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(Revised 10-22-2014)

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climate control
electromechanical
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process control
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Pneumatic Products U.S.

A complete range of pneumatic system components

Catalog PDN1000-3US

Parker

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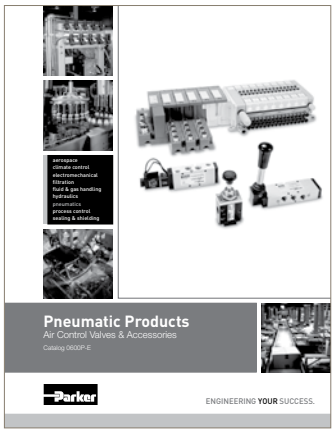

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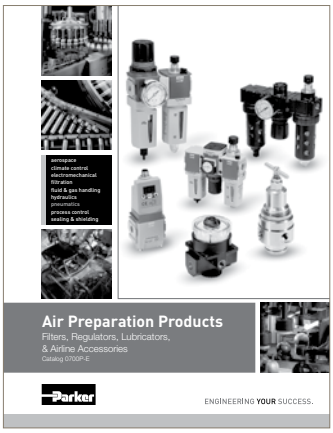

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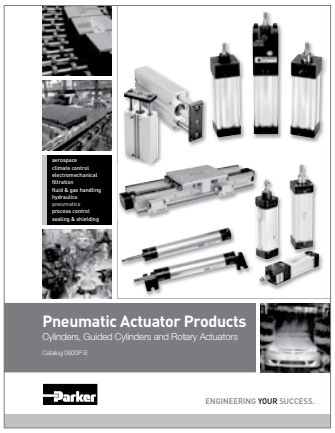

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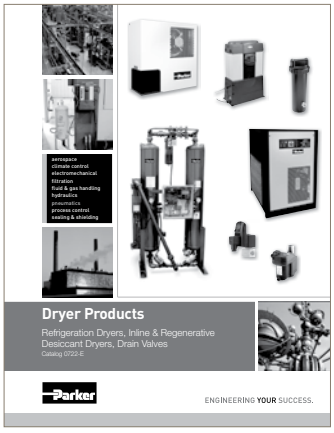

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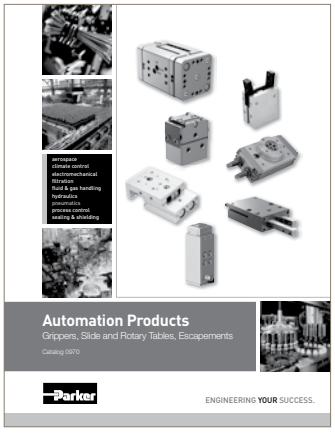

0970-E

For additional technical data, view the above catalogs at www.parker.com/pneu/literature
For information on Parker's On-line Training, visit www.parker/training

The Parker 5-Year Extended Warranty

Parker Hannifin Corporation will extend its warranty on all pneumatic components to sixty (60) months providing they are correctly installed and protected by Parker pneumatic filters which are properly maintained. Components covered by this warranty include all cylinders, valves and pneumatic automation components manufactured by Parker in any of our global facilities. This warranty covers our components anywhere in the world you may ship your equipment.

Parker's obligation under this warranty is limited to the replacement or repair of any failed components. The buyer understands that the seller will not be liable for any other costs or damages.

The buyers of quality Parker components and filters benefit by having ONE source for all pneumatic needs - **Parker.**

5 Year Warranty

Yoon Chung

Yoon "Michael" Chung
President
Automation Group

Parker

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This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application including consequences of any failure, and review the information concerning the product or system in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the application are met.

The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and its subsidiaries at any time without notice.

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Product	Page	Additional Technical Data
Introduction & Product Index		**A**
Introduction, Warning, Offer of Sale	A1	
Table of Contents	A2-A3	
Pictorial Index	A4-A13	
Actuator Products		**B**
Tie Rod Cylinders		
3MA Series	B6-B15	0900P-E
4MA/4ML Series	B16-B39	0900P-E
3MAJ/4MAJ Series	B40-B57	0900P-E
4MNR Series	B58-B64	0900P-E
P1D Series	B65-B82	0900P-E
Round Body Cylinders		
SR/SRM/SRD/SRDM Series	B83-B108	0900P-E
SRX Series	B109-B116	0900P-E
P1L Series	B117-B131	0900P-E
P1A Series	B132-B135	0900P-E
P Series	B136-B142	0900P-E
Compact Cylinders		
P1Q Series	B143-B150	0960P-E
P1M Series	B151-B162	0900P-E
LP/LPM Series	B163-B168	0900P-E
Guided Cylinders		
P5T Series	B169-B175	0900P-E
P5L Series	B176-B201	0900P-E
HB Series	B202-B209	0900P-E
P5E Series	B210-B215	0900P-E
Rodless Cylinders		
OSP-P Series	B216-B233	0900P-E
P1X Series	B234-B245	0900P-E
P1Z Series	B246-B257	0900P-E
GDL Series	B258-B262	0900P-E
Rotary Actuators		
PV Series	B263-B266	0900P-E
PRN(A) Series	B267-B271	0900P-E
PTR Series	B272-B274	0900P-E
HP Series	B275-B277	0900P-E
P1V-S Series	B278-B280	0900P-E
Automation Products		
Grippers	B281-B313	0970-E
Slide Tables	B314-B325	0970-E
Rotary Tables	B326-B327	0970-E
Escapements	B328-B329	0970-E
Sensors	B330-B333	0970-E
Fittings	B334	0970-E
Actuator Accessories		
Linear Alignment Couplers	B335	0900P-E
4TK Air-Oil Tanks	B336	0900P-E
PRL Series	B337-B338	0900P-E
Electronic Sensors		
Drop-in, Solid State, Reed, Weld Immune, NAMUR and Proximity Sensors	B339-B360	0900P-E
Shock Absorbers		
Industrial Shock Absorbers (Linear Decelerators)	B361-B378	0900P-E

Product	Page	Additional Technical Data
Vacuum Products		**C**
Cups		
PFG Flat	C4-C16	0802-E
PBG Bellows	C17-C28	0802-E
P5V-CFS Flat	C29	0802-E
PJG Short Bellows	C30-C41	0802-E
PCG Multiple Bellows	C42-C49	0802-E
PUGB Flat Swivel	C50-C53	0802-E
Generators		
MCA, CV, CV-CK	C54-C55	0802-E
CHF	C56-C57	0802-E
MC22	C58-C60	0802-E
MC72	C61-C63	0802-E
CEK	C64-C66	0802-E
CVXCEK	C67-C68	0802-E
Generator Sensors		
MPS-23	C69-C70	0802-E
MVS-201	C71-C72	0802-E
Pressure Sensors		
MPS-33	C73-C74	0802-E
MPS-34	C75-C76	0802-E
SCP01	C77	0802-E
SCPSD	C78-C79	0802-E
Cables	C80	0802-E
Generator Accessories		
FSV Series Flow Sensing Valve	C81	0802-E
CH01 Series Check Valve	C82	0802-E
VF & VFL Vacuum Filters	C83	0802-E
VFP Vacuum Filters	C84	0802-E
Vacuum Silencers	C85	0802-E
Valve Products		**D**
Direct Acting		
XM Series	D4-D7	0600P-E
15mm Solenoid	D8-D10	0600P-E
Inline		
Viking Lite Series	D11-D18	0600P-E
Viking Xtreme Series	D19-D42	0600P-E
B Series	D43-D67	0600P-E
ADEX Series	D68-D77	0600P-E
N Series	D78-D88	0600P-E
Subbase & Manifold		
Moduflex	D89-D112	0600P-E
Isys Micro Series	D113-D123	0600P-E
Isys ISO Series	D124-D165	0600P-E
Fieldbus Systems	D166-D184	0600P-E
DX ISOMAX Series	D185-D197	0600P-E
Valvair II	D198-D207	0600P-E
Manual / Mechanical		
DIrectair 2, Directair 4 Series	D208-D217	0600P-E
Viking Xtreme Lever Series	D218-D224	0600P-E
42 Lever / Pedal Series	D225-D226	0600P-E
M0 Series	D227-D230	0600P-E
Lockout Valves – LV-EZ Series	D231-D232	0700P-E
Brass Poppet / Sliding Seal	D233-D235	0600P-E

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Product	Page	Additional Technical Data
Valve Products – Continued		**D**
Valve Accessories		
Control Panel Products	D236-D239	0600P-E
Sensing / Limit Switches	D240-D248	0600P-E
Air Preparation Products		**E**
Global Modular		
Particulate Filters	E3-E5	0700P-E
Coalescing and Adsorber Filters	E6-E8	0700P-E
Regulators	E9-E11	0700P-E
Common Regulators	E12-E13	0700P-E
Filter / Regulators	E14-E16	0700P-E
Lubricators	E17-E19	0700P-E
Combinations	E20-E22	0700P-E
Electronic Proportional Regulators	E23-E24	0700P-E
Soft Start / Dump Valves	E25-E27	0700P-E
Solenoid Operators	E28-E29	0700P-E
Accessories	E30-E33	0700P-E
Flow Curves	E34-E39	0700P-E
Air-Prep II		
Particulate Filters	E40-E41	0700P-E
Coalescing Filters	E42-E43	0700P-E
Regulators	E44-E47	0700P-E
Filter / Regulators	E48-E51	0700P-E
Lubricators	E52-E55	0700P-E
Combos	E56-E58	0700P-E
Miniature		
Particulate Filters	E59	0700P-E
Coalescing Filters	E60	0700P-E
Regulators	E61-E65	0700P-E
Filter / Regulators	E66-E67	0700P-E
Lubricators	E68	0700P-E
Combos	E69	0700P-E
P3N		
Particulate Filters	E70	0700P-E
Coalescing Filters	E71	0700P-E
Regulators	E72-E73	0700P-E
Filter / Regulators	E74-E75	0700P-E
Lubricators	E76	0700P-E
Combos	E77-E78	0700P-E
General Industrial		
Particulate Filters	E79-E82	0700P-E
Coalescing Filters	E83-E87	0700P-E
Regulators	E88-E95	0700P-E
Lubricators	E96-E98	0700P-E
Combos	E99	0700P-E
Stainless Steel		
Filters	E100-E101	0700P-E
Regulators	E102-E103	0700P-E
Filter / Regulators	E104-E105	0700P-E
Lubricators	E106	0700P-E

Product	Page	Additional Technical Data
Air Preparation Products – Continued		**E**
Precision & Proportional Regulators		
Semi-Precision Dial Regulators	E107-E108	0700P-E
Precision Filter / Regulators	E109	0700P-E
Precision Pneumatic Input Signal Amplifier	E110-E111	0700P-E
High Precision Regulators	E112-E113	0700P-E
High Precision Relief Valve	E114	0700P-E
High Precision Vacuum Regulator	E115	0700P-E
Electronic Proportional Regulator	E116-E117	0700P-E
Bulk Liquid Separators		
P3TF Bulk Liquid Separator	E118-E119	0700P-E
P3TF Bulk Liquid Separator, Flanged	E120	0700P-E
Dryer Products		**F**
PRD Refrigeration Dryers	F3-F4	0722P-E
DD Inline Desiccant Dryers	F5	0722P-E
P3TJA Regenerative Desiccant Dryers	F6	0722P-E
PTW Heatless Desiccant Dryers	F7-F8	0722P-E
ED Zero Air Loss Condensate Drains	F9	0722P-E
WDV3-G Auto Electrical Drain Valves	F10	0722P-E
Accessories		**G**
Ball Valves / Plug Valves	G3	0700P-E
Hose Barb Fittings	G4	0700P-E
Integrated Fittings	G5-G10	0700P-E
Tank Valves & Air Chucks	G10	0700P-E
Mufflers & Silencers	G11	0700P-E
Quick Exhaust, Shuttle & Relief Valves	G12	0700P-E
Blow Guns, Drip Leg Drain & Pressure Switch	G13	0700P-E
SensoControl® Diagnostic Products Industrial Prooducts	G14	3854 USA 3883 USA
Quick Connect Couplers	G15-G17	0700P-E
Tubing	G18-G19	0700P-E
Prestolok Composite Fittings	G20-G29	0700P-E
Prestolok Metal Fittings	G29-G35	0700P-E
Pipe Fittings	G36-G39	0700P-E
Application Techincal Data		**H**
Fluid Power Graphic Symbols	H1	
Actuator Technical Information	H2-H5	
Vacuum Technical Information	H6-H9	
Valve Technical Information	H10	
Safety Guides, Offer of Sale		**J**
Part Number to Page Number	J1-J25	
Safety Guide – Actuator Products	J26-J27	
Safety Guide – Control Products	J28-J29	
Offer of Sale	J30	

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Tie Rod Cylinders

3MA Series - Economy NFPA Cylinder

- Bore sizes 1-1/2 through 5 inch
- 18 standard mounting styles
- Pressures up to 250 PSIG
- Temperatures -10°F to 165°F
- Aluminum body construction

B6

4MA / 4ML Series - Flexible NFPA Cylinder

- Bore sizes 1-1/2 through 8 inch
- 20 standard mounting styles
- Pressures up to 250 PSIG
- Temperatures -50°F to 250°F
- Aluminum body construction

B16

3MAJ / 4MAJ - Rodlock Cylinder

- Bore sizes 1-1/2 through 8 inch
- 17 standard mounting styles
- Pressures up to 100 PSIG
- Temperatures -10°F to 165°F
- Aluminum body construction

B40

4MNR Series - Non-Rotating Cylinder

- Bore sizes 1-1/8 through 4 inch
- 14 standard mounting styles
- Pressures up to 250 PSIG
- Temperatures -10°F to 165°F
- Aluminum body construction

B58

P1D Series - ISO 15552 / ISO 6431

- 5 available for maximum flexibility
- Bore sizes 32mm through 200mm
- 10 standard mounting styles
- Pressures up to 145 PSIG
- Temperatures -10°F to 250°F
- Aluminum body construction

B65

Round Body Cylinders

SR / SRM / SRD / SRDM Series - Non-Repairable

- Bore sizes 5/16 through 3 inch
- 28 mounting styles
- Pressures up to 250 PSIG
- Temperatures -10°F to 165°F
- Stainless steel body construction

B83

SRX Series - Position Feedback

- Bore sizes 1-1/16 through 3 inch
- Continuous position feedback
- Pressures up to 150 PSIG
- Temperatures 40°F to 165°F
- Stainless steel body construction

B109

P1L Series - Repairable

- Bore sizes 20mm through 100mm
- 9 mounting styles
- Pressures up to 145 PSIG
- Temperatures -10°F to 250°F
- Aluminum body construction

B117

P1A Series - ISO Non-Repairable

- Bore sizes 10mm through 25mm
- 5 mounting styles
- Pressures up to 145 PSIG
- Temperatures -40°F to 302°F
- Stainless steel body construction

B132

P Series - Repairable

- Bore sizes 1-1/8 through 4 inch
- 4 mounting styles
- Pressures up to 150 PSIG
- Temperatures -10°F to 250°F
- Aluminum body construction

B136

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Compact Cylinders

P1Q Series - Economy Compact Cylinder

- Bore sizes 12mm through 100mm
- 4 flexible mounting options
- Pressures up to 10 PSIG
- Temperatures 23°F to 158°F
- Aluminum body construction

B143

P1M Series - Compact Cylinder

- Bore sizes 12mm through 100mm
- 6 mounting options
- Pressures up to 145 PSIG
- Temperatures -4°F to 250°F
- Aluminum body construction

B151

LP / LPM Series - Compact Cylinder

- Bore sizes 9/16 through 4 inch
- 6 mounting styles
- Pressures up to 150 PSIG
- Temperatures -10°F to 200°F
- Aluminum body construction

B163

Guided Cylinders

P5T Series - Compact Guided

- Bore sizes 16mm through 100mm
- Pressures up to 145 PSIG
- Temperatures 0°F to 250°F
- Aluminum body construction
- Flexible porting: top, rear, side

B169

P5L Series - Guided

- Bore sizes 20mm through 100mm
- Direct mounting
- Pressures up to 145 PSIG
- Temperatures 0°F to 250°F
- Extruded aluminum body construction

B176

HB Series - Heavy Duty Guided

- Bore sizes 1-1/2 through 2-1/2 inch
- Thrust, reach and compact versions available
- Air service pressure up to 250 PSIG, hydraulic service up to 750 PSIG
- Temperatures 0°F to 250°F
- Aluminum body construction
- Rod lock version available

B202

P5E Series - P1D ISO Guided

- Bore sizes 32mm through 100mm
- Pressures up to 145 PSIG
- Temperatures 14°F to 165°F
- Aluminum body construction
- Rod lock version available

B210

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Rodless Cylinders

OSP-P Series - Band Type Rodless

- Bore sizes 10mm through 80mm
- Pressures to max. 8 bar
- Temperatures -10°F to 80°F
- Aluminum body construction

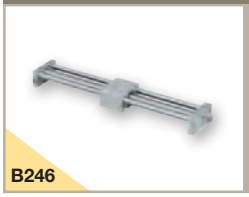
B216

P1X Series - Band Type Rodless

- 7 bore sizes 16mm through 63mm
- Integral sensor mounting rail
- Pressures 7 to 100 PSIG
- Temperatures 40°F to 140°F
- Aluminum body construction

B234

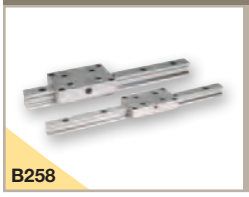
P1Z Series - Magnetically Coupled Rodless



- 3 bore sizes 16mm, 20mm & 32mm
- Pressures 29 to 100 PSIG
- Temperatures 15°F to 140°F
- Stainless steel body construction

B246

GDL Series - Rails & Cassettes



- 6 sizes available
- Speed up to 10m/s (33 ft/s)
- Temperatures -10°C to 80°C
- Aluminum alloy rail
- Aluminum body construction

B258

Rotary Actuators

PV Series - Vane Rotary

- 8 model sizes
- Single or double vane models
- Pressures to 150 PSIG
- Temperatures 30°F to 250°F
- 7 to 1800 lb-in output torque

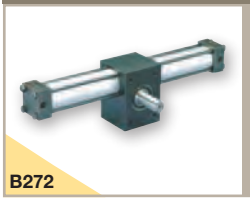
B263

PRN(A) Series - Vane Rotary

- 5 miniature and 4 standard models
- Temperatures -23°F to 176°F
- 1.33 to 2355 in-lb torque at 100 PSIG

B267

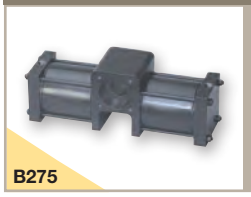
PTR Series - Rack & Pinion Rotary



- Bore sizes 1 through 3-1/4 inch
- Pressures to 250 PSIG
- Temperatures 0°F to 250°F
- 39 to 2281 lb-in output torque

B272

HP Series - Large Rack & Pinion Rotary



- 2 large bore models
- 3 standard rotations
- Pressures to 100 PSIG
- Temperatures 0°F to 250°F
- 4500 and 10,000 lb-in output at 100 PSIG

B275

P1V-S Series - Air Motors

- Power from 20 through 1200 watts
- Speeds 5 to 24,000 RPM
- Pressures to max. 7 bar
- Temperatures -30°C to 100°C

B278

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Automation Products

Grippers

- Grip forces to 44,000N
- Parallel or Angular
- 2 or 3 jaw
- Pneumatic or electric
- Temperature to 300°F
- Magnetic piston standard
- Clean room

B281

Slide Tables

- 6 bore sizes: 6mm to 25mm
- Strokes to 150mm
- Integration of linear rail and dual bore cylinder
- Available with adjustable stroke and shock absorbers
- Magnetic piston standard

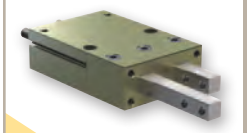
B314

Rotary Tables

- 4 bore sizes: 16mm to 32mm
- Dual rack and pinion with integrated bearing
- Adjustable rotation standard 0 to 190 degrees
- Available with optional shock absorbers

B326

Escapements

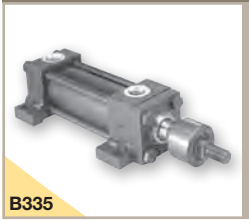


- 3 bore sizes: 14mm to 27mm
- Locking key ensures part separation and eliminates jams
- Adjustable retract stops
- Sealed design repels contaminants
- Dowel holes in body for precision applications

B328

Actuator Accessories

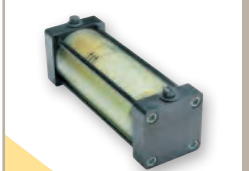
Linear Alignment Couplers



- 12 standard thread sizes
- Maximum reliability for trouble-free operation, long life and lower operating costs
- Increased cylinder life by reducing wear on piston and rod bearings
- Stainless steel versions available

B335

4TK Series - Air Oil Tanks



- 6 standard bore sizes
- Lightweight aluminum / fiberglass design
- 2 fluid flow baffles reduce agitation and aeration
- 8 standard mounting styles

B336

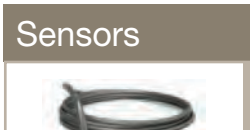
PRL Series - Stand Alone Rodlock

- 5 different sizes
- Large holding forces
- 2 different mounting styles
- Case-hardened rod material available

B337

Electronic Sensors

Sensors



- Solid state
- Reed
- NAMUR
- Proximity

B339

Shock Absorbers

Shock Absorbers

- Miniature - self-compensating
- Heavyweight - soft contact and self-compensating
- Miniature - soft contact and self-compensating
- Magnum series - adjustable
- Heavy - self-compensating
- Heavy - adjustable

B361

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Pneumatic Division
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www.parker.com/pneumatics

Vacuum Cups

PFG Flat Cups

- Precision molded single lip flat cup for smooth or slightly curved surfaces.
- Low profile design makes flat pads ideal for fast response
- Cup Sizes: 1.5mm to 200mm

C4

PBG Bellows Cups

- Versatile bellows cup design provides a flexible sealing lip for products with irregular, smooth, curved surfaces, and flexible products
- Cup sizes: 10mm to 150mm

C17

P5V-CFS Flat Cups

- Precision molded double lip flat cup for slightly curved surfaces
- Double lip for additional security. If outside lip bends and looses its seal, the inner lip remains sealed.
- Outer ribs prevent the cup lip from being cut
- Cup Sizes: 50mm to 150mm

C29

PJG Short Bellows Cups

- Versatile bellows cup design provides a flexible sealing lip for products with irregular, smooth, curved surfaces, and slightly flexible products
- Shorter stroke provides fast response
- Cup sizes: 6mm to 80mm

C30

PCG Multiple Bellows Cups

- Versatile bellows cup design provides a flexible sealing lip for products with irregular, smooth, or curved surfaces
- 2-1/2 bellows design minimizes contact pressure applied to products
- Cup sizes: 5mm to 90mm

C42

PUGB Flat Swivel Cups

- 30° swivel single lip flat cup for smooth surfaces, slightly curved surfaces, and flexible products
- Rigid stem or level compensator provides good stability for horizontal lift
- Cup Sizes: 60mm to 100mm

C50

Vacuum Generators

MCA, CV, CV-CK Inline Generators

- MCA: Light weight vacuum generator
- CV: Basic aluminum body vacuum generator
- CV-CK: Basic aluminum body vacuum generator with mechanical switch for part present confirmation

C54

CHF Inline Generators

- CHF- High Flow Series is a multistage vacuum generator
- Intended for high flow vacuum applications
- Ideal for porous applications
- Standard with flow thru exhaust mufflers to reduce clogging in dirty environments

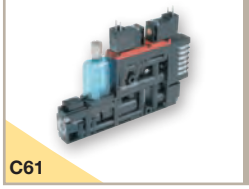
C56

MC22 Integrated Generators

- Compact vacuum generator includes vacuum and blow-off solenoids and vacuum filters
- Optional check valve and MPS-23 pressure sensor
- Air-economizing function with MVS-201 pressure sensor
- Inline version can be mounted on manifolds up to 8 stations

C58

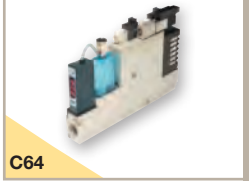
MC72 Integrated Generators



- Light weight vacuum generator includes vacuum and blow-off solenoids.
- Includes check valve,vacuum filter and optional MPS-23 pressure sensor
- Air-economizing function with MVS-201 pressure sensor
- Inline version can be mounted on manifolds up to 5 stations

C61

CEK Integrated Generators



- Air-economizing functions with emergency stop logic that maintains degree of vacuum with loss of output power
- Includes vacuum and blow-off solenoids, check valve, vacuum filter and optional MPS-23 pressure sensor
- Inline versions can be mounted in manifolds up to 5 stations

C64

CVXCEK Integrated Generators

- Basic 2 station CEK generator manifold with additional electrical capabilities
- Integrates MPS-23 sensor for on board air-economizing programming
- M12 electrical wiring package with optional 18-pin single connection

C67

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Vacuum Generator Sensors

MPS-23 Integrated Generator Sensors

- 0 to -30 inHg, -14.7 to 72.5 PSIG
- Output type: (2) NPN / PNP
- Media: air, non-corrosive gas
- IP65
- Hysteresis output mode: variable, 100% F.S.
- Output setting: push button
- LED display (Red)

C69

MVS-201 Integrated Generator Sensors

- 0 to -30 inHg, -14.7 to 72.5 PSIG
- Output type: (2) NPN / PNP
- Media: air, non-corrosive gas
- IP65
- Hysteresis output mode: variable, 100% F.S.
- Output setting: push button
- LED display (Red)

C71

Pressure Sensors / Cables

MPS-33 Pressure Sensors

- 0 to -30 inHg, 0 to 145 PSIG
- Output type: (2) PNP or (1) NPN with analog
- Media: air, non-corrosive gas
- IP50
- Hysteresis output mode: variable, 100% F.S.
- Output setting: push button
- LED display (Red)

C73

MPS-34 Pressure Sensors

- 0 to -30 inHg, 0 to 145 PSIG
- Output type: (2) PNP or (1) NPN with analog
- Media: air, non-corrosive gas
- IP50
- Hysteresis output mode: variable, 100% F.S.
- Output setting: push button
- LED display (Red)

C75

SCP01 Pressure Sensor

- Stainless steel body
- Compact construction
- Shock and vibration proof
- Resistant to pressure spikes
- Accuracy +/- 0.5% FS

C77

SCPSD Pressure Sensors

- CV-CK is a Venturi Generator with adjustable open contact mechanical switch for vacuum confirmation.
- Great for low cost vacuum confirmation

C78

Cables – continued

Cables

- M8, M12 male / female connector
- Length: 2m or 5m
- Cover: PVC or PUR
- Connection type: swivel straight or angled
- IP67 swivel connector

C80

Vacuum Generator Accessories

FSV Metered Flow Sensing Valve

- Pick and place randomly placed products
- Minimize vacuum loss when cup seal is lost
- Direct mounting to cups
- 1/8 to G3/8 connection
- Integrated bronze filter

C81

CH01 One Way Check Valve

- Poppet design
- Low leakage
- Low cracking pressure

C82

VF & VFL Vacuum Filters

- Filters the vacuum system to protect the components from damaging particles absorbed from the environment
- Elements easily replaced

C83

VFP Vacuum Filters

- Provides easy monitoring, economy and safety
- 10 micron porous plastic element prolongs element life
- Shatterproof and airtight
- Replaceable filter element

C84

Vacuum Silencers

- Pressure up to 128 PSIG
- Temperature 41°F to 132°F (5°C to 55.5°C)
- Silencing effect 20 dB

C85

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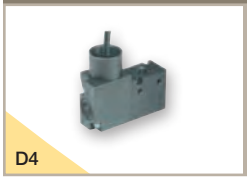
Direct Acting Valves

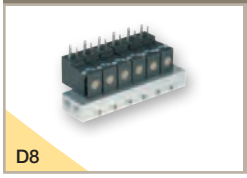
XM Series - Direct Acting



- Inline or stacking
- 1/8 inch ports
- Pressures 0 t0 125 PSIG
- Temperatures 32°F to 125°F
- Flow - .15 Cv

D4

15mm Series - Direct Acting

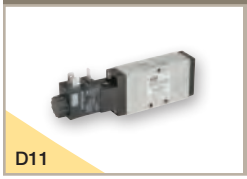


- Subbase or manifold
- 1/8 inch ports
- Pressures VAC to 145 PSIG
- Temperatures 5°F to 140°F
- Flow - .033 to .05 Cv

D8

Inline Valves

Viking Lite Series - Inline



- Inline or bar manifold
- 1/8 through 3/8 inch ports
- Pressures 22 to 145 PSIG
- Temperatures 14°F to 122°F
- Flow - .6 to 2.5 Cv

D11

Viking Xtreme Series - Inline

- Inline or bar manifold
- 1/8 through 1/2 inch ports
- Pressures VAC to 232 PSIG
- Temperatures -40°F to 140°F
- Flow - .7 to 2.7 Cv

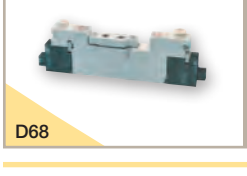
D19

B Series - Inline

- Inline, subbase or bar manifold
- 1/8 through 3/4 inch ports
- Pressures VAC to 145 PSIG
- Temperatures 5°F to 120°F
- Flow - .75 to 7.0 Cv

D43

ADEX Series - Inline



- Inline, subbase or bar manifold
- M3, M5, 1/8 inch ports
- Pressures VAC to 100 PSIG
- Temperatures 32°F to 122°F
- Flow - .1 to .47 Cv

D68

Inline – continued

N Series - Inline Poppet

- Inline mounted
- 3/8 through 1-1/2 inch ports
- Pressures 30 to 250 PSIG
- Temperatures 0°F to 200°F
- Flow - 3.6 to 29.9 Cv

D78

Subbase & Manifold Valves

Moduflex Series Valves

- Inline or stacking
- 4mm tube, 1/4, 3/8 inch ports
- Pressures VAC to 120 PSIG
- Temperatures 5°F to 140°F
- Flow - .18 to .80 Cv

D89

Isys Micro Series

- Subbase or manifold
- 4mm through 1/4 tube
- Pressures VAC to 145 PSIG
- Temperatures 5°F to 120°F
- Flow - .35 Cv

D113

Isys ISO Series

- Subbase or manifold
- 1/8 through 3/4 inch ports
- Pressures VAC to 145 PSIG
- Temperatures 5°F to 120°F
- Flow - .55 to 6.0 Cv

D124

Fieldbus Systems

- Fieldbus interface for Isys and Moduflex valves
- Up to 256 inputs
- Up to 256 outputs
- Digital or analog

D166

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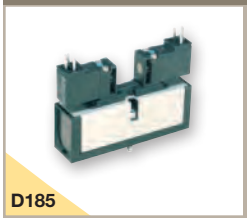
Subbase & Manifold – continued

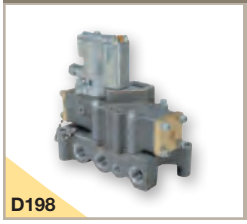
DX ISOMAX Series



- Subbase or manifold
- 1/8 through 3/4 inch ports
- Pressures VAC to 145 PSIG
- Temperatures 14°F to 140°F
- Flow - .55 to 4.15 Cv

D185

Valvair II Series



- Subbase or manifold
- 3/8 through 1-1/2 inch ports
- Pressures VAC to 225 PSIG
- Temperatures 0°F to 200°F
- Flow - 1.9 to 12.0 Cv

D198

Manual / Mechanical Valves

Directair 2 & 4

- Manual / mechanical
- 1/8 and 1/4 inch ports
- Pressures VAC to 150 PSIG
- Temperatures 32°F to 175°F
- Flow - .20 to .84 Cv

D208

Viking Xtreme

- Manual / mechanical
- 1/8, 1/4 and 3/8 inch ports
- Pressures:
  Type A & B - VAC to 232 PSIG
  Type C & D - VAC to 174 Psig
- Temperatures -40°F to 140°F
- Flow - .5 to 2.7 Cv

D218

42 Series

- Manual / mechanical
- 1/4 and 3/8 inch ports
- Pressures VAC to 150 PSIG
- Temperatures 0°F to 140°F
- Flow - 1.3 to 2.9 Cv

D225

Manual / Mechanical – continued

M0 Series

- Air Pilot, Manual / mechanical
- 1/4 and 1 inch ports
- Pressures VAC to 225 PSIG
- Temperatures -15°F to 200°F
- Flow - .5 to 1.25 Cv

D227

LV / EZ Lockout Valves

- Port sizes 3/8 through 1-1/4 inch
- Max.supply pressure 300 PSIG
- Max. operating temperature 175°F
- Cv from 3.7 to 14

D231

Brass Poppet, Sliding Seal

- 4-way, 3-position rotary disc, direct air operated valves
- Pressures 0 to 150 PSIG
- Temperatures 18°F to 200°F
- Flow - 2.5 to 6.2 Cv

D233

Valve Accessories

Control Panel Products

- A wide variety of push buttons and selector switches
- Visual indicators
- Foot pedal switches
- Modular pneumatic / electric push buttons

D236

Sensing / Limit Switches

- Limit switches in a variety of sizes and configurations
- Pressure switches with many adjustable ranges
- Components designed specifically for pneumatic technology using pressure variation, air bleen or blocking for detection

D240

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Air Preparation Products

Global FRL's

- Port size: 1/4 through 3/4 inch
- Maximum supply pressure: 300 PSIG
- Operating temperature: -13°F through 150°F
- Filters, regulators, filter / regulators, lubricators and accessories

E3

General Industrial FRL's

- Port size: 1/8 through 3 inch
- Maximum supply pressure: 250 PSIG
- Operating temperature: 32°F through 150°F
- Filters, regulators, filter / regulators, lubricators and accessories

E79

Prep-Air II FRL's

- Compact & standard
- Port size: 1/4 through 3/4 inch
- Filters, regulators, filter / regulators, lubricators and accessories
- Operating temperature: 32°F through 175°F
- Point of use applications
- Modular construction

E40

Stainless Steel FRL's

- Port sizes: 1/4 and 1/2 inch
- Stainless steel construction handles most corrosive environments
- Operating temperature -40°F through 180°F
- Meets NACE specifications MR-01-75/ISO 15156
- Filters, regulators, filter / regulators, and lubricators

E100

Miniature FRL's

- Port size: 1/8 through 3/8 inch
- Filters, regulators, filter / regulators, lubricators and accessories
- Operating temperature: -4°F through 125°F
- Non-modular construction
- Ideal for point of use applications

E59

Precision / Proportional Regulators

- Port sizes: 1/4 through 2 inch
- Maximum supply pressure: 300 PSIG
- Operating temperature: -40°F through 200°F
- High precision
- Electronic proportional

E107

P3N FRL's

- Port size: 3/4 through 1-1/2 inch
- Filters, regulators, filter / regulators, lubricators and accessories
- Operating temperature: 32°F through 175°F
- High flow

E70

Liquid Separators

- Port sizes 1/4 through 6 inch flange
- High liquid removal efficiencies at all flow conditions
- Low maintenance
- Suitable for variable flow compressors

E118

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Dryers

Dryer Products

- Refrigeration (10-2400 SCFM)
- Inline desiccant (15-60 SCFM)
- Regenerative desiccant (3-800 SCFM)
- Heatless desiccant dryers
- Zero loss & timer drains
- Auto electrical drain valves

F3

Accessories

Ball Valves / Plug Valves

- Forged brass, general purpose, industrial ball valves
- Stainless steel, general purpose, industrial ball valves
- One piece extruded brass body plug valves

G3

Hose & Fittings

- 801 General purpose hose
- Push-on hose barb fittings

G4

Integrated Fittings

- Flow control regulators
- Inline check valves
- Blocking valves
- Threshold sensors

G5

Miscellaneous Accessories

- Tank valves & air chucks
- Mufflers & silencers
- Relief valves
- Quick exhaust / shuttle valves
- Pressure switches
- Blow guns
- Ports from M5 through 3/4 inch

G10

Accessories – continued

Quick Connect Couplers

- Senso Control® (Product Hightlight Only)
- Industrial interchange nipples –1/4" to 3/4" body size
- Sleevematic couplers –1/4" to 1/2" body size
- Saflomatic couplers –1/4" to 3/4" body size
- Economatic quick connect couplings –1/4" body size

G14

Tubing & Fittings

- Push-to-connect, Prestolok composite fittings
- Push-to-connect, Prestolok metal fittings
- Pipe fittings
- E: instrument grade tubing, N: flexible tubing, FRPE: flame resistant tubing, NR: semi-rigid high strength tubing, U: polyether base tubing

G18

Application Engineering Data

- Fluid Power Graphic Symbols
- Valve Product Selection Data
- Technical Data
- Application Engineering Data

H1

Part Number to Page Number, Safety Guides, Offer of Sale

- Part Number to Page Number Index
- **Safety Guide** – Actuator Products
- **Safety Guide** – Control Products
- Offer of Sale

J1

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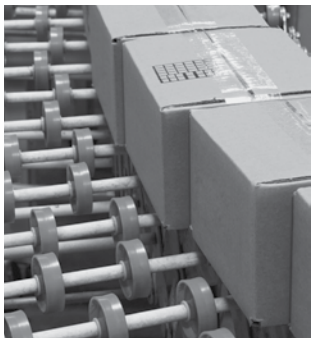

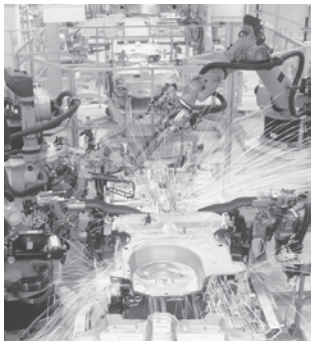

Actuator Products

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Tie Rod Cylinders

3MA Series - Economy NFPA Cylinder

- Bore sizes 1-1/2 through 5 inch
- 18 standard mounting styles
- Pressures up to 250 PSIG
- Temperatures -10°F to 165°F
- Aluminum body construction

B6

4MA / 4ML Series - Flexible NFPA Cylinder

- Bore sizes 1-1/2 through 8 inch
- 20 standard mounting styles
- Pressures up to 250 PSIG
- Temperatures -50°F to 250°F
- Aluminum body construction

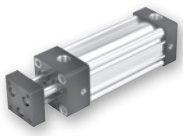
B16

3MAJ / 4MAJ - Rodlock Cylinder

- Bore sizes 1-1/2 through 8 inch
- 17 standard mounting styles
- Pressures up to 100 PSIG
- Temperatures -10°F to 165°F
- Aluminum body construction

B40

4MNR Series - Non-Rotating Cylinder



- Bore sizes 1-1/8 through 4 inch
- 14 standard mounting styles
- Pressures up to 250 PSIG
- Temperatures -10°F to 165°F
- Aluminum body construction

B58

P1D Series - ISO 15552 / ISO 6431

- 6 available for maximum flexibility
- Bore sizes 32mm through 200mm
- 10 standard mounting styles
- Pressures up to 145 PSIG
- Temperatures -10°F to 250°F
- Aluminum body construction

B65

Round Body Cylinders

SR / SRM / SRD / SRDM Series - Non-Repairable

- Bore sizes 5/16 through 3 inch
- 28 mounting styles
- Pressures up to 250 PSIG
- Temperatures -10°F to 165°F
- Stainless steel body construction

B83

SRX Series - Position Feedback

- Bore sizes 1-1/16 through 3 inch
- Continuous position feedback
- Pressures up to 150 PSIG
- Temperatures 40°F to 165°F
- Stainless steel body construction

B109

P1L Series - Repairable

- Bore sizes 20mm through 100mm
- 9 mounting styles
- Pressures up to 145 PSIG
- Temperatures -10°F to 250°F
- Aluminum body construction

B117

P1A Series - ISO Non-Repairable

- Bore sizes 10mm through 25mm
- 5 mounting styles
- Pressures up to 145 PSIG
- Temperatures -40°F to 302°F
- Stainless steel body construction

B132

P Series - Repairable

- Bore sizes 1-1/8 through 4 inch
- 4 mounting styles
- Pressures up to 150 PSIG
- Temperatures -10°F to 250°F
- Aluminum body construction

B136

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Compact Cylinders

P1Q Series - Economy Compact Cylinder

- Bore sizes 12mm through 100mm
- 4 flexible mounting options
- Pressures up to 10 PSIG
- Temperatures 23°F to 158°F
- Aluminum body construction

B143

P1M Series - Compact Cylinder

- Bore sizes 12mm through 100mm
- 6 mounting options
- Pressures up to 145 PSIG
- Temperatures -4°F to 250°F
- Aluminum body construction

B151

LP / LPM Series - Compact Cylinder

- Bore sizes 9/16 through 4 inch
- 6 mounting styles
- Pressures up to 150 PSIG
- Temperatures -10°F to 200°F
- Aluminum body construction

B163

Guided Cylinders

P5T Series - Compact Guided

- Bore sizes 16mm through 100mm
- Pressures up to 145 PSIG
- Temperatures 0°F to 250°F
- Aluminum body construction
- Flexible porting: top, rear, side

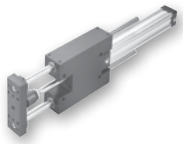
B169

P5L Series - Guided

- Bore sizes 20mm through 100mm
- Direct mounting
- Pressures up to 145 PSIG
- Temperatures 0°F to 250°F
- Extruded aluminum body construction

B176

HB Series - Heavy Duty Guided



- Bore sizes 1-1/2 through 2-1/2 inch
- Thrust, reach and compact versions available
- Air service pressure up to 250 PSIG, hydraulic service up to 750 PSIG
- Temperatures 0°F to 250°F
- Aluminum body construction
- Rod lock version available

B202

P5E Series - P1D ISO Guided

- Bore sizes 32mm through 100mm
- Pressures up to 145 PSIG
- Temperatures 14°F to 165°F
- Aluminum body construction
- Rod lock version available

B210

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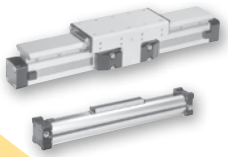
Rodless Cylinders

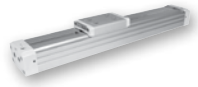
OSP-P Series - Band Type Rodless



- Bore sizes 10mm through 80mm
- Pressures to max. 8 bar
- Temperatures -10°F to 80°F
- Aluminum body construction

B216

P1X Series - Band Type Rodless



- 7 bore sizes 16mm through 63mm
- Integral sensor mounting rail
- Pressures 7 to 100 PSIG
- Temperatures 40°F to 140°F
- Aluminum body construction

B234

P1Z Series - Magnetically Coupled Rodless

- 3 bore sizes 16mm, 20mm & 32mm
- Pressures 29 to 100 PSIG
- Temperatures 15°F to 140°F
- Stainless steel body construction

B246

GDL Series - Rails & Cassettes

- 6 sizes available
- Speed up to 10m/s (33 ft/s)
- Temperatures -10°C to 80°C
- Aluminum alloy rail
- Aluminum body construction

B258

Rotary Actuators

PV Series - Vane Rotary

- 8 model sizes
- Single or double vane models
- Pressures to 150 PSIG
- Temperatures 30°F to 250°F
- 7 to 1800 lb-in output torque

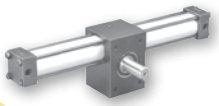
B263

PRN(A) Series - Vane Rotary

- 5 miniature and 4 standard models
- Temperatures -23°F to 176°F
- 1.33 to 2355 in-lb torque at 100 PSIG

B267

PTR Series - Rack & Pinion Rotary



- Bore sizes 1 through 3-1/4 inch
- Pressures to 250 PSIG
- Temperatures 0°F to 250°F
- 39 to 2281 lb-in output torque

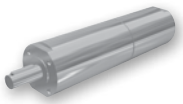
B272

HP Series - Large Rack & Pinion Rotary

- 2 large bore models
- 3 standard rotations
- Pressures to 100 PSIG
- Temperatures 0°F to 250°F
- 4500 and 10,000 lb-in output at 100 PSIG

B275

P1V-S Series - Air Motors



- Power from 20 through 1200 watts
- Speeds 5 to 24,000 RPM
- Pressures to max. 7 bar
- Temperatures -30°C to 100°C

B278

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Automation Products

Grippers

- Grip forces to 44,000N
- Parallel or Angular
- 2 or 3 jaw
- Pneumatic or electric
- Temperature to 300°F
- Magnetic piston standard
- Clean room

B281

Slide Tables

- 6 bore sizes: 6mm to 25mm
- Strokes to 150mm
- Integration of linear rail and dual bore cylinder
- Available with adjustable stroke and shock absorbers
- Magnetic piston standard

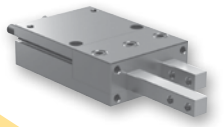
B314

Rotary Tables

- 4 bore sizes: 16mm to 32mm
- Dual rack and pinion with integrated bearing
- Adjustable rotation standard 0 to 190 degrees
- Available with optional shock absorbers

B326

Escapements

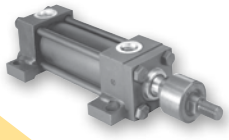


- 3 bore sizes: 14mm to 27mm
- Locking key ensures part separation and eliminates jams
- Adjustable retract stops
- Sealed design repels contaminants
- Dowel holes in body for precision applications

B328

Actuator Accessories

Linear Alignment Couplers



- 12 standard thread sizes
- Maximum reliability for trouble-free operation, long life and lower operating costs
- Increased cylinder life by reducing wear on piston and rod bearings
- Stainless steel versions available

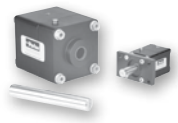
B335

4TK Series - Air Oil Tanks

- 6 standard bore sizes
- Lightweight aluminum / fiberglass design
- 2 fluid flow baffles reduce agitation and aeration
- 8 standard mounting styles

B336

PRL Series - Stand Alone Rodlock



- 5 different sizes
- Large holding forces
- 2 different mounting styles
- Case-hardened rod material available

B337

Electronic Sensors

Sensors

- Solid state
- Reed
- NAMUR
- Proximity

B339

Shock Absorbers

Shock Absorbers

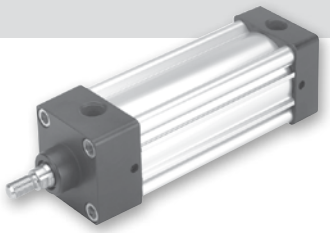
- Miniature - self-compensating
- Heavyweight - soft contact and self-compensating
- Miniature - soft contact and self-compensating
- Magnum series - adjustable
- Heavy - self-compensating
- Heavy - adjustable

B361

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

3MA Series

- NFPA interchangeable economy series
- Bore sizes – 1-1/2", 2", 2-1/2", 3-1/4", 4" and 5"
- Available in any practical stroke length
- 18 standard modular mounting styles available
- Extruded-profile aluminum body with integrated switch grooves
- Single rod end or double rod end options available
- Cushions – standard and adjustable at both ends, optional non-cushioned
- NPT porting standard
- RoHS compliant



Operating information

Operating pressure:	250 PSIG (17 bar)
Temperature range:	-10°F to 165°F (-23°C to 74°C)
Filtration requirements:	40 micron, dry filtered air

Ordering information

2.00	C		J		3MA		U			1	4		A	C	6.000

Bore size

1.50
2.00
2.50
3.25
4.00
5.00

Double rod cylinder [5]

Specify "K" only if double rod cylinder is required.

Series

3MA

Ports

Standard (NPTF)

Piston rod number

Standard (rod code number 1) [3]

Stroke length

Specify stroke length required in inches.

Cushion head end

C	Standard (cushioned head end)
Blank	Non-cushioned head end

Mounting style

Specify mounting style code (see table on following page).

Seals

Blank	Standard (nitrile seals)
E	Fluorocarbon rod wiper and rod seal only [2]

Cushion cap end

C	Standard (cushioned cap end)
Blank	Non-cushioned cap end

Cylinder construction

Blank*	Standard (extruded body, standard round lobe orientation)
A*	Extruded body, round lobe orientation rotated 90 degrees from standard
N*	Extruded body, round lobe orientation rotated 180 degrees from standard
Z*	Extruded body, round lobe orientation rotated 270 degrees from standard
T	Aluminum round tube and carbon steel tie rods and nuts

* Please reference catalog 0900P-E, table on page B10. Only applies to 1-1/2" to 4" bore size.

Special modification

Specify "S" only for special modification other than rod end, and then describe modification in item notes.

Piston rod thread type

A	Standard (UNF unified thread)
W	BSF British fine
M *	Metric

* Please reference catalog 0900P-E, page B106.

Piston rod thread style

4	Small male
8	Intermediate male
9	Short female
55	For use with split coupler [4]
3	Special (and specify all dimensions required)

Rod material code

Blank	Standard
Y	17-4 PH stainless steel
J	303 stainless steel
S	316 stainless steel

Piston type

Blank	Standard (lipseals and magnetic ring) [5]
1	Lipseals, no magnetic ring [5]
2	Lipseals, no magnetic ring (aluminum piston)
3	Lipseals and magnetic ring (aluminum piston)
4	Bumper seals, no magnetic ring
6	Bumper seals and magnetic ring
B	Lipseals, 1/4" thick bumpers both ends [1]
H	Lipseals, 1/4" thick bumper head end[1]
C	Lipseals, 1/4" thick bumper cap end [1]
D	Lipseals and magnetic ring, 1/4" thick bumpers both ends [1]
F	Lipseals and magnetic ring, 1/4" thick bumper head end [1]
R	Lipseals and magnetic ring, 1/4" thick bumper cap end [1]

[1] Addition of 1/4" bumper results in a 1/4" stroke loss per bumper, per end. For example, a 6" stroke cylinder with 1/4" bumpers at both ends (option B) has an effective stroke of 5-1/2".
[2] Used for external chemical compatibility applications, not high temperature.
[3] Review Piston Rod Selection Chart, please reference catalog 0900P-E, page A14 to determine proper piston rod diameter. (Note: 3MA has only one rod diameter per bore size, so proper piston rod diameter from chart result may lead to bore size change). For oversize rod within the same bore size, please see 4MA section.
[4] For additional information regarding this style, please reference catalog 0900P-E, page B105.
If non-standard Rod Material Code is required with this option, please place an "S" for special in Special Modification field and specify rod material in the item notes.
[5] Double rod cylinders not available with composite piston type.

For ordering purposes, when special options or common modifications are requested, the factory will assign a sequential part number in place of the model number.

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Pneumatic Division
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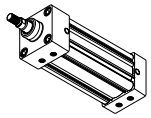
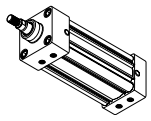
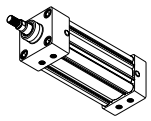
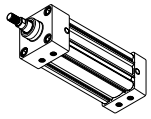
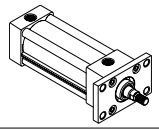
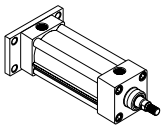
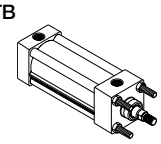
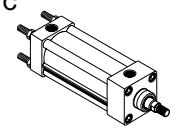
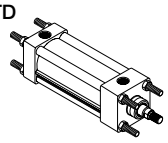
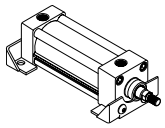
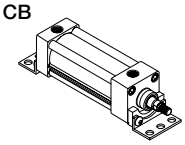
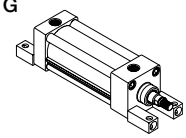
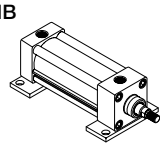
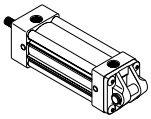
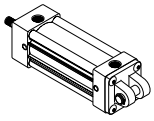
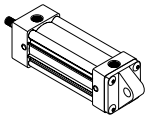
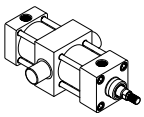
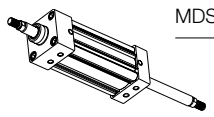
3MA Mounting Styles for 1-1/2" to 5" Bore

Mounting style	NFPA mounting	Description	Bore size
TEF 	MX5/MS4	Sleeve Nut with Side Tap (standard mount)	1-1/2 - 5
T 	MX0	No Mount (same construction as TEF)	1-1/2 - 5
TE 	MX5	Sleeve Nut (same construction as TEF)	1-1/2 - 5
F 	MS4	Side Tap (same construction as TEF)	1-1/2 - 5
J 	MF1	Head Rectangular Flange	1-1/2 - 5
H 	MF2	Cap Rectangular Flange	1-1/2 - 5
TB 	MX3	Tie Rods Extended Head End	1-1/2 - 5
TC 	MX2	Tie Rods Extended Cap End	1-1/2 - 5
TD 	MX1	Tie Rods Extended Both Ends	1-1/2 - 5

Mounting style	NFPA mounting	Description	Bore size
C 	MS2	Side Lug	1-1/2 - 5
CB 	MS1	Side End Angle	1-1/2 - 5
G 	MS7	Side End Lug	1-1/2 - 4
NB 	N/A	Base Bar	1-1/2 - 4
BB 	MP1	Cap Fixed Clevis	1-1/2 - 5
BC 	MP2	Cap Detachable Clevis	1-1/2 - 5
BE 	MP4	Cap Detachable Eye	1-1/2 - 4
DD 	MT4	Intermediate Trunnion	1-1/2 - 5
KTEF* 	MDX5/ MDS4	Double Rod End, TEF Mount	1-1/2 - 5

* Double rod end cylinders can be ordered with head mountings, i.e. KJ.

Sensors
For sensors see page B339.

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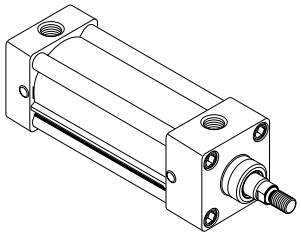
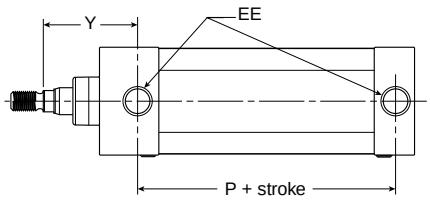
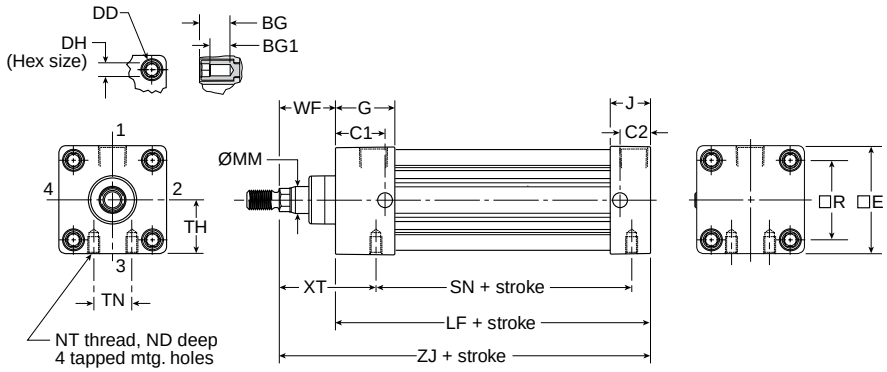
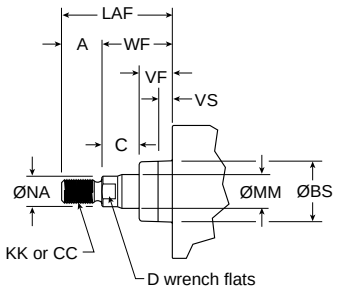
3MA Single Rod Dimensioned Drawings (Styles TEF, T, TE and F)









For dimensions of all standard rod end styles, please see next page.

BS = pilot diameter

VS = length of pilot diameter

Styles TEF, T, TE and F

Bore size	Rod no.	Rod dia. MM	Thread Style 8 CC	Thread Style 4 & 9 KK	A	AA	BG	BG1	+.000 -.004 BS	C	C1	C2	D	DD	DH	E	EE (NPTF)	G
1-1/2	1	5/8	1/2-20	7/16-20	0.750	2.020	0.562	0.374	1.124	0.385	1.000	0.500	1/2	1/4-28	1/4	2.000	3/8	1.438
2	1	5/8	1/2-20	7/16-20	0.750	2.600	0.562	0.362	1.124	0.385	1.148	0.711	1/2	5/16-24	5/16	2.500	3/8	1.375
2-1/2	1	5/8	1/2-20	7/16-20	0.750	3.100	0.562	0.362	1.124	0.385	1.117	0.711	1/2	5/16-24	5/16	3.000	3/8	1.344
3-1/4	1	1	7/8-14	3/4-16	1.125	3.900	0.700	0.500	1.499	0.510	1.350	0.881	7/8	3/8-24	3/8	3.750	1/2	1.594
4	1	1	7/8-14	3/4-16	1.125	4.700	0.700	0.500	1.499	0.510	1.350	0.881	7/8	3/8-24	3/8	4.500	1/2	1.594
5	1	1	7/8-14	3/4-16	1.125	5.800	0.781	0.531	1.499	0.510	1.350	0.975	7/8	1/2-20	1/2	5.500	1/2	1.594

Bore size	Rod no.	Rod dia. MM	J	LAF	NA	ND	NT	R	+.005 -.005 TH	TN	VF	VS	WF	XT	Y	Add stroke LF	P	SN	ZJ
1-1/2	1	5/8	0.938	1.750	0.563	0.375	1/4-20	1.430	0.993	0.625	0.615	-	1.000	1.938	1.875	3.625	2.313	2.250	4.625
2	1	5/8	0.938	1.750	0.563	0.438	5/16-18	1.840	1.243	0.875	0.615	0.250	1.000	1.938	1.875	3.625	2.313	2.250	4.625
2-1/2	1	5/8	0.938	1.750	0.563	0.625	3/8-16	2.190	1.493	1.250	0.615	0.250	1.000	1.938	1.938	3.750	2.375	2.375	4.750
3-1/4	1	1	1.125	2.500	0.938	0.750	1/2-13	2.760	1.868	1.500	0.865	0.250	1.375	2.438	2.438	4.250	2.625	2.625	5.625
4	1	1	1.125	2.500	0.938	0.750	1/2-13	3.320	2.243	2.063	0.865	0.250	1.375	2.438	2.438	4.250	2.625	2.625	5.625
5	1	1	1.219	2.500	0.938	0.938	5/8-11	4.100	2.743	2.688	0.865	0.250	1.375	2.438	2.438	4.500	2.875	2.875	5.875

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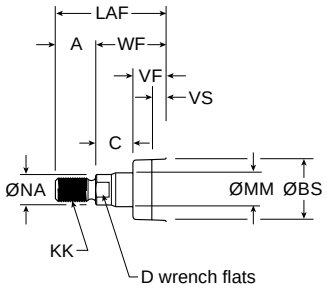
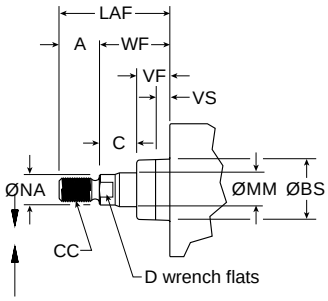
3MA Rod End Dimensions

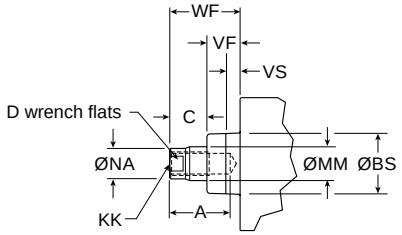
Thread Style 4
(NFPA Style SM)
Small Male



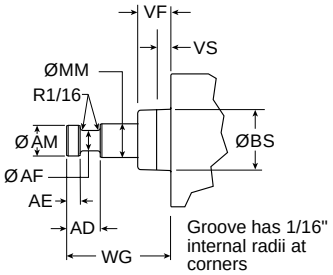
Thread Style 8
(NFPA Style IM)
Intermediate Male



Thread Style 9
(NFPA Style SF)
Short Female



Thread Style 55
For use with Split Coupler
(please reference catalog 0900P-E, page B105 for more information)



Thread Style 3 - "Special Thread"
Special threads, rod extensions, rod eyes, blanks, etc. are also available.
To order, specify "Style 3" and give desired dimensions for KK or CC, A and W or WF.
If otherwise special, please supply dimensioned sketch.

Applies to all rod ends:
BS = pilot diameter
VS = length of pilot diameter

Rod End Dimensions

Bore size	Rod no.	Rod dia. MM	Thread Style 8 CC	Thread Style 4 & 9 KK	A	AD	AE	AF	AM	+.000 -.004 BS	C	D	LAF	NA	VF	VS	WF	WG
1-1/2	1	5/8	1/2-20	7/16-20	0.750	0.625	0.250	0.375	0.570	1.124	0.385	1/2	1.750	0.563	0.615	-	1.000	1.750
2	1	5/8	1/2-20	7/16-20	0.750	0.625	0.250	0.375	0.570	1.124	0.385	1/2	1.750	0.563	0.615	0.250	1.000	1.750
2-1/2	1	5/8	1/2-20	7/16-20	0.750	0.625	0.250	0.375	0.570	1.124	0.385	1/2	1.750	0.563	0.615	0.250	1.000	1.750
3-1/4	1	1	7/8-14	3/4-16	1.125	0.938	0.375	0.688	0.950	1.499	0.510	7/8	2.500	0.938	0.865	0.250	1.375	2.375
4	1	1	7/8-14	3/4-16	1.125	0.938	0.375	0.688	0.950	1.499	0.510	7/8	2.500	0.938	0.865	0.250	1.375	2.375
5	1	1	7/8-14	3/4-16	1.125	0.938	0.375	0.688	0.950	1.499	0.510	7/8	2.500	0.938	0.865	0.250	1.375	2.375

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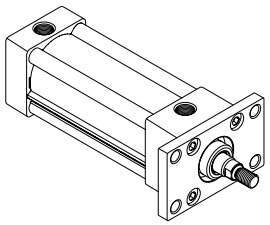
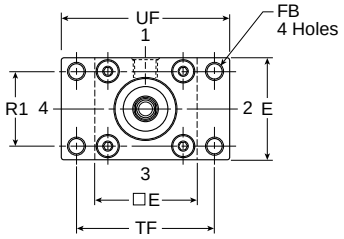
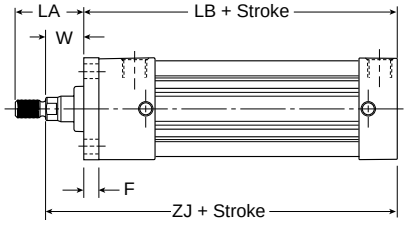
Head Rectangular Flange

Style J
(NFPA MF1)





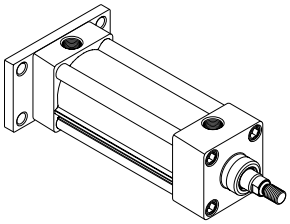


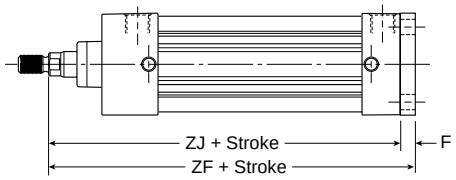
Note: Style J has a W dimension instead of WF and a LA dimension instead of LAF because of the flange installation. Please use dimensions W and LA regarding rod ends only for Style J.

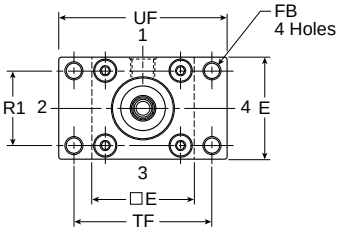
For reference, WF = W + F and LA = W + A.

Cap Rectangular Flange

Style H
(NFPA MF2)







Styles J and H

Bore size	Rod no.	Rod dia. MM	A	E	F	FB	LA	R1	TF	UF	W	Add stroke LB	ZF	ZJ
1-1/2	1	5/8	0.750	2.000	0.375	0.313	1.375	1.430	2.750	3.375	0.625	4.000	5.000	4.625
2	1	5/8	0.750	2.500	0.375	0.375	1.375	1.840	3.375	4.125	0.625	4.000	5.000	4.625
2-1/2	1	5/8	0.750	3.000	0.375	0.375	1.375	2.190	3.875	4.625	0.625	4.125	5.125	4.750
3-1/4	1	1	1.125	3.750	0.625	0.438	1.875	2.760	4.688	5.500	0.750	4.875	6.250	5.625
4	1	1	1.125	4.500	0.625	0.438	1.875	3.320	5.438	6.250	0.750	4.875	6.250	5.625
5	1	1	1.125	5.500	0.625	0.563	1.875	4.100	6.625	7.625	0.750	5.125	6.500	5.875

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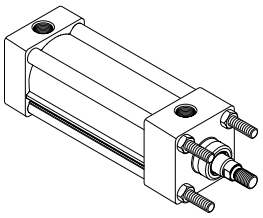
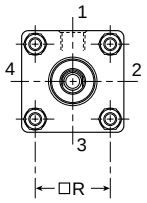
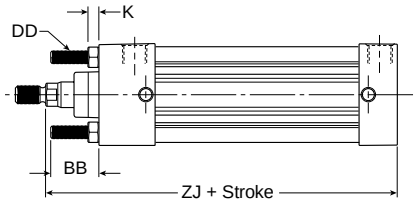
Tie Rods Ext. Head End

Style TB
(NFPA MX3)

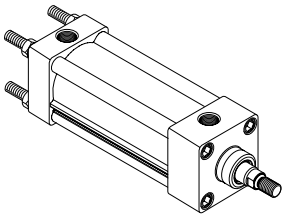


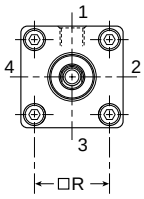


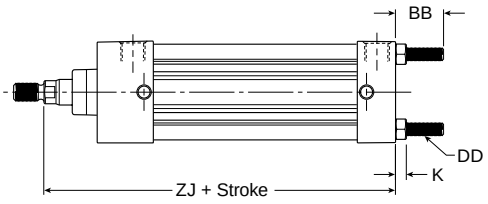


Tie Rods Ext. Cap End

Style TC
(NFPA MX2)

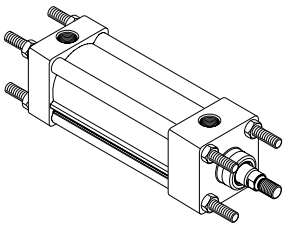


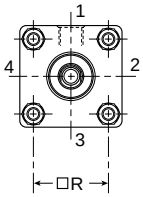


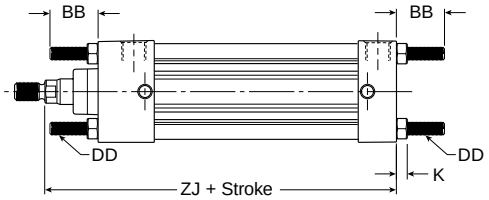


Tie Rods Ext. Both Ends

Style TD
(NFPA MX1)







Styles TB, TC and TD

Bore size	Rod no.	Rod dia. MM	BB	DD	E	K	R	Add stroke ZJ
1-1/2	1	5/8	1.000	1/4-28	2.000	0.250	1.430	4.625
2	1	5/8	1.125	5/16-24	2.500	0.313	1.840	4.625
2-1/2	1	5/8	1.125	5/16-24	3.000	0.313	2.190	4.750
3-1/4	1	1	1.375	3/8-24	3.750	0.375	2.760	5.625
4	1	1	1.375	3/8-24	4.500	0.375	3.320	5.625
5	1	1	1.813	1/2-20	5.500	0.438	4.100	5.875

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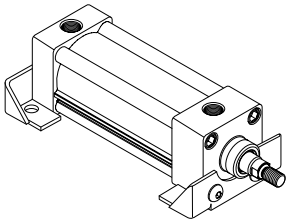
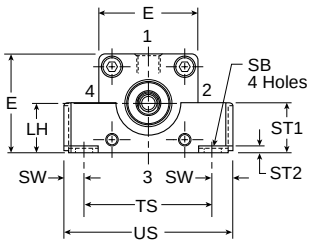
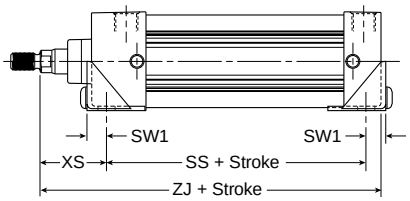
Side Lug

Style C
(NFPA MS2)





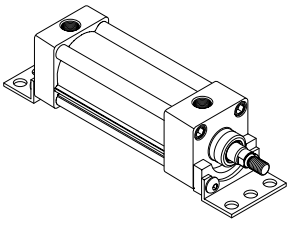


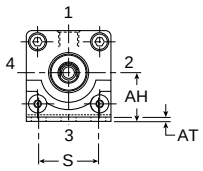
Style C

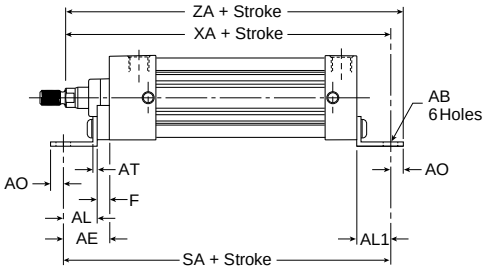
Bore size	Rod no.	Rod dia. MM	E	LH	SB	ST	ST1	ST2	SW	SW1	TS	US	XS	Add stroke SS	Add stroke ZJ
1-1/2	1	5/8	2.000	0.993	0.438	0.500	1.000	0.120	0.375	0.495	2.750	3.500	1.375	2.875	4.625
2	1	5/8	2.500	1.243	0.438	0.500	1.250	0.120	0.375	0.495	3.250	4.000	1.375	2.875	4.625
2-1/2	1	5/8	3.000	1.493	0.438	0.500	1.343	0.120	0.375	0.495	3.750	4.500	1.375	3.000	4.750
3-1/4	1	1	3.750	1.868	0.563	0.750	1.500	0.188	0.500	0.688	4.750	5.750	1.875	3.250	5.625
4	1	1	4.500	2.243	0.563	0.750	1.500	0.188	0.500	0.688	5.500	6.500	1.875	3.250	5.625
5	1	1	5.500	2.743	0.813	1.000	1.500	0.250	0.688	0.938	6.875	8.250	2.063	3.125	5.875

Side End Angle*

Style CB
(NFPA MS1)







Note: Dimension "S" is for the holes in the mount (not the screw to screw dimension)

*Maximum recommended pressure for this mount is 150 PSIG

Style CB

Bore size	Rod no.	Rod dia. MM	AB	AE	AH	AL	AL1	AO	AT	E	F	S	Add stroke SA	Add stroke XA	Add stroke ZA
1-1/2	1	5/8	0.438	1.375	1.188	1.000	1.000	0.375	0.125	2.000	0.375	1.250	6.000	5.625	6.000
2	1	5/8	0.438	1.375	1.438	1.000	1.000	0.375	0.125	2.500	0.375	1.750	6.000	5.625	6.000
2-1/2	1	5/8	0.438	1.375	1.625	1.000	1.000	0.375	0.125	3.000	0.375	2.250	6.125	5.750	6.125
3-1/4	1	1	0.563	1.875	1.938	1.250	1.250	0.500	0.125	3.750	0.625	2.750	7.375	6.875	7.375
4	1	1	0.563	–	2.250	1.875	1.250	0.500	0.125	4.500	–	3.500	7.375	6.875	7.375
5	1	1	0.688	2.000	2.750	1.375	1.375	0.625	0.188	5.500	0.625	4.250	7.875	7.250	7.875

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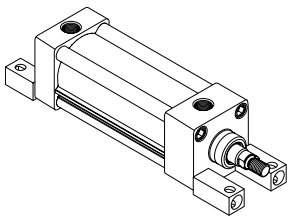
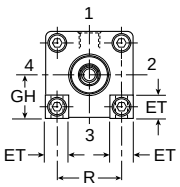
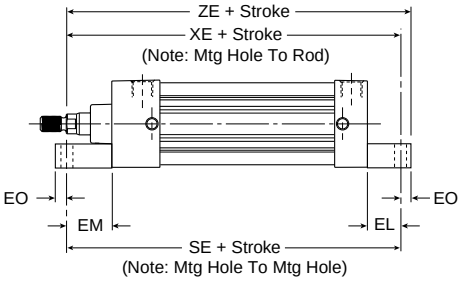
Side End Lug
Style G
(NFPA MS7)



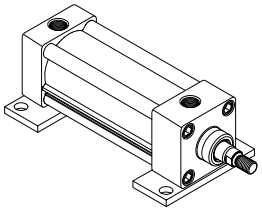


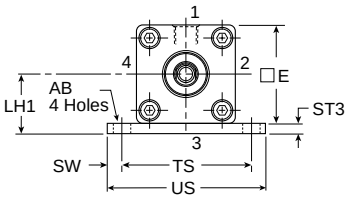


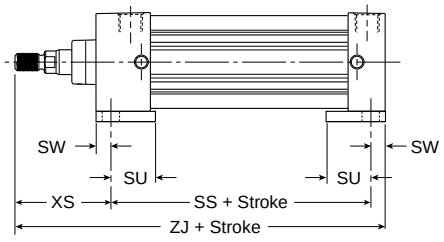
Style G

Bore Size	Rod no.	Rod Dia. MM	E	EB	EL	EM	EO	ET	GH	R	Add stroke SE	XE	ZE
1-1/2	1	5/8	2.000	0.281	0.750	1.125	0.250	0.563	0.993	1.430	5.500	5.375	5.625
2	1	5/8	2.500	0.344	0.938	1.313	0.313	0.688	1.243	1.840	5.875	5.563	5.875
2-1/2	1	5/8	3.000	0.344	1.063	1.438	0.313	0.813	1.493	2.190	6.250	5.813	6.125
3-1/4	1	1	3.750	0.406	0.875	1.500	0.375	1.000	1.868	2.760	6.625	6.500	6.875
4	1	1	4.500	0.406	1.000	1.625	0.375	1.188	2.243	3.320	6.875	6.625	7.000

Base Bar Mount
Style NB







Note: Fasteners for NB base bar mount have been applied with removable threadlocking compound and torqued to bottom of endcaps.

Style NB

Bore size	Rod no.	Rod dia. MM	AB	E	LH1	ST3	SU	SW	TS	US	XS	Add stroke SS	ZJ
1-1/2	1	5/8	0.438	2.000	1.243	0.250	1.125	0.375	2.750	3.500	1.375	2.875	4.625
2	1	5/8	0.438	2.500	1.493	0.250	1.125	0.375	3.250	4.000	1.375	2.875	4.625
2-1/2	1	5/8	0.438	3.000	1.868	0.375	1.125	0.375	3.750	4.500	1.375	3.000	4.750
3-1/4	1	1	0.563	3.750	2.368	0.500	1.250	0.500	4.750	5.750	1.875	3.250	5.625
4	1	1	0.563	4.500	2.743	0.500	1.250	0.500	5.500	6.500	1.875	3.250	5.625

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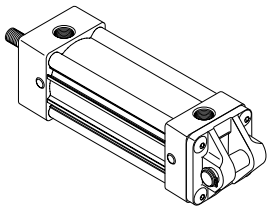
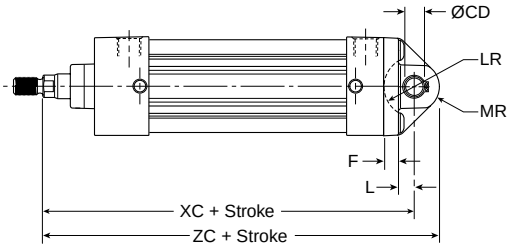
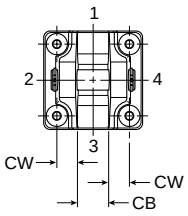
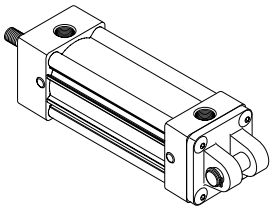
Cap Fixed Clevis
Style BB
(NFPA MP1)

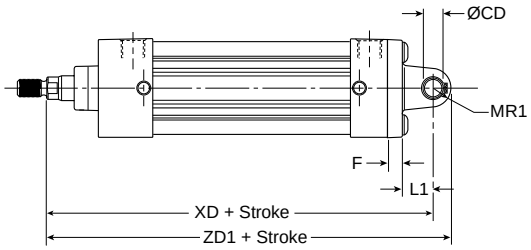


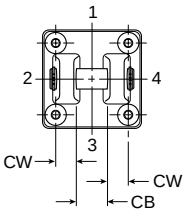




Cap Detachable Clevis
Style BC
(NFPA MP2)

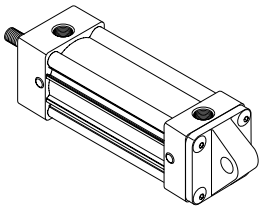


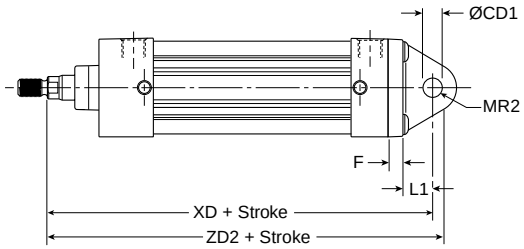


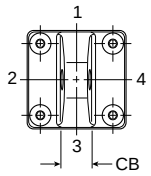


Cap Detachable Eye*
Style BE
(NFPA MP4)

Note: 5 inch bore not available on BE mount, see 4MA series.







Note: For maximum swivel angle of BB mount with rear mounting plate, please reference Catalog 0900P-E, cylinder accessories on page B108.

Styles BB, BC and BE

Bore size	Rod no.	Rod dia. MM	CB	+.000 -.002 CD	+.002 +.004 CD1	CW	E	F	L	LR	L1	MR	MR1	MR2	Add stroke XC	XD	ZC	ZD1	ZD2
1-1/2	1	5/8	0.750	0.501	0.500	0.500	2.000	0.375	0.375	0.750	0.750	0.625	0.500	0.625	5.375	5.750	6.000	6.250	6.375
2	1	5/8	0.750	0.501	0.500	0.500	2.500	0.375	0.375	0.750	0.750	0.625	0.500	0.625	5.375	5.750	6.000	6.250	6.375
2-1/2	1	5/8	0.750	0.501	0.500	0.500	3.000	0.375	0.375	0.750	0.750	0.625	0.500	0.688	5.500	5.875	6.125	6.375	6.563
3-1/4	1	1	1.250	0.751	0.750	0.625	3.750	0.625	0.625	1.000	1.250	0.938	0.750	0.875	6.875	7.500	7.813	8.250	8.375
4	1	1	1.250	0.751	0.750	0.625	4.500	0.625	0.625	1.000	1.250	0.938	0.750	0.875	6.875	7.500	7.813	8.250	8.375
5 *	1	1	1.250	0.751	0.750	0.625	5.500	0.625	0.625	1.000	1.250	0.938	0.750	0.875	7.125	7.750	8.063	8.500	8.625

* 5 inch bore not available on BE mount, see 4MA series

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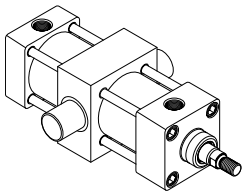
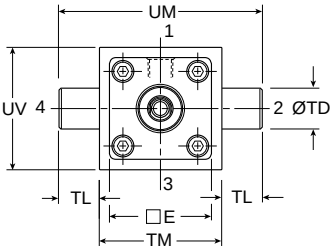
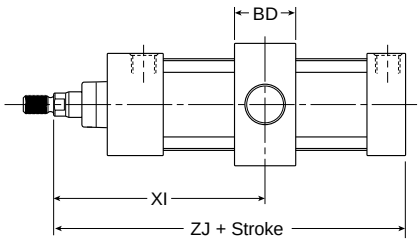
Intermediate Trunnion

Style DD
(NFPA MT4)

Note: Tie rod nuts for Style DD have a slot instead of internal hex.







Style DD

Bore size	Rod no.	Rod dia. MM	E	BD	+.000 –.001 TD	TL	TM	UM	UT	UV	XG	Min. XI	Add stroke XJ	Add stroke ZJ
1–1/2	1	5/8	2.000	1.250	1.000	1.000	2.500	4.500	4.000	2.500	1.750	3.036	4.125	4.625
2	1	5/8	2.500	1.500	1.000	1.000	3.000	5.000	4.500	3.000	1.750	3.125	4.125	4.625
2-1/2	1	5/8	3.000	1.500	1.000	1.000	3.500	5.500	5.000	3.500	1.750	3.094	4.250	4.750
3-1/4	1	1	3.750	2.000	1.000	1.000	4.500	6.500	5.750	4.250	2.250	3.969	5.000	5.625
4	1	1	4.500	2.000	1.000	1.000	5.250	7.250	6.500	5.000	2.250	3.969	5.000	5.625
5	1	1	5.500	2.000	1.000	1.000	6.250	8.250	7.500	6.000	2.250	3.969	5.250	5.875

Mounting Kits and Accessories

Refer to page B37 for 3MA mounting kits and cylinder accessories.

1-1/2" - 5" Bore 3MA Piston Seal Kits & Complete Cylinder Kits

Bore size	Rod no.	Rod dia. MM	PK - Piston Seal Kit, Standard Lipseals Includes piston & end seals	SK - Complete Cylinder Kit. Includes wiper, rod seal, rod bearing, cylinder seals, and needle valve inserts	Torque units endcap fastener or tie rod	
			Nitrile seal kit number	Nitrile seal kit number	USA inch-lbs	Metric N-m
1-1/2	1	5/8	PK1503MA01	SK15003MA1	32 - 36	3.6 - 4.1
2	1	5/8	PK2003MA01	SK20003MA1	72 - 82	8 - 9
2-1/2	1	5/8	PK2503MA01	SK25003MA1	72 - 82	8 - 9
3-1/4	1	1	PK3253MA01	SK32003MA1	216 - 228	24 - 25.3
4	1	1	PK4003MA01	SK40003MA1	216 - 228	24 - 25.3
5	1	1	PK5003MA01	SK50003MA1	360 - 372	41 - 42

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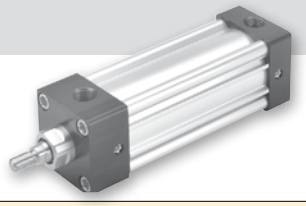
4MA/4ML Series – 1-1/2" thru 5" Bore Size



- Industry leading aluminum NFPA interchangeable cylinder with flexible construction
- Bore sizes – 1-1/2", 2", 2-1/2", 3-1/4", 4" and 5"
- Removable bronze alloy gland/bearing for easy maintenance
- Available in any practical stroke length
- 20 standard mounting styles available
- Extruded-profile aluminum body with integrated switch grooves
- Single rod end or double rod ends
- Cushions – standard and adjustable at both ends, optional non-cushioned
- RoHS compliant

Operating information

	4MA	4ML
Operating pressure:	250 PSIG (17 bar) maximum air service	400 PSIG (27 bar) maximum hydraulic service
Temperature range –		
Standard seals	-10°F to 165°F (-23°C to 74°C)	
Fluorocarbon seals	-10°F to 250°F (-23°C to 121°C)	
Low temperature seals	-50°F to 150°F (-46°C to 66°C)	
Filtration requirements:	40 micron, dry filtered air	Filtered hydraulic oil

Ordering information

2.00			J		4MA		U			1	4		A		6.000

Bore size

1.50 [1]
2.00
2.50
3.25
4.00
5.00

Double rod cylinder [12]
Specify "K" only if double rod cylinder is required.

Mounting style
Specify mounting style code (see table on following page).

Series

4MA	Air service
4ML	Hydraulic service [2]

Ports

U	NPTF
R	BSPP
B	BSPT
T	SAE

Piston rod number
Specify rod code number for required diameter. [8, 2]

Stroke length
Specify stroke length required in inches. [11]

Cushion cap end

Blank	Non-cushioned cap end
C	Cushioned cap end (not available for 4ML)

Piston rod thread type

A	Standard (UNF unified thread)
W	BSF British fine
M *	Metric

* Please reference catalog 0900P-E, page B106.

Cushion head end

Blank	Non-cushioned head end
C	Cushioned head end (not available for 1.50" bore with 1" rod or 4ML)

Special modification
Specify "S" only for special modification other than rod end, and then describe modification in item notes. (Includes 4MA with Linear Position Sensor Option) [7]

Seals

Blank	Standard (nitrile seals)
V	Fluorocarbon seals [4]
E	Fluorocarbon rod wiper and rod seal only [5]
4	Low temperature seals [4]
M	Metallic rod wiper, nitrile seals [6]

Cylinder construction

Blank*	Standard (extruded body, standard round lobe orientation)
A*	Extruded body, round lobe orientation rotated 90 degrees from standard
N*	Extruded body, round lobe orientation rotated 180 degrees from standard
Z*	Extruded body, round lobe orientation rotated 270 degrees from standard
T	Aluminum round tube and carbon steel tie rods & nuts

* Please reference catalog 0900P-E, table on page B10. Only applies to 1-1/2" to 4" bore size.

Piston type [2]

Blank	Standard (lipseals and magnetic ring) [12]
1	Lipseals, no magnetic ring [12]
2	Lipseals, no magnetic ring (aluminum piston)
3	Lipseals and magnetic ring (aluminum piston) (standard for 4ML)
4	Bumper seals, no magnetic ring
6	Bumper seals and magnetic ring
B	Lipseals, 1/4" thick bumpers both ends [3]
H	Lipseals, 1/4" thick bumper head end [3]
C	Lipseals, 1/4" thick bumper cap end [3]
D	Lipseals and magnetic ring, 1/4" thick bumpers both ends [3]
F	Lipseals and magnetic ring, 1/4" thick bumper head end [3]
R	Lipseals and magnetic ring, 1/4" thick bumper cap end [3]

Piston rod thread style

4	Small male
8	Intermediate male
9	Short female
55	For use with split coupler [9]
3	Special (and specify all dimensions required)

Rod material and gland code

Blank	Standard rod and gland
H	Standard rod and HI LOAD gland
Y	17-4 PH stainless steel rod and standard gland
Z	17-4 PH stainless steel rod and HI LOAD gland
J	303 stainless steel rod and standard gland [10]
K	303 stainless steel rod and HI LOAD gland [10]
S	316 stainless steel rod and standard gland [10]
T	316 stainless steel rod and HI LOAD gland [10]

1 Not available with Linear Position Sensor Option (LPSO).
2 Piston Types (blank), 1, 4 and 6 not available for 4ML. Piston Types (blank) and 1 not available for oversize rod numbers 2 and 3. Seals option V only available with Piston Types 2 and 4. Seals option 4 only available with Piston Types 2 and 3.
3 Addition of 1/4" bumper results in a 1/4" stroke loss per bumper, per end. For example, a 6" stroke cylinder with 1/4" bumpers at both ends (option B) has an effective stroke of 5-1/2".
4 Reed and solid-state sensors only available with standard seals or options E and M. See footnote 2.
5 Used for external chemical compatibility applications, not high temperature.
6 If fluorocarbon seals are required with this option, please place an "S" for special in the Special Modification field and specify the "fluorocarbon seals and metallic rod wiper" in the item notes.
7 For Linear Position Sensor Option (LPSO), please include the following information for the Special Modification item notes:
a. Sensor part number (please reference catalog 0900P-E, pages B100-B104)
b. Sensor position
c. Port position (if other than position 1)
d. Length of stop tubing, gross stroke and net stroke (if required)
Also, Piston Type option (blank), 3, 6, D, F or R is required.
8 Review Piston Rod Selection Chart, please reference catalog 0900P-E, page A14 to determine proper piston rod diameter.
9 For additional information regarding this style, please reference catalog 0900P-E, page B105. If non-standard Rod Material and Gland Code is required with this option, please place an "S" for special in Special Modification field and specify Rod Material and Gland Code in the item notes.
10 Not available for 4ML.
11 If a stop tube is required, specify gross stroke (net stroke + stop tube) in the model number, then place an "S" for special in the Special Modification field and specify the stop tube length in the item notes. Not available with Piston Types (blank) and 1.
12 Double rod cylinders not available with composite piston type.

For ordering purposes, when special options or common modifications are requested, the factory will assign a sequential part number in place of the model number.

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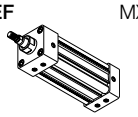
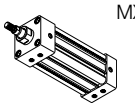
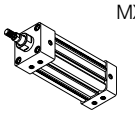
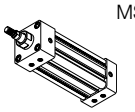
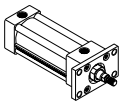
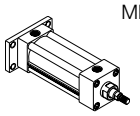
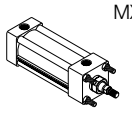
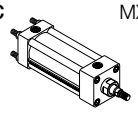
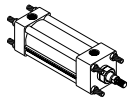
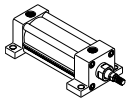
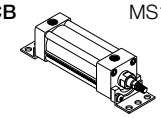
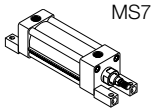
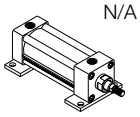
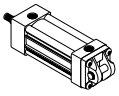
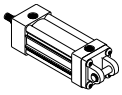
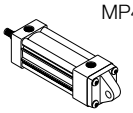
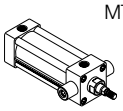
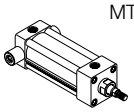
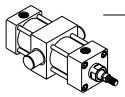
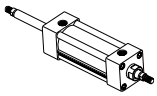
4MA/4ML Mounting Styles for 1-1/2" to 5" Bore

Mounting style	NFPA mounting	Description	Bore size
TEF 	MX5/MS4	Sleeve Nut with Side Tap (standard mount)	1-1/2 - 5*
T 	MX0	No Mount (same construction as TEF)	1-1/2 - 5
TE 	MX5	Sleeve Nut (same construction as TEF)	1-1/2 - 5
F 	MS4	Side Tap (same construction as TEF)	1-1/2 - 5*
J 	MF1	Head Rectangular Flange	1-1/2 - 5
H 	MF2	Cap Rectangular Flange	1-1/2 - 5
TB 	MX3	Tie Rods Extended Head End	1-1/2 - 5
TC 	MX2	Tie Rods Extended Cap End	1-1/2 - 5
TD 	MX1	Tie Rods Extended Both Ends	1-1/2 - 5
C 	MS2	Side Lug	1-1/2 - 5

Mounting style	NFPA mounting	Description	Bore size
CB 	MS1	Side End Angle	1-1/2 - 5
G 	MS7	Side End Lug	1-1/2 - 4*
NB 	N/A	Base Bar	1-1/2 - 4*
BB 	MP1	Cap Fixed Clevis	1-1/2 - 5
BC 	MP2	Cap Detachable Clevis	1-1/2 - 5
BE 	MP4	Cap Detachable Eye	1-1/2 - 5
D 	MT1	Head Trunnion	1-1/2 - 5*
DB 	MT2	Cap Trunnion	1-1/2 - 5
DD 	MT4	Intermediate Trunnion	1-1/2 - 5
KTEF † 	MDX5/MDS4	Double Rod End, TEF Mount	1-1/2 - 5

* Not available for 1-1/2" bore with 1" rod.

† Double rod end cylinders can be ordered with head mountings, i.e. KJ.

Sensors
For sensors see page B339.

Kits & Accessories
See page B37.

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Pneumatic Division
Richland, Michigan
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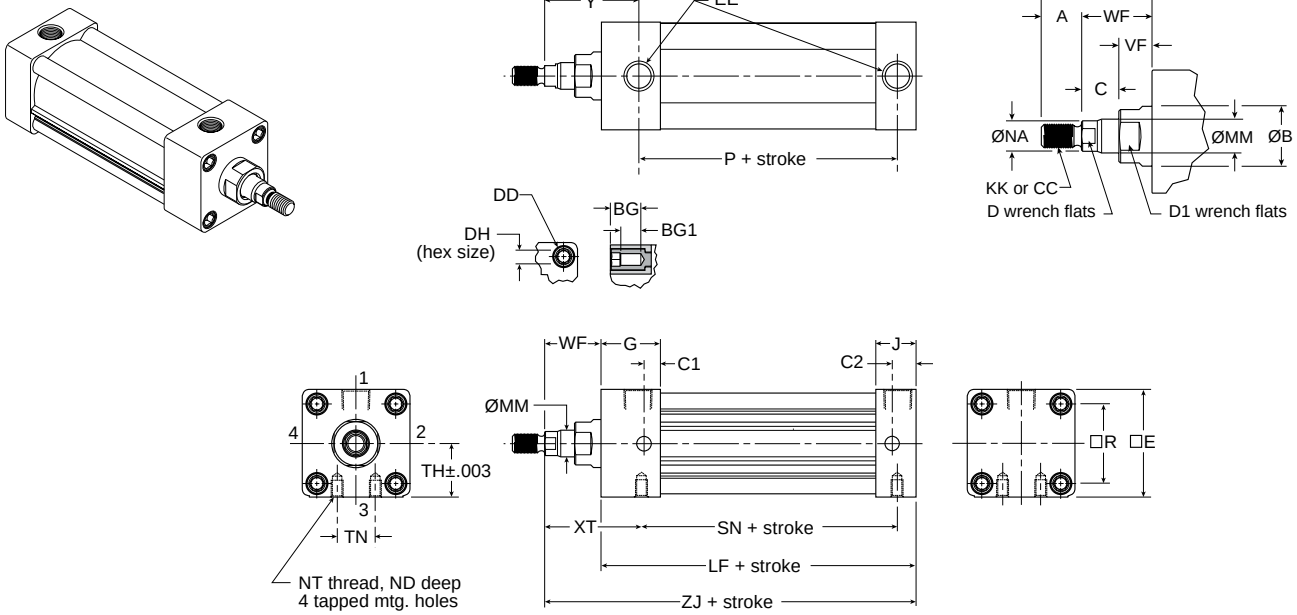
Single Rod Dimensioned Drawings (Styles TEF, T, TE and F)



Styles TEF, T, TE and F

Bore size	Rod no.	Rod dia. MM	Thread Style 8 CC	Thread Style 4 & 9 KK	A	AA	+.000 -.002 B	BG	BG1	C	C1	C2	D	D1	DD	DH	E	EE (NPTF)	G
1-1/2	1 *	5/8	1/2-20	7/16-20	0.750	2.020	1.124	0.562	0.374	0.385	1.000	0.500	1/2	1	1/4-28	1/4	2.000	3/8	1.438
	2	1	7/8-14	3/4-16	1.125	2.020	1.499	0.562	0.374	0.510	–	0.500	7/8	1-3/8	1/4-28	1/4	2.000	3/8	1.438
2	1	5/8	1/2-20	7/16-20	0.750	2.600	1.124	0.562	0.362	0.385	1.000	0.562	1/2	1	5/16-24	5/16	2.500	3/8	1.375
	3	1	7/8-14	3/4-16	1.125	2.600	1.499	0.562	0.362	0.510	1.000	0.562	7/8	1-3/8	5/16-24	5/16	2.500	3/8	1.375
2-1/2	1	5/8	1/2-20	7/16-20	0.750	3.100	1.124	0.562	0.362	0.385	1.000	0.594	1/2	1	5/16-24	5/16	3.000	3/8	1.344
	3	1	7/8-14	3/4-16	1.125	3.100	1.499	0.562	0.362	0.510	1.000	0.594	7/8	1-3/8	5/16-24	5/16	3.000	3/8	1.344
3-1/4	1	1	7/8-14	3/4-16	1.125	3.900	1.499	0.700	0.500	0.510	1.188	0.719	7/8	1-3/8	3/8-24	3/8	3.750	1/2	1.594
	3	1-3/8	1-1/4-12	1-14	1.625	3.900	1.999	0.700	0.500	0.635	1.188	0.719	1-1/8	1-7/8	3/8-24	3/8	3.750	1/2	1.594
4	1	1	7/8-14	3/4-16	1.125	4.700	1.499	0.700	0.500	0.510	1.188	0.719	7/8	1-3/8	3/8-24	3/8	4.500	1/2	1.594
	3	1-3/8	1-1/4-12	1-14	1.625	4.700	1.999	0.700	0.500	0.635	1.188	0.719	1-1/8	1-7/8	3/8-24	3/8	4.500	1/2	1.594
5	1	1	7/8-14	3/4-16	1.125	5.800	1.499	0.781	0.531	0.510	1.188	0.813	7/8	1-3/8	1/2-20	1/2	5.500	1/2	1.594
	3	1-3/8	1-1/4-12	1-14	1.625	5.800	1.999	0.781	0.531	0.635	1.188	0.813	1-1/8	1-7/8	1/2-20	1/2	5.500	1/2	1.594

Bore size	Rod no.	Rod dia. MM	J	LAF	NA	ND	NT	R	+.003 -.003 TH	TN	VF	WF	XT	Y	Add stroke LF	P	SN	ZJ
1-1/2	1 *	5/8	0.938	1.750	0.563	0.375	1/4-20	1.430	0.993	0.625	0.615	1.000	1.938	1.875	3.625	2.313	2.250	4.625
	2	1	0.938	2.500	0.938	-	-	1.430	0.993	-	0.865	1.375	-	2.250	3.625	2.313	-	5.000
2	1	5/8	0.937	1.750	0.563	0.438	5/16-18	1.840	1.243	0.875	0.615	1.000	1.938	1.875	3.625	2.313	2.250	4.625
	3	1	0.937	2.500	0.938	0.375	5/16-18	1.840	1.243	0.875	0.865	1.375	2.313	2.250	3.625	2.313	2.250	5.000
2-1/2	1	5/8	0.938	1.750	0.563	0.625	3/8-16	2.190	1.493	1.250	0.615	1.000	1.938	1.938	3.750	2.375	2.375	4.750
	3	1	0.938	2.500	0.938	0.625	3/8-16	2.190	1.493	1.250	0.865	1.375	2.313	2.313	3.750	2.375	2.375	5.125
3-1/4	1	1	1.125	2.500	0.938	0.750	1/2-13	2.760	1.868	1.500	0.865	1.375	2.438	2.438	4.250	2.625	2.625	5.625
	3	1 3/8	1.125	3.250	1.313	0.750	1/2-13	2.760	1.868	1.500	0.990	1.625	2.688	2.688	4.250	2.625	2.625	5.875
4	1	1	1.125	2.500	0.938	0.750	1/2-13	3.320	2.243	2.063	0.865	1.375	2.438	2.438	4.250	2.625	2.625	5.625
	3	1-3/8	1.125	3.250	1.313	0.750	1/2-13	3.320	2.243	2.063	0.990	1.625	2.688	2.688	4.250	2.625	2.625	5.875
5	1	1	1.219	2.500	0.938	0.938	5/8-11	4.100	2.743	2.688	0.865	1.375	2.438	2.438	4.500	2.875	2.875	5.875
	3	1-3/8	1.219	3.250	1.313	0.938	5/8-11	4.100	2.743	2.688	0.990	1.625	2.688	2.688	4.500	2.875	2.875	6.125

*** NOTE -** 1-1/2" bore with 1" rod is TE mount, F mount not available.
1-1/2" bore with 1" rod cannot have a cushion at head end.

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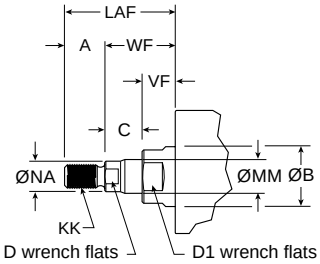
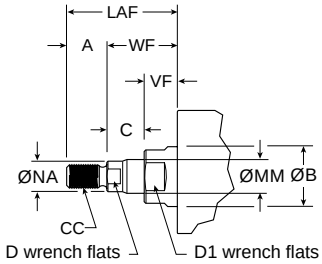
4MA Rod End Dimensions

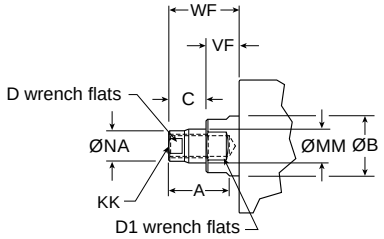
Thread Style 4
(NFPA Style SM)
Small Male



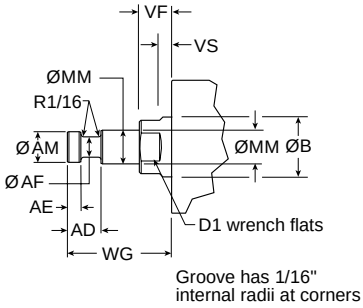
Thread Style 8
(NFPA Style IM)
Intermediate Male



Thread Style 9
(NFPA Style SF)
Short Female



Thread Style 55
For use with Split Coupler
(please reference catalog 0900P-E, page B105 for more information)



Thread Style 3 - "Special Thread"
Special threads, rod extensions, rod eyes, blanks, etc. are also available.
To order, specify "Style 3" and give desired dimensions for KK or CC, A and W or WF.
If otherwise special, please supply dimensioned sketch.

Rod End Dimensions

Bore size	Rod no.	Rod dia. MM	Thread Style 8 CC	Thread Style 4 & 9 KK	A	AD	AE	AF	AM	+.000 -.002 B	C	D	D1	LAF	NA	VF	WF	WG
1-1/2	1	5/8	1/2-20	7/16-20	0.750	0.625	0.250	0.375	0.570	1.124	0.385	1/2	1	1.750	0.563	0.615	1.000	1.750
	2	1	7/8-14	3/4-16	1.125	0.938	0.375	0.688	0.950	1.499	0.510	7/8	1-3/8	2.500	0.938	0.865	1.375	2.375
2	1	5/8	1/2-20	7/16-20	0.750	0.625	0.250	0.375	0.570	1.124	0.385	1/2	1	1.750	0.563	0.615	1.000	1.750
	3	1	7/8-14	3/4-16	1.125	0.938	0.375	0.688	0.950	1.499	0.510	7/8	1-3/8	2.500	0.938	0.865	1.375	2.375
2-1/2	1	5/8	1/2-20	7/16-20	0.750	0.625	0.250	0.375	0.570	1.124	0.385	1/2	1	1.750	0.563	0.615	1.000	1.750
	3	1	7/8-14	3/4-16	1.125	0.938	0.375	0.688	0.950	1.499	0.510	7/8	1-3/8	2.500	0.938	0.865	1.375	2.375
3-1/4	1	1	7/8-14	3/4-16	1.125	0.938	0.375	0.688	0.950	1.499	0.510	7/8	1-3/8	2.500	0.938	0.865	1.375	2.375
	3	1-3/8	1-1/4-12	1-14	1.625	1.063	0.375	0.875	1.320	1.999	0.635	1-1/8	1-7/8	3.250	1.313	0.990	1.625	2.750
4	1	1	7/8-14	3/4-16	1.125	0.938	0.375	0.688	0.950	1.499	0.510	7/8	1-3/8	2.500	0.938	0.865	1.375	2.375
	3	1-3/8	1-1/4-12	1-14	1.625	1.063	0.375	0.875	1.320	1.999	0.635	1-1/8	1-7/8	3.250	1.313	0.990	1.625	2.750
5	1	1	7/8-14	3/4-16	1.125	0.938	0.375	0.688	0.950	1.499	0.510	7/8	1-3/8	2.500	0.938	0.865	1.375	2.375
	3	1-3/8	1-1/4-12	1-14	1.625	1.063	0.375	0.875	1.320	1.999	0.635	1-1/8	1-7/8	3.250	1.313	0.990	1.625	2.750

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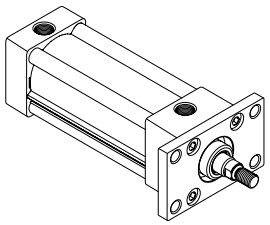
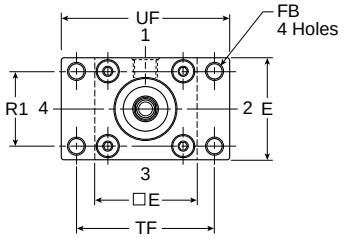
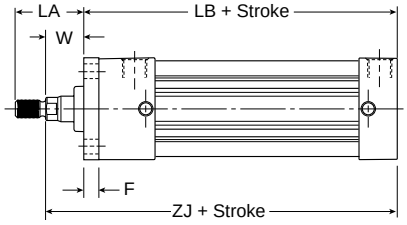
Head Rectangular Flange

Style J
(NFPA MF1)





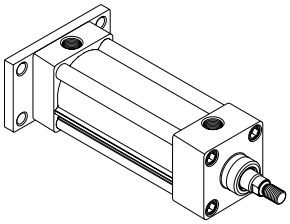


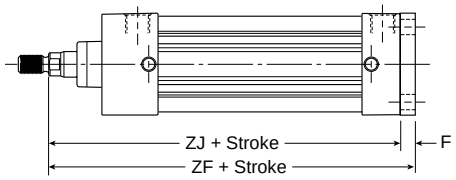
Note: Style J has a W dimension instead of WF and a LA dimension instead of LAF because of the flange installation. Please use dimensions W and LA regarding rod ends only for Style J.

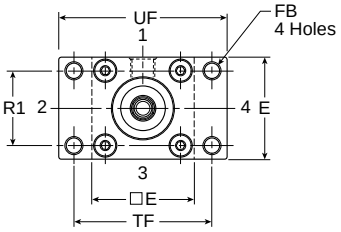
For reference, WF = W + F and LA = W + A.

Cap Rectangular Flange

Style H
(NFPA MF2)







Styles J and H

Bore size	Rod no.	Rod dia. MM	A	E	F	FB	LA	R1	TF	UF	W	Add stroke LB	ZF	ZJ
1-1/2	1	5/8	0.750	2.000	0.375	0.313	1.375	1.430	2.750	3.375	0.625	4.000	5.000	4.625
	2	1	1.125	2.000	0.375	0.313	2.125	1.430	2.750	3.375	1.000	4.000	5.375	5.000
2	1	5/8	0.750	2.500	0.375	0.375	1.375	1.840	3.375	4.125	0.625	4.000	5.000	4.625
	3	1	1.125	2.500	0.375	0.375	2.125	1.840	3.375	4.125	1.000	4.000	5.375	5.000
2-1/2	1	5/8	0.750	3.000	0.375	0.375	1.375	2.190	3.875	4.625	0.625	4.125	5.125	4.750
	3	1	1.125	3.000	0.375	0.375	2.125	2.190	3.875	4.625	1.000	4.125	5.500	5.125
3-1/4	1	1	1.125	3.750	0.625	0.438	1.875	2.760	4.688	5.500	0.750	4.875	6.250	5.625
	3	1-3/8	1.625	3.750	0.625	0.438	2.625	2.760	4.688	5.500	1.000	4.875	6.500	5.875
4	1	1	1.125	4.500	0.625	0.438	1.875	3.320	5.438	6.250	0.750	4.875	6.250	5.625
	3	1-3/8	1.625	4.500	0.625	0.438	2.625	3.320	5.438	6.250	1.000	4.875	6.500	5.875
5	1	1	1.125	5.500	0.625	0.563	1.875	4.100	6.625	7.625	0.750	5.125	6.500	5.875
	3	1-3/8	1.625	5.500	0.625	0.563	2.625	4.100	6.625	7.625	1.000	5.125	6.750	6.125

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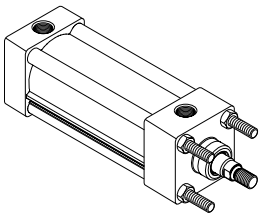
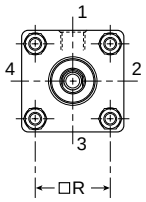
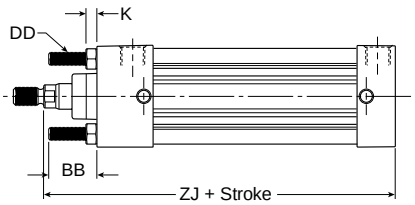
Tie Rods Ext. Head End

Style TB
(NFPA MX3)

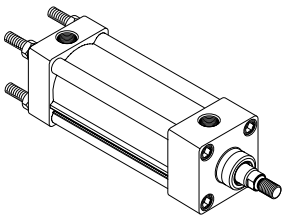


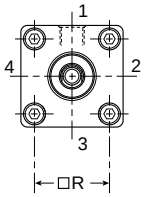


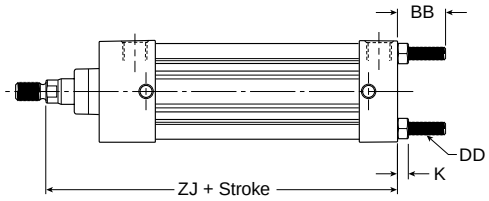


Tie Rods Ext. Cap End

Style TC
(NFPA MX2)

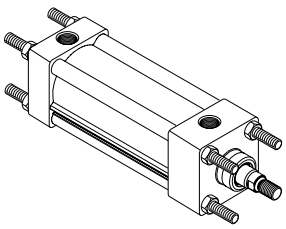


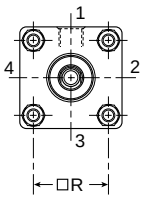


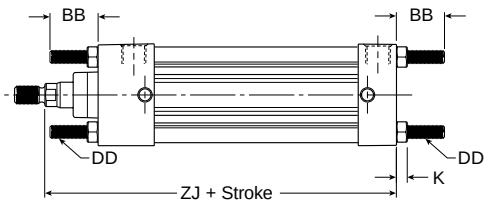


Tie Rods Ext. Both Ends

Style TD
(NFPA MX1)







Styles TB, TC and TD

Bore size	Rod no.	Rod dia. MM	BB	DD	E	K	R	Add stroke ZJ
1-1/2	1	5/8	1.000	1/4-28	2.000	0.250	1.430	4.625
	2	1	1.000	1/4-28	2.000	0.250	1.430	5.000
2	1	5/8	1.125	5/16-24	2.500	0.313	1.840	4.625
	3	1	1.125	5/16-24	2.500	0.313	1.840	5.000
2-1/2	1	5/8	1.125	5/16-24	3.000	0.313	2.190	4.750
	3	1	1.125	5/16-24	3.000	0.313	2.190	5.125
3-1/4	1	1	1.375	3/8-24	3.750	0.375	2.760	5.625
	3	1-3/8	1.375	3/8-24	3.750	0.375	2.760	5.875
4	1	1	1.375	3/8-24	4.500	0.375	3.320	5.625
	3	1-3/8	1.375	3/8-24	4.500	0.375	3.320	5.875
5	1	1	1.813	1/2-20	5.500	0.438	4.100	5.875
	3	1-3/8	1.813	1/2-20	5.500	0.438	4.100	6.125

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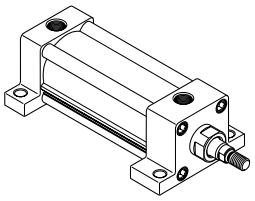
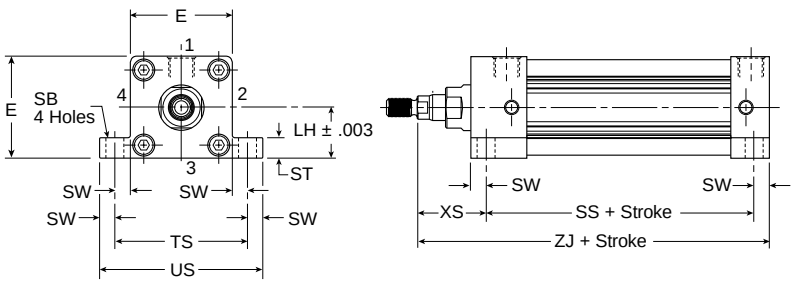
Side Lug

Style C for
(NFPA MS2)



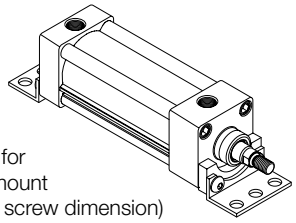


Styles C

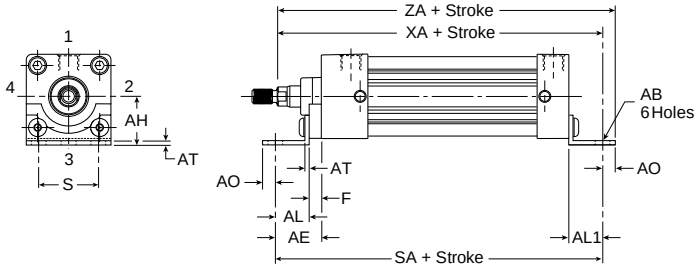
Bore size	Rod no.	Rod dia. MM	E	LH	SB	ST	ST1	ST2	SW	SW1	TS	US	XS	Add stroke SS	Add stroke ZJ
1-1/2	1	5/8	2.000	0.993	0.438	0.500	1.000	0.120	0.375	0.495	2.750	3.500	1.375	2.875	4.625
	2	1	2.000	0.993	0.438	0.500	1.000	0.120	0.375	0.495	2.750	3.500	1.750	2.875	5.000
2	1	5/8	2.500	1.243	0.438	0.500	1.250	0.120	0.375	0.495	3.250	4.000	1.375	2.875	4.625
	3	1	2.500	1.243	0.438	0.500	1.250	0.120	0.375	0.495	3.250	4.000	1.750	2.875	5.000
2-1/2	1	5/8	3.000	1.493	0.438	0.500	1.343	0.120	0.375	0.495	3.750	4.500	1.375	3.000	4.750
	3	1	3.000	1.493	0.438	0.500	1.343	0.120	0.375	0.495	3.750	4.500	1.750	3.000	5.125
3-1/4	1	1	3.750	1.868	0.563	0.750	1.500	0.188	0.500	0.688	4.750	5.750	1.875	3.250	5.625
	3	1-3/8	3.750	1.868	0.563	0.750	1.500	0.188	0.500	0.688	4.750	5.750	2.125	3.250	5.875
4	1	1	4.500	2.243	0.563	0.750	1.500	0.188	0.500	0.688	5.500	6.500	1.875	3.250	5.625
	3	1-3/8	4.500	2.243	0.563	0.750	1.500	0.188	0.500	0.688	5.500	6.500	2.125	3.250	5.875
5	1	1	5.500	2.743	0.813	1.000	1.500	0.250	0.688	0.938	6.875	8.250	2.063	3.125	5.875
	3	1-3/8	5.500	2.743	0.813	1.000	1.500	0.250	0.688	0.938	6.875	8.250	2.313	3.125	6.125

Side End Angle*

Style CB
(NFPA MS1)



Note:
Dimension "S" is for
the holes in the mount
(not the screw to screw dimension)



*Maximum recommended pressure for this mount is 150 PSIG

Style CB

Bore size	Rod no.	Rod dia. MM	AB	AE	AH	AL	AL1	AO	AT	E	F	S	Add stroke SA	Add stroke XA	Add stroke ZA
1-1/2	1	5/8	0.438	1.375	1.188	1.000	1.000	0.375	0.125	2.000	0.375	1.250	6.000	5.625	6.000
	2	1	0.438	1.375	1.188	1.000	1.000	0.375	0.125	2.000	0.375	1.250	6.000	6.000	6.375
2	1	5/8	0.438	1.375	1.438	1.000	1.000	0.375	0.125	2.500	0.375	1.750	6.000	5.625	6.000
	3	1	0.438	1.375	1.438	1.000	1.000	0.375	0.125	2.500	0.375	1.750	6.000	6.000	6.375
2-1/2	1	5/8	0.438	1.375	1.625	1.000	1.000	0.375	0.125	3.000	0.375	2.250	6.125	5.750	6.125
	3	1	0.438	1.375	1.625	1.000	1.000	0.375	0.125	3.000	0.375	2.250	6.125	6.125	6.500
3-1/4	1	1	0.563	1.875	1.938	1.250	1.250	0.500	0.125	3.750	0.625	2.750	7.375	6.875	7.375
	3	1-3/8	0.563	1.875	1.938	1.250	1.250	0.500	0.125	3.750	0.625	2.750	7.375	7.125	7.625
4	1	1	0.563	–	2.250	1.875	1.250	0.500	0.125	4.500	–	3.500	7.375	6.875	7.375
	3	1-3/8	0.563	–	2.250	1.875	1.250	0.500	0.125	4.500	–	3.500	7.375	7.125	7.625
5	1	1	0.688	2.000	2.750	1.375	1.375	0.625	0.188	5.500	0.625	4.250	7.875	7.250	7.875
	3	1-3/8	0.688	2.000	2.750	1.375	1.375	0.625	0.188	5.500	0.625	4.250	7.875	7.500	8.125

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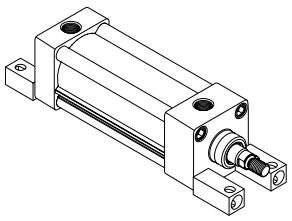
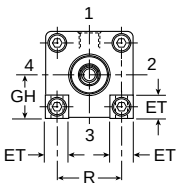
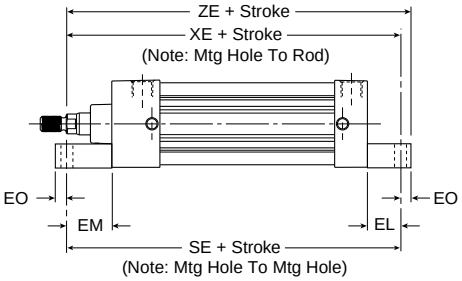
Side End Lug

Style G
(NFPA MS7)







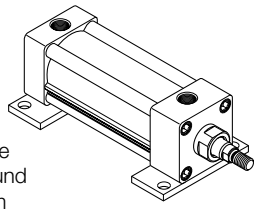
Style G

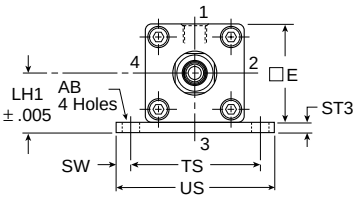
Bore size	Rod no.	Rod dia. MM	E	EB	EL	EM	EO	ET	GH	R	Add Stroke SE	XE	ZE
1-1/2	1	5/8	2.000	0.281	0.750	1.125	0.250	0.563	0.993	1.430	5.500	5.375	5.625
	2	1	–	–	–	–	–	–	–	–	–	–	–
2	1	5/8	2.500	0.344	0.938	1.313	0.313	0.688	1.243	1.840	5.875	5.563	5.875
	3	1	2.500	0.344	0.938	1.313	0.313	0.688	1.243	1.840	5.875	5.938	6.250
2-1/2	1	5/8	3.000	0.344	1.063	1.438	0.313	0.813	1.493	2.190	6.250	5.813	6.125
	3	1	3.000	0.344	1.063	1.438	0.313	0.813	1.493	2.190	6.250	6.188	6.500
3-1/4	1	1	3.750	0.406	0.875	1.500	0.375	1.000	1.868	2.760	6.625	6.500	6.875
	3	1-3/8	3.750	0.406	0.875	1.500	0.375	1.000	1.868	2.760	6.625	6.750	7.125
4	1	1	4.500	0.406	1.000	1.625	0.375	1.188	2.243	3.320	6.875	6.625	7.000
	3	1-3/8	4.500	0.406	1.000	1.625	0.375	1.188	2.243	3.320	6.875	6.875	7.250

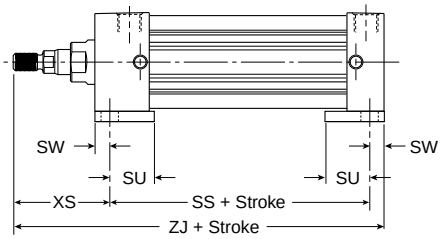
Base Bar Mount

Style NB for 4MA

Note: Fasteners for NB base bar mount have been applied with removable threadlocking compound and torqued to bottom of endcaps.







Style NB

Bore size	Rod no.	Rod dia. MM	AB	E	LH1	ST3	SU	SW	TS	US	XS	Add stroke SS	ZJ
1-1/2	1	5/8	0.438	2.000	1.243	0.250	1.125	0.375	2.750	3.500	1.375	2.875	4.625
	2	1	–	–	–	–	–	–	–	–	–	–	–
2	1	5/8	0.438	2.500	1.493	0.250	1.125	0.375	3.250	4.000	1.375	2.875	4.625
	3	1	0.438	2.500	1.493	0.250	1.125	0.375	3.250	4.000	1.750	2.875	5.000
2-1/2	1	5/8	0.438	3.000	1.868	0.375	1.125	0.375	3.750	4.500	1.375	3.000	4.750
	3	1	0.438	3.000	1.868	0.375	1.125	0.375	3.750	4.500	1.750	3.000	5.125
3-1/4	1	1	0.563	3.750	2.368	0.500	1.250	0.500	4.750	5.750	1.875	3.250	5.625
	3	1-3/8	0.563	3.750	2.368	0.500	1.250	0.500	4.750	5.750	2.125	3.250	5.875
4	1	1	0.563	4.500	2.743	0.500	1.250	0.500	5.500	6.500	1.875	3.250	5.625
	3	1-3/8	0.563	4.500	2.743	0.500	1.250	0.500	5.500	6.500	2.125	3.250	5.875

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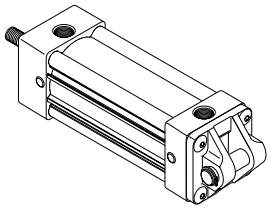
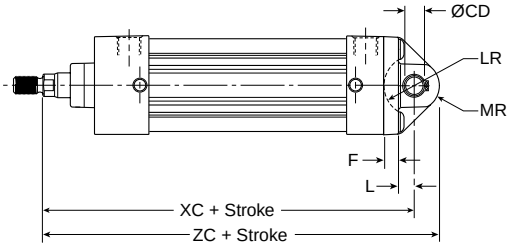
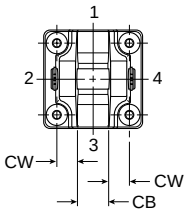
Cap Fixed Clevis

Style BB
(NFPA MP1)

Note: For maximum swivel angle of BB mount with rear mounting plate, see cylinder accessories

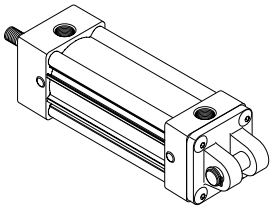


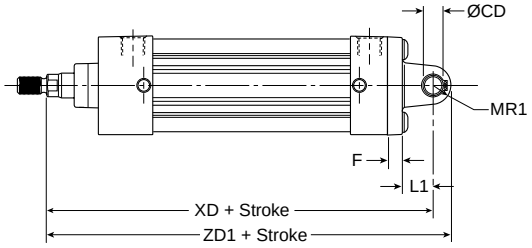


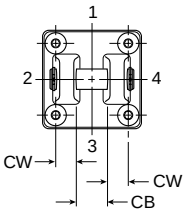


Cap Detachable Clevis

Style BC
(NFPA MP2)

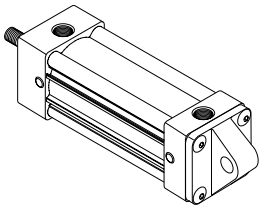


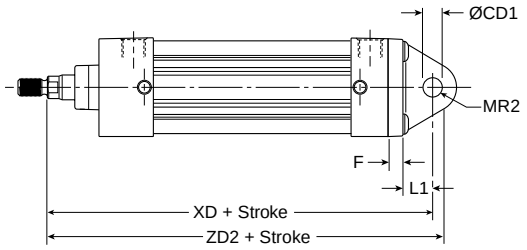


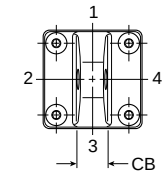


Cap Detachable Eye

Style BE
(NFPA MP4)







Styles BB, BC and BE

Bore size	Rod no.	Rod dia. MM	CB	+.000 -.002 CD	+.002 +.004 CD1	CW	E	F	L	LR	L1	MR	MR1	MR2	Add stroke XC	XD	ZC	ZD1	ZD2
1-1/2	1	5/8	0.750	0.501	0.500	0.500	2.000	0.375	0.375	0.750	0.750	0.625	0.500	0.625	5.375	5.750	6.000	6.250	6.375
	2	1	0.750	0.501	0.500	0.500	2.000	0.375	0.375	0.750	0.750	0.625	0.500	0.625	5.750	6.125	6.375	6.625	6.750
2	1	5/8	0.750	0.501	0.500	0.500	2.500	0.375	0.375	0.750	0.750	0.625	0.500	0.625	5.375	5.750	6.000	6.250	6.375
	3	1	0.750	0.501	0.500	0.500	2.500	0.375	0.375	0.750	0.750	0.625	0.500	0.625	5.750	6.125	6.375	6.625	6.750
2-1/2	1	5/8	0.750	0.501	0.500	0.500	3.000	0.375	0.375	0.750	0.750	0.625	0.500	0.688	5.500	5.875	6.125	6.375	6.563
	3	1	0.750	0.501	0.500	0.500	3.000	0.375	0.375	0.750	0.750	0.625	0.500	0.688	5.875	6.250	6.500	6.750	6.313
3-1/4	1	1	1.250	0.751	0.750	0.625	3.750	0.625	0.625	1.000	1.250	0.938	0.750	0.875	6.875	7.500	7.813	8.250	8.375
	3	1-3/8	1.250	0.751	0.750	0.625	3.750	0.625	0.625	1.000	1.250	0.938	0.750	0.875	7.125	7.750	8.063	8.500	8.625
4	1	1	1.250	0.751	0.750	0.625	4.500	0.625	0.625	1.000	1.250	0.938	0.750	0.875	6.875	7.500	7.813	8.250	8.375
	3	1-3/8	1.250	0.751	0.750	0.625	4.500	0.625	0.625	1.000	1.250	0.938	0.750	0.875	7.125	7.750	8.063	8.500	8.625
5	1	1	1.250	0.751	0.750	0.625	5.500	0.625	0.625	1.000	1.250	0.938	0.750	0.875	7.125	7.750	8.063	8.500	8.625
	3	1-3/8	1.250	0.751	0.750	0.625	5.500	0.625	0.625	1.000	1.250	0.938	0.750	0.875	7.375	8.000	8.313	8.750	8.875

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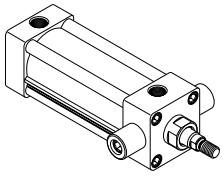
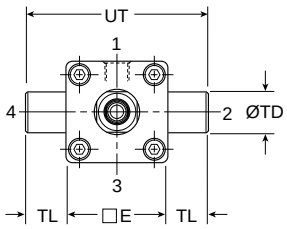
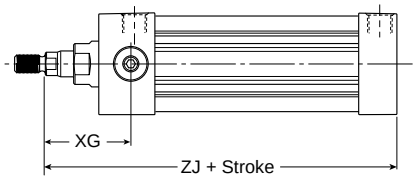
Head Trunnion*

Style D
(NFPA MT1)

Note: not available for 1-1/2" bore with 1" rod.

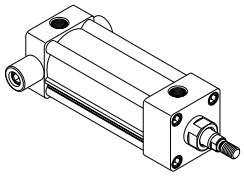


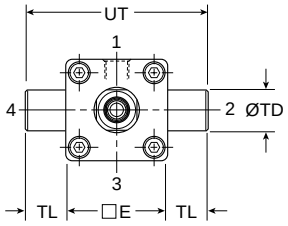


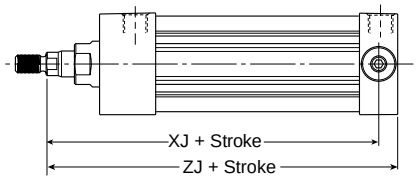


Cap Trunnion

Style DB
(NFPA MT2)



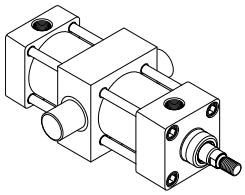


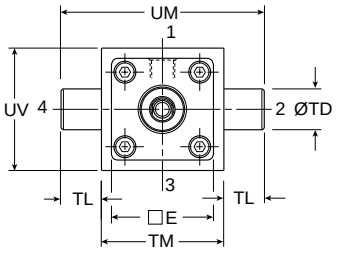


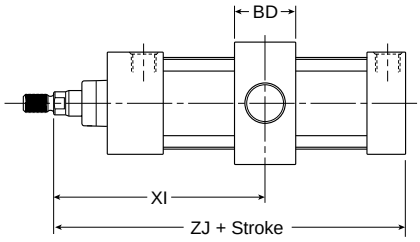
Intermediate Trunnion

Style DD
(NFPA MT4)

Note: Tie rod nuts for Style DD have a slot instead of internal hex.







Styles D, DB and DD

Bore size	Rod no.	Rod dia. MM	E	BD	+.000 –.001 TD	TL	TM	UM	UT	UV	XG	Min. XI	Add stroke XJ	Add stroke ZJ
1–1/2	1 *	5/8	2.000	1.250	1.000	1.000	2.500	4.500	4.000	2.500	1.750	3.036	4.125	4.625
	2	1	2.000	1.250	1.000	1.000	2.500	4.500	4.000	2.500	–	3.437	4.250	5.000
2	1	5/8	2.500	1.500	1.000	1.000	3.000	5.000	4.500	3.000	1.750	3.125	4.125	4.625
	3	1	2.500	1.500	1.000	1.000	3.000	5.000	4.500	3.000	2.125	3.500	4.500	5.000
2-1/2	1	5/8	3.000	1.500	1.000	1.000	3.500	5.500	5.000	3.500	1.750	3.094	4.250	4.750
	3	1	3.000	1.500	1.000	1.000	3.500	5.500	5.000	3.500	2.125	3.469	4.625	5.125
3-1/4	1	1	3.750	2.000	1.000	1.000	4.500	6.500	5.750	4.250	2.250	3.969	5.000	5.625
	3	1-3/8	3.750	2.000	1.000	1.000	4.500	6.500	5.750	4.250	2.500	4.219	5.250	5.875
4	1	1	4.500	2.000	1.000	1.000	5.250	7.250	6.500	5.000	2.250	3.969	5.000	5.625
	3	1-3/8	4.500	2.000	1.000	1.000	5.250	7.250	6.500	5.000	2.500	4.219	5.250	5.875
5	1	1	5.500	2.000	1.000	1.000	6.250	8.250	7.500	6.000	2.250	3.969	5.250	5.875
	3	1-3/8	5.500	2.000	1.000	1.000	6.250	8.250	7.500	6.000	2.500	4.219	5.500	6.125

* Head trunnion style D not available for 1-1/2" bore with 1" rod

Kits & Accessories

See page B37.

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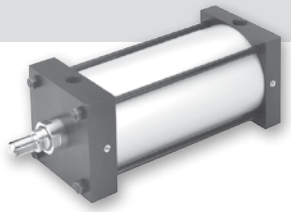
4MA/4ML Series – 6" thru 8" Bore Size



- Industry leading NFPA interchangeable cylinder with flexible construction
- Bore sizes – 6" and 8"
- Removable bronze alloy gland/bearing for easy maintenance
- Available in any practical stroke length
- Tube and tie rod construction for heavy duty use
- Single rod end or double rod ends
- Cushions – optional and adjustable at either end or both ends (N/A for 4ML hydraulic version)
- 20 standard mounting styles available
- RoHS compliant

Operating information

	4MA	4ML
Operating pressure:	250 PSIG (17 bar) maximum air service	400 PSIG (27 bar) maximum hydraulic service
Temperature range –		
Standard seals	-10°F to 165°F (-23°C to 74°C)	
Fluorocarbon seals	-10°F to 250°F (-23°C to 121°C)	
Low temperature seals	-50°F to 150°F (-46°C to 66°C)	
Filtration requirements:	40 micron, dry filtered air	Filtered hydraulic oil

Ordering information

6.00			J	4MA		U			1	4		A		12.000

Bore size

6.00
8.00

Double rod cylinder

Specify "K" only if double rod cylinder is required.

Series

4MA	Air service
4ML	Hydraulic service

Ports

U	NPTF
R	BSPP
B	BSPT
T	SAE

Piston rod number

Specify rod code number for required diameter. [8, 2]

Stroke length

Specify stroke length required in inches. [8]

Mounting style

Specify mounting style code (see table on following page).

Special modification

Specify "S" only for special modification other than rod end, and then describe modification in item notes. (Includes 4MA with Linear Position Sensor Option) [7]

Cushion cap end

Blank	Non-cushioned cap end
C	Cushioned cap end (not available for 4ML)

Cushion head end

Blank	Non-cushioned head end
C	Cushioned head end (not available for 4ML)

Piston rod thread type

A	Standard (UNF unified thread)
W	BSF British fine
M *	Metric

* Please reference catalog 0900P-E, page B106.

Piston type

Blank	Standard (lipseals and magnetic ring)
3	Lipseals and magnetic ring

Seals

Blank	Standard (nitrile seals)
V	Fluorocarbon seals [1]
E	Fluorocarbon rod wiper and rod seal only [2]
4	Low temperature seals [1]
M	Metallic rod wiper, nitrile seals [3]

Rod material and gland code

Blank	Standard rod and gland
H	Standard rod and HI LOAD gland
Y	17-4 PH stainless steel rod and standard gland
Z	17-4 PH stainless steel rod and HI LOAD gland
J	303 stainless steel rod and standard gland [7]
K	303 stainless steel rod and HI LOAD gland [7]
S	316 stainless steel rod and standard gland [7]
T	316 stainless steel rod and HI LOAD gland [7]

Piston rod thread style

4	Small male
8	Intermediate male
9	Short female
55	For use with split coupler [6]
3	Special (and specify all dimensions required)

1 Reed and solid-state sensors only available with standard seals or options E and M.
2 Used for external chemical compatibility applications, not high temperature.
3 If fluorocarbon seals are required with this option, please place an "S" for special in the Special Modification field and specify the "fluorocarbon seals and metallic rod wiper" in the item notes.
4 For Linear Position Sensor Option (LPSO), please include the following information for the Special Modification item notes:
   a. Sensor part number (please reference catalog 0900P-E, pages B100-B104)
   b. Sensor position
   c. Port position (if other than position 1)
   d. Length of stop tubing, gross stroke and net stroke (if required) Also, Piston Type 3 is required.
5 Review Piston Rod Selection Chart, please reference catalog 0900P-E, page A14 to determine proper piston rod diameter.
6 For additional information regarding this style, please reference catalog 0900P-E, page B105. If non-standard Rod Material and Gland Code is required with this option, please place an "S" for special in Special Modification field and specify Rod Material and Gland Code in the item notes.
7 Not available for 4ML.
8 If a stop tube is required, specify gross stroke (net stroke + stop tube) in the model number, then place an "S" for special in the Special Modification field and specify the stop tube length in the item notes.

Sensors

For sensors see page B339.

For ordering purposes, when special options or common modifications are requested, the factory will assign a sequential part number in place of the model number.

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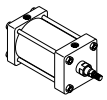
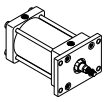
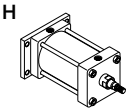
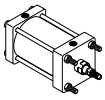
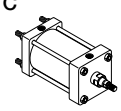
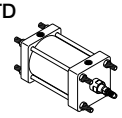
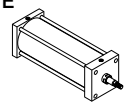
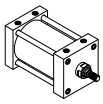
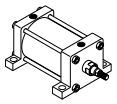
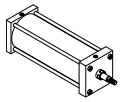
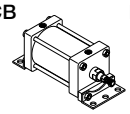
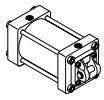
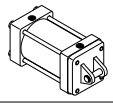
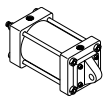
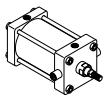
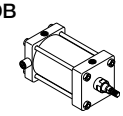
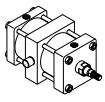
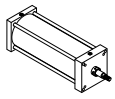
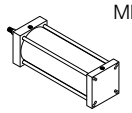
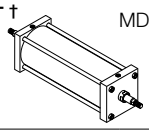
4MA/4ML Mounting Styles for 6" to 8" Bore

Mounting style	NFPA mounting	Description	Bore size
T 	MX0	No Mount	6 - 8
J 	MF1	Head Rectangular Flange	6
H 	MF2	Cap Rectangular Flange	6
TB 	MX3	Tie Rods Extended Head End	6 - 8
TC 	MX2	Tie Rods Extended Cap End	6 - 8
TD 	MX1	Tie Rods Extended Both Ends	6 - 8
TE 	MX5	Sleeve Nut	6 - 8
TEF 	MX5/MS4	Sleeve Nut with Side Tap	6 - 8
C 	MS2	Side Lug	6 - 8
F 	MS4	Side Tap	6 - 8

Mounting style	NFPA mounting	Description	Bore size
CB 	MS1	Side End Angle	6 - 8
BB 	MP1	Cap Fixed Clevis	6 - 8
BC 	MP2	Cap Detachable Clevis	6 - 8
BE 	MP4	Cap Detachable Eye	6
D 	MT1	Head Trunnion	6 - 8
DB 	MT2	Cap Trunnion	6 - 8
DD 	MT4	Intermediate Trunnion	6 - 8
JB 	ME3	Head Square	8
HB 	ME4	Cap Square	8
KT † 	MDX0	Double Rod End, No Mount	6 - 8

† Double rod end cylinders can be ordered with head mountings, i.e. KJ.

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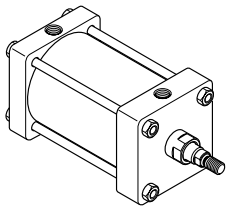
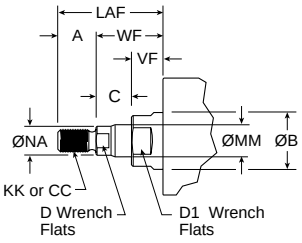
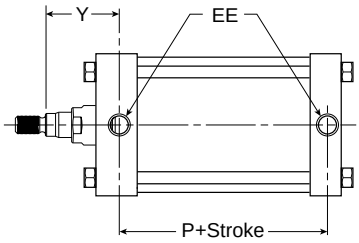
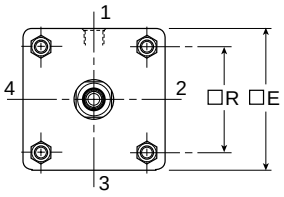
Single Rod Dimensioned Drawings – (Style T)

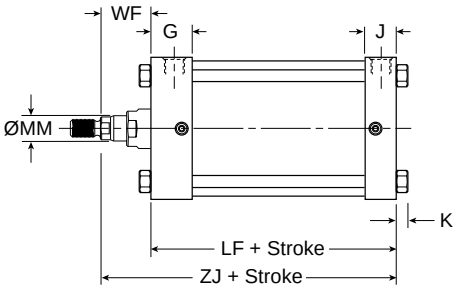






For dimensions of all standard rod end styles, please see next page.





Style T

Bore size	Rod no.	Rod dia. MM	Thread Style 8 CC	Thread Style 4 & 9 KK	A	AA	+.000 -.002 B	C	D	D1	E	EE (NPTF)	G
6	1	1-3/8	1-1/4-12	1-14	1.625	6.900	1.999	0.635	1-1/8	1-7/8	6.500	3/4	1.910
	3	1-3/4	1-1/2-12	1-1/4-12	2.000	6.900	2.374	0.760	1-1/2	2-3/16	6.500	3/4	1.910
8	1	1-3/8	1-1/4-12	1-14	1.625	9.100	1.999	0.635	1-1/8	1-7/8	8.500	3/4	1.810
	3	1-3/4	1-1/2-12	1-1/4-12	2.000	9.100	2.374	0.760	1-1/2	2-3/16	8.500	3/4	1.810

Bore size	Rod no.	Rod dia. MM	J	K	LAF	NA	R	VF	WF	Y	Add stroke LF	P	ZJ
6	1	1-3/8	1.410	0.438	3.250	1.313	4.880	0.990	1.625	2.813	5.000	3.125	6.625
	3	1-3/4	1.410	0.438	3.875	1.688	4.880	1.115	1.875	3.063	5.000	3.125	6.875
8	1	1-3/8	1.440	0.563	3.250	1.313	6.440	0.990	1.625	2.750	5.125	3.250	6.750
	3	1-3/4	1.440	0.563	3.875	1.688	6.440	1.115	1.875	3.000	5.125	3.250	7.000

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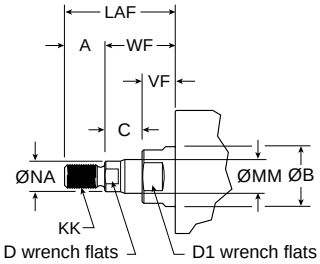
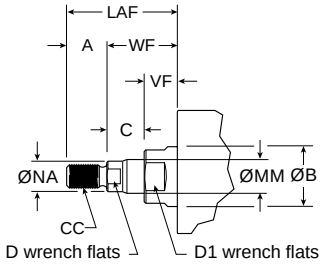
4MA Rod End Dimensions

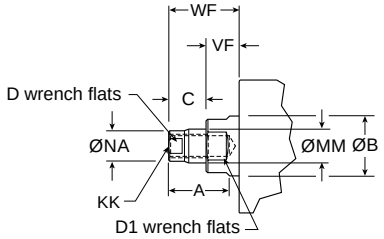
Thread Style 4
(NFPA Style SM)
Small Male



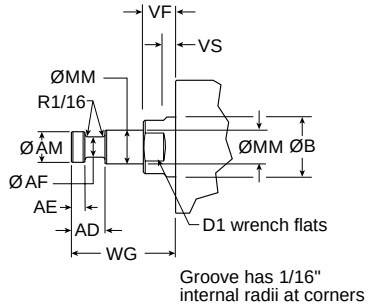
Thread Style 8
(NFPA Style IM)
Intermediate Male



Thread Style 9
(NFPA Style SF)
Short Female



Thread Style 55
For use with Split Coupler
(please reference catalog 0900P-E, page B105 for more information)



Thread Style 3 - "Special Thread"
Special threads, rod extensions, rod eyes, blanks, etc. are also available.
To order, specify "Style 3" and give desired dimensions for KK or CC, A and W or WF.
If otherwise special, please supply dimensioned sketch.

Rod End Dimensions

Bore size	Rod no.	Rod dia. MM	Thread Style 8 CC	Thread Style 4 & 9 KK	A	AD	AE	AF	AM	+.000 -.002 B	C	D	D1	LAF	NA	VF	WF	WG
6	1	1-3/8	1-1/4-12	1-14	1.625	1.063	0.375	0.875	1.320	1.999	0.635	1-1/8	1-7/8	3.250	1.313	0.990	1.625	2.750
	3	1-3/4	1-1/2-12	1-1/4-12	2.000	1.313	0.500	1.125	1.700	2.374	0.760	1-1/2	2-3/16	3.875	1.688	1.115	1.875	3.125
8	1	1-3/8	1-1/4-12	1-14	1.625	1.063	0.375	0.875	1.320	1.999	0.635	1-1/8	1-7/8	3.250	1.313	0.990	1.625	2.750
	3	1-3/4	1-1/2-12	1-1/4-12	2.000	1.313	0.500	1.125	1.700	2.374	0.760	1-1/2	2-3/16	3.875	1.688	1.115	1.875	3.125

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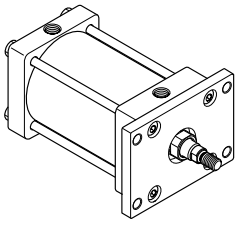
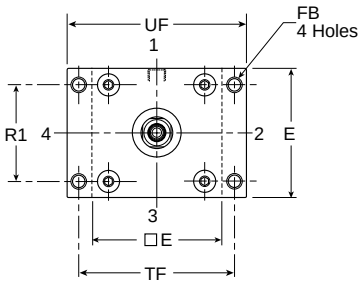
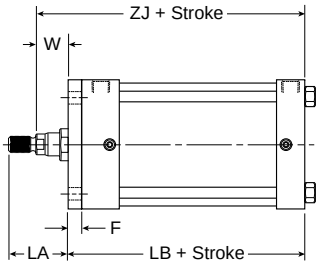
Head Rectangular Flange

Style J
(NFPA MF1)
(only 6" Bore)





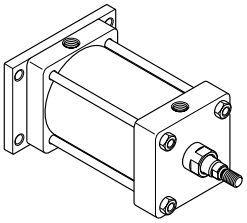


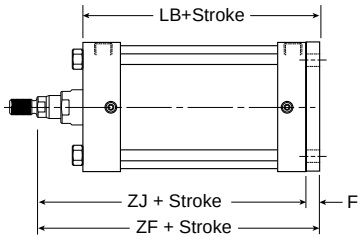
Note: Style J has a W dimension instead of WF and a LA dimension instead of LAF because of the flange installation. Please use dimensions W and LA regarding rod ends only for Style J.

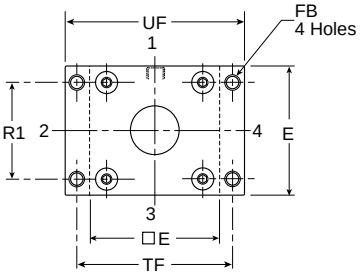
For reference, WF = W + F and LA = W + A.

Cap Rectangular Flange

Style H
(NFPA MF2)
(only 6" Bore)







Styles J and H

Bore size	Rod no.	Rod dia. MM	A	E	F	FB	LA	R1	TF	UF	W	Add stroke LB	Add stroke ZF	Add stroke ZJ
6	1	1-3/8	1.625	6.500	0.750	0.563	2.500	4.880	7.625	8.625	0.875	5.750	7.375	6.625
	3	1-3/4	2.000	6.500	0.750	0.563	3.125	4.880	7.625	8.625	1.125	5.750	7.625	6.875

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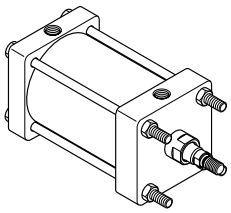
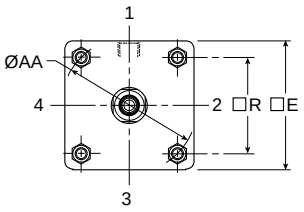
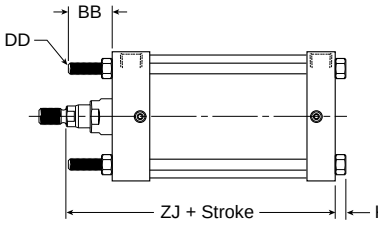
Tie Rods Ext. Head End

Style TB
(NFPA MX3)

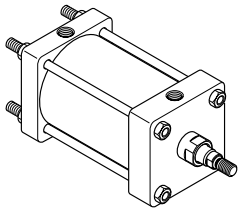


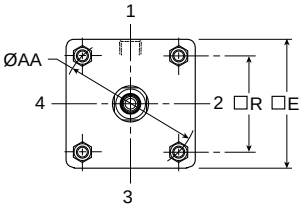


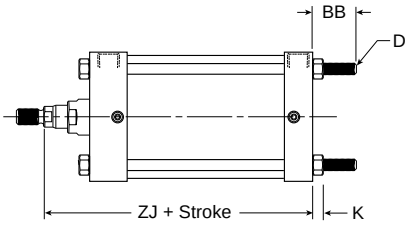


Tie Rods Ext. Cap End

Style TC
(NFPA MX2)

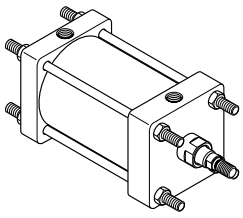


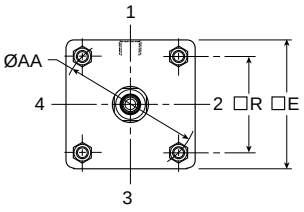


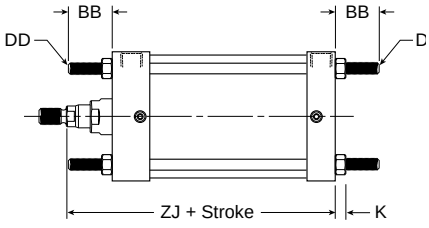


Tie Rods Ext. Both Ends

Style TD
(NFPA MX1)







Styles TB, TC and TD

Bore size	Rod no.	Rod dia. MM	AA	BB	DD	E	K	R	Add stroke ZJ
6	1	1-3/8	6.900	1.813	1/2-20	6.500	0.438	4.880	6.625
	3	1-3/4	6.900	1.813	1/2-20	6.500	0.438	4.880	6.875
8	1	1-3/8	9.100	2.313	5/8-18	8.500	0.563	6.440	6.750
	3	1-3/4	9.100	2.313	5/8-18	8.500	0.563	6.440	7.000

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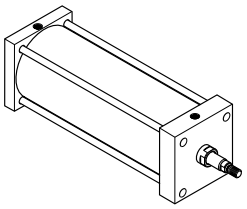
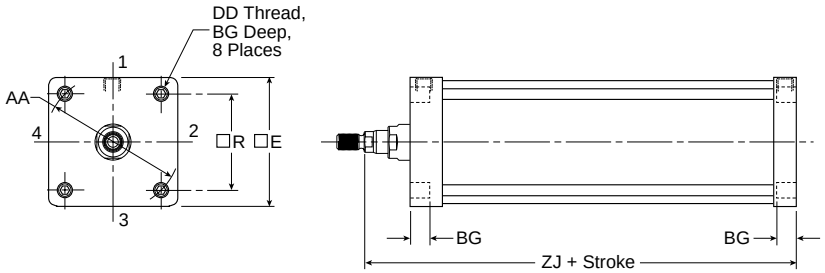
Sleeve Nut
Style TE
(NFPA MX5)

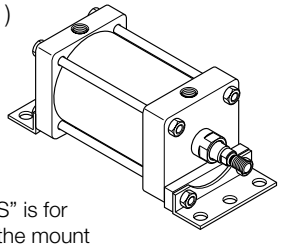




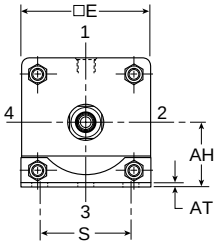
Style TE

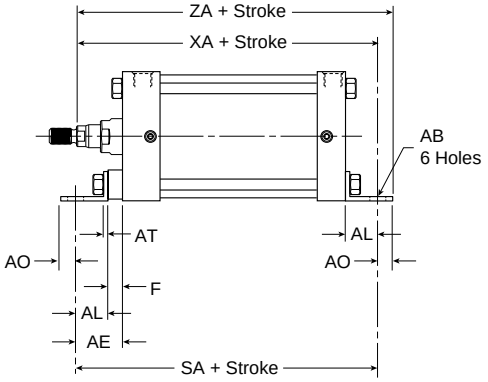
Bore size	Rod no.	Rod dia. MM	AA	BG	DD	E	R	Add stroke ZJ
6	1	1-3/8	6.900	0.500	1/2-20	6.500	4.880	6.625
	3	1-3/4	6.900	0.500	1/2-20	6.500	4.880	6.875
8	1	1-3/8	9.100	0.620	5/8-18	8.500	6.440	6.750
	3	1-3/4	9.100	0.620	5/8-18	8.500	6.440	7.000

Side End Angle*
Style CB
(NFPA MS1)



Note:
Dimension "S" is for the holes in the mount (not the screw to screw dimension)





*Maximum recommended pressure for this mount is 150 PSIG

Style CB

Bore size	Rod no.	Rod dia. MM	AB	AE	AH	AL	AO	AT	E	F	S	Add stroke SA	XA	ZA
6	1	1-3/8	0.813	2.125	3.250	1.375	0.625	0.188	6.500	0.750	5.250	8.500	8.000	8.625
	3	1-3/4	0.813	2.125	3.250	1.375	0.625	0.188	6.500	0.750	5.250	8.500	8.250	8.875
8	1	1-3/8	0.813	1.813	4.250	1.813	0.688	0.250	8.500	–	7.125	8.750	8.563	9.250
	3	1-3/4	0.813	1.813	4.250	1.813	0.688	0.250	8.500	–	7.125	8.750	8.813	9.500

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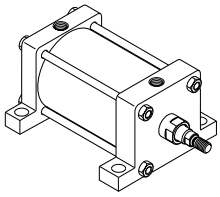
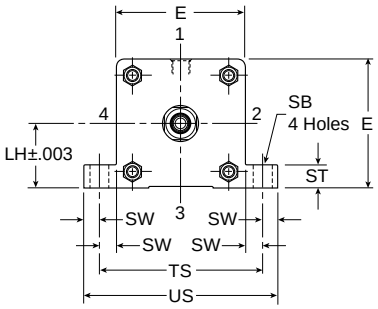
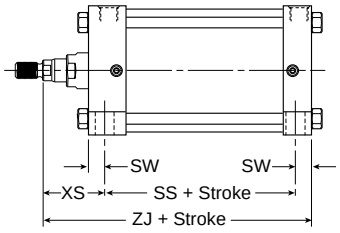
Side Lug

Style C
(NFPA MS2)





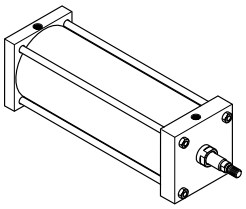


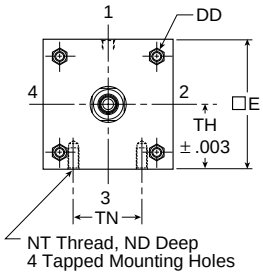
Style C

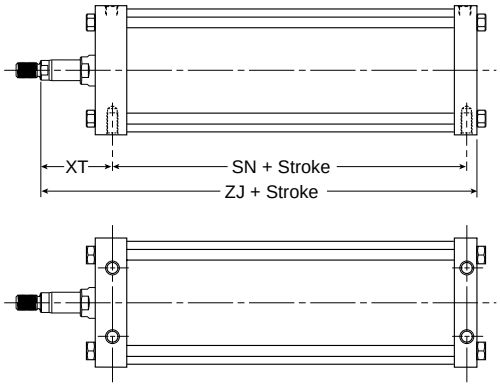
Bore size	Rod no.	Rod dia. MM	E	+/-.003 LH	SB	ST	SW	TS	US	XS	Add stroke SS	Add stroke ZJ
6	1	1-3/8	6.500	3.243	0.813	1.000	0.688	7.875	9.250	2.313	3.625	6.625
	3	1-3/4	6.500	3.243	0.813	1.000	0.688	7.875	9.250	2.563	3.625	6.875
8	1	1-3/8	8.500	4.243	0.813	1.000	0.688	9.875	11.250	2.313	3.750	6.750
	3	1-3/4	8.500	4.243	0.813	1.000	0.688	9.875	11.250	2.563	3.750	7.000

Side Tap

Style F
(NFPA MS4)







Style F

Bore size	Rod no.	Rod dia. MM	E	ND	NT	+/-.003 TH	TN	XT	Add stroke SN	Add stroke ZJ
6	1	1-3/8	6.500	1.125	3/4-10	3.243	3.250	2.813	3.125	6.625
	3	1-3/4	6.500	1.125	3/4-10	3.243	3.250	3.063	3.125	6.875
8	1	1-3/8	8.500	1.125	3/4-10	4.243	4.500	2.813	3.250	6.750
	3	1-3/4	8.500	1.125	3/4-10	4.243	4.500	3.063	3.250	7.000

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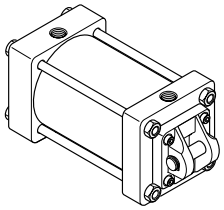
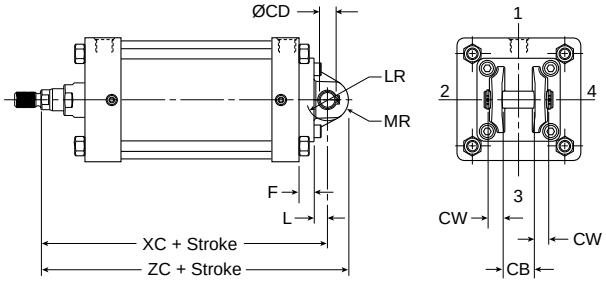
Cap Fixed Clevis

Style BB
(NFPA MP1)

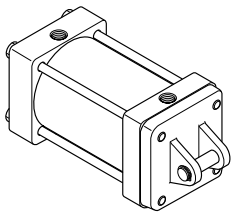
Note: For maximum swivel angle of BB mount with rear mounting plate, please reference catalog 0900P-E, cylinder accessories on page B108.

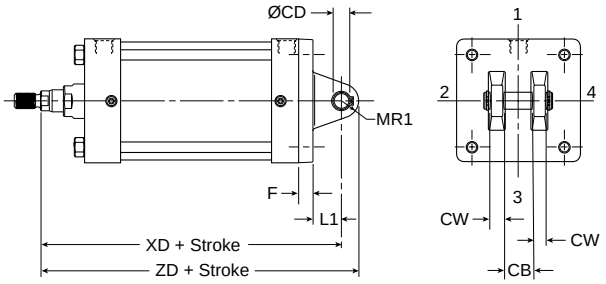




Cap Detachable Clevis

Style BC
(NFPA MP2)



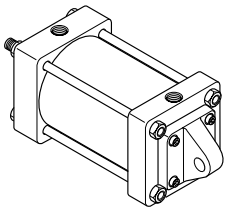


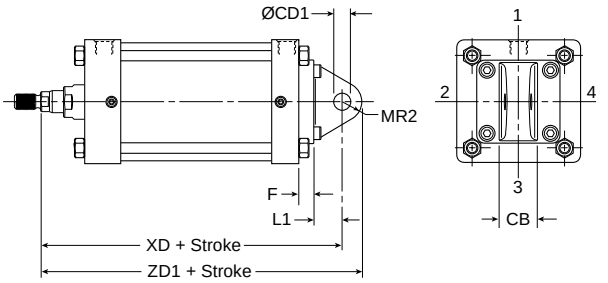
Styles BB and BC

Bore size	Rod no.	Rod dia. MM	CB	+.000 -.002 CD	CW	E	F	L	LR	L1	MR	MR1	Add stroke XC	XD	ZC	ZD
6	1	1- 3/8	1.500	1.001	0.750	6.500	0.750	0.750	1.250	1.500	1.125	1.000	8.125	8.875	9.250	9.875
	3	1-3/4	1.500	1.001	0.750	6.500	0.750	0.750	1.250	1.500	1.125	1.000	8.375	9.125	9.500	10.125
8	1	1-3/8	1.500	1.001	0.750	8.500	0.750	0.750	1.250	1.500	1.125	1.000	8.250	9.000	9.375	10.000
	3	1-3/4	1.500	1.001	0.750	8.500	0.750	0.750	1.250	1.500	1.125	1.000	8.500	9.250	9.625	10.250

Cap Detachable Eye

Style BE
(NFPA MP4)
(only 6" Bore)





Style BE

Bore size	Rod no.	Rod dia. MM	CB	+.002 +.004 CD1	E	F	L1	MR2	Add stroke XD	ZD1
6	1	1-3/8	1.500	1.000	6.500	0.750	1.500	1.125	8.875	10.000
	3	1-3/4	1.500	1.000	6.500	0.750	1.500	1.125	9.125	10.250

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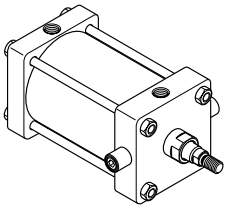
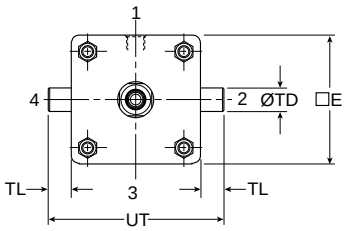
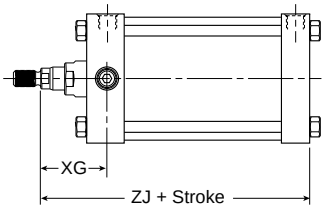
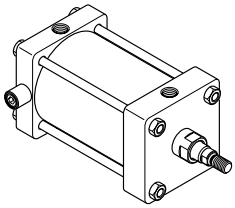
Head Trunnion
Style D
(NFPA MT1)

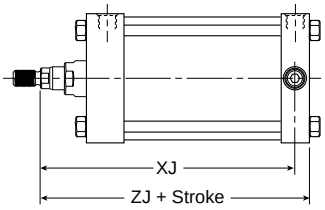


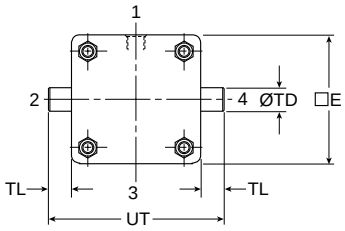




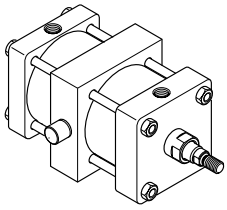
Cap Trunnion
Style DB
(NFPA MT2)

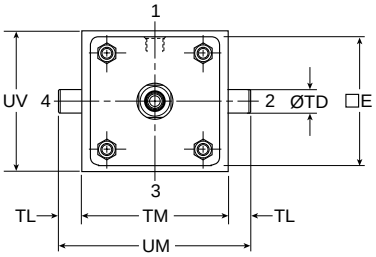


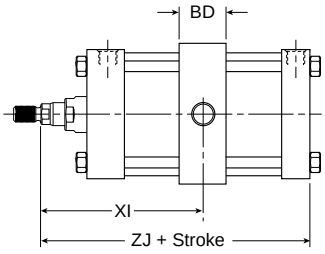




Intermediate Trunnion
Style DD
(NFPA MT4)







Styles D, DB and DD

Bore size	Rod no.	Rod dia. MM	E	BD	+.000 -.001 TD	TL	TM	UM	UT	UV	XG	Min. XI	Add stroke XJ	Add stroke ZJ
	1	1-3/8	6.500	2.500	1.375	1.375	7.625	10.375	9.250	7.000	2.625	4.813	5.875	6.625
6	3	1-3/4	6.500	2.500	1.375	1.375	7.625	10.375	9.250	7.000	2.875	5.063	6.125	6.875
	1	1-3/8	8.500	2.500	1.375	1.375	9.750	12.500	11.250	9.500	2.625	4.750	6.000	6.750
8	3	1-3/4	8.500	2.500	1.375	1.375	9.750	12.500	11.250	9.500	2.875	5.000	6.250	7.000

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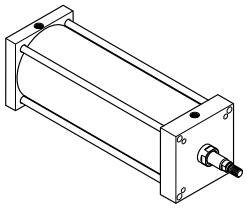
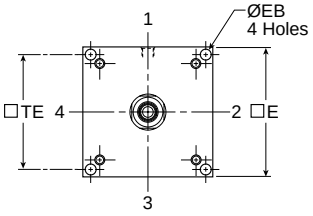
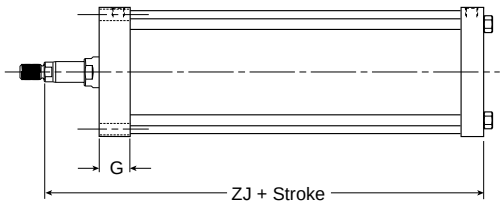
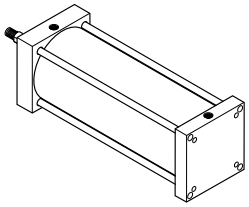
Head Square
Style JB
(NFPA ME3)

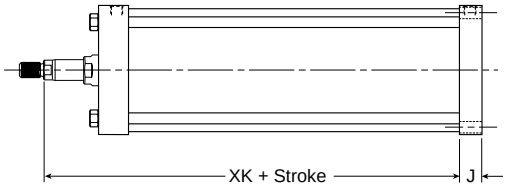


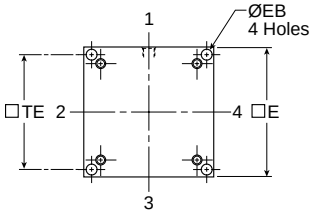




Cap Square
Style HB
(NFPA ME4)







Styles JB and HB

Bore size	Rod no.	Rod dia. MM	E	EB	G	J	TE	Add stroke XK	Add stroke ZJ
8	1	1-3/8	8.500	0.688	1.810	1.440	7.570	5.313	6.750
	3	1-3/4	8.500	0.688	1.810	1.440	7.570	5.563	7.000

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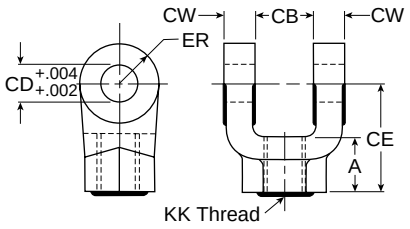
Mounting Kits and Accessories

Bore size	J (MF1) Head rectangular flange Kit number	H (MF2) Cap rectangular flange Kit number	BB (MP1) Cap fixed clevis Kit number	BC (MP2) Cap detachable clevis Kit number	BE (MP4) Cap detachable eye Kit number	CB (MS1) Side end angles Kit number	C (MS2) Side lug (3MA only) Kit number	G (MS7) Side end lug Kit number	Kit fastener torque units inch-lbs	N-m
1-1/2	L079700150	L079700150	L079710150	L079730150	L079720150	L079740150	L079830150	L079750150	32-36	3.6-4.1
2	L079700200	L079700200	L079710200	L079730200	L079720200	L079740200	L079830200	L079750200	72-82	8-9
2-1/2	L079700250	L079700250	L079710250	L079730250	L079720250	L079740250	L079830250	L079750250	72-82	8-9
3-1/4	L079700325	L079700325	L079710325	L079730325	L079720325	L079740325	L079830325	L079750325	216-228	24-25.3
4	L079700400	L079700400	L079710400	L079730400	L079720400	L079740400	L079830400	L079750400	216-228	24-25.3
5	L079700500	L079700500	L079710500	L079730500	N/A	L079740500	L079830500	N/A	360-372	41-42

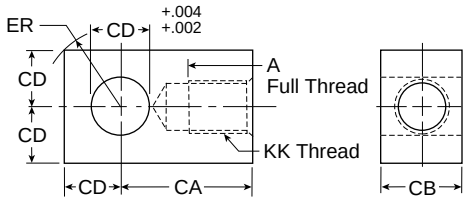
** Spacer plate not used for 4" bore or double rod cylinders

Female Rod Clevis



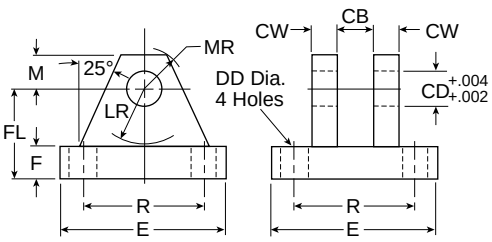
Symbol	1458030044	1458030050	1458030075	1458030088	1458030100	1458030125	1458030150
A	3/4	3/4	1-1/8	1-5/8	1-5/8	2	2-1/4
CB	3/4	3/4	1-1/4	1-1/2	1-1/2	2	2-1/2
CD	1/2	1/2	3/4	1	1	1-3/8	1-3/4
C E	1-1/2	1-1/2	2-1/8	2-15/16	2-15/16	3-3/4	4-1/2
CW	1/2	1/2	5/8	3/4	3/4	1	1-1/4
ER	1/2	1/2	3/4	1	1	1-3/8	1-3/4
KK	7/16-20	1/2-20	3/4-16	7/8-14	1-14	1-1/4-12	1-1/2-12
Load capacity (lbs)	4250	4900	11200	18800	19500	33500	45600

Rod Eye Knuckle



Symbol	1458040044	1458040050	1458040075	1458040088	1458040100	1458040125	1458040150
A	3/4	3/4	1-1/8	1-1/8	1-5/8	2	2-1/4
CA	1-1/2	1-1/2	2-1/16	2-3/8	2-13/16	3-7/16	4
CB	3/4	3/4	1-1/4	1-1/2	1-1/2	2	2-1/2
CD	1/2	1/2	3/4	1	1	1-3/8	1-3/4
ER	23/32	23/32	1-1/16	1-7/16	1-7/16	1-31/32	2-1/2
KK	7/16-20	1/2-20	3/4-16	7/8-14	1-14	1-1/4-12	1-1/2-12
Load capacity (lbs)	5000	5700	12100	13000	21700	33500	45000

Clevis Bracket



Symbol	1458050044	1458050050	1458050075	1458050100	1458050138	1458050175
CB	15/32	3/4	1-1/4	1-1/2	2	2-1/2
CD	7/16	1/2	3/4	1	1-3/8	1-3/4
CW	3/8	1/2	5/8	3/4	1	1-1/4
DD	17/64	13/32	17/32	21/32	21/32	29/32
E	2-1/4	3-1/2	5	6-1/2	7-1/2	9-1/2
F	3/8	1/2	5/8	3/4	7/8	7/8
FL	1	1-1/2	1-7/8	2-1/4	3	3-5/8
LR	5/8	3/4	1-3/16	1-1/2	2	2-3/4
M	3/8	1/2	3/4	1	1-3/8	1-3/4
MR	1/2	5/8	29/32	1-1/4	1-21/32	2-7/32
R	1.75	2.55	3.82	4.95	5.73	7.50
Load capacity (lbs)	3600	7300	14000	19200	36900	34000

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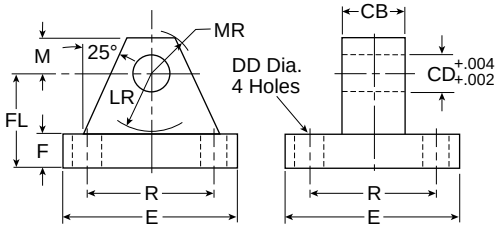
Mounting Plate & Eye Bracket



Symbol	1458060031	1458060050	1458060075	1458060100	1458060138	1458060175
CB	15/16	3/4	1-1/4	1-1/2	2	2-1/2
CD	15/16	1/2	3/4	1	1-3/8	1-3/4
DD	17/64	13/32	17/32	21/32	21/32	29/32
E	2-1/4	2-1/2	3-1/2	4-1/2	5	6-1/2
F	3/8	3/8	5/8	7/8	7/8	1-1/8
FL	1	1-1/8	1 7/8	2-3/8	3	3-3/8
LR	5/8	3/4	1-1/4	1-1/2	2-1/8	2-1/4
M	3/8	1/2	3/4	1	1-3/8	1-3/4
MR	1/2	9/16	7/8	1-1/4	1-5/8	2-1/8
R	1.75	1.63	2.55	3.25	3.82	4.95
Load Capacity (lbs)	1700	4100	10500	20400	21200	49480

1-1/2" to 8" Bore Cylinder Accessories

Rod end accessories can be selected by cylinder rod end thread size from Table A & B below. Mating parts for rod end accessories are listed just to the right of the knuckle or clevis selected. Mounting plates for style MP1 & MP4 cylinder mounts are selected by bore size from Table C.

Table A

	Mating parts		
Rod end thread size	**Female rod clevis**	**Eye bracket**	**Pivot pin**
7/16-20	1458030044	1458060050	0856640050
1/2-20	1458030050	1458060050	0856640050
3/4-16	1458030075	1458060075	0856640075
7/8-14	1458030088	1458060100	0856640100
1-14	1458030100	1458060100	0856640100
1-1/4-12	1458030125	1458060138	0856640138
1-1/2-12	1458030150	1458060175	0856640175

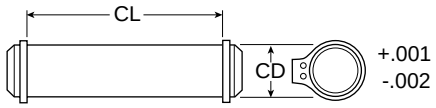
Table B

	Mating parts	
Knuckle	**Clevis bracket**	**Pivot pin**
1458040044	1458050050	0856640050
1458040050	1458050050	0856640050
1458040075	1458050075	0856640075
1458040088	1458050100	0856640100
1458040100	1458050100	0856640100
1458040125	1458050138	0856640138
1458040150	1458050175	0856640175

Table C

	Mounting plates	
Bore size	**For mtg. style MP1 cylinder**	**For mtg. style MP4 cylinder**
1-1/2	1458060050	1458050050
2	1458060050	1458050050
2-1/2	1458060050	1458050050
3-1/4	1458060075	1458050075
4	1458060075	1458050075
5	1458060075	—
6	1458060100	—
8	1458060100	—

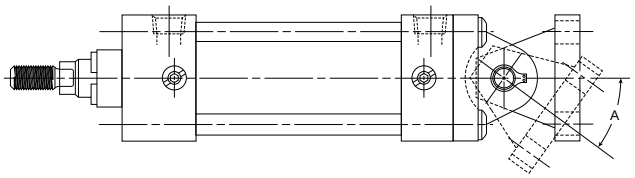
Pivot Pin



Symbol	0856640044	0856640050	0856640075	0856640100	0856640138	0856640175
CD	7/16	1/2	3/4	1	1-3/8	1-3/4
CL	1-5/16	1-7/8	2-5/8	3-1/8	4-1/8	5-3/16
Shear cap. (lbs)	6600	8600	19300	34300	65000	105200

Note: Pivot Pin must be ordered separately for single lug pivot mounting.

Maximum pivot angle for rear clevis mounts (BB mounts) and accessories



Bore	1-1/2	2	2-1/2	3-1/4	4	5	6	8
Angle A	52	43	29	50	49	45	42	42

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Service Kits

			RG - Rod gland cartridge kit. Includes gland and wiper, rod, and o-ring seals		Gland to head torque units		PK - Piston seal kit, standard lipseals. Includes piston and o-ring seals		SK - complete cylinder kit. Includes rod gland kit, piston seal kit, and cushion kits		Torque units endcap fastener or tie rod	
Bore size	Rod dia.	Rod no.	Nitrile seal kit number	Fluorocarbon seals kit number	Ft-lbs	Nm	Nitrile seal kit number	Fluorocarbon seal kit number	Nitrile seal kit number	Fluorocarbon seal kit number	inch-lbs	Nm
1-1/2	5/8	1	RG04MA0061	RG04MA0065	40-45	54-61	PK1504MA01	PK1504MA05	SK15104MA1	SK15104MA5	32-36	3.6-4.1
	1	2	RG04MA0101	RG04MA0105	45-50	61-68			SK15304MA1	SK15304MA5		
2	5/8	1	RG04MA0061	RG04MA0065	40-45	54-61	PK2004MA01	PK2004MA05	SK20104MA1	SK20104MA5	72-82	8-9
	1	3	RG04MA0101	RG04MA0105	45-50	61-68			SK20304MA1	SK20304MA5		
2-1/2	5/8	1	RG04MA0061	RG04MA0065	40-45	54-61	PK2504MA01	PK2504MA05	SK25104MA1	SK25104MA5	72-82	8-9
	1	3	RG04MA0101	RG04MA0105	45-50	61-68			SK25304MA1	SK25304MA5		
3-1/4	1	1	RG04MA0101	RG04MA0105	45-50	61-68	PK3254MA01	PK3254MA05	SK32104MA1	SK32104MA5	216-228	24-25.3
	1-3/8	3	RG04MA0131	RG04MA0135	75-80	102-108			SK32304MA1	SK32304MA5		
4	1	1	RG04MA0101	RG04MA0105	45-50	61-68	PK4004MA01	PK4004MA05	SK40104MA1	SK40104MA5	216-228	24-25.3
	1-3/8	3	RG04MA0131	RG04MA0135	75-80	102-108			SK40304MA1	SK40304MA5		
5	1	1	RG04MA0101	RG04MA0105	45-50	61-68	PK5004MA01	PK5004MA05	SK50104MA1	SK50104MA5	360-372	41-42
	1-3/8	3	RG04MA0131	RG04MA0135	75-80	102-108			SK50304MA1	SK50304MA5		
6	1-3/8	1	RG04MA0131	RG04MA0135	75-80	102-108	PK6004MA01	PK6004MA05	SK60104MA1	SK60104MA5	420-432	48-49
	1-3/4	3	RG04MA0171	RG04MA0175	90-95	122-129			SK60304MA1	SK60304MA5		
8	1-3/8	1	RG04MA0131	RG04MA0135	75-80	102-108	PK8004MA01	PK8004MA05	SK80104MA1	SK80104MA5	960-972	109-115
	1-3/4	3	RG04MA0171	RG04MA0175	90-95	122-129			SK80304MA1	SK80304MA5		

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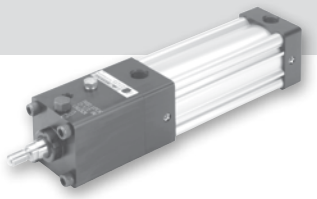
3MAJ/4MAJ Series



- Industry leading NFPA interchangeable rod lock cylinder with flexible construction
- Rod lock holding force equivalent to cylinder output force at 100 PSIG
- Bore sizes – 1-1/2", 2', 2-1/2", 3-1/4", 4", 5", 6" and 8"
- 17 standard styles mounting styles available
- Available in any practical stroke length
- Rod diameters – 5/8", 1", 1-3/8" and 1-3/4"
- Single rod end or double rod ends
- Adjustable cushions are standard at both ends
- Manual override feature standard on all configurations

Operating information

Operating pressure:	100 PSIG (7 bar) maximum air pressure, except 2" bore with 1" rod rated at 80 PSIG) 60 PSIG (4.1 bar) minimum air pressure to release rod lock
Temperature range –	
Standard seals	-10°F to 165°F (-23°C to 74°C)
Fluorocarbon seals	-10°F to 250°F (-23°C to 121°C)
Filtration requirements:	40 micron, dry filtered air

Ordering information

2.00	C		J		4MAJ		U			1	4		A	C	6.000

Bore size

1.50 [1]
2.00
2.50
3.25
4.00
5.00
6.00 [2, 11]
8.00 [2, 11]

Double Rod Cylinder [12]

Specify "K" only if double rod cylinder is required.

Mounting style

Specify mounting style code (see table on following page).

Series

4MAJ	4MA rod lock cylinder
3MAJ	3MA rod lock cylinder

Ports [4]

U	NPTF
R	BSPP
B	BSPT
T	SAE

Piston rod number

Specify rod code number for required diameter. [8,]

Special modification

Specify "S" only for special modification other than rod end, and then describe modification in item notes. (Includes 4MAJ with Linear Position Sensor Option) [7]

Stroke length

Specify stroke length required in inches. [8]

Cushion cap end

C	Cushioned cap end "C" is required

Cushion head end

C	Cushioned head end "C" is required

Piston rod thread type

A	Standard (UNF unified thread)
W	BSF British fine
M *	Metric

* Please reference catalog 0900P-E, page B106.

Cylinder construction

Blank*	Standard (extruded body, standard round lobe orientation)
A*	Extruded body, round lobe orientation rotated 90 degrees from standard
N*	Extruded body, round lobe orientation rotated 180 degrees from standard
Z*	Extruded body, round lobe orientation rotated 270 degrees from standard
T	Aluminum round tube and carbon steel tie rods & nuts

* Please reference catalog 0900P-E, table on page B10. Only applies to 1-1/2" to 4" bore.

Seals

Blank	Standard (nitrile seals)
V	Fluorocarbon seals [2, 5]
E	Fluorocarbon rod wiper and rod seal only [6]

Rod material and gland code

Blank	Standard rod and gland
H	Standard rod and HI LOAD gland
Y	17-4 PH stainless steel rod and standard gland
Z	17-4 PH stainless steel rod and HI LOAD gland

Piston rod thread style

4	Small male
8	Intermediate male
9	Short female
55	For use with split coupler [9]
3	Special (and specify all dimensions required)

Piston type [11]

Blank	Standard (lipseals and magnetic ring) [12]
1	Lipseals, no magnetic ring [12]
2	Lipseals, no magnetic ring (aluminum piston)
3	Lipseals and magnetic ring (aluminum piston)
4	Bumper seals, no magnetic ring
6	Bumper seals and magnetic ring
B	Lipseals, 1/4" thick bumpers both ends [3]
H	Lipseals, 1/4" thick bumper head end [3]
C	Lipseals, 1/4" thick bumper cap end [3]
D	Lipseals and magnetic ring, 1/4" thick bumpers both ends [3]
F	Lipseals and magnetic ring, 1/4" thick bumper head end [3]
R	Lipseals and magnetic ring, 1/4" thick bumper cap end [3]

1 Not available with 1" rod diameter (rod number 2) for 1-1/2" bore. Not available with Linear Position Sensor Option (LPSO).

2 Not available for 3MAJ, please specify 4MAJ.

3 Addition of 1/4" bumper results in a 1/4" stroke loss per bumper, per end. For example, a 6" stroke cylinder with 1/4" bumpers at both ends (option B) has an effective stroke of 5-1/2".

4 Port thread styles only for base cylinder. Rod lock port is always NPTF. If a different rod lock port thread style is required, place an "S" for special in the Special Modification field and indicate the desired rod lock port thread style in the item notes. NPTF cylinder ports are must be ordered for 3MAJ.

5 Fluorocarbon seals for 4MAJ are only for external chemical compatibility applications, not high temperature.

6 Used for external chemical compatibility applications, not high temperature.

7 For Linear Position Sensor Option (LPSO), please include the following information for the Special Modification item notes:
a. Sensor part number (please reference catalog 0900P-E, pages B100-B104)
b. Sensor position
c. Port position (if other than position 1)
d. Length of stop tubing, gross stroke and net stroke (if required)
LPSO not available for 3MAJ, please specify 4MAJ. Cylinder dimensions will approximate dimensions for 4MAJ. Piston Type option (blank), 3, 6, D, F or R is required. Please consult the Actuator Division for additional information.

8 Review Piston Rod Selection Chart, please reference catalog 0900P-E, on page A14 to determine proper piston rod diameter.

9 For additional information regarding this style, please reference catalog 0900P-E, page B105. If non-standard Rod Material and Gland Code is required with this option, please place an "S" for special in Special Modification field and specify Rod Material and Gland Code in the item notes.

10 If a stop tube is required, specify gross stroke (net stroke + stop tube) in the model number, then place an "S" for special in the Special Modification field and specify the stop tube length in the item notes. Not available with Piston Types (blank) and 1 for 1-1/2" - 5" bore cylinders. Stop tube not available for 3MAJ, please specify 4MAJ.

11 6"-8" bore 4MAJ can accept only Piston Types (blank) and 3. The (blank) piston for 6"-8" bores is aluminum, lipseals, no magnetic ring. Composite pistons not available with oversize rod number 3.

12 Double rod cylinders not available with composite piston type.

For ordering purposes, when special options or common modifications are requested, the factory will assign a sequential part number in place of the model number.

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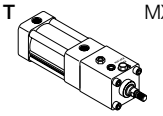
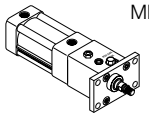
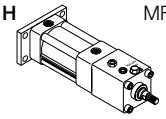
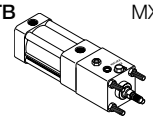
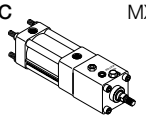
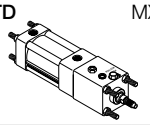
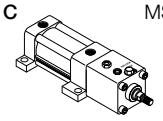
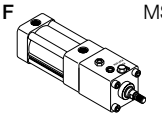
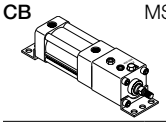
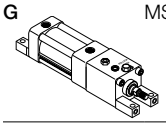
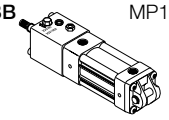
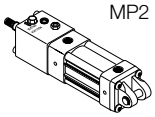
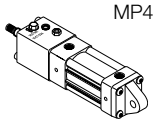
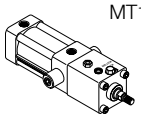
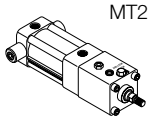
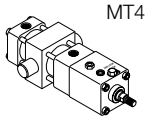
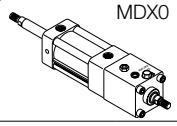
3MAJ*/4MAJ Mounting Styles for 6" to 8" Bore

Mounting style	NFPA mounting	Description	Bore size
T 	MX0	No Mount	1-1/2 - 8
J 	MF1	Head Rectangular Flange	1-1/2 - 6
H 	MF2	Cap Rectangular Flange	1-1/2 - 6
TB 	MX3	Tie Rods Extended Head End	1-1/2 - 8
TC 	MX2	Tie Rods Extended Cap End	1-1/2 - 8
TD 	MX1	Tie Rods Extended Both Ends	1-1/2 - 8
C 	MS2	Side Lug	1-1/2 - 8
F 	MS4	Side Tap	1-1/2 - 8
CB 	MS1	Side End Angle	1-1/2 - 8
G 	MS7	Side End Lug	1-1/2 - 4

Mounting style	NFPA mounting	Description	Bore size
BB 	MP1	Cap Fixed Clevis	1-1/2 - 8
BC 	MP2	Cap Detachable Clevis	1-1/2 - 8
BE 	MP4	Cap Detachable Eye	1-1/2 - 6
D 	MT1	Head Trunnion	1-1/2 - 8
DB 	MT2	Cap Trunnion	1-1/2 - 8
DD 	MT4	Intermediate Trunnion	1-1/2 - 8
KT 	MDX0	Double Rod End, No Mount	1-1/2 - 8

* 3MAJ utilizes base 3MA cylinder and is available in 1-1/2" to 5" bore sizes. Mounting style codes C, D and DB not available for 3MAJ

Sensors
For sensors see page B339.

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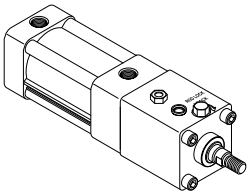
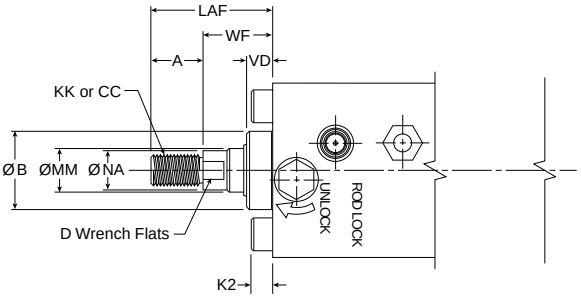
3MAJ/4MAJ Series Single Rod Dimensions

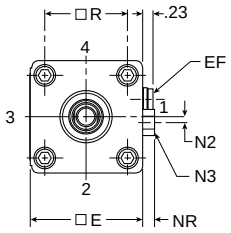
No Mount Basic

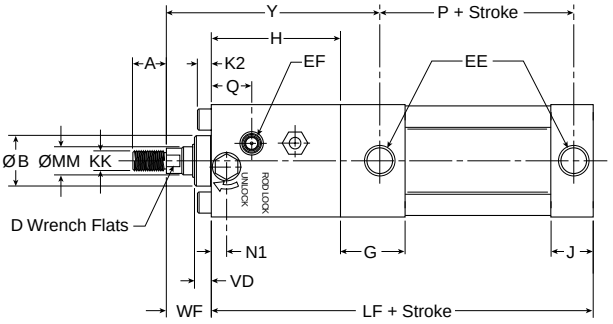
Style T
(NFPA MX0)





For dimensions of all standard rod end styles, see next page.





Style T

Bore size	Rod no.	Rod dia. MM	Thread Style 8 CC	Thread Style 4 & 9 KK	A	AA	+.000 -.002 B	D	E	EE (NPTF)	EF (NPTF)	G	H	J
1-1/2	1	5/8	1/2-20	7/16-20	0.750	2.020	1.124	1/2	2.000	3/8	1/8	1.438	2.625	0.938
2	1	5/8	1/2-20	7/16-20	0.750	2.600	1.124	1/2	2.500	3/8	1/8	1.375	2.875	0.937
	3	1	7/8-14	3/4-16	1.125	2.600	1.499	7/8	2.500	3/8	1/8	1.375	3.875	0.937
2-1/2	1	5/8	1/2-20	7/16-20	0.750	3.100	1.124	1/2	3.000	3/8	1/8	1.344	2.875	0.938
	3	1	7/8-14	3/4-16	1.125	3.100	1.499	7/8	3.000	3/8	1/8	1.344	4.000	0.938
3-1/4	1	1	7/8-14	3/4-16	1.125	3.900	1.499	7/8	3.750	1/2	1/4	1.594	4.500	1.125
	3	1-3/8	1-1/4-12	1-14	1.625	3.900	1.999	1-1/8	3.750	1/2	1/4	1.594	4.875	1.125
4	1	1	7/8-14	3/4-16	1.125	4.700	1.499	7/8	4.500	1/2	1/4	1.594	4.875	1.125
	3	1-3/8	1-1/4-12	1-14	1.625	4.700	1.999	1-1/8	4.500	1/2	1/4	1.594	5.125	1.125
5	1	1	7/8-14	3/4-16	1.125	5.800	1.499	7/8	5.500	1/2	1/4	1.594	5.375	1.219
	3	1-3/8	1-1/4-12	1-14	1.625	5.800	1.999	1-1/8	5.500	1/2	1/4	1.594	5.750	1.219

Bore size	Rod no.	Rod dia. MM	K2	LAF	N1	N2	Hex N3	NA	NR	Q	R	VD	WF	Y	Add stroke LF	Add stroke P
1-1/2	1	5/8	0.250	1.750	0.220	0.140	5/16	0.563	0.190	0.715	1.430	0.375	1.000	4.500	6.250	2.313
2	1	5/8	0.313	1.750	0.340	0.130	1/2	0.563	0.265	0.895	1.840	0.375	1.000	4.750	6.500	2.313
	3	1	0.313	2.500	0.338	0.146	1/2	0.938	0.275	1.065	1.840	0.500	1.375	6.125	7.500	2.313
2-1/2	1	5/8	0.313	1.750	0.346	0.150	1/2	0.563	0.265	0.755	2.190	0.500	1.000	4.813	6.625	2.375
	3	1	0.313	2.500	0.346	0.148	1/2	0.938	0.265	1.120	2.190	0.500	1.375	6.313	7.750	2.375
3-1/4	1	1	0.375	2.500	0.631	0.180	5/8	0.938	0.340	1.510	2.760	0.500	1.375	6.938	8.750	2.625
	3	1-3/8	0.375	3.250	0.813	0.247	5/8	1.313	0.350	1.645	2.760	0.625	1.625	7.563	9.125	2.625
4	1	1	0.375	2.500	0.625	0.240	7/8	0.938	0.500	1.725	3.320	0.500	1.375	7.313	9.125	2.625
	3	1-3/8	0.375	3.250	0.771	0.276	7/8	1.313	0.490	1.679	3.320	0.750	1.625	7.813	9.375	2.625
5	1	1	0.500	2.500	0.720	0.220	7/8	0.938	0.500	1.995	4.100	0.500	1.375	7.813	9.875	2.875
	3	1-3/8	0.500	3.250	0.720	0.220	7/8	1.313	0.490	2.330	4.100	0.750	1.625	8.438	10.250	2.875

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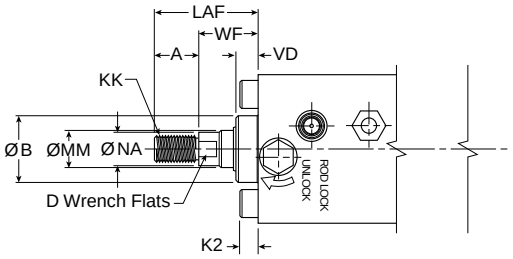
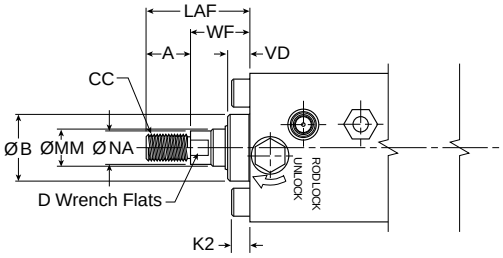
Rod End Dimensions

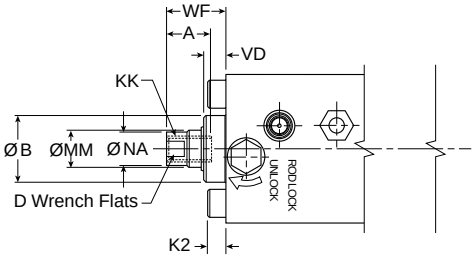
Thread Style 4
(NFPA Style SM)
Small Male



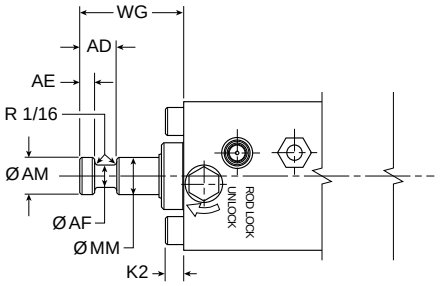
Thread Style 8
(NFPA Style IM)
Intermediate Male



Thread Style 9
(NFPA Style SF)
Short Female



Thread Style 55
For use with Split Coupler
(please reference catalog 0900P-E, page B105 for more information)



Thread Style 3 - "Special Thread"
Special threads, rod extensions, rod eyes, blanks, etc. are also available.
To order, specify "Style 3" and give desired dimensions for KK or CC, A and W or WF.
If otherwise special, please supply dimensioned sketch.

Rod End Dimensions

Bore size	Rod no.	Rod dia. MM	Thread Style 8 CC	Thread Style 4 & 9 KK	A	AD	AE	AF	AM	+.000 -.002 B	D	K2	LAF	NA	VD	WF	WG
1-1/2	1	5/8	1/2-20	7/16-20	0.750	0.625	0.250	0.375	0.570	1.124	1/2	0.250	1.750	0.563	0.375	1.000	1.750
2	1	5/8	1/2-20	7/16-20	0.750	0.625	0.250	0.375	0.570	1.124	1/2	0.313	1.750	0.563	0.375	1.000	1.750
	3	1	7/8-14	3/4-16	1.125	0.938	0.375	0.688	0.950	1.499	7/8	0.313	2.500	0.938	0.500	1.375	2.375
2-1/2	1	5/8	1/2-20	7/16-20	0.750	0.625	0.250	0.375	0.570	1.124	1/2	0.313	1.750	0.563	0.500	1.000	1.750
	3	1	7/8-14	3/4-16	1.125	0.938	0.375	0.688	0.950	1.499	7/8	0.313	2.500	0.938	0.500	1.375	2.375
3-1/4	1	1	7/8-14	3/4-16	1.125	0.938	0.375	0.688	0.950	1.499	7/8	0.375	2.500	0.938	0.500	1.375	2.375
	3	1-3/8	1-1/4-12	1-14	1.625	1.063	0.375	0.875	1.320	1.999	1-1/8	0.375	3.250	1.313	0.625	1.625	2.750
4	1	1	7/8-14	3/4-16	1.125	0.938	0.375	0.688	0.950	1.499	7/8	0.375	2.500	0.938	0.500	1.375	2.375
	3	1-3/8	1-1/4-12	1-14	1.625	1.063	0.375	0.875	1.320	1.999	1-1/8	0.375	3.250	1.313	0.750	1.625	2.750
5	1	1	7/8-14	3/4-16	1.125	0.938	0.375	0.688	0.950	1.499	7/8	0.500	2.500	0.938	0.500	1.375	2.375
	3	1-3/8	1-1/4-12	1-14	1.625	1.063	0.375	0.875	1.320	1.999	1-1/8	0.500	3.250	1.313	0.750	1.625	2.750

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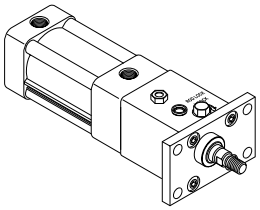
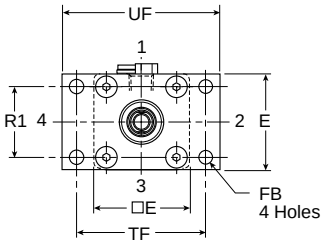
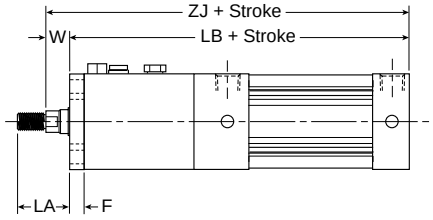
Head Rectangular Flange

Style J
(NFPA MF1)





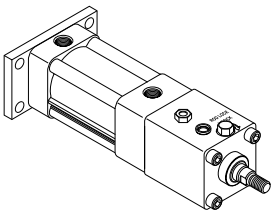


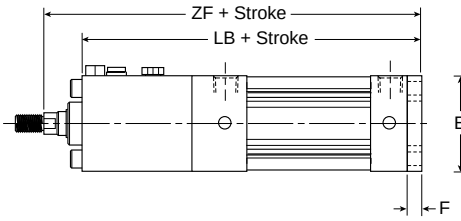
Note: Style J has a W dimension instead of WF and a LA dimension instead of LAF because of the flange installation. Please use dimensions W and LA regarding rod ends only for Style J.

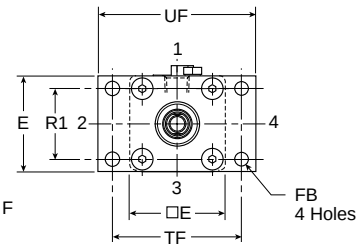
For reference, WF = W + F and LA = W + A.

Cap Rectangular Flange

Style H
(NFPA MF2)







Styles J and H

Bore size	Rod no.	Rod dia. MM	A	E	F	FB	LA	R1	TF	UF	W	Add stroke LB	Add stroke ZF	Add stroke ZJ
1-1/2	1	5/8	0.750	2.000	0.375	0.313	1.375	1.430	2.750	3.375	0.625	6.625	7.625	7.250
2	1	5/8	0.750	2.500	0.375	0.375	1.375	1.840	3.375	4.125	0.625	6.875	7.875	7.500
	3	1	1.125	2.500	0.375	0.375	2.125	1.840	3.375	4.125	1.000	7.875	9.250	8.875
2-1/2	1	5/8	0.750	3.000	0.375	0.375	1.375	2.190	3.875	4.625	0.625	7.000	8.000	7.625
	3	1	1.125	3.000	0.375	0.375	2.125	2.190	3.875	4.625	1.000	8.125	9.500	9.125
3-1/4	1	1	1.125	3.750	0.625	0.438	1.875	2.760	4.688	5.500	0.750	9.375	10.750	10.125
	3	1-3/8	1.625	3.750	0.625	0.438	2.625	2.760	4.688	5.500	1.000	9.750	11.375	10.750
4	1	1	1.125	4.500	0.625	0.438	1.875	3.320	5.438	6.250	0.750	9.750	11.125	10.500
	3	1-3/8	1.625	4.500	0.625	0.438	2.625	3.320	5.438	6.250	1.000	10.000	11.625	11.000
5	1	1	1.125	5.500	0.625	0.563	1.875	4.100	6.625	7.625	0.750	10.500	11.875	11.250
	3	1-3/8	1.625	5.500	0.625	0.563	2.625	4.100	6.625	7.625	1.000	10.875	12.500	11.875

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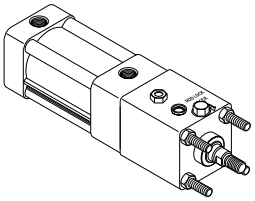
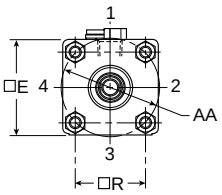
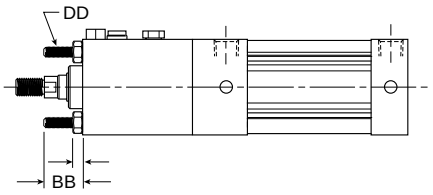
Tie Rods Extended Head End Mount

Style TB
(NFPA MX3)

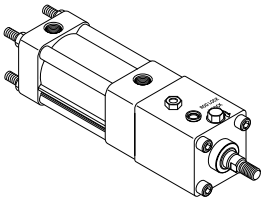


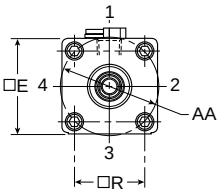


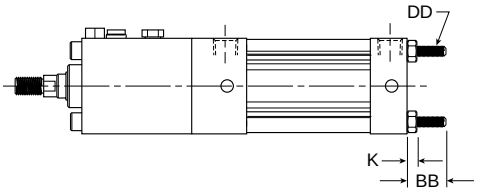


Tie Rods Extended Cap End Mount

Style TC
(NFPA MX2)

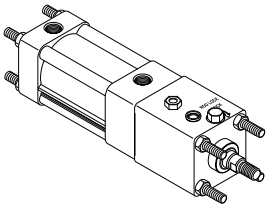


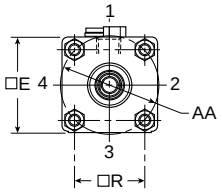


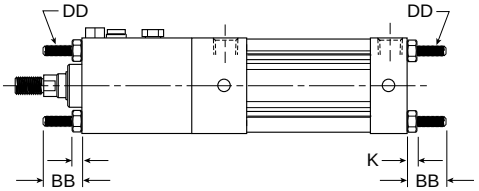


Tie Rods Extended Both Ends Mount

Style TD
(NFPA MX1)







Styles TB, TC and TD

Bore size	Rod no.	Rod dia. MM	AA	BB	DD	E	K	R
1-1/2	1	5/8	2.020	1.000	1/4-28	2.000	0.250	1.430
2	1	5/8	2.600	1.125	5/16-24	2.500	0.313	1.840
	3	1	2.600	1.125	5/16-24	2.500	0.313	1.840
2-1/2	1	5/8	3.100	1.125	5/16-24	3.000	0.313	2.190
	3	1	3.100	1.125	5/16-24	3.000	0.313	2.190
3-1/4	1	1	3.900	1.375	3/8-24	3.750	0.375	2.760
	3	1-3/8	3.900	1.375	3/8-24	3.750	0.375	2.760
4	1	1	4.700	1.375	3/8-24	4.500	0.375	3.320
	3	1-3/8	4.700	1.375	3/8-24	4.500	0.375	3.320
5	1	1	5.800	1.813	1/2-20	5.500	0.438	4.100
	3	1-3/8	5.800	1.813	1/2-20	5.500	0.438	4.100

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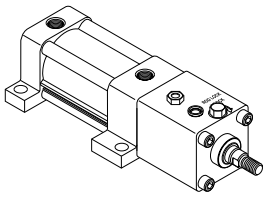
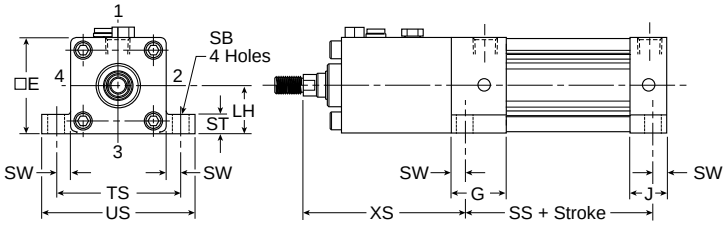
Side Lug Mount

Style C (only 4MAJ)
(NFPA MS2)



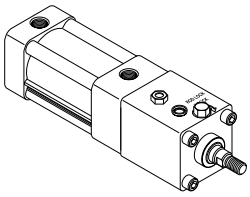


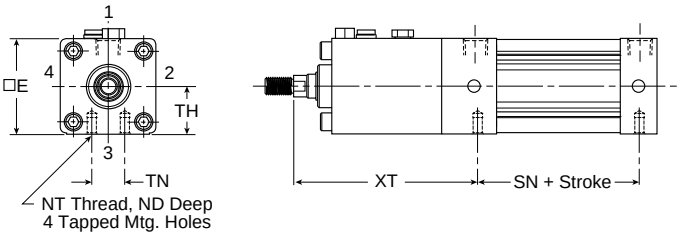
Style C

Bore size	Rod no.	Rod dia. MM	E	G	J	+/-.003 LH	SB	ST	SW	TS	US	XS	Add stroke SS
1-1/2	1	5/8	2.000	1.438	0.938	0.993	0.438	0.500	0.375	2.750	3.500	4.000	2.875
2	1	5/8	2.500	1.375	0.937	1.243	0.438	0.500	0.375	3.250	4.000	4.250	2.875
	3	1	2.500	1.375	0.937	1.243	0.438	0.500	0.375	3.250	4.000	5.625	2.875
2-1/2	1	5/8	3.000	1.344	0.938	1.493	0.438	0.500	0.375	3.750	4.500	4.250	3.000
	3	1	3.000	1.344	0.938	1.493	0.438	0.500	0.375	3.750	4.500	5.750	3.000
3-1/4	1	1	3.750	1.594	1.125	1.868	0.563	0.750	0.500	4.750	5.750	6.375	3.250
	3	1-3/8	3.750	1.594	1.125	1.868	0.563	0.750	0.500	4.750	5.750	7.000	3.250
4	1	1	4.500	1.594	1.125	2.243	0.563	0.750	0.500	5.500	6.500	6.750	3.250
	3	1-3/8	4.500	1.594	1.125	2.243	0.563	0.750	0.500	5.500	6.500	7.250	3.250
5	1	1	5.500	1.594	1.219	2.743	0.813	1.000	0.688	6.875	8.250	7.438	3.125
	3	1-3/8	5.500	1.594	1.219	2.743	0.813	1.000	0.688	6.875	8.250	8.063	3.125

Side Tap Mount

Style F
(NFPA MS4)





Style F

Bore size	Rod no.	Rod dia. MM	E	ND	NT	+/-.003 TH	TN	XT	Add stroke SN
1-1/2	1	5/8	2.000	0.375	1/4-20	0.993	0.625	4.563	2.250
2	1	5/8	2.500	0.438	5/16-18	1.243	0.875	4.813	2.250
	3	1	2.500	0.375	5/16-18	1.243	0.875	6.188	2.250
2-1/2	1	5/8	3.000	0.625	3/8-16	1.493	1.250	4.813	2.375
	3	1	3.000	0.625	3/8-16	1.493	1.250	6.313	2.375
3-1/4	1	1	3.750	0.750	1/2-13	1.868	1.500	6.938	2.625
	3	1-3/8	3.750	0.750	1/2-13	1.868	1.500	7.563	2.625
4	1	1	4.500	0.750	1/2-13	2.243	2.063	7.313	2.625
	3	1-3/8	4.500	0.750	1/2-13	2.243	2.063	7.813	2.625
5	1	1	5.500	0.938	5/8-11	2.743	2.688	7.813	2.875
	3	1-3/8	5.500	0.938	5/8-11	2.743	2.688	8.438	2.875

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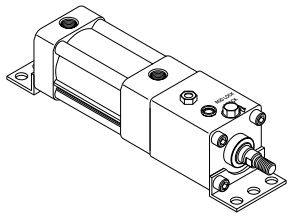
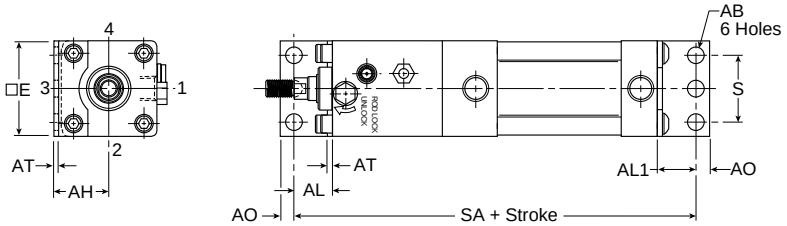
Side End Angle Mount

Style CB
(NFPA MS1)



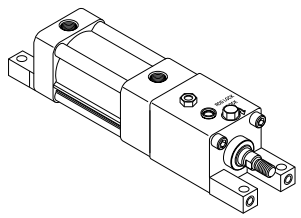


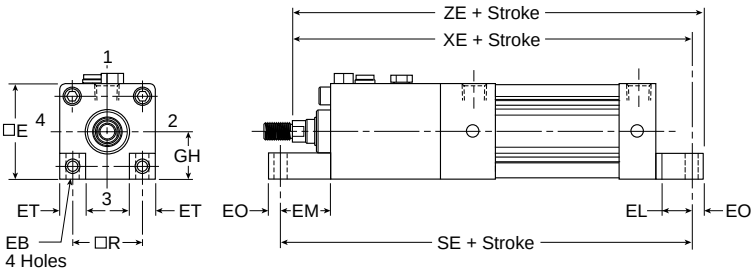
Style CB

Bore size	Rod no.	Rod dia. MM	AB	AH	AL	AL1	AO	AT	E	S	Add stroke SA
1-1/2	1	5/8	0.438	1.188	1.000	1.000	0.375	0.125	2.000	1.250	8.250
2	1	5/8	0.438	1.438	1.000	1.000	0.375	0.125	2.500	1.750	8.500
	3	1	0.438	1.438	1.000	1.000	0.375	0.125	2.500	1.750	9.500
2-1/2	1	5/8	0.438	1.625	1.000	1.000	0.375	0.125	3.000	2.250	8.625
	3	1	0.438	1.625	1.000	1.000	0.375	0.125	3.000	2.250	9.750
3-1/4	1	1	0.563	1.938	1.250	1.250	0.500	0.125	3.750	2.750	11.250
	3	1-3/8	0.563	1.938	1.250	1.250	0.500	0.125	3.750	2.750	11.625
4	1	1	0.563	2.250	1.875	1.250	0.500	0.125	4.500	3.500	12.250
	3	1-3/8	0.563	2.250	1.875	1.250	0.500	0.125	4.500	3.500	12.500
5	1	1	0.688	2.750	1.375	1.375	0.625	0.188	5.500	4.250	12.625
	3	1-3/8	0.688	2.750	1.375	1.375	0.625	0.188	5.500	4.250	13.000

Side End Lug Mount

Style G
(NFPA MS7)





Style G

Bore size	Rod no.	Rod dia. MM	E	EB	EL	EM	EO	ET	+/-.003 GH	R	Add stroke SE	XE	ZE
1-1/2	1	5/8	2.000	0.281	0.750	1.125	0.250	0.563	0.993	1.430	8.125	8.000	8.250
2	1	5/8	2.500	0.344	0.938	1.313	0.313	0.688	1.243	1.840	8.750	8.438	8.750
	3	1	2.500	0.344	0.938	1.313	0.313	0.688	1.243	1.840	9.750	9.813	10.125
2-1/2	1	5/8	3.000	0.344	1.063	1.438	0.313	0.813	1.493	2.190	9.125	8.688	9.000
	3	1	3.000	0.344	1.063	1.438	0.313	0.813	1.493	2.190	10.250	10.188	10.500
3-1/4	1	1	3.750	0.406	0.875	1.500	0.375	1.000	1.868	2.760	11.125	11.000	11.375
	3	1-3/8	3.750	0.406	0.875	1.500	0.375	1.000	1.868	2.760	11.500	11.625	12.000
4	1	1	4.500	0.406	1.000	1.625	0.375	1.188	2.243	3.320	11.750	11.500	11.875
	3	1-3/8	4.500	0.406	1.000	1.625	0.375	1.188	2.243	3.320	12.000	12.000	12.375

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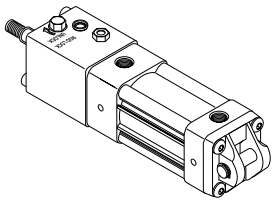
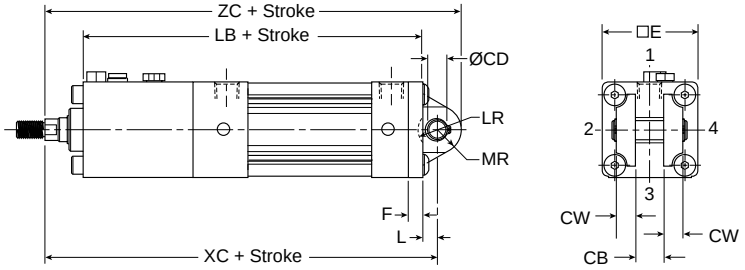
Cap Fixed Clevis Mount

Style BB
(NFPA MP1)

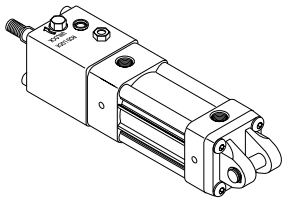
NOTE: For maximum swivel angle of BB mount with rear mounting plate, please reference catalog 0900P-E, cylinder accessories on page B108.

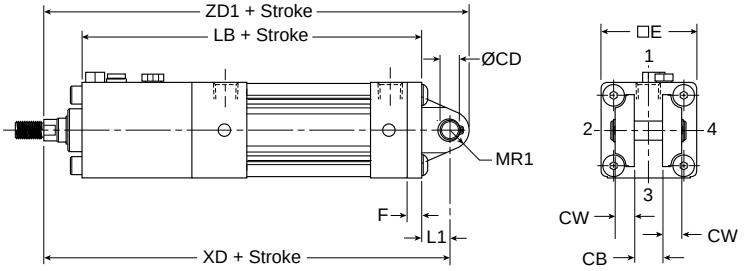




Cap Detachable Clevis Mount

Style BC
(NFPA MP2)





Styles BB and BC

Bore size	Rod no.	Rod dia. MM	CB	+.000 -.002 CD	CW	E	F	L	L1	LR	MR	MR1	Add stroke LB	XC	XD	ZC	ZD1
1-1/2	1	5/8	0.750	0.501	0.500	2.000	0.375	0.375	0.750	0.750	0.625	0.500	6.625	8.000	8.375	8.625	8.875
2	1	5/8	0.750	0.501	0.500	2.500	0.375	0.375	0.750	0.750	0.625	0.500	6.875	8.250	8.625	8.875	9.125
	3	1	0.750	0.501	0.500	2.500	0.375	0.375	0.750	0.750	0.625	0.500	7.875	9.625	10.000	10.250	10.500
2-1/2	1	5/8	0.750	0.501	0.500	3.000	0.375	0.375	0.750	0.750	0.625	0.500	7.000	8.375	8.750	9.000	9.250
	3	1	0.750	0.501	0.500	3.000	0.375	0.375	0.750	0.750	0.625	0.500	8.125	9.875	10.250	10.500	10.750
3-1/4	1	1	1.250	0.751	0.625	3.750	0.625	0.625	1.250	1.000	0.938	0.750	9.375	11.375	12.000	12.313	12.750
	3	1-3/8	1.250	0.751	0.625	3.750	0.625	0.625	1.250	1.000	0.938	0.750	9.750	12.000	12.625	12.938	13.375
4	1	1	1.250	0.751	0.625	4.500	0.625	0.625	1.250	1.000	0.938	0.750	9.750	11.750	12.375	12.688	13.125
	3	1-3/8	1.250	0.751	0.625	4.500	0.625	0.625	1.250	1.000	0.938	0.750	10.000	12.250	12.875	13.188	13.625
5	1	1	1.250	0.751	0.625	5.500	0.625	0.625	1.250	1.000	0.938	0.750	10.500	12.500	13.125	13.438	13.875
	3	1-3/8	1.250	0.751	0.625	5.500	0.625	0.625	1.250	1.000	0.938	0.750	10.875	13.125	13.750	14.063	14.500

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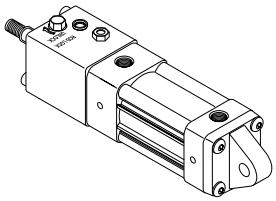
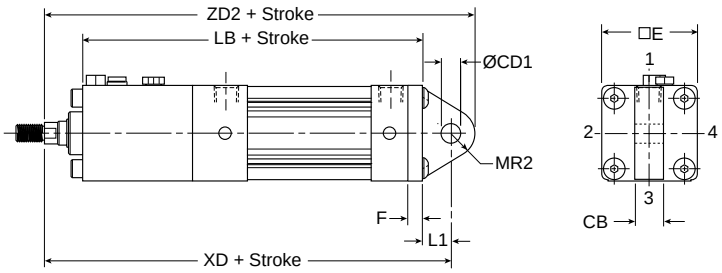
Cap Detachable Eye Mount*

Style BE
(NFPA MP4)

*Not available for 5" bore 3MAJ, please specify 4MAJ.





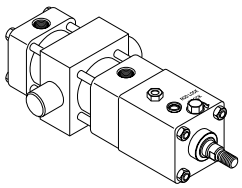
Style BE

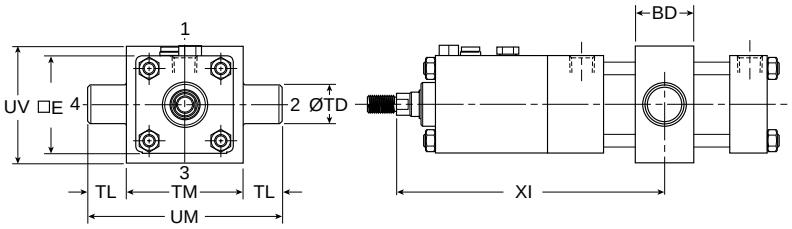
Bore size	Rod no.	Rod dia. MM	CB	+.002 +.004 CD1	E	F	L1	MR2	Add Stroke LB	XD	ZD2
1-1/2	1	5/8	0.750	0.500	2.000	0.375	0.750	0.625	6.625	8.375	9.000
2	1	5/8	0.750	0.500	2.500	0.375	0.750	0.625	6.875	8.625	9.250
	3	1	0.750	0.500	2.500	0.375	0.750	0.625	7.875	10.000	10.625
2-1/2	1	5/8	0.750	0.500	3.000	0.375	0.750	0.688	7.000	8.750	9.438
	3	1	0.750	0.500	3.000	0.375	0.750	0.688	8.125	10.250	10.938
3-1/4	1	1	1.250	0.750	3.750	0.625	1.250	0.875	9.375	12.000	12.875
	3	1-3/8	1.250	0.750	3.750	0.625	1.250	0.875	9.750	12.625	13.500
4	1	1	1.250	0.750	4.500	0.625	1.250	0.875	9.750	12.375	13.250
	3	1-3/8	1.250	0.750	4.500	0.625	1.250	0.875	10.000	12.875	13.750
5 *	1	1	1.250	0.750	5.500	0.625	1.250	0.875	10.500	13.125	14.000
	3	1-3/8	1.250	0.750	5.500	0.625	1.250	0.875	10.875	13.750	14.625

Intermediate Trunnion Mount

Style DD
(NFPA MT4)

Note: Tie rod nuts for Style DD have a slot instead of external hex.





Note: Style DD requires minimum stroke per table.

Style DD

Bore size	Rod no.	Rod dia. MM	E	BD	+.000 -.001 TD	TL	TM	UM	UV	Min. XI	Min. stroke
1-1/2	1	5/8	2.000	1.250	1.000	1.000	2.500	4.500	2.500	5.69	3.250
2	1	5/8	2.500	1.500	1.000	1.000	3.000	5.000	3.000	6.00	4.000
	3	1	2.500	1.500	1.000	1.000	3.000	5.000	3.000	7.38	4.000
2-1/2	1	5/8	3.000	1.500	1.000	1.000	3.500	5.500	3.500	5.97	3.875
	3	1	3.000	1.500	1.000	1.000	3.500	5.500	3.500	7.47	3.875
3-1/4	1	1	3.750	2.000	1.000	1.000	4.500	6.500	4.250	13.72	4.375
	3	1-3/8	3.750	2.000	1.000	1.000	4.500	6.500	4.250	14.34	4.375
4	1	1	4.500	2.000	1.000	1.000	5.250	7.250	5.000	14.09	4.875
	3	1-3/8	4.500	2.000	1.000	1.000	5.250	7.250	5.000	14.59	4.875
5	1	1	5.500	2.000	1.000	1.000	6.250	8.250	6.000	16.34	5.125
	3	1-3/8	5.500	2.000	1.000	1.000	6.250	8.250	6.000	16.97	5.125

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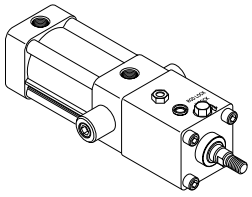
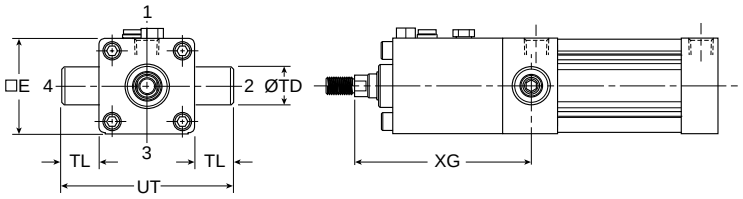
Head Trunnion Mount

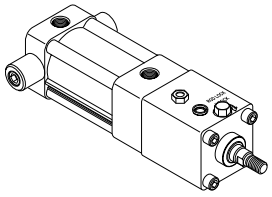
Style D (only 4MAJ)
(NFPA MT1)

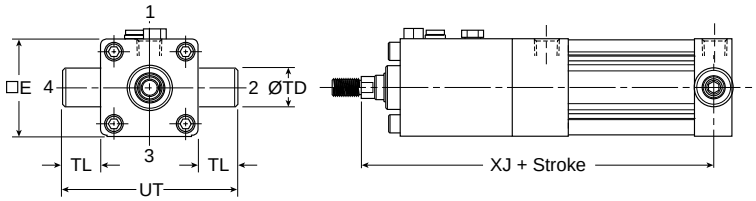




Cap Trunnion Mount

Style DB (only 4MAJ)
(NFPA MT2)





Styles D and DB

Bore size	Rod no.	Rod dia. MM	E	+.000 -.001 TD	TL	UT	XG	XJ
1-1/2	1	5/8	2.000	1.000	1.000	4.000	4.375	6.750
2	1	5/8	2.500	1.000	1.000	4.500	4.625	7.000
	3	1	2.500	1.000	1.000	4.500	6.000	8.375
2-1/2	1	5/8	3.000	1.000	1.000	5.000	4.625	7.125
	3	1	3.000	1.000	1.000	5.000	6.125	8.625
3-1/4	1	1	3.750	1.000	1.000	5.750	6.750	9.500
	3	1-3/8	3.750	1.000	1.000	5.750	7.375	10.125
4	1	1	4.500	1.000	1.000	6.500	7.125	9.875
	3	1-3/8	4.500	1.000	1.000	6.500	7.625	10.375
5	1	1	5.500	1.000	1.000	7.500	7.625	10.625
	3	1-3/8	5.500	1.000	1.000	7.500	8.250	11.250

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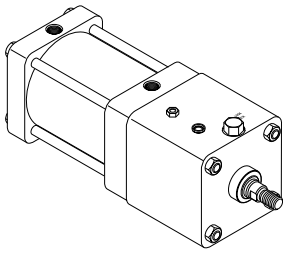
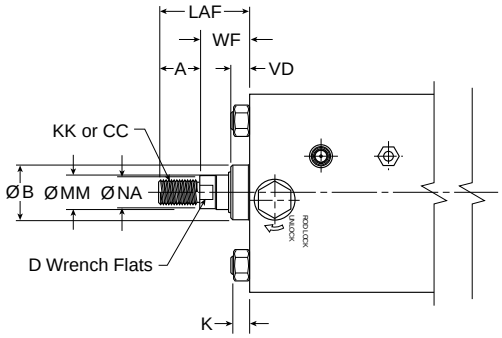
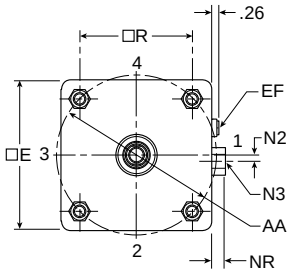
No Mount

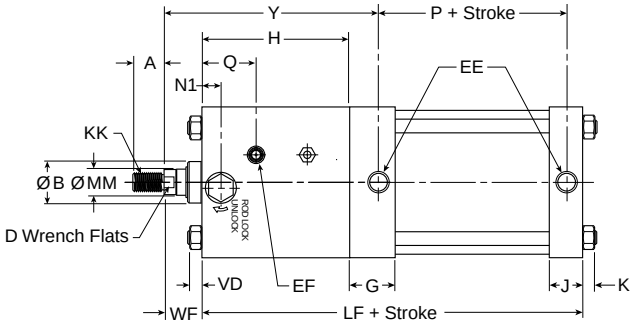
Style T
(NFPA MX0)





For dimensions of all standard rod end styles, see next page.





Style T

Bore size	Rod no.	Rod dia. MM	Thread Style 8 CC	Thread Style 4 & 9 KK	A	AA	+.000 -.002 B	D	E	EE (NPTF)	EF (NPTF)	G	H	J
6	1	1-3/8	1-1/4 - 12	1-14	1.625	6.900	1.999	1-1/8	6.500	3/4	1/4	1.910	6.375	1.410
	3	1-3/4	1-1/2 - 12	1-1/4 - 12	2.000	6.900	2.374	1-1/2	6.500	3/4	1/4	1.910	6.875	1.410
8	1	1-3/8	1-1/4 - 12	1-14	1.625	9.100	1.999	1-1/8	8.500	3/4	1/4	1.810	6.625	1.440
	3	1-3/4	1-1/2 - 12	1-1/4 - 12	2.000	9.100	2.374	1-1/2	8.500	3/4	1/4	1.810	7.125	1.440

Bore size	Rod no.	Rod dia. MM	K	LAF	N1	N2	Hex N3	NA	NR	Q	R	VD	WF	Y	Add stroke LF	Add stroke P
6	1	1-3/8	0.438	3.250	1.165	0.177	1-5/16	1.313	0.750	2.705	4.880	0.755	1.625	9.188	11.375	3.125
	3	1-3/4	0.438	3.875	1.495	0.177	1-5/16	1.688	0.740	3.055	4.880	0.875	1.875	9.938	11.875	3.125
8	1	1-3/8	0.563	3.250	1.305	0.177	1-5/16	1.313	0.740	2.885	6.440	0.755	1.625	9.375	11.750	3.250
	3	1-3/4	0.563	3.875	1.570	0.177	1-5/16	1.688	0.740	3.145	6.440	0.875	1.875	10.125	12.250	3.250

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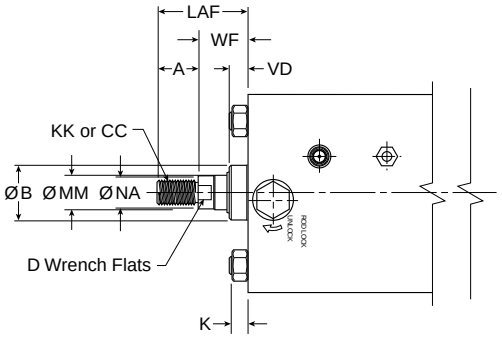
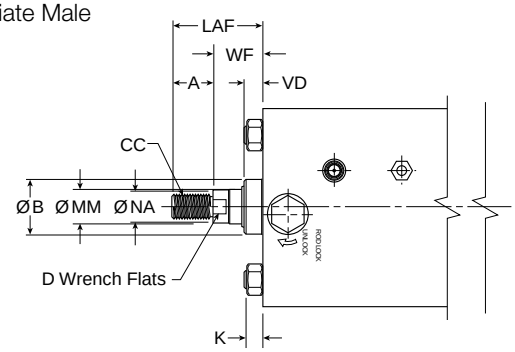
Rod End Dimensions – 6" to 8" Bore Sizes

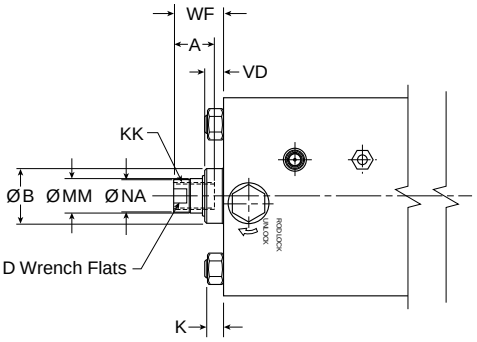
Thread Style 4
(NFPA Style SM)
Small Male



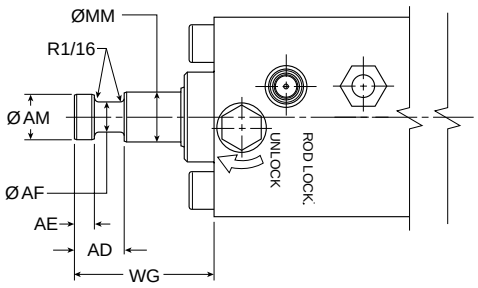
Thread Style 8
(NFPA Style IM)
Intermediate Male



Thread Style 9
(NFPA Style SF)
Short Female



Thread Style 55
For use with Split Coupler
(please reference catalog 0900P-E, page B105 for more information)



Thread Style 3 - "Special Thread"
Special threads, rod extensions, rod eyes, blanks, etc. are also available.
To order, specify "Style 3" and give desired dimensions for KK or CC, A and W or WF.
If otherwise special, please supply dimensioned sketch.

Rod End Dimensions

Bore size	Rod no.	Rod dia. MM	Thread Style 8 CC	Thread Style 4 & 9 KK	A	AD	AE	AF	AM	+.000 -.002 B	D	K	LAF	NA	VD	WF	WG
6	1	1-3/8	1-1/4-12	1-14	1.625	1.063	0.375	0.875	1.320	1.999	1-1/8	0.438	3.250	1.313	0.755	1.625	2.750
	3	1-3/4	1-1/2-12	1-1/4-12	2.000	1.313	0.500	1.125	1.700	2.374	1-1/2	0.438	3.875	1.688	0.875	1.875	3.125
8	1	1-3/8	1-1/4-12	1-14	1.625	1.063	0.375	0.875	1.320	1.999	1-1/8	0.563	3.250	1.313	0.755	1.625	2.750
	3	1-3/4	1-1/2-12	1-1/4-12	2.000	1.313	0.500	1.125	1.700	2.374	1-1/2	0.563	3.875	1.688	0.875	1.875	3.125

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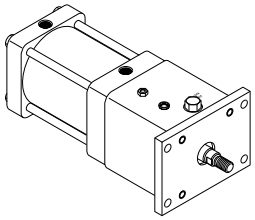
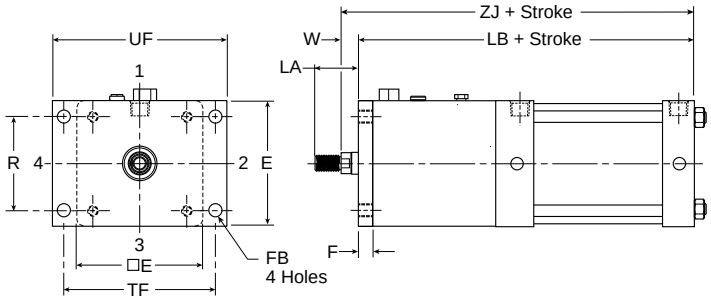
Head Rectangular Flange Mount

Style J
(NFPA MF1)
(only 6" Bore)



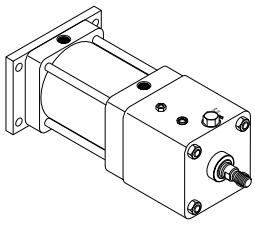


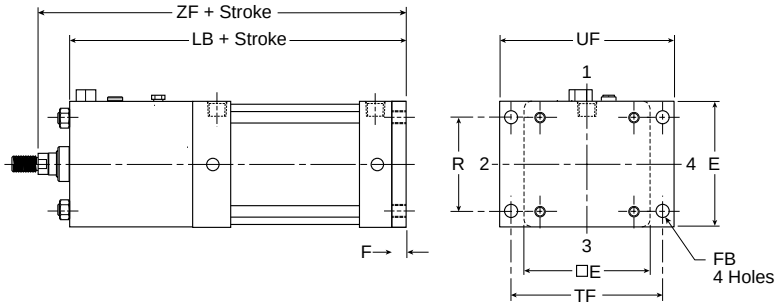
Note: Style J has a W dimension instead of WF and a LA dimension instead of LAF because of the flange installation. Please use dimensions W and LA regarding rod ends only for Style J.

For reference, WF = W + F and LA = W + A.

Cap Rectangular Flange Mount

Style H
(NFPA MF2)
(only 6" Bore)





Styles J and H

Bore size	Rod no.	Rod dia. MM	A	E	F	FB	LA	R	TF	UF	W	Add stroke LB	ZF	ZJ
6	1	1-3/8	1.625	6.500	0.750	0.563	2.500	4.880	7.625	8.625	0.875	12.125	13.750	13.000
	3	1-3/4	2.000	6.500	0.750	0.563	3.125	4.880	7.625	8.625	1.125	12.625	14.500	13.750

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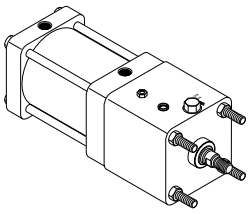
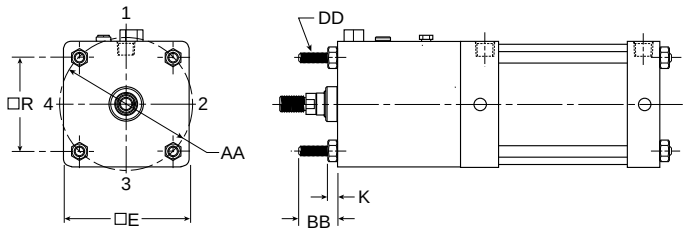
Tie Rods Extended Head End Mount

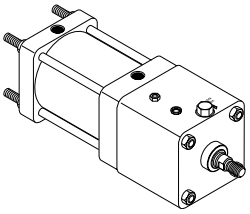
Style TB
(NFPA MX3)

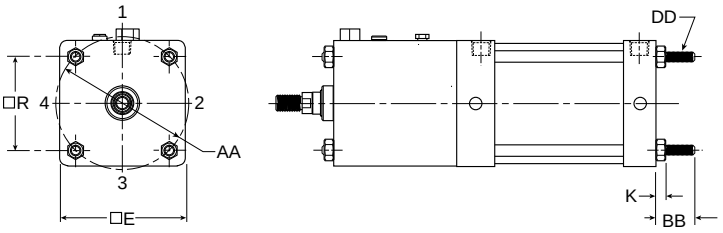




Tie Rods Extended Cap End Mount

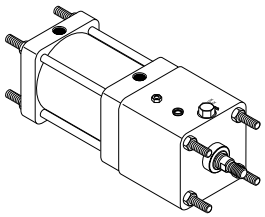
Style TC
(NFPA MX2)

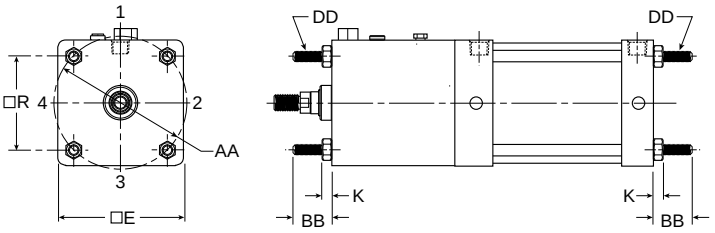




Tie Rods Extended Both Ends Mount

Style TD
(NFPA MX1)





Styles TB, TC and TD

Bore size	Rod no.	Rod dia. MM	AA	BB	DD	E	K	R
6	1	1-3/8	6.900	1.813	1/2-20	6.500	0.438	4.880
	3	1-3/4	6.900	1.813	1/2-20	6.500	0.438	4.880
8	1	1-3/8	9.100	2.313	5/8-18	8.500	0.563	6.440
	3	1-3/4	9.100	2.313	5/8-18	8.500	0.563	6.440

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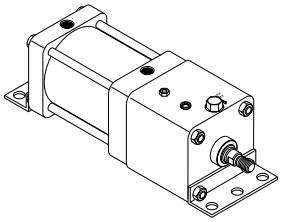
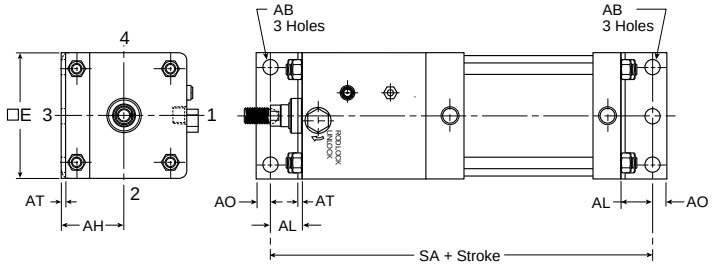
Side End Angle Mount

Style CB
(NFPA MS1)



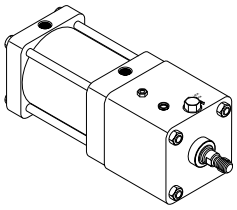


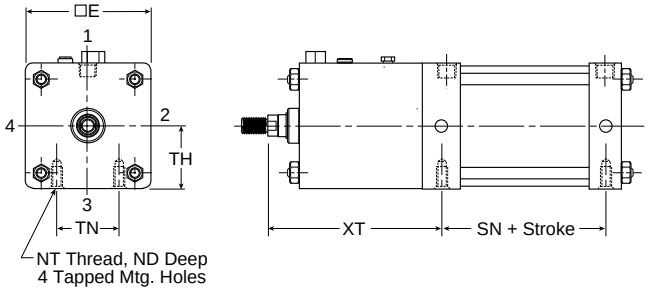
Style CB

Bore size	Rod no.	Rod dia. MM	AB	AH	AL	AO	AT	E	S	Add stroke SA
6	1	1-3/8	0.813	3.250	1.375	0.625	0.188	6.500	5.250	14.125
	3	1-3/4	0.813	3.250	1.375	0.625	0.188	6.500	5.250	14.625
8	1	1-3/8	0.813	4.250	1.813	0.688	0.250	8.500	7.125	15.375
	3	1-3/4	0.813	4.250	1.813	0.688	0.250	8.500	7.125	15.875

Side Tap Mount

Style F
(NFPA MS4)



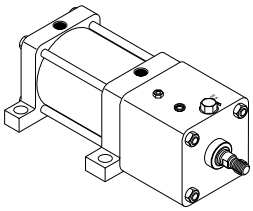


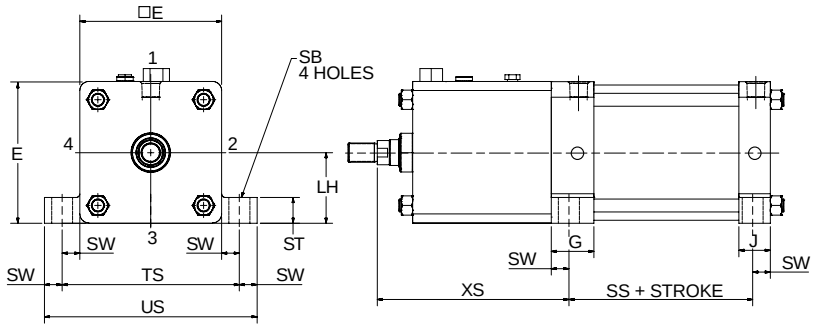
Style F

Bore size	Rod no.	Rod dia. MM	E	ND	NT	+/-.003 TH	TN	XT	Add stroke SN
6	1	1-3/8	6.500	1.125	3/4-10	3.243	3.250	9.188	3.125
	3	1-3/4	6.500	1.125	3/4-10	3.243	3.250	9.938	3.125
8	1	1-3/8	8.500	1.125	3/4-10	4.243	4.500	9.438	3.250
	3	1-3/4	8.500	1.125	3/4-10	4.243	4.500	10.188	3.250

Side Lug Mount

Style C
(NFPA MS2)





Style C

Bore size	Rod no.	Rod dia. MM	E	G	J	+/-.003 LH	SB	ST	SW	TS	US	XS	Add stroke SS
6	1	1-3/8	6.500	1.910	1.410	3.243	0.813	1.000	0.688	7.875	9.250	8.688	3.625
	3	1-3/4	6.500	1.910	1.410	3.243	0.813	1.000	0.688	7.875	9.250	9.438	3.625
8	1	1-3/8	8.500	1.810	1.440	4.243	0.813	1.000	0.688	9.875	11.250	8.938	3.750
	3	1-3/4	8.500	1.810	1.440	4.243	0.813	1.000	0.688	9.875	11.250	9.688	3.750

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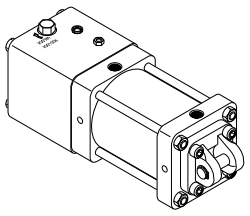
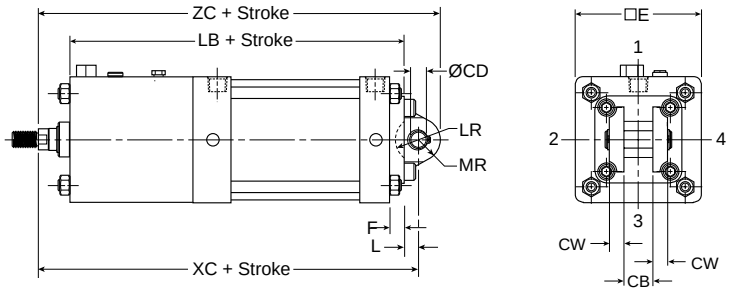
Cap Fixed Clevis

Style BB
(NFPA MP1)

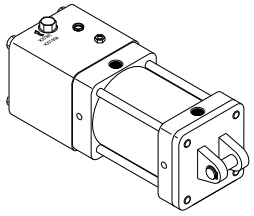
NOTE: For maximum swivel angle of BB mount with rear mounting plate, please reference catalog 0900P-E, cylinder accessories on page B108.

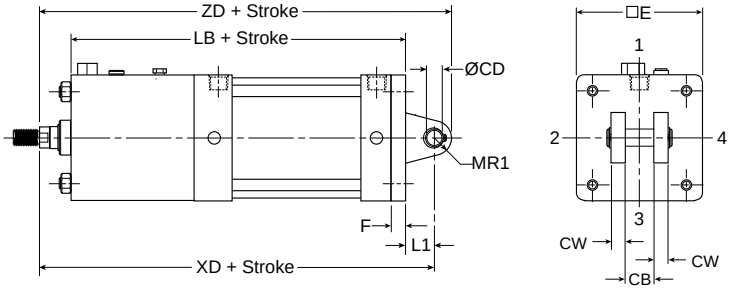




Cap Detachable Clevis

Style BC
(NFPA MP2)



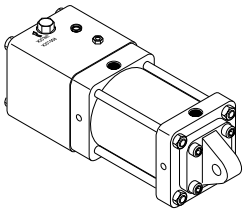


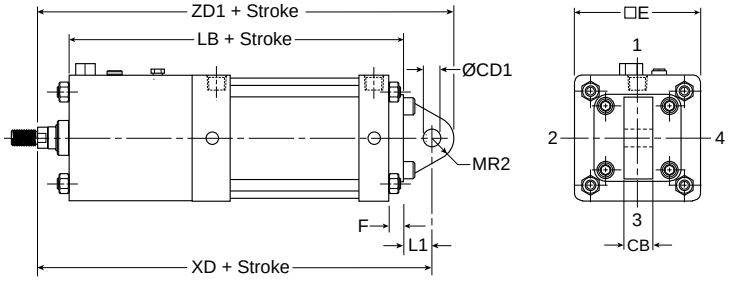
Styles BB and BC

Bore size	Rod no.	Rod dia. MM	CB	+.000 -.002 CD	CW	E	F	L	L1	LR	MR	MR1	Add stroke LB	XC	XD	ZC	ZD
6	1	1-3/8	1.500	1.001	0.750	6.500	0.750	0.750	1.500	1.250	1.125	1.000	12.125	14.500	15.250	15.625	16.250
	3	1-3/4	1.500	1.001	0.750	6.500	0.750	0.750	1.500	1.250	1.125	1.000	12.625	15.250	16.000	16.375	17.000
8	1	1-3/8	1.500	1.001	0.750	8.500	0.750	0.750	1.500	1.250	1.125	1.000	12.500	14.875	15.625	16.000	16.625
	3	1-3/4	1.500	1.001	0.750	8.500	0.750	0.750	1.500	1.250	1.125	1.000	13.000	15.625	16.375	16.750	17.375

Cap Detachable Eye Mount

Style BE
(NFPA MP4)
(only 6" Bore)





Style BE

Bore size	Rod no.	Rod dia. MM	CB	+.002 +.004 CD1	E	F	L1	MR2	Add stroke LB	XD	ZD1
6	1	1-3/8	1.500	1.000	6.500	0.750	1.500	1.125	12.125	15.250	16.375
	3	1-3/4	1.500	1.000	6.500	0.750	1.500	1.125	12.625	16.000	17.125

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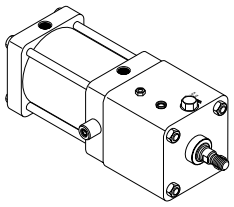
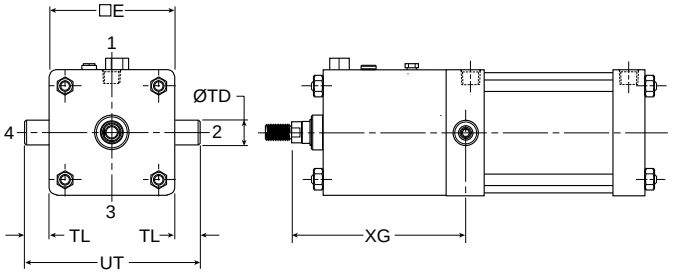
Head Trunnion Mount

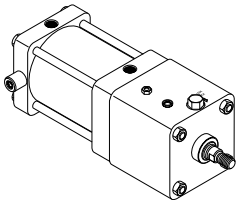
Style D
(NFPA MT1)

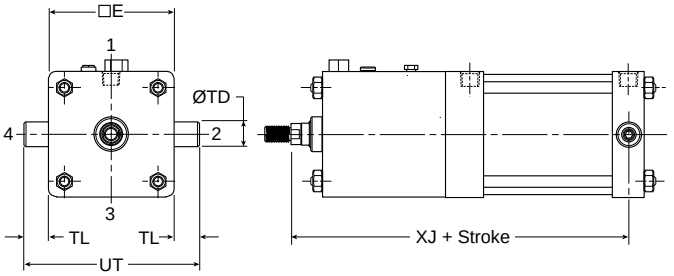




Cap Trunnion Mount

Style DB
(NFPA MT2)



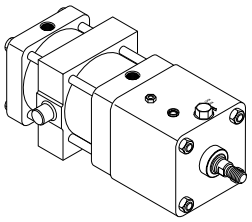


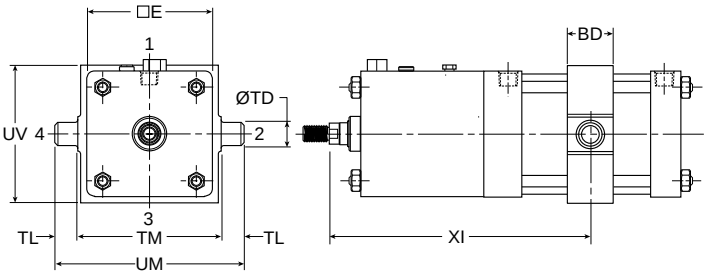
Styles D and DB

Bore size	Rod no.	Rod dia. MM	E	+.000 -.001 TD	TL	UT	XG	XJ
6	1	1-3/8	6.500	1.375	1.375	9.250	9.000	12.250
	3	1-3/4	6.500	1.375	1.375	9.250	9.750	13.000
8	1	1-3/8	8.500	1.375	1.375	11.250	9.250	12.625
	3	1-3/4	8.500	1.375	1.375	11.250	10.000	13.375

Intermediate Trunnion Mount

Style DD
(NFPA MT4)





Note: Style DD requires minimum stroke per table.

Style DD

Bore size	Rod no.	Rod dia. MM	E	BD	+.000 -.001 TD	TL	TM	UM	UV	Min. XI	Min. stroke
6	1	1-3/8	6.500	2.500	1.375	1.375	7.625	10.375	7.000	20.16	6.125
	3	1-3/4	6.500	2.500	1.375	1.375	7.625	10.375	7.000	20.19	6.125
8	1	1-3/8	8.500	2.500	1.375	1.375	9.750	12.500	9.500	26.31	6.500
	3	1-3/4	8.500	2.500	1.375	1.375	9.750	12.500	9.500	27.06	6.500

Kits & Accessories
See page B37.

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Richland, Michigan
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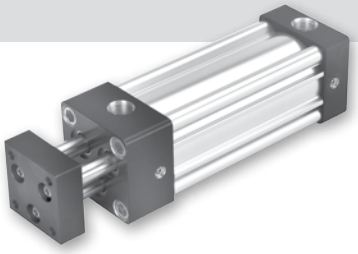
4MNR Series

- Bore sizes – 1-1/8", 1-1/2", 2", 2-1/2", 3-1/4", and 4"
- Non-rotating cylinder, multiple piston rods
- Strokes available in any practical stroke length
- Steel tooling plate standard, specials available
- Single rod end or double rod ends
- Optional adjustable cushions available
- Mounting styles – 14 standard styles
- RoHS compliant



Operating information

Operating pressure:	250 PSIG (17 bar)
Temperature range –	
Standard seals	-10°F to 165°F (-23°C to 74°C)
Fluorocarbon seals	-10°F to 250°F (-23°C to 121°C)
Filtration requirements:	40 micron, dry filtered air

Ordering information

2.00			J		4MNR	2	U			T	9		A		6.000

Bore size

1.12 [1]
1.50 [1]
2.00
2.50
3.25
4.00

Double rod cylinder

Specify "K" only if double rod cylinder is required.

Mounting style

Specify mounting style code (see table on following page).

Cushion head end

Blank	Non-cushioned head end
C	Cushioned head end

Cylinder construction

Blank*	Standard (extruded body, standard round lobe orientation)
A*	Extruded body, round lobe orientation rotated 90 degrees from standard
N*	Extruded body, round lobe orientation rotated 180 degrees from standard
Z*	Extruded body, round lobe orientation rotated 270 degrees from standard
T	Aluminum round tube and carbon steel tie rods & nuts

* Please reference table in catalog 0900P-E, page B10

Series

4MNR

Piston type [2]

2	Lipseals, no magnetic ring (aluminum piston)
3	Lipseals and magnetic ring (aluminum piston)

Ports

U	NPTF
R	BSPP

Seals

Blank	Standard (nitrile seals)
V	Fluorocarbon seals [3]
E	Fluorocarbon rod wiper and rod seal only [4]

Special modification

Specify "S" only for special modification other than rod end, and then describe modification in item notes. (Includes 4MNR with Linear Position Sensor Option) [5]

Tooling plate

T	Standard plate
M	Special plate (please specify details)

Piston rod thread style

9	Standard
3	Special (and specify all dimensions required)

Rod material and gland code

Blank	Standard rod and gland
H	Standard rod and HI LOAD gland
Y	17-4 PH stainless steel rod and standard gland

Piston rod thread type

A	Standard (UNF unified thread)

Cushion cap end

Blank	Non-cushioned cap end
C	Cushioned cap end

Stroke length

Specify stroke length required in inches.

1 Not available with Linear Position Sensor Option (LPSO).
2 Seals option V only available with Piston Type 2.
3 Reed and solid-state sensors only available with standard seals or options E. See footnote 2.
4 Used for external chemical compatibility applications, not high temperature.

Kits & Accessories
See page B37.

Sensors
For sensors see page B339.

For ordering purposes, when special options or common modifications are requested, the factory will assign a sequential part number in place of the model number.

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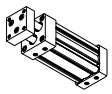
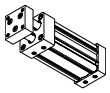
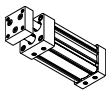
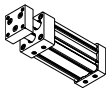
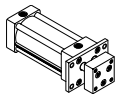
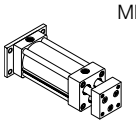
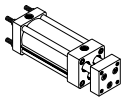
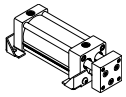
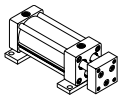
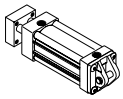
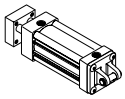
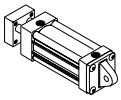
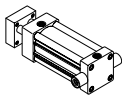
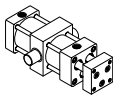
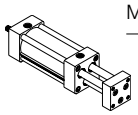
4MNR Mounting Styles

Mounting style	NFPA mounting	Description	Bore size
TEF 	MX5/MS4	Sleeve Nut with Side Tap (standard mount)	1-1/2 - 4
T 	MX0	No Mount (same construction as TEF)	1-1/8 - 4
TE 	MX5	Sleeve Nut (same construction as TEF)	1-1/2 - 4
F 	MS4	Side Tap (same construction as TEF)	1-1/8 - 4
J 	MF1	Head Rectangular Flange	1-1/8 - 4
H 	MF2	Cap Rectangular Flange	1-1/2 - 4
TC 	MX2	Tie Rods Extended Cap End	1-1/2 -5
C 	MS2	Side Lug	1-1/2 - 4

Mounting style	NFPA mounting	Description	Bore size
NB 	N/A	Base Bar	1-1/8 - 4
BB 	MP1	Cap Fixed Clevis	1-1/2 - 4
BC 	MP2	Cap Detachable Clevis	1-1/8 - 4
BE 	MP4	Cap Detachable Eye	1-1/8 - 4
DB 	MT2	Cap Trunnion	1-1/2 - 4
DD 	MT4	Intermediate Trunnion	1-1/2 - 4
KTEF / KT / KTE / KF * 	MDX0 / MDX5 / MDS4	Double Rod End	1-1/2 - 4

* Double rod end cylinders can be ordered with head mountings i.e. KJ.

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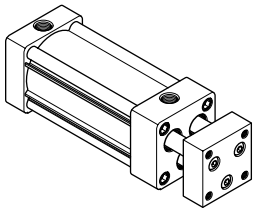
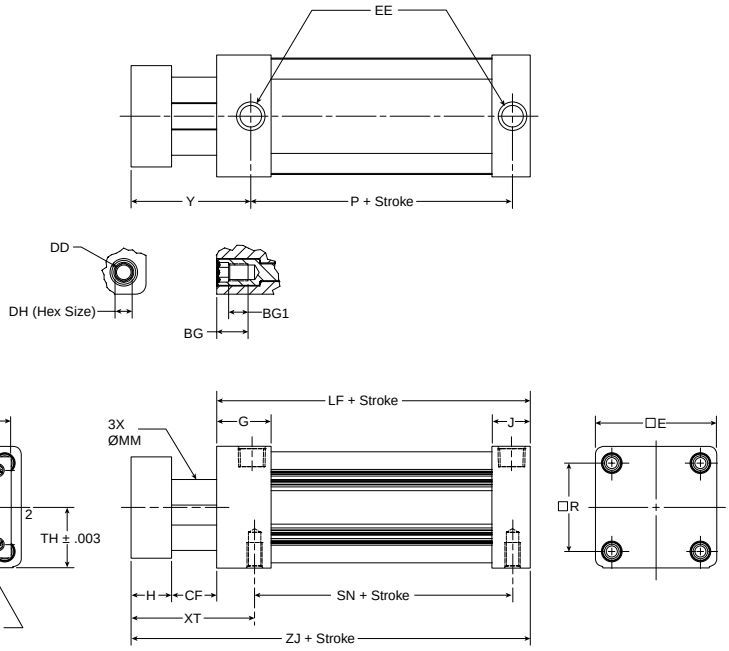
4MNR Single Rod Dimensioned Drawings (Styles TEF, T, TE and F)

(NFPA MX0, MX5, MS4)





Thread Style 3 - "Special Thread"

Special threads, rod extensions, rod eyes, blanks, etc. are also available.
To order, specify "Style 3" and give desired dimensions for KK (thread size), A (thread length) and W or WF.
If otherwise special, please supply dimensioned sketch.

Styles TEF, T, TE and F

Bore size	Rod dia. MM	BG	BG1	CF	DD	DH	E	EE (NPTF)	G	H	J	ND	NT
1-1/8 *	5/16	-	-	0.875	10-32	-	1.500	1/8	1.000	0.625	0.625	0.250	10-32
1-1/2	8mm	0.056	0.375	1.125	1/4-28	1/4	2.000	3/8	1.438	0.750	0.938	0.375	1/4-20
2	12mm	0.056	0.362	1.125	5/16-24	5/16	2.500	3/8	1.375	0.750	0.938	0.438	5/16-18
2-1/2	16mm	0.056	0.362	1.125	5/16-24	5/16	3.000	3/8	1.344	1.000	0.938	0.625	3/8-16
3-1/4	16mm	0.700	0.500	1.375	3/8-24	3/8	3.750	1/2	1.594	1.000	1.125	0.750	1/2-13
4	16mm	0.700	0.500	1.375	3/8-24	3/8	4.500	1/2	1.594	1.000	1.125	0.750	1/2-13

Bore size	Rod dia. MM	QQ	R	TB	TH	TP	TN	XT	Y	Add stroke LF	P	SN	ZJ
1-1/8 *	5/16	6-32	1.125	0.750	0.750	1.250	0.500	2.000	2.031	2.500	1.468	1.500	3.750
1-1/2	8mm	10-32	1.430	1.120	0.993	1.500	0.625	2.812	2.750	3.625	2.313	2.250	5.375
2	12mm	1/4-28	1.840	1.430	1.243	2.000	0.875	2.812	2.750	3.625	2.313	2.250	5.375
2-1/2	16mm	5/16-24	2.190	1.840	1.493	2.500	1.250	3.062	3.062	3.750	2.375	2.375	5.875
3-1/4	16mm	3/8-24	2.760	2.190	1.680	3.250	1.500	3.437	3.437	4.250	2.625	2.625	6.500
4	16mm	3/8-24	3.320	2.760	2.243	4.000	2.063	3.437	3.437	4.250	2.625	2.625	6.500

* Twin rod with flange construction (not shown)

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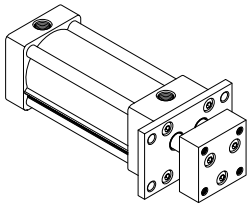
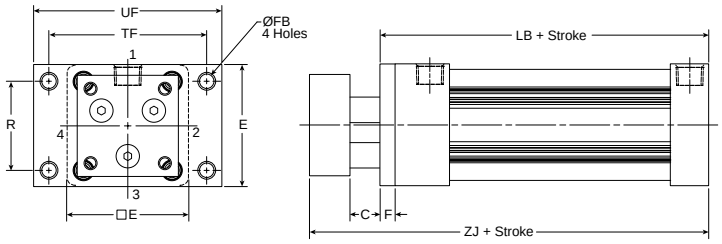
Head Rectangular Flange

Style J
(NFPA MF1)

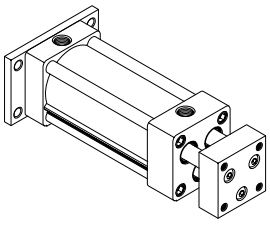


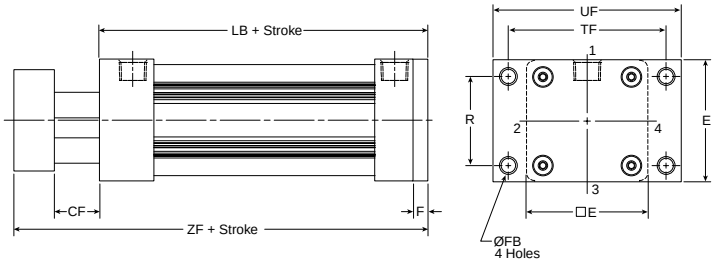


Note: Style J has a "C" dimension instead of "CF" because of the flange installation. For reference, CF = C + F

Cap Rectangular Flange

Style H
(NFPA MF2)





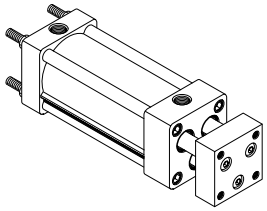
Styles J and H

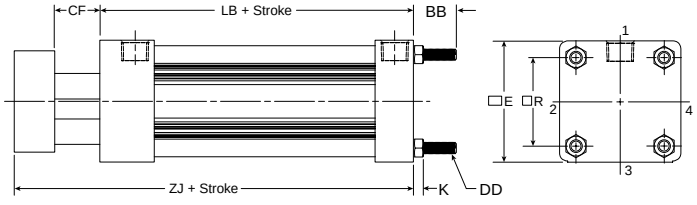
Bore size	Rod dia. MM	C	CF	E	F	FB	H	R	TF	UF	Add stroke LB	ZF	ZJ
1-1/8 *	5/16	0.625	0.875	1.500	0.250	0.219	0.625	1.000	2.000	2.500	2.750	4.250	4.000
1-1/2	8mm	0.750	1.125	2.000	0.375	0.313	0.750	1.430	2.750	3.375	4.000	5.875	5.500
2	12mm	0.750	1.125	2.500	0.375	0.375	0.750	1.840	3.375	4.125	4.000	5.875	5.500
2-1/2	16mm	0.750	1.125	3.000	0.375	0.375	1.000	2.190	3.875	4.625	4.125	6.250	5.875
3-1/4	16mm	0.750	1.375	3.750	0.625	0.438	1.000	2.760	4.688	5.500	4.875	7.250	6.625
4	16mm	0.750	1.375	4.500	0.625	0.438	1.000	3.320	5.438	6.250	4.875	7.250	6.625

* Twin rod with flange construction (not shown)

Tie Rods Ext. Cap End

Style TC
(NFPA MX2)





Style TC

Bore size	Rod dia. MM	BB	DD	CF	E	K	R	Add stroke LB	ZJ
1-1/2	8mm	1.000	1/4-28	1.125	2.000	0.250	1.430	4.000	5.500
2	12mm	1.125	5/16-24	1.125	2.500	0.313	1.840	4.000	5.500
2-1/2	16mm	1.125	5/16-24	1.125	3.000	0.313	2.190	4.125	5.875
3-1/4	16mm	1.375	3/8-24	1.375	3.750	0.375	2.760	4.875	6.625
4	16mm	1.375	3/8-24	1.375	4.500	0.375	3.320	4.875	6.625

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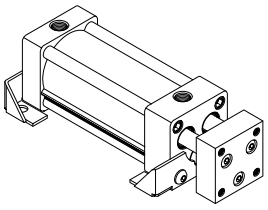
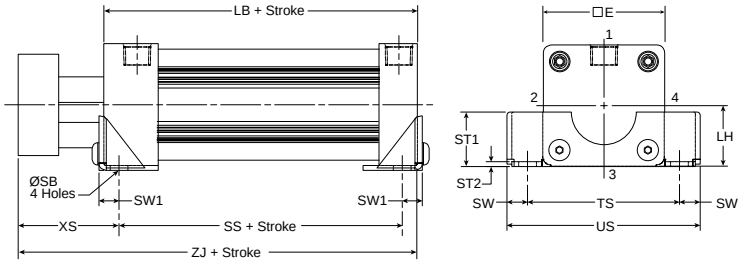
Side Lug

Style C
(NFPA MS2)



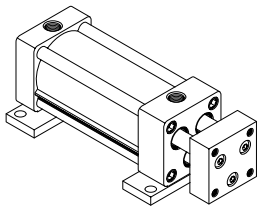


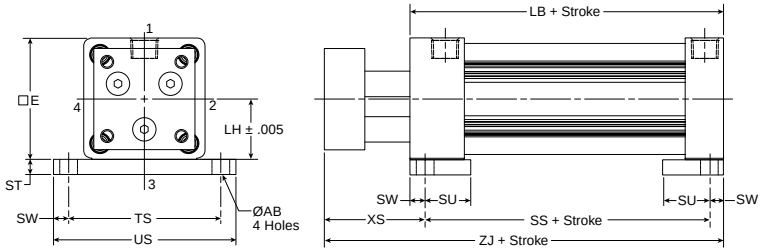
Style C

Bore size	Rod dia. MM	E	LH	SB	ST1	ST2	SW	SW1	TS	US	XS	Add stroke LB	SS	ZJ
1-1/2	8mm	2.000	0.993	0.438	1.000	0.120	0.375	0.495	2.750	3.500	2.250	4.000	2.875	5.500
2	12mm	2.500	1.243	0.438	1.250	0.120	0.375	0.495	3.250	4.000	2.250	4.000	2.875	5.500
2-1/2	16mm	3.000	1.493	0.438	1.343	0.120	0.375	0.495	3.750	4.500	2.500	4.125	3.000	5.875
3-1/4	16mm	3.750	1.868	0.563	1.500	0.188	0.500	0.688	4.750	5.750	2.875	4.875	3.250	6.625
4	16mm	4.500	2.243	0.563	1.500	0.188	0.500	0.688	5.500	6.500	2.875	4.875	3.250	6.625

Base Bar Mount

Style NB





Note: Fasteners for NB base bar mount have been applied with removable threadlocking compound and torqued to bottom of endcaps.

Style NB

Bore size	Rod dia. MM	AB	E	LH	ST	SU	SW	TS	US	XS	Add stroke LB	SS	ZJ
1-1/8 *	5/16	0.203	1.500	1.000	0.250	0.750	0.250	1.875	2.375	1.750	2.750	1.750	3.750
1-1/2	8mm	0.438	2.000	1.243	0.250	1.125	0.375	2.750	3.500	2.250	4.000	2.875	5.500
2	12mm	0.438	2.500	1.493	0.250	1.125	0.375	3.250	4.000	2.250	4.000	2.875	5.500
2-1/2	16mm	0.438	3.000	1.868	0.375	1.125	0.375	3.750	4.500	2.500	4.125	3.000	5.875
3-1/4	16mm	0.563	3.750	2.368	0.500	1.250	0.500	4.750	5.750	2.875	4.875	3.250	6.625
4	16mm	0.563	4.500	2.743	0.500	1.250	0.500	5.500	6.500	2.875	4.875	3.250	6.625

* Twin rod with flange construction (not shown)

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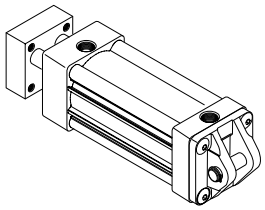
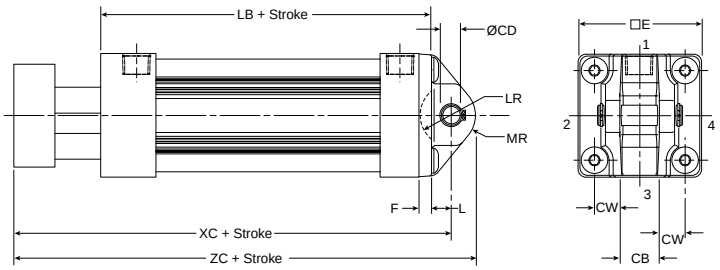
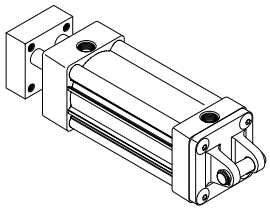
Cap Fixed Clevis
Style BB (NFPA MP1)

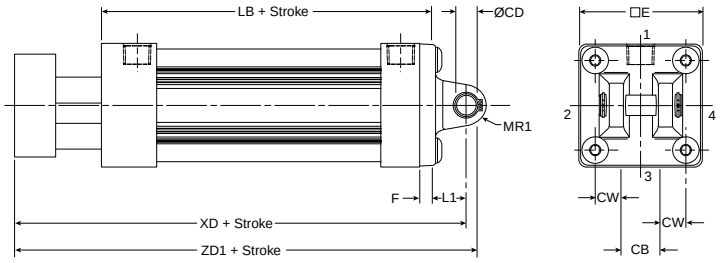
Note: For maximum swivel angle of BB mount with rear mounting plate, please reference catalog 0900P-E, accessories page B141.



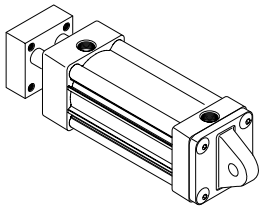


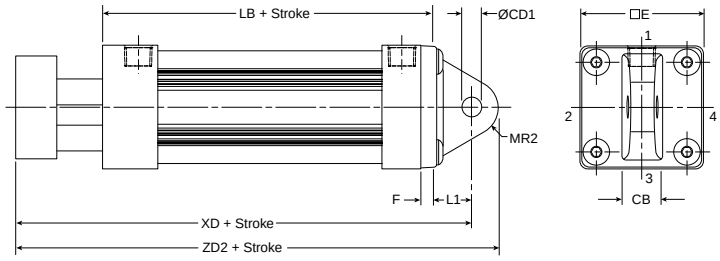
Cap Detachable Clevis
Style BC (NFPA MP2)





Cap Detachable Eye
Style BE (NFPA MP4)





Styles BB, BC and BE

Bore size	Rod dia. MM	CB	CD	CD1	CW	E	F	L	LR	L1
1-1/2	8mm	0.750	0.501	0.500	0.500	2.000	0.375	0.375	0.750	0.750
2	12mm	0.750	0.501	0.500	0.500	2.500	0.375	0.375	0.750	0.750
2-1/2	16mm	0.750	0.501	0.500	0.500	3.000	0.375	0.375	0.750	0.750
3-1/4	16mm	1.250	0.751	0.750	0.625	3.750	0.625	0.625	1.000	1.250
4	16mm	1.250	0.751	0.750	0.625	4.500	0.625	0.625	1.000	1.250

Bore size	Rod dia. MM	MR	MR1	MR2	Add stroke LB	XC	XD	ZC	ZD1	ZD2
1-1/2	8mm	0.625	0.500	0.625	4.000	6.250	6.625	6.875	7.125	7.250
2	12mm	0.625	0.500	0.625	4.000	6.250	6.625	6.875	7.125	7.250
2-1/2	16mm	0.625	0.500	0.688	4.125	6.625	7.000	7.250	7.500	7.688
3-1/4	16mm	0.938	0.750	0.875	4.875	7.875	8.500	8.813	9.250	9.375
4	16mm	0.938	0.750	0.875	4.875	7.875	8.500	8.813	9.250	9.375

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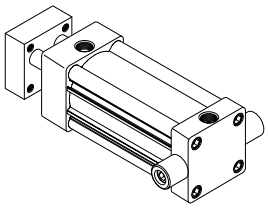
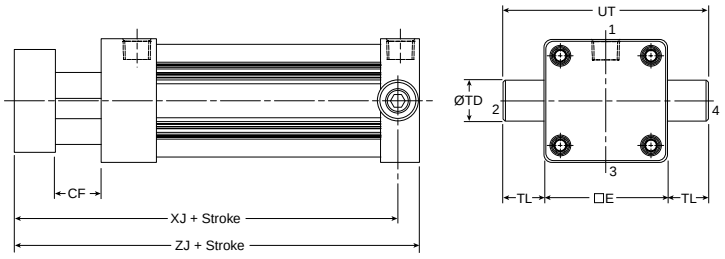
Cap Trunnion

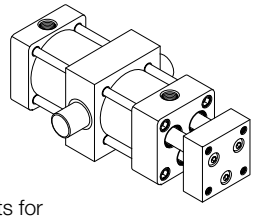
Style DB
(NFPA MT2)



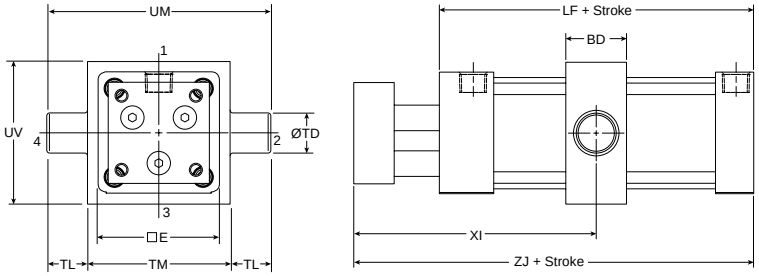


Intermediate Trunnion

Style DD
(NFPA MT4)



Note: Tie rod nuts for Style DD have a slot instead of internal hex.



Styles DD and DD

Bore size	Rod dia. MM	E	BD	CF	TD	TL	TM	UM	UT	UV	Min. XI	Add stroke LF	XJ	ZJ
1-1/2	8mm	2.000	1.250	1.125	1.000	1.000	2.500	4.500	4.000	2.500	4.000	4.000	5.000	5.875
2	12mm	2.500	1.500	1.125	1.000	1.000	3.000	5.000	4.500	3.000	4.125	4.000	5.000	5.875
2-1/2	16mm	3.000	1.500	1.125	1.000	1.000	3.500	5.500	5.000	3.500	4.375	4.125	5.375	6.250
3-1/4	16mm	3.750	2.000	1.375	1.000	1.000	4.500	6.500	5.750	4.250	5.125	4.875	6.000	7.250
4	16mm	4.500	2.000	1.375	1.000	1.000	5.250	7.250	6.500	5.000	5.125	4.875	6.000	7.250

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Pneumatic Division
Richland, Michigan
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P1D Series

The innovative P1D is a long lasting ISO/VDMA cylinder. The cylinders are double acting, with a new design of air cushioning.

The P1D complies with the current ISO 6431, ISO 15552, VDMA 24562 and AFNOR installation dimension standards

- Available in 32 to 200mm bores
- PUR seals for long service life
- Drop-in sensors
- Corrosion resistant design
- Magnetic piston as standard
- Lubricated with food grade grease

Operating information

Operating pressure:	145 PSIG (10 bar) maximum	
Temperature range:	Standard:	-4°F to 176°F (-20°C to 80°C)
	High temperature:	14°F to 250°F (-10°C to 121°C)
Cylinders for low pressure hydraulic operation:	Ø32 - 125mm	
ATEX approval:	CE Ex IIGD c T4	248°F (120°C)
Filtration requirements:	40 micron, dry filtered air	

P1D Standard - Double acting

Ø32mm - (G1/8)

Stroke (mm)	Order Code
25	**P1D-S032MC-0025NNNNN**
40	**P1D-S032MC-0040NNNNN**
50	**P1D-S032MC-0050NNNNN**
80	**P1D-S032MC-0080NNNNN**
100	**P1D-S032MC-0100NNNNN**
125	**P1D-S032MC-0125NNNNN**
160	**P1D-S032MC-0160NNNNN**
200	**P1D-S032MC-0200NNNNN**
250	**P1D-S032MC-0250NNNNN**
320	**P1D-S032MC-0320NNNNN**
400	**P1D-S032MC-0400NNNNN**
500	**P1D-S032MC-0500NNNNN**

Ø40mm - (G1/4)

25	**P1D-S040MC-0025NNNNN**
40	**P1D-S040MC-0040NNNNN**
50	**P1D-S040MC-0050NNNNN**
80	**P1D-S040MC-0080NNNNN**
100	**P1D-S040MC-0100NNNNN**
125	**P1D-S040MC-0125NNNNN**
160	**P1D-S040MC-0160NNNNN**
200	**P1D-S040MC-0200NNNNN**
250	**P1D-S040MC-0250NNNNN**
320	**P1D-S040MC-0320NNNNN**
400	**P1D-S040MC-0400NNNNN**
500	**P1D-S040MC-0500NNNNN**

Ø50mm - (G1/4)

25	**P1D-S050MC-0025NNNNN**
40	**P1D-S050MC-0040NNNNN**
50	**P1D-S050MC-0050NNNNN**
80	**P1D-S050MC-0080NNNNN**
100	**P1D-S050MC-0100NNNNN**
125	**P1D-S050MC-0125NNNNN**
160	**P1D-S050MC-0160NNNNN**
200	**P1D-S050MC-0200NNNNN**
250	**P1D-S050MC-0250NNNNN**
320	**P1D-S050MC-0320NNNNN**
400	**P1D-S050MC-0400NNNNN**
500	**P1D-S050MC-0500NNNNN**

Ø63mm - (G3/8)

Stroke (mm)	Order Code
25	**P1D-S063MC-0025NNNNN**
40	**P1D-S063MC-0040NNNNN**
50	**P1D-S063MC-0050NNNNN**
80	**P1D-S063MC-0080NNNNN**
100	**P1D-S063MC-0100NNNNN**
125	**P1D-S063MC-0125NNNNN**
160	**P1D-S063MC-0160NNNNN**
200	**P1D-S063MC-0200NNNNN**
250	**P1D-S063MC-0250NNNNN**
320	**P1D-S063MC-0320NNNNN**
400	**P1D-S063MC-0400NNNNN**
500	**P1D-S063MC-0500NNNNN**

Ø80mm - (G3/8)

25	**P1D-S080MC-0025NNNNN**
40	**P1D-S080MC-0040NNNNN**
50	**P1D-S080MC-0050NNNNN**
80	**P1D-S080MC-0080NNNNN**
100	**P1D-S080MC-0100NNNNN**
125	**P1D-S080MC-0125NNNNN**
160	**P1D-S080MC-0160NNNNN**
200	**P1D-S080MC-0200NNNNN**
250	**P1D-S080MC-0250NNNNN**
320	**P1D-S080MC-0320NNNNN**
400	**P1D-S080MC-0400NNNNN**
500	**P1D-S080MC-0500NNNNN**

Ø100mm - (G1/2)

Stroke (mm)	Order Code
25	**P1D-S100MC-0025NNNNN**
40	**P1D-S100MC-0040NNNNN**
50	**P1D-S100MC-0050NNNNN**
80	**P1D-S100MC-0080NNNNN**
100	**P1D-S100MC-0100NNNNN**
125	**P1D-S100MC-0125NNNNN**
160	**P1D-S100MC-0160NNNNN**
200	**P1D-S100MC-0200NNNNN**
250	**P1D-S100MC-0250NNNNN**
320	**P1D-S100MC-0320NNNNN**
400	**P1D-S100MC-0400NNNNN**
500	**P1D-S100MC-0500NNNNN**

Ø125mm - (G1/2)

25	**P1D-S125MC-0025NNNNN**
40	**P1D-S125MC-0040NNNNN**
50	**P1D-S125MC-0050NNNNN**
80	**P1D-S125MC-0080NNNNN**
100	**P1D-S125MC-0100NNNNN**
125	**P1D-S125MC-0125NNNNN**
160	**P1D-S125MC-0160NNNNN**
200	**P1D-S125MC-0200NNNNN**
250	**P1D-S125MC-0250NNNNN**
320	**P1D-S125MC-0320NNNNN**
400	**P1D-S125MC-0400NNNNN**
500	**P1D-S125MC-0500NNNNN**

The cylinders are supplied complete with a zinc plated steel piston rod nut.

Sensors

For sensors see page B339.

☐ Most popular.

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Design Versions

P1D Basic Version

The P1D Basic Version cylinders meet the specifications in the ISO 15552 standard. This means full interchangeability to any ISO 15552 cylinder anywhere around the globe. P1D Basic Version will be available throughout the extensive worldwide Parker Hannifin organization.

P1D Standard Version

P1D Standard Version cylinders are available in 32-125mm bores and utilize internal composite technology to save weight, while assuring the high performance and functionality expected of ISO cylinders. Cushions and bumpers at both ends and a magnetic piston are included as standard. The Standard Version serves all markets where performance at an affordable price is desired.

P1D Removable Gland Version

P1D Removable Gland Version cylinders are available in 32-200mm bores and utilize bar stock endcaps and a removable high-strength bronze bearing for traditional and custom applications. The bronze bearing assembly is externally removable for quick and easy maintenance. No other ISO cylinder manufacturer in the world produces a Removable Gland Version and meets these demands. This version covers all applications which require performance and customization at all bore sizes.

P1D Rod Lock Cylinder

The P1D Rod Lock Cylinder incorporates a powerful piston rod locking device, which clamps the piston rod and locks it in position. The locking device is a spring lock with an air pressure release and is integrated into the front (head) cover of the cylinder.

P1D Clean Version

The P1D Clean Version is completely designed for the food industry. The stringent requirements for hygiene regarding choice of material and corrosion resistance have guided the development of this cylinder version. Available with BSPP ports (ISO 1179-1 with ISO 228-1 threads).

P1D Tie-Rod Version

The P1D Tie-Rod Version cylinders are based on the same high level technology as the Standard Version. They accept either Standard Version or Removable Gland Version heads and caps. This cylinder is the perfect choice wherever a true tie-rod cylinder is needed.

Guided Cylinders

For guided versions of the P1D, see the P5E Series and HB Series.

P5E Series

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Ordering information

P1D	–	S	032	M	C	–	0500	N	N	N	N	N

Piston Style

Cushions	Piston material: Composite [1]	Piston material: Aluminum [2]
None	M	Y
Cush B/E	– [3, 20]	4
Cush head	J	5
Cush cap	K	6

Bore size

032	32mm
040	40mm
050	50mm
063	63mm
080	80mm
100	100mm
125	125mm
160	160mm [8]
200	200mm [8]

Stroke [14]

Specify whole mm using 4 digits, i.e. 0500

Cylinder ports front & rear

–	BSPP Ports (G Threads)**
E	NPTF Ports*
Q	BSPT Ports (Rc Threads)*†

* Not available on clean version.
† Not available on die cast version.
** ISO 1179-1 with ISO 228-1 threads.

Rod end

N	Metric male
6	Metric female
3	Special*

* Please provide desired dimensions for KK, AM and WH or W. If otherwise, please provide dimensioned sketch.

Version

	Cylinder body profile	Rod lock: None	Rod lock: Fitted w/ standard rod lock [7]	Rod lock: Fitted w/ manual override rod lock [7]
Die cast end caps [4]	Basic	B	N/A	N/A
	Standard	S	L	N/A
	Tie Rod [13]	T	M	N/A
	Clean	C	D	N/A
Machined end caps rod lock not available with removable gland. [5]	Standard	G [5]	R	J
	Tie Rod [13]	E [5]	7 [4]	Consult Factory
Special [6]	Any Special	/		

Rod mountings & plugs [15]

Rod mounting	No plugs [16, 20]	With plugs [1]
Swivel rod eye	S	A
Swivel rod eye SS	T	1
Swivel rod eye with clevis bracket GA [19]	V	E
Swivel rod eye SS with clevis bracket GA	W	2
Clevis	C	B
Clevis SS	D	3
Flexco coupling	F	G
One additional piston rod nut	X	P
Stainless steel piston rod nut	Y	4
Acid-resistant nut	Z	5
None (piston rod nut only)	N	R

Sensors [17]

Prepared for factory-fitted sensors	Cable location: Front or left	Cable location: Rear or right	Cable location: Front & rear
P1D clean version	6	7	8
P1D all versions (except Clean) prepared for sensors or clean version without sensor capability [18, 20]	N		

Function

Fastener type	Rod wiper style	Double acting	Double rod	Tandem [13]
Standard end cover screws	Std scraper	M [20]	F	C
	Metal scraper	Q	R	J
Stainless steel end cover screws [9]	Std scraper	A	G	N/A
	Metal scraper	S	T	N/A

Mounting style

	Standard [20]	Rotated 90°
Flange MF1 at head (front) end	1	3
Flange MF2 at cap (rear) end	B	4
Flanges MF1 and MF2 at both ends	2	K
Foot brackets MS1	F	R
Clevis bracket GA aluminum	C	U
Rear eye MP4 aluminum	E	V
Rear swivel eye MP6 aluminum	S	W
Clevis bracket MP2 aluminum	T	Y
Rear eye + clevis (MP4 + MP2) aluminum	L	Z
Clevis bracket MP2 + pivot hinge aluminum	X	5
Clevis bracket GA aluminum + steel swivel hinge	Q	0
Rear swivel eye + clevis bracket GA aluminum	M	A
Intermediate trunnion MT4 (requires XV dimension)	G	7
Trunnion flange at head (front) end [4]	H	P
Trunnion flange at cap (rear) end [4]	J	8
None (MX0)	N	9

Piston rod & seal material

Piston rod material	Seal material: Standard	Seal material: Fluorocarbon [10]	Seal material: Hydraulic [11]
Chrome plated carbon steel [2]	C [20]	G	J
Chrome plated stainless steel [2, 19]	R [20]	D	Z
303 Stainless steel [13]	S	N/A	N/A
Acid-resistant stainless steel	M	N [2]	N/A

Notes:

1 Not available for 160-200mm bores.
2 Not available on Clean Version.
3 Must be placed in model code.
4 Not available for 160-200mm bores or with fluorocarbon seals.
5 When Removable Gland Version is fitted with rod lock, gland cannot be replaced without disassembling cylinder.
6 If special cylinder is ordered (other than rod end), End Cap Style, Cylinder Body Profile and Rod Lock option must be given in addition to the special request.
7 Cylinders fitted with rod locks must be cushioned on both ends.
8 Tie Rod Version E must be specified for these bores.
9 Applies only to end cover screws for 32-125mm bores. For stainless steel tie rods and nuts (all bore sizes), change Version to special and request stainless steel tie rods and nuts.
10 If used for temperature above 80°C (176°F), aluminum piston required. Not available with die cast end caps.
11 Hydraulic seal option valid for Removable Gland Version only. Adjustable cushion options and Rod Lock Versions not available.
12 Only available on Clean Version.
13 Tie Rod Version is required for Tandem Function.
14 When specifying a stop tube, place a "/" in the version field. Then specify the version, amount of stop tube and amount of net stroke. The stroke used in the model code should be gross stroke (net stroke plus stop tube).
15 Please review Piston Rod Selection Chart in the Engineering Section to check for a rod buckling condition.
16 Clean Version comes standard with plugs. Use this column when ordering Clean Version.
17 For sensor part numbers and specifications, please refer to Electronic Sensors section.
18 P1D Clean Version ordered without sensors cannot be retrofitted with sensor capability.
19 Consult factory for this option.
20 Only option for Basic Version.

Double Rod Cylinders

Double rod option is available with Mounting Styles MX0, MS1, MF1, MF2 and MT4.

For double rod cylinders, it is assumed that the rod number and rod end are the same for both piston rods. On a double rod cylinder where the two rod ends are different, use a rod end of '3' and be sure to clearly state which rod end is to be assembled at which end.

For ordering purposes, when special options or common modifications are requested, the factory will assign a sequential part number in place of the model number.

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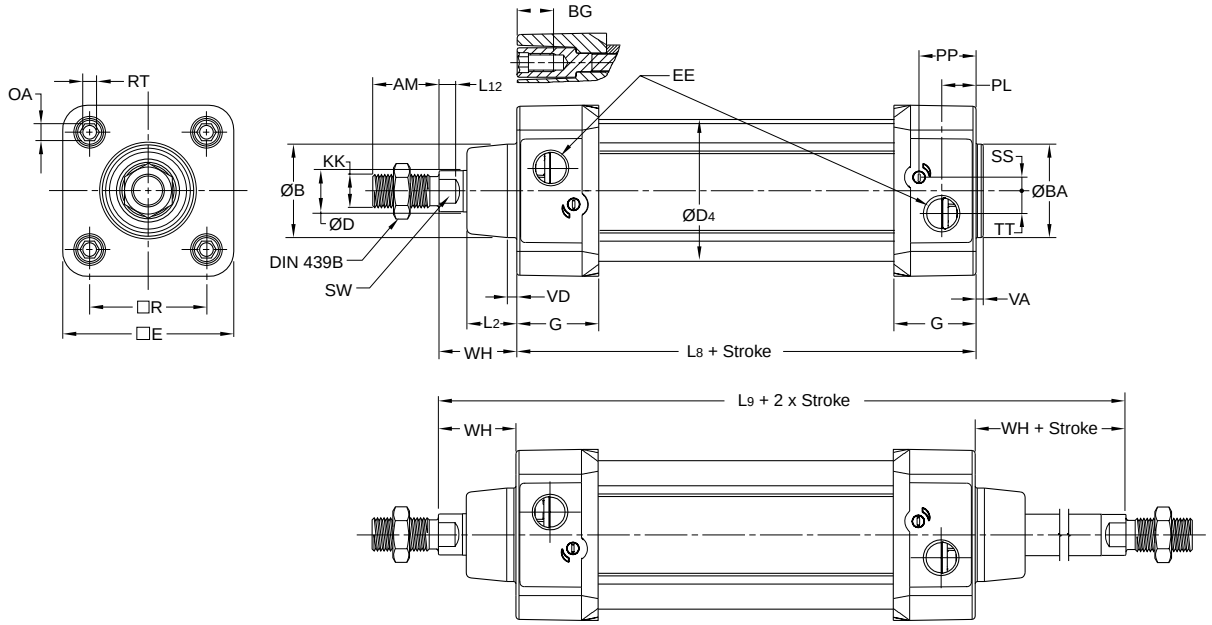
P1D Basic & Standard Version



Bore size	AM mm	B mm	BA mm	BG mm	D mm	D4 mm	E	EE BSPP*	EE NPTF/ BSPT	G mm	KK	L2 mm	L8 mm	L9 mm	L12 mm
32	22	30	30	16	12	45.0	50.0	G1/8	1/8	28.5	M10x1.25	16.0	94	146	6.0
40	24	35	35	16	16	52.0	57.4	G1/4	1/4	33.0	M12x1.25	19.0	105	165	6.5
50	32	40	40	16	20	60.7	69.4	G1/4	1/4	33.5	M16x1.5	24.0	106	180	8.0
63	32	45	45	16	20	71.5	82.4	G3/8	3/8	39.5	M16x1.5	24.0	121	195	8.0
80	40	45	45	17	25	86.7	99.4	G3/8	3/8	39.5	M20x1.5	30.0	128	220	10.0
100	40	55	55	17	25	106.7	116.0	G1/2	1/2	44.5	M20x1.5	32.4	138	240	10.0
125	54	60	60	20	32	134.0	139.0	G1/2	1/2	51.0	M27x2	45.0	160	290	13.0

Bore size	OA mm	PL mm	PP mm	R mm	RT	SS mm	SW mm	TT mm	VA mm	VD mm	WH mm
32	6	13	21.8	32.5	M6	4.0	10	4.5	3.5	4.5	26
40	6	14	21.9	38.0	M6	8.0	13	5.5	3.5	4.5	30
50	8	14	25.9	46.5	M8	4.0	17	7.5	3.5	4.5	37
63	8	16	27.4	56.5	M8	6.5	17	11.0	3.5	4.5	37
80	6	16	30.5	72.0	M10	0	22	15.0	3.5	4.5	46
100	6	18	35.8	89.0	M10	0	22	20.0	3.5	4.5	51
125	8	23	40.5	110.0	M12	0	27	17.5	3.5	6.5	65

* ISO 1179-1 with ISO 228-1 threads

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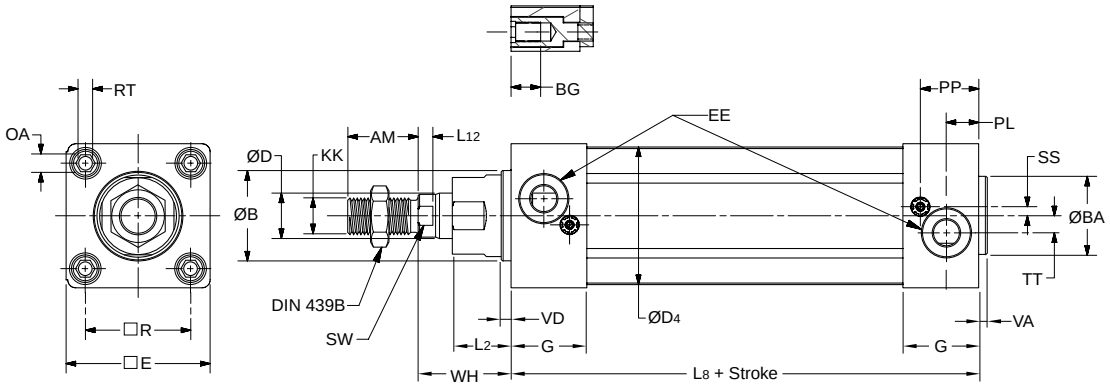
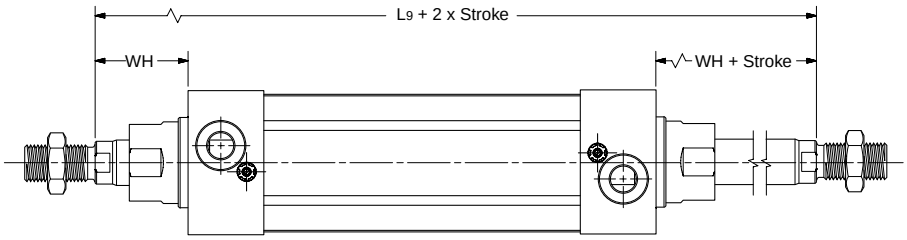
P1D Removable Gland Version





Bore size	AM mm	B mm	BA mm	BG mm	D mm	D4 mm	E mm	EE BSPP *	EE NPTF/ BSPT	G mm	KK	L2 mm	L8 mm	L9 mm	L12 mm
32	22	30	30	16	12	45.0	46.5	G1/8	1/8	28.5	M10x1.25	18	94	146	6.0
40	24	35	35	16	16	52.0	52.0	G1/4	1/4	33.0	M12x1.25	20	105	165	6.5
50	32	40	40	16	20	60.7	63.5	G1/4	1/4	33.5	M16x1.5	26	106	180	6.5
63	32	45	45	16	20	71.5	76.0	G3/8	3/8	39.5	M16x1.5	26	121	195	6.5
80	40	45	45	17	25	86.7	95.5	G3/8	3/8	39.5	M20x1.5	33	128	220	10.0
100	40	55	55	17	25	106.7	114.5	G1/2	1/2	44.5	M20x1.5	33	138	240	10.0
125	54	60	60	20	32	134.0	140.0	G1/2	1/2	51.0	M27x2	41	160	290	13.0

Bore size	OA mm	PL mm	PP mm	R mm	RT	SS mm	SW mm	TT mm	VA mm	VD mm	WH mm
32	6	13	21.8	32.5	M6	6.5	10	4.5	3.5	4.5	26
40	6	14	21.9	38.0	M6	8.0	13	5.5	3.5	4.5	30
50	8	14	25.9	46.5	M8	4.0	17	7.5	3.5	4.5	37
63	8	16	27.4	56.5	M8	6.5	17	11.0	3.5	4.5	37
80	6	16	30.5	72.0	M10	0	22	15.0	3.5	4.5	46
100	6	18	35.8	89.0	M10	0	22	20.0	3.5	4.5	51
125	8	23	40.5	110.0	M12	0	27	17.5	5.5	6.5	65

* ISO 1179-1 with ISO 228-1 threads

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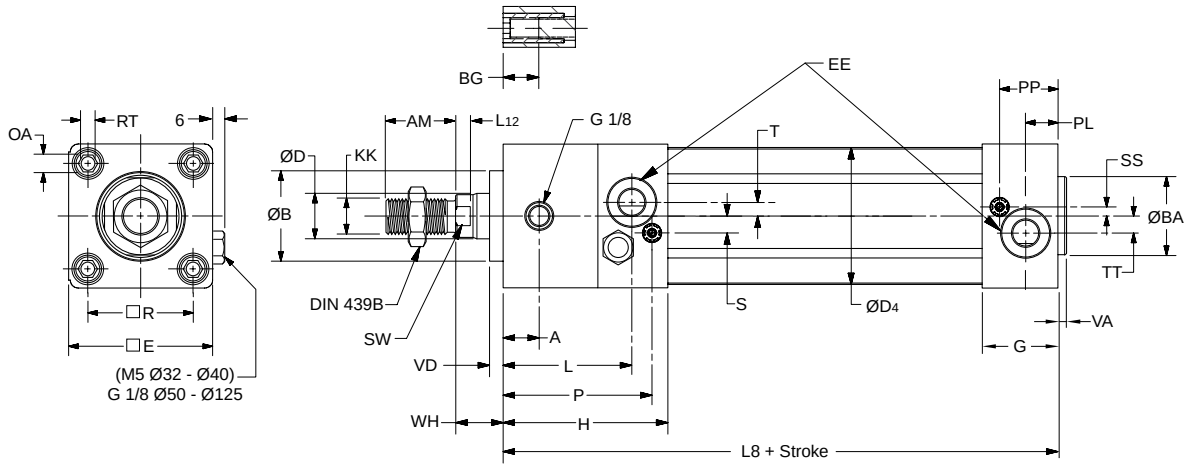
P1D Rod Lock Version (Version R or L)



Bore size	A mm	AM mm	B mm	BA mm	BG mm	D mm	D_4 mm	E mm	EE *	G mm	H mm	KK	L mm	L_8 mm	L_{12} mm
32	16	22	30	30	16	12	45.0	46.5	G1/8	28.5	71.5	M10x1.25	56.0	137	6.0
40	16	24	35	35	16	16	52.0	52.0	G1/4	33.0	77.0	M12x1.25	56.0	149	6.5
50	18	32	40	40	16	20	60.7	63.5	G1/4	33.5	80.5	M16x1.5	62.5	153	6.5
63	26	32	45	45	16	20	71.5	76.0	G3/8	39.5	96.5	M16x1.5	74.5	178	6.5
80	35	40	45	45	17	25	86.7	95.5	G3/8	39.5	110.5	M20x1.5	87.0	199	10.0
100	50	40	55	55	17	25	106.7	114.5	G1/2	44.5	132.5	M20x1.5	106.0	226	10.0
125	60	54	60	60	20	32	134.0	140.0	G1/2	51.0	145.0	M27x2	117.0	254	13.0

Bore size	OA mm	P mm	PL mm	PP mm	R mm	RT mm	S mm	SS mm	SW mm	T mm	TT mm	VA mm	VD mm	WH mm
32	6	64.8	13	21.8	32.5	M6	7	6.5	10	2.5	4.5	3.5	4.5	15
40	6	68.0	14	21.9	38.0	M6	9	8.0	13	2.0	5.5	3.5	4.5	16
50	8	73.5	14	25.9	46.5	M8	8	4.0	17	4.0	7.5	3.5	5.0	17
63	8	89.5	16	27.4	56.5	M8	8	6.5	17	2.0	11.0	3.5	5.0	17
80	6	101.5	16	30.5	72.0	M10	9	0	22	5.0	15.0	3.5	4.0	20
100	6	123.5	18	35.8	89.0	M10	12	0	22	6.0	20.0	3.5	4.0	20
125	8	136.0	23	40.5	110.0	M12	12	0	27	6.0	17.5	5.5	6.0	27

* ISO 1179-1 with ISO 228-1 threads

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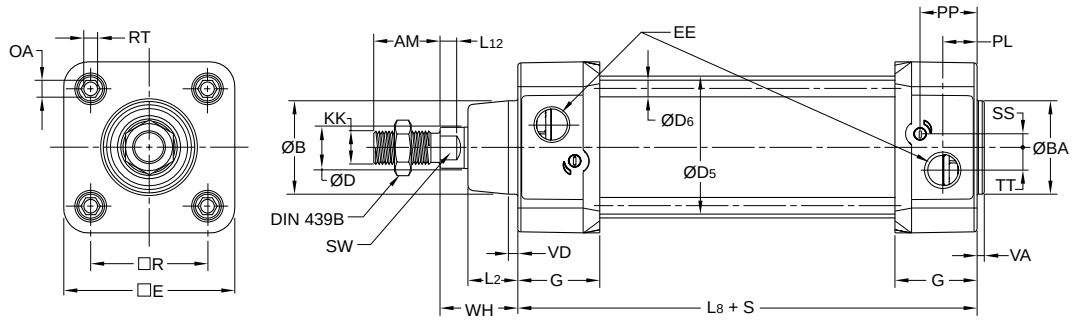
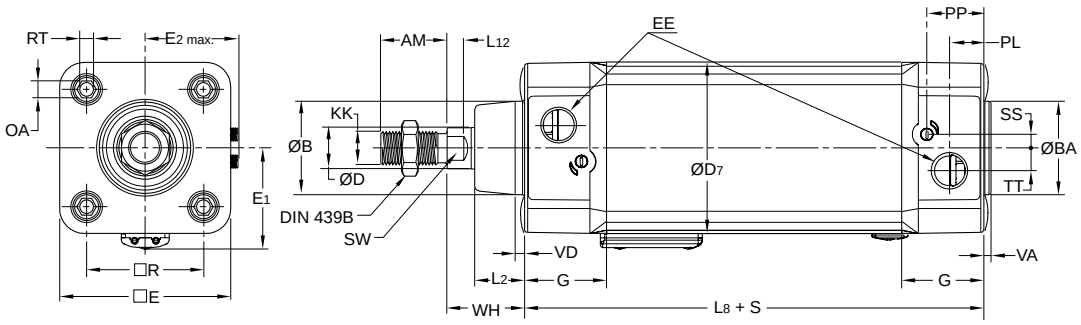
P1D Tie-Rod Version (32-125mm)



P1D Clean Version



Bore size	D_5 mm	D_6 mm	D_7 mm	E_1 mm	$E_{2\ max}$ mm
32	36	5.3	49.6	32	5
40	45	5.3	57.3	36	6
50	55	7.1	69.3	42	6
63	68	7.1	82.3	49	5
80	85	8.9	99.3	57	5
100	105	8.9	117.6	68	6
125	132	10.7	142.8	81	6

Other dimensions, see P1D removable gland version.

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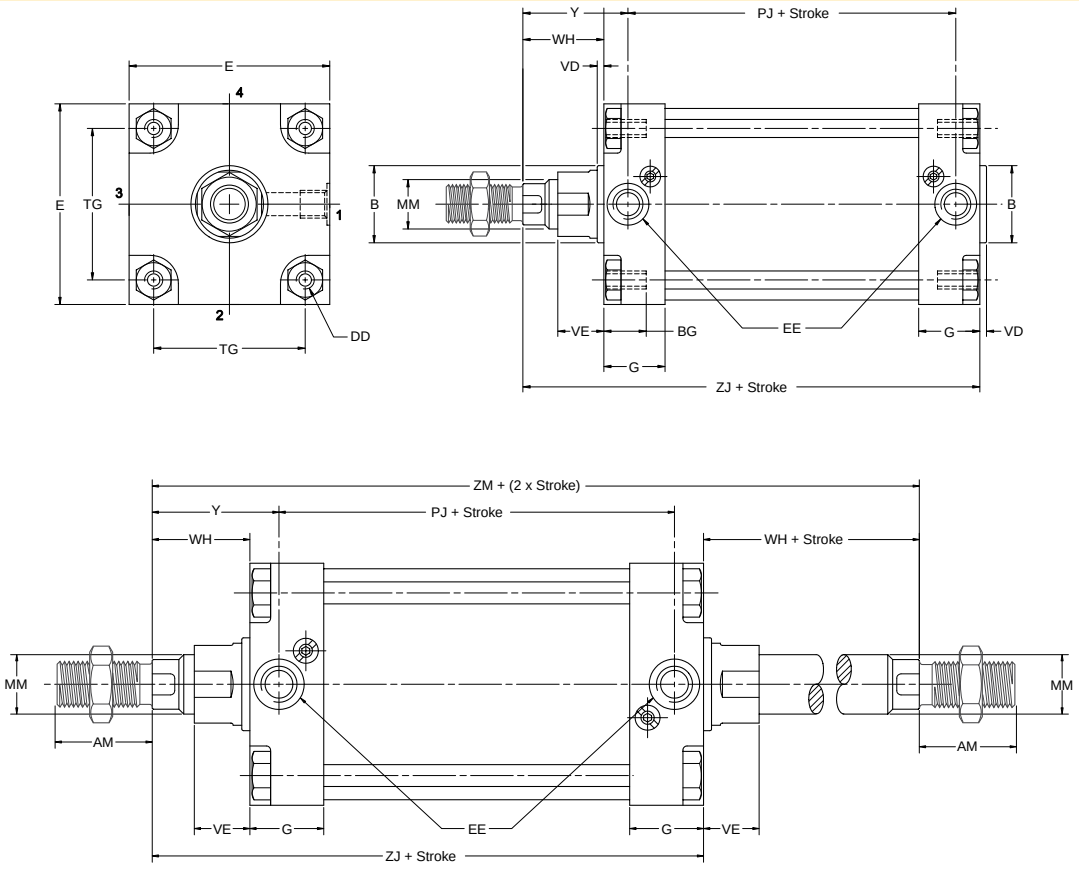
P1D Tie-Rod Version (160-200mm)



Rod End #1

Rod End #2

Bore size	AM mm	B d11 mm	BG mm	DD	E mm	EE BSPP [3]	EE NPTF/ BSPT	G mm	MM mm	TG mm	VD mm	VE mm	WH mm	Y mm	PJ1 mm	ZJ1 mm	ZM2 mm
160	72	65	24	M16	177	G3/4	3/4	54	40	140	6	56	80	105	130	260	340
200	72	75	24	M16	214	G3/4	3/4	54	40	175	6	56	95	120	130	275	370

1 Add stroke
2 Add 2× stroke
3 ISO 1179-1 with ISO 228-1 threads

Double Rod Cylinders

Double rod option is available on Mounting Styles MX0, MS1, MF1, MF2 and MT4.

For double rod cylinders, it is assumed that the rod number and rod end are the same for both piston rods. On a double rod cylinder where the two rod ends are different, use a rod end of '3' and be sure to clearly state which rod end is to be assembled at which end.

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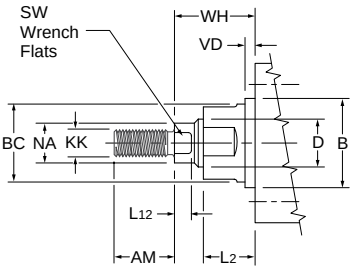
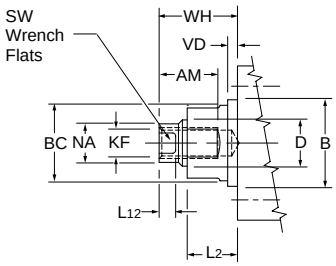
All Mountings Except MF1

Thread Style N



Thread Style 6



Thread Style 3 - "Special Thread"

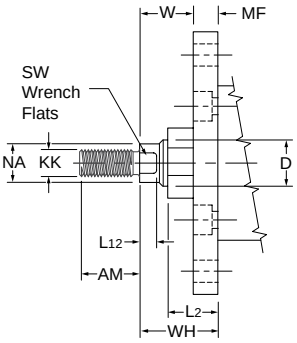
Special thread, extension, rod eye, blank, etc are also available. To order, specify "Style 3" and provide desired dimensions for KF or KK, AM and WH. If otherwise special, furnish dimensioned sketch.

Bore size	D	KK	KF	AM	B d11	BC	SW across flats	L12	NA	VD	L2	WH*
32	12	M10x1.25	M8x1	22	30	27	10	6	11	4.5	18	26
40	16	M12x1.25	M10x1.25	24	35	32	13	6.5	15	4.5	20	30
50	20	M16x1.5	M14x1.5	32	40	36	17	6.5	19	4.5	26	37
63	20	M16x1.5	M14x1.5	32	45	36	17	6.5	19	4.5	26	37
80	25	M20x1.5	M18x1.5	40	45	41	22	10	24	4.5	33	46
100	25	M20x1.5	M18x1.5	40	55	41	22	10	24	4.5	33	51
125	32	M27x2	M24x2	54	60	50	27	13	31	6.5	41	65
160	40	M36x2	M30x2	72	65	60	36	16	39	6	56	80
200	40	M36x2	M30x2	72	75	60	36	16	39	6	56	95

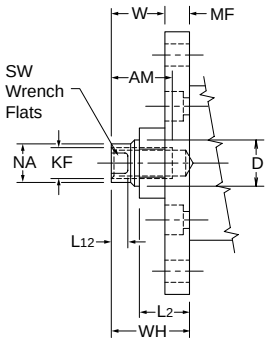
***NOTE:** Dimensions do not apply to Rod Lock Versions.

With MF1 Mounting

Thread Style N



Thread Style 6



"Special Thread" Style 3

Special thread, extension, rod eye, blank, etc are also available. To order, specify "Style 3" and provide desired dimensions for KF or KK, AM and WH. If otherwise special, furnish dimensioned sketch.

Bore size	D	KK	KF	AM	SW across flats	L12	MF	NA	L2	W†	WH†
32	12	M10x1.25	M8x1	22	10	6	10	11	18	16	26
40	16	M12x1.25	M10x1.25	24	13	6.5	10	15	20	20	30
50	20	M16x1.5	M14x1.5	32	17	6.5	12	19	26	25	37
63	20	M16x1.5	M14x1.5	32	17	6.5	12	19	26	25	37
80	25	M20x1.5	M18x1.5	40	22	10	16	24	33	30	46
100	25	M20x1.5	M18x1.5	40	22	10	16	24	33	35	51
125	32	M27x2	M24x2	54	27	13	20	31	41	45	65
160	40	M36x2	M30x2	72	36	16	20	39	56	60	80
200	40	M36x2	M30x2	72	36	16	25	39	56	70	95

†**NOTE:** Dimensions do not apply to Rod Lock Versions.

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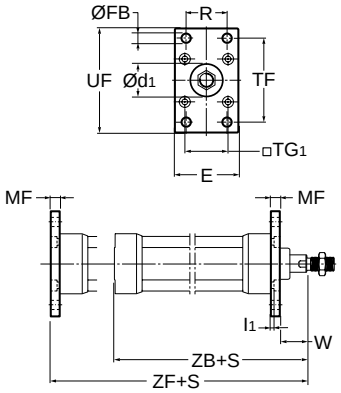
Flange – MF1, MF2

Intended for fixed mounting of cylinder. Flange can be fitted to front or rear end cover of cylinder.

Materials:
32-100mm bore flange: Surface-treated aluminum, black
125-200mm bore flange: Steel, black
Mounting screws acc. to DIN 6912: Zinc-plated steel 8.8

Supplied complete with mounting screws for attachment to cylinder.



According to ISO MF1/MF2, VDMA 24 562, AFNOR

Bore size mm	d1 H11 mm	FB H13 mm	TG1 mm	E mm	R JS14 mm	MF JS14 mm	TF JS14 mm	UF	l1 -0.5 mm	W mm	ZF mm	ZB mm	Weight kg	Part number
32	30	7	32.5	45	32	10	64	80	5.0	16	130	123.5	0.23	**P1C-4KMBA**
40	35	9	38.0	52	36	10	72	90	5.0	20	145	138.5	0.28	**P1C-4LMBA**
50	40	9	46.5	65	45	12	90	110	6.5	25	155	146.5	0.53	**P1C-4MMBA**
63	45	9	56.5	75	50	12	100	120	6.5	25	170	161.5	0.71	**P1C-4NMBA**
80	45	12	72.0	95	63	16	126	150	8.0	30	190	177.5	1.59	**P1C-4PMBA**
100	55	14	89.0	112	75	16	150	185	8.0	35	205	192.5	2.19	**P1C-4QMBA**
125	60	16	110.0	140	90	20	188	220	10.5	45	245	230.5	3.78	**P1C-4RMB**
160	65	18	140.0	180	115	20	230	260	9.5	60	280	266	C.F.	**L075370160**
200	75	22	175.0	220	135	25	270	300	12.5	70	300	281	C.F.	**L075370200**

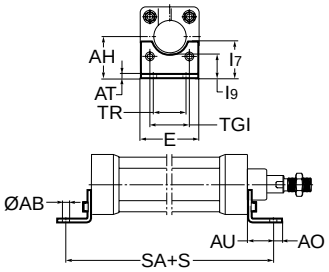
S = Stroke length C.F. = Consult Factory

Foot Bracket – MS1

Intended for fixed mounting of cylinder. Foot bracket can be fitted to front and rear end covers of cylinder.

Materials:
Foot bracket: Surface-treated steel, black
Mounting screws acc. to DIN 912: Zinc-plated steel 8.8

Supplied in pairs with mounting screws for attachment to cylinder.



According to ISO MS1, VDMA 24 562, AFNOR

Bore size mm	AB H14 mm	TG1 mm	E mm	TR JS14 mm	AO mm	AU mm	AH JS15 mm	l7 mm	AT mm	l9 JS14 mm	SA mm	Weight* kg	Part number
32	7	32.5	45	32	10	24	32	30	4.5	17.0	142	0.06	**P1C-4KMF**
40	9	38.0	52	36	8	28	36	30	4.5	18.5	161	0.08	**P1C-4LMF**
50	9	46.5	65	45	13	32	45	36	5.5	25.0	170	0.16	**P1C-4MMF**
63	9	56.5	75	50	13	32	50	35	5.5	27.5	185	0.25	**P1C-4NMF**
80	12	72.0	95	63	14	41	63	49	6.5	40.5	210	0.50	**P1C-4PMF**
100	14	89.0	115	75	15	41	71	54	6.5	43.5	220	0.85	**P1C-4QMF**
125	16	110.0	140	90	22	45	90	71	8.0	60.0	250	1.48	**P1C-4RMF**
160	18	140.0	180	115	15	60	115	100	9.0	63.5	300	C.F.	**L075380160**
200	22	175.0	220	135	30	70	135	100	12.0	65.0	320	C.F.	**L075380200**

S = Stroke length C.F. = Consult Factory *Weight per item

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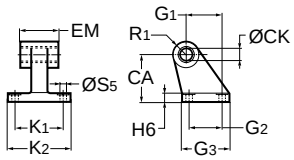
Pivot Bracket with Rigid Bearing

Intended for flexible mounting of cylinder. The pivot bracket can be combined with clevis bracket MP2.

Materials:
Pivot bracket: Surface-treated aluminium, black
Bearing: Sintered oil-bronze bushing



According to CETOP RP 107 P, VDMA 24 562, AFNOR

Bore size mm	CK H9 mm	S5 H13 mm	K1 JS14 mm	K2	G1 JS14 mm	G2 JS14 mm	EM mm	G3 mm	CA JS15 mm	H6 mm	R1 mm	Weight kg	Part number
32	10	6.6	38	51	21	18	25.5	31	32	8	10.0	0.06	**P1C-4KMD**
40	12	6.6	41	54	24	22	27.0	35	36	10	11.0	0.08	**P1C-4LMD**
50	12	9.0	50	65	33	30	31.0	45	45	12	13.0	0.15	**P1C-4MMD**
63	16	9.0	52	67	37	35	39.0	50	50	12	15.0	0.20	**P1C-4NMD**
80	16	11.0	66	86	47	40	49.0	60	63	14	15.0	0.33	**P1C-4PMD**
100	20	11.0	76	96	55	50	59.0	70	71	15	19.0	0.49	**P1C-4QMD**
125	25	14.0	94	124	70	60	69.0	90	90	20	22.5	1.02	**P1C-4RMD**
160	30	14.0	118	156	97	89	88.5	126	115	25	31.0	C.F.	**L075480160**
200	30	16.0	122	162	105	89	88.5	130	135	30	31.0	C.F.	**L075480200**

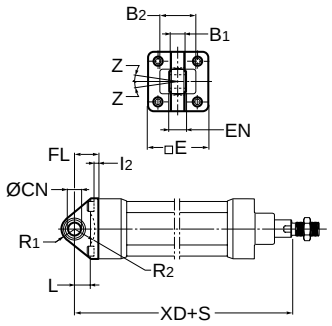
C.F. = Consult Factory

Swivel Eye Bracket – MP6

Intended for use together with clevis bracket GA

Materials:
Bracket: Surface-treated aluminium, black
(Cast iron for 160-200mm bores)
Swivel bearing acc. to DIN 648K: Hardened steel

Supplied complete with mounting screws for attachment to cylinder.



According to VDMA 24 562, AFNOR

Bore size mm	E mm	B1 mm	B2 mm	EN mm	R1 mm	R2 mm	FL mm	I2 mm	L mm	CN H7 mm	XD mm	Z	Weight kg	Part number
32	45	10.5	–	14	16	–	22	5.5	12	10	142	4°	0.08	**P1C-4KMSA**
40	52	12.0	–	16	18	–	25	5.5	15	12	160	4°	0.11	**P1C-4LMSA**
50	65	15.0	51	21	21	19	27	6.5	15	16	170	4°	0.20	**P1C-4MMSA**
63	75	15.0	–	21	23	–	32	6.5	20	16	190	4°	0.27	**P1C-4NMSA**
80	95	18.0	–	25	29	–	36	10.0	20	20	210	4°	0.52	**P1C-4PMSA**
100	115	18.0	–	25	31	–	41	10.0	25	20	230	4°	0.72	**P1C-4QMSA**
125	140	25.0	–	37	40	–	50	10.0	30	30	275	4°	1.53	**P1C-4RMSA**
160	177	30.0	–	43	44	41	55	4.0	41	35	315	16°	C.F.	**L075420160**
200	214	30.0	–	43	48	42	60	8.0	42	35	335	16°	C.F.	**L075420200**

S = Stroke length C.F. = Consult Factory

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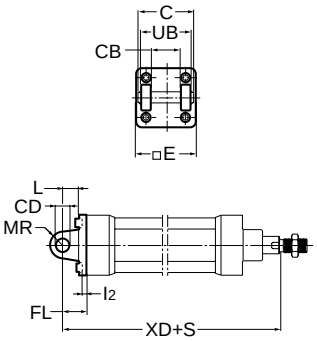
Clevis Bracket – MP2

Intended for flexible mounting of cylinder. Clevis bracket MP2 can be combined with clevis bracket MP4.

Materials:

Clevis bracket: Surface-treated aluminium, black for 32-160mm bores; Cast iron for 200mm bore
Pin: Surface hardened steel
Circlips according to DIN 471: Spring steel
Mounting screws acc. to DIN 912: Zinc-plated steel 8.8

Supplied complete with mounting screws for attachment to cylinder.



According to ISO MP2, VDMA 24 562, AFNOR

Bore size mm	C mm	E mm	UB h14 mm	CB H14 mm	FL ±0.2 mm	L mm	l2 mm	CD H9 mm	MR mm	XD mm	Weight kg	Part number
32	53	45	45	26	22	13	5.5	10	10	142	0.08	**P1C-4KMT**
40	60	52	52	28	25	16	5.5	12	12	160	0.11	**P1C-4LMT**
50	68	65	60	32	27	16	6.5	12	12	170	0.14	**P1C-4MMT**
63	78	75	70	40	32	21	6.5	16	16	190	0.29	**P1C-4NMT**
80	98	95	90	50	36	22	10.0	16	16	210	0.36	**P1C-4PMT**
100	118	115	110	60	41	27	10.0	20	20	230	0.64	**P1C-4QMT**
125	139	140	130	70	50	30	10.0	25	25	275	1.17	**P1C-4RMT**
160	178	180	170	90	55	35	10.0	30	25	315	C.F.	**L075390160**
200	178	200	170	90	60	35	14.0	30	25	335	C.F.	**L075390200**

S = Stroke length C.F. = Consult Factory

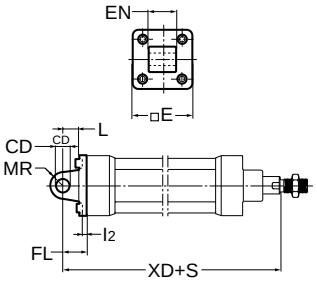
Clevis Bracket – MP4

Intended for flexible mounting of cylinder. Clevis bracket MP4 can be combined with clevis bracket MP2.

Materials:

Clevis bracket: Surface-treated aluminium, black for 32-125mm bores; Cast iron for 160-200mm bores
Mounting screws acc. to DIN 912: Zinc-plated steel 8.8

Supplied complete with mounting screws for attachment to cylinder.



According to ISO MP4, VDMA 24 562, AFNOR

Bore size mm	E mm	EW mm	FL mm	L ±0.2 mm	l2 mm	CD mm	MR H9 mm	XD mm	Weight kg	Part number
32	45	26	22	13	5.5	10	10	142	0.09	**P1C-4KME**
40	52	28	25	16	5.5	12	12	160	0.13	**P1C-4LME**
50	65	32	27	16	6.5	12	12	170	0.17	**P1C-4MME**
63	75	40	32	21	6.5	16	16	190	0.36	**P1C-4NME**
80	95	50	36	22	10.0	16	16	210	0.46	**P1C-4PME**
100	115	60	41	27	10.0	20	20	230	0.83	**P1C-4QME**
125	140	70	50	30	10.0	25	25	275	1.53	**P1C-4RME**
160	180	90	55	35	10.0	30	25	315	C.F.	**L075410160**
200	220	90	60	35	14.0	30	25	335	C.F.	**L075410200**

S = Stroke length C.F. = Consult Factory

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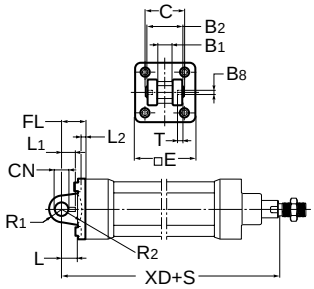
Clevis Bracket – GA

Intended for flexible mounting of cylinder. Clevis bracket GA can be combined with pivot bracket with swivel bearing, swivel eye bracket and swivel rod eye.

Materials:
Clevis bracket: Surface-treated aluminium
Pin: Surface hardened steel
Locking pin: Spring steel
Circlips according to DIN 471: Spring steel
Mounting screws acc. to DIN 912: Zinc-plated steel 8.8

Supplied complete with mounting screws for attachment to cylinder.

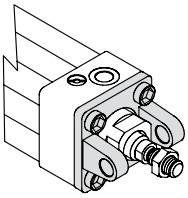


According to VDMA 24 562, AFNOR

Bore size mm	C mm	E mm	B2 d12 mm	B1 H14 mm	T mm	B3 mm	R2 mm	L1 mm	FL ±0.2 mm	I2 mm	L mm	CN F7 mm	R1 mm	XD mm	Weight kg	Part number
32	41	45	34	14	3	3.3	17	11.5	22	5.5	12	10	11	142	0.09	**P1C-4KMCA**
40	48	52	40	16	4	4.3	20	12.0	25	5.5	15	12	13	160	0.13	**P1C-4LMCA**
50	54	65	45	21	4	4.3	22	14.0	27	6.5	17	16	18	170	0.17	**P1C-4MMCA**
63	60	75	51	21	4	4.3	25	14.0	32	6.5	20	16	18	190	0.36	**P1C-4NMCA**
80	75	95	65	25	4	4.3	30	16.0	36	10.0	20	20	22	210	0.58	**P1C-4PMCA**
100	85	115	75	25	4	4.3	32	16.0	41	10.0	25	20	22	230	0.89	**P1C-4QMCA**
125	110	140	97	37	6	6.3	42	24.0	50	10.0	30	30	30	275	1.75	**P1C-4RMCA**
160	140	178	122	43	6	6.3	46	26.5	55	10.0	37	35 h9	36	C.F.	C.F.	**L075510160**
200	175	218	122	43	6	6.3	49	26.5	60	11.5	40	35 h9	38	C.F.	C.F.	**L075510200**

S = Stroke length C.F. = Consult Factory

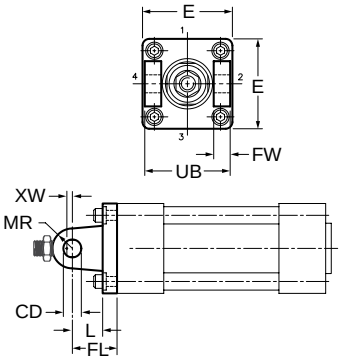
Head Detachable Clevis – MP7



Intended for flexible mounting of cylinder

Materials:
Clevis bracket: Cast iron for 32-63mm bores;
Surface treated aluminum, black for 80-200mm bores
Mounting screws acc. to DIN 912: Zinc-plated steel 8.8

Supplied complete with mounting screws for attachment to cylinder.



According to ISO MP7, VDMA 24 562, AFNOR

Bore size mm	CD mm	E mm	FL mm	FW mm	L mm	MR mm	UB mm	XW mm	Part number
32	10	46.5	22	8	12	10	45	4	**L075400032**
40	12	52	25	9	15	12	52	5	**L075400040**
50	12	63.5	27	10	15	13	60	10	**L075400050**
63	16	76	32	15	20	16	70	5	**L075400063**
80	16	95.5	36	20	20	17	90	10	**L075400080**
100	20	114.5	41	25	25	21	110	10	**L075400100**
125	25	140	50	30	35	25	130	15	**L075400125**
160	30	177	55	40	36	30	170	25	**L075400160**
200	30	214	60	40	41	30	170	35	**L075400200**

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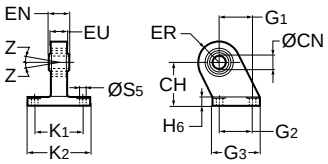
Pivot Bracket with Swivel Bearing

Intended for use together with clevis bracket GA.

Materials:
Pivot bracket: Surface-treated steel, black
Swivel bearing acc. to DIN 648K: Hardened steel



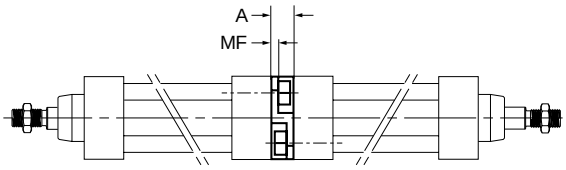
According to VDMA 24 562, AFNOR

Bore size mm	CN H7 mm	S5 H13 mm	K1 JS14 mm	K2 mm	EU mm	G1 JS14 mm	G2 JS14 mm	EN mm	G3 mm	CH JS15 mm	H6 mm	ER mm	Z	Weight kg	Part number
32	10	6.6	38	51	10.5	21	18	14	31	32	10	16	4°	0.18	**P1C-4KMA**
40	12	6.6	41	54	12.0	24	22	16	35	36	10	18	4°	0.25	**P1C-4LMA**
50	16	9.0	50	65	15.0	33	30	21	45	45	12	21	4°	0.47	**P1C-4MMA**
63	16	9.0	52	67	15.0	37	35	21	50	50	12	23	4°	0.57	**P1C-4NMA**
80	20	11.0	66	86	18.0	47	40	25	60	63	14	28	4°	1.05	**P1C-4PMA**
100	20	11.0	76	96	18.0	55	50	25	70	71	15	30	4°	1.42	**P1C-4QMA**
125	30	14.0	94	124	25.0	70	60	37	90	90	20	40	4°	3.10	**P1C-4RMA**

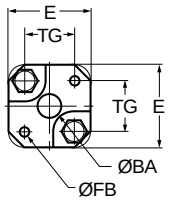
Mounting Kit

Mounting kit for back to back mounted cylinders, 3 and 4 position duplex cylinders.

Materials:
Mounting: Aluminium
Mounting screws: Zinc-plated steel 8.8



Bore size mm	E mm	TG mm	ØFB mm	MF mm	A mm	ØBA mm	Weight kg	Part number
32	50	32.5	6.5	5	16	30	0.060	**P1E-6KB0**
40	60	38.0	6.5	5	16	35	0.078	**P1E-6LB0**
50	66	46.5	8.5	6	20	40	0.162	**P1E-6MB0**
63	80	56.5	8.5	6	20	45	0.194	**P1E-6NB0**
80	100	72.0	10.5	8	25	45	0.450	**P1E-6PB0**
100	118	89.0	10.5	8	25	55	0.672	**P1E-6QB0**

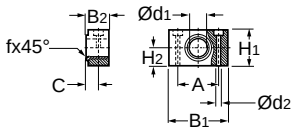


Pivot Bracket – MT4

Intended for use together with central trunnion MT4.

Materials:
Pivot bracket: Surface-treated aluminium
Bearing acc. to DIN 1850 C: Sintered oil-bronze bushing

Supplied in pairs.



According to ISO, VDMA 24 562, AFNOR

Bore size mm	B1 mm	B2 mm	A mm	C mm	d1 mm	d2 H13 mm	H1 mm	H2 mm	fx45° min mm	Weight* kg	Part number
32	46	18.0	32	10.5	12	6.6	30	15	1.0	0.04	**9301054261**
40	55	21.0	36	12.0	16	9.0	36	18	1.6	0.07	**9301054262**
50	55	21.0	36	12.0	16	9.0	36	18	1.6	0.07	
63	65	23.0	42	13.0	20	11.0	40	20	1.6	0.12	**9301054264**
80	65	23.0	42	13.0	20	11.0	40	20	1.6	0.12	
100	75	28.5	50	16.0	25	14.0	50	25	2.0	0.21	**9301054266**
125	75	28.5	50	16.0	25	14.0	50	25	2.0	0.21	

* Weight per item

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Intermediate Trunnion – MT4

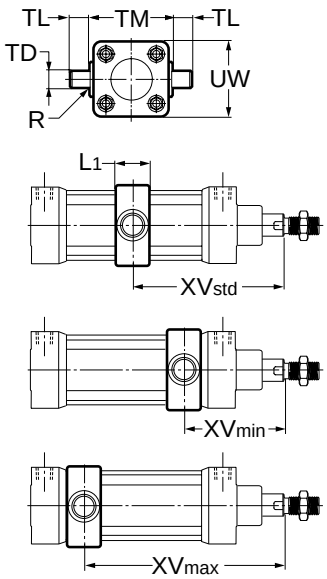
Standard*

Tie Rod Version

Intended for articulated mounting of cylinder. The trunnion is factory-fitted at an optional location. Order by specifying Mounting Style G or 7 and providing the desired XV dimension (3-digit measure in mm). See page B67 for ordering information. Combined with pivot bracket for MT4 for 32-125mm bores.

Materials:
Trunnion: Zinc plated steel
(Cast iron for 160-200mm bores)

* Standard mounting is for the Standard cylinder body and is permanently affixed by the factory.



According to ISO MT4, VDMA 24 562, AFNOR

Bore size mm	TM h14 mm	TL h14 mm	TD e9 mm	R mm	UW mm	L1 mm	X1 mm	XVmin mm	X2 mm	Weight kg
32	50	12	12	1.0	46	15	73.0	62.0	84.0	0.13
40	63	16	16	1.6	59	20	82.5	73.0	92.0	0.31
50	75	16	16	1.6	69	20	90.0	80.5	99.5	0.37
63	90	20	20	1.6	84	25	97.5	89.5	106.0	0.69
80	110	20	20	1.6	102	25	110.0	98.0	122.0	0.89
100	132	25	25	2.0	125	30	120.0	110.5	129.5	1.58
125	160	25	25	2.0	155	32	145.0	132.0	158.0	2.60
160	200	32	32	2.5	190	70	C.F.	169	C.F.	C.F.
200	250	32	32	2.5	242	70	C.F.	184	C.F.	C.F.

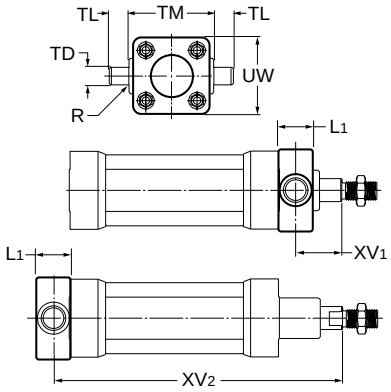
XVstd = X1 + Stroke length/2 XVmax = X2 + Stroke length C.F. = Consult Factory

Flange Mounted Trunnion

Intended for articulated mounting of cylinder. This trunnion can be flange mounted on the front or rear end cover of all P1D cylinders. If you choose, you can order a complete cylinder with factory-fitted flange mounted trunnion – see the ordering information on page B67 Individual trunnions have part numbers as shown below.

Materials:
Trunnion: zinc plated steel
Screws: zinc plated steel, 8.8

Delivered complete with mounting screws for attachment to the cylinder



According to ISO MT4, VDMA 24 562, AFNOR

Bore size mm	TM h14 mm	TL h14 mm	TD e9 mm	R mm	UW mm	L1 mm	XV_1 mm	X mm	Weight kg	Part number
32	50	12	12	1.0	46	14	19.0	127.0	0.17	**P1D-4KMYF**
40	63	16	16	1.6	59	19	20.5	144.5	0.43	**P1D-4LMYF**
50	75	16	16	1.6	69	19	27.5	152.5	0.55	**P1D-4MMYF**
63	90	20	20	1.6	84	24	25.0	170.0	1.10	**P1D-4NMYF**
80	110	20	20	1.6	102	24	34.0	186.0	1.66	**P1D-4PMYF**
100	132	25	25	2.0	155	29	36.5	203.5	3.00	**P1D-4QMYF**

XV_2 = X + Stroke length

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Swivel Rod Eye

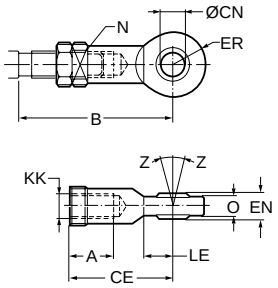
Stainless Steel
Swivel Rod Eye

Swivel rod eye for articulated mounting of cylinder.
Swivel rod eye can be combined with clevis bracket GA.
Maintenance-free.

Materials:
Swivel rod eye: Zinc-plated steel
Swivel bearing according to DIN 648K: Hardened steel

Swivel rod eye: Stainless steel
Swivel bearing according to DIN 648K: Stainless steel

Use stainless steel nut (see next page) with stainless steel swivel rod eye.



According to ISO 8139

Bore size mm	A mm	B min mm	B max mm	CE mm	CN H9 mm	EN h12 mm	ER mm	KK	LE min mm	N mm	O mm	Z	Weight kg	Part number	Stainless steel part number
32	20	48.0	55	3	10	14	14	M10x1.25	15	17	10.5	12°	0.08	**P1C-4KRS**	**P1S-4JRT**
40	22	56.0	62	50	12	16	16	M12x1.25	17	19	12.0	12°	0.12	**P1C-4LRS**	**P1S-4LRT**
50	28	72.0	80	64	16	21	21	M16x1.5	22	22	15.0	15°	0.25	**P1C-4MRS**	**P1S-4MRT**
63	28	72.0	80	64	16	21	21	M16x1.5	22	22	15.0	15°	0.25		
80	33	87.0	97	77	20	25	25	M20x1.5	26	32	18.0	15°	0.46	**P1C-4PRS**	**P1S-4PRT**
100	33	87.0	97	77	20	25	25	M20x1.5	26	32	18.0	15°	0.46		
125	51	123.5	137	110	30	37	35	M27x2	36	41	25.0	15°	1.28	**P1C-4RRS**	**P1S-4RRT**
160/200	56	C.F.	C.F.	125	35*	43	40	M36x2	40	50	28.0	15°	C.F.	**L075470036**	**C.F.**

*H7 C.F. = Consult Factory

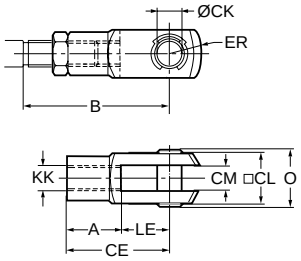
Clevis

Stainless Steel
Clevis

Clevis for articulated mounting of cylinder.

Materials:
Clevis, clip: Galvanized steel
Pin: Hardened steel

Clevis: Stainless steel
Pin: Stainless steel
Circlips according to DIN 471: Stainless steel



According to ISO 8140

Bore size mm	A mm	B min mm	B max mm	CE mm	CK h11/E9 mm	CL mm	CM mm	ER mm	KK	LE mm	O mm	Weight kg	Part number	Stainless steel part number
32	20	45.0	52	40	10	20	10	16	M10x1.25	20	28.0	0.09	**P1C-4KRC**	**P1S-4JRD**
40	24	54.0	60	48	12	24	12	19	M12x1.25	24	32.0	0.15	**P1C-4LRC**	**P1S-4LRD**
50	32	72.0	80	64	16	32	16	25	M16x1.5	32	41.5	0.35	**P1C-4MRC**	**P1S-4MRD**
63	32	72.0	80	64	16	32	16	25	M16x1.5	32	41.5	0.35		
80	40	90.0	100	80	20	40	20	32	M20x1.5	40	50.0	0.75	**P1C-4PRC**	**P1S-4PRD**
100	40	90.0	100	80	20	40	20	32	M20x1.5	40	50.0	0.75		
125	56	123.5	137	110	30	55	30	45	M27x2	54	72.0	2.10	**P1C-4RRC**	**P1S-4RRD**
160/200	71	C.F.	C.F.	144	35	70	35	57	M36x2	72	95	C.F.	**L075490036**	**C.F.**

C.F. = Consult Factory

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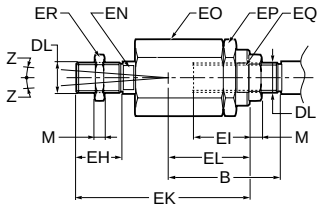
Flexo Coupling

Flexo coupling for articulated mounting of piston rod. Flexo fitting is intended to take up axial angle errors within a range of ±4°.

Materials:
Flexo coupling, nut: Zinc-plated steel
Socket: Hardened steel

Supplied complete with galvanized adjustment nut.



Bore size mm	B min mm	B max mm	DL	EH mm	EI mm	EK mm	EL mm	EN mm	EO mm	EP mm	EQ mm	ER mm	M mm	Z	Weight kg	Part number
32	36.0	43	M10x1.25	20	23	70	31	12	30	30	19	30	5.0	4°	0.21	**P1C-4KRF**
40	37.0	43	M12x1.25	23	23	67	31	12	30	30	19	30	6.0	4°	0.22	**P1C-4LRF**
50	53.0	61	M16x1.5	40	32	112	45	19	41	41	30	41	8.0	4°	0.67	**P1C-4MRF**
63	53.0	61	M16x1.5	40	32	112	45	19	41	41	30	41	8.0	4°	0.67	
80	57.0	67	M20x1.5	39	42	122	56	19	41	41	30	41	10.0	4°	0.72	**P1C-4PRF**
100	57.0	67	M20x1.5	39	42	122	56	19	41	41	30	41	10.0	4°	0.72	
125	75.5	89	M27x2	48	48	145	60	24	55	55	32	55	13.5	4°	1.80	**P1C-4RRF**
160/200	C.F.	C.F.	M36x2	72	78	251	C.F.	36	75	75	50	55	18.0	4°	C.F.	**L075530036**

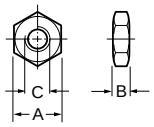
C.F. = Consult Factory

Nuts

Intended for fixed mounting of accessories to the piston rod.

Material: Zinc-plated steel

All P1D cylinders are delivered with a zinc-plated steel piston rod nut, except P1D Clean, which is delivered with a stainless steel piston rod nut instead.



Stainless Steel Nut

Material: Stainless steel A2

All P1D cylinders are delivered with a zinc-plated steel piston rod nut, except P1D Clean, which is delivered with a stainless steel piston rod nut instead.

Acid-proof nut

Material: Acid-proof steel A4

Cylinders with acid-proof piston rod are supplied with nut of acid-proof steel.

According to DIN 439 B

Bore size mm	A mm	B mm	C	Weight kg	Part numbers		
					Steel	Stainless steel	Acid-proof
32	17	5.0	M10x1.25	0.007	**9128985601**	**9126725404**	**0261109919**
40	19	6.0	M12x1.25	0.010	**0261109910**	**9126725405**	**0261109920**
50	24	8.0	M16x1.5	0.021	**9128985603**	**9126725406**	**0261109917**
63	24	8.0	M16x1.5	0.021			
80	30	10.0	M20x1.5	0.040	**0261109911**	**0261109921**	**0261109916**
100	30	10.0	M20x1.5	0.040			
125	41	13.5	M27x2	0.100	**0261109912**	**0261109922**	**0261109918**
160/200	55	18.0	M36x2	C.F.	**L075540036**	**C.F.**	**C.F.**

C.F. = Consult Factory

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Service Kits: P1D-S, P1D-T, P1D-C, and P1D-F Versions

Cylinder bore mm	P1D cylinder version Consisting of: piston, rod and o-ring seals
32	SK032P1D01
40	SK040P1D01
50	SK050P1D01
63	SK063P1D01
80	SK080P1D01
100	SK100P1D01
125	SK125P1D01

Gland Service Kits: P1D-G and P1D-E Versions

Bore size mm	Rod dia. mm	Rod no.	RG-rod gland cartridge kit Consisting of: rod gland, seals, and wiper Nitrile seals part number	RG-rod gland cartridge kit Consisting of: rod gland, seals, and wiper Fluorocarbon seals part number	RK-rod seal kit Consisting of: gland seals, and wiper Nitrile seals part number	RK-rod seal kit Consisting of: gland seals, and wiper Fluorocarbon seals Part number
32	12	1	RG0P1D0121	RG0P1D0125	RK0P1D0121	RK0P1D0125
40	16	1	RG0P1D0161	RG0P1D0165	RK0P1D0161	RK0P1D0165
50 & 63	20	1	RG0P1D0201	RG0P1D0205	RK0P1D0201	RK0P1D0205
80 & 100	25	1	RG0P1D0251	RG0P1D0255	RK0P1D0251	RK0P1D0255
125	32	1	RG0P1D0321	RG0P1D0325	RK0P1D0321	RK0P1D0325

Piston and End Seal Service Kits: P1D-G and P1D-E Versions

Bore size mm	PK – piston seal kit Consisting of: piston seals, wear ring, and magnetic strip (nitrile only) Nitrile seals part number	PK – piston seal kit Consisting of: piston seals, wear ring, and magnetic strip (nitrile only) Fluorocarbon seals part number	CB – cylinder body end seal kit Consisting of: end seal o-rings Nitrile seals part number	CB – cylinder body end seal kit Consisting of: end seal o-rings Fluorocarbon seals part number
32	PK032P1D01	PK032P1D05	CB032P1D01	CB032P1D05
40	PK040P1D01	PK040P1D05	CB040P1D01	CB040P1D05
50	PK050P1D01	PK050P1D05	CB050P1D01	CB050P1D05
63	PK063P1D01	PK063P1D05	CB063P1D01	CB063P1D05
80	PK080P1D01	PK080P1D05	CB080P1D01	CB080P1D05
100	PK100P1D01	PK100P1D05	CB100P1D01	CB100P1D05
125	PK125P1D01	PK125P1D05	CB125P1D01	CB125P1D05

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SR Series

- 304 stainless steel cylinder body, non repairable construction
- Aluminum heads and caps, Delrin heads and caps are optional
- 12 bore sizes — 5/16" through 3" (see dimensional tables for SRM and SRD/SRDM exclusions).
- Stainless steel piston rods are standard up to 1.50" bore
- 28 standard mounting styles (not all available on SRM and SRD/SRDM – see table on following page)
- Single and double acting
- Adjustable cushions optional on both ends

Operating information

Operating pressure:	250 PSIG (17 bar) for SR and SRM 100 PSIG (7 bar) for SRD/SRDM
Temperature range:	-10°F to 165°F (-23°C to 74°C) for SR 14°F to 140°F (-10°C to 60°C) for SRM 32°F to 160°F (0°C to 71°C) for SRD/SRDM
Filtration requirements:	40 micron, dry filtered air

Ordering information

1.06	C		D	SR	B	V				C	2.00

Bore Size [1]

.31	5/16"
.44	7/16"
.56	9/16"
.75	3/4"
.88	7/8"
1.06	1-1/16"
1.25	1-1/4"
1.50	1-1/2"
1.75	1-3/4"
2.00	2"
2.50	2-1/2"
3.00	3"

Cushion Head [2]
Use "C" only when cushion head is required.

Double Rod
Use "K" only when double rod is required.
Available on DX and DXH mounting only.

Mounting [1, 5]
N, NR, NRP, P, R, RP, D, DP, DXP, DX, DXH, A, RA, AP, AR, BRN, BRR, BFD, BRD, BFN, BFR, TRN, TRR, TFD, TRD, TFN or TFR.

Series

SR	Standard cylinder
SRM	With magnetic piston
SRD	With delrin caps
SRDM	With delrin caps and magnetic piston

Piston

Blank	No bumpers
B	With bumpers [3]

Seals

Blank	Standard seals
V	Fluorocarbon seals [4]
W	Rod wiper

Special
Use "S" only if special modifications are required, except piston rod end.

Non-Standard Rod
Specify Y for stainless steel piston rod.
Stainless steel is standard on all bore sizes up to and including 1.50" Bore.

Non-Standard Piston Rod
Use "3" only when special piston rod end is required.
Specify CC, LE and A Dimensions (See next page.)

Cushion Cap [2]
Use "C" only when cushion cap is required.

Stroke
Specify in inches.

1 Bore sizes and mounting styles are limited by series. See table on next page for availability.
2 Cushions not available on SRD/SRDM series or KDX mounts.
3 Bumpers may increase cylinder length. Please reference catalog 0900P-E, page D37 for adders.
4 Fluorocarbon seals not available on SRM or SRDM series.
5 TRD mount not available with cushions.

Sensors
For sensors see page B339.

For ordering purposes, when special options or common modifications are requested, the factory will assign a sequential part number in place of the model number.

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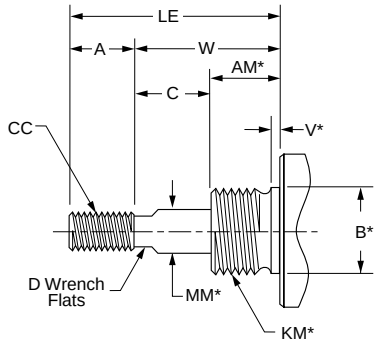
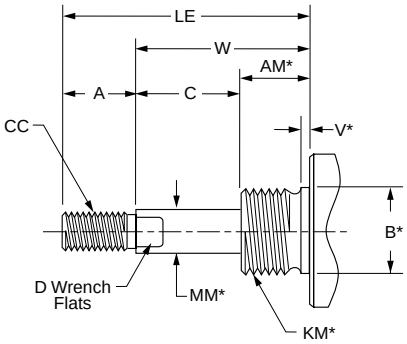
Non-Standard Rods

For non-standard rod dimensions, or undersized rod end threads, put a "3" in model number and describe the rod using the letters shown in the drawing. Specify CC, LE and A dimensions. LE is measured in retracted position.

Full diameter rod end threads



Undersized rod end threads

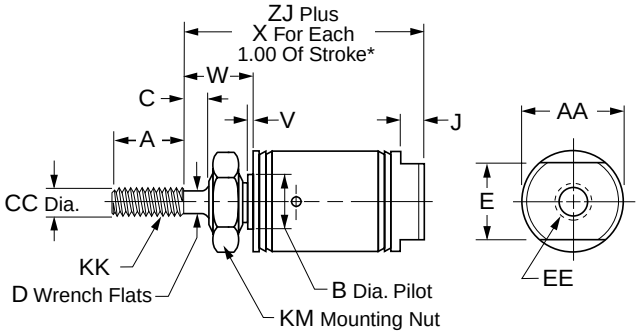


* Requires an S designation in model number.

Mounting Style N

Nose mount, spring return

Bore size	SR	SRM	Std. strokes (in)	Max.. stroke (in)	SS rod std
5/16"	•		1/2, 1, 1-1/2, 2, 2-1/2, 3, 4	4	✔
7/16"	•		1/2, 1, 1-1/2, 2, 2-1/2, 3, 4	6	✔
9/16"	•	•	1/2, 1, 1-1/2, 2, 3, 4	6	✔
3/4"	•	•	1/2, 1, 1-1/2, 2, 3, 4	6	✔
7/8"	•		1/2, 1, 1-1/2, 2, 3, 4	6	✔
1-1/16"	•	•	1/2, 1, 1-1/2, 2, 3, 4	6	✔
1-1/4"	•	•	1/2, 1, 2, 3, 4	6	✔
1-1/2"	•	•	1/2, 1, 2, 3, 4	6	✔
1-3/4"	•	•	1/2, 1, 1-1/2, 2, 2-1/2, 3, 4	6	
2"	•	•	–	4	



Bore size	A	AA	B	C	CC	D	E	EE	J	KK	KM	V	W	X	ZJ SR	ZJ SRM
5/16"	0.38	0.36	–	–	0.125	–	0.36	#10-32	–	#5-40 UNC	1/4-28	0	0.25	0.75**	1.12	–
7/16"	0.50	0.50	0.374	–	0.188	–	0.38	#10-32	0.19	#10-32 UNF	3/8-24	0.05	0.31	0.94**	1.31	–
9/16"	0.50	0.62	0.437	–	0.188	–	0.50	#10-32	0.19	#10-32 UNF	7/16-20	0.06	0.38	1.62	1.53	1.76
3/4"	0.50	0.81	0.499	–	0.250	–	0.62	1/8 NPTF	0.19	1/4-28 UNF	1/2-20	0.09	0.44	1.69	1.50	1.75
7/8"	0.50	0.93	0.624	–	0.250	–	0.62	1/8 NPTF	0.19	1/4-28 UNF	5/8-18	0.09	0.50	1.56	1.84	–
1-1/16"	0.50	1.12	0.624	0.12	0.312	0.25	0.88	1/8 NPTF	0.19	5/16-24 UNF	5/8-18	0.09	0.69	1.56	2.06	2.31
1-1/4"	0.75	1.34	0.749	0.25	0.437	0.38	0.88	1/8 NPTF	0.25	7/16-20 UNF	3/4-16	0.09	0.88	1.81	2.66	2.78
1-1/2"	0.75	1.56	0.749	0.25	0.437	0.38	0.88	1/8 NPTF	0.25	7/16-20 UNF	3/4-16	0.09	0.88	1.69	2.44	2.69
1-3/4"	0.88	1.84	1.031	0.38	0.500	7/16	1.25	1/4 NPTF	0.25	1/2-20 UNF	1-14	0.09	0.75	2.0	2.97	3.09
2"	0.88	2.08	1.374	0.38	0.625	0.50	1.25	1/4 NPTF	0.31	1/2-20 UNF	1-1/4-12	0.12	1.19	–	▲	▲

▲ **SR:** 5.41" for 1" stroke, 7.41" for 2 " stroke, 8.66" for 3" stroke, 11.59" for 4" stroke.
SRM: 5.66" for 1" stroke, 7.66" for 2" stroke, 8.91" for 3 " stroke, 11.84" for 4" stroke.

* To determine lengths for half inch stroke increments, determine length for next highest whole number stroke and subtract a half inch.

** For each 0.50" of stroke

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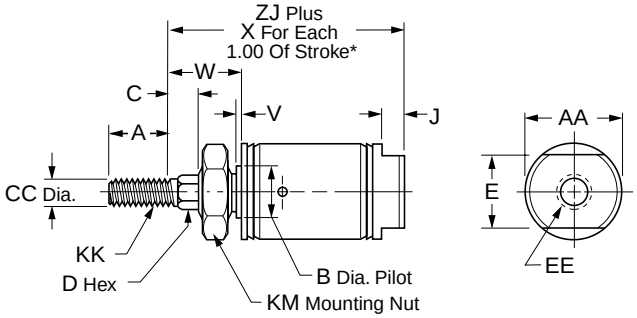
Mounting Style NR

Nose mount, spring return, hex rod



Bore size	SR	SRM	Std. stroke (in)	Max.. stroke (in)	SS rod std
7/16"	•		1/2, 1, 1-1/2, 2, 3, 4	6	✔
9/16"	•	•	1/2, 1, 1-1/2, 2, 3, 4	6	✔
3/4"	•	•	1/2, 1, 1-1/2, 2, 3, 4	6	✔
7/8"	•		1/2, 1, 1-1/2, 2, 3, 4	6	✔
1-1/16"	•	•	1/2, 1, 1-1/2, 2, 3, 4	6	✔
1-1/4"	•	•	1, 2, 3, 4	6	✔
1-1/2"	•	•	1/2, 1, 2, 3, 4	6	✔
1-3/4"	•	•	1/2, 1, 1-1/2, 2, 2-1/2, 3, 4	6	

Bore size	A	AA	B	C	CC	D	E	EE	J	KK	KM	V	W	X	ZJ	
															SR	SRM
7/16"	0.50	–	0.374	0.25	0.188	3/16	–	#10-32	0.19	#10-32 UNF	3/8-24	0.05	0.56	0.94	1.56	–
9/16"	0.50	–	0.437	0.25	0.188	3/16	–	#10-32	0.19	#10-32 UNF	7/16-20	0.06	0.62	1.62	1.78	2.03
3/4"	0.50	–	0.499	0.25	0.250	1/4	–	1/8 NPTF	0.19	1/4-28 UNF	1/2-20	0.09	0.69	1.69	1.75	2.00
7/8"	0.50	–	0.624	0.25	0.250	1/4	–	1/8 NPTF	0.19	1/4-28 UNF	5/8-18	0.09	0.75	1.56	2.09	–
1-1/16"	0.50	1.12	0.624	0.25	0.312	3/8	0.88	1/8 NPTF	0.19	5/16-24 UNF	5/8-18	0.09	0.75	1.56	2.19	2.44
1-1/4"	0.88	1.34	0.749	0.25	0.437	7/16	0.88	1/8 NPTF	0.25	7/16-20 UNF	3/4-16	0.09	0.88	1.81	2.66	2.78
1-1/2"	0.88	1.56	0.749	0.38	0.437	7/16	0.88	1/8 NPTF	0.25	7/16-20 UNF	3/4-16	0.09	1.00	1.69	2.56	2.81
1-3/4"	0.88	1.84	1.031	0.38	0.500	1/2	1.25	1/4 NPTF	0.25	1/2-20 UNF	1-14	0.09	1.12	2.0	3.03	3.15

* To determine lengths for half inch stroke increments, determine length for next highest whole number stroke and subtract one half inch.

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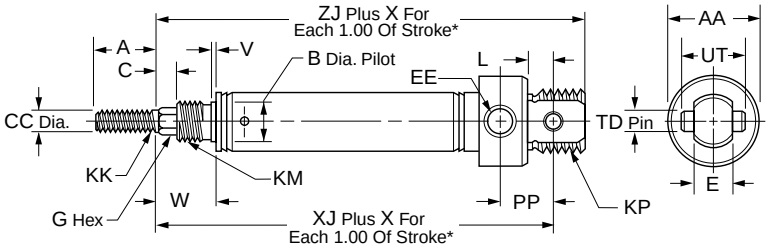
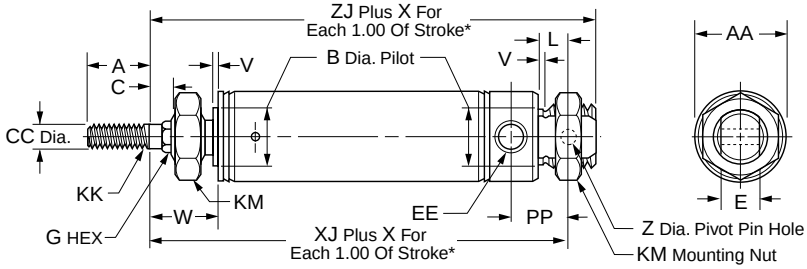
Mounting Style NRP

Pivot & nose mount, spring return, hex rod



Bore sizes
7/16" *
3/4"

* No mounting nuts



Bore sizes
9/16" *
7/8" *
1-1/16" *
1-1/4"
1-1/2" *
1-3/4"

* No mounting nuts

Bore size	SR	SRM	Std. stroke (in)	Max. stroke (in)	SS rod std	A	AA	B	C	CC	E	EE
7/16"	•		1/2, 1, 1-1/2, 2, 3, 4	6	✔	0.50	0.74	0.374	0.25	0.188	0.31	#10-32
9/16"	•	•	1/2, 1, 1-1/2, 2, 3, 4	6	✔	0.50	0.62	0.437	0.25	0.188	0.31	#10-32
3/4"	•	•	1, 2, 3, 4	6	✔	0.50	0.86	0.499	0.25	0.250	0.38	1/8 NPTF
7/8"	•		1, 2, 3, 4	6	✔	0.50	0.93	0.624	0.25	0.250	0.38	1/8 NPTF
1-1/16"	•	•	1, 2, 3, 4	6	✔	0.50	1.12	0.624	0.25	0.312	0.38	1/8 NPTF
1-1/4"	•	•	1, 2, 3, 4	6	✔	0.88	1.34	0.749	0.25	0.437	0.50	1/8 NPTF
1-1/2"	•	•	1, 2, 3, 4	6	✔	0.88	1.56	0.749	0.38	0.437	0.62	1/8 NPTF
1-3/4"	•	•	1/2, 1, 1-1/2, 2, 2-1/2, 3, 4	6		0.88	1.84	1.031	0.38	0.500	0.62	1/4 NPTF

Bore size	G HEX	KK	KM	KP	L	PP	TD	UT	V	W	X	XJ		Z	ZJ	
												SR	SRM		SR	SRM
7/16"	3/16	#10-32 UNF	3/8-24	7/16-20 UNF	0.25	0.44	0.156	0.50	0.05	0.56	0.94	2.00	–	–	2.25	–
9/16"	3/16	#10-32 UNF	7/16-20	7/16-20 UNF	0.25	0.38	–	–	0.06	0.62	1.62	2.06	2.31	0.157	2.25	2.50
3/4"	1/4	1/4-28 UNF	1/2-20	5/8-18 UNF	0.34	0.62	0.250	0.75	0.09	0.69	1.69	2.53	2.78	–	2.81	3.06
7/8"	1/4	1/4-28 UNF	5/8-18	5/8-18 UNF	0.34	0.62	0.250	0.75	0.09	0.75	1.56	2.72	–	–	3.00	–
1-1/16"	3/8	5/16-24 UNF	5/8-18	5/8-18 UNF	0.34	0.62	0.250	0.75	0.09	0.75	1.56	2.78	3.03	–	3.06	3.31
1-1/4"	7/16	7/16-20 UNF	3/4-16	–	0.41	0.78	0.251	–	0.09	0.88	1.81	3.38	3.50	0.251	3.78	3.91
1-1/2"	7/16	7/16-20 UNF	3/4-16	–	0.50	0.81	0.375	1.00	0.09	1.00	1.69	3.25	3.50	–	3.62	3.87
1-3/4"	1/2	1/2-20 UNF	1-14	–	0.50	1.12	0.376	0.62	0.09	1.12	2.0	4.09	4.21	0.376	4.59	4.71

* To determine lengths for half inch stroke increments, determine length for next highest whole number stroke and subtract one half inch.

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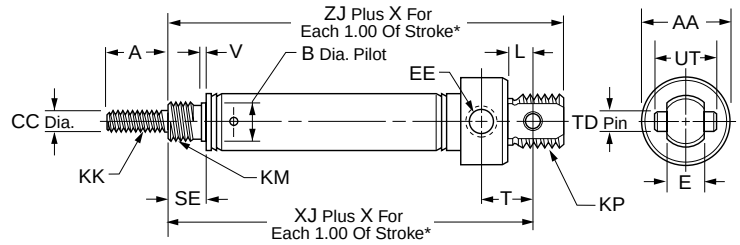
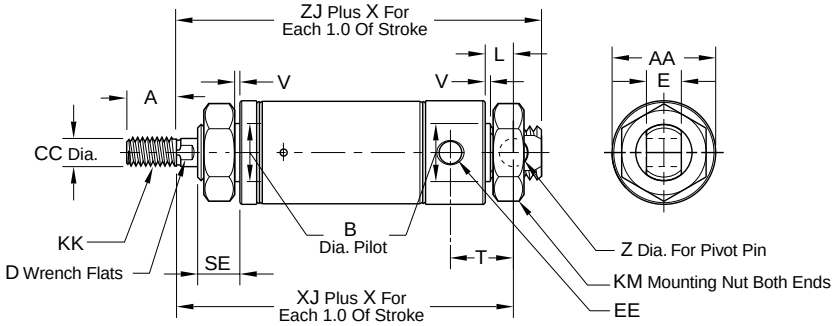
Mounting Style P

Pivot mount, spring return



Bore sizes
5/16" *
7/16"
3/4"

* No mounting nuts



Bore sizes
9/16" *
7/8" *
1-1/16" *
1-1/4"
1-1/2" *
1-3/4"
2" *

* No mounting nuts

Bore size	SR	SRM	Std. stroke (in)	Max. stroke (in)	SS rod std	A	AA	B	CC	D	E	EE
5/16"	•		1/2, 1, 1-1/2, 2, 3, 4	4	✔	0.38	0.39	–	0.125	–	0.25	#10-32
7/16"	•		1/2, 1, 1-1/2, 2, 3, 4	6	✔	0.50	0.74	0.374	0.188	–	0.31	#10-32
9/16"	•	•	1/2, 1, 1-1/2, 2, 3, 4	6	✔	0.50	0.62	0.437	0.188	–	0.31	#10-32
3/4"	•	•	1/2, 1, 1-1/2, 2, 3, 4	6	✔	0.50	0.86	0.499	0.250	–	0.38	1/8 NPTF
7/8"	•		1/2, 1, 1-1/2, 2, 3, 4	6	✔	0.50	0.93	0.624	0.250	–	0.38	1/8 NPTF
1-1/16"	•	•	1/2, 1, 1-1/2, 2, 3, 4	6	✔	0.50	1.12	0.624	0.312	0.25	0.38	1/8 NPTF
1-1/4"	•	•	1, 2, 3, 4	6	✔	0.75	1.34	0.749	0.437	0.38	0.50	1/8 NPTF
1-1/2"	•	•	1, 2, 3, 4	6	✔	0.75	1.56	0.749	0.437	0.38	0.62	1/8 NPTF
1-3/4"	•	•	1/2, 1, 1-1/2, 2, 2-1/2, 3, 4	6		0.88	1.84	1.031	0.500	7/16	0.62	1/4 NPTF
2"	•	•	–	4		0.88	2.08	1.374	0.625	0.50	0.75	1/4 NPTF

Bore size	KK	KM	KP	L	SE	T	TD	UT	V	X	XJ SR	XJ SRM	Z	ZJ SR	ZJ SRM
5/16"	#5-40 UNC	3/8-24	–	0.34	0.25	0.34	–	–	–	0.75	1.52	–	0.125	1.68	–
7/16"	#10-32 UNF	3/8-24	7/16-20 UNF	0.25	0.31	0.44	0.156	0.50	0.05	0.94	1.75	–	–	2.00	–
9/16"	#10-32 UNF	7/16-20	7/16-20 UNF	0.25	0.38	0.38	–	–	0.06	1.62	1.81	2.06	0.157	2.00	2.25
3/4"	1/4-28 UNF	1/2-20	5/8-18 UNF	0.34	0.44	0.62	0.250	0.75	0.09	1.69	2.28	2.53	–	2.56	2.81
7/8"	1/4-28 UNF	5/8-18	5/8-18 UNF	0.34	0.50	0.62	0.250	0.75	0.09	1.56	2.47	–	–	2.75	–
1-1/16"	5/16-24 UNF	5/8-18	5/8-18 UNF	0.34	0.50	0.62	0.250	0.75	0.09	1.56	2.66	2.91	–	2.94	3.19
1-1/4"	7/16-20 UNF	3/4-16	–	0.41	0.63	0.78	–	–	0.09	1.81	3.38	3.91	0.251	3.78	3.50
1-1/2"	7/16-20 UNF	3/4-16	–	0.50	0.63	0.81	0.375	1.00	0.09	1.81	3.12	3.37	–	3.50	3.75
1-3/4"	1/2-20 UNF	1-14	–	0.50	0.75	1.12	–	–	0.09	2.0	4.03	4.15	0.376	4.53	4.65
2"	1/2-20 UNF	1-1/4-12	–	0.56	0.81	1.03	–	–	0.12	–	■	✷	–	▲	◆

■ 6.34" for 1" stroke, 8.34" for 2" stroke, 9.59" for 3" stroke, 12.53" for 4" stroke*

▲ 6.78" for 1" stroke, 8.78" for 2" stroke, 10.03" for 3" stroke, 12.97" for 4" stroke*

* To determine lengths for half inch stroke increments, determine length for next highest whole number stroke and subtract a half inch.

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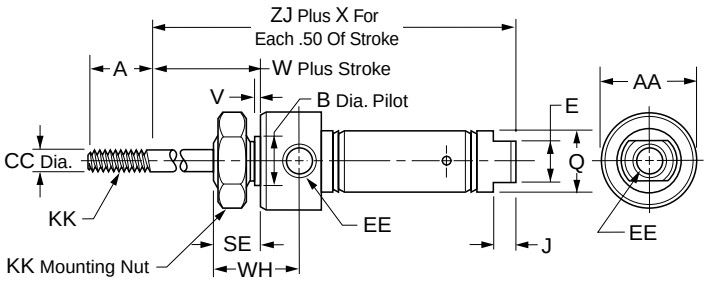
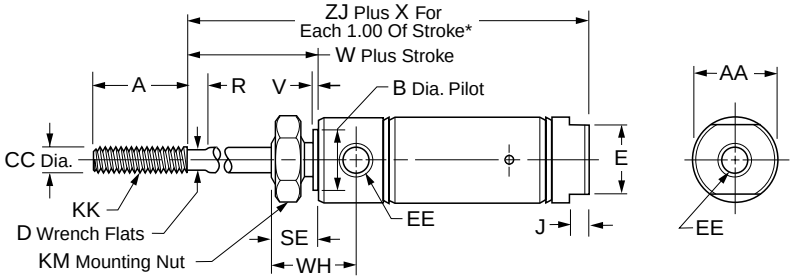
Mounting Style R

Nose mount, spring extended



Bore sizes
5/16
7/16"
3/4"



Bore sizes
9/16"
7/8"
1-1/16"
1-1/4"
1-1/2"
1-3/4"
2" *

* No mounting nuts

Bore size	SR	SRM	Std. stroke (in)	Max. stroke (in)	SS rod std	A	AA	B	CC	D	E
5/16"	•		1/2, 1, 1-1/2, 2, 2-1/2, 3	4	✔	0.38	0.50 SQ.	–	0.125	–	–
7/16"	•		1/2, 1, 1-1/2, 2, 3	6	✔	0.50	0.74	0.437	0.188	–	0.38
9/16"	•	•	1/2, 1, 1-1/2, 2, 3	6	✔	0.50	0.62	0.437	0.188	–	0.50
3/4"	•	•	1/2, 1, 2, 3, 4	6	✔	0.50	0.86	0.624	0.250	–	–
7/8"	•		1/2, 1, 2, 3, 4	6	✔	0.50	0.93	0.624	0.250	–	–
1-1/16"	•	•	1/2, 1, 1-1/2, 2, 3, 4	6	✔	0.50	1.12	0.624	0.312	0.25	–
1-1/4"	•	•	1, 2, 3, 4	6	✔	0.75	1.34	0.749	0.437	0.38	–
1-1/2"	•	•	1, 2, 3, 4	6	✔	1.25	1.56	0.749	0.437	0.38	0.88
1-3/4"	•	•	1/2, 1, 1-1/2, 2, 2-1/2, 3, 4	6		0.88	1.84	1.031	0.500	7/16	–
2"	•	•	–	4		0.88	2.08	1.374	0.625	0.50	–

Bore size	EE	J	KK	KM	Q	R	SE	V	W	WH	X	ZJ SR	ZJ SM
5/16"	#10-32	–	#5-40 UNC	3/8-24	0.36	–	0.31	–	0.31	0.47	1.25	1.49	–
7/16"	#10-32	0.19	#10-32 UNF	7/16-20	0.50	–	0.38	0.05	0.38	0.72	1.44	1.94	–
9/16"	#10-32	0.19	#10-32 UNF	7/16-20	0.62	–	0.38	0.05	0.38	0.78	2.62	2.00	2.25
3/4"	1/8 NPTF	–	1/4-28 UNF	5/8-18	0.81	–	0.50	0.09	0.50	0.97	2.69**	2.31	2.56
7/8"	1/8 NPTF	–	1/4-28 UNF	5/8-18	–	–	0.50	0.09	0.50	0.97	2.56	2.31	–
1-1/16"	1/8 NPTF	–	5/16-24 UNF	5/8-18	–	0.12	0.50	0.09	0.62	1.06	2.81	2.62	2.87
1-1/4"	1/8 NPTF	–	7/16-20 UNF	3/4-16	–	0.25	0.62	0.09	0.88	1.38	2.81	3.47	3.60
1-1/2"	1/8 NPTF	0.25	7/16-20 UNF	3/4-16	–	0.25	0.62	0.09	0.88	1.25	3.00	3.19	3.44
1-3/4"	1/4 NPTF	–	1/2-20 UNF	1-14	–	–	0.75	0.09	1.06	1.63	3.0	4.03	4.15
2"	1/4 NPTF	–	1/2-20 UNF	1-1/4-12	–	0.38	0.81	0.12	1.19	1.47	–	▲	◆

▲ 7.11" for 1" stroke, 10.11" for 2" stroke, 12.34" for 3" stroke, 16.34" for 4" stroke.*

* To determine lengths for half inch stroke increments, determine length for next highest whole number stroke and subtract one half inch.

** For each 1.00" of stroke.

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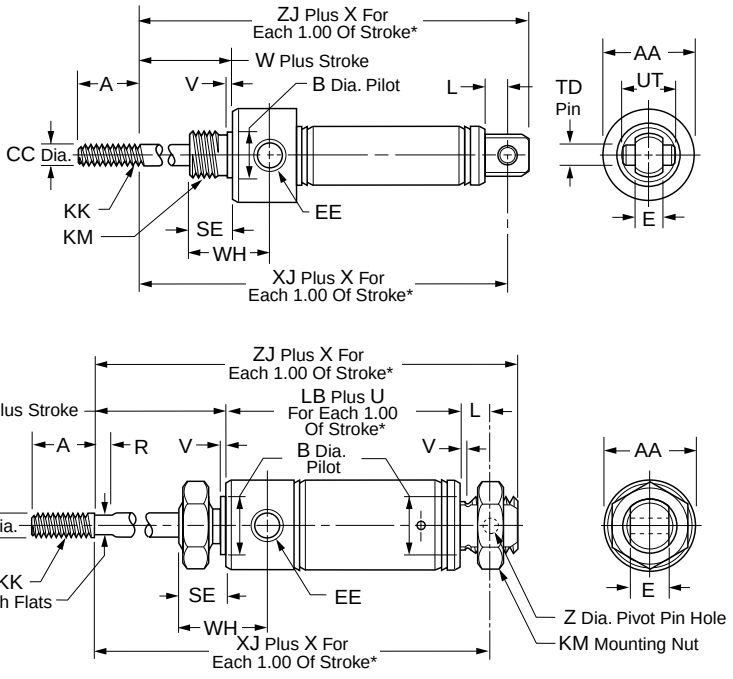
Mounting Style RP

Pivot and nose mount, spring extended



Bore sizes
5/16" *
7/16"
3/4"

* No mounting nuts

Bore sizes
9/16" *
7/8" *
1-1/16" *
1-1/4"
1-1/2" *
1-3/4"
2" *

* No mounting nuts

Bore size	SR	SRM	Std. stroke (in)	Max. stroke (in)	SS rod std	A	AA	B	CC	D	E	EE	KK
5/16"	•		1/2, 1, 1-1/2, 2, 2-1/2, 3	4	✔	0.38	0.50 SQ.	–	0.125	–	0.25	#10-32	#5-40 UNC
7/16"	•		1/2, 1, 1-1/2, 2, 3	6	✔	0.50	0.74	0.437	0.188	–	0.31	#10-32	#10-32 UNF
9/16"	•	•	1/2, 1, 1-1/2, 2, 3	6	✔	0.50	0.62	0.437	0.188	–	0.31	#10-32	#10-32 UNF
3/4"	•	•	1/2, 1, 2, 3, 4	6	✔	0.50	0.86	0.624	0.250	–	0.38	1/8 NPTF	1/4-28 UNF
7/8"	•		1/2, 1, 2, 3, 4	6	✔	0.50	0.93	0.624	0.250	–	0.38	1/8 NPTF	1/4-28 UNF
1-1/16"	•	•	1/2, 1, 1- 1/2, 2, 3, 4	6	✔	0.50	1.12	0.624	0.312	0.25	0.38	1/8 NPTF	5/16-24 UNF
1-1/4"	•	•	1, 2, 3, 4	6	✔	0.75	1.34	0.749	0.437	0.38	0.50	1/8 NPTF	7/16-20 UNF
1-1/2"	•	•	1, 2, 3, 4	6	✔	1.25	1.56	0.749	0.437	0.38	0.62	1/8 NPTF	7/16-20 UNF
2"	•	•	–	4		.88	2.08	1.374	0.625	0.50	0.75	1/4 NPTF	1/2-20 UNF

Bore size	KM	L	LB	R	SE	TD	U	UT	V	W	WH	X	XJ SR	XJ SRM	Z	ZJ SR	ZJ SRM
5/16"	3/8-24	0.19	–	–	0.31	–	–	–	–	0.31	0.47	1.25	1.88	–	–	2.04	–
7/16"	7/16-20	0.25	–	–	0.38	0.156	–	0.50	0.05	0.38	0.72	1.44	2.38	–	–	2.62	–
9/16"	7/16-20	0.25	–	–	0.38	–	–	–	0.06	0.38	0.78	2.62	2.28	2.53	0.157	2.47	2.72
3/4"	5/8-18	0.34	–	–	0.50	0.250	–	0.75	0.09	0.50	0.97	2.69	2.44	2.69	–	2.72	2.97
7/8"	5/8-18	0.34	–	–	0.50	0.250	–	0.75	0.09	0.50	0.97	2.56	2.63	–	–	2.91	–
1-1/16"	5/8-18	0.34	–	0.12	0.50	0.250	–	0.75	0.09	0.62	1.06	2.81	2.78	3.03	–	3.06	3.31
1-1/4"	3/4-16	0.41	2.47	0.25	0.62	–	1.81	–	0.09	0.88	1.38	2.81	3.78	3.91	0.251	4.16	4.28
1-1/2"	3/4-16	0.50	–	0.25	0.62	0.375	–	1.00	0.09	0.88	1.25	3.00	3.88	4.13	–	4.25	4.50
2"	1-1/4 -12	0.56	–	0.38	0.81	–	–	–	0.12	1.19	1.47	–	■	✷	0.376	▲	◆

■ 8.05" for 1" stroke, 11.05" for 2" stroke, 13.28" for 3" stroke, 17.28" for 4" stroke*

▲ 8.50" for 1" stroke, 11.50" for 2" stroke, 13.72" for 3" stroke, 17.72" for 4" stroke*

* To determine lengths for half inch stroke increments, determine length for next highest whole number stroke and subtract one half inch.

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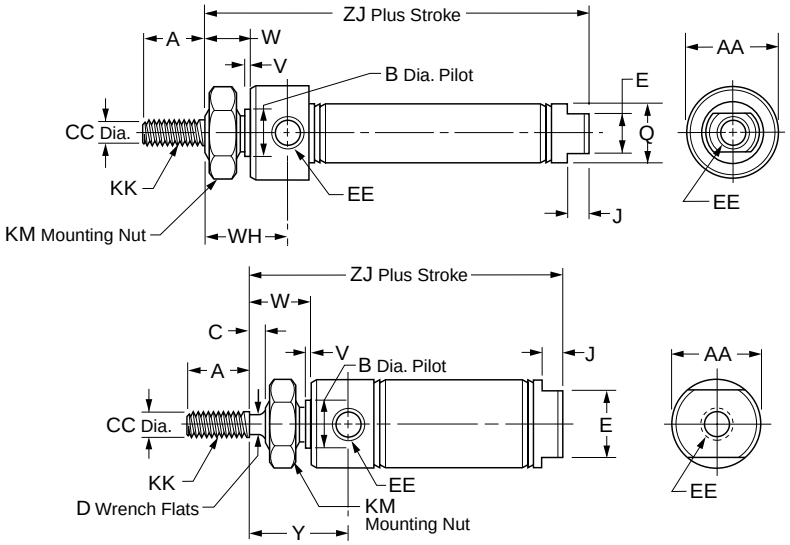
Mounting Style D

Nose mount, double acting



Bore sizes
5/16"
7/16"
3/4"

Bore sizes
9/16"
7/8"
1-1/16"
1-1/4"
1-1/2"
1-3/4"
2" *
2-1/2" *
3" *

* No mounting nuts

Bore size	SR	SRM	SRD SRDM	Std. stroke (in)	Max. stroke (in)	SS rod std	A	AA	B	C	CC
5/16"	•			1/2, 1, 1-1/2, 2, 2-1/2, 3, 4	4	✔	0.38	0.50 SQ.	–	–	0.125
7/16"	•			1/2, 1, 1-1/2, 2, 3, 4	12	✔	0.50	0.74	0.437	–	0.188
9/16"	•	•	•	1/2, 1, 1-1/2, 2, 3, 4	12	✔	0.50	0.62	0.437	–	0.188
3/4"	•	•	•	1/2, 1, 2, 2-1/2, 3, 4, 5, 6, 8, 10	12	✔	0.50	0.86	0.624	–	0.250
7/8"	•			1/2, 1, 2, 3, 4, 5, 6	12	✔	0.50	0.93	0.624	–	0.250
1-1/16"	•	•	•	1/2, 1, 1-1/2, 2, 2-1/2, 3, 4, 5, 6, 8, 10, 12	12	✔	0.50	1.12	0.624	0.12	0.312
1-1/4"	•	•		1, 2, 3, 4, 5, 6	12	✔	0.75	1.34	0.749	0.25	0.437
1-1/2"	•	•	•	1/2, 1, 2, 3, 4, 5, 6, 8, 10, 12	12	✔	0.75	1.56	0.749	0.25	0.437
1-3/4"	•	•		1/2, 1, 1-1/2, 2, 2-1/2, 3, 4, 5, 6	12		0.88	1.84	1.031	0.31	0.500
2"	•	•	•	–	12		0.88	2.08	1.374	0.38	0.625
2-1/2"	•	•		–	12		0.88	2.62	1.500	0.38	0.625
3"	•			–	12		1.25	3.16	1.630	0.38	0.750

Bore size	D	E	EE	J	KK	KM	Q	V	W	WH	Y	ZJ SR	ZJ SRM
5/16"	–	–	#10-32	–	#5-40 UNC	3/8-24	0.36	–	0.31	0.47	–	1.64	–
7/16"	–	0.38	#10-32	0.19	#10-32 UNF	7/16-20	0.50	0.05	0.38	0.72	–	2.12	–
9/16"	–	0.50	#10-32	0.19	#10-32 UNF	7/16-20	–	0.06	0.38	0.78	–	2.28	2.53
3/4"	–	0.62	1/8 NPTF	0.19	1/4-28 UNF	5/8-18	0.81	0.09	0.50	0.97	–	2.97	2.97
7/8"	–	0.62	1/8 NPTF	0.19	1/4-28 UNF	5/8-18	–	0.09	0.50	0.97	–	2.94	–
1-1/16"	0.25	0.88	1/8 NPTF	0.19	5/16-24 UNF	5/8-18	–	0.09	0.62	–	1.19	3.25	3.41
1-1/4"	0.38	0.88	1/8 NPTF	0.25	7/16-20 UNF	3/4-16	–	0.09	0.88	–	1.62	4.00	4.03
1-1/2"	0.38	0.88	1/8 NPTF	0.25	7/16-20 UNF	3/4-16	–	0.09	0.88	–	1.50	3.69	3.94
1-3/4"	7/16	1.25	1/4 NPTF	0.25	1/2-20 UNF	1-14	–	0.09	1.06	1.63	–	4.69	4.69
2"	0.50	1.25	1/4 NPTF	0.31	1/2-20 UNF	1-1/4-12	–	0.12	1.19	–	1.84	4.69	4.97
2-1/2"	1/2	1.75	1/4 NPTF	0.31	1/2-20 UNF	1-3/8-12	–	0.13	1.19	–	1.84	4.69	4.69
3"	5/8	2.00	3/8 NPTF	0.31	5/8-18 UNF	1-1/2-12	–	0.19	1.38	–	2.09	5.25	–

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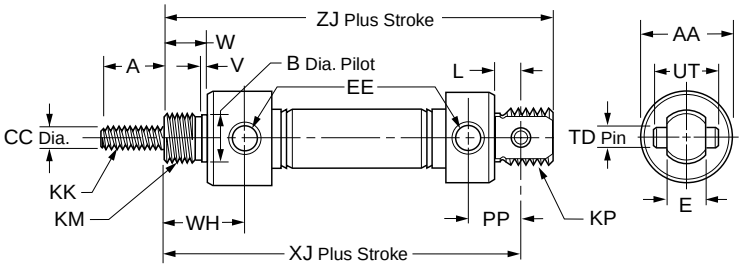
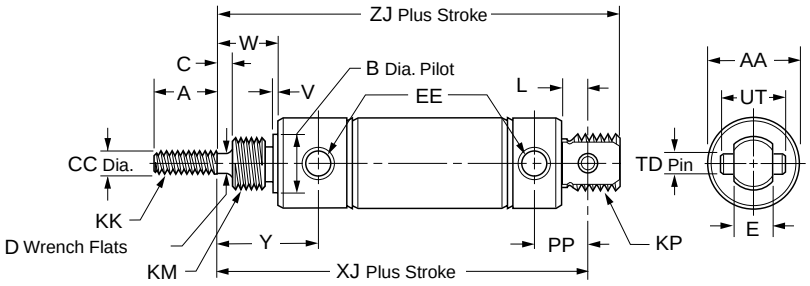
Mounting Style DP

Pivot and nose mount, double acting, pivot pin

Bore sizes
5/16"
7/16"
3/4"



Bore sizes
1-1/16"
1-1/2"



Bore size	SR	SRM	Std. stroke (in)	Max. stroke (in)	SS rod	A	AA	B	CC	D	E
7/16"	•		1/2, 1, 1-1/2, 2, 3, 4	12	✔	0.50	0.74	0.437	0.188	–	0.31
3/4"	•	•	1/2, 1, 2, 2-1/2, 3, 4, 5, 6, 8, 10	12	✔	0.50	0.86	0.624	0.250	–	0.38
1-1/16"	•	•	1/2, 1, 1-1/2, 2, 2-1/2, 3, 4, 5, 6, 8, 10, 12	12	✔	0.50	1.12	0.624	0.312	0.25	0.38
1-1/2"	•	•	1, 2, 3, 4, 5, 6, 8, 10, 12	12	✔	0.75	1.56	0.749	0.437	0.38	0.62

Bore size	EE	KK	KM	KP	L	PP	TD	UT	V	W	WH	XJ SR	XJ SRM	Y	ZJ SR	ZJ SRM
7/16"	#10-32	#10-32 UNF	7/16-20	7/16-20 UNF	0.25	0.44	0.156	0.50	0.05	0.38	0.72	2.56	–	–	2.81	–
3/4"	1/8 NPTF	1/4-28 UNF	5/8-18	5/8-18 UNF	0.34	0.62	0.250	0.75	0.09	0.50	0.97	3.75	3.75	–	4.03	4.03
1-1/16"	1/8 NPTF	5/16-24 UNF	5/8-18	5/8-18 UNF	0.34	0.62	0.250	0.75	0.09	0.62	–	3.84	4.00	1.19	4.12	4.28
1-1/2"	1/8 NPTF	7/16-20 UNF	3/4-16	–	0.50	0.81	0.375	1.00	0.09	0.87	–	4.38	4.63	1.50	4.75	5.00

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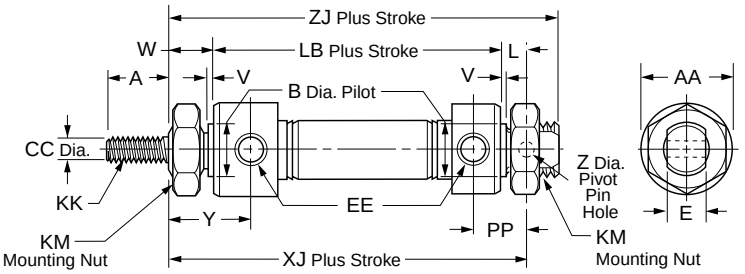
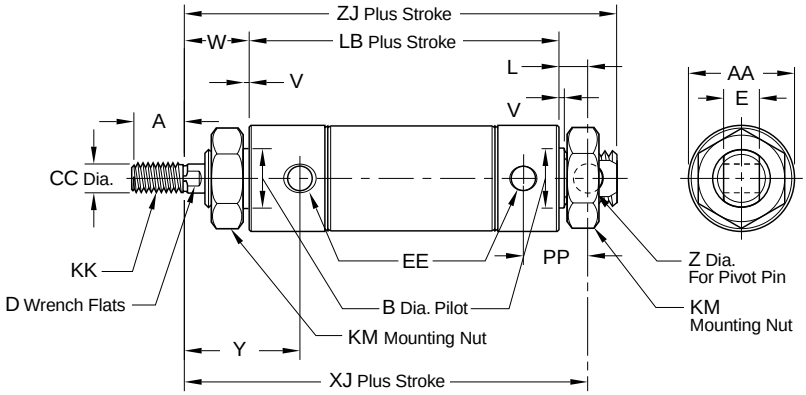
Mounting Style DXP

Pivot & nose mount, double acting, no pivot pin



Bore sizes
5/16"
7/16"
3/4"



Bore sizes
9/16" *
7/8"
1-1/16"
1-1/4"
1-1/2"
1-3/4"
2" *
2-1/2" *
3" *

* No mounting nuts

Bore size	SR	SRM	SRD SRDM	Std. stroke (in)	Max. stroke (in)	SS rod std	A	AA	B	CC	D	E
5/16"	•			1/2, 1, 1-1/2, 2, 2-1/2, 3, 4	4	✔	0.38	0.50 SQ.	–	0.125	–	0.25
7/16"	•			1/2, 1, 1-1/2, 2, 3, 4	12	✔	0.50	0.74	0.437	0.188	–	0.31
9/16"	•	•	•	1/2, 1, 1-1/2, 2, 3, 4	12	✔	0.50	0.62	0.437	0.188	–	0.31
3/4"	•	•	•	1, 2, 3, 4, 5, 6, 8, 10	32	✔	0.50	0.86	0.624	0.250	–	0.38
7/8"	•			1, 2, 3, 4, 5, 6, 8, 10	32	✔	0.50	0.93	0.624	0.250	–	0.38
1-1/16"	•	•	•	1/2, 1, 1-1/2, 2, 2-1/2, 3, 4, 5, 6, 8, 10, 12	32	✔	0.50	1.12	0.624	0.312	0.25	0.38
1-1/4"	•	•		1, 2, 3, 4, 5, 6, 7, 8, 10, 12	32	✔	0.75	1.34	0.749	0.437	0.38	0.50
1-1/2"	•	•	•	–	32	✔	0.75	1.56	0.749	0.437	0.38	0.62
1-3/4"	•	•		1, 2, 3, 4, 5, 6, 8, 10, 12	32		0.88	1.84	1.031	0.500	7/16	0.62
2"	•	•	•	–	32		0.88	2.08	1.374	0.625	0.50	0.75
2-1/2"	•	•		–	32		0.88	2.62	1.500	0.625	1/2	0.75
3"	•			–	32		1.25	3.16	1.630	0.750	5/8	0.88

Bore size	EE	KK	KM	L	LB	PP	V	W	XJ SR	XJ SRM	Y	Z	ZJ SR	ZJ SRM
5/16"	#10-32	#5-40 UNC	3/8-24	0.19	–	0.34	–	0.31	2.03	–	–	0.125	2.19	–
7/16"	#10-32	#10-32 UNF	7/16-20	0.25	1.94	0.44	0.05	0.38	2.56	–	0.72	0.157	2.81	–
9/16"	#10-32	#10-32 UNF	7/16-20	0.25	–	0.38	0.06	0.38	2.56	2.81	0.78	0.157	2.75	3.00
3/4"	1/8 NPTF	1/4-28 UNF	5/8-18	0.34	2.91	0.62	0.09	0.50	3.75	3.75	0.97	0.251	4.03	4.03
7/8"	1/8 NPTF	1/4-28 UNF	5/8-18	0.34	–	0.62	0.09	0.50	3.56	–	0.97	0.251	3.84	–
1-1/16"	1/8 NPTF	5/16-24 UNF	5/8-18	0.34	–	0.62	0.09	0.62	3.84	–	1.19	0.251	4.12	4.28
1-1/4"	1/8 NPTF	7/16-20 UNF	3/4-16	0.41	–	0.78	0.09	0.88	4.72	4.75	1.62	0.251	5.12	5.16
1-1/2"	1/8 NPTF	7/16-20 UNF	3/4-16	0.50	–	0.81	0.09	0.88	4.38	4.63	1.50	0.376	4.75	5.00
1-3/4"	1/4 NPTF	1/2-20 UNF	1-14	0.50	4.19	1.12	0.09	1.06	5.75	5.75	1.94	0.376	6.25	6.25
2"	1/4 NPTF	1/2-20 UNF	1-1/4-12	0.56	–	1.03	0.12	1.19	5.62	5.91	–	0.376	6.06	6.34
2-1/2"	1/4 NPTF	1/2-20 UNF	1-3/8-12	0.56	–	1.03	0.13	1.19	5.62	5.62	1.84	0.376	6.06	6.06
3"	3/8 NPTF	5/8-18 UNF	1-1/2-12	0.81	–	1.34	0.19	1.38	6.50	–	2.09	0.500	7.12	–

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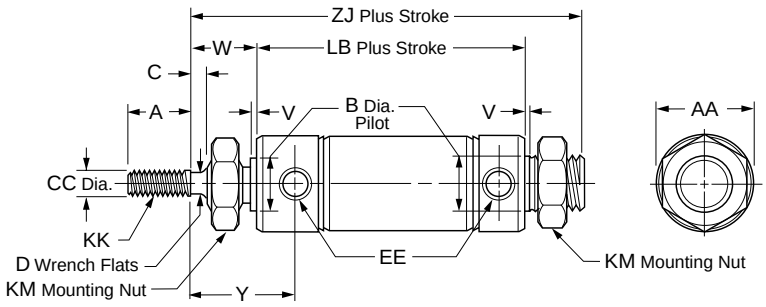
Mounting Style DX

Threaded both ends, double acting



Bore size	SR	SRM	Std. stroke (in)	Max. stroke (in)	SS rod std
7/16" *	•		1/2, 1, 1-1/2, 2, 3, 4	12	✔
9/16" *	•	•	1/2, 1, 1-1/2, 2, 3, 4	12	✔
3/4" *	•	•	1, 2, 3, 4, 5, 6, 8, 10	32	✔
7/8" *	•	•	1, 2, 3, 4, 5, 6, 8, 10	32	✔
1-1/16" *	•	•	1/2, 1, 1-1/2, 2, 2-1/2, 3, 4, 5, 6, 8, 10, 12	32	✔
1-1/4" *	•	•	1, 2, 3, 4, 5, 6, 7, 8, 10, 12	32	✔
1-1/2"	•	•	1, 2, 3, 4, 5, 6, 8, 10, 12	32	✔
2" *	•	•	–	32	

Bore size	A	AA	B	C	CC	D	EE	KK	KM	LB SR	LB SRM	V	W	Y	ZJ SR	ZJ SRM
7/16" *	0.50	0.74	0.437	–	0.188	–	#10-32	#10-32 UNF	7/16-20	1.94		0.05	0.38	0.72	2.81	
9/16" *	0.50	0.62	0.437	–	0.188	–	#10-32	#10-32 UNF	7/16-20	–		0.06	0.38	0.78	2.75	
3/4" *	0.50	0.86	0.624	–	0.250	–	1/8 NPTF	1/4-28 UNF	5/8-18	2.91		0.09	0.50	0.97	4.03	
7/8" *	0.50	0.93	0.624	–	0.250	–	1/8 NPTF	1/4-28 UNF	5/8-18	–		0.09	0.50	0.97	3.84	
1-1/16" *	0.50	1.12	0.624	0.12	0.312	0.25	1/8 NPTF	5/16-24 UNF	5/8-18	–		0.09	0.62	1.19	4.12	
1-1/4" *	0.75	0.34	0.749	0.25	0.437	0.38	1/8 NPTF	7/16-20 UNF	3/4-16	–		0.09	0.88	1.62	5.12	
1-1/2"	0.75	1.56	0.749	0.25	0.437	0.38	1/8 NPTF	7/16-20 UNF	3/4-16	3.00		0.09	0.88	1.50	4.50	
2" *	0.88	2.08	1.374	0.38	0.625	0.50	1/4 NPTF	1/2-20 UNF	1-1/4-12	–		0.12	1.19	–	6.06	

* Available upon request. Please consult factory.

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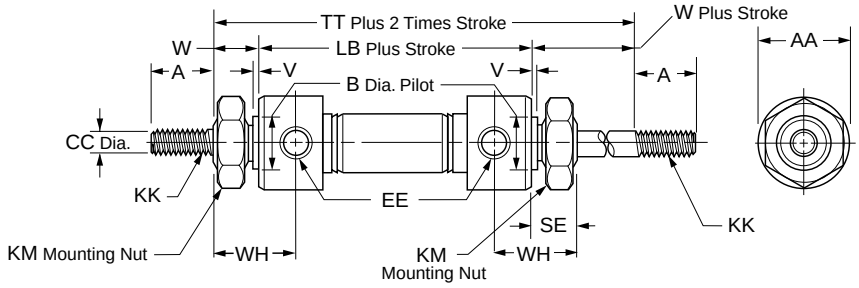
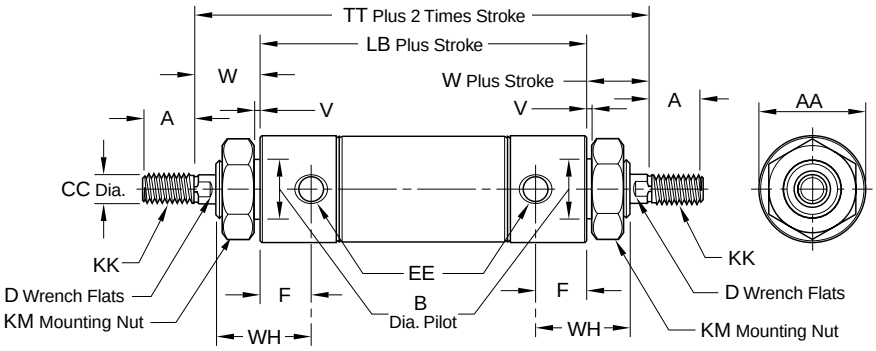
Mounting Style KDX

Threaded both ends, double acting, double rod



Bore sizes
7/16"
3/4"



Bore sizes
9/16" *
7/8"
1-1/16"
1-1/4"
1-1/2"
1-3/4"
2" *
2-1/2" *
3" *

* No mounting nuts

Bore size	SR	SRM	SRD SRDM	Std. stroke (in)	Max. stroke (in)	SS rod	A	AA	B	CC
7/16"	•			1/2, 1, 1-1/2, 2, 3, 4	6	✔	0.50	0.74	0.437	0.188
9/16"	•	•	•	1/2, 1, 1-1/2, 2, 3, 4	6	✔	0.50	0.62	0.437	0.188
3/4"	•	•	•	1, 2, 3, 4, 5, 6	12	✔	0.50	0.86	0.624	0.250
7/8"	•			1, 2, 3, 4, 6	12	✔	0.50	0.93	0.624	0.250
1-1/16"	•	•	•	1, 2, 3, 4, 5, 6	12	✔	0.50	1.12	0.624	0.312
1-1/4"	•	•	•	1, 2, 3, 4, 5, 6	12	✔	0.75	1.34	0.749	0.437
1-1/2"	•	•	•	1, 2, 3, 4, 5, 6	12	✔	0.75	1.56	0.749	0.437
1-3/4"	•	•		1, 2, 3, 4, 5, 6	12	✔	0.88	1.84	1.031	0.500
2"	•	•	•	–	12	✔	0.88	2.08	1.374	0.625
2-1/2"	•	•		–	18	✔	0.88	2.62	1.500	0.625
3"	•			–	12	✔	1.25	3.16	1.630	0.750

Bore size	D	EE	F	KK	KM	LB SR	LB SRM	SE	TT SR	TT SRM	V	W	WH
7/16"	–	#10-32	0.34	#10-32 UNF	7/16-20	2.06	–	0.38	2.81	–	0.05	0.38	0.72
9/16"	–	#10-32	0.40	#10-32 UNF	7/16-20	2.19	2.44	0.38	2.94	3.19	0.06	0.38	0.78
3/4"	–	1/8 NPTF	0.47	1/4-28 UNF	5/8-18	3.00	3.00	0.50	4.00	4.00	0.09	0.50	0.97
7/8"	–	1/8 NPTF	0.47	1/4-28 UNF	5/8-18	2.91	–	0.50	3.91	–	0.09	0.50	0.97
1-1/16"	0.25	1/8 NPTF	0.56	5/16-24 UNF	5/8-18	2.75	3.28	0.50	4.00	4.53	0.09	0.62	1.19
1-1/4"	0.38	1/8 NPTF	0.75	7/16-20 UNF	3/4-16	3.81	3.84	0.63	5.56	5.59	0.09	0.88	1.62
1-1/2"	0.38	1/8 NPTF	0.62	7/16-20 UNF	3/4-16	3.38	3.63	0.63	5.12	5.38	0.09	0.88	1.50
1-3/4"	7/16	1/4 NPTF	0.88	1/2-20 UNF	1-14	4.44	4.44	0.75	6.56	6.56	0.09	1.06	1.63
2"	0.50	1/4 NPTF	0.65	1/2-20 UNF	1-1/4-12	4.19	4.47	–	6.56	6.84	0.12	1.19	1.84
2-1/2"	1/2	1/4 NPTF	0.65	1/2-20 UNF	1-3/8-12	4.19	4.19	–	6.56	6.56	0.13	1.19	1.84
3"	5/8	3/8 NPTF	0.71	5/8-18 UNF	1-1/2-12	4.56	–	–	7.31	–	0.19	1.38	1.72

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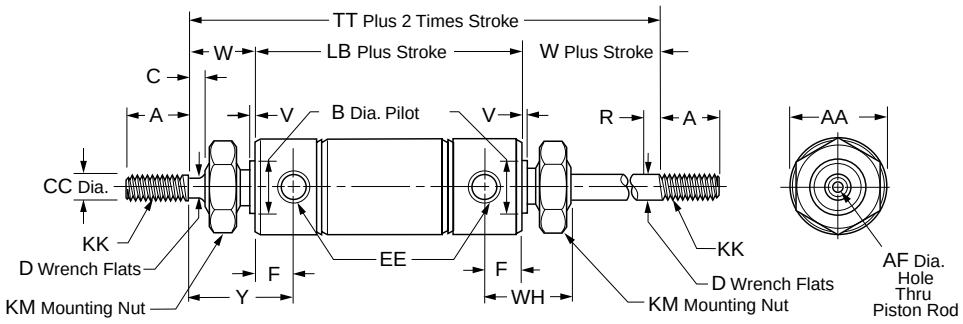
Mounting Style KDXH

Threaded both ends, double rod, hollow rod

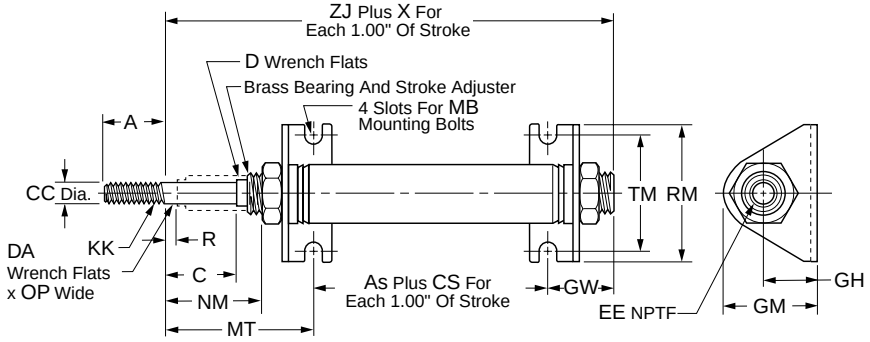


Bore size	SR	SRM	Std. stroke (in)	Max. stroke (in)	SS rod	A	AA	AF	B	C	CC
1-1/16"	•	•	1, 2, 3, 4, 5, 6	12	N/A	0.50	1.12	0.187	0.624	0.12	0.312
1-1/4"	•	•	1, 2, 3, 4, 5, 6	12	N/A	0.75	1.34	0.250	0.749	0.25	0.437
1-1/2"	•	•	1, 2, 3, 4, 5, 6	12	N/A	0.75	1.56	0.250	0.749	0.25	0.437
1-3/4"	•	•	1, 2, 3, 4, 5, 6	12	N/A	0.88	1.84	0.328	1.031	0.38	0.500

Bore size	D	EE	F	KK	KM	LB SR	LB SRM	R	TT SR	TT SRM	V	W	WH	Y
1-1/16"	0.25	1/8 NPTF	0.56	5/16-24 UNF	5/8-18	2.75	3.28	0.12	4.00	4.53	0.09	0.62	1.06	1.19
1-1/4"	0.38	1/8 NPTF	0.75	7/16-20 UNF	3/4-16	3.81	3.84	0.25	5.56	5.59	0.09	0.88	1.38	1.62
1-1/2"	0.38	1/8 NPTF	0.62	7/16-20 UNF	3/4-16	3.38	3.63	0.25	5.12	5.38	0.09	0.88	1.25	1.50
1-3/4"	7/16	1/4 NPTF	0.88	1/2-20 UNF	1-14	4.44	4.44	–	6.56	6.56	0.09	1.06	1.63	1.63

Mounting Style A

Nose mount, spring return, head adjustable stroke



Bore size	SR	SRM	Std. stroke	Max. stroke (in)	SS rod std	A	AS	C	CC	CS	D
3/4"	•		Stroke adjustment in 1" increments to 3":	6	✔	0.50	–	1.19	0.250	1.69	–
1-1/16"	•		1" stroke adjusts 0-1"	6	✔	0.50	0.32	1.25	0.312	1.56	0.25
1-1/2"	•		2" stroke adjusts 1-2" 3" stroke adjusts 2-3"	6	✔	0.75	0.19	1.25	0.437	2.00	0.62

Bore size	EE	GH	GM	GW	KK	MB	MT	NM	OP	R	RM	TM	X	ZJ
3/4"	1/8 NPTF	0.81	1.38	0.88	1/4-28 UNF	0.250	2.38	1.44	–	0.19	1.88	1.50	1.69	3.12
1-1/16"	1/8 NPTF	0.81	1.38	0.93	5/16-24 UNF	0.250	2.38	1.44	0.12	0.25	1.88	1.50	1.56	3.63
1-1/2"	1/8 NPTF	1.00	1.78	1.25	7/16-20 UNF	0.250	2.56	1.50	–	0.25	2.50	1.88	2.00	4.00

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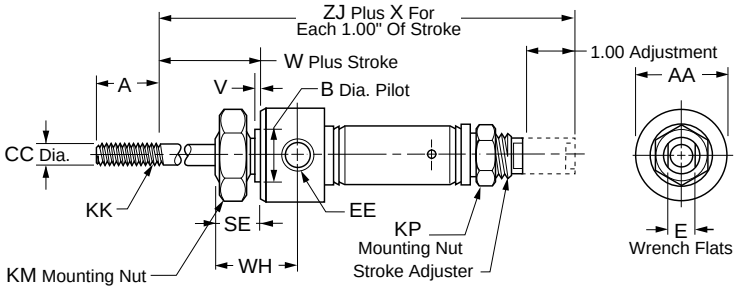
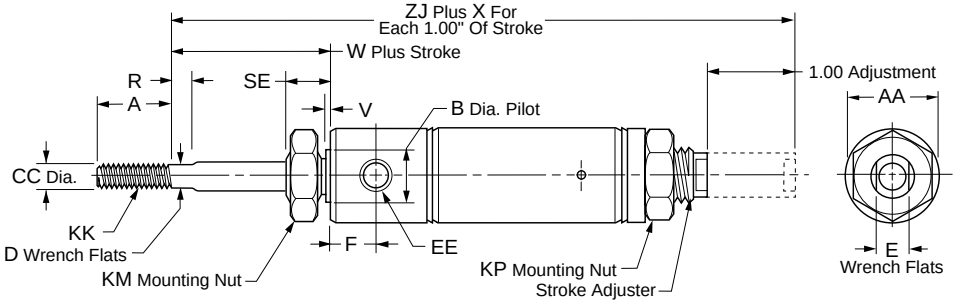
Mounting Style RA

Nose mount, spring return, cap adjustable stroke

Bore sizes
3/4"



Bore sizes
1-1/16"
1-1/2"



Bore size	SR	SRM	Std. stroke	Max. stroke (in)	SS rod std
3/4"	•		Stroke adjustment in 1" increments to 3":	6	✔
1-1/16"	•		1" stroke adjusts 0-1"	6	✔
1-1/2"	•		2" stroke adjusts 1-2" 3" stroke adjusts 2-3"	6	✔

Bore size	A	AS	AA	B	CC	D	E	EE	F
3/4"	0.50	1.69	0.86	0.624	0.250	–	0.34	1/8 NPTF	–
1-1/16"	0.50	0.32	1.12	0.624	0.312	0.25	0.50	1/8 NPTF	0.56
1-1/2"	1.25	0.19	1.56	0.749	0.437	0.38	0.62	1/8 NPTF	0.62

Bore size	KK	KM	SE	R	V	W	WH	X	ZJ
3/4"	1/4-28 UNF	5/8-18	0.50	–	0.09	0.53	0.97	2.69	3.78
1-1/16"	5/16-24 UNF	5/8-18	0.50	0.12	0.09	0.50	–	2.56	4.03
1-1/2"	7/16-20 UNF	3/4-16	0.62	0.25	0.09	0.88	–	2.00	5.81

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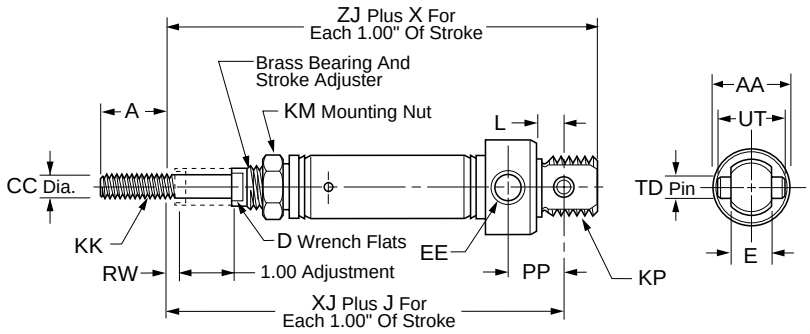
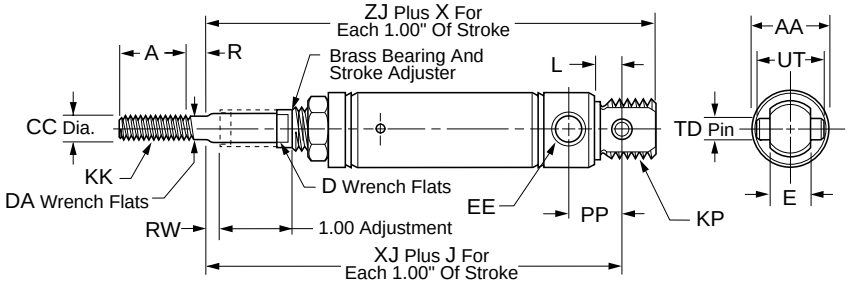
Mounting Style AP

Pivot mount, spring return, head adjustable stroke



Bore sizes
3/4"



Bore sizes
1-1/16"
1-1/2"

Bore size	SR	SRM	Std. stroke	Max. stroke (in)	SS rod std
3/4"	•		Stroke adjustment in 1" increments to 3":	6	✔
1-1/16"	•		1" stroke adjusts 0-1"	6	✔
			2" stroke adjusts 1-2"		
1-1/2"	•		3" stroke adjusts 2-3"	6	✔

Bore size	A	AA	CC	D	DA	E	EE	J	KK
3/4"	0.50	0.86	0.250	0.34	–	0.38	1/8 NPTF	1.69	1/4-28 UNF
1-1/16"	0.50	1.12	0.312	0.50	0.25	0.38	1/8 NPTF	1.56	5/16-24 UNF
1-1/2"	0.75	1.56	0.437	0.62	0.38	0.62	1/8 NPTF	2.00	7/16-20 UNF

Bore size	KM	KP	L	OP	PP	R	RW	TD	UT	X	XJ	ZJ
3/4"	7/16-20	5/8-18 UNF	0.34	–	0.62	0.19	0.19	0.250	0.75	1.69	3.65	3.93
1-1/16"	–	5/8-18 UNF	0.34	0.25	0.62	0.12	0.25	0.250	0.75	1.56	3.97	4.25
1-1/2"	3/4-16	–	0.50	–	0.81	0.25	0.25	0.375	1.00	2.00	4.31	4.69

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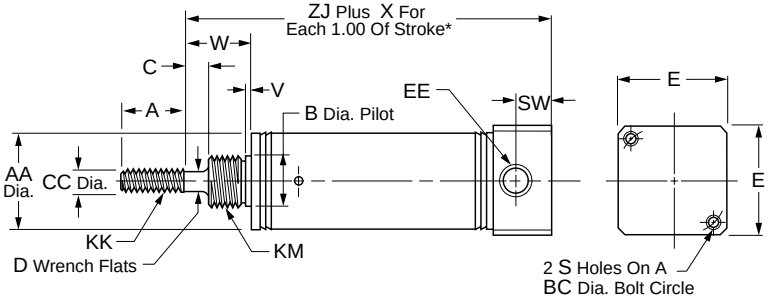
Mounting Style BRN

Rear block mount, single acting, spring return



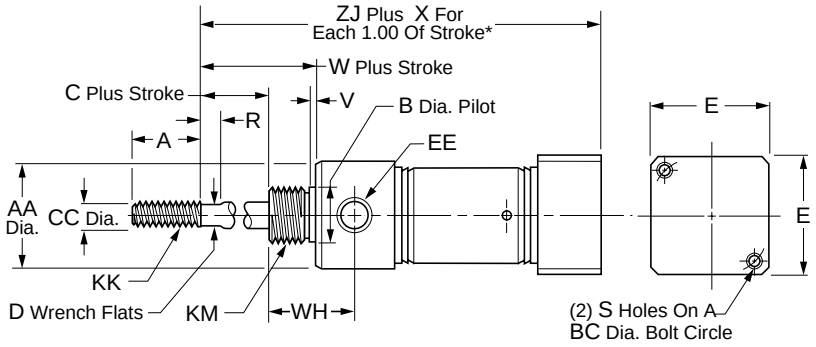
Bore size	SR	SRM	Std. stroke (in)	Max. stroke (in)	SS rod std	A	AA	B	C	CC	D
7/16"	•		1/2, 1, 2, 3, 4	6	✔	0.50	0.5	0.374	–	0.188	–
3/4"	•	•	1, 2, 3, 4	6	✔	0.75	0.81	0.499	0.25	0.250	0.22
1-1/16"	•	•	1, 2, 3, 4	6	✔	0.75	1.12	0.624	0.38	0.312	0.25
1-1/2"	•	•	1, 2, 3, 4	6	✔	1.25	1.56	0.749	0.25	0.437	0.38

Bore size	E	EE	KK	KM	SW	V	W	X	ZJ SR	ZJ SRM
7/16"	0.75	#10-32	#10-32 UNF	3/8-24	0.38	0.05	0.31	0.94	1.62	–
3/4"	1.00	1/8 NPTF	1/4-28 UNF	1/2-20	0.44	0.09	0.62	1.69	2.31	2.56
1-1/16"	1.25	1/8 NPTF	5/16-24 UNF	5/8-18	0.44	0.09	0.88	1.81	2.81	3.06
1-1/2"	1.75	1/4 NPTF	7/16-20 UNF	3/4-16	0.62	0.09	0.88	2.00	3.06	3.31

* To determine lengths for half inch stroke increments, determine length for next highest whole number stroke and subtract one half inch.

Mounting Style BRR

Rear block mount, single acting, spring extend



Bore size	SR	SRM	Std. stroke (in)	Max. stroke (in)	SS rod std	A	AA	B	BC	C	CC	D
3/4"	•	•	1, 2, 3, 4	6	✔	0.75	0.86	0.624	1.00	0.25	0.250	0.22
1-1/16"	•	•	1, 2, 3, 4	6	✔	0.75	1.12	0.624	1.25	0.38	0.312	0.25
1-1/2"	•	•	1, 2, 3, 4	6	✔	1.25	1.56	0.749	1.75	0.25	0.437	0.38

Bore size	E	EE	KK	KM	R	S	V	W	WH	X	ZJ SR	ZJ SRM
3/4"	1.00	1/8 NPTF	1/4-28 UNF	5/8-18	0.25	#10-32 UNF	0.09	0.75	0.97	2.69	3.22	3.47
1-1/16"	1.25	1/8 NPTF	5/16-24 UNF	5/8-18	0.25	#10-32 UNF	0.09	0.88	1.06	2.81	3.53	3.78
1-1/2"	1.75	1/4 NPTF	7/16-20 UNF	3/4-16	0.25	1/4-20 UNC	0.09	0.88	1.25	3.00	3.88	4.13

* To determine lengths for half inch stroke increments, determine length for next highest whole number stroke and subtract one half inch.

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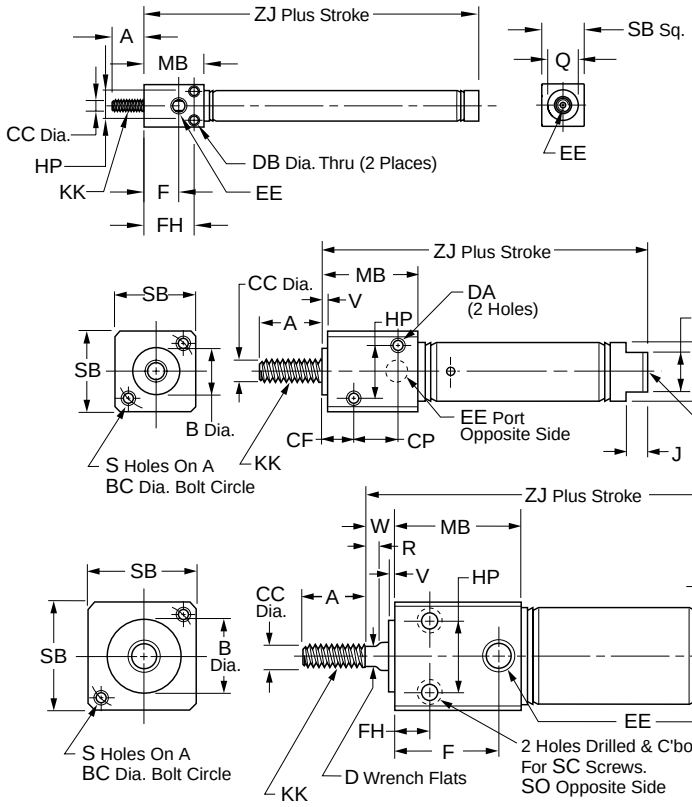
Mounting Style BFD

Front block mount, double acting



Bore sizes
5/16"

Bore sizes
7/16"

Bore sizes
3/4"
1-1/16"
1-1/2"

Bore size	SR	SRM	Std. stroke (in)	Max. stroke (in)	SS rod std	A	AA	B	BC	CC
5/16"	•		1/2, 1, 1-1/2, 2, 2-1/2, 3, 4	4	✔	0.38	–	–	–	0.125
7/16"	•		1/2, 1, 1-1/2, 2, 3, 4	12	✔	0.50	0.50	0.437	0.75	0.188
3/4"	•	•	1/2, 1, 2, 3, 4, 5, 6	12	✔	0.75	0.81	0.624	1.00	0.250
1-1/16"	•	•	1, 2, 3, 4, 5, 6	12	✔	0.75	1.12	0.750	1.25	0.312
1-1/2"	•	•	1, 2, 3, 4, 5, 6	12	✔	1.25	1.56	1.00	1.75	0.437

Bore size	CF	CP	D	DA	DB	E	EE	F	FH	HP	J
5/16"	–	–	–	–	0.11	–	#10-32	0.41	0.59	0.34	–
7/16"	0.31	0.44	–	#8-32	–	0.38	#10-32	–	0.31	0.44	0.19
3/4"	–	–	0.22	–	–	0.62	1/8 NPTF	0.88	0.38	0.62	0.19
1-1/16"	–	–	0.25	–	–	0.88	1/8 NPTF	1.16	0.62	0.81	0.19
1-1/2"	–	–	0.38	–	–	0.88	1/4 NPTF	1.53	0.88	1.12	0.25

Bore size	KK	MB	Q	R	S	SB	SC	SO	V	W	ZJ SR	ZJ SRM
5/16"	#5-40 UNC	0.71	0.36	–	–	0.50 SQ	–	–	–	–	1.72	–
7/16"	#10-32 UNF	0.88	–	–	#8-32 UNC	0.75	–	–	0.062	–	2.12	–
3/4"	1/4-28 UNF	1.12	–	–	#10-32 UNF	1.00	#10-32	1/4-20 UNC	0.093	0.34	3.22	3.22
1-1/16"	5/16-24 UNF	1.41	–	0.25	#10-32 UNF	1.25	#10-32	1/4-20 UNC	0.093	0.47	3.75	3.91
1-1/2"	7/16-20 UNF	1.88	–	–	1/4-20 UNC	1.75	1/4-20	5/16-18 UNC	0.125	0.38	4.19	4.44

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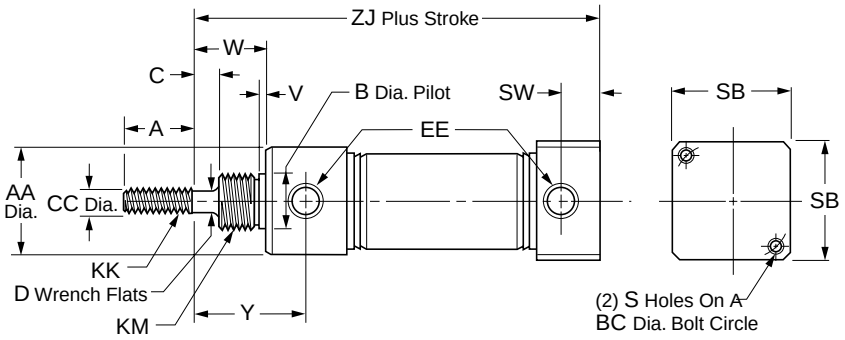
Mounting Style BRD

Rear block mount, double acting



Bore size	SR	SRM	Std. stroke (in)	Max. stroke (in)	SS rod std
7/16"	•		1/2, 1, 2, 3, 4	12	✔
3/4"	•	•	1, 2, 3, 4, 5, 6	12	✔
1-1/16"	•	•	1, 2, 3, 4	12	✔
1-1/2"	•	•	1, 2, 3, 4, 5, 6	12	✔

Bore size	A	AA	B	BC	C	CC	D	EE	KK
7/16"	0.50	0.74	0.437	0.75	–	0.188	–	#10-32	#10-32 UNF
3/4"	0.75	0.86	0.624	1.00	0.25	0.250	0.22	1/8 NPTF	1/4-28 UNF
1-1/16"	0.75	1.12	0.624	1.25	0.38	0.312	0.25	1/8 NPTF	5/16-24 UNF
1-1/2"	1.25	1.56	0.749	1.75	0.25	0.437	0.38	1/4 NPTF	7/16-20 UNF

Bore size	KM	S	SB	SW	V	W	Y	ZJ	
								SR	SRM
7/16"	7/16-20 UNF	#8-32 UNC	0.75	0.38	0.05	0.43	0.72	2.44	–
3/4"	5/8-18 UNF	#10-32 UNF	1.00	0.44	0.09	0.75	1.22	3.78	3.78
1-1/16"	5/8-18 UNF	#10-32 UNF	1.25	0.44	0.09	0.88	1.44	4.00	4.16
1-1/2"	3/4-16 UNF	1/4-20 UNC	1.75	0.62	0.09	0.88	1.47	4.38	4.63

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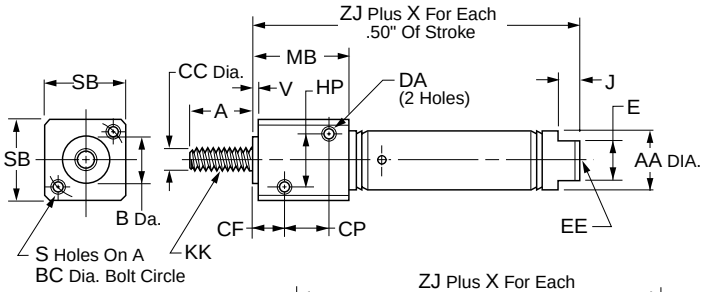
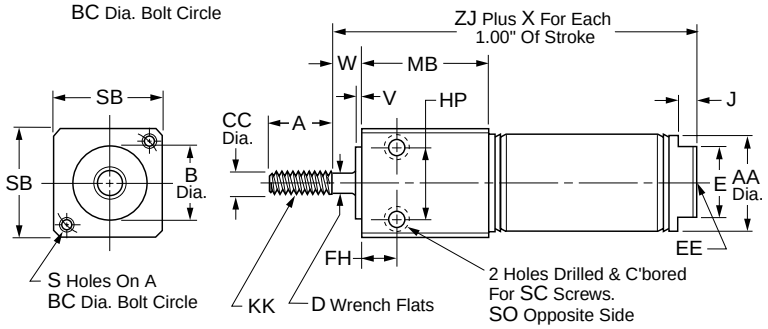
Mounting Style BFN

Front block mount, single acting, spring return

Bore sizes
7/16"



Bore sizes
3/4"
1-1/16"
1-1/2"



Bore size	SR	SRM	Std. stroke (in)	Max stroke (in)	SS rod std
7/16"	•		1/2, 1, 1-1/2, 2, 3	6	✔
3/4"	•	•	1/2, 1, 2, 3, 4	6	✔
1-1/16"	•	•	1, 2, 3, 4	6	✔
1-1/2"	•	•	1, 2, 3, 4	6	✔

Bore size	A	AA	B	BC	CC	CF	CP	D	DA	E	EE	FH
7/16"	0.50	0.50	0.437	0.75	0.188	0.31	0.44	–	#8-32 UNC	0.38	#10-32	0.31
3/4"	0.75	0.81	0.624	1.00	0.250	–	–	0.22	–	0.62	1/8 NPTF	0.38
1-1/16"	0.75	1.12	0.750	1.25	0.312	–	–	0.25	–	0.88	1/8 NPTF	0.62
1-1/2"	1.25	1.56	1.00	1.75	0.437	–	–	0.38	–	0.88	1/4 NPTF	0.88

Bore size	HP	J	KK	MB	S	SB	SC	SO	V	W	X	ZJ SR	ZJ SRM
7/16"	0.44	0.19	#10-32 UNF	0.88	#8-32 UNC	0.75	–	–	0.062	–	0.94	1.94	–
3/4"	0.62	0.19	1/4-28 UNF	1.12	#10-32 UNF	1.00	#10-32	1/4-20 UNC	0.093	0.34	1.69	2.66	2.91
1-1/16"	0.81	0.19	5/16-24 UNF	1.41	#10-32 UNF	1.25	#10-32	1/4-20 UNC	0.093	0.47	1.81	3.38	3.63
1-1/2"	1.12	0.25	7/16-20 UNF	1.88	1/4 UNC	1.75	1/4-20	5/16-18 UNC	0.125	0.38	2.00	3.69	3.94

* To determine lengths for half inch stroke increments, determine length for next highest whole number stroke and subtract one half inch.

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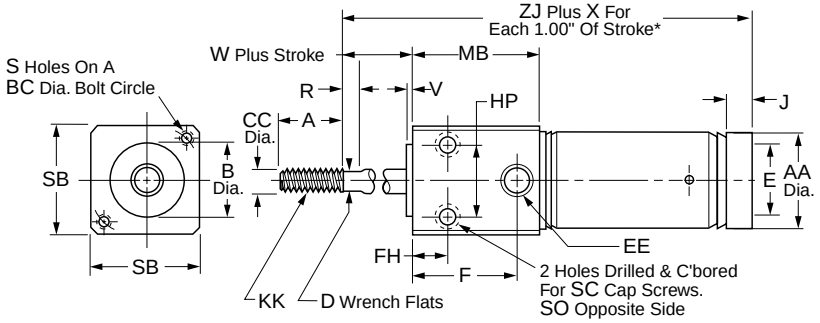
Mounting Style BFR

Front block mount, single acting, spring extend



Bore size	SR	SRM	Std. stroke (in)	Max stroke (in)	SS rod std
3/4"	•	•	1, 2, 3, 4	6	✔
1-1/16"	•	•	1, 2, 3, 4	6	✔
1-1/2"	•	•	1, 2, 3, 4	6	✔

Bore size	A	AA	B	BC	CC	D	E	EE	F	FH	HP	J
3/4"	0.75	0.81	0.624	1.00	0.250	0.22	–	1/8 NPTF	0.88	0.38	0.62	0.19
1-1/16"	0.75	1.12	0.750	1.25	0.312	0.25	–	1/8 NPTF	1.16	0.62	0.81	–
1-1/2"	1.25	1.56	1.00	1.75	0.437	0.38	0.88	1/4 NPTF	1.53	0.88	1.12	0.25

Bore size	KK	MB	R	S	SB	SC	SO	V	W	X	ZJ	
											SR	SRM
3/4"	1/4-28 UNF	1.12	0.25	#10-32 UNF	1.00	#10-32	1/4-20 UNC	0.093	0.34	2.69	2.56	2.81
1-1/16"	5/16-24 UNF	1.41	0.25	#10-32 UNF	1.25	#10-32	1/4-20 UNC	0.093	0.47	2.81	3.12	3.37
1-1/2"	7/16-20 UNF	1.88	0.25	1/4-20 UNC	1.75	1/4-20	5/16-18 UNC	0.125	0.38	3.00	3.69	3.94

* To determine lengths for half inch stroke increments, determine length for next highest whole number stroke and subtract one half inch.

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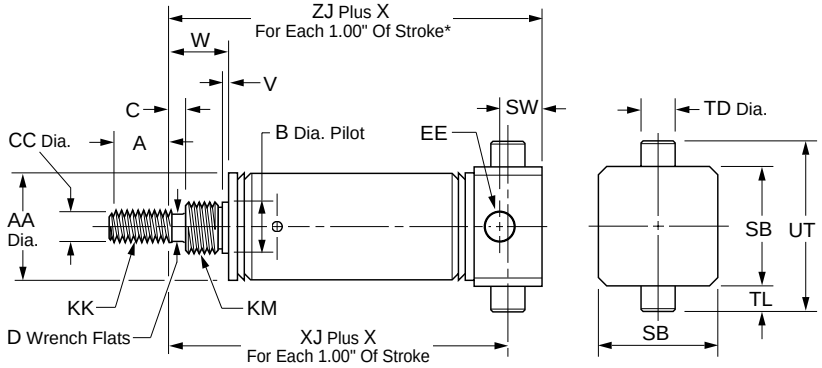
Mounting Style TRN

Rear trunnion mount, single acting, spring return



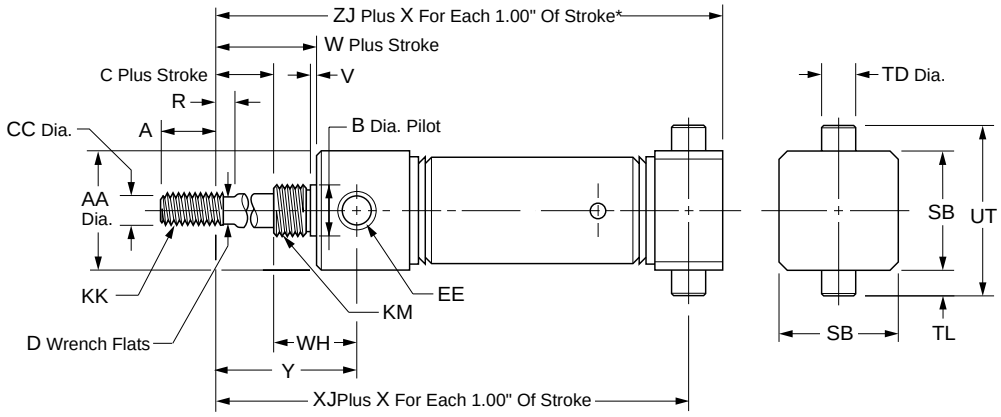
Bore size	SR	SRM	Std. stroke (in)	Max. stroke (in)	SS rod std	A	AA	B	C	CC	D	EE
7/16"	•		1/2, 1, 2, 3, 4	6	✔	0.50	0.50	0.374	–	0.188	–	#10-32
3/4"	•	•	1, 2, 3, 4	6	✔	0.75	0.81	0.499	0.25	0.250	0.22	1/8 NPTF
1-1/16"	•	•	1, 2, 3, 4	6	✔	0.75	1.12	0.624	0.38	0.312	0.25	1/8 NPTF
1-1/2"	•	•	1, 2, 3, 4	6	✔	1.25	1.56	0.749	0.25	0.437	0.38	1/4 NPTF

Bore size	KK	KM	SB	SW	TD	TL	UT	V	W	X	XJ SR	XJ SRM	ZJ SR	ZJ SRM
7/16"	#10-32 UNF	3/8-24 UNF	0.75	0.38	0.374	0.50	1.25	0.05	0.32	0.94**	1.38	–	1.62	–
3/4"	1/4-28 UNF	1/2-20 UNF	1.00	0.44	0.500	0.38	1.75	0.09	0.62	1.69	1.94	2.19	2.31	2.56
1-1/16"	5/16-24 UNF	5/8-18 UNF	1.25	0.44	0.500	0.38	2.00	0.09	0.88	1.81	2.44	2.69	2.81	3.06
1-1/2"	7/16-20 UNF	3/4-16 UNF	1.75	0.62	0.500	0.38	2.50	0.09	0.88	2.00	2.56	2.81	3.06	3.31

* To determine lengths for half inch stroke increments, determine length for next highest whole number stroke and subtract one half inch.
** For each 0.50" of stroke.

Mounting Style TRR

Rear trunnion mount, single acting, spring extend



Bore size	SR	SRM	Std. stroke (in)	Max. stroke (in)	SS rod std	A	AA	B	C	CC	D	EE
3/4"	I	I	1, 2, 3, 4	6	3	0.75	0.86	0.624	0.25	0.250	0.22	1/8 NPTF
1-1/16"	I	I	1, 2, 3, 4	6	3	0.75	1.12	0.624	0.38	0.312	0.25	1/8 NPTF
1-1/2"	I	I	1, 2, 3, 4	6	3	1.25	1.56	0.749	0.25	0.437	0.38	1/4 NPTF

Bore size	KK	KM	R	SB	TD	TL	UT	V	W	WH	X	XJ SR	XJ SRM	ZJ SR	ZJ SRM
3/4"	1/4-28 UNF	1/2-20 UNF	0.25	1.00	0.500	0.38	1.75	0.09	0.75	0.72	2.69	2.85	3.10	3.22	3.47
1-1/16"	5/16-24 UNF	5/8-18 UNF	0.25	1.25	0.500	0.38	2.00	0.09	0.88	0.68	2.81	3.15	3.40	3.53	3.78
1-1/2"	7/16-20 UNF	3/4-16 UNF	0.25	1.75	0.500	0.38	2.50	0.09	0.88	1.25	3.00	3.38	3.63	3.88	4.13

* To determine lengths for half inch stroke increments, determine length for next highest whole number stroke and subtract one half inch.

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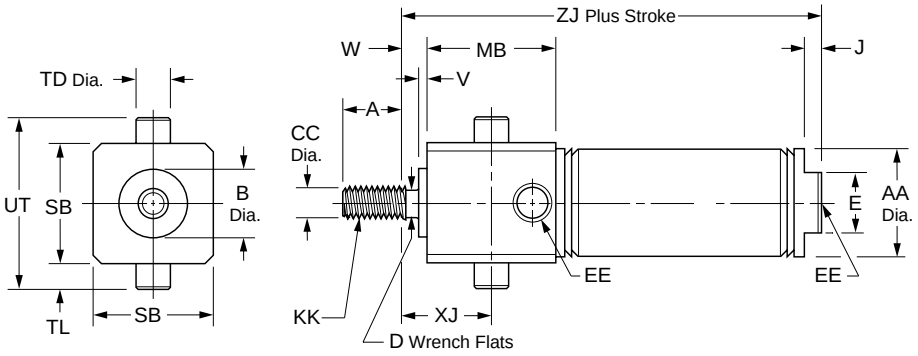
Mounting Style TFD

Front trunnion mount, double acting

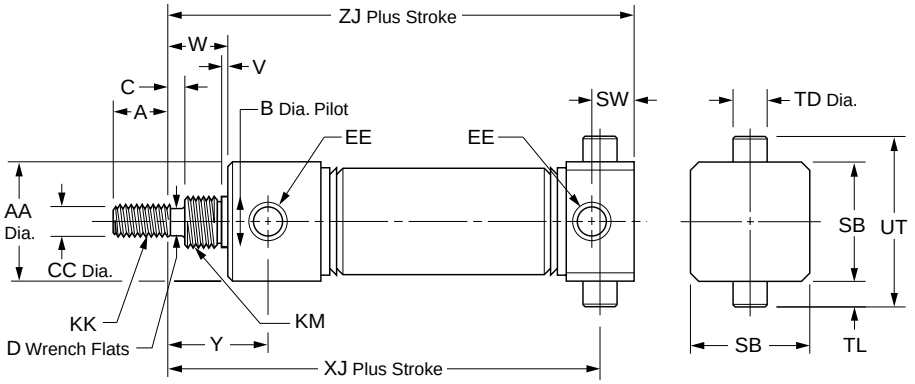


Bore size	SR	SRM	Std. stroke (in)	Max. stroke (in)	SS rod std	A	AA	B	CC	D	E	EE
7/16"	•		1/2, 1, 1-1/2, 2, 3, 4	12	✔	0.50	0.50	0.437	0.188	–	0.38	#10-32
3/4"	•	•	1, 2, 3, 4, 5, 6	12	✔	0.75	0.81	0.624	0.250	0.22	0.62	1/8 NPTF
1-1/16"	•	•	1, 2, 3, 4, 5, 6	12	✔	0.75	1.12	0.750	0.312	0.25	0.88	1/8 NPTF
1-1/2"	•	•	1, 2, 3, 4, 5, 6	12	✔	1.25	1.56	1.000	0.437	0.38	0.88	1/4 NPTF

Bore size	J	KK								ZJ	
	0.19	#10-32 UNF	MB	SB	TD	TL	UT	V	W	XJ	SR	SRM
7/16"	0.19	1/4-28 UNF	0.88	0.75	0.374	0.250	1.25	0.062	–	0.31	2.12	–
3/4"	0.19	5/16-24 UNF	1.12	1.00	0.500	0.38	1.75	0.093	0.34	0.69	3.22	3.22
1-1/16"	0.25	7/16-20 UNF	1.41	1.25	0.500	0.38	2.00	0.093	0.47	1.09	3.75	3.91
1-1/2"			1.88	1.75	0.500	0.38	2.50	0.125	0.38	1.31	4.19	4.44

Mounting Style TRD

Rear trunnion mount, double acting



Bore size	SR	SRM	Std. stroke (in)	Max. stroke (in)	SS rod std	A	AA	B	C	CC	D	EE
7/16"	•		1/2, 1, 1-1/2, 2, 3, 4	12	✔	0.50	0.74	0.437	–	0.188	–	#10-32
3/4"	•	•	1, 2, 3, 4, 5, 6	12	✔	0.75	0.86	0.624	0.25	0.250	0.22	1/8 NPTF
1-1/16"	•	•	1, 2, 3, 4	12	✔	0.75	1.12	0.624	0.38	0.312	0.25	1/8 NPTF
1-1/2"	•	•	1, 2, 3, 4, 5, 6	12	✔	1.25	1.56	0.749	0.25	0.437	0.38	1/4 NPTF

Bore size	KK	KM								XJ			ZJ	
	#10-32 UNF	7/16-20 UNF	SB	SW	TD	TL	UT	V	W	SR	SRM	Y	SR	SRM
7/16"	1/4-28 UNF	5/8-18 UNF	0.75	0.38	0.374	0.25	1.25	0.05	0.38	2.19	–	0.72	2.44	–
3/4"	5/16-24 UNF	5/8-18 UNF	1.00	0.44	0.500	0.38	1.75	0.09	0.75	3.41	3.41	1.22	3.78	3.78
1-1/16"	7/16-20 UNF	3/4-16 UNF	1.25	0.44	0.500	0.38	2.00	0.09	0.88	3.62	3.62	1.44	4.00	4.16
1-1/2"			1.75	0.62	0.500	0.38	2.50	0.09	0.88	3.88	4.13	1.47	4.38	4.63

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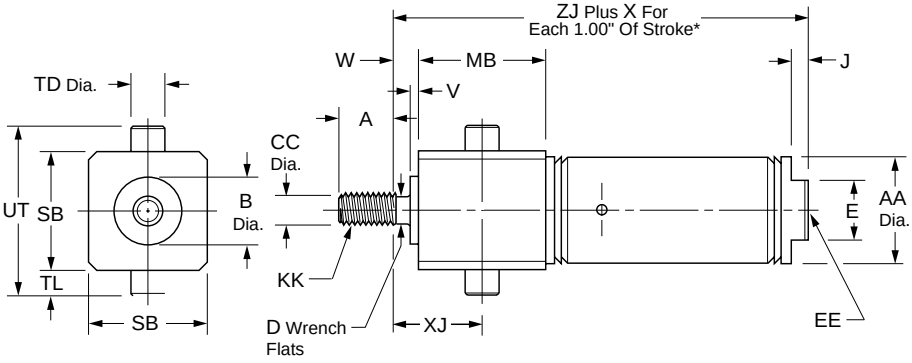
Mounting Style TFN

Front trunnion mount, single acting, spring return



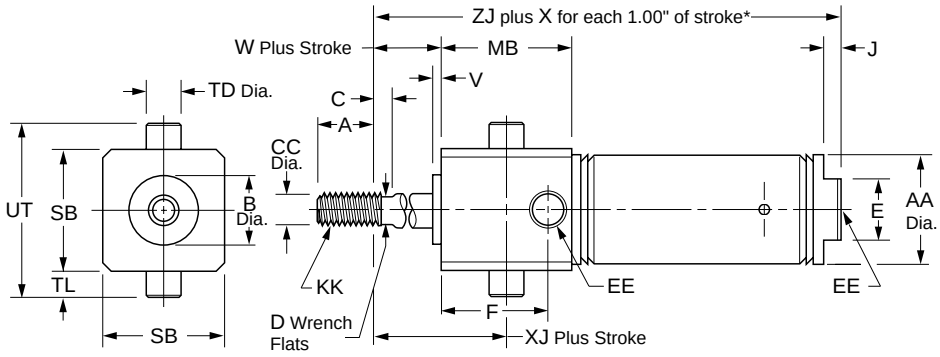
Bore size	SR	SRM	Std. stroke (in)	Max. stroke (in)	SS rod std	A	AA	B	CC	D	E	EE
7/16"	•		1/2, 1, 1-1/2, 2, 3	6	✔	0.50	0.50	0.437	0.188	–	0.38	#10-32
3/4"	•	•	1/2, 1, 2, 3, 4	6	✔	0.75	0.81	0.624	0.250	0.22	0.62	1/8 NPTF
1-1/16"	•	•	1, 2, 3, 4	6	✔	0.75	1.12	0.750	0.312	0.25	0.88	1/8 NPTF
1-1/2"	•	•	1, 2, 3, 4	6	✔	1.25	1.56	1.000	0.437	0.38	0.88	1/4 NPTF

Bore size	J	KK	MB	SB	TD	TL	UT	V	W	X	XJ	ZJ SR	ZJ SRM
7/16"	0.19	#10-32 UNF	0.88	0.75	0.374	0.25	1.25	0.062	0	0.94**	0.31	1.94	–
3/4"	0.19	5/16-24 UNF	1.12	1.00	0.500	0.38	1.75	0.093	0.34	1.69	0.69	2.66	2.91
1-1/16"	0.25	7/16-20 UNF	1.41	1.25	0.500	0.38	2.00	0.093	0.47	1.81	1.09	3.38	3.63
1-1/2"			1.88	1.75	0.500	0.38	2.50	0.125	0.38	2.00	1.31	3.69	3.94

* To determine lengths for half inch stroke increments, determine length for next highest whole number stroke and subtract one half inch.
** For each 0.50" of stroke

Mounting Style TFR

Front trunnion mount, single acting, spring extend



Bore size	SR	SRM	Std. stroke (in)	Max. stroke (in)	SS rod std	A	AA	B	C	CC	D	E
3/4"	•	•	1, 2, 3, 4	6	✔	0.75	0.81	0.624	0.25	0.250	0.22	0
1-1/16"	•	•	1, 2, 3, 4	6	✔	0.75	1.12	0.750	0.25	0.312	0.25	0
1-1/2"	•	•	1, 2, 3, 4	6	✔	1.25	1.56	1.000	0.25	0.437	0.38	0.88

Bore size	F	EE	J	KK	MB	SB	TD	TL	UT	V	W	X	XJ	ZJ SR	ZJ SRM
3/4"	0.88	1/8 NPTF	–	1/4-28 UNF	1.12	1.00	0.500	0.38	1.75	0.093	0.34	2.69	0.69	2.56	2.81
1-1/16"	1.16	1/8 NPTF	–	5/16-24 UNF	1.41	1.25	0.500	0.38	2.00	0.093	0.47	2.81	1.09	3.12	3.37
1-1/2"	–	1/4 NPTF	0.25	7/16-20 UNF	1.88	1.75	0.500	0.38	2.50	0.125	0.38	3.00	1.31	3.69	3.94

* To determine lengths for half inch stroke increments, determine length for next highest whole number stroke and subtract one half inch.

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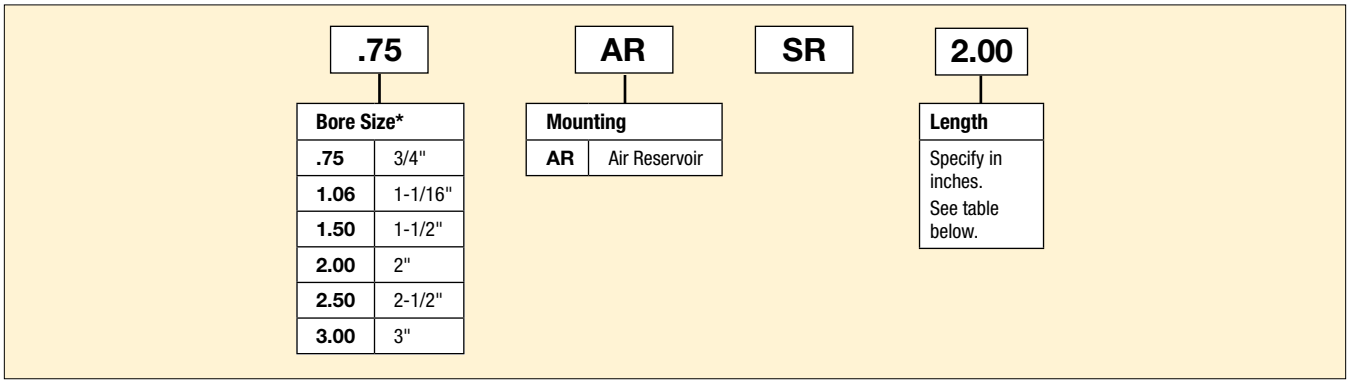
Air Reservoirs

Air Reservoirs installed can significantly reduce the pulsation of a system. In addition air reservoirs can be used as a means to store energy. Caution should always be used when storing energy. Air reservoirs if installed in the correct location and sized correctly can temporarily increase the flow of an actuator or cylinder.
As always never exceed the rated pressure of the cylinder.

Ordering information

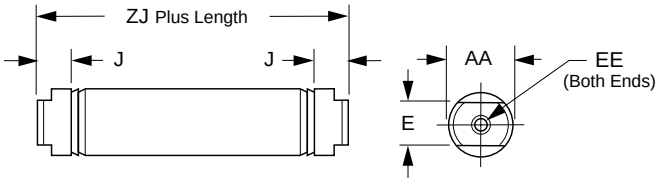


Bore Size*	
.75	3/4"
1.06	1-1/16"
1.50	1-1/2"
2.00	2"
2.50	2-1/2"
3.00	3"

Mounting	
AR	Air Reservoir

Length
Specify in inches. See table below.

Bore size	Standard lengths	Max. length	Volume (in3)
3/4"	1" increments to 4"	32"	0.39 plus 0.44 per inch length
1-1/16"	1" increments to 8"	32"	0.99 plus 0.89 per inch length
1-1/2"	1" increments to 16"	32"	1.91 plus 1.77 per inch length
2"	1" increments to 16"	32"	4.22 plus 3.14 per inch length
2-1/2"	1" increments to 16"	32"	7.04 plus 4.91 per inch length
3"	1" increments to 16"	32"	9.90 plus 7.07 per inch length



Bore size	AA	E	EE	J	ZJ
3/4"	0.813	0.625	1/8" NPTF	0.19	1.938
1-1/16"	1.125	0.88	1/8" NPTF	0.19	2.375
1-1/2"	1.56	0.88	1/8" NPTF	0.250	2.250
2"	2.08	1.25	1/4" NPTF	0.562	2.875
2-1/2"	2.62	1.75	1/4" NPTF	0.562	2.875
3"	3.16	2.00	3/8" NPTF	0.562	3.190

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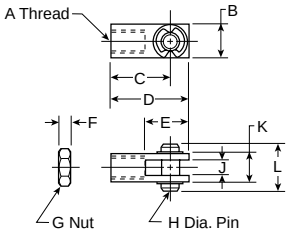
Piston Rod Clevis

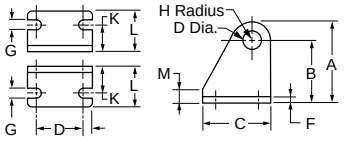
Assembly includes pin and (2) retainer rings and (1) jam nut.



Bore size	A	B	C	D	E	F	G	H	J	K	L	Part number
5/16	#5-40	.31	.44	.56	.38	.11	#5-40	.12	.13	.31	.50	**L071300025**
7/16, 9/16	#10-32	.38	.75	.94	.56	.12	#10-32	.19	.19	.38	.56	**L071300100** **L077130100***
3/4, 7/8	1/4-28	.50	.94	1.19	.68	.16	1/4-28	.25	.25	.50	.69	**L071300200** **L077130200***
1-1/16	5/16-24	.50	.94	1.19	.68	.19	5/16-24	.25	.25	.50	.69	**L071300300** **L077130300***
1-1/4, 1-1/2	7/16-20	.75	1.31	1.69	.94	.25	7/16-20	.38	.38	.75	1.03	**L071300400** **L077130400***
1-3/4, 2, 2-1/2	1/2-20	.75	1.31	1.69	.94	.31	1/2-20	.38	.38	.75	1.03	**L071300500** **L077130500***
3	5/8-18	1.00	2.25	2.75	1.50	.38	5/8-18	.50	.50	1.00	1.38	**L071300600**

* Stainless Steel for use with SRD/SRDM cylinders.

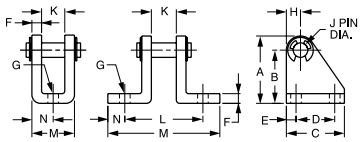
Pivot Brackets



Bore size	A	B	C	D	E	F	G	H	J	K	L	M	Part number
7/16	.76	.56	.75	.50	.12	.06	.19	.20	.160	.28	.50	.12	**L071310100**
3/4, 7/8, 1-1/16	1.19	.88	1.12	.75	.19	.12	.27	.31	.255	.44	.81	.25	**L071310200**
1-1/2	1.75	1.38	1.50	1.00	.25	.12	.27	.38	.380	.62	1.00	.25	**L071310300**

Pivot Bracket Assembly

Assembly includes pin and (2) retainer rings.



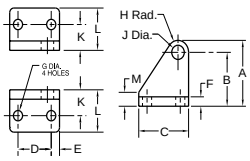
5/16" bore only

Bore size	A	B	C	D	E	F	G	H	J	K	L	M	N	Part number
5/16	.53	.40	.62	.38	.12	.04	16	.12	.12	.26	–	.36	.18	**L071320025**
7/16, 9/16	.76	.56	.75	.50	.12	.06	.19	.19	.156	.34	.91	1.34	.22	**L071320100** **L077150100***
3/4, 7/8, 1-1/16	1.18	.88	1.12	.75	.19	.12	.27	.30	.250	.38	1.25	2.00	.38	**L071320200** **L077150200***
1-1/4	1.18	.88	1.12	.75	.19	.12	27	.30	.250	.50	1.38	2.14	.38	**L071320300**
1-1/2, 1-3/4	1.75	1.38	1.50	1.00	.25	.25	.27	.37	.375	.62	2.00	2.88	.44	**L071320400** **L077150400***
2, 2-1/2	1.75	1.38	1.50	1.00	.25	.25	.27	.37	.375	.75	2.12	3.00	.44	**L071320500** **L077150500***
3	2.25	1.75	1.75	1.25	.25	.25	.27	50	.50	.88	2.62	3.88	.62	**L071320600**

* Stainless steel for use with SRD/SRDM cylinders.

SR Series Trunnion Brackets

Select brackets for SR series trunnion mount cylinders from the table below. (Note: trunnion brackets are ordered as a separate item from the cylinder.)



Bore size	A	B	C	D	E	F	G	H	J	K	L	M	Part number
7/16	1.75	1.38	1.50	1	.25	.25	.27	.38	.375	.69	1.12	.37	**L076600100**
3/4, 1-1/16, 1-1/2	1.75	1.38	1.50	1	.25	.25	.27	.38	.500	.69	1.12	.37	**L076600200**

☐ Most popular.

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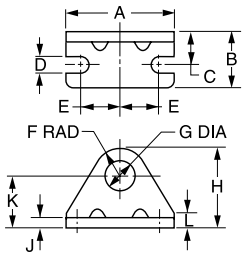
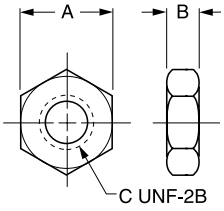
Foot Brackets



Bore size	A	B	C	D	E	F	G	H	J	K	L	Part number
5/16	1.00	.37	.25	.13	.37	.31	.25	.75	.06	.44	.12	**L073790016**
5/16	1.00	.37	.25	.13	.37	.31	.38	.75	.06	.44	.12	**L073790023**
7/16	1.38	.62	.31	.19	.50	.31	.38	.88	.07	.56	.12	**L073790024**
7/16, 9/16	1.38	.62	.38	.19	.50	.38	.44	.94	.09	.56	.12	**L073790028** **L077160028***
3/4	1.62	.75	.44	.19	.62	.41	.50	1.09	.10	.69	.19	**L073790032**
3/4, 7/8, 1-1/16	1.88	1.00	.56	.27	.75	.56	.63	1.38	.12	.81	.25	**L073790040** **L077160040***
1-1/4, 1-1/2	2.50	1.50	.75	.27	.94	.75	.75	1.75	.12	1.00	.38	**L073790048** **L077160048***
1-3/4	3.00	1.50	.87	.35	1.12	.91	1.03	2.16	.19	1.25	.50	**L073790102**
2	3.12	1.62	1.00	.34	1.12	1.00	1.38	2.50	.25	1.50	.62	**L073790124** **L077160124***
2-1/2	3.75	1.62	1.00	.35	1.44	1.25	1.51	3.00	.25	1.75	.75	**L073790132**
3	4.37	1.62	1.00	.35	1.75	1.25	1.64	3.14	.25	1.89	.89	**L073790140**

* Stainless Steel for use with SRD/SRDM cylinders.

Mounting Nut



Bore size	A	B	C	Part number
5/16	.44	.16	1/4-28	**L073800200**
5/16, 7/16	.56	.22	3/8-24	**L073800400**
7/16, 9/16	.69	.25	7/16-20	**L073800500** **L077170500***
3/4	.75	.31	1/2-20	**L073800600**
3/4, 7/8, 1-1/16	.94	.38	5/8-18	**L073800800** **L077170800***
1-1/4, 1-1/2	1.12	.42	3/4-16	**L073800900**
1-1/4, 1-1/2	1.12	.72	3/4-16	**L077170900***
1-3/4	1.50	.55	1-14	**L073801100**
2	1.88	.50	1-1/4-12	**L073801200** **L077171200***
2-1/2	2.06	.78	1-3/8-12	**L073801400**
3	2.25	.84	1-1/2-12	**L073801500**

* Stainless Steel for use with SRD/SRDM cylinders.

☐ Most popular.

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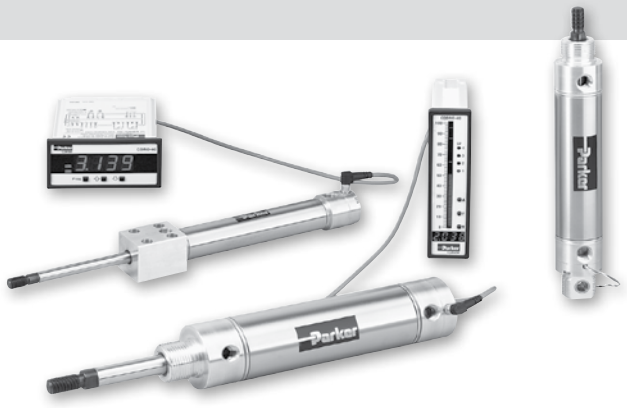
SRX Series

- Continuous position feedback
- Bore sizes: 1-1/16" to 3"
- Signal input: 5 to 24 VDC
- Signal output (w/o controls): DC ratiometric voltage*
- Signal output (w/controls): 0 to 10 VDC or 4 to 20 mA
- Strokes: Available in any practical stroke length up to 24"

* Mega Ohm impedence interface device suggested for limiting sensor current if controller is not used.



Operating information

Operating pressure:	150 PSIG (10.3 bar)
Temperature range:	40°F to 160°F (4.4°C to 71°C)
Filtration requirements:	40 micron, dry filtered air

Ordering information

1.50"	DXP	P	SRX	B	F	S	3	6.00"

Bore size

1.06"
1.50"
2.00"
2.50"
3.00"

Mounting s tyle

D	Nose mount
DXP	Nose and pivot mount
BFD	Front block mount

Connector style

P	Plug
F	Flying leads

Piston

B	Bumper*

Leave blank if not required.

Seals

F	Low friction

Leave blank if not required.

Special

S	Special

Leave blank if special modification is not required.

Non-standard rod dimension

3	Non-standard dimension

Leave blank if special rod end dimension is not required.

NOTE: For non-standard / special rod ends, see below.

Stroke

Stroke in inches

* Incorporating bumpers adds 1/4" of overall length to the cylinder.

Sensors

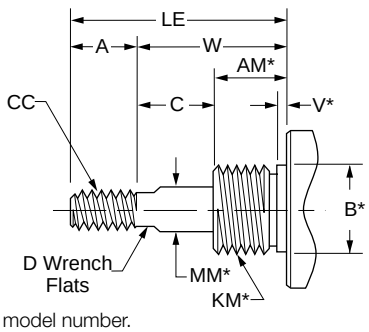
For sensors see page B339.

For ordering purposes, when special options or common modifications are requested, the factory will assign a sequential part number in place of the model number.

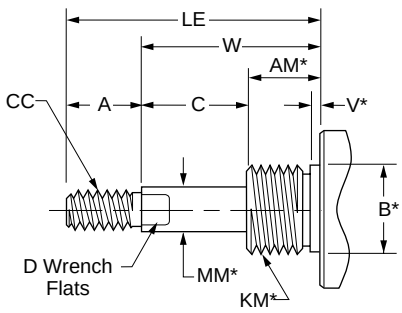
Non-standard rods

For non-standard rod dimensions, or undersized rod end threads, put a “3” in model number and describe the rod using the letters shown in the drawing. It is necessary to specify only those dimensions that are non-standard.
LE is measured in retracted position.

Full diameter rod end threads



Undersized rod end threads



* Requires an “S” designation in model number.

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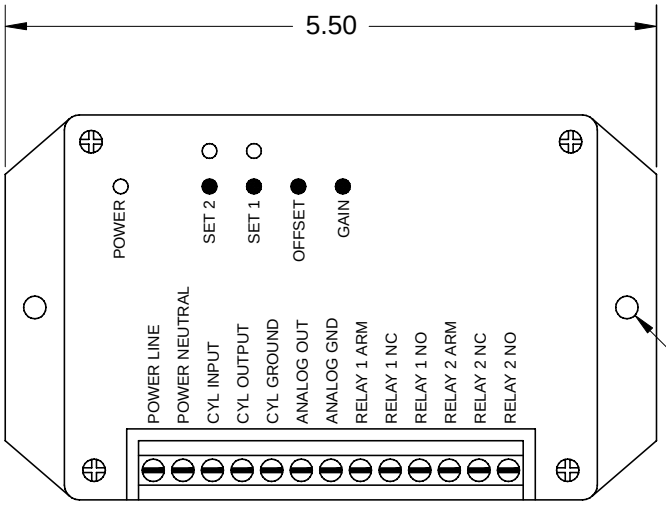
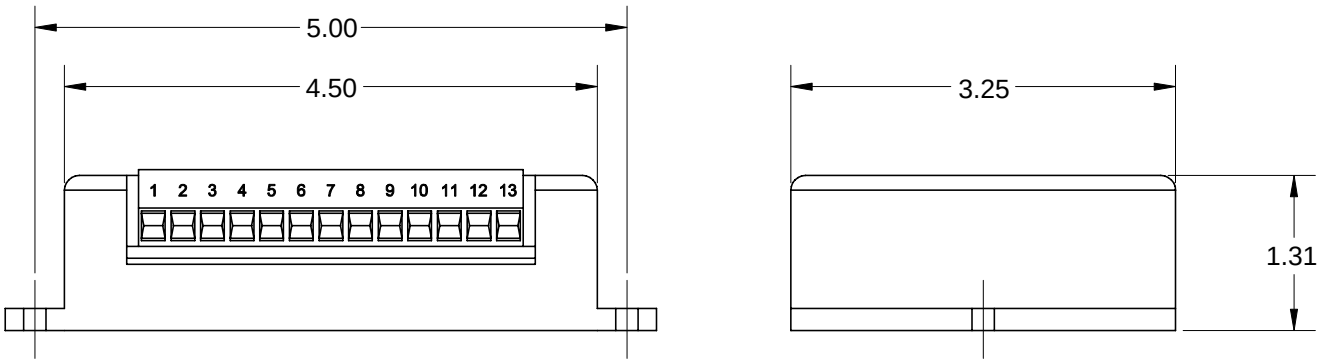
Dual Set Point Controller, Part #149344000



Ordering Information

Model number	Input specifications	Output specifications
1493440002	120 VAC	0-10 V
1493440003	120 VAC	4-20 mA
1493440004	12-24 VDC	0-10 V
1493440005	12-24 VDC	4-20 mA



Dual Set Point Controller Specifications, Part #149344000

- Power Input Requirements..... 12 to 24 VDC, 0.1 amps, or
  120 VAC, 60 Hz, 0.1 amps
- Output specifications – Set Point ..... Relay (2) 2 amps @ 24 VDC or 120 VAC
- Output Specifications – Scaleable..... 0 to 10 V, 1 mA max. output current (10K ohm impedance min.)
  4 to 20mA, into 500-ohm max. impedance
- Maximum Zero Offset..... 50% of cylinder stroke
- Minimum Span Range..... 50% of cylinder stroke
- Enclosure Dimensions..... 1.31" h x 5.50" w x 3.25" d
- Electronics Temperature Operating Range .... +40°F to +160°F

Please reference Parker Bulletin #0971-G-B2 for information regarding programming and operation of this controller.

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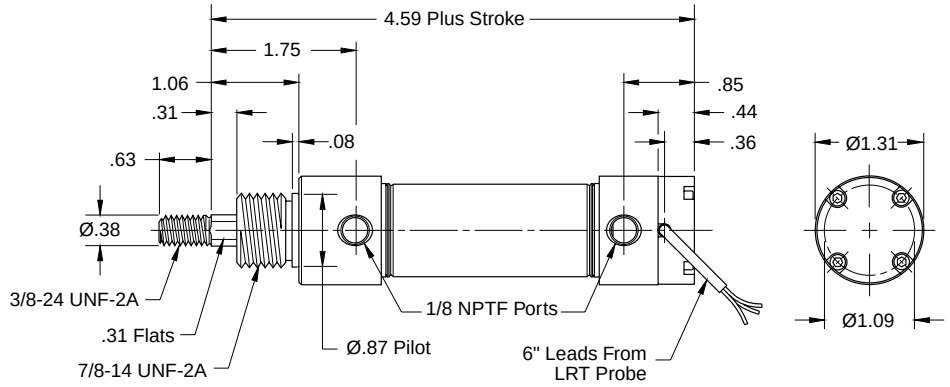
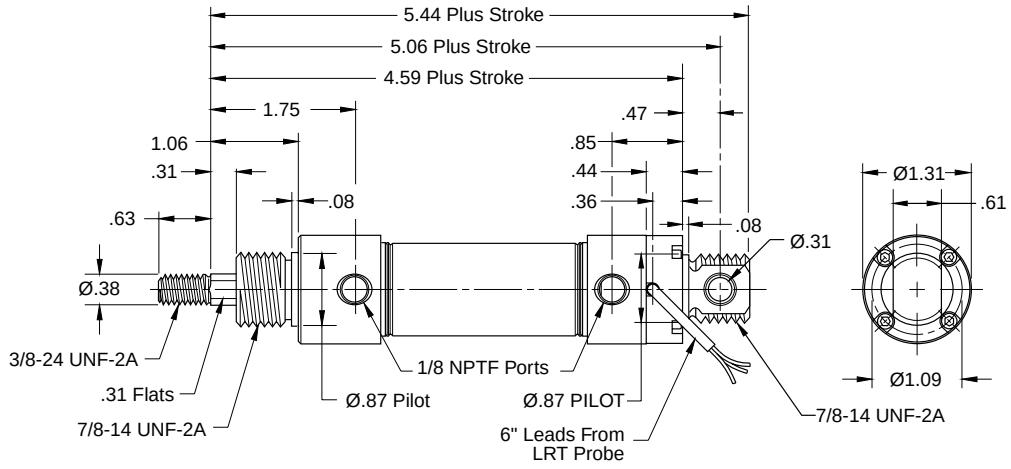
1-1/16" Bore Cylinders

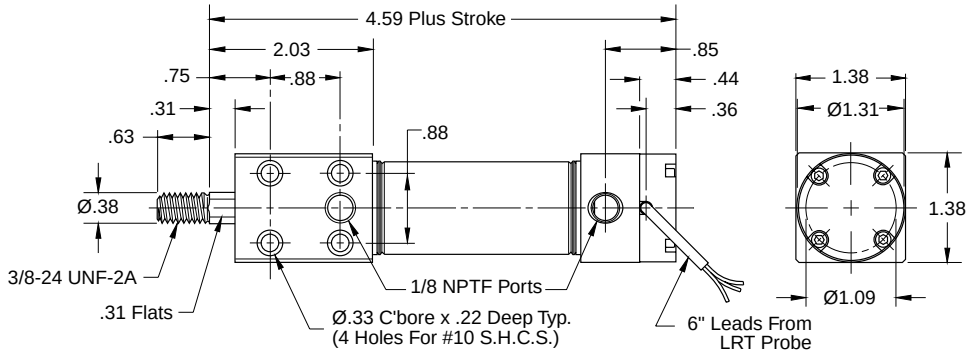
Style D



Style DXP



Style BFD



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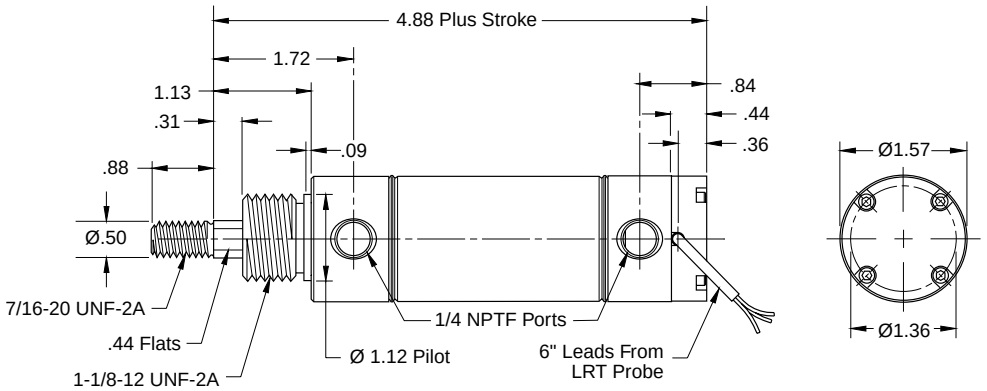
1-1/2" Bore Cylinders

Style D



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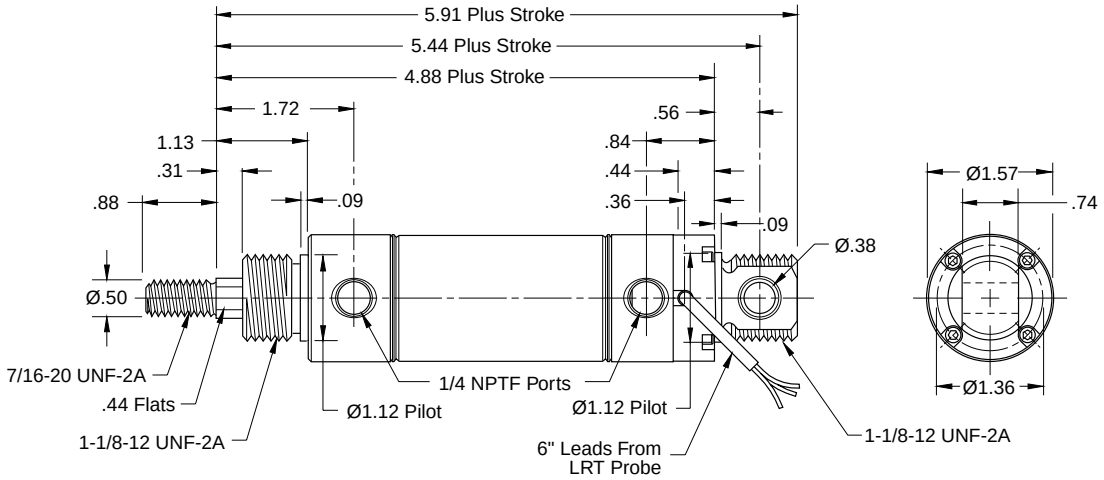

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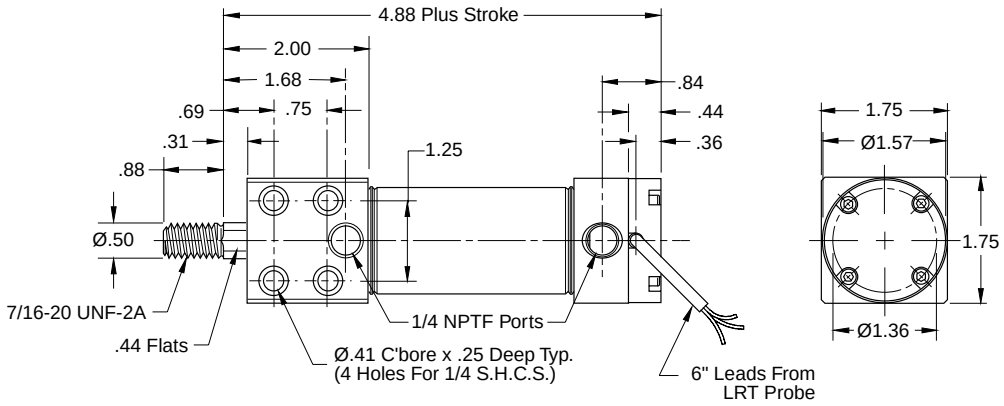

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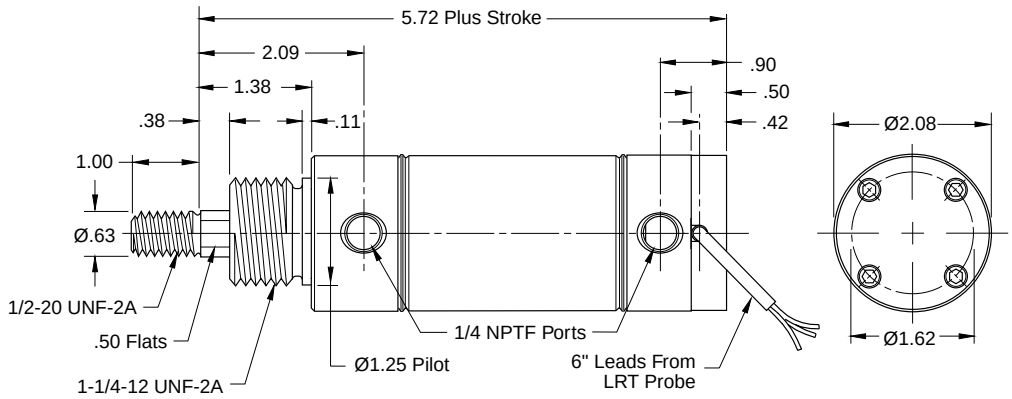
2" Bore Cylinders

Style D



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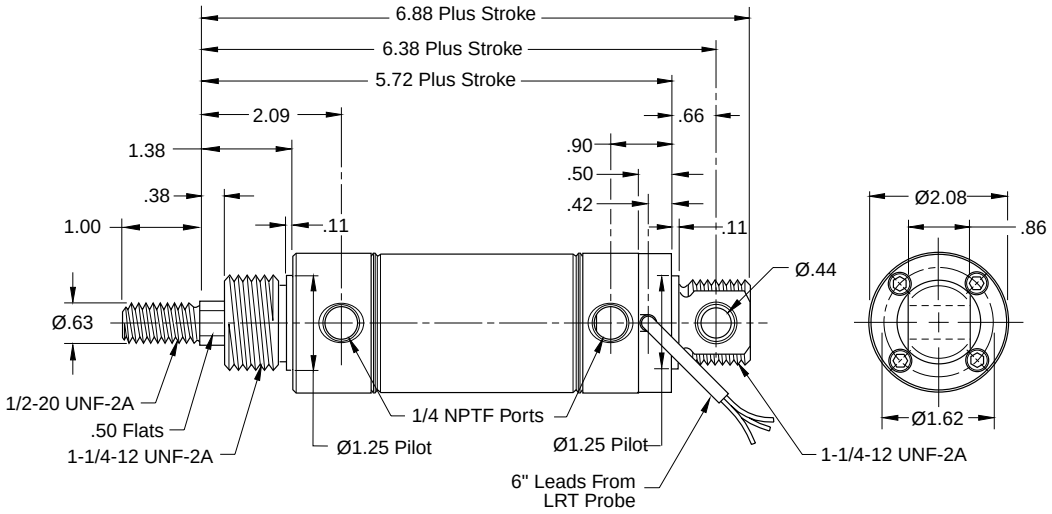

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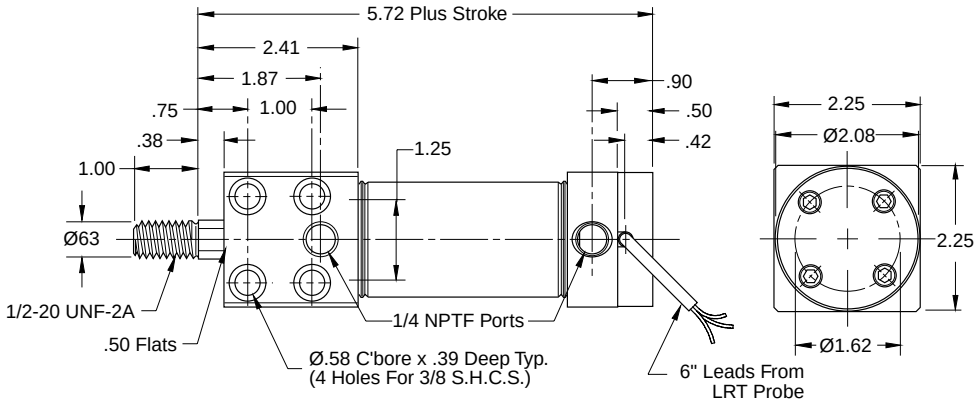

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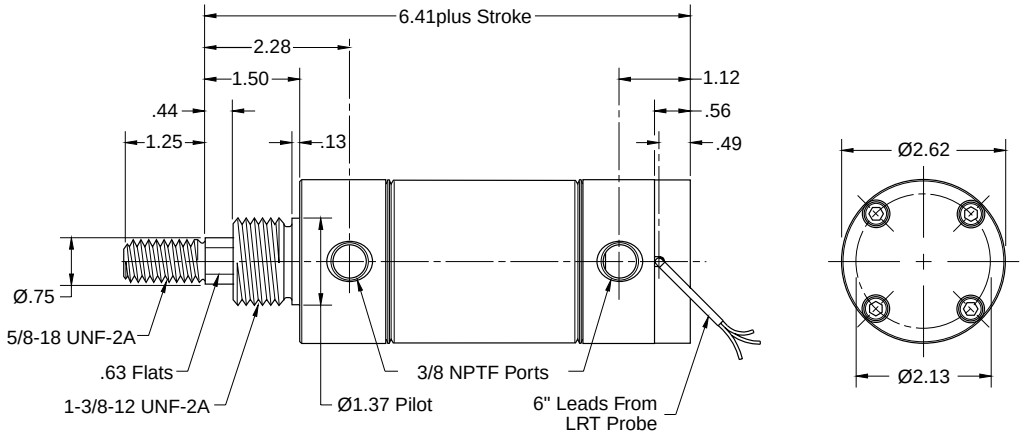
2-1/2" Bore Cylinders

Style D



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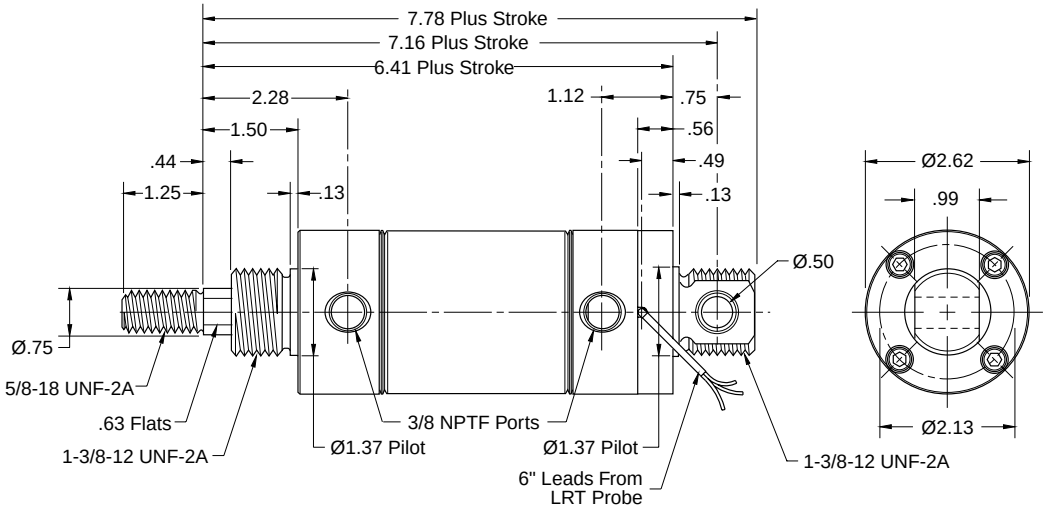

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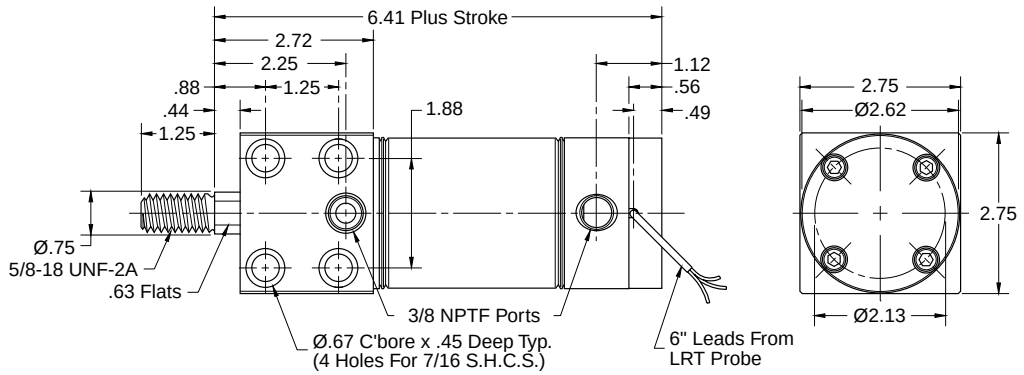

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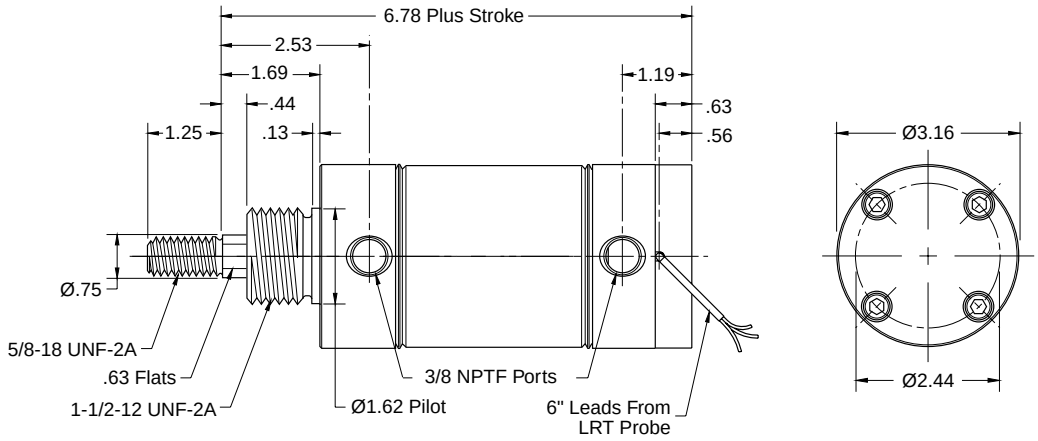
3" Bore Cylinders

Style D



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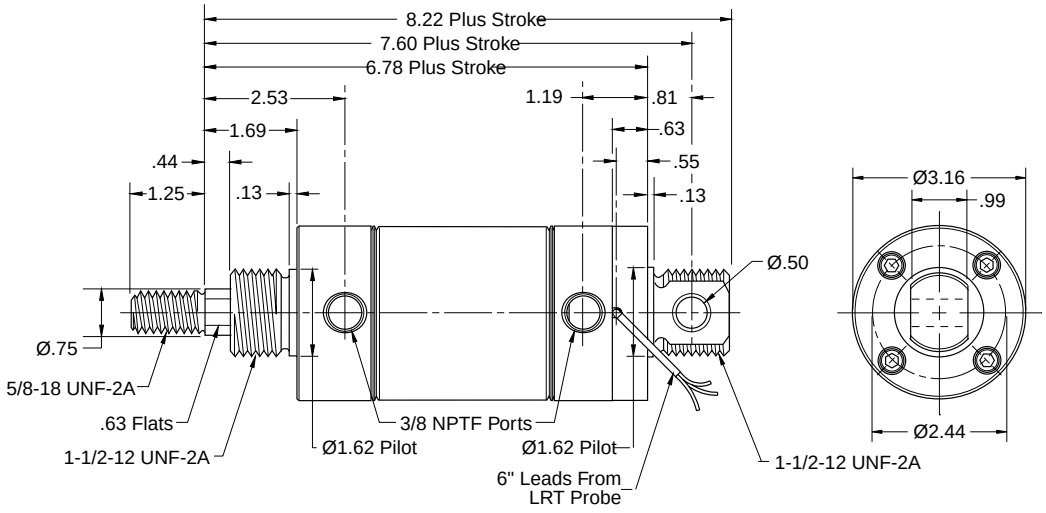
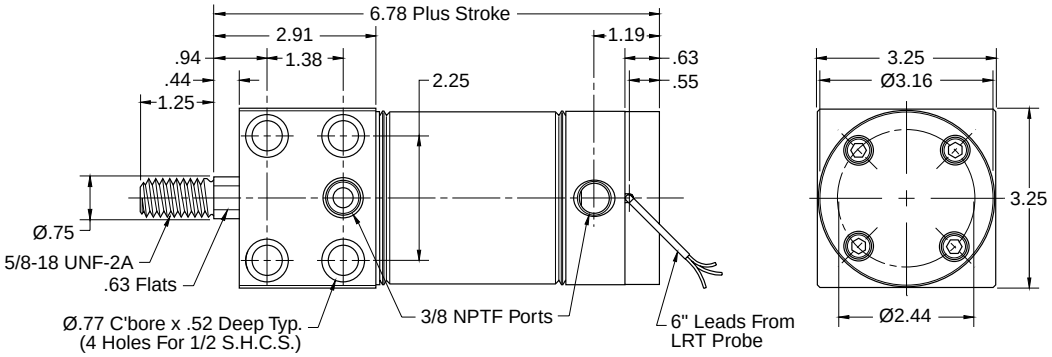


Style BFD



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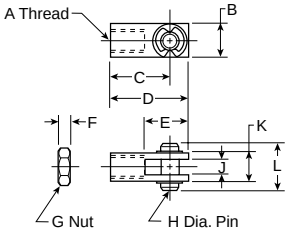
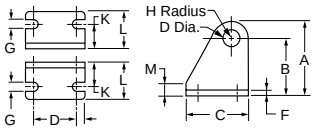
Piston Rod Clevis



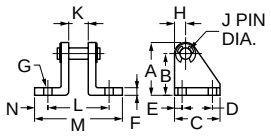
Bore size	A	B	C	D	E	F	G	H	J	K	L	Part number
1-1/16	3/8–24	.63	1.38	1.69	.94	.22	3/8–24	.31	.32	.63	.88	L071300350
1-1/2	7/16–20	.75	1.31	1.69	.94	.25	7/16–20	.38	.38	.75	1.03	L071300400
2	1/2–20	.88	1.88	2.31	1.31	.31	1/2–20	.44	.45	.88	1.14	L071300550
2-1/2, 3	5/8–18	1.00	2.25	2.75	1.50	.38	5/8–18	.50	.51	1.00	1.38	L071300600

Pivot Brackets



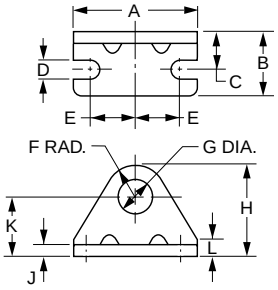
Bore size	A	B	C	D	E	F	G	H	J	K	L	M	Part number
1-1/16	1.31	1.00	1.31	.81	.25	.16	.28	.31	.315	.56	.88	.28	L071310400
1-1/2	1.63	1.25	1.63	1.00	.31	.19	.34	.38	.378	.69	1.13	.31	L071310500
2	1.81	1.38	1.81	1.19	.31	.25	.34	.44	.440	.75	1.19	.38	L071310600
2-1/2, 3	2.13	1.63	2.13	1.38	.38	.25	.41	.50	.503	.88	1.38	.38	L071310700

Pivot Brackets



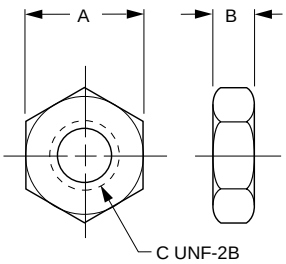
Bore size	A	B	C	D	E	F	G	H	J	K	L	M	N	Part number
1-1/16	1.31	1.00	1.31	.81	.25	.16	.28	.31	.312	.62	1.75	2.38	.31	L071320250
1-1/2	1.63	1.25	1.63	1.00	.31	.19	.34	.38	.375	.75	2.13	3.00	.44	L071320350
2	1.81	1.38	1.81	1.19	.31	.25	.34	.44	.437	.88	2.38	3.25	.44	L071320450
2-1/2, 3	2.13	1.63	2.13	1.38	.38	.25	.41	.50	.500	1.00	2.75	3.75	.50	L071320550

Foot Brackets



Bore size	A	B	C	D	E	F	G	H	J	K	L	Part number
1-1/16	2.13	1.16	.66	.28	.75	.75	.88	1.75	.16	1.00	.38	L073790056
1-1/2	2.75	1.44	.81	.35	1.00	.94	1.13	2.19	.19	1.25	.38	L073790108
2	3.00	1.59	.91	.35	1.19	1.06	1.26	2.44	.22	1.38	.44	L073790116
2-1/2	3.75	1.88	1.06	.41	1.50	1.19	1.38	2.81	.25	1.63	.50	L073790125
3	4.38	1.62	1.00	.35	1.75	1.25	1.64	3.14	.25	1.89	.89	L073790140

Mounting Nut



Bore size	A	B	C	Part number
1-1/16	1.31	.48	7/8–14	L073801000
1-1/2	1.69	.61	1-1/8–12	L073801300
2	1.88	.50	1-1/4–12	L073801200
2-1/2	2.06	.78	1-3/8–12	L073801400
3	2.25	.84	1-1/2–12	L073801500

☐ Most popular.

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P1L Series

- Repairable aluminum cylinder, anodized body and end caps
- 8 bore sizes: 20mm to 100mm (3/4" to 4")
- 4 Standard rod ends: inch, metric, male, female
- Bumpers standard on both ends
- Adjustable cushions optional at both ends
- Mounting styles: 9 standard
- Strokes available in any practical length
- Available in metric or inch mounting threads

Operating information

Operating pressure:	10 bar (145 PSIG)
Temperature range:	
Standard	-23°C to 74°C (-10°F to 250°F)
High temperature version*	-23°C to 121°C (-10°F to 250°F)

* Option intended for limited exposure to temperatures over 80°C or 176°F. This option is primarily for applications which subject the cylinder to fluids that have an adverse effect on external seals.

Filtration requirements: 40 micron, dry filtered air

Ordering information

P1L	N	032	D	M	N	0200	W	B	N	N	N

Construction [1]

N	Inch mounting threads
M	Metric mounting threads

Bores (mm)

020	032	050	080
025	040	063	100

Function

D	Double acting, single rod
K	Double acting, double rod

Cushions/magnetic piston

N	No cushion, no magnetic piston
M	No cushion, magnetic piston [2]
F	Cushioned both ends, no magnetic piston
Y	Cushioned both ends, magnetic piston [2]

Seal material

N	Standard seals
T	Fluorocarbon

Stroke

Specify in mm

Version [3]

B	Basic
W	With options
/	Special

Mounting style

N	No mountings fitted (std.)
J	Front flange
H	Rear flange
B	Single rear clevis
A	Double rear clevis
F	Foot, front & rear
G	Nose mount
E	Front trunnion
D	Rear trunnion

Port type [1]

N	NPT threads [4]
B	BSPT threads [5]

Rod end style [1]

N	Inch male [4]
6	Metric female
5	Metric male [5]
9	Inch female
3	Special

Rod material

N	Carbon steel (std on 32-100mm bores)
S	Stainless (std on 20-25mm bores)

Notes:

1. When selecting inch or metric construction, be advised that the piston rod end and porting thread will coincide with the mounting thread selected as the standard for the basic cylinder. For example, selecting "M" in the construction field will automatically provide a metric male piston rod end and BSPT ports as standard.
2. Not available with fluorocarbon seal option.
3. If cylinder contains no options, then use "B" as the last digit in the model code. The last 4 boxes are used only when "W" or "/" appears in this field.
4. Standard with Inch Construction
5. Standard with Metric Construction
6. Please consult factory for availability of stroke lengths longer than those listed.

Sensors

For sensors see page B339.

Stroke length for standard cylinders

Bore	Min. stroke (mm)	Max. stroke (mm) [6]
20	2	1000
25	2	1000
32	2	1000
40	4	1000
50	5	1000
63	7	1000
80	4	1000
100	4	1000

For ordering purposes, when special options or common modifications are requested, the factory will assign a sequential part number in place of the model number.

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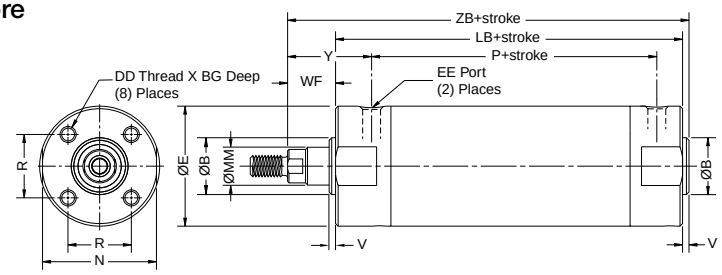
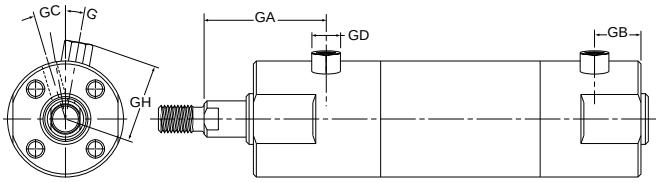
Style N - Basic No Mount

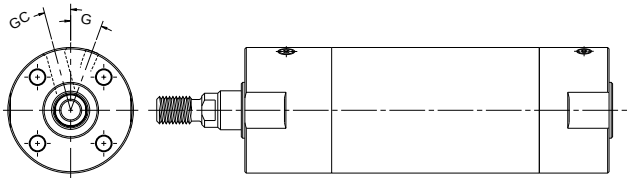
Typical 20 to 100 mm Bore without air cushion



With adjustable air cushion - 20 to 25 mm bores



With adjustable air cushion - 32 to 100 mm bores (feature a flush-fit cushion adjustment screw)



Style N, envelope and mounting dimensions – mm (inch)

Bore size	ØB +0 -0.02 (+0 -0.001)	DD (UNF)	BG depth	ØE	EE (NPTF)	Ø MM rod dia.	N	NA	R	V	WF	Y
20	12 (0.472)	M4x0.7 (8-32)	7 (0.28)	27 (1.06)	1/8* (1/8 †)	8 (0.315)	24 (0.94)	–	14 (0.55)	2 (0.08)	13 (0.50)	28 (1.10)
25	14 (0.551)	M5x0.8 (10-32)	7.6 (0.30)	32 (1.26)	1/8* (1/8 †)	10 (0.394)	29 (1.14)	–	16.5 (0.65)	2 (0.08)	16 (0.62)	30 (1.18)
32	18 (0.709)	M5x0.8 (10-32)	7.6 (0.30)	39 (1.53)	1/8 (1/8)	12 (0.472)	36 (1.42)	11 (0.43)	20 (0.79)	2 (0.08)	22 (0.88)	40 (1.57)
40	25 (0.984)	M6x1 (1/4-28)	12 (0.47)	48.5 (1.91)	1/8 (1/8)	16 (0.630)	44 (1.73)	14 (0.55)	26 (1.02)	2 (0.08)	22 (0.88)	42 (1.65)
50	30 (1.181)	M8x1.25 (5/16-24)	16 (0.63)	59 (2.32)	1/4 (1/4)	20 (0.787)	55 (2.17)	18 (0.71)	32 (1.26)	2 (0.08)	30 (1.19)	53 (2.09)
63	32 (1.260)	M10x1.5 (3/8-24)	16 (0.63)	72 (2.83)	1/4 (1/4)	20 (0.787)	69 (2.72)	18 (0.71)	38 (1.50)	2 (0.08)	30 (1.19)	53 (2.09)
80	40 (1.575)	M10x1.5 (3/8-24)	22 (0.88)	90 (3.54)	3/8 (3/8)	25 (0.984)	86 (3.39)	23 (0.91)	50 (1.97)	3 (0.12)	31 (1.22)	59 (2.32)
100	50 (1.968)	M12x1.75 (1/2-20)	22 (0.88)	110 (4.33)	1/2 (1/2)	32 (1.260)	106 (4.17)	30 (1.18)	60 (2.36)	3 (0.12)	31 (1.22)	57 (2.24)

	Add stroke		
Bore size	LB	P	ZB
20	69 (2.70)	45 (1.77)	83 (3.28)
25	69 (2.70)	46 (1.81)	86 (3.40)
32	71 (2.78)	43 (1.69)	95 (3.74)
40	78 (3.06)	49 (1.93)	102 (4.02)
50	90 (3.53)	53 (2.09)	122 (4.80)
63	90 (3.53)	52 (2.05)	122 (4.80)
80	108 (4.25)	64 (2.52)	142 (5.59)
100	108 (4.25)	66 (2.60)	142 (5.59)

* Ports are M5 for cushioned versions, metric
† Ports are 10-32 for cushioned versions, inch

	Adjustable air cushion							
Bore size	GA	GB	GD Hex	GC°	G°	GH	EE	Cushion length
20	33 (1.30)	14 (0.55)	8 (0.31)	13-1/2	25-1/2	20.5 (0.81)	M5 x 0.8 (10-32 UNF)	9 (0.35)
25	35 (1.38)	14 (0.55)	8 (0.31)	15-1/2	20-1/2	23 (0.91)	M5 x 0.8 (10-32 UNF)	9 (0.35)
32	–	–	–	10-1/2	30-1/2	–	1/8 (1/8 NPTF)	10 (0.39)
40	–	–	–	10-1/2	22-1/2	–	1/8 (1/8 NPTF)	12 (0.47)
50	–	–	–	10-1/2	23-1/2	–	1/4 (1/4 NPTF)	15 (0.59)
63	–	–	–	15-1/2	20-1/2	–	1/4 (1/4 NPTF)	15 (0.59)
80	–	–	–	15-1/2	25-1/2	–	3/8 (3/8 NPTF)	15 (0.59)
100	–	–	–	15-1/2	25-1/2	–	1/2 (1/2 NPTF)	15 (0.59)

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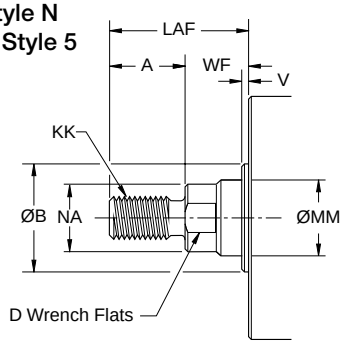
Rod End Details

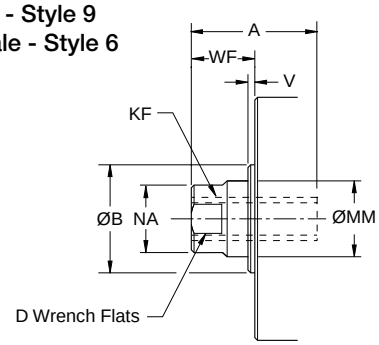
Male threads

Inch male - Style N
Metric male - Style 5



Female threads

Inch female - Style 9
Metric female - Style 6



Special rod end threads

Thread Style 3

Special Metric or Inch threads, extension, blank, etc., are also available.
To order, specify “Style 3” and give desired dimensions for KK or KF, A and LAF or WF (length dimensions in millimeters).
If otherwise special, supply a dimensioned sketch.

Rod ends – mm (inch)

Bore size	A	ØB +0 -0.02 (+0 -0.001)	D	Thread KK Style 5 (Style N)	Thread KF Style 6 (Style 9)	LAF	Ø MM rod dia.	NA	V	WF
20	13 (0.50)	12 (0.472)	6 (0.24)	M8 x 1.25 (1/4-28)	M5 x 0.80 (#10-32)	26 (1.00)	8 (0.315)	–	2 (0.08)	13 (0.50)
25	13 (0.50)	14 (0.551)	8 (0.31)	M10 x 1.25 (5/16-24)	M6 x 1.00 (1/4-28)	29 (1.12)	10 (0.394)	–	2 (0.08)	16 (0.62)
32	19 (0.75)	18 (0.709)	10 (0.39)	M10 x 1.25 (7/16-20)	M8 x 1.25 (5/16-24)	41 (1.63)	12 (0.472)	11 (0.43)	2 (0.08)	22 (0.88)
40	19 (0.75)	25 (0.984)	12 (0.47)	M14 x 1.5 (7/16-20)	M8 x 1.25 (3/8-24)	41 (1.63)	16 (0.630)	14 (0.55)	2 (0.08)	22 (0.88)
50	22 (0.88)	30 (1.181)	16 (0.63)	M18 x 1.5 (1/2-20)	M10 x 1.25 (1/2-20)	52 (2.07)	20 (0.787)	18 (0.71)	2 (0.08)	30 (1.19)
63	22 (0.88)	32 (1.260)	16 (0.63)	M18 x 1.5 (1/2-20)	M10 x 1.25 (1/2-20)	52 (2.07)	20 (0.787)	18 (0.71)	2 (0.08)	30 (1.19)
80	38 (1.50)	40 (1.575)	20 (0.79)	M22 x 1.5 (3/4-16)	M16 x 1.5 (5/8-18)	69 (2.72)	25 (0.984)	23 (0.91)	3 (0.12)	31 (1.22)
100	48 (1.88)	50 (1.968)	26 (1.02)	M26 x 1.5 (1-14)	M20 x 1.5 (3/4-16)	79 (3.11)	32 (1.260)	30 (1.18)	3 (0.12)	31 (1.22)

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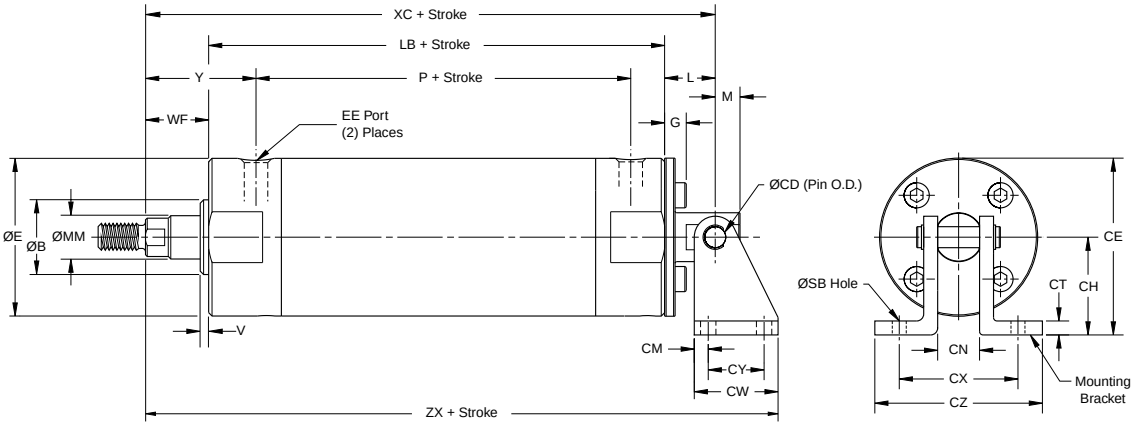
Style B - Single Rear Clevis

Typical 20 to 100 mm Bore



Note: Mating Mounting Bracket and Pin must be ordered as separate items

Style B, envelope and mounting dimensions – mm (inch)

Bore size	ØB +0 - 0.02 (+0 - 0.001)	ØCD h9 (+0 - 0.002)	ØE	EE BSPT (NTPF)	G	L	M	ØMM rod dia.	V	WF	Y
20	12 (0.472)	6.35 (0.250)	27 (1.06)	1/8* (1/8 †)	7 (0.26)	18 (0.70)	7 (0.28)	8 (0.315)	2 (0.08)	13 (0.50)	28 (1.10)
25	14 (0.551)	6.35 (0.250)	32 (1.26)	1/8* (1/8 †)	8 (0.27)	17 (0.68)	7 (0.28)	10 (0.394)	2 (0.08)	16 (0.62)	30 (1.18)
32	18 (0.709)	6.35 (0.250)	39 (1.53)	1/8 (1/8)	15.5 (0.57)	27 (1.07)	10 (0.39)	12 (0.472)	2 (0.08)	22 (0.88)	40 (1.57)
40	25 (0.984)	9.52 (0.375)	48.5 (1.91)	1/8 (1/8)	10 (0.36)	22 (0.88)	10 (0.39)	16 (0.630)	2 (0.08)	22 (0.88)	42 (1.65)
50	30 (1.181)	9.52 (0.375)	59 (2.32)	1/4 (1/4)	12 (0.43)	23 (0.91)	11 (0.44)	20 (0.787)	2 (0.08)	30 (1.19)	53 (2.09)
63	32 (1.260)	9.52 (0.375)	72 (2.83)	1/4 (1/4)	13 (0.46)	23 (0.91)	11 (0.44)	20 (0.787)	2 (0.08)	30 (1.19)	53 (2.09)
80	40 (1.575)	19.07 (0.751)	90 (3.54)	3/8 (3/8)	15 (0.54)	35 (1.38)	19 (0.75)	25 (0.984)	3 (0.12)	31 (1.22)	59)2.32
100	50 (1.968)	19.07 (0.751)	110 (4.33)	1/2 (1/2)	17 (0.64)	43 (1.69)	19 (0.75)	32 (1.260)	3 (0.12)	31 (1.22)	57 (2.24)

Bore size	CE	CH	CM	CN	CT	CW	CX	CY	CZ	ØSB	Add stroke LB	P	XC	ZX
20	35.5 (1.39)	22 (0.87)	5 (0.19)	10 (0.38)	3 (0.12)	29 (1.13)	32 (1.25)	19 (0.75)	51 (2.00)	7 (0.27)	69 (2.70)	45 (1.77)	99 (3.91)	120 (4.74)
25	38 (1.49)	22 (0.87)	5 (0.19)	10 (0.38)	3 (0.12)	29 (1.13)	32 (1.25)	19 (0.75)	51 (2.00)	7 (0.27)	69 (2.70)	46 (1.81)	102 (4.00)	123 (4.83)
32	41.5 (1.63)	22 (0.87)	5 (0.19)	13 (0.50)	3 (0.12)	29 (1.13)	35 (1.38)	19 (0.75)	54 (2.12)	7 (0.27)	71 (2.78)	43 (1.69)	120 (4.72)	141 (5.55)
40	59 (2.31)	35 (1.38)	6 (0.25)	16 (0.62)	3 (0.12)	38 (1.50)	47 (1.86)	25 (1.00)	67 (2.62)	7 (0.27)	78 (3.06)	49 (1.93)	122 (4.81)	151 (5.94)
50	64.5 (2.52)	35 (1.38)	6 (0.25)	19 (0.75)	6 (0.25)	38 (1.50)	54 (2.12)	25 (1.00)	76 (3.00)	7 (0.27)	90 (3.53)	53 (2.09)	143 (5.63)	172 (6.76)
63	80 (3.17)	44 (1.75)	6 (0.25)	19 (0.75)	6 (0.25)	38 (1.50)	54 (2.12)	25 (1.00)	76 (3.00)	7 (0.27)	90 (3.53)	52 (2.05)	143 (5.63)	172 (6.76)
80	96 (3.77)	51 (2.00)	13 (0.50)	28 (1.09)	6 (0.25)	64 (2.50)	72 (2.84)	38 (1.50)	104 (4.09)	11 (0.42)	108 (4.25)	64 (2.52)	173 (6.82)	218 (8.57)
100	115 (4.54)	60 (2.37)	13 (0.50)	32 (1.25)	6 (0.25)	70 (2.75)	76 (3.00)	44 (1.75)	108 (4.25)	14 (0.55)	108 (4.25)	66 (2.60)	189 (7.44)	240 (9.44)

* Ports are M5 for cushioned versions, metric
† Ports are 10-32 for cushioned versions, inch

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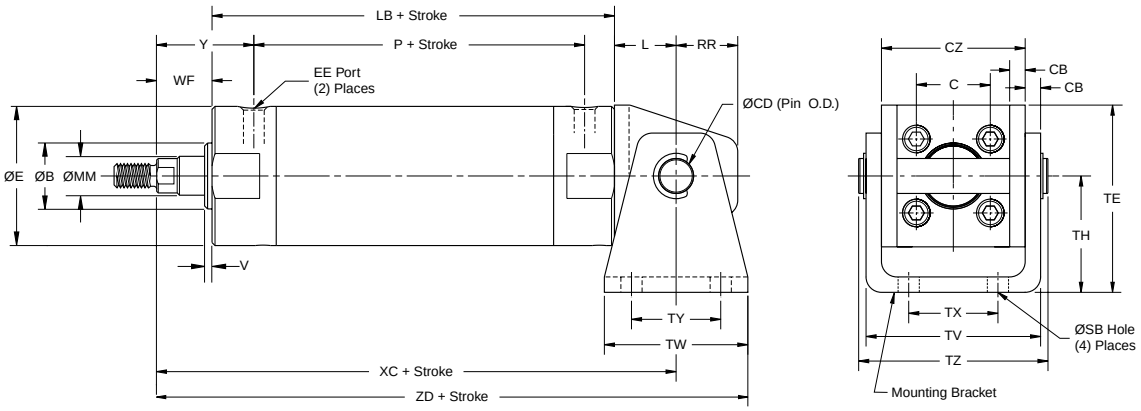
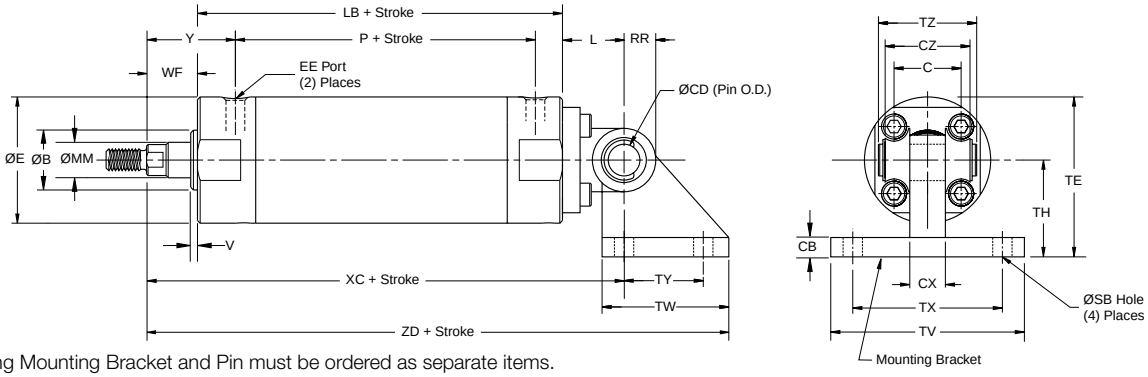
Style A - Double Rear Clevis

Typical 20 to 63 mm bore



Typical 80 to 100 mm bore



Note: Mating Mounting Bracket and Pin must be ordered as separate items.

Style A, envelope and mounting dimensions – mm (inch)

Bore size	ØB +0 -0.02 (+0 -0.001)	C	CB	ØCD d 9 (-0.001 -0.003)	CZ	CX	ØE	EE BSPT (NPTF)	L	ØMM rod dia.	RR	V	WF
20	12 (0.472)	14 (0.55)	3 (0.12)	8 (0.315)	29 (1.14)	–	27 (1.06)	1/8* (1/8†)	14 (0.55)	8 (0.315)	11 (0.43)	2 (0.08)	13 (0.50)
25	14 (0.551)	16.5 (0.65)	3 (0.12)	10 (0.394)	33 (1.30)	–	32 (1.26)	1/8* (1/8†)	16 (0.63)	10 (0.394)	13 (0.51)	2 (0.08)	16 (0.62)
32	18 (0.709)	20 (0.79)	4.5 (0.18)	12 (0.472)	40 (1.57)	–	39 (1.53)	1/8 (1/8)	20 (0.79)	12 (0.472)	15 (0.59)	2 (0.08)	22 (0.88)
40	25 (0.984)	26 (1.02)	4.5 (0.18)	14 (0.551)	49 (1.93)	–	48.5 (1.91)	1/8 (1/8)	22 (0.87)	16 (0.630)	18 (0.71)	2 (0.08)	22 (0.88)
50	30 (1.181)	32 (1.26)	6 (0.25)	16 (0.630)	60 (2.36)	–	59 (2.32)	1/4 (1/4)	25 (0.98)	20 (0.787)	20 (0.79)	2 (0.08)	30 (1.19)
63	32 (1.260)	38 (1.50)	8 (0.31)	18 (0.709)	74 (2.91)	–	72 (2.83)	1/4 (1/4)	30 (1.18)	20 (0.787)	22 (0.87)	2 0.08)	30 (1.19)
80	40 (1.575)	50 (1.97)	11 (0.43)	18 (0.709)	56 (2.20)	28 (1.10)	90 (3.54)	3/8 (3/8)	35 (1.38)	25 (0.984)	18 (0.71)	3 (0.12)	31 (1.22)
100	50 (1.968)	60 (2.36)	12 (0.47)	22 (0.866)	64 (2.52)	32 (1.26)	110 (4.33)	1/2 (1/2)	43 (1.69)	32 (1.260)	22 (0.87)	3 (0.12)	31 (1.22)

Bore size	Ø SB	TY	TV	TE	TH	TX	TW	TZ	Y	Add Stroke LB	P	XC	ZD
20	5.5 (0.22)	28 (1.10)	35 (1.39)	38 (1.50)	25 (0.98)	16 (0.63)	42 (1.66)	43.4 (1.71)	28 (1.10)	69 (2.70)	45 (1.77)	95 (3.75)	116 (4.58)
25	5.5 (0.22)	28 (1.10)	39 (1.55)	45.5 (1.79)	30 (1.18)	20 (0.79)	42 (1.66)	48 (1.89)	30 (1.18)	69 (2.70)	46 (1.81)	100 (3.95)	121 (4.78)
32	7 (0.28)	28 (1.10)	49 (1.93)	54 (2.13)	35 (1.38)	22 (0.87)	48 (1.88)	59.4 (2.34)	40 (1.57)	71 (2.78)	43 (1.69)	113 (4.45)	137 (5.39)
40	7 (0.28)	30 (1.18)	58 (2.28)	63.5 (2.50)	40 (1.57)	30 (1.18)	56 (2.20)	71.4 (2.81)	42 (1.65)	78 (3.06)	49 (1.93)	122 (4.81)	150 (5.91)
50	9 (0.35)	36 (1.42)	72 (2.83)	79 (3.11)	50 (1.97)	36 (1.42)	64 (2.52)	86 (3.38)	53 (2.09)	90 (3.53)	53 (2.09)	145 (5.70)	177 (6.96)
63	11 (0.43)	46 (1.81)	90 (3.54)	96 (3.78)	60 (2.36)	46 (1.81)	74 (2.91)	105.4 (4.15)	53 (2.09)	90 (3.53)	52 (2.05)	150 (5.90)	187 (7.36)
80	11 (0.43)	45 (1.77)	110 (4.33)	100 (3.94)	55 (2.17)	85 (3.35)	72 (2.83)	64 (2.52)	59 (2.32)	108 (4.25)	64 (2.52)	174 (6.85)	232.5 (9.15)
100	13.5 (0.53)	60 (2.36)	130 (5.12)	120 (4.72)	65 (2.56)	100 (3.94)	93 (3.66)	72 (2.83)	57 (2.24)	108 (4.25)	66 (2.60)	182 (7.17)	258.5 (10.18)

* Ports are M5 for cushioned versions, metric
† Ports are 10-32 for cushioned versions, inch

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Pneumatic Division
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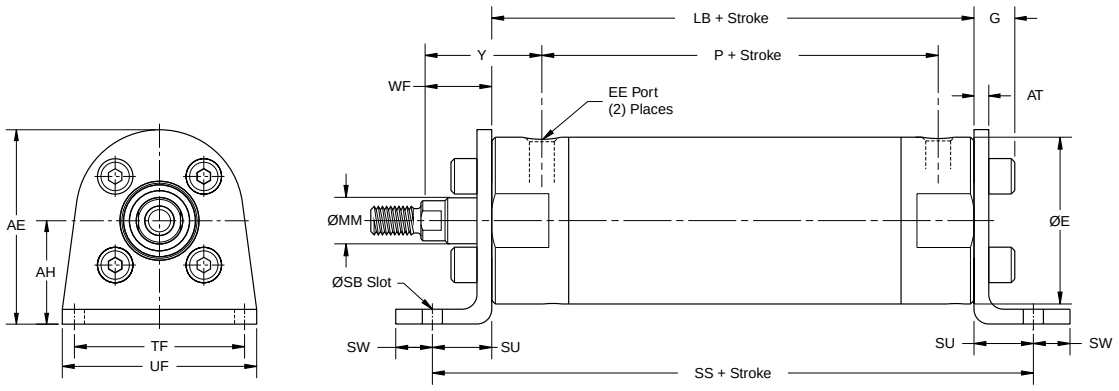
Style F - Foot Mount

Typical 20 to 100 mm bore



Style F, envelope and mounting dimensions – mm (inch)

Bore size	AE	AH	AT	ØE	EE (BSPT)	G	ØMM rod dia.	ØSB
20	36.5 1.44)	20.6 (0.81)	3 (0.12)	27 (1.06)	1/8* (1/8†)	6 (0.20)	8 (0.315)	7 (0.27)
25	38.5 (1.52)	20.6 (0.81)	3 (0.12)	32 (1.26)	1/8* (1/8†)	6.5 (0.22)	10 (0.394)	7 (0.27)
32	46.5 (1.83)	25.4 (1.00)	3 (0.12)	39 (1.53)	1/8 (1/8)	6.5 (0.22)	12 (0.472)	7 (0.28)
40	51 (2.02)	25.4 (1.00)	3 (0.12)	48.5 (1.91)	1/8 (1/8)	7 (0.25)	16 (0.630)	7 (0.28)
50	72 (2.84)	38.1 (1.50)	6 (0.25)	59 (2.32)	1/4 (1/4)	11 (0.41)	20 (0.787)	9 (0.34)
63	83.5 (3.29)	44.5 (1.75)	6 (0.25)	72 (2.83)	1/4 (1/4)	12 (0.44)	20 (0.787)	9 (0.34)
80	101 (3.98)	55 (2.17)	6 (0.25)	90 (3.54)	3/8 (3/8)	12 (0.44)	25 (0.984)	11 (0.43)
100	121 (4.76)	65 (2.56)	6 (0.25)	110 (4.33)	1/2 (1/2)	13 (0.50)	32 (1.260)	14 (0.55)

Bore size	SU	SW	TF	UF	WF	Y	Add stroke		
							LB	P	SS
20	14 (0.56)	11 (0.44)	38 (1.50)	48 (1.88)	13 (0.50)	28 (1.10)	69 (2.70)	45 (1.77)	97 3.82)
25	14 (0.56)	11 (0.44)	38 (1.50)	48 (1.88)	16 (0.62)	30 (1.18)	69 (2.70)	46 (1.81)	97 (3.82)
32	19 (0.75)	19 0.75)	48 (1.88)	63.5 (2.50)	22 (0.88)	40 (1.57)	71 (2.78)	43 (1.69)	109 (4.28)
40	18 (0.72)	20 (0.78)	48 (1.88)	63.5 (2.50)	22 (0.88)	42 (1.65)	78 (3.06)	49 (1.93)	114 (4.50)
50	25 (1.00)	16 (0.62)	57 (2.24)	79 (3.12)	30 (1.19)	53 (2.09)	90 (3.53)	53 (2.09)	140 (5.53)
63	25 (1.00)	16 (0.62)	73 (2.88)	95 (3.75)	30 (1.19)	53 (2.09)	90 (3.53)	52 (2.05)	140 (5.53)
80	28.5 (1.12)	14 (0.55)	100 (3.94)	125 (4.92)	31 (1.22)	59 (2.32)	108 (4.25)	64 (2.52)	165 (6.49)
100	30 (1.18)	16 0.63)	120 (4.72)	150 (5.91)	31 (1.22)	57 (2.24)	108 (4.25)	66 (2.60)	168 (6.61)

* Ports are M5 for cushioned versions, metric
† Ports are 10-32 for cushioned versions, inch

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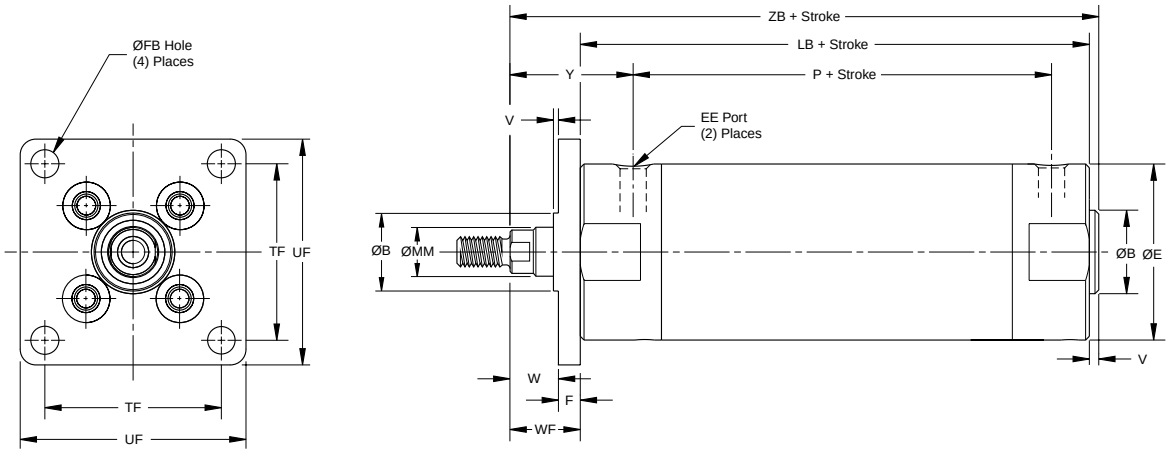
Style J - Front Flange

Typical 20 to 100 mm bore



Style J, envelope and mounting dimensions – mm (inch)

Bore size	ØB +0 -0.02	ØE	EE (BSPT)	F	ØFB	ØMM rod dia.	TF	UF	V	WF	W	Y
20	12 (0.472)	27 (1.06)	1/8* (1/8†)	6 (0.24)	5.5 (0.22)	8 (0.315)	28 (1.10)	40 (1.57)	2 (0.08)	13 (0.50)	7 (0.26)	28 (1.10)
25	14 (0.551)	32 (1.26)	1/8* (1/8†)	7 (0.28)	5.5 (0.22)	10 (0.394)	32 (1.26)	44 (1.73)	2 (0.08)	16 (0.62)	9 (0.34)	30 (1.18)
32	18 (0.709)	39 (1.53)	1/8 (1/8)	7 (0.28)	7 (0.28)	12 (0.472)	38 (1.50)	53 (2.09)	2 (0.08)	22 (0.88)	15 (0.60)	40 (1.57)
40	25 (0.984)	48.5 (1.91)	1/8 (1/8)	8 (0.31)	7 (0.28)	16 (0.630)	46 (1.81)	61 (2.40)	2 (0.08)	22 (0.88)	14 (0.57)	42 (1.65)
50	30 (1.181)	59 (2.32)	1/4 (1/4)	9 (0.35)	9 (0.35)	20 (0.787)	58 (2.28)	76 (3.00)	2 (0.08)	30 (1.19)	21 (0.84)	53 (2.09)
63	32 (1.260)	72 (2.83)	1/4 (1/4)	9 (0.35)	11 (0.43)	20 (0.787)	70 (2.76)	92 (3.62)	2 (0.08)	30 (1.19)	21 (0.84)	53 (2.09)
80	40 (1.575)	90 (3.54)	3/8 (3/8)	11 (0.43)	11 (0.43)	25 (0.984)	82 (3.23)	104 (4.09)	3 (0.12)	31 (1.22)	20 (0.79)	59 (2.32)
100	50 (1.968)	110 (4.33)	1/2 (1/2)	14 (0.55)	14 (0.55)	32 (1.260)	100 (3.94)	128 (5.04)	3 (0.12)	31 (1.22)	17 (0.67)	57 (2.24)

Bore size	Add stroke		
	LB	P	ZB
20	69 (2.70)	45 (1.77)	83 (3.28)
25	69 (2.70)	46 (1.81)	86 (3.40)
32	71 (2.78)	43 (1.69)	95 (3.74)
40	78 (3.06)	49 (1.93)	102 (4.02)
50	90 (3.53)	53 (2.09)	122 (4.80)
63	90 (3.53)	52 (2.05)	122 (4.80)
80	108 (4.25)	64 (2.52)	142 (5.59)
100	108 (4.25)	66 (2.60)	142 (5.59)

* Ports are M5 for cushioned versions, metric
† Ports are 10-32 for cushioned versions, inch

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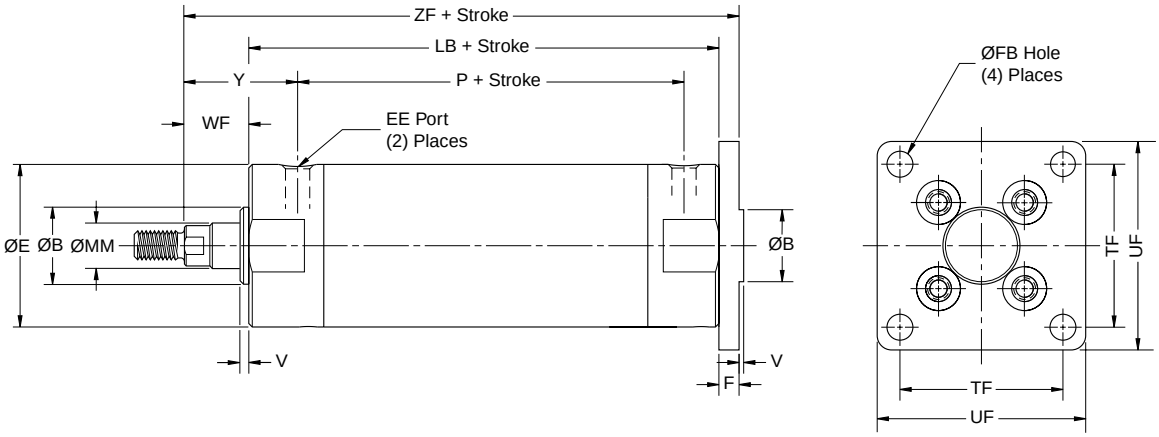
Style H - Rear Flange

Typical 20 to 100 mm bore



Style H, envelope and mounting dimensions – mm (inch)

Bore size	ØB +0 -0.02	ØE	EE (BSPT)	F	ØFB	ØMM rod dia.	TF	UF	V	WF	Y
20	12 (0.472)	27 (1.06)	1/8* (1/8†)	6 (0.24)	5.5 (0.22)	8 (0.315)	28 (1.10)	40 (1.57)	2 (0.08)	13 (0.50)	28 (1.10)
25	14 (0.551)	32 (1.26)	1/8* (1/8†)	7 (0.28)	5.5 (0.22)	10 (0.394)	32 (1.26)	44 (1.73)	2 (0.08)	16 (0.62)	30 (1.18)
32	18 (0.709)	39 (1.53)	1/8 (1/8)	7 (0.28)	7 (0.28)	12 (0.472)	38 (1.50)	53 (2.09)	2 (0.08)	22 (0.88)	40 (1.57)
40	25 (0.984)	48.5 (1.91)	1/8 (1/8)	8 (0.31)	7 (0.28)	16 (0.630)	46 (1.81)	61 (2.40)	2 (0.08)	22 (0.88)	42 (1.65)
50	30 (1.181)	59 (2.32)	1/4 (1/4)	9 (0.35)	9 (0.35)	20 (0.787)	58 (2.28)	76 (3.00)	2 (0.08)	30 (1.19)	53 (2.09)
63	32 (1.260)	72 (2.83)	1/4 (1/4)	9 (0.35)	11 (0.43)	20 (0.787)	70 (2.76)	92 (3.62)	2 (0.08)	30 (1.19)	53 (2.09)
80	40 (1.575)	90 (3.54)	3/8 (3/8)	11 (0.43)	11 (0.43)	25 (0.984)	82 (3.23)	104 (4.09)	3 (0.12)	31 (1.22)	59 (2.32)
100	50 (1.968)	110 (4.33)	1/2 (1/2)	14 (0.55)	14 (0.55)	32 (1.260)	100 (3.94)	128 (5.04)	3 (0.12)	31 (1.22)	57 (2.24)

Bore size	Add stroke LB	P	ZF
20	69 (2.70)	45 (1.77)	87 (3.44)
25	69 (2.70)	46 (1.81)	91 (3.60)
32	71 (2.78)	43 (1.69)	100 (3.94)
40	78 (3.06)	49 (1.93)	108 (4.25)
50	90 (3.53)	53 (2.09)	129 (5.07)
63	90 (3.53)	52 (2.05)	129 (5.07)
80	108 (4.25)	64 (2.52)	150 (5.91)
100	108 (4.25)	66 (2.60)	153 (6.02)

* Ports are M5 for cushioned versions, metric
† Ports are 10-32 for cushioned versions, inch

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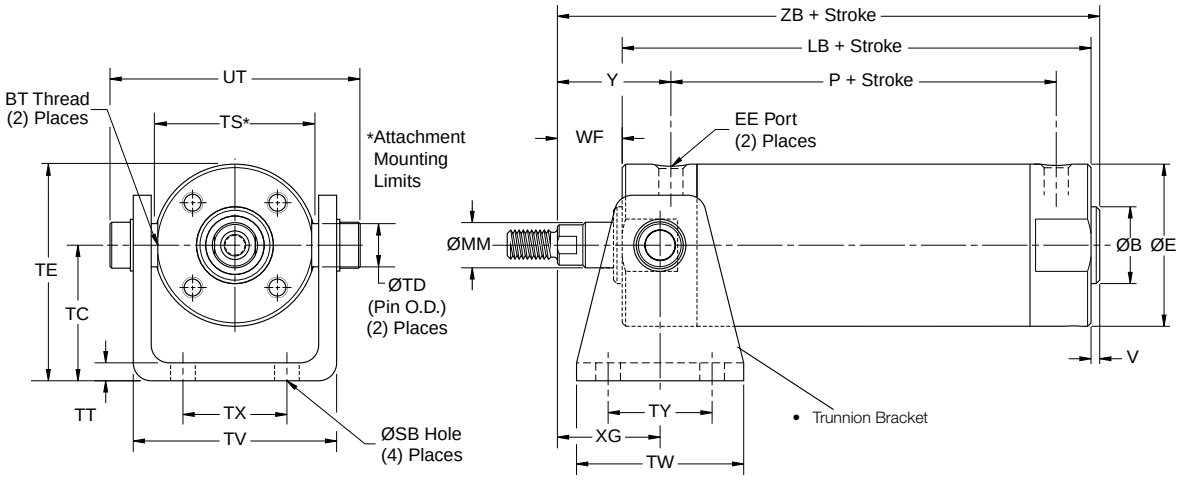
Style E - Front Trunnion

Typical 20 to 63 mm bore



Note: Trunnion Bracket must be ordered as separate item

Style E, envelope and mounting dimensions – mm (inch)

Bore size	ØB +0 -0.02	BT	D	ØE	EE (BSPT)	ØMM rod dia.	V	WF	XG	Y	ØSB	TC
20	12 (0.472)	M5x0.80	6 (0.24)	27 (1.06)	1/8* (1/8†)	8 (0.315)	2 (0.08)	13 (0.50)	24 (0.93)	28 (1.10)	5.5 (0.22)	25 (0.98)
25	14 (0.551)	M6x0.75	8 (0.31)	32 (1.26)	1/8* (1/8†)	10 (0.394)	2 (0.08)	16 (0.62)	27 (1.05)	30 (1.18)	5.5 (0.22)	30 (1.18)
32	18 (0.709)	M8x1.00	10 (0.39)	39 (1.53)	1/8 (1/8)	12 (0.472)	2 (0.08)	22 (0.88)	33 (1.31)	40 (1.57)	7 (0.28)	35 (1.38)
40	25 (0.984)	M10x1.25	12 (0.47)	48.5 (1.91)	1/8 (1/8)	16 (0.630)	2 (0.08)	22 (0.88)	34 (1.35)	42 (1.65)	7 (0.28)	40 (1.57)
50	30 (1.181)	M12x1.25	16 (0.63)	59 (2.32)	1/4 (1/4)	20 (0.787)	2 (0.08)	30 (1.19)	43 (1.70)	53 (2.09)	9 (0.35)	50 (1.97)
63	32 (1.260)	M14x1.50	16 (0.63)	72 (2.83)	1/4 (1/4)	20 (0.787)	2 (0.08)	30 (1.19)	43 (1.70)	53 (2.09)	11 (0.43)	60 (2.36)

Bore size	ØTD e8	TE	TS	TT	TV	TW	TX	TY	UT	Add stroke LB	P	ZB
20	8 (0.315)	38.5 (1.51)	28 (1.10)	3 (0.12)	35 (1.39)	42 (1.66)	16 (0.63)	28 (1.10)	47.5 (1.87)	69 (2.70)	45 (1.77)	83 (3.28)
25	10 (0.394)	46 (1.81)	33 (1.30)	3 (0.12)	39 (1.55)	42 (1.66)	20 (0.79)	28 (1.10)	53 (2.09)	69 (2.70)	46 (1.81)	86 (3.40)
32	12 (0.472)	54.5 (2.15)	40 (1.58)	4.5 (0.18)	49 (1.93)	48 (1.88)	22 (0.87)	28 (1.10)	68 (2.67)	71 (2.78)	43 (1.69)	95 (3.74)
40	14 (0.551)	64 (2.53)	49 (1.93)	4.5 (0.18)	58 (2.28)	56 (2.20)	30 (1.18)	30 (1.18)	79 (3.10)	78 (3.06)	49 (1.93)	102 (4.02)
50	16 (0.630)	79.5 (3.13)	60 (2.36)	6 (0.25)	72 (2.83)	64 (2.52)	36 (1.42)	36 (1.42)	99 (3.88)	90 (3.53)	53 (2.09)	122 (4.80)
63	18 (0.709)	96 (3.78)	74 (2.91)	8 (0.31)	90 (3.54)	74 (2.91)	46 (1.81)	46 (1.81)	119 (4.69)	90 (3.53)	52 (2.05)	122 (4.80)

* Ports are M5 for cushioned versions, metric
† Ports are 10-32 for cushioned versions, inch

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Pneumatic Division
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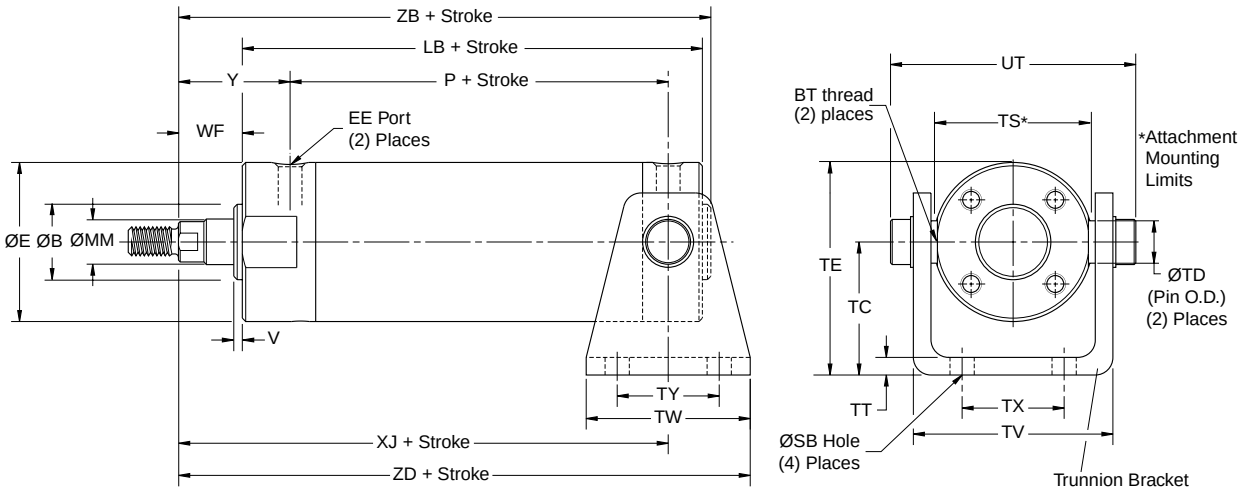
Style D - Rear Trunnion

Typical 20 to 63 mm bore



Note: Trunnion Bracket must be ordered as separate item

Style D, envelope and mounting dimensions – mm (inch)

Bore size	ØB +0 -0.02	BT	ØE	EE (BSPT)	ØMM rod dia.	V	WF	Y	ØSB	TC	ØTD e8	TE
20	12 (0.472)	M5x0.80	27 (1.06)	1/8* (1/8†)	8 (0.315)	2 (0.08)	13 (0.50)	28 (1.10)	5.5 (0.22)	25 (0.98)	8 (0.315)	38.5 (1.51)
25	14 (0.551)	M6x0.75	32 (1.26)	1/8* (1/8†)	10 (0.394)	2 (0.08)	16 (0.62)	30 (1.18)	5.5 (0.22)	30 (1.18)	10 (0.394)	46 (1.81)
32	18 (0.709)	M8x1.00	39 (1.53)	1/8 (1/8)	12 (0.472)	2 (0.08)	22 (0.88)	40 (1.57)	7 (0.28)	35 (1.38)	12 (0.472)	54.5 (2.15)
40	25 (0.984)	M10x1.25	48.5 (1.91)	1/8 (1/8)	16 (0.630)	2 (0.08)	22 (0.88)	42 (1.65)	7 (0.28)	40 (1.57)	14 (0.551)	64 (2.53)
50	30 (1.181)	M12x1.25	59 (2.32)	1/4 (1/4)	20 (0.787)	2 (0.08)	30 (1.19)	53 (2.09)	9 (0.35)	50 (1.97)	16 (0.630)	79.5 (3.13)
63	32 (1.260)	M14x1.50	72 (2.83)	1/4 (1/4)	20 (0.787)	2 (0.08)	30 (1.19)	53 (2.09)	11 (0.43)	60 (2.36)	18 (0.709)	96 (3.78)

Bore size	TS	TT	TV	TW	TX	TY	UT	Add stroke LB	P	XJ	ZB	ZD
20	28 (1.10)	3 (0.12)	35 (1.39)	42 (1.66)	16 (0.63)	28 (1.10)	47.5 (1.87)	69 (2.70)	45 (1.77)	70 (2.77)	83 (3.28)	91 (3.60)
25	33 (1.30)	3 (0.12)	39 (1.55)	42 (1.66)	20 (0.79)	28 (1.10)	53 (2.09)	69 (2.70)	46 (1.81)	73 (2.89)	86 (3.40)	94 (3.72)
32	40 (1.58)	4.5 (0.18)	49 (1.93)	48 (1.88)	22 (0.87)	28 (1.10)	68 (2.67)	71 (2.78)	43 (1.69)	83 (3.27)	95 (3.74)	107 (4.21)
40	49 (1.93)	4.5 (0.18)	58 (2.28)	56 (2.20)	30 (1.18)	30 (1.18)	79 (3.10)	78 (3.06)	49 (1.93)	90 (3.54)	102 (4.02)	118 (4.64)
50	60 (2.36)	6 (0.25)	72 (2.83)	64 (2.52)	36 (1.42)	36 (1.42)	99 (3.88)	90 (3.53)	53 (2.09)	108 (4.25)	122 (4.80)	140 (5.51)
63	74 (2.91)	8 (0.31)	90 (3.54)	74 (2.91)	46 (1.81)	46 (1.81)	119 (4.69)	90 (3.53)	52 (2.05)	108 (4.25)	122 (4.80)	145 (5.71)

* Ports are M5 for cushioned versions, metric
† Ports are 10-32 for cushioned versions, inch

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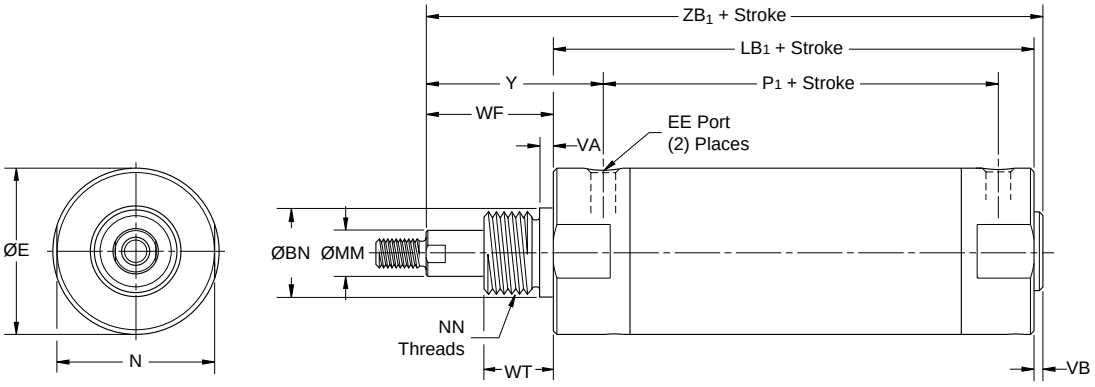
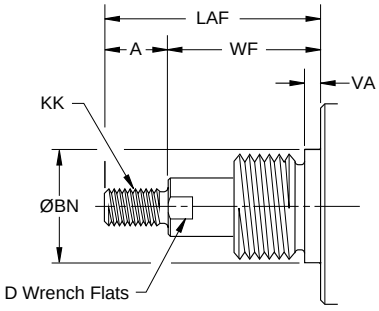
Style G - Nose Mount

Typical 20 to 25 mm bore

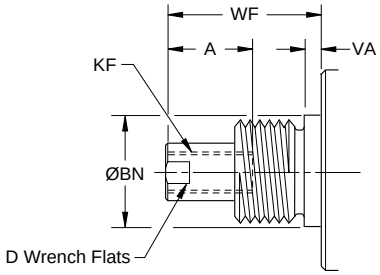


Rod end details – 20 and 25 mm bore

Male threads
Inch male - Style N
Metric male - Style 5



Female threads
Inch female - Style 9
Metric female - Style 6



Special rod end threads

Thread style 3
Special metric or inch threads, extension, blank, etc., are also available. To order, specify "Style 3" and give desired dimensions for KK or KF, A and LAF or WF (length dimensions in millimeters). If otherwise special, supply a dimensioned sketch.

Style G, envelope and mounting dimensions – mm (inch)

Bore size	A	BN +0 -0.08	D	ØE	EE (BSPT)	Thread KK Style 5	Thread KF Style 6	LAF	ØMM rod dia.	NN	N	VA	VB	WF	WT	Y	Add stroke LB[1]	P[1]	ZB[1]
20	13 (0.50)	19.02 (0.749)	6 (0.24)	27 (1.06)	1/8* (1/8†)	M8x1.25 (1/4-28)	M5x0.80 (#10-32)	35 (1.38)	8 (0.315)	3/4-16 (3/4-16)	24 (0.94)	3 (0.12)	2 (0.08)	22 (0.88)	16 (0.63)	32 (1.25)	66 (2.60)	47 (1.85)	90 (3.56)
25	13 (0.50)	19.02 (0.749)	8 (0.31)	32 (1.26)	1/8* (1/8†)	M10x1.25 5/16-24 ()	M6x1.00 (1/4-28)	35 (1.38)	10 (0.394)	3/4-16 (3/4-16)	29 (1.14)	3 (0.12)	2 (0.08)	22 (0.88)	16 (0.63)	32 (1.25)	66 (2.60)	47 (1.85)	90 (3.56)

* Ports are M5 for cushioned versions, metric
† Ports are 10-32 for cushioned versions, inch

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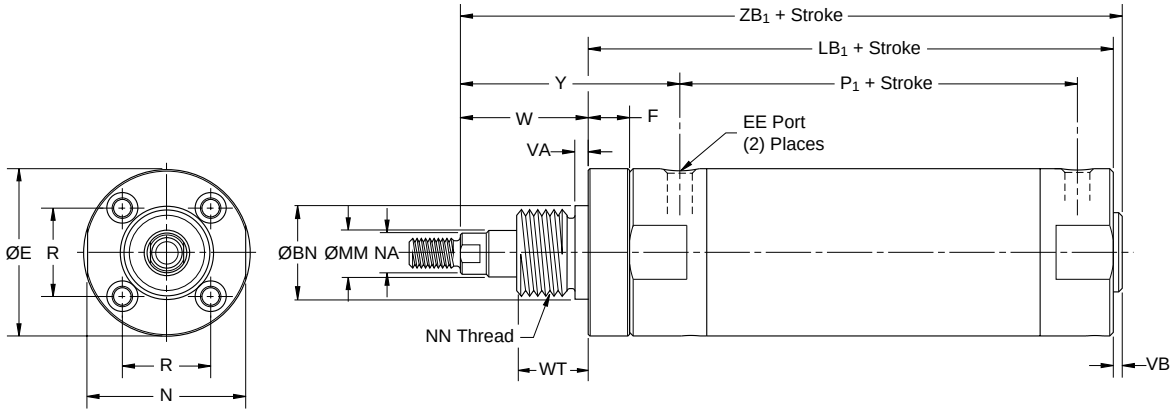
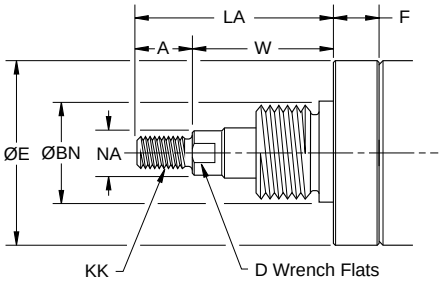
Style G - Nose Mount

Typical 32 to 63mm bore

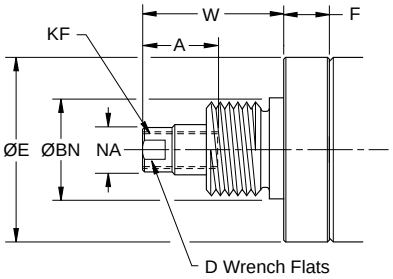


Rod end details – 32 to 63mm bore

Male threads
Inch male - Style N
Metric male - Style 5



Female threads
Inch female - Style 9
Metric female - Style 6



Special rod end threads

Thread style 3

Special metric or inch threads, extension, blank, etc., are also available. To order, specify "Style 3" and give desired dimensions for KK or KF, A and LAF or WF (Note: LAF = LA+F and WF = W+F), (length dimensions in millimeters). If otherwise special, supply a dimensioned sketch.

Style G, envelope and mounting dimensions – mm (inch)

Bore size	A	BN +0 -0.8	D	ØE	EE* (BSPT)	F	Thread KK Style 5	Thread KF Style 6	LA	ØMM rod dia.	NN	N	NA	R	VA	VB	W	WT	Y	Add stroke LB1	Add stroke P1	Add stroke ZB1
32	19 (0.75)	19.02 (0.749)	10 (0.39)	39 (1.53)	1/8 (1/8)	9 (0.37)	M10x1.25 (7/16-20)	M8x1.25 (5/16-24)	41 (1.63)	12 (0.472)	3/4-16 (3/4-16)	36 (1.42)	11 (0.43)	20 (0.79)	3 (0.12)	2 (0.08)	22 (0.88)	16 (0.63)	49 (1.93)	80 (3.15)	43 (1.69)	104 (4.11)
40	19 (0.75)	26.87 (1.058)	12 (0.47)	48.5 (1.91)	1/8 (1/8)	14 (0.56)	M14x1.5 (7/16-20)	M8x1.25 (3/8-24)	51 (2.00)	16 (0.630)	1-14 (1-14)	44 (1.73)	14 (0.55)	26 (1.02)	5 (0.19)	2 (0.08)	32 (1.25)	22 (0.88)	66 (2.60)	92 (3.62)	49 (1.93)	126 (4.95)
50	22 (0.88)	34.90 (1.374)	16 (0.63)	59 (2.32)	1/4 (1/4)	15 (0.59)	M18x1.5 (1/2-20)	M10x1.25 (1/2-20)	52 (2.07)	20 (0.787)	1-1/4-12 (1-1/4-12)	55 (2.17)	18 (0.71)	32 (1.26)	3 (0.12)	2 (0.08)	30 (1.19)	20.5 (0.81)	68 (2.68)	105 (4.12)	53 (2.09)	137 (5.39)
63	22 (0.88)	38.10 (1.500)	16 (0.63)	72 (2.83)	1/4 (1/4)	16 (0.63)	M18x1.5 (1/2-20)	M10x1.25 (1/2-20)	52 (2.07)	20 (0.787)	1-3/8-12 (1-3/8-12)	69 (2.72)	18 (0.71)	38 (1.50)	3 (0.12)	2 (0.08)	30 (1.19)	20.5 (0.81)	70 (2.76)	106 (4.19)	52 (2.05)	139 (5.46)

* See Metric Dimensions for BSPT Port Size.
See Inch Dimensions for NPTF Port Size.

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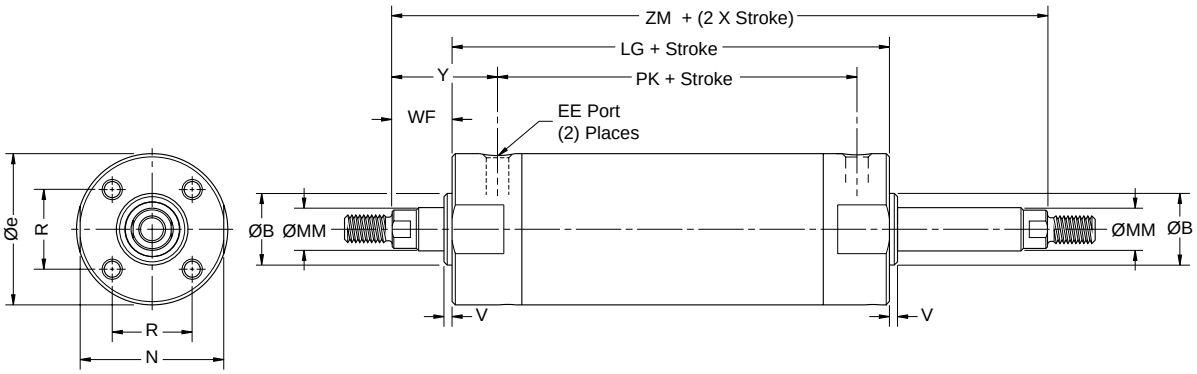
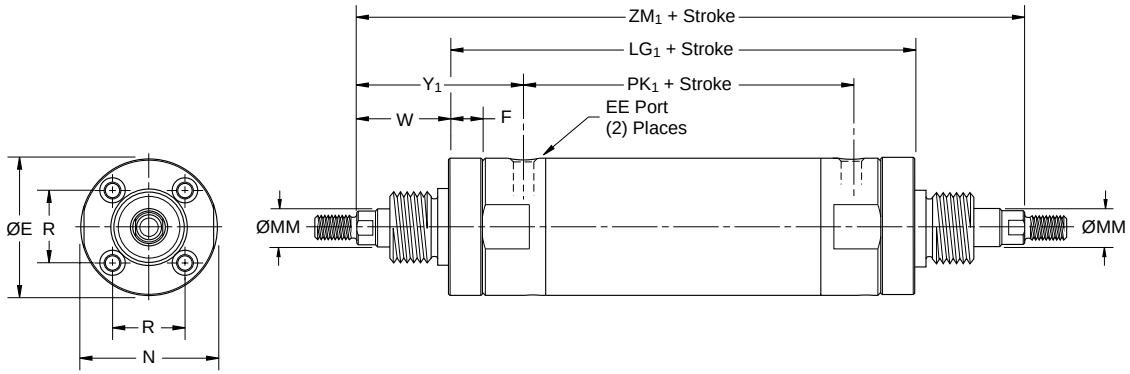
Double-Rod

Typical 20 to 100mm bore



Double-Rod

Nose Mount (32 to 63mm bore)



For detailed dimensions for the nose mount from 20 to 63 mm bore, please reference previous pages.

Double rod, envelope and mounting dimensions – mm (inch)

Bore size	ØB +0 -0.02	ØE	F	EE (BSPT)	ØMM rod dia.	N	R	V	W	WF	Y	Y1	Add stroke LG	LG1	PK	PK1	ZM	ZM1
20	12 (0.472)	27 (1.06)	–	1/8* (1/8†)	8 (0.315)	24 (0.94)	14 (0.55)	2 (0.08)	–	13 (0.50)	28 (1.10)	32 (1.25)	75 (2.97)	70 (2.74)	45 (1.77)	50 (1.97)	101 (3.97)	95 (3.74)
25	14 (0.551)	32 (1.26)	–	1/8* (1/8†)	10 (0.394)	29 (1.14)	16.5 (0.65)	2 (0.08)	–	16 (0.62)	30 (1.18)	32 (1.25)	75 (2.97)	70 (2.74)	47 (1.85)	50 (1.97)	107 (4.21)	101 (3.98)
32	18 (0.709)	39 (1.53)	9 (0.37)	1/8 (1/8)	12 (0.472)	36 (1.42)	20 (0.79)	2 (0.08)	22 (0.88)	22 (0.88)	40 (1.57)	49 (1.93)	78 (3.06)	97 (3.80)	42 (1.65)	42 () 1.65	122 (4.82)	141 (5.56)
40	25 (0.984)	48.5 (1.91)	14 (0.56)	1/8 (1/8)	16 (0.630)	44 (1.73)	26 (1.02)	2 (0.08)	32 (1.25)	22 (0.88)	42 (1.65)	66 (2.60)	87 (3.41)	115 (4.53)	47 (1.85)	47 (1.85)	131 (5.17)	179 (7.03)
50	30 (1.181)	59 (2.32)	15 (0.59)	1/4 (1/4)	20 (0.787)	55 (2.17)	32 (1.26)	2 (0.08)	30 (1.19)	30 (1.19)	53 (2.09)	68 (2.68)	100 (3.93)	130 (5.11)	54 (2.13)	54 (2.13)	160 (6.31)	190 (7.49)
63	32 (1.260)	72 (2.83)	17 (0.66)	1/4 (1/4)	20 (0.787)	69 (2.72)	38 (1.50)	2 (0.08)	30 (1.19)	30 (1.19)	53 (2.09)	70 (2.76)	100 (3.93)	133 (5.25)	54 (2.13)	54 (2.13)	160 (6.31)	194 (7.63)
80	40 (1.575)	90 (3.54)	–	3/8 (3/8)	25 (0.984)	86 (3.39)	50 (1.97)	3 (0.12)	–	31 (1.22)	59 (2.32)	–	119 (4.70)	–	61 (2.40)	–	181 (7.14)	–
100	50 (1.968)	110 (4.33)	–	1/2 (1/2)	32 (1.260)	106 (4.17)	60 (2.36)	3 (0.12)	–	31 (1.22)	57 (2.24)	–	119 (4.70)	–	65 (2.56)	–	181 (7.14)	–

* Ports are M5 for cushioned versions, metric
† Ports are 10-32 for cushioned versions, inch

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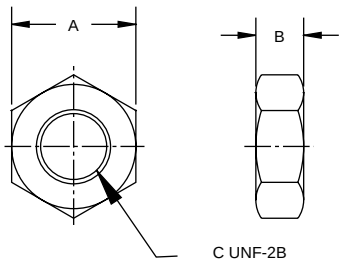
Rod Jam Nut



Rod jam nut should be ordered separately on all mounting styles.

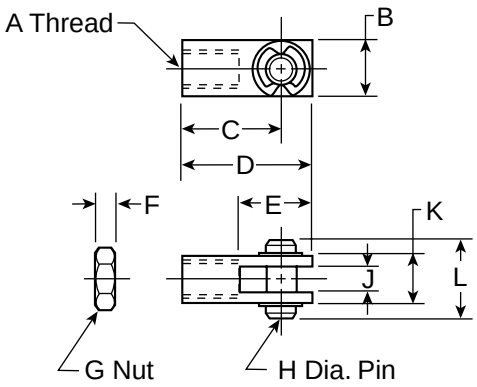
Rod Jam Nut Dimensions – mm

Bore size	A	B	C	Part number
20	13	4	M8 x 1.25	**L075540008**
25-32	17	5	M10 x 1.25	**L075540010**
40	22	7	M14 x 1.5	**L075540014**
50-63	27	8	M18 x 1.5	**L075540018**
80	32	11	M22 x 1.5	**L075540022**
100	41	16	M26 x 1.5	**L075540026**

Rod Jam Nut Dimensions – inch

Bore size	A	B	C	Part number
20	0.44	0.16	1/4-28	**L077970025**
25	0.50	0.19	5/16-24	**L077970031**
32-40	0.69	0.25	7/16-20	**L077970044**
50-63	0.75	0.31	1/2-20	**L077970050**
80	1.12	0.42	3/4 -16	**L077970075**
100	1.50	0.55	1-14	**L077970100**

Piston Rod Clevis



Piston Rod Clevis Dimensions – mm

Bore size	A	B	C	D	E	F	H h9	J	K	L	Part number
20	M8x1.25	13	24	30	18	4	6.35	6.5	13	17.5	**L077590020**
25	M10x1.25	19	24	30	18	5	6.35	6.5	19	24.5	**L077590025**
32	M10x1.25	19	34	43	24	5	9.52	10	19	26	**L077590032**
40	M14x1.5	19	34	43	24	7	9.52	10	19	26	**L077590040**
50	M18x1.5	28	34	43	24	8	9.52	10	28	36	**L077590050**
63	M18x1.5	28	34	43	24	8	9.52	10	28	36	**L077590050**
80	M22x1.5	38	50	71	48	11	18	28	56	64	**PIM-4PRC**
100	M26x1.5	44	55	79	55	16	22	32	63.5	72	**L077590100**

Piston Rod Clevis Dimensions – inch

Bore size	A	B	C	D	E	F	H	J	K +0 -0.02	L	Part number
20	1/4-28	0.50	0.94	1.19	0.69	0.16	0.250	0.26	0.50	0.69	**L077960025**
25	5/16-24	0.50	0.94	1.19	0.69	0.19	0.250	0.26	0.50	0.69	**L077960031**
32	7/16-20	0.75	1.32	1.69	0.94	0.25	0.375	0.38	0.75	1.03	**L077960044**
40	7/16-20	0.75	1.32	1.69	0.94	0.25	0.375	0.38	0.75	1.03	**L077960044**
50	1/2-20	0.75	1.32	1.69	0.94	0.31	0.375	0.38	0.75	1.03	**L077960050**
63	1/2-20	0.75	1.32	1.69	0.94	0.31	0.375	0.38	0.75	1.03	**L077960050**
80	3/4-16	1.25	1.81	2.38	1.31	0.42	0.437	0.52	1.25	1.66	**L077960075**
100	1-14	1.50	2.63	3.38	1.81	0.55	0.500	0.64	1.50	1.91	**L077960100**

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Mounting Kits & Accessories

How to order P1L mounting kits as a separate item

Bore size	Foot mounting		Flange		Trunnion / double clevis bracket	Single clevis bracket
	Inch	Metric	Inch	Metric		
20	**L077440075**	**L077550020**	**L077450075**	**L077560020**	**L077510020**	**L077520075**
25	**L077440100**	**L077550025**	**L077450100**	**L077560025**	**L077510025**	**L077520075**
32	**L077440125**	**L077550032**	**L077450125**	**L077560032**	**L077510032**	**L077520125**
40	**L077440150**	**L077550040**	**L077450150**	**L077560040**	**L077510040**	**L077520150**
50	**L077440200**	**L077550050**	**L077450200**	**L077560050**	**L077510050**	**L077520200**
63	**L077440250**	**L077550063**	**L077450250**	**L077560063**	**L077510063**	**L077520250**
80	**L077440312**	**L077550080**	**L077450312**	**L077560080**	**L077510080**	**L077520312**
100	**L077440400**	**L077550100**	**L077450400**	**L077560100**	**L077510100**	**L077520400**

Bore size	Single clevis		Double clevis		Single clevis pin	Double clevis pin
	Inch	Metric	Inch	Metric		
20	**L077470075**	**L077570020**	**L077480075**	**L077580020**	**L077490075**	**L077500020**
25	**L077470100**	**L077570025**	**L077480100**	**L077580025**	**L077490075**	**L077500025**
32	**L077470125**	**L077570032**	**L077480125**	**L077580032**	**L077490125**	**L077500032**
40	**L077470150**	**L077570040**	**L077480150**	**L077580040**	**L077490150**	**L077500040**
50	**L077470200**	**L077570050**	**L077480200**	**L077580050**	**L077490200**	**L077500050**
63	**L077470250**	**L077570063**	**L077480250**	**L077580063**	**L077490200**	**L077500063**
80	**L077470312**	**L077570080**	**L077480312**	**L077580080**	**L077490312**	**L077500080**
100	**L077470400**	**L077570100**	**L077480400**	**L077580100**	**L077490400**	**L077500100**

Notes:
- "Inch" mounting kits include inch threaded bolts, while "Metric" mounting kits include metric threaded bolts. Please verify that the kit style matches the cylinder Construction type (code "N" or "M") for which it is intended.
- Clevis pins may be used for either Inch or Metric mounting kits.

Service kits

Bore size	Single rod cylinder repair kits Consisting of: 1 ea. Symbol #5, 7, 12, & 2 ea. Symbol #1, 8 11, 14		Double rod cylinder repair kits Consisting of: 1 ea. Symbol #5, 7, & 2 ea. Symbol #1, 8 11, 12, 14	
	Class 1 seals, std. service	Class 5 seals, high temp.	Class 1 seals, std. service	Class 5 seals, high temp.
mm	Part number	Part number	Part number	Part number
20	**P1L020D001**	**P1L020D005**	**P1L020K001**	**P1L020K005**
25	**P1L025D001**	**P1L025D005**	**P1L025K001**	**P1L025K005**
32	**P1L032D001**	**P1L032D005**	**P1L032K001**	**P1L032K005**
40	**P1L040D001**	**P1L040D005**	**P1L040K001**	**P1L040K005**
50	**P1L050D001**	**P1L050D005**	**P1L050K001**	**P1L050K005**
63	**P1L063D001**	**P1L063D005**	**P1L063K001**	**P1L063K005**
80	**P1L080D001**	**P1L080D005**	**P1L080K001**	**P1L080K005**
100	**P1L100D001**	**P1L100D005**	**P1L100K001**	**P1L100K005**

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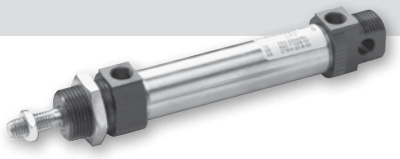
P1A Series

- Conforms to ISO 6432 and CETOP RP52P standards
- 5 bore sizes, 10mm to 25mm
- Stainless steel body with black anodized aluminum end caps
- Stainless steel piston rod
- Magnetic piston and bumpers standard



Operating information

Operating pressure:	10 bar (145 PSIG)
Temperature range:	
Working	-20°C to 80°C (-4°F to 176°F)
High temperature version	
20mm, 25mm	-10°C to 150°C (14°F to 302°F)
10mm, 12mm, 16mm	-10°C to 120°C (14°F to 248°F)
Low temperature version	-40°C to 60°C (-40°F to 140°F)
Filtration requirements:	40 micron, dry filtered air

Ordering information

P1A – S **016** **M** **S** **–** **0025**

Bore size	
010	10mm
012	12mm
016	16mm
020	20mm
025	25mm

Cylinder type / function		
M		Double-acting, adjustable cushioning. Ø16-25 mm. Not for sealing material type F.
D		Double-acting, bumpers, Ø10 - Ø25
F		Double-acting, adjustable cushioning, double rod, Ø16-25 mm. Not for sealing material type F.
K		Double-acting, bumpers, double rod, Ø10 - Ø25
S		Single-acting, bumpers, spring return for retract stroke, Ø10-25 mm
T		Single-acting, bumpers, spring extend for advance stroke, Ø16-25 mm

Stroke length, mm
E.g. 0025 = 25 mm For standard stroke length and max length see table below.

Sealing material	
S	Standard -20°C to +80°C (-4°F to +176°F) Magnetic piston
F	High temperature: Ø12 mm, 16 mm, 20 mm and 25 mm -10°C to +150°C. (14°F to 302°F) Non magnetic piston
V	External seals of fluorinated rubber -20°C to +80°C (-4°F to +176°F) Magnetic piston

Stroke Lengths

Cylinder model	Bore size	Stroke Length (• = standard, ◦ = non-standard, blank = N/A)															
		10	15	20	25*	30	40	50*	80*	100*	125*	160*	200*	250*	320*	400*	500*
Double acting with fixed end-cushioning:																	
P1A-S 010 D	10	•	•	•	•	•	•	•	•	•	•	◦	◦	◦	◦	◦	◦
P1A-S 012 D	12	•	•	•	•	•	•	•	•	•	•	•	•	◦	◦	◦	◦
P1A-S 016 D	16	•	•	•	•	•	•	•	•	•	•	•	•	◦	◦	◦	◦
P1A-S 020 D	20	•	•	•	•	•	•	•	•	•	•	•	•	•	•	◦	◦
P1A-S 025 D	25	•	•	•	•	•	•	•	•	•	•	•	•	•	•	◦	◦
Double acting with adjustable end-cushioning:																	
P1A-S 016 M	16			•	•	•	•	•	•	•	•	•	•	•	•	•	•
P1A-S 020 M	20			•	•	•	•	•	•	•	•	•	•	•	•	•	•
P1A-S 025 M	25			•	•	•	•	•	•	•	•	•	•	•	•	•	•
Single acting:																	
P1A-S 010 SS	10	•	•	◦	•	◦	•	•	•								
P1A-S 012 SS	12	•	•	◦	•	◦	•	•	•								
P1A-S 016 SS(TS)	16	•	•	◦	•	◦	•	•	•**								
P1A-S 020 SS(TS)	20	•	•	◦	•	◦	•	•	•								
P1A-S 025 SS(TS)	25	•	•	◦	•	◦	•	•	•								

* Standard stroke lengths in mm according to ISO 4393
** Not for the TS version

Sensors
For sensors see page B339.

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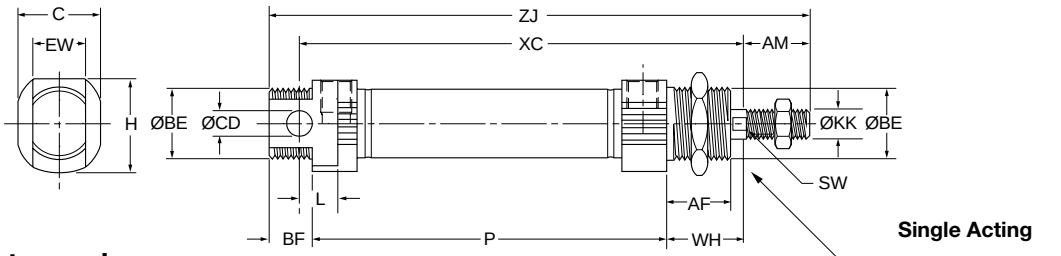
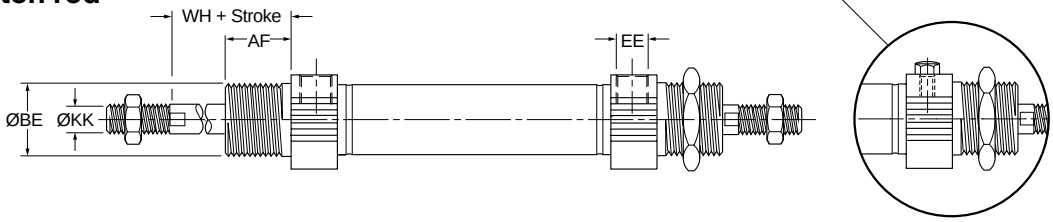
Double acting cylinders



Double piston rod



Bore size mm	AM 0/-2 mm	BE	AF mm	BF mm	C mm	CD h9 mm	EE	EW mm	H mm	KK	L mm	SW mm	WH±1.2 mm
10	12	M12x1.25	12	10	14.0	4	M5	8	16.7	M4	6	–	16
12	16	M16x1.5	18	13	18.0	6	M5	12	19.1	M6	9	5	22
16[1]	16	M16x1.5	18	13	18.0	6	M5	12	19.1	M6	9	5	22
16[2]	16	M16x1.5	18	13	25.0	6	M5	12	24.0	M6	9	5	22
20	20	M22x1.5	20	14	24.0	8	G1/8	16	27.0	M8	12	7	24
25	22	M22x1.5	22	14	27.5	8	G1/8	16	29.0	M10x1.25	12	9	28

1) P1A-S016DS/SS/TS 2) P1A-S016MS

Double acting cylinders

Bore size mm	XC mm	ZJ mm	P mm
10	64 + stroke	84 + stroke	46 + stroke
12	75 + stroke	99 + stroke	48 + stroke
16	82 + stroke	104 + stroke	53 + stroke
20	95 + stroke	125 + stroke	67 + stroke
25	104 + stroke	132 + stroke	68 + stroke

Single-acting, spring return, type SS

Bore size	XC (mm) at various strokes						ZJ (mm) at various strokes						P (mm) at various strokes					
mm	10	15	25	40	50	80	10	15	25	40	50	80	10	15	25	40	50	80
10	74	79	89	126	136	174	94	99	109	146	156	194	56	61	71	108	118	156
12	85	90	100	132	142	185	109	114	124	156	166	209	58	63	73	105	115	158
16	92	97	107	122	132	184	114	119	129	144	154	206	63	68	78	93	103	155
20	105	110	120	135	145	191	135	140	150	165	175	221	77	82	92	107	117	163
25	114	119	129	144	154	201	142	147	157	172	182	229	78	83	93	108	118	165

Single-acting, spring-extended, type TS

Bore size	ZC [3] (mm) at various strokes						ZJ [3] (mm) at various strokes						P (mm) at various strokes					
mm	10	15	25	40	50	80	10	15	25	40	50	80	10	15	25	40	50	80
16	107	112	122	137	147	–	134	139	149	164	174	–	78	83	93	108	118	–
20	120	125	135	150	160	195	156	161	171	186	196	231	92	97	107	122	132	167
25	129	134	144	159	169	205	165	170	180	195	205	241	93	98	108	123	133	169

3) With piston rod retracted, as shown in the dimension drawing
Length tolerances ±1 mm Stroke length tolerance +1.5/0 mm

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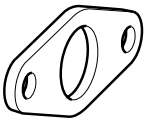
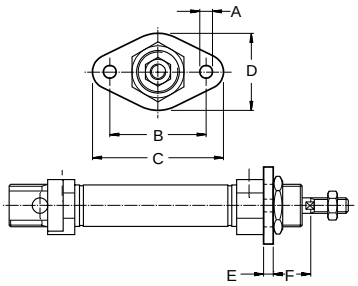
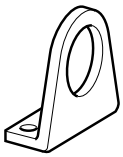
Flange - MF8

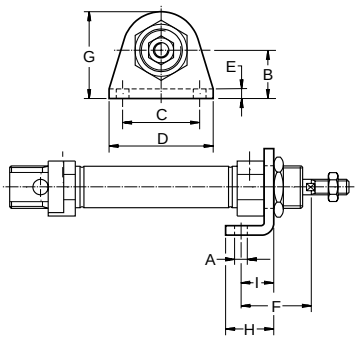




Cylinder Ø mm	A	B	C	D	E	F	Weight lbs	Part number
10	4.5	30	40	22	3	13	0.025	**P1A-4CMB**
12-16	5.5	40	52	30	4	18	0.055	**P1A-4DMB**
20	6.6	50	66	40	5	19	0.100	**P1A-4HMB**
25	6.6	50	66	40	5	23	0.100	

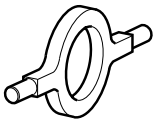
Foot - MS3

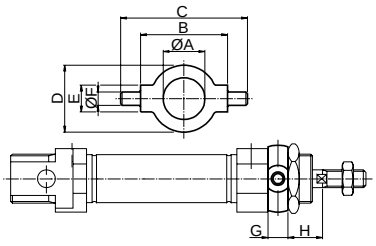




Cylinder Ø mm	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I mm	Weight lbs	Part number
10	4.5	16	25	35	3	24	26.0	16	11	0.045	**P1A-4CMF**
12-16	5.5	20	32	42	4	32	32.5	20	14	0.08	**P1A-4DMF**
20	6.5	25	40	54	5	36	45.0	25	17	0.18	**P1A-4HMF**
25	6.5	25	40	54	5	40	45.0	25	17	0.18	

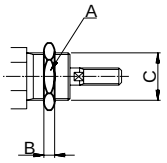
Cover Trunnion





Cylinder Ø mm	A mm	B h14 mm	C mm	D mm	E e9 mm	F mm	G mm	H mm	Weight lbs	Part number
10	12.5	26	38	20	8	4	6	10	0.03	**P1A-4CMJ**
12-16	16.5	38	58	25	10	6	8	14	0.07	**P1A-4DMJ**
20	22.5	46	66	30	10	6	8	16	0.08	**P1A-4HMJ**
25	22.5	46	66	30	10	6	8	20	0.08	

Mounting Nut



Cylinder Ø mm	A mm	B mm	C mm	Weight lbs	Part number
10	19	6	M12x1.25	0.02	**9127385101**
12-16	24	8	M16x1.50	0.04	**9127385102**
20-25	32	11	M22x1.50	0.09	**9127385103**

☐ Most popular.

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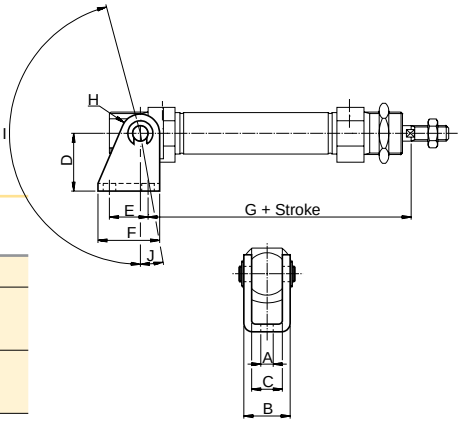
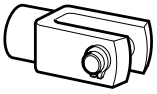
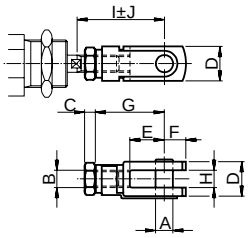
Clevis Bracket



Cylinder Ø mm	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I °	J °	Weight lbs	Part number
10	4.5	13	8	24	12.5	20	65.3	5	160	17	0.045	**P1A-4CMT**
12	5.5	18	12	27	15.0	25	73.0	7	170	15	0.08	**P1A-4DMT**
16	5.5	18	12	27	15.0	25	80.0	7	170	15	0.08	
20	6.5	24	16	30	20.0	32	91.0	10	165	10	0.18	**P1A-4HMT**
25	6.5	24	16	30	20.0	32	100.0	10	165	10	0.18	

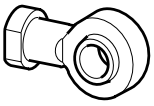
Rod clevis

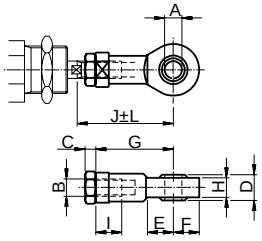




Cylinder Ø mm	A mm	B	C mm	D mm	E mm	F mm	G mm	H mm	I mm	J mm	Weight lbs	Part number
10	4	M4	2.2	8	8	5	16	4	22.0	2.0	0.015	**P1A-4CRC**
12-16	6	M6	3.2	12	12	7	24	6	31.0	3.0	0.05	**P1A-4DRC**
20	8	M8	4.0	16	16	10	32	8	40.5	3.5	0.10	**P1A-4HRC**
25	10	M10 x 1.25	5.0	20	20	12	40	10	49.0	3.0	0.21	**P1A-4JRC**

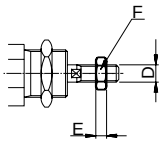
Swivel Rod Eye





Cylinder Ø mm	A mm	B	C mm	D mm	E mm	F mm	G mm	H mm	I mm	J mm	K mm	L mm	Weight lbs	Part number
10	5	M4	2.2	8	10	9	27	6.0	8	33.0	9	2.0	0.04	**P1A-4CRS**
12-16	6	M6	3.2	9	10	10	30	6.8	9	38.5	11	1.5	0.06	**P1A-4DRS**
20	8	M8	4.0	12	12	12	36	9.0	12	46.0	14	2.0	0.10	**P1A-4HRS**
25	10	M10 x 1.25	5.0	14	14	14	43	10.5	15	52.5	17	2.5	0.19	**P1A-4JRS**

Rod Nut



Cylinder Ø mm	D mm	F mm	E mm	Weight lbs	Part number
10	M4	7	2.2	0.002	**0261110600**
12-16	M6	10	3.2	0.004	**0261210800**
20	M8	13	4.0	0.010	**0261211000**
25	M10x1.25	17	5.0	0.015	**9128985601**

☐ Most popular.

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P Series

- Repairable design, aluminum construction
- 6 bore sizes: 1-1/8" to 4"
- Double-acting, spring-return and spring-extend models
- Cushions optional at either or both ends
- Universal nose and tang mounts
- Standard stroke lengths to 20 inches in one inch increments, plus 1-1/2", 2-1/2" and 3-1/2" strokes. Fraction strokes and strokes over 20 inches are available upon request.

Operating information

Operating pressure:	150 PSIG (8 bar)
Temperature range:	
Standard seals	-10°F to 165°F (-23°C to 74°C)
Fluorocarbon seals	-10°F to 250°F (-23°C to 121°C)
Filtration requirements:	40 micron, dry filtered air

Ordering information

2-1/2"	C	K		P	L	U				1	6		C	X6"

Bore size

1-1/8"
1-1/2"
2"
2-1/2"
3"
4"

Cushion head end

Blank	No cushion
C	Cushion head end

Double rod

Blank	Single rod
K	Double rod

Mounting style

Blank	Standard
N	No tang
A	Dual tang

Series

Piston

Blank	0-ring piston
L	Lipseal piston

Sensors available on lipseal pistons only.

Ports

U	N.P.T.F.

Seals / options

Blank	Buna-N
V	Fluorocarbon
M	Magnet with Buna-N seals[1]

Spring

E	Spring extend
R	Spring return

Special number

Use "S" symbol only if special feature is required (specify).

NOTE: Do not use symbol "S" for rod end modification.

Rod diameter style

1	Standard

For double rod cylinders specify rod code twice.

Rod thread

6	Standard
3	Special

(For special rod end specify "CC" thread Dia. A and LE or LE1 or Dim. or submit sketch.)

Rod material

Blank	Standard rod
D	416 Stainless steel[2]

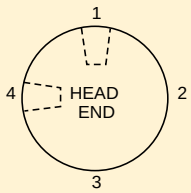
Cushion cap end

Blank	No cushion
C	Cushion cap end

Stroke

Specify in inches. Show times symbol "X" just ahead of stroke length.

Safety Cushion Adjustment Location



With port in position 1, cushion location will be position 4.

Notes:
[1] Must specify lipseal piston with magnet option.
[2] Standard on 1-1/8" bore. {D} not required.

Sensors

For sensors see page B339.

For ordering purposes, when special options or common modifications are requested, the factory will assign a sequential part number in place of the model number.

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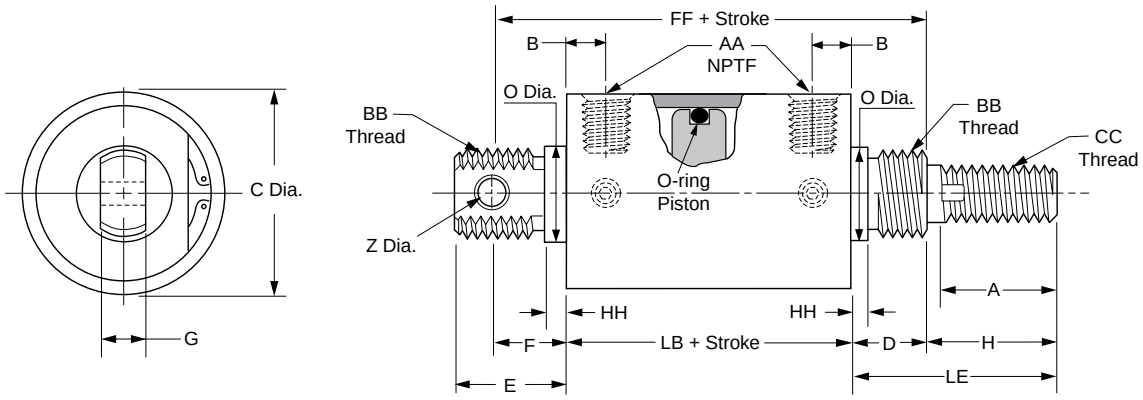
Model P

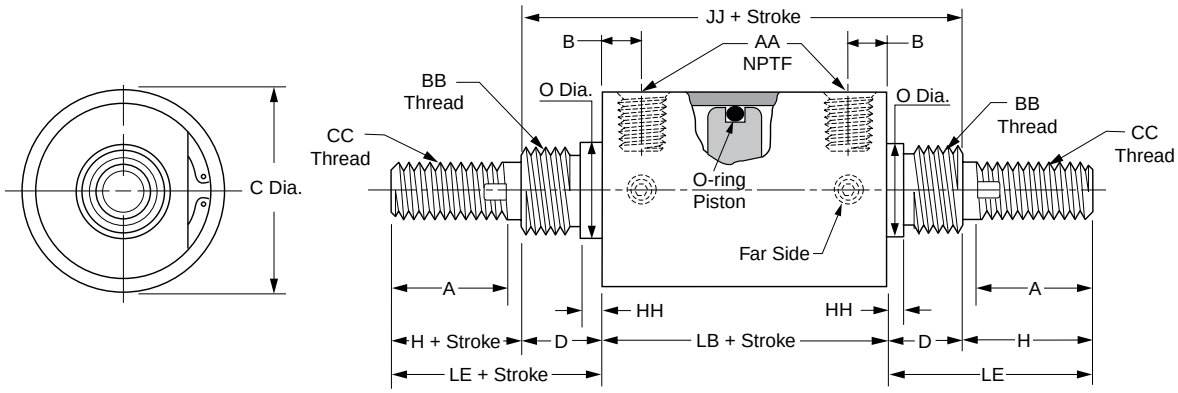
O-ring piston – single rod



Model P cylinders are available without tang covered by dimension E minus HH at no extra charge. To order specify Model NP.

Model KP

O-ring piston – double rod



Mounting nuts not supplied with cylinder.

Model P and KP single and double rod cylinders

Bore Size	Rod Dia.	LB	B	C	D	E	F	G	H	A	O	Z	AA	BB	CC	FF	HH	JJ	LE
1-1/8	3/8	2-1/16	13/32	1-3/8	5/8	1	11/16	3/8	1	7/8	3/4	1/4	1/8	3/4-16	3/8-16	3-3/8	3/32	3-5/16	1-5/8
1-1/2	1/2	2-5/8	1/2	1-3/4	7/8	1-1/4	7/8	1/2	1-7/16	1-1/4	1-1/16	5/16	1/4	1-14	1/2-13	4-3/8	1/8	4-3/8	2-5/16
2	5/8	2-5/8	1/2	2-1/4	7/8	1-1/4	7/8	1/2	1-7/16	1-1/4	1-1/16	5/16	1/4	1-14	5/8-11	4-3/8	1/8	4-3/8	2-5/16
2-1/2	3/4	3	5/8	2-3/4	1	2	1-3/8	5/8	1-11/16	1-1/2	1-3/8	7/16	3/8	1-3/8-12	3/4-10	5-3/8	3/16	5	2-11/16
3	3/4	3	5/8	3-1/4	1	2	1-3/8	5/8	1-11/16	1-1/2	1-3/8	7/16	3/8	1-3/8-12	3/4-10	5-3/8	3/16	5	2-11/16

Note: 4" bore size offered only with Lipseal Piston.
FLUOROCARBON SEALS for operation to 250°F are available at extra cost. Specify model PV or KPV.

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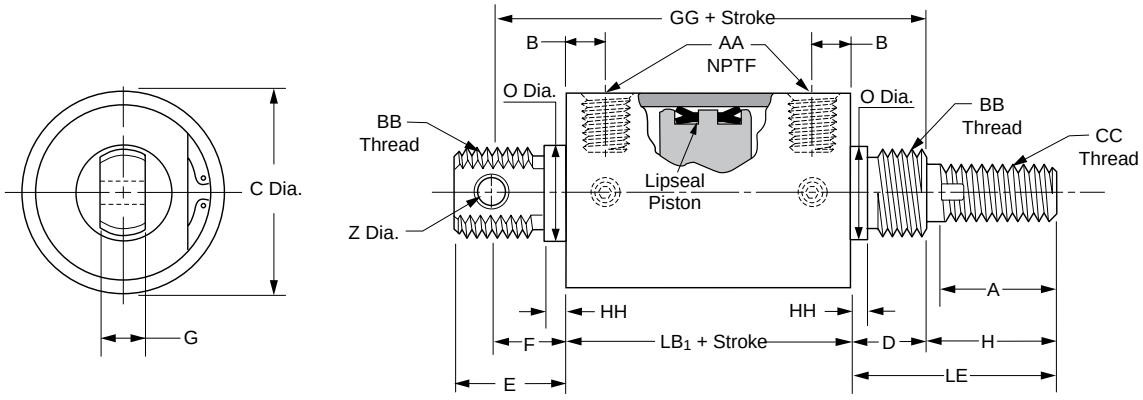
Model PL

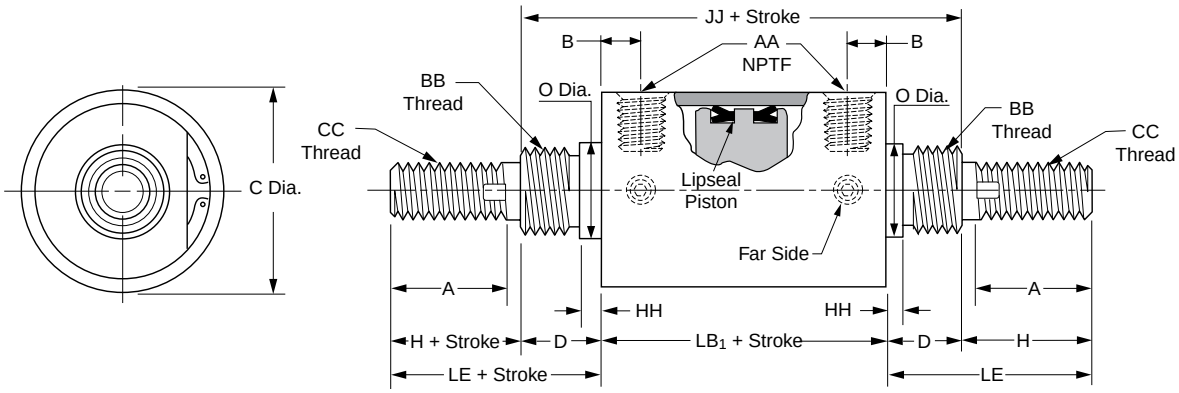
Lipseal piston – single rod



Model PL cylinders are available without tang covered by dimension E minus HH at no extra charge. To order specify Model NPL.

Model KPL

Lipseal piston – double rod



Mounting nuts not supplied with cylinder.

Model PL and KPL single and double rod cylinders

Bore Size	Rod Dia.	LB_1	B	C	D	E	F	G	H	A	O	Z	AA	BB	CC	GG	HH	KK	LE
1-1/8	3/8	3-1/16	13/32	1-3/8	5/8	1	11/16	3/8	1	7/8	3/4	1/4	1/8	3/4-16	3/8-16	4-3/8	3/32	4-5/16	1-5/8
1-1/2	1/2	3-5/8	1/2	1-3/4	7/8	1-1/4	7/8	1/2	1-7/16	1-1/4	1-1/16	5/16	1/4	1-14	1/2-13	5-3/8	1/8	5-3/8	2-5/16
2	5/8	3-5/8	1/2	2-1/4	7/8	1-1/4	7/8	1/2	1-7/16	1-1/4	1-1/16	5/16	1/4	1-14	5/8-11	5-3/8	1/8	4-3/8	2-5/16
2-1/2	3/4	4	5/8	2-3/4	1	2	1-3/8	5/8	1-11/16	1-1/2	1-3/8	7/16	3/8	1-3/8-12	3/4-10	6-3/8	3/16	6	2-11/16
3	3/4	4	5/8	3-1/4	1	2	1-3/8	5/8	1-11/16	1-1/2	1-3/8	7/16	3/8	1-3/8-12	3/4-10	6-3/8	3/16	6	2-11/16
4	1	5-1/2	15/16	4-3/8	1-1/8	2-3/16	1-7/16	3/4	2-1/4	1-7/8	1-3/4	1/2	1/2	1-3/4-12	1-14	8-1/16	3/16	7-1/4	3-3/8

FLUOROCARBON SEALS for operation to 250°F are available at extra cost. Specify model PLV or KPLV.

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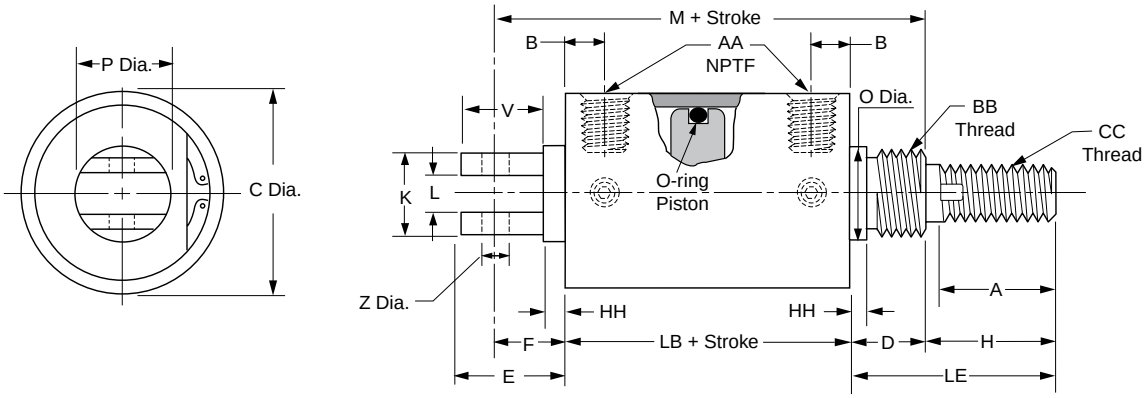
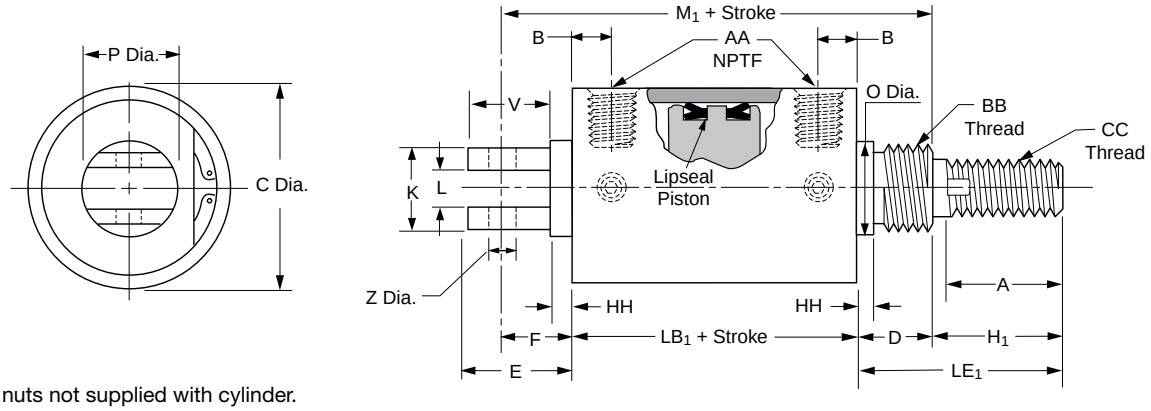
Model AP

O-ring piston – single rod
1-1/8" bore thru 3" bore



Model APL

Lipseal piston – single rod
1-1/8" bore thru 4" bore



Mounting nuts not supplied with cylinder.

Models AP and APL only

Bore Size	Rod Dia.	LB	LB_1	B	C	D	E	F	H	H_1	A	K	L	M	M_1	O	P	V	Z	AA	BB	CC	HH	LE	LE_1
1-1/8	3/8	2-1/16	3-1/16	13/32	1-3/8	5/8	1	11/16	1	1	7/8	15/16	3/8	4-3/8	5-3/8	3/4	15/16	7/8	3/8	1/8	3/4-16	3/8-16	3/32	1-5/8	1-5/8
1-1/2	1/2	2-5/8	3-5/8	1/2	1-3/4	7/8	1-5/8	15/16	2-7/16	1-7/16	1-1/4	1-1/4	1/2	6-7/8	6-7/8	1-1/16	1-1/4	1-1/2	3/8	1/4	1-14	1/2-13	1/8	3-5/16	2-5/16
2	5/8	2-5/8	3-5/8	1/2	2-1/4	7/8	2-1/4	1-9/16	2-7/16	1-7/16	1-1/4	1-1/2	1/2	7-1/2	7-1/2	1-1/16	1-11/16	1-3/4	1/2	1/4	1-14	5/8-11	1/8	3-5/16	2-5/16
2-1/2	3/4	3	4	5/8	2-3/4	1	1-13/16	1-1/8	3-11/16	2-11/16	1-1/2	1-1/2	1/2	8-13/16	8-13/16	1-3/8	2-1/4	1-11/16	1/2	3/8	1-3/8-12	3/4-10	3/16	4-11/16	3-11/16
3	3/4	3	4	5/8	3-1/4	1	2-5/16	1-5/8	3-11/16	2-11/16	1-1/2	1-1/2	1/2	9-5/16	9-5/16	1-3/8	2-1/4	1-3/4	1/2	3/8	1-3/8-12	3/4-10	3/16	4-11/16	3-11/16
4	1	–	5-1/2	15/16	4-3/8	1-1/8	2-7/8	1-7/8	–	2-1/4	1-7/8	2-1/4	3/4	–	10-3/4	1-3/4	3	2-1/2	3/4	1/2	1-3/4-12	1-14	3/16	–	3-3/8

FLUOROCARBON Seals for operation to 250°F are available at extra cost. Specify model ASPV or ASPLV.

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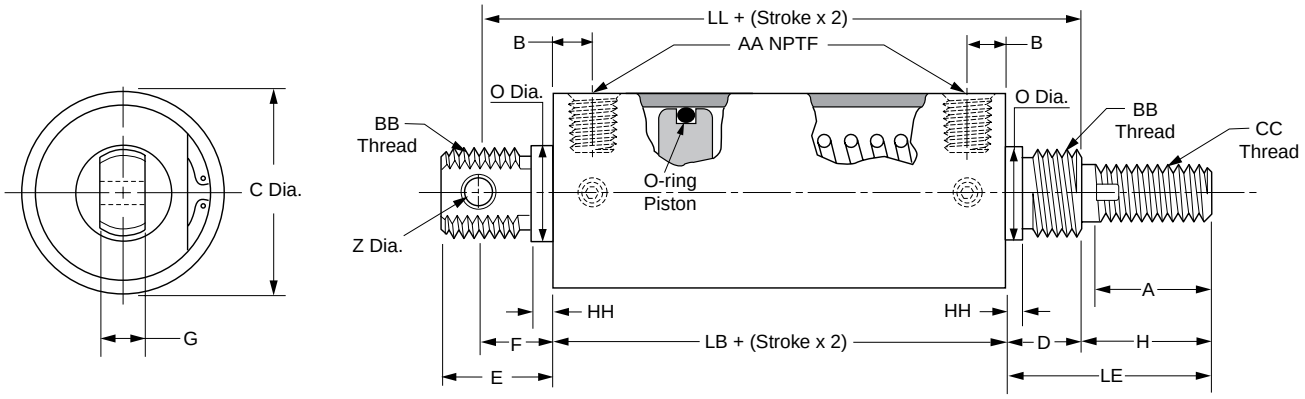
Model PR – Spring return
Model PE – Spring extend

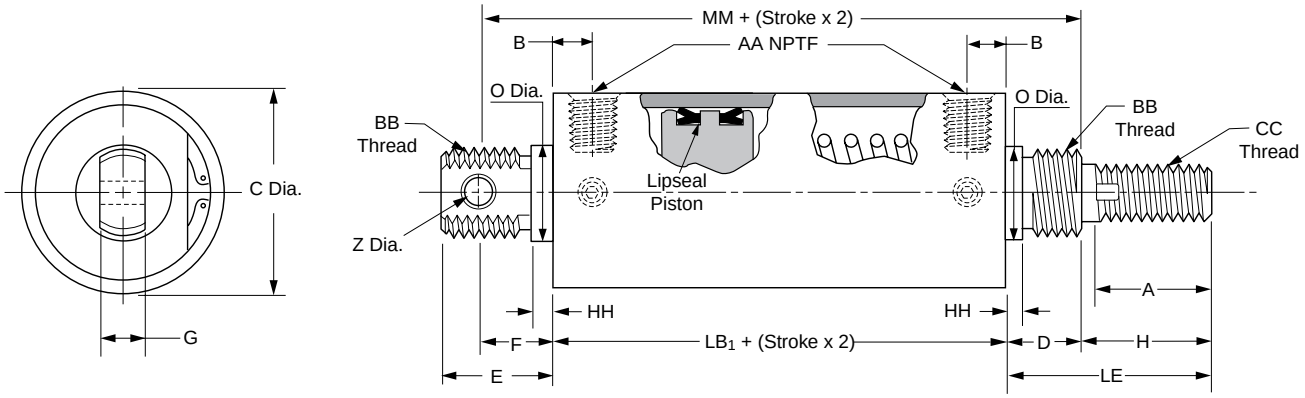
O-ring piston



Spring return cylinders are available without tail section covered by dimension E minus HH at no extra charge. To order, add letter "N" to model number.

Model PLR – Spring return
Model PLE – Spring extend

Lipseal piston



Mounting nuts not supplied with cylinder.

For single rod spring return cylinders up to 6" stroke (no load spring)

Bore Size	Rod Dia.	LB	LB_1	B	C	D	E	F	G	H	A	O	Z	AA	BB	CC	HH	LL	MM	LE	Spring force Pre-load (lbs.)	Spring force Max. load (lbs.)
1-1/8	3/8	2-1/16	3-1/16	13/32	1-3/8	5/8	1	11/16	3/8	1	7/8	3/4	1/4	1/8	3/4-16	3/8-16	3/32	3-3/8	4-3/8	1-5/8	12	36
1-1/2	1/2	2-5/8	3-5/8	1/2	1-3/4	7/8	1-1/4	7/8	1/2	1-7/16	1-1/4	1-1/16	5/16	1/4	1-14	1/2-13	1/8	4-3/8	5-3/8	2-5/16	14	45
2	5/8	2-5/8	3-5/8	1/2	2-1/4	7-/8	1-1/4	7/8	1/2	1-7/16	1-1/4	1-1/16	5/16	1/4	1-14	5/8-11	1/8	4-3/8	5-3/8	2-5/16	18	48
2-1/2	3/4	3	4	5/8	2-3/4	1	2	1-3/8	5/8	1-11/16	1-1/2	1-3/8	7/16	3/8	1-3/8-12	3/4-10	3/16	5-3/8	6-3/8	2-11/16	30	64
3	3/4	3	4	5/8	31/4	1	2	1-3/8	5/8	1-11/16	1-1/2	1-3/8	7/16	3/8	1-3/8-12	3/4-10	3/16	5-3/8	6-3/8	2-11/16	30	64
4	1	▲	5-1/2	15/16	4-3/8	1-1/8	2-3/16	1-7/16	3/4	2-1/4	1-7/8	1-3/4	1/2	1/2	1-3/4-12	1-14	3/16	▲	8-1/16	3-3/8	50	148

▲ 4" bore spring return cylinders, available only with lipseal type piston.
** Net stroke plus stop tube = gross stroke.
FLUOROCARBON SEALS for operation to 250°F are available at extra cost. Specify model PVR, PVE, PLVR or PLVE.
* Dimensions shown are for cylinder with no load spring. For heavier springs or double rod spring return cylinders, consult factory.

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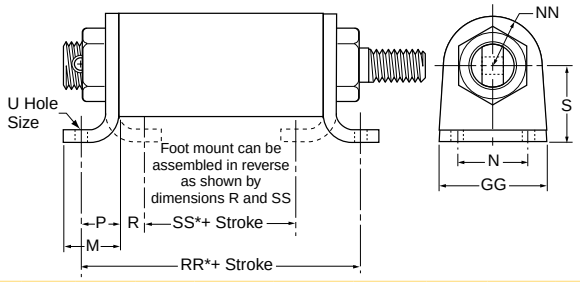
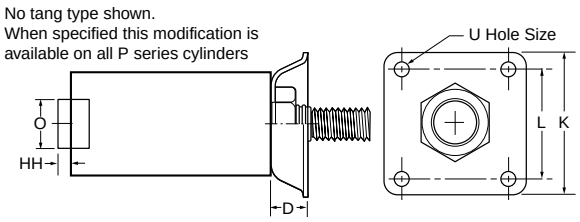
Foot and Flange Mounts

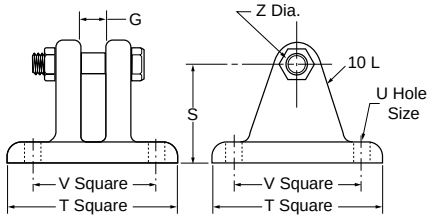




Bore size	D	K	L	M	N	O	P	R	S	U	GG	HH	NN	RR	SS	Foot mount*	Flange mount**
1-1/8	5/8	2-1/2	2	1-3/8	1-11/16	3/4	7/8	5/8	1-9/32	9/32	2-11/16	3/32	11/16	3-13/16	13/16	**L069190000**	**L069230000**
1-1/2	7/8	3-1/4	2-1/2	1-9/32	1-5/8	1-1/16	7/8	9/16	1-3/4	9/32	2-7/16	1/8	1-1/8	4-3/8	1-1/2	**L069200000**	**L069240000**
2	7/8	3-1/4	2-1/2	1-9/32	1-5/8	1-1/16	7/8	9/16	1-3/4	9/32	2-7/16	1/8	1-1/8	4-3/8	1-1/2	**L069200000**	**L069240000**
2-1/2	1	4-1/2	3-3/8	1-29/32	2-1/4	1-3/8	1-1/4	7/8	2-3/8	13/32	3-9/16	3/16	1-5/8	5-1/2	1-1/4	**L069210000**	**L069250000**
3	1	4-1/2	3-3/8	1-29/32	2-1/4	1-3/8	1-1/4	7/8	2-3/8	13/32	3-9/16	3/16	1-5/8	5-1/2	1-1/4	**L069210000**	**L069250000**
4	1-1/8	5-1/4	4	2-17/32	3-1/4	1-3/4	1-3/4	1-5/16	3-3/16	15/32	4-13/16	3/16	2-3/16	9▲	2-7/8▲	**L069220000**	**L069260000**

▲ Dimension shown is for lipseal piston type.
* Part number includes one foot mounting and one mounting nut.
** Includes mounting nut.

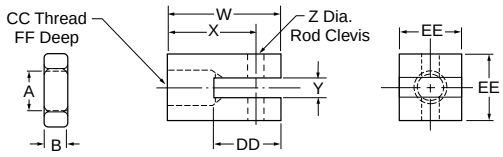
Clevis Bracket



Bore size	G	S	T	U	V	Z	Part number
1-1/8	3/8	1-9/32	2-1/4	9/32	1-3/4	1/4	**L067300000**
1-1/2	1/2	1-3/4	3	9/32	2-1/4	5/16	**L067310000**
2	1/2	1-3/4	3	9/32	2-1/4	5/16	**L067310000**
2-1/2	5/8	2-3/8	4	13/32	3	7/16	**L067320000**
3	5/8	2-3/8	4	13/32	3	7/16	**L067320000**
4	3/4	3-3/16	5	15/32	3-3/4	1/2	**L067330000**

Connecting pin and locknut furnished with clevis bracket.

Rod Clevis

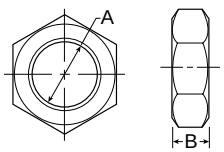


Cyl. bore	Rod dia.	A	B	CC	DD	EE	FF	W	X	Y	Z	Part number
1-1/8	3/8	3/8-16	7/32	3/8-16	1-1/8	3/4	5/8	1-3/4	1-3/8	5/16	1/4	**L067340000**
1-1/2	1/2	1/2-13	5/16	1/2-13	1-5/16	1	15/16	2-1/4	1-3/4	3/8	5/16	**L067350000**
2	5/8	5/8-11	3/8	5/8-11	1-5/16	1	15/16	2-1/4	1-3/4	3/8	5/16	**L067360000**
2-1/2	3/4	3/4-10	27/64	3/4-10	1-5/16	1-1/4	1-1/16	2-3/8	1-13/16	1/2	7/16	**L067370000**
3	3/4	3/4-10	27/64	3/4-10	1-5/16	1-1/4	1-1/16	2-3/8	1-13/16	1/2	7/16	**L067370000**
4	1	1-14	35/64	1-14	1-13/16	1-1/2	1-9/16	3-3/8	2-5/8	5/8	1/2	**L067380000**

Note: Rod end jam nut furnished with rod clevis.

☐ Most popular.

Mounting Nut for Cylinders**



Bore size	A	B	Part number
1-1/8	3/4-16	27/64	**0833010048**
1-1/2 & 2	1-14	35/64	**0833010100**
2-1/2 & 3	1-3/8-12	25/32	**0833010124**
4	1-3/4-12	15/16	**0831830000**

Sensors
For sensors see page B339.

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Table A

Seal kit for series "P" cylinders with o-ring piston

Contains: 2 each symbol #15 & 1 each symbol #16, 24 & 25

Bore size	Standard seal kit part number	Hi-temp seal kit part number
1-1/8"	**L067680000**	**L067730000**
1-1/2"	**L067690000**	**L067740000**
2"	**L067700000**	**L067750000**
2-1/2"	**L067710000**	**L067760000**
3"	**L067720000**	**L067770000**

Table B

Seal kit for series "P" cylinders with lipseal piston

Contains: 2 each symbol #15 & 23 & 1 each symbol #24 & 25

Bore size	Standard seal kit part number	Hi-temp seal kit part number
1-1/8"	**L067780000**	**L067840000**
1-1/2"	**L067790000**	**L067850000**
2"	**L067800000**	**L067860000**
2-1/2"	**L067810000**	**L067870000**
3"	**L067820000**	**L067880000**
4"	**L067830000**	**L067890000**

Table C

Cushion seal kit for series "P" cylinders

Contains: 2 each symbol #19 & 21 (Symbol #21 not required or supplied for 1-1/8" & 1-1/2" bore size cylinders)

Bore size	Standard seal kit part number	Hi-temp seal kit part number
1-1/8"	**L067900000**	**L067950000**
1-1/2"	**L067910000**	**L067960000**
2"	**L067920000**	**L067970000**
2-1/2"	**L067930000**	**L067980000**
3"	**L067930000**	**L067980000**
4"	**L067940000**	**L067990000**

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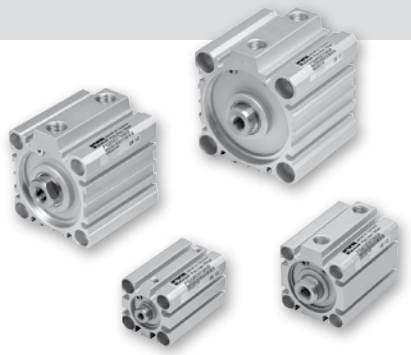
P1Q Series

- Economical square body compact cylinder
- 10 bore sizes available 12mm - 100mm
- 4 flexible mounting options
- Female and male rod ends available
- Bumpers standard on all models
- Magnetic and non-magnetic contruction available



Operating information

Operating pressure:	10 bar (145 PSIG) maximum
Temperature range:	-5°C to 60°C (23°F to 140°F)
Filtration requirements:	40 micron, dry filtered air

Metric Double Acting / Magnetic - Female Threaded Piston Rod

12mm

Stroke (mm)	Order Code
5	**P1QS012DC7G0005**
10	**P1QS012DC7G0010**
15	**P1QS012DC7G0015**
25	**P1QS012DC7G0025**
30	**P1QS012DC7G0030**

16mm

5	**P1QS016DC7G0005**
10	**P1QS016DC7G0010**
15	**P1QS016DC7G0015**
25	**P1QS016DC7G0025**
30	**P1QS016DC7G0030**

20mm

10	**P1QS020DC7G0010**
15	**P1QS020DC7G0015**
25	**P1QS020DC7G0025**
30	**P1QS020DC7G0030**
40	**P1QS020DC7G0040**
50	**P1QS020DC7G0050**

25mm

10	**P1QS025DC7G0010**
15	**P1QS025DC7G0015**
25	**P1QS025DC7G0025**
30	**P1QS025DC7G0030**
40	**P1QS025DC7G0040**
50	**P1QS025DC7G0050**

32mm

Stroke (mm)	Order Code
10	**P1QS032DC7N0010**
15	**P1QS032DC7N0015**
25	**P1QS032DC7N0025**
30	**P1QS032DC7N0030**
40	**P1QS032DC7N0040**
50	**P1QS032DC7N0050**
75	**P1QS032DC7N0075**
100	**P1QS032DC7N0100**

40mm

15	**P1QS040DC7N0015**
25	**P1QS040DC7N0025**
30	**P1QS040DC7N0030**
40	**P1QS040DC7N0040**
50	**P1QS040DC7N0050**
75	**P1QS040DC7N0075**
100	**P1QS040DC7N0100**

50mm

15	**P1QS050DC7N0015**
25	**P1QS050DC7N0025**
30	**P1QS050DC7N0030**
40	**P1QS050DC7N0040**
50	**P1QS050DC7N0050**
75	**P1QS050DC7N0075**
100	**P1QS050DC7N0100**

63mm

Stroke (mm)	Order Code
15	**P1QS063DC7N0015**
25	**P1QS063DC7N0025**
30	**P1QS063DC7N0030**
40	**P1QS063DC7N0040**
50	**P1QS063DC7N0050**
75	**P1QS063DC7N0075**

80mm

15	**P1QS080DC7N0015**
25	**P1QS080DC7N0025**
30	**P1QS080DC7N0030**
40	**P1QS080DC7N0040**
50	**P1QS080DC7N0050**
75	**P1QS080DC7N0075**

100mm

15	**P1QS100DC7N0015**
25	**P1QS100DC7N0025**
30	**P1QS100DC7N0030**
40	**P1QS100DC7N0040**
50	**P1QS100DC7N0050**
75	**P1QS100DC7N0075**

Sensors
For sensors see page B339.

☐ Most popular.

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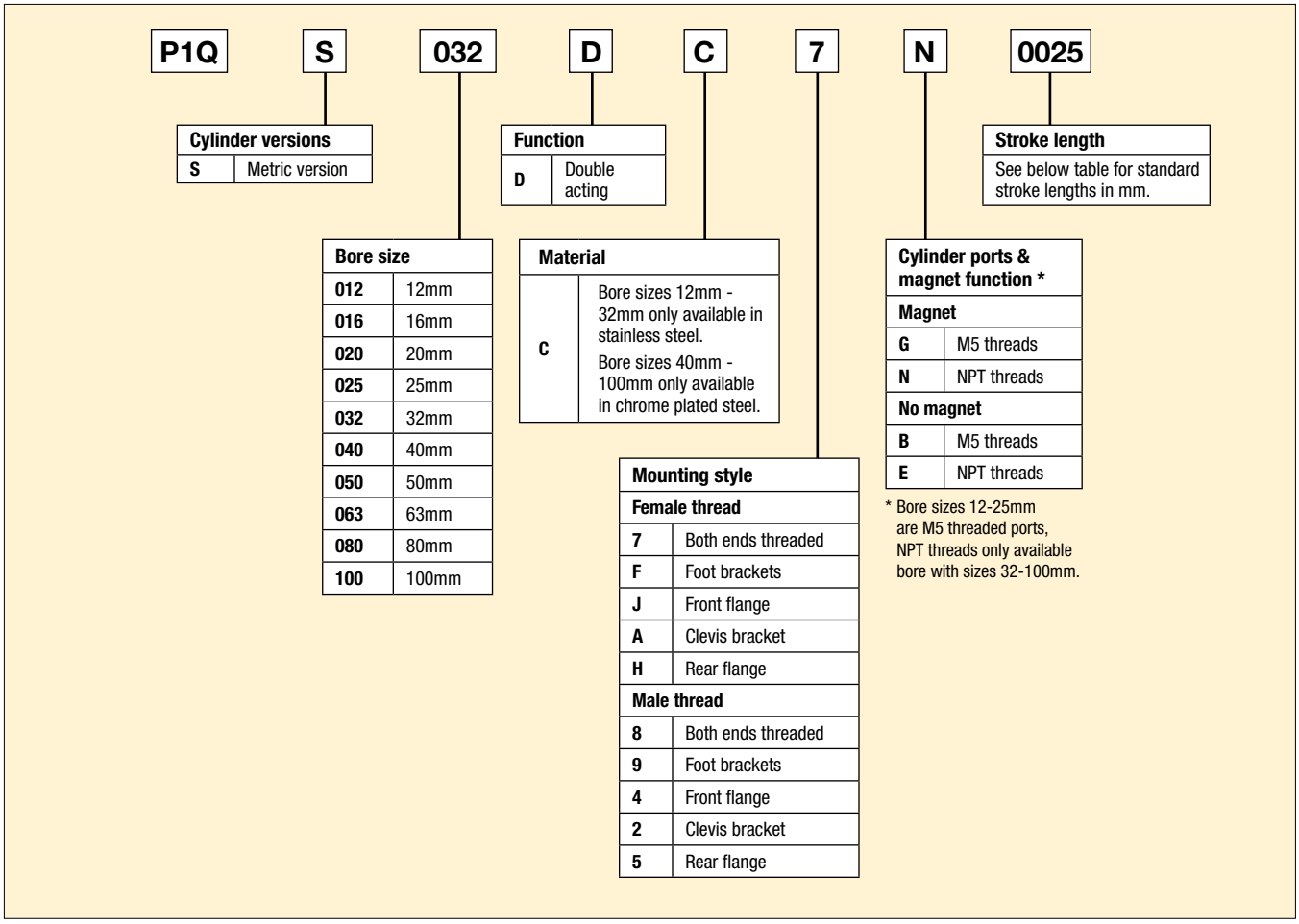
Ordering information



Standard strokes

Bore size	5	10	15	25	30	40	50	75	100
12 - 16	•	•	•	•	•				
20 - 25		•	•	•	•	•	•		
32		•	•	•	•	•	•	•	•
40 - 50			•	•	•	•	•	•	•
63 - 100			•	•	•	•	•	•	

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Cylinder forces, double acting variants

Cyl. bore/ pist. rod mm		Stroke piston area cm²	Max theoretical force in N (bar) 1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0
12/6	+	1.1	11	23	34	45	57	**68**	79	90	102
	-	0.8	8	17	25	34	42	**51**	59	68	76
16/8	+	2.0	20	40	60	80	101	**121**	141	161	181
	-	1.5	15	30	45	60	75	**90**	106	121	136
20/10	+	3.1	31	63	94	126	157	**188**	220	251	283
	-	2.4	24	47	71	94	118	**141**	165	188	212
25/12	+	4.9	49	98	147	196	245	**295**	344	393	442
	-	3.8	38	76	113	151	189	**227**	264	302	340
32/16	+	8.0	80	161	241	322	402	**483**	563	643	724
	-	6.0	60	121	181	241	302	**362**	422	483	543
40/16	+	12.6	126	251	377	503	628	**754**	880	1005	1131
	-	10.6	106	211	317	422	528	**633**	739	844	950
50/20	+	19.6	196	393	589	785	982	**1178**	1374	1571	1767
	-	16.5	165	330	495	660	825	**990**	1155	1319	1484
63/20	+	31.2	312	623	935	1247	1559	**1870**	2182	2494	2806
	-	28.0	280	561	841	1121	1402	**1682**	1962	2242	2523
80/25	+	50.3	503	1005	1508	2011	2513	**3016**	3519	4021	4524
	-	45.4	454	907	1361	1814	2268	**2721**	3175	3629	4082
100/32	+	78.5	785	1571	2356	3142	3927	**4712**	5498	6283	7069
	-	70.5	705	1410	2115	2820	3525	**4230**	4936	5640	6345

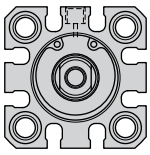
\+ = Outward stroke
\- = Return stroke

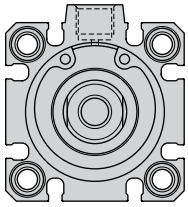
Note:
Select a theoretical force 50-100% larger than the force required

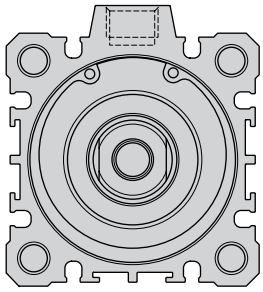
Front profiles by bore size

Ø12

Ø16


Ø20 - Ø25


Ø32 - Ø40


Ø50 - Ø100

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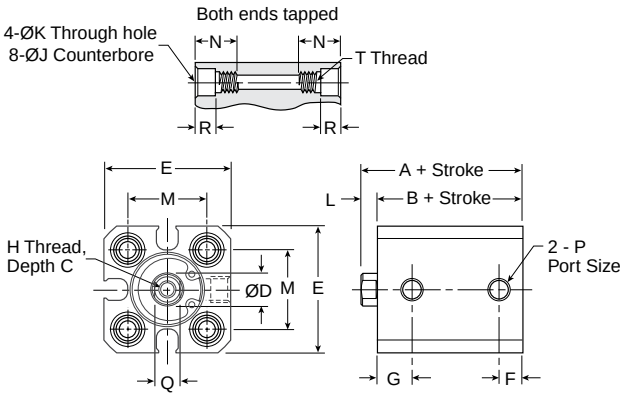
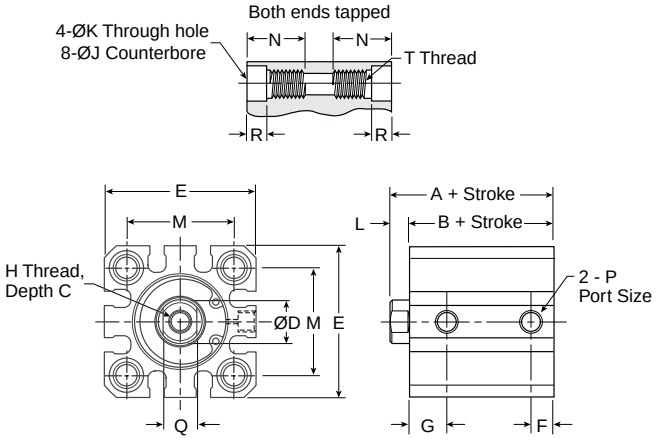
Magnet Dimensions

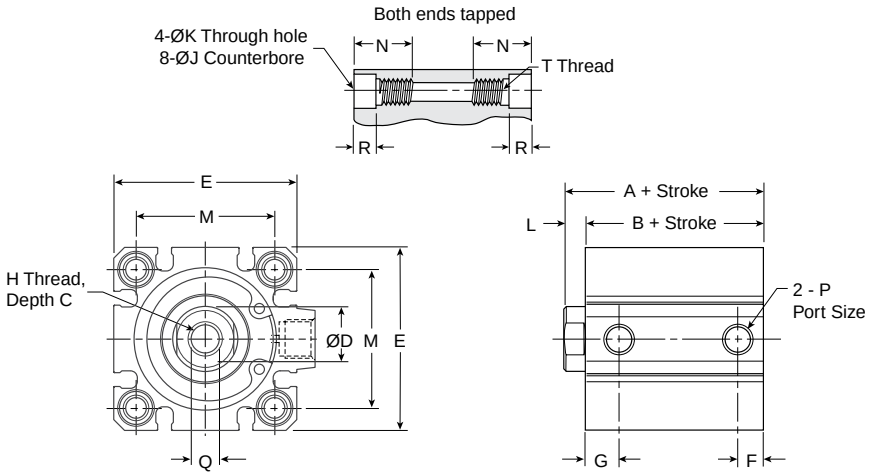
Ø12 - Ø16



Ø20 - Ø25



Ø32 - Ø100



Bore size	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H	J mm	K mm	L mm	M mm	N mm	P	Q mm	R mm	T
12	25.5	22	6	6	25	5	7.5	M3x0.5	6.5	3.5	3.5	15.5	11	M5x0.8	5	4	M4x0.7
16	25.5	22	8	8	29	5	7.5	M4x0.7	6.5	3.5	3.5	20	11	M5x0.8	6	4	M4x0.7
20	34	29.5	7	10	36	5.5	9	M5x0.8	9	5.4	4.5	25.5	17	M5x0.8	8	7	M6x1.0
25	37.5	32.5	12	12	40	5.5	11	M6x1.0	9	5.4	5	28	17	M5x0.8	10	7	M6x1.0
32	40	33	13	16	45	7.5	10.5	M8x1.25	9	5.5	7	34	17	1/8"	14	7	M6x1.0
40	46.5	39.5	13	16	52	8	11	M8x1.25	9	5.5	7	40	17	1/8"	14	7	M6x1.0
50	48.5	40.5	15	20	64	10.5	10.5	M10x1.5	11	6.6	8	50	22	1/4"	17	8	M8x1.25
63	54	46	15	20	77	10.5	15	M10x1.5	14	9	8	60	28.5	1/4"	17	10.5	M10x1.5
80	63.5	53.5	21	25	98	12.5	16	M16x2.0	17.5	11	10	77	35.5	3/8"	22	13.5	M12x1.75
100	75	63	27	30	117	13	23	M20x2.5	17.5	11	12	94	35.5	3/8"	27	13.5	M12x1.75

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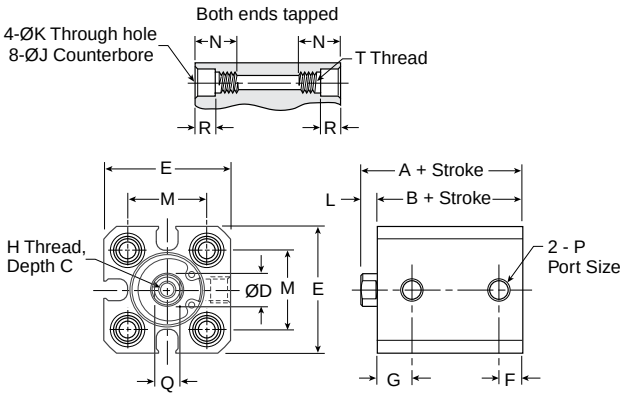
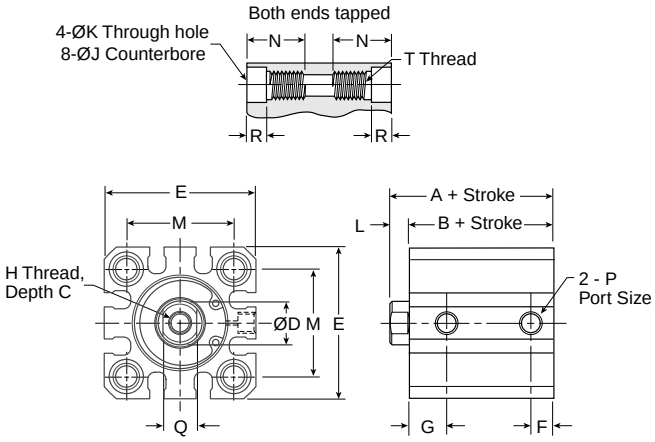
Non-magnet Dimensions

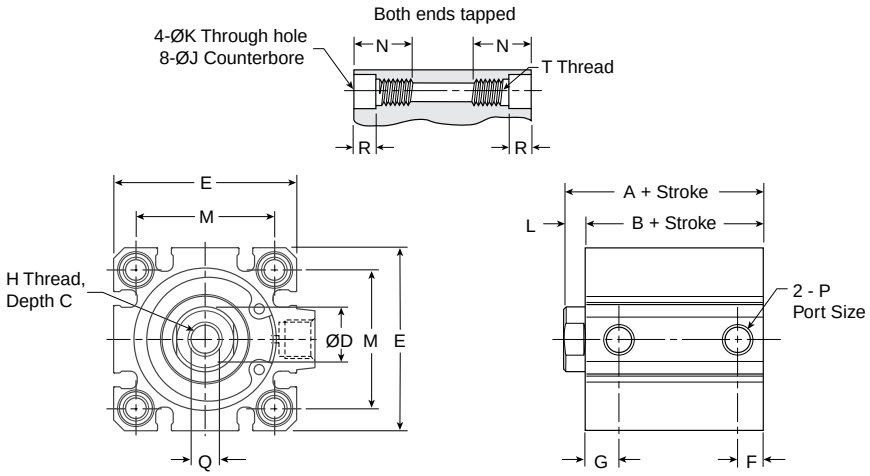
Ø12 - Ø16



Ø20 - Ø25



Ø32 - Ø100



Bore size	A 5 to 50mm	A 75 to 100mm	B 5 to 50mm	B 75 to 100mm	C mm	D mm	E mm	F mm	G mm	H	J mm	K mm	L mm	M mm	N mm	P	Q mm	R mm	T
12	20.5	–	17	–	6	6	25	5	7.5	M3x0.5	6.5	3.5	3.5	15.5	11	M5x0.8	5	4	M4x0.7
16	20.5	–	17	–	8	8	29	5	7.5	M4x0.7	6.5	3.5	3.5	20	11	M5x0.8	6	4	M4x0.7
20	24	–	19.5	–	7	10	36	5.5	9	M5x0.8	9	5.4	4.5	25.5	17	M5x0.8	8	7	M6x1.0
25	27.5	–	22.5	–	12	12	40	5.5	11	M6x1.0	9	5.4	5	28	17	M5x0.8	10	7	M6x1.0
32	30	40	23	33	13	16	45	7.5	10.5	M8x1.25	9	5.5	7	34	17	1/8"	14	7	M6x1.0
40	36.5	46.5	29.5	39.5	13	16	52	8	11	M8x1.25	9	5.5	7	40	17	1/8"	14	7	M6x1.0
50	38.5	48.5	30.5	40.5	15	20	64	10.5	10.5	M10x1.5	11	6.6	8	50	22	1/4"	17	8	M8x1.25
63	44	54	36	46	15	20	77	10.5	15	M10x1.5	14	9	8	60	28.5	1/4"	17	10.5	M10x1.5
80	53.5	63.5	43.5	53.5	21	25	98	12.5	16	M16x2.0	17.5	11	10	77	35.5	3/8"	22	13.5	M12x1.75
100	65	75	53	63	27	30	117	13	23	M20x2.5	17.5	11	12	94	35.5	3/8"	27	13.5	M12x1.75

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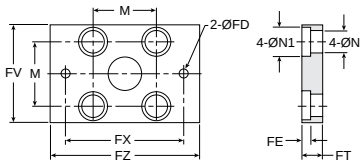
Flange Mounting – Style J, H, 4, 5

Intended for fixed mounting of cylinder. Flange can be fitted to front or rear of cylinder.

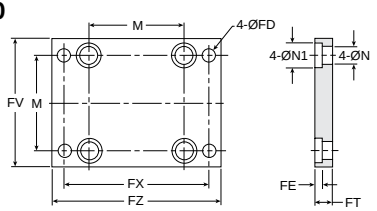
Material
Flange: surface treated steel, black

Supplied complete with mounting screws for attachment to cylinder.

Ø12 - Ø25



Ø32 - Ø100



Bore size	FD mm	FT mm	FV mm	FX mm	FZ mm	M mm	N mm	N1 mm	Mass kg	Part number
12	4.5	5.5	25	45	55	15.5	4.5	7.5	0.08	**P1Q-4DMB**
16	4.5	5.5	30	45	55	20	4.5	7.5	0.10	**P1Q-4FMB**
20	6.5	8	39	48	60	25.5	6.5	10.5	0.16	**P1Q-4HMB**
25	6.5	8	42	52	64	28	6.5	10.5	0.20	**P1Q-4JMB**
32	5.5	8	48	56	65	34	6.5	10.5	0.23	**P1Q-4KMB**
40	5.5	8	54	62	72	40	6.5	10.5	0.28	**P1Q-4LMB**
50	6.5	9	67	76	89	50	8.5	13.5	0.53	**P1Q-4MMB**
63	9	9	80	92	108	60	10.5	16.5	0.71	**P1Q-4NMB**
80	11	11	99	116	134	77	12.5	18.5	1.59	**P1Q-4PMB**
100	11	11	117	136	154	94	12.5	18.5	2.19	**P1Q-4QMB**

Foot Mounting – Style F, 9

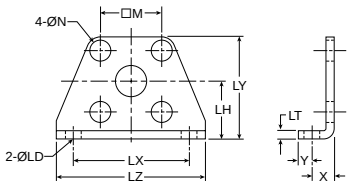
Intended for fixed mounting of cylinder. Angle bracket can be fitted to front and rear of cylinder.

Material
Angle bracket: surface treated steel, black

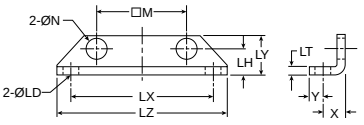
Supplied in pairs with mounting screws for attachment to cylinder.

* Weight per item

Ø12 - Ø25



Ø32 - Ø100



Bore size	LD mm	LH mm	LT mm	LX mm	LY mm	LZ mm	X mm	Y mm	M mm	N mm	Mass kg	Part number
12	4.5	17	2	34	29.5	44	8	4.5	15.5	4.5	0.02*	**P1Q-4DMF**
16	4.5	19	2	38	33.5	48	8	5	20	4.5	0.02*	**P1Q-4FMF**
20	6.5	24	3.2	48	42	62	9.2	5.8	25.5	6.5	0.04*	**P1Q-4HMF**
25	6.5	26	3.2	52	46	66	10.7	5.8	28	6.5	0.05*	**P1Q-4JMF**
32	6.5	13	3.2	57	20	71	11.2	5.8	34	6.5	0.06*	**P1Q-4KMF**
40	6.5	13	3.2	64	20	78	11.2	7	40	6.5	0.08*	**P1Q-4LMF**
50	8.5	14	3.2	79	22	95	12.2	8	50	8.5	0.16*	**P1Q-4MMF**
63	10.5	16	3.2	95	26	113	13.7	9	60	10.5	0.25*	**P1Q-4NMF**
80	13	20.5	4.5	118	32	140	16.5	11	77	13	0.50*	**P1Q-4PMF**
100	13	24	6	137	36	162	23	11.5	94	13	0.85*	**P1Q-4QMF**

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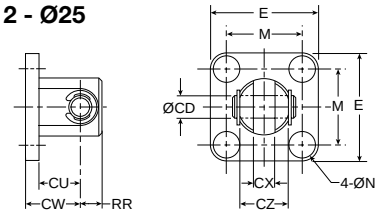
Clevis Mounting – Style A, 2

Intended for flexible mounting of cylinder. Clevis bracket can be fitted to the rear of cylinder.

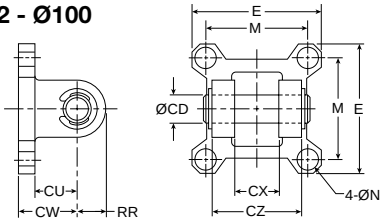
Material
Clevis bracket: surface treated steel, black

Supplied complete with mounting screws for attachment to cylinder.

Ø12 - Ø25



Ø32 - Ø100



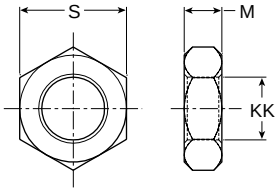
Bore size	CD mm	CU mm	CW mm	CX mm	CZ mm	N mm	RR mm	M mm	E mm	Mass kg	Part number
12	5	9.5	14	5.3	9.8	4.5	6	15.5	25	0.02	**P1Q-4DMT**
16	5	10.5	15	6.8	11.8	4.5	6	20	29	0.03	**P1Q-4FMT**
20	8	12.5	18	8.3	15.8	6.5	9	25.5	36	0.05	**P1Q-4HMT**
25	10	14.5	20	10.3	19.8	6.5	10	28	40	0.06	**P1Q-4JMT**
32	10	14.5	20	18.3	35.8	6.5	10	34	45.5	0.08	**P1Q-4KMT**
40	10	15	22	18.3	35.8	6.5	10	40	53.5	0.11	**P1Q-4LMT**
50	14	20	28	22.3	43.8	8.5	14	50	64.5	0.14	**P1Q-4MMT**
63	14	21	30	22.3	43.8	10.5	14	60	77.5	0.29	**P1Q-4NMT**
80	18	28	38	28.3	55.8	12.5	18	77	98.5	0.36	**P1Q-4PMT**
100	22	32	45	32.3	63.8	12.5	22	94	117.5	0.64	**P1Q-4QMT**

Jam Nut

Intended for fixed mounting of accessories to the piston rod.

Materials
Galvanized steel

Cylinders supplied with galvanized nut.



Bore size	KK	M	S	Mass kg	Part number
12	M5x0.8	2.7	18	0.002	**L075540005**
16	M6x1.0	3.2	10	0.002	**L075540006**
20	M8x1.25	4	13	0.005	**L075540008**
25	M10x1.25	5	17	0.007	**L075540010**
32	M14x1.5	7	22	0.010	**L075540014**
40	M14x1.5	7	22	0.010	**L075540014**
50	M18x1.5	8	27	0.021	**L075540018**
63	M18x1.5	8	27	0.021	**L075540018**
80	M22x1.5	11	32	0.040	**L075540022**
100	M26x1.5	16	41	0.040	**L075540026**

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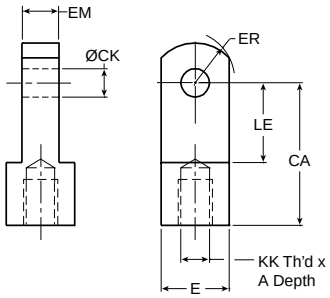
Rod Eye

Rod eye for articulated mounting of cylinder.
Rod eye can be combined with clevis bracket.
Maintenance-free.

Material
Rod eye, nut: galvanized steel

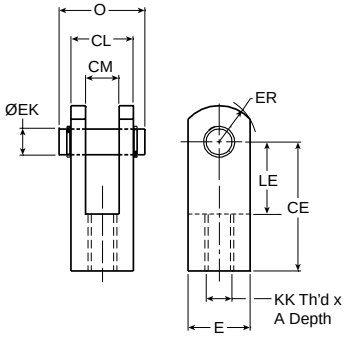


Bore size	A	E	CA	KK	ER	LE	CK	EM	Mass kg	Part number
12	7	9.5 Sq.	16	M5x0.8	6.5	7	5	5	0.03	**P1M-4DRE**
16	8	11 Sq.	25	M6x1.0	8	14	5	6.5	0.03	**P1M-4FRE**
20	8.5	16 Sq.	25	M8x1.25	10.5	11.5	8	8	0.05	**P1M-4HRE**
25	10.5	19 Sq.	30	M10x1.25	13	14	10	10	0.07	**P1M-4JRE**
32	14	22 Dia.	30	M14x1.5	12	14	10	18	0.08	**P1M-4LRE**
40	14	22 Dia.	30	M14x1.5	12	14	10	18	0.12	**P1M-4LRE**
50	18.5	28 Dia.	40	M18x1.5	16	20	14	22	0.25	**P1M-4MRE**
63	18.5	28 Dia.	40	M18x1.5	16	20	14	22	0.25	**P1M-4MRE**
80	22	38 Dia.	50	M22x1.5	21	27	18	28	0.25	**P1M-4PRE**

Rod Clevis

Clevis for articulated mounting of cylinder.

Material
Clevis, clip, nut: galvanized steel
Pin: hardened steel



Bore size	A	E	CE	KK	ER	LE	EK (h9)	CM	CL	O	Mass kg	Part number
12	7	9.5	16	M5x0.8	6.5	7	5	5	9.5	14.5	0.02	**P1M-4DRC**
16	11	11	21	M6x1.0	8	10	5	6.5	11	16.5	0.02	**P1M-4FRC**
20	8.5	16	25	M8x1.25	10.5	11.5	8	8	16	21	0.05	**P1M-4HRC**
25	10.5	19	30	M10x1.25	13	14	10	10	19	25.5	0.09	**P1M-4JRC**
32	16	22 Dia.	30	M14x1.25	12	14	10	18	36	41.5	0.09	**P1M-4LRC**
40	16	22 Dia.	30	M14x1.25	12	14	10	18	36	41.5	0.15	**P1M-4LRC**
50	20	28 Dia.	40	M18x1.5	16	20	14	22	44	50.5	0.35	**P1M-4MRC**
63	20	28 Dia.	40	M18x1.5	16	20	14	22	44	50.5	0.35	**P1M-4MRC**
80	23	38 Dia.	50	M22x1.5	21	27	18	28	56	64	0.75	**P1M-4PRC**

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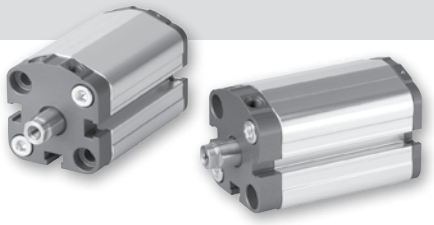
P1M Series

- Versatile range of square body style compact cylinder
- Available in Low Profile Version or Long Bearing Version for enhanced rod bearing support
- 10 bore sizes: 12mm through 100mm
- Single and double acting versions available
- Four flexible port configurations available
- Recessed, flush position piston sensing available



Operating information

Operating pressure:	145 PSIG (10 bar) maximum air
Temperature range:	Standard: -4°F to 176°F (-20°C to 80°C) High: 14°F to 250°F (-10°C to 121°C)
Filtration requirements:	40 micron, dry filtered air

Ordering information

P1M	032	C	/	D	C	P	6	G	012

Bore size

012	12mm
016	16mm
020	20mm
025	25mm
032	32mm
040	40mm
050	50mm
063	63mm
080	80mm
100	100mm

Cylinder style

C	Basic no mtgs.
A	Double rear clevis [1,3]
B	Single rear clevis [1,3]
F	Foot mount [1,4]
J	Front flange [1]
H	Rear flange [1, 3]

Insert "/" to denote special

Function

D	Double acting
K	Double rod
R	Single acting spring return [6]
E	Single acting spring extend [4]

Piston/seal material

Without magnet [2]

C	No bumpers class 1 std. temp. seals
G	No bumpers class 5 fluorocarbon seals
B	With bumpers class 1 std. temp. seals [7]

With magnet [5]
(Not available on spring extend models)

N	No bumpers class 1 std. temp. seals
M	With bumpers class 1 std. temp. seals [7]

Piston rod & bearings

Extra low profile rod bearing

P	Chrome plated steel rod not available on 12-25mm bores
Y	Stainless steel rod standard on 12-25mm bores and spring extend models

Long rod bearing [2]

C	Chrome plated steel rod not available on 12-25mm bores
A	Stainless steel rod standard on 12-25mm bores and spring extend models

Rod threads

Inch

4	Male
9	Female

Metric

5	Male
6	Female
3	Special rod end

Ports

Bspp

G	Ported each end
H	Both ports head
J	Both ports cap
K	Both ports cap face [3]

NPTF
(Not available on 12-25mm bores)

N	Ported each end
M	Both ports head
L	Both ports cap
P	Both ports cap face [3]

Stroke length
Specify stroke length required in mm.

Maximum stroke lengths

Bore	ELP bearing version		Long bearing version		Single acting version
	Min. stroke*	Max. stroke	Min. stroke*	Max. stroke	Standard stroke
12	3	50	4	200	5,10
16	3	50	4	200	5,10
20	3	50	8	200	5,10
25	3	50	8	200	5,10
32	3	100	9	320	5,10
40	3	100	7	320	5,10
50	3	100	13	320	10, 20, 25
63	3	100	18	500	10, 20, 25
80	3	150	23	500	10, 20, 25
100	3	150	18	500	10, 20, 25

* Minimum stroke for double rod cylinders: 12-63mm bores is 5mm; 80 &100mm bores is 10mm

NOTES:
1. Fitted with Mounting Accessory
2. Magnetic Piston Option must be specified along with Long Rod Bearing option to achieve Long Bearing Version
3. Porting Options 'K' and 'P' (Both ports cap face) not available with rear mountings
4. Single Acting Spring Extend available with stainless steel rod only.
5. For information regarding sensors, please refer to Electronic Sensors section.
6. Spring return is short bearing version only.
7. Bumper only available on head end for spring extend. Bumper only available on cap end for spring return.

Sensors
For sensors see page B339.

For ordering purposes, when special options or common modifications are requested, the factory will assign a sequential part number in place of the model number.

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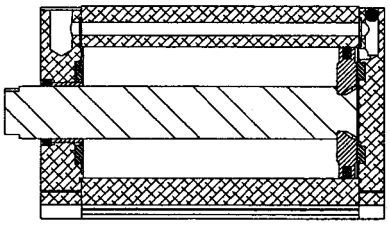
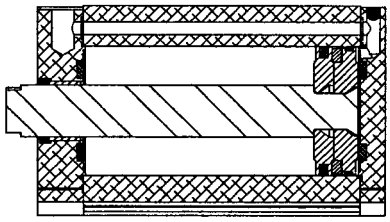
Extra Low Profile Version

The Extra Low Profile Bearing Version provides the most compact cylinder possible. This bearing version is recommended for applications that require shorter stroke lengths or that are light duty. It is available in stroke lengths up to 50mm in the smaller bore sizes and 150 mm in the larger bore sizes.

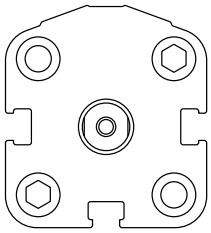


Long Bearing Version

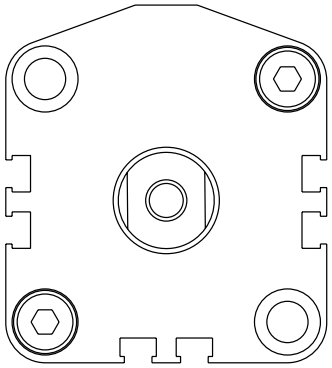
The Long Bearing Version provides additional rod bearing and piston bearing support and also includes a magnetic piston with bearing strip for greater piston bearing support. This Long Bearing version is required for stroke lengths beyond the Extra Low Profile maximum stroke length and is recommended for higher duty applications.



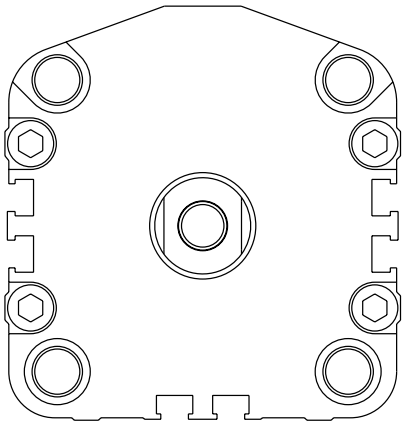
Front profiles by bore size



Bores 12-25mm



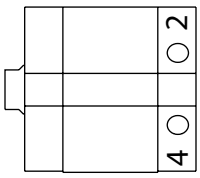
Bores 32-50mm



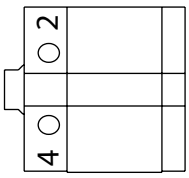
Bores 63-100mm

Porting configurations

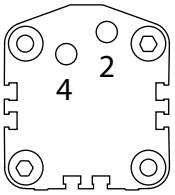
Both Ports Cap



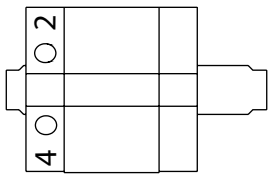
Both Ports Head*



Both Ports Cap Face



Double Rod Both Ports One End



To retract cylinder apply air to port #2

To extend cylinder apply air to port #4

For a double rod cylinder, pressurize port #2 to retract the piston rod into the head containing the ports.

* For 12mm to 16mm bores, although the location of ports #2 and #4 are reversed, porting functions shown above apply.

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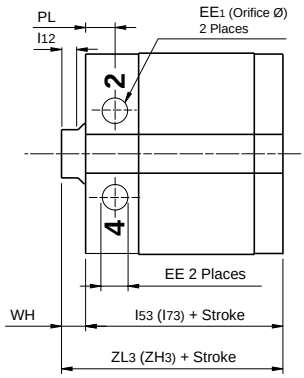
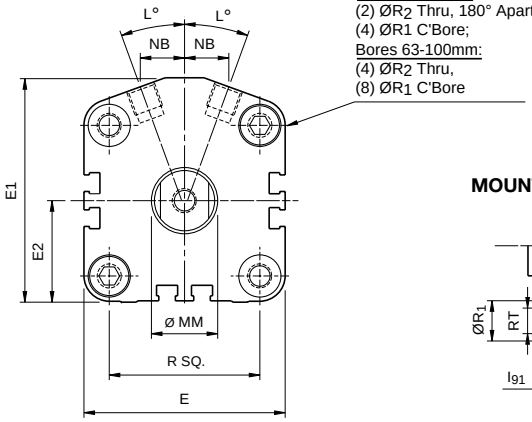
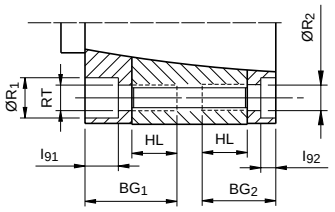
All porting configurations

BOTH PORTS HEAD



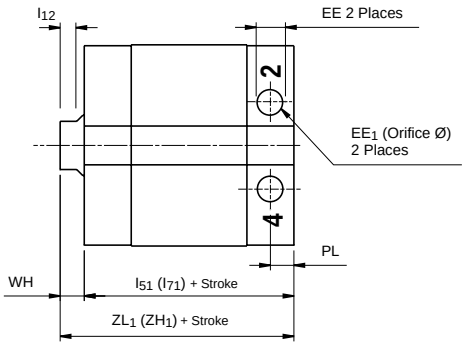


MOUNTING HOLE CONFIGURATION
BOTH PORTS HEAD

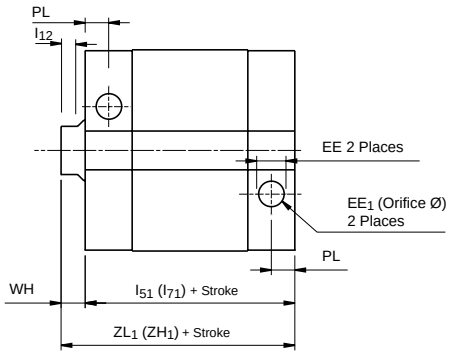


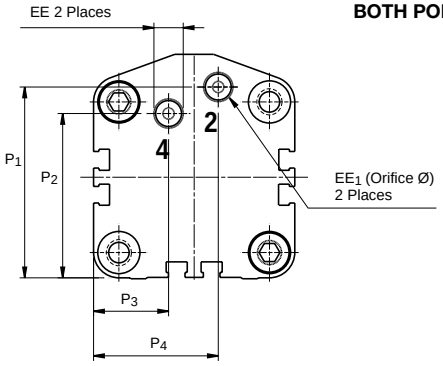
Optional porting configurations

BOTH PORTS CAP

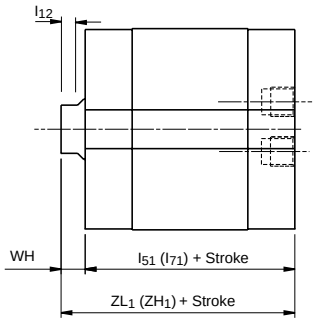


HEAD & CAP PORTED

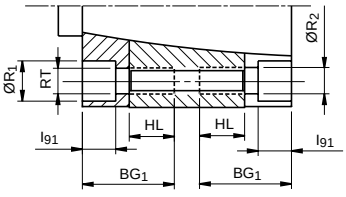




BOTH PORTS CAP FACE



MOUNTING HOLE CONFIGURATION
BOTH PORTS CAP OR CAP FACE, PORTS AT HEAD & CAP



Note: Magnetic Dimensions in Parentheses

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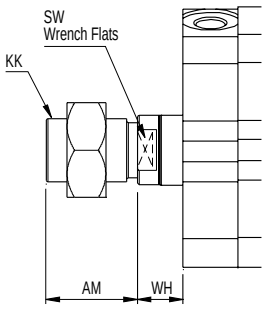
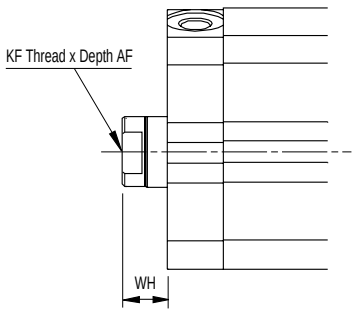
For special rod ends, specify "3" in model number and give desired WH, AM or AF and KK or KF (length dimensions in millimeters).

Jam nut is supplied when cylinder is ordered with Style 4 or Style 5 rod end.



Style 5 / Style 4



Style 6 / Style 9

Bore size	Rod	AF Style 6	AF Style 9	AM Style 5	AM Style 4	KF Style 6	KF Style 9	KK Style 5	KK Style 4	WH Style 4, 9 & 6	WH Style 5	I_{12}	SW
12	6	6	5.4	9	8	M3x0.5	#8-32	M5x0.8	#8-32	3.5	5	3	5
16	8	8	5.4	10	8	M4x0.7	#8-32	M6x1.0	#8-32	3.5	5.5	3	7
20	10	7	7	12	8	M5x0.8	#10-32	M8x1.25	#10-32	4.5	6.5	4	9
25	10	12	10	15	9.5	M6x1.0	1/4-28	M10x1.25	1/4-28	5	7.5	4	9
32	12	13	13.3	20.5	12.7	M8x1.25	5/16-24	M12x1.25	5/16-24	7	8	5	10
40	16	13	18.3	20.5	16	M8x1.25	3/8-24	M14x1.5	3/8-24	7	8	5.5	13
50	20	15	17.6	26	19.5	M10x1.5	1/2-20	M18x1.5	1/2-20	8	7.5	5.5	16
63	20	15	17.6	26	19.5	M10x1.5	1/2-20	M18x1.5	1/2-20	8	7.5	5.5	16
80	25	21	24.3	32.5	25.5	M16x2.0	5/8-18	M22x1.5	5/8-18	10	11	6	21
100	25	27	27	32.5	28.5	M20x2.5	3/4-16	M22x1.5	3/4-16	12	11	6	21

Bore size	BG_1	BG_2	E	E_1	E_2	EE BSPP	EE NPTF	EE_1	HL	l_{91}	l_{92}	L	NB	P_1	P_2
12	16.5	11.5	27	31	14	M5	–	1	8	3.5	3.5	26	5.5	25	9.5
16	17	12	31.5	35	16	M5	–	1.2	8	4	4	20	7	29.5	9.5
20	19	14.5	38.5	42.5	19.5	M5	–	1.3	10	4.5	4.5	20	8	35	13.5
25	21	15	41.5	45.5	21	M5	–	1.8	10	5	5	20	8.5	38.5	14
32	25	17	48	56	24	G1/8	1/8	2.7	10	4	4	25	9.5	45.5	16.5
40	25.5	17.5	56	62.5	28	G1/8	1/8	3.4	10	4	4	20	11.5	51	12
50	29.5	23.5	67	74.5	33.5	G1/8	1/8	4	14	5	5	20	14.5	63	54.5
63	34	28	82	86	40.5	G1/8	1/8	5	18	6.5	8	20	17.5	73.5	64
80	43	34	98	106.5	48.5	G1/4	1/4	5.5	22	8.5	10	20	25.5	92	79.5
100	44	35.5	119	126.5	59.5	G1/4	1/4	6	22	8.5	10	20	31.5	111.5	97.5

Bore size	P_3	P_4	PL	PM	R	R_1	R_2*	RT	Non-magnetic l_{51}	Non-magnetic l_{53}	Non-magnetic ZL_1	Non-magnetic ZL_3	Magnetic l_{71}	Magnetic l_{73}	Magnetic ZH_1	Magnetic ZH_3	ELP Max stroke
12	13.5	13.5	5	8.5	15.5	5.8	3.5	M4	22	17	25.5	20.5	33	28	36.5	31.5	50
16	15.5	18	5	9	20	7.4	3.5	M4	23.5	18.5	27	22	34.5	29.5	38	33	50
20	24.5	21.5	5	9	25.5	9	5.5	M6	24	19.5	28.5	24	34	29.5	38.5	34	50
25	27.5	24.5	7	9	28	9	5.5	M6	28.5	22.5	33.5	27.5	38.5	32.5	43.5	37.5	50
32	31.5	28.5	8	10.5	34	10.5	5.5	M6	36.5	28.5	43.5	35.5	46	37.5	53	44.5	100
40	23	33	7.5	9.5	40	10.5	5.5	M6	38.5	29.5	44.5	36.5	47.5	39.5	54.5	46.5	100
50	25	41.5	8	10	50	13.5	7.5	M8	38.5	32.5	46.5	40.5	47.5	41.5	55.5	49.5	100
63	30	53	8	11	60	13.5	9.5	M10	39.5	34	47.5	42	51.5	46	59.5	54	100
80	33	69.5	11.5	11.5	77	16.5	11	M12	52	43	62	53	62.5	53.5	72.5	63.5	150
100	36.5	87.5	12	12	94	17	11	M12	57	48.5	69	60.5	71.5	63	83.5	75	150

*"R2 thru" not available on 12mm and 16mm bores.

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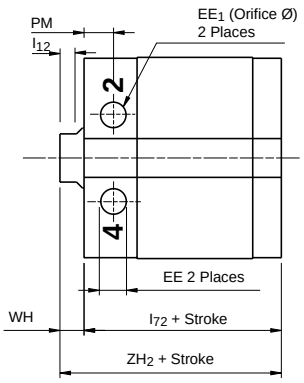
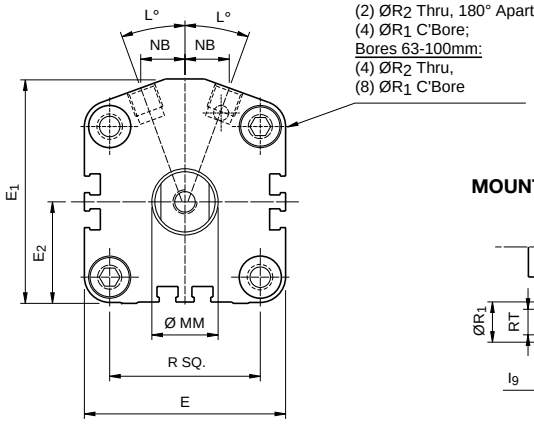
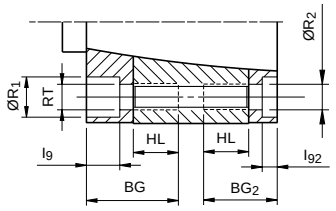
All porting configurations

BOTH PORTS HEAD



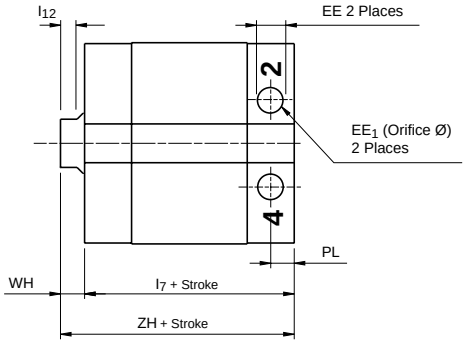


MOUNTING HOLE CONFIGURATION
BOTH PORTS HEAD

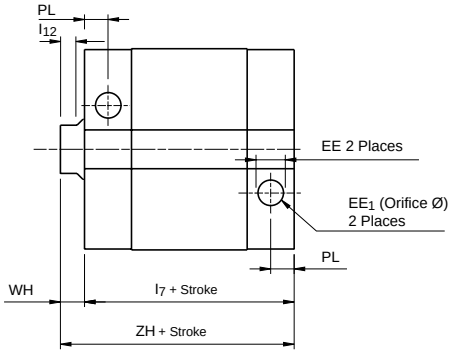


Optional porting configurations

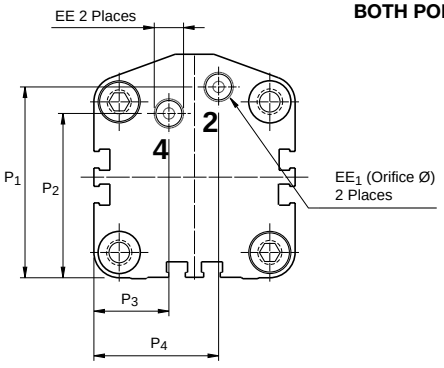
BOTH PORTS CAP

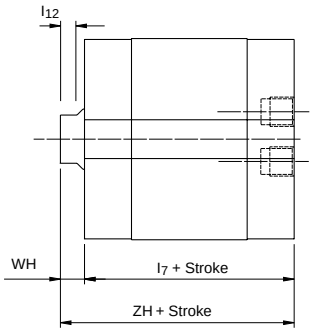


HEAD & CAP PORTED

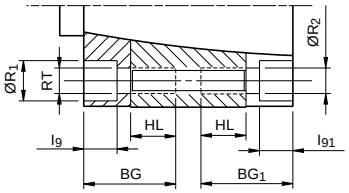


BOTH PORTS CAP FACE





MOUNTING HOLE CONFIGURATION
BOTH PORTS CAP OR CAP FACE, PORTS AT HEAD & CAP



Note: Magnetic Dimensions in Parentheses

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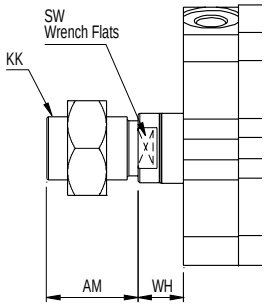
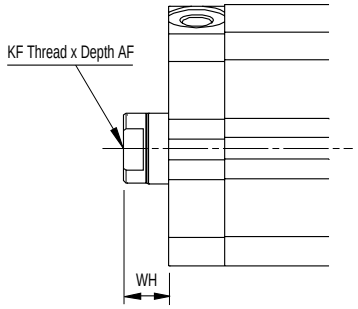
For special rod ends, specify "3" in model number and give desired WH, AM or AF and KK or KF (length dimensions in millimeters).

Jam nut is supplied when Style 4 or Style 5 rod end is specified.

Note: Magnetic piston and longer rod bearing are standard with Long Bearing Version.



Style 5 / Style 4



Style 6 / Style 9

Bore size	Rod MM	AF Style 6	AF Style 9	AM Style 5	AM Style 4	KF Style 6	KF Style 9	KK Style 5	KK Style 4	WH Style 4, 9 & 6	WH Style 5	I_{12}	SW
12	6	6	5.4	9	8	M3x0.5	#8-32	M5x0.8	#8-32	3.5	5	3	5
16	8	8	5.4	10	8	M4x0.7	#8-32	M6x1.0	#8-32	3.5	5.5	3	7
20	10	7	7	12	8	M5x0.8	#10-32	M8x1.25	#10-32	4.5	6.5	4	9
25	10	12	10	15	9.5	M6x1.0	1/4-28	M10x1.25	1/4-28	5	7.5	4	9
32	12	13	13.3	20.5	12.7	M8x1.25	5/16-24	M12x1.25	5/16-24	7	8	5	10
40	16	13	18.3	20.5	16	M8x1.25	3/8-24	M14x1.5	3/8-24	7	8	5.5	13
50	20	15	17.6	26	19.5	M10x1.5	1/2-20	M18x1.5	1/2-20	8	7.5	5.5	16
63	20	15	17.6	26	19.5	M10x1.5	1/2-20	M18x1.5	1/2-20	8	7.5	5.5	16
80	25	21	24.3	32.5	25.5	M16x2.0	5/8-18	M22x1.5	5/8-18	10	11	6	21
100	25	27	27	32.5	28.5	M20x2.5	3/4-16	M22x1.5	3/4-16	12	11	6	21

Bore size	BG	BG_1	BG_2	E	E_1	E_2	EE BSPP	EE NPTF	EE_1	HL	l_7	l_{72}	l_9	l_{91}	l_{92}	L
12	21.5	16.5	11.5	27	31	14	M5	–	1	8	38.5	33.5	3.5	3.5	3.5	26
16	22	17	12	31.5	35	16	M5	–	1.2	8	40.5	35.5	5.5	4	4	20
20	24.5	19	14.5	38.5	42.5	19.5	M5	–	1.3	10	40	35.5	10.5	4.5	4.5	20
25	24.5	21	15	41.5	45.5	21	M5	–	1.8	10	42.5	36.5	10.5	5	5	20
32	27.5	25	17	48	56	24	G1/8	1 8	2.7	10	48	40	14	4	4	25
40	27.5	25.5	17.5	56	62.5	28	G1/8	1/8	3.4	10	49.5	41.5	14	4	4	20
50	31.5	29.5	23.5	67	74.5	33.5	G1/8	1/8	4	14	49.5	43.5	13	5	5	20
63	37	34	28	82	86	40.5	G1/8	1/8	5	18	54.5	49	6.5	6.5	8	20
80	43	43	34	98	106.5	48.5	G1/4	1/4	5.5	22	62.5	53.5	9.5	8.5	10	20
100	44	44	35.5	119	126.5	59.5	G1/4	1/4	6	22	71.5	63	9.5	8.5	10	20

Bore size	NB	P_1	P_2	P_3	P_4	PM	R	R_1	R_2*	RT	ZH	ZH_2	Min stroke	Max stroke
12	5.5	25	9.5	13.5	13.5	8.5	15.5	5.8	3.5	M4	42	37	4	200
16	7	29.5	9.5	15.5	18	9	20	7.4	3.5	M4	44	39	4	200
20	8	35	13.5	24.5	21.5	9	25.5	9	5.5	M6	44.5	40	8	200
25	8.5	38.5	14	27.5	24.5	9	28	9	5.5	M6	47.5	41.5	8	200
32	9.5	45.5	16.5	31.5	28.5	10.5	34	10.5	5.5	M6	55	47	9	320
40	11.5	51	12	23	33	9.5	40	10.5	5.5	M6	56.5	48.5	7	320
50	14.5	63	54.5	25	41.5	10	50	13.5	7.5	M8	57.5	51.5	13	320
63	17.5	73.5	64	30	53	11	60	13.5	9.5	M10	62.5	57	18	500
80	25.5	92	79.5	33	69.5	11.5	77	16.5	11	M12	72.5	62.5	23	500
100	31.5	111.5	97.5	36.5	87.5	12	94	17	11	M12	83.5	75	18	500

* "R2 thru" not available on 12mm and 16mm bores.

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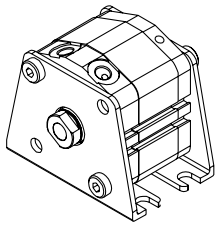
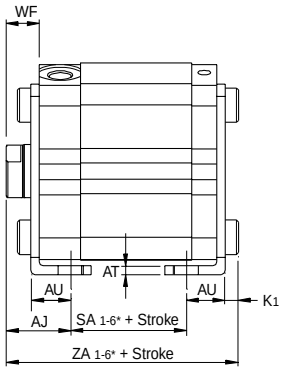
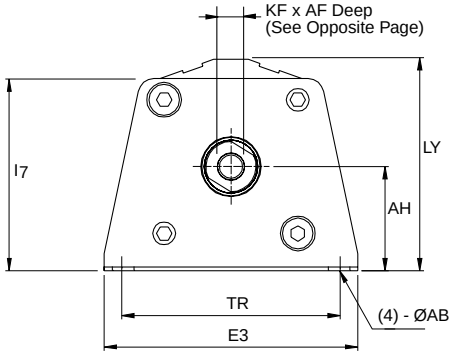
Foot Mounting – Style F







Please note bearing, piston and porting configuration for selecting proper dimensions.

Bore size	AB	AH	AJ	AT	AU	E3	I7	K1	LY	TR	Part number
12	4.5	17	19.5	2	8	44	29.5	2.8	34	35	**P1M-4DMF**
16	4.5	19	19.5	2	8	48	33.5	2.8	38	39	**P1M-4FMF**
20	6.5	24	20.5	3.2	9.2	62	42	4	47	50	**P1M-4HMF**
25	6.5	26	22.5	3.2	10.7	66	46	4	50.5	52	**P1M-4JMF**
32	6.5	30	25	3.2	11.2	71	54	4	62	60	**P1M-4KMF**
40	6.5	33	25	3.2	11.2	78	61	4	67.5	67	**P1M-4LMF**
50	9	39	29.5	3.2	14.7	95	72.5	5	80	82	**P1M-4MMF**
63	11	46	31	3.2	16.2	113	32	5	91.5	100	**P1M-4NMF**
80	13	59	35	4.5	19.5	140	42	7	117	118	**P1M-4PMF**
100	13	71	39	6	23	162	53	7	138	139	**P1M-4QMF**

	ELP version non-magnetic					ELP version magnetic					Long bearing version					
	Both ports head		Optional porting		Min. **	Both ports head		Optional porting		Min.**	Both ports head		Optional porting		Min.**	Style 5
Bore size	SA1	ZA1*	SA2*	ZA2*	stroke	SA3	ZA3*	SA4	ZA4*	stroke	SA5	ZA5*	SA6	ZA6*	stroke	end length adjustment
12	5	35.3	10	40.3	15	16	46.3	21	51.3	4	21.5	51.8	26.5	56.8	4	1.5
16	6.5	36.8	11.5	41.8	14	17.5	47.8	22.5	52.8	4	23.5	53.8	28.5	58.8	4	2
20	7.5	41.2	12	45.7	18	17.5	51.2	22	55.7	8	23.5	57.2	28	61.9	8	2
25	7.5	44.7	13.5	50.7	18	17.5	54.7	23.5	60.7	8	21.5	58.7	27.5	64.7	8	2.5
32	12.5	52.5	20.5	60.7	18	21.5	61.7	29.5	69.9	9	24	64	32	72.2	9	1
40	13.5	53.7	21.5	61.9	17	23.5	63.7	31.5	71.9	7	25.5	65.7	33.5	73.9	7	1
50	9.5	58.7	15.5	64.9	22	18.5	67.7	24.5	73.9	13	20.5	69.7	26.5	75.9	13	-0.5
63	8	60.2	13.5	65.7	30	20	72.2	25.5	77.7	18	23	75.2	28.5	80.7	18	-0.5
80	13	74.5	22	83.5	33	23.5	85	32.5	94	23	23.5	85	32.5	94	23	1
100	14.5	83.5	23	92	33	29	98	37.5	106.5	18	29	98	37.5	106.5	18	-1

* For strokes less than 'min. stroke', only one bracket will be supplied at rod end.

** Dimensions shown apply only for rod end styles 4, 6 and 9. For rod end style 5, please include the above length adjustment.

Note: Foot bracket mounting is not available with cap face porting

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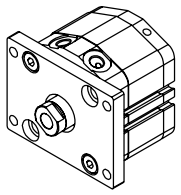
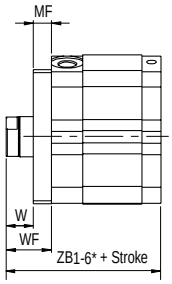
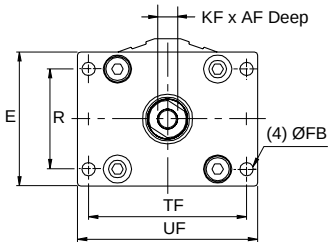
Front Flange Mounting – Style J



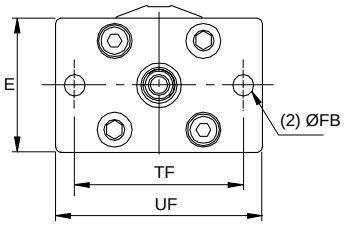
Please note bearing, piston and porting configuration for selecting proper dimensions.



Bores 32-100mm



Bores 12-25mm

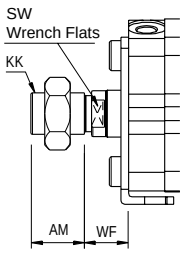


Bore size	E	FB	MF	R	TF	UF	ELP version Non-magnetic Both ports head ZB_1*	ELP version Non-magnetic Optional Porting ZB_2*	ELPversion Magnetic Both ports head ZB_3*	ELPversion Magnetic Optional porting ZB_4*	Long bearing Version Both ports head ZB_5*	Long bearing Version Optional porting ZB_6*	Style 5 rod end length adjustment	Part number
12	25	4.5	5.5	–	45	55	30.5	35.5	41.5	46.5	47	52	1.5	**P1M-4DMB**
16	30	4.5	5.5	–	45	55	32	37	43	48	49	54	2	**P1M-4FMB**
20	39	6.5	8	–	50.5	62	34	38.5	44	48.5	50	54.5	2	**P1M-4HMB**
25	42	6.5	8	–	53	65	37.5	43.5	47.5	53.5	51.5	57.5	2.5	**P1M-4JMB**
32	48	5.5	8	34	58	68	45.5	53.5	54.5	62.5	57	65	1	**P1M-4KMB**
40	54	5.5	8	40	66	76	46.5	54.5	56.5	64.5	58.5	66.5	1	**P1M-4LMB**
50	67	6.5	9	50	79	90	50.5	56.5	59.5	65.5	61.5	67.5	-0.5	**P1M-4MMB**
63	80	9	9	60	97	112	52	57.5	64	69.5	67	72.5	-0.5	**P1M-4NMB**
80	99	11	11	77	116	134	63	72	73.5	82.5	73.5	82.5	1	**P1M-4PMB**
100	117	11	11	94	137	154	70.5	79	85	93.5	85	93.5	-1	**P1M-4QMB**

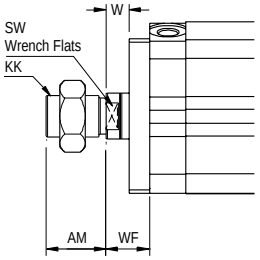
* Dimensions shown apply only for Rod End Styles 4, 6 and 9. For Rod End Style 5, please include the above length adjustment.

Rod End Front Mounts F & J

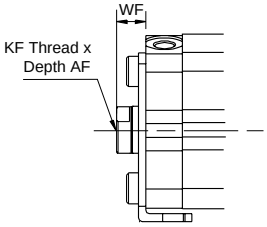
For special rod threads, specify "3" in model number and give desired AM or AF, WF and KK or KF.



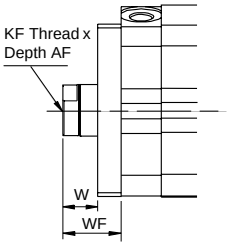
Foot Mounting - Style F



Foot Flange Mounting - Style J



Foot Mounting - Style F



Foot Flange Mounting - Style J

Bore size	AF Style 9	AF Style 6	AM Style 4	AM Style 5	KF Style 9	KF Style 6	KK Style 4	KK Style 5	W Styles 9, 6, 4	W Style 5	WF Styles 9, 6, 4	WF Style 5	SW
12	5.4	6	8	9	#8-32	M3X0.5	#8-32	M5X0.8	8	9.5	13.5	15	5
16	5.4	8	8	10	#8-32	M4x0.7	#8-32	M6x1.0	8	10	13.5	15.5	7
20	7	7	8	12	#10-32	M5x0.8	#10-32	M8x1.25	6.5	8.5	14.5	16.5	9
25	10	12	9.5	15	1/4-28	M6x1.0	1/4-28	M10x1.25	7	9.5	15	17.5	9
32	13.3	13	12.7	20.5	5/16-24	M8x1.25	5/16-24	M12x1.25	9	10	17	18	10
40	18.3	13	16	20.5	3/8-24	M8x1.25	3/8-24	M14x1.5	9	10	17	18	13
50	17.6	15	19.5	26	1/2-20	M10x1.5	1/2-20	M18x1.5	9	8.5	18	17.5	16
63	17.6	15	19.5	26	1/2-20	M10x1.5	1/2-20	M18x1.5	9	8.5	18	17.5	16
80	24.3	21	25.5	32.5	5/8-18	M16x2.0	5/8-18	M22x1.5	9	10	20	21	21
100	27	27	28.5	32.5	3/4-16	M20x2.5	3/4-16	M22x1.5	11	10	22	21	21

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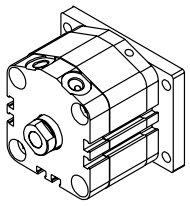
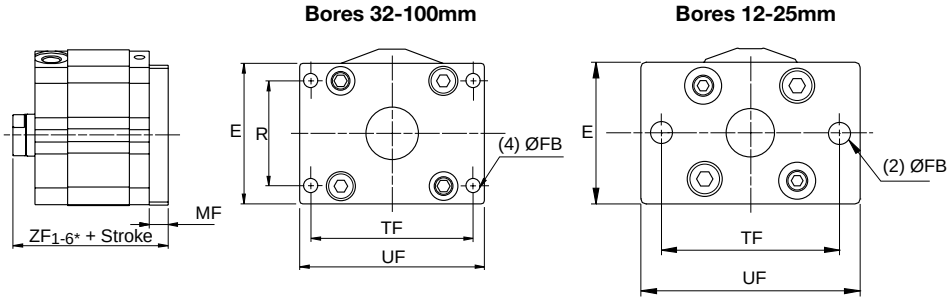
Rear Flange Mounting – Style H





Please note bearing, piston and porting configuration for selecting proper dimensions.

Bore size	E	FB	MF	R	TF	UF	Part number
12	25	4.5	5.5	–	45	55	**P1M-4DMB**
16	30	4.5	5.5	–	45	55	**P1M-4FMB**
20	39	6.5	8	–	50.5	62	**P1M-4HMB**
25	42	6.5	8	–	53	65	**P1M-4JMB**
32	48	5.5	8	34	58	68	**P1M-4KMB**
40	54	5.5	8	40	66	76	**P1M-4LMB**
50	67	6.5	9	50	79	90	**P1M-4MMB**
63	80	9	9	60	97	112	**P1M-4NMB**
80	99	11	11	77	116	134	**P1M-4PMB**
100	117	11	11	94	137	154	**P1M-4QMB**

	ELP version non-magnetic		ELP version magnetic		Long bearing version		
Bore size	Both ports head ZF_1*	Optional porting ZF_2*	Both ports head ZF_3*	Optional porting ZF_4*	Both ports head ZF_5*	Optional porting ZF_6*	Style 5 rod end length adjustment
12	26	31	37	42	42.5	47.5	1.5
16	27.5	32.5	38.5	43.5	44.5	49.5	2
20	32	36.5	42	46.5	48	52.5	2
25	35.5	41.5	45.5	51.5	49.5	55.5	2.5
32	43.5	51.5	52.5	60.5	55	63	1
40	44.5	52.5	54.5	62.5	56.5	64.5	1
50	49.5	55.5	58.5	64.5	60.5	66.5	-0.5
63	51	57.5	63	68.5	66	71.5	-0.5
80	64	73	74.5	83.5	74.5	83.5	1
100	71.5	80	86	94.5	86	94.5	-1

Note: Rear Flange mounting is not available with cap face porting.

* Dimensions shown apply only for Rod End Styles 4, 6 and 9.

For Rod End Style 5, please include the above length adjustment.

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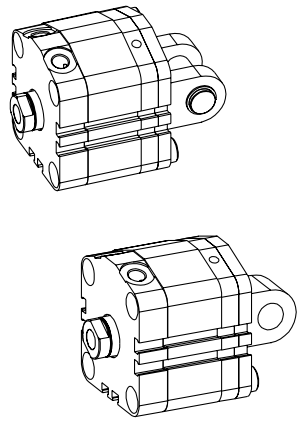
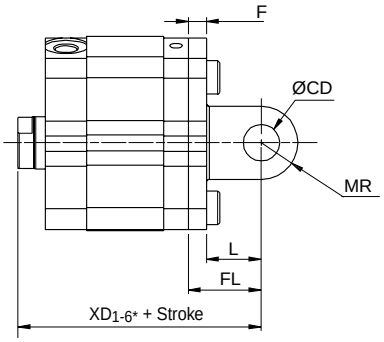
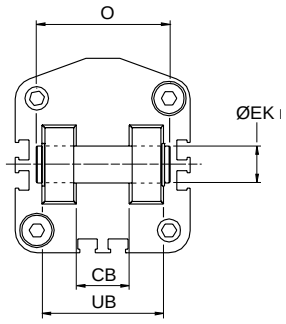
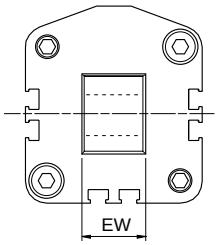
Rear Clevis Mounts – Styles A & B







Style A



Style B

Please note bearing, piston and porting configuration for selecting proper dimensions.

Bore size	CB	CD/EK	EW	F	FL	L	MR	O	UB	Double clevis kit part number	Single clevis kit part number**
12	5	5	5	4	14	10	6.5	14.5	10	**P1M-4DMT**	**P1M-4DME**
16	6.5	5	6.5	4	15	11	6.5	16.5	12	**P1M-4FMT**	**P1M-4FME**
20	8	8	8	5	18	13	10	21	16	**P1M-4HMT**	**P1M-4HME**
25	10	10	10	5	20	15	11	25.5	20	**P1M-4JMT**	**P1M-4JME**
32	18	10	18	5	20	15	10	41.5	36	**P1M-4KMT**	**P1M-4KME**
40	18	10	18	6	22	16	10	41.5	36	**P1M-4LMT**	**P1M-4LME**
50	22	14	22	7	28	21	14	50.5	44	**P1M-4MMT**	**P1M-4MME**
63	22	14	22	8	30	22	14	50.5	44	**P1M-4NMT**	**P1M-4NME**
80	28	18	28	10	38	28	18	64	56	**P1M-4PMT**	**P1M-4PME**
100	32	22	32	13	45	32	22	72	64	**P1M-4QMT**	**P1M-4QME**

	ELP version non-magnetic		ELP version magnetic		Long bearing version		
Bore size	Both ports head XD_1*	Optional porting XD_2*	Both ports head XD_3*	Optional porting XD_4*	Both ports head XD_5*	Optional porting XD_6*	Style 5 rod end length adjustment
12	34.5	39.5	45.5	50.5	51	56	1.5
16	37	42	48	53	54	59	2
20	42	46.5	52	56.5	58	62.5	2
25	47.5	53.5	57.5	63.5	61.5	67.5	2.5
32	55.5	63.5	64.5	72.5	67	75	1
40	59.5	66.5	68.5	76.5	70.5	78.5	1
50	68.5	74.5	77.5	83.5	79.5	85.5	-0.5
63	72	78.5	84	89.5	87	92.5	-0.5
80	91	100	101.5	110.5	101.5	110.5	1
100	105.5	114	120	128.5	120	128.5	-1

* Dimensions shown apply only for Rod End Styles 4, 6 and 9. For Rod End Style 5, please include the above length adjustment.

** Single Clevis Kit can be used as mounting bracket for double clevis cylinders. Double Clevis Kit can be used as mounting kit fo single clevis cylinders.

Note: Rear Clevis mounts are not available with cap face port.

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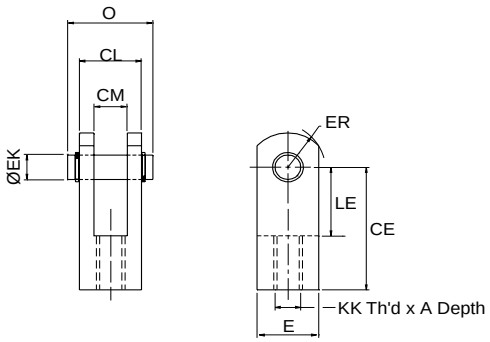
Rod Clevis



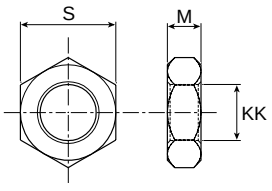
Metric

Bore size	A	E	CE	KK	ER	LE	EK (h9)	CM	CL	O	Part number
12	7	9.5	16	M5x0.8	6.5	7	5	5	9.5	14.5	**P1M-4DRC**
16	11	11	21	M6x1.0	8	10	5	6.5	11	16.5	**P1M-4FRC**
20	8.5	16	25	M8x1.25	10.5	11.5	8	8	16	21	**P1M-4HRC**
25	10.5	19	30	M10x1.25	13	14	10	10	19	25.5	**P1M-4JRC**
32	16	22 Dia.	30	M12x1.25	12	14	10	18	36	41.5	**P1M-4KRC**
40	16	22 Dia.	30	M14x1.5	12	14	10	18	36	41.5	**P1M-4LRC**
50/63	20	28 Dia.	40	M18x1.5	16	20	14	22	44	50.5	**P1M-4MRC**
80	23	38 Dia.	50	M22x1.5	21	27	18	28	56	64	**P1M-4PRC**
100	24	44 Dia.	55	M22x1.5	24	31	22	32	64	72	**P1M-4QRC**

Inch

Bore size	A	E	CE	KK	ER	LE	EK (inch) +0, -0.002	CM	CL (inch)	O (inch)	Part number
12	6	9.5	16	#8-32	6.5	7	3/16	5	0.375	0.563	**P1M-4DRC-T**
16	6	11	21	#8-32	8	10	3/16	6.5	0.437	0.625	**P1M-4FRC-T**
20	6	16	25	#10-32	10.5	11.5	5/16	8	0.625	0.875	**P1M-4HRC-T**
25	8	19	30	1/4-28	13	14	3/8	10	0.750	1.031	**P1M-4JRC-T**
32	16	22 Dia.	30	5/16-24	12	14	3/8	18	1.437	1.687	**P1M-4KRC-T**
40	16	22 Dia.	30	3/8-24	12	14	3/8	18	1.437	1.687	**P1M-4LRC-T**
50/63	20	28 Dia.	40	1/2-20	16	20	1/2	22	1.750	2.125	**P1M-4MRC-T**
80	23	38 Dia.	50	5/8-18	21	27	3/4	28	2.250	2.625	**P1M-4PRC-T**
100	24	44 Dia.	55	3/4-16	24	31	7/8	32	2.500	2.875	**P1M-4QRC-T**

Jam Nuts



Style 4

Bore size	KK	M	S	Part number
12	#8-32	1/8	11/32	**L073800080**
16	#8-32	1/8	11/32	**L073800080**
20	#10-32	1/8	3/8	**L073800100**
25	1/4-28	5/32	7/16	**L073800200**
32	5/16-24	3/16	1/2	**L073800300**
40	3/8-24	7/32	9/16	**L073800400**
50	1/2-20	5/16	3/4	**L073800600**
63	1/2-20	5/16	3/4	**L073800600**
80	5/8-18	3/8	15/16	**L073800800**
100	3/4-16	27/64	1-1/8	**L073800900**

Dimensions in inches

Style 5

Bore size	KK	M	S	Part number
12	M5x0.8	2.7	18	**L075540005**
16	M6x1.0	3.2	10	**L075540006**
20	M8x1.25	4	13	**L075540008**
25	M10x1.25	5	17	**L075540010**
32	M12x1.25	6	19	**L075540012**
40	M14x1.5	7	22	**L075540014**
50	M18x1.5	8	27	**L075540018**
63	M18x1.5	8	27	**L075540018**
80	M22x1.5	11	32	**L075540022**
100	M22x1.5	11	32	**L075540022**

Dimensions in mm

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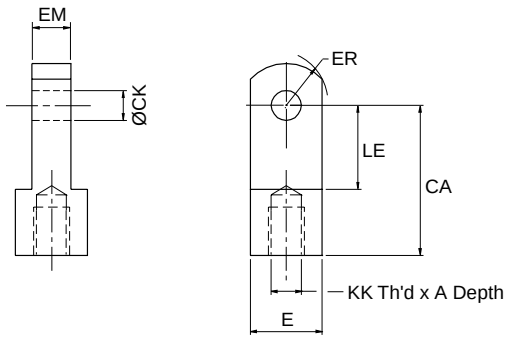
Rod Eye



Metric

Bore size	A	E	CA	KK	ER	LE	CK	EM	Part number
12	7	9.5 Sq.	16	M5x0.8	6.5	7	5	5	**P1M-4DRE**
16	8	11 Sq.	25	M6x1.0	8	14	5	6.5	**P1M-4FRE**
20	8.5	16 Sq.	25	M8x1.25	10.5	11.5	8	8	**P1M-4HRE**
25	10.5	19 Sq.	30	M10x1.25	13	14	10	10	**P1M-4JRE**
32	15	22 Dia.	30	M12x1.25	12	14	10	18	**P1M-4KRE**
40	14	22 Dia.	30	M14x1.5	12	14	10	18	**P1M-4LRE**
50/63	18.5	28 Dia.	40	M18x1.5	16	20	14	22	**P1M-4MRE**
80	22	38 Dia.	50	M22x1.5	21	27	18	28	**P1M-4PRE**
100	22	44 Dia.	55	M22x1.5	24	31	22	32	**P1M-4QRE**

Inch

Bore size	A	E	CA	KK	ER	LE	CK (inch)	EM	Part number
12	6	9.5 Sq.	16	#8-32	6.5	7	3/16	5	**P1M-4DRE-T**
16	6	11 Sq.	25	#8-32	8	14	3/16	6.5	**P1M-4FRE-T**
20	6	16 Sq.	25	#10-32	10.5	11.5	5/16	8	**P1M-4HRE-T**
25	8	19 Sq.	30	1/4-28	13	14	3/8	10	**P1M-4JRE-T**
32	12	22 Dia.	30	5/16-24	12	14	3/8	18	**P1M-4KRE-T**
40	11	22 Dia.	30	3/8-24	12	14	3/8	18	**P1M-4LRE-T**
50/63	18	28 Dia.	40	1/2-20	16	20	1/2	22	**P1M-4MRE-T**
80	21	38 Dia.	50	5/8-18	21	27	3/4	28	**P1M-4PRE-T**
100	21	44 Dia.	55	3/4-16	24	31	7/8	32	**P1M-4QRE-T**

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LP/LPM Series

- Low profile design
- Flexible construction with special modification capability
- High density iron rod bearing provides maximum support for longer life
- Single and double acting versions available
- 6 mounting styles
- 8 bore sizes from 9/16" to 4"
- Strokes from 1/8" to 6"
- Permanent lubrication
- Non-lube service

Operating information

Operating pressure:		200 PSIG (17 bar)
Temperature range:	LP	-10°F to 200°F (-23°C to 93°C)
	LPM	-10°F to 140°F (-23°C to 60°C)
Filtration requirements:		40 micron, dry filtered air

Ordering information

1.50	K	N	LP	L	V	B	E	S	9	1.25"

Bore size

0.56	9/16"
0.75	3/4"
1.12	1-1/8"
1.50	1-1/2"
2.00	2"
2.50	2-1/2"
3.00	3"
4.00	4"

Double rod cylinder

Blank	Single rod
K	Double rod

Mounting style

N	Basic (Std.)
Single rod styles	
4F	Head bolt
4R	Cap bolt
2F	Head trunnion [1]
2R	Cap trunnion [1]
1	Cap pivot eye
Double rod styles	
N	Basic
4R	Cap bolt
2F	Head trunnion
Hollow rod styles [1,2,5]	
NH	Basic
4RH	Cap bolt
2FH	Head trunnion

Series

LP	Standard
LPM	Magnetic Piston [5]

Piston seal

Blank	Standard seal
L	Lipseal piston seal [3]

Seals

Blank	Standard
V	Class 5 seals

Bumpers*

Blank	No bumpers
B	Bumpers both ends
H	Head end only
C	Cap end only [4]

* Please reference catalog 0900P-E, page E60 for stroke reduction.

Spring

Blank	None
E	Spring extended
R	Spring return

Special features

Blank	No special feature
S	Special feature

Rod end thread style

9	Standard female rod end
4	Optional male rod end
3	Special rod end (specify dimensions or sketch)

Stroke length

Specify stroke length required in inches.

1 Not available on 9/16" bore.
2 Hollow rods are used on double rod cylinders. All hollow rod options require the double rod prefix "K".
3 Lipseal piston is not available on LPM Series.
4 Not available on spring extend.
5 LPM Series with hollow rod option are not available on the 9/16", 3/4" and 1-1/8" bore sizes.

Note: For sensor specifications and part numbers, please refer to the Electronic Sensors section.

Sensors

For sensors see page B339.

For ordering purposes, when special options or common modifications are requested, the factory will assign a sequential part number in place of the model number.

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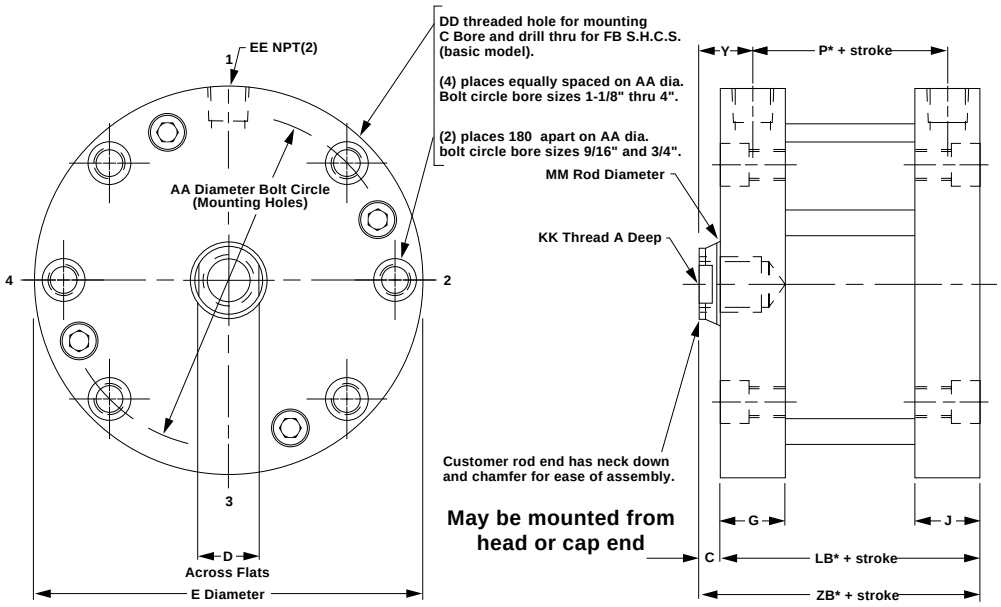
Mounting Style N

Cylinder Dimensions
Double Acting
Single Rod End,
Female Rod Style No. 9

Temperature: -10°F to 200°F (optional Fluorocarbon seals). All air cylinders are permanently lubricated. LPM Series maximum temperature 140°F.



Bore size	A	C	D	E	G	J	P*	Y	AA	DD	EE	FB	KK	LB*	MM	ZB*
9/16	0.40	1/8	7/32	1-1/8	23/64	23/64	11/32	17/64	0.875	#8-32	#10-32	#4	#8-32	5/8	1/4	3/4
3/4	0.44	1/8	1/4	1-1/2	23/64	23/64	3/8	17/64	1.219	#10-32	#10-32	#6	#10-32	21/32	5/16	25/32
1-1/8	0.62	1/8	7/16	2	1/2	1/2	27/64	3/8	1.687	#10-32	1/8	#6	5/16-24	59/64	1/2	1-3/64
1-1/2	0.62	1/8	1/2	2-5/8	1/2	1/2	1/2	3/8	2.187	1/4-28	1/8	#10	3/8-24	1	5/8	1-1/8
2	0.70†	1/8	5/8	3-1/8	1/2	1/2	9/16	3/8	2.687	1/4-28	1/8	#10	1/2-20	1-1/16	3/4	1-3/16
2-1/2	0.70†	1/8	5/8	3-3/4	5/8	5/8	5/8	7/16	3.250	5/16-24	1/4	1/4	1/2-20	1-1/4	3/4	1-3/8
3	0.75†	1/8	3/4	4-1/4	43/64	43/64	21/32	7/16	3.781	5/16-24	1/4	1/4	5/8-18	1-9/32	7/8	1-13/32
4	0.75†	1/8	7/8	5-1/2	27/32	27/32	49/64	17/32	4.937	3/8-24	3/8	5/16	3/4-16	1-5/8	1	1-3/4

* These dimensions are for the LP Series with standard piston.
† For strokes less than 0.25", A dimension = 0.66".

Added length table for LPM or lipseal piston options

Bore size	LPM option*						LP with lipseal piston option				
	P	LB	XD	XJ	ZB	Stroke	P	LB	XD	XJ	ZB
9/16†	15/16	1-7/32	2	–	1-11/32	1/2	5/8	29/32	1-11/16	–	1-1/32
3/4†	31/32	1-1/4	2-1/32	1-3/16	1-3/8	1/2	21/32	15/16	1-23/32	7/8	1-1/16
1-1/8†	63/64	1-31/64	2-3/8	1-23/64	1-39/64	9/16	43/64	1-11/64	2-1/16	1-3/64	1-19/64
1-1/2	1-1/8	1-5/8	2-13/16	1-1/2	1-3/4	7/16	13/16	1-5/16	2-1/2	1-3/16	1-7/16
2	1-9/32	1-25/32	3-1/32	1-21/32	1-29/32	7/16	61/64	1-29/64	2-45/64	1-21/64	1-37/64
2-1/2	1-21/64	1-61/64	3-21/64	1-3/4	2-5/64	1/2	1	1-5/8	3	1-27/64	1-3/4
3	1-27/64	2-3/64	3-53/64	1-53/64	2-11/64	1/2	1-3/32	1-23/32	3-1/2	1-1/2	1-27/32
4	1-1/2	2-23/64	4-11/64	2	2-31/64	1/2	1-11/64	2-1/32	3-27/32	1-43/64	2-5/32

Note minimum strokes for LPM option.
† These bore sizes not available for the LPM option with the hollow rod option.
* The LPM option is only available with the standard quad seal.

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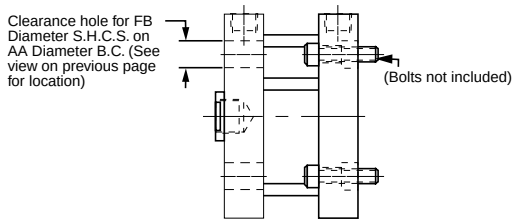
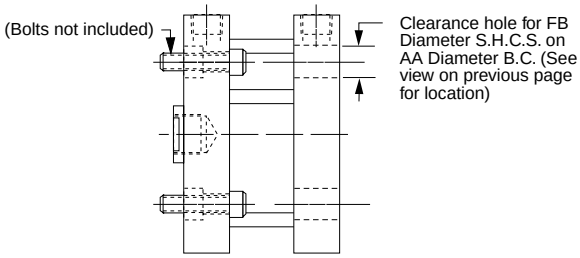
Head Bolt Clearance Holes

Mounting Style 4F
Available Head End



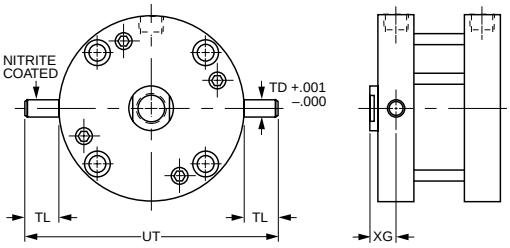
Cap Bolt Clearance Holes

Mounting Style 4R
Available Cap End



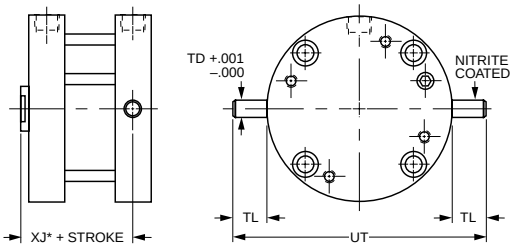
Head Trunnion

Mounting Style 2F (9/16" bore not available)



Cap Trunnion

Mounting Style 2R (9/16" bore not available)

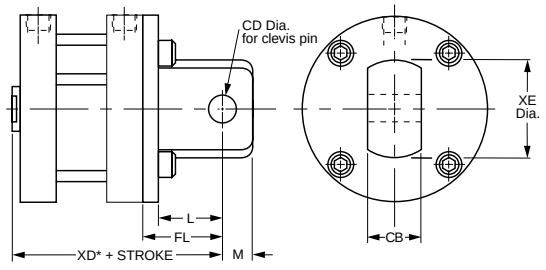


Bore size	TD	TL	UT	XG	XJ*
3/4	0.125	5/16	2-1/8	5/16	19/32
1-1/8	0.250	1/2	3	3/8	51/64
1-1/2	0.250	1/2	3-5/8	3/8	7/8
2	0.250	1/2	4-1/8	3/8	15/16
2-1/2	0.312	5/8	5	29/64	1-3/64
3	0.312	5/8	5-1/2	15/32	1-1/16
4	0.375	3/4	7	35/64	1-17/64

* These dimensions are for the LP Series with standard piston.

Cap Pivot Eye

Mounting Style 1



Bore size	L	M	CB	CD	FL	XD*	XE
9/16	1/2	1/4	3/8	3/16	21/32	1-13/32	19/32
3/4	1/2	1/4	3/8	3/16	21/32	1-7/16	3/4
1-1/8	1/2	1/4	3/8	3/16	49/64	1-13/16	3/4
1-1/2	13/16	7/16	3/4	3/8	1-1/16	2-3/16	1-3/8
2	13/16	7/16	3/4	3/8	1-1/8	2-5/16	1-3/8
2-1/2	13/16	7/16	3/4	3/8	1-1/4	2-5/8	1-3/8
3	1-9/32	9/16	1	5/8	1-21/32	3-1/16	1-7/8
4	1-9/32	9/16	1	5/8	1-11/16	3-7/16	1-7/8

Order clevis pin from accessories when required.
* These dimensions are for the LP Series with standard piston. See table on the previous page for dimensions for the lipseal piston or LPM options.

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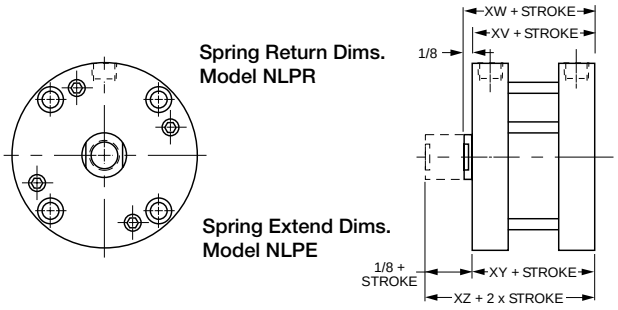
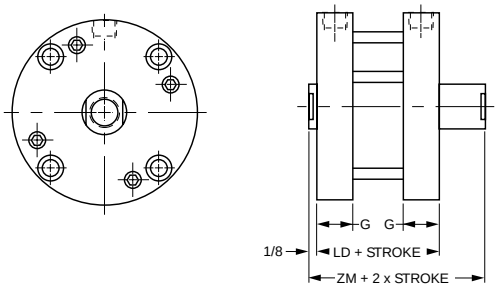
Spring Extend & Spring Return Cylinders
(Available through 2" stroke)



Double Rod Spring Extend & Spring Return Cylinders
(Available through 2" stroke)



Bore size	1/8" to 1" stroke XV	XW	XY	XZ	Over 1" to 2" stroke XV	XW	XY	XZ	Add this length to XV, XW, XY, XZ for Lipseal Piston
9/16	1	1-1/8	57/64	1-1/64	1-11/16	1-13/16	1-37/64	1-45/64	9/32
3/4	1-1/64	1-9/64	59/64	1-3/64	1-45/64	1-53/64	1-39/64	1-47/64	9/32
1-1/8	1-23/64	1-31/64	1-9/32	1-13/32	1-63/64	2-7/64	1-29/32	2-1/32	1/4
1-1/2	1-25/64	1-33/64	1-11/32	1-15/32	2-1/64	2-9/64	1-31/32	2-3/32	5/16
2	1-11/64	1-19/64	1-13/32	1-17/32	1-51/64	1-59/64	2-1/32	2-5/32	25/64
2-1/2	1-3/8	1-1/2	1-23/32	1-27/32	2	2-1/8	2-11/32	2-15/64	3/8
3	1-1/2	1-5/8	1-55/64	1-63/64	2-1/8	2-1/4	2-31/64	2-39/64	7/16
4	1-27/32	1-31/32	2-13/64	2-21/64	2-15/32	2-19/32	2-53/64	2-61/64	13/32

Bore size	G	Spring return/extend – LP ≥ 1/8", ≤ 1" LD	ZM	Min.* stroke	<1", ≤ 2" LD	ZM	Spring return/extend – LPM ≥ 1/8", >1" LD	ZM	Min.* stroke	>1", ≤ 2" LD	ZM
9/16	23/64	1-1/8	1-3/8	5/16	1-13/16	2-1/16	1-23/32	1-27/32	3/16	2-13/32	2-17/32
3/4	23/64	1-11/64	1-27/64	1/8	1-55/64	2-7/64	1-49/64	1-57/64	3/16	2-29/64	2-37/64
1-1/8	1/2	1-1/2	1-3/4	1/8	2-1/8	2-3/8	2-1/16	2-3/16	1/8	2-11/16	2-13/16
1-1/2	1/2	1-11/16	1-15/16	1/8	2-5/16	2-9/16	2-5/16	2-7/16	1/4	2-15/16	3-1/16
2	1/2	1-31/64	1-47/64	1/8	2-7/64	2-23/64	2-13/64	2-21/64	1/4	2-53/64	2-61/64
2-1/2	5/8	1-3/4	2	1/8	2-3/8	2-5/8	2-29/64	2-37/64	3/16	3-5/64	3-13/64
3	43/64	1-29/32	2-5/32	1/8	2-17/32	2-25/32	2-43/64	2-51/64	1/8	3-19/64	3-27/64
4	27/32	2-1/4	2-1/2	1/8	2-7/8	3-1/8	2-63/64	3-7/64	1/8	3-39/64	3- 47/64

* Note minimum strokes for LPM option.

Spring force data

1/8" to 1" stroke Bore size	Max. Spring force (lbs)	Spring rate (lb/in)	Over 1" to 2" stroke Bore dia.	Max. Spring force (lbs)	Spring rate (lb/in)
9/16	5.7	4.25	9/16	5.7	1.75
3/4	9	6	3/4	9	2.5
1-1/8	10	6	1-1/8	10	2.5
1-1/2	13	5.5	1-1/2	12	2.25
2	13	5.5	2	12	2.25
2-1/2	17.5	6	2-1/2	16	2.5
3 & 4	24	6.5	3 & 4	23	2.75

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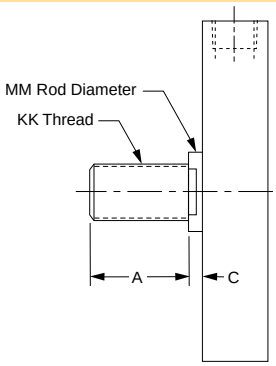
Optional Male Rod End

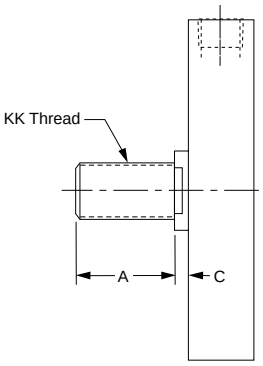
Specify #4



Bore size	A	C	KK	MM
9/16	0.38	1/8	#8-32	1/4
3/4	0.50	1/8	#10-32	5/16
1-1/8	0.50	1/8	5/16-24	1/2
1-1/2	0.50	1/8	3/8-24	5/8
2	0.62	1/8	1/2-20	3/4
2-1/2	0.62	1/8	1/2-20	3/4
3	0.75	1/8	5/8-18	7/8
4	0.75	1/8	3/4-16	1

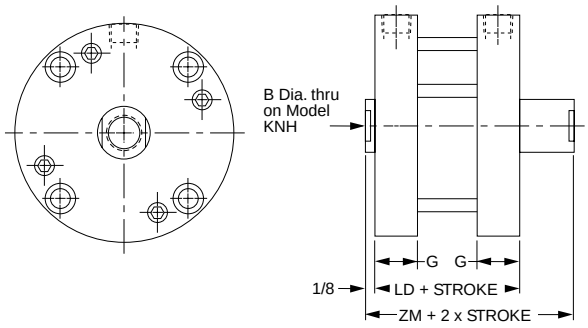
Non-standard Rods

For non-standard rod ends, please specify rod thread style 3 and provide the KK, A, and C dimensions as needed.



Double or Hollow Rod Cylinders

Note: Cylinders with hollow rod option should not be bottomed out during stroke.



LP double or hollow rod option, LPM, lipseal piston

Bore size	B	G	Standard double rod end or with hollow rod		LPM option		LP with lipseal piston option	
			LD	ZM	LD	ZM	LD	ZM
9/16	*	23/64	3/4	1	1-11/32	1-15/32	1-1/32	1-9/32
3/4	9/64	23/64	13/16	1-1/16	1-13/32	1-17/32	1-3/32	1-11/32
1-1/8	7/32	1/2	1-3/16	1-7/16	1-3/4	1-7/8	1-7/16	1-11/16
1-1/2	9/32	1/2	1-19/64	1-35/64	1-59/64	2-3/64	1-39/64	1-55/64
2	3/8	1/2	1-3/8	1-5/8	2-3/32	2-7/32	1-49/64	2-1/64
2-1/2	3/8	5/8	1-5/8	1-7/8	2-21/64	2-29/64	2	2-1/4
3	7/16	43/64	1-11/16	1-15/16	2-29/64	2-37/64	2-1/8	2-3/8
4	1/2	27/32	2-1/32	2-9/32	2-49/64	2-57/64	2-7/16	2-11/16

*Hollow rod not available on 9/16" bore.

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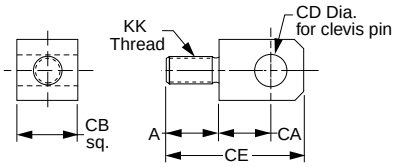
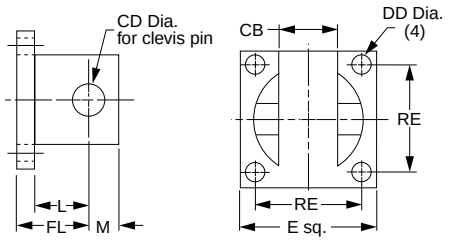
Rod Eye



Bore size	A	CA	CB	CD	CE	KK	Part number
9/16	3/8	15/32	3/8	3/16	1-3/32	#8-32	**L073810008**
3/4	3/8	15/32	3/8	3/16	1-3/32	#10-32	**L073810010**
1-1/8	9/16	15/32	3/8	3/16	1-9/32	5/16-24	**L073810020**
1-1/2	5/8	23/32	3/4	3/8	1-25/32	3/8-24	**L073810024**
2-2-1/2	21/32	23/32	3/4	3/8	1-27/32	1/2-20	**L073810032**
3	21/32	1	1	5/8	2-3/8	5/8-18	**L073810040**
4	21/32	1	1	5/8	2-3/8	3/4-16	**L073810048**

Clevis Bracket

(Supplied with Pin)

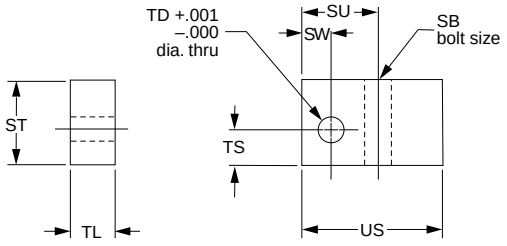


E	L	M	CB	CD	DD	FL	RE	Part number
1	13/32	7/32	25/64	3/16	9/64	9/16	3/4	**L073820012**
1-3/4	25/32	13/32	49/64	3/8	11/64	15/16	1-3/8	**L073820024**
2-1/2	1	9/16	1-1/64	5/8	17/64	1-1/4	2	**L073820040**

Use L073820012 on 9/16", 3/4" and 1-1/8" bore.
Use L073820024 on 1-1/2", 2" and 2-1/2" bore.
Use L073820040 on 3" and 4" bore.

Note: The Clevis Bracket is an accessory for the rod eye or the cap pivot eye and cannot be mounted directly to the cylinder.

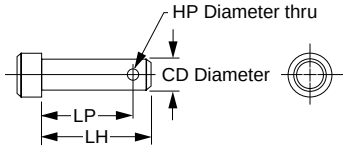
Trunnion Bracket



SB	ST	SU	SW	TD	TL	TS	US	Part number
1/4	7/8	13/16	5/16	.252	1/2	3/8	1-1/2	**L073840016**
5/16	1	15/16	3/8	.314	5/8	29/64	1-5/8	**L073840020**
3/8	1-1/4	1- 1/16	7/16	.377	3/4	35/64	1-7/8	**L073840024**

Use L073840016 on 1-1/8", 1-1/2" and 2" bore.
Use L073840020 on 2- 1/2" and 3" bore.
Use L073840024 on 4" bore.

Clevis Pin



CD	HP	LH	LP	Part number
3/16	3/32	1	29/32	**L073830012**
3/8	5/32	1-5/8	1-15/32	**L073830024**
5/8	5/32	2	1-27/32	**L073830040**

Service Kits

		Standard piston, single rod cylinders		Lipseal piston, single rod cylinders	
Bore size	Rod dia.	Class 1 seals part number	Class 5 seals part number	Class 1 seals part number	Class 5 seals part number
9/16	1/4"	**SKS05LP251**	**SKS05LP255**	**KS05LPL251**	**KS05LPL255**
3/4	5/16"	**SKS07LP311**	**SKS07LP315**	**KS07LPL311**	**KS07LPL315**
1-1/8	1/2"	**SKS12LP501**	**SKS12LP505**	**KS12LPL501**	**KS12LPL505**
1-1/2	5/8"	**SKS15LP621**	**SKS15LP625**	**KS15LPL621**	**KS15LPL625**
2	3/4"	**SKS20LP751**	**SKS20LP755**	**KS20LPL751**	**KS20LPL755**
2-1/2	3/4"	**SKS25LP751**	**SKS25LP755**	**KS25LPL751**	**KS25LPL755**
3	7/8"	**SKS30LP871**	**SKS30LP875**	**KS30LPL871**	**KS30LPL875**
4	1"	**SKS40LP101**	**SKS40LP105**	**KS40LPL101**	**KS40LPL105**

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P5T Series

- Compact guided cylinder for short stroke applications
- 9 Bore sizes, 16mm to 200mm
- Strokes 10 to 100mm depending on model
- Standard dowel holes on body and tool plate
- High load bearing option
- Internal bumpers and magnetic piston are standard
- Flexible porting: top, rear, side

Operating information

Operating pressure:	1 MPa (145 PSIG / 10 bar)
Temperature range:	
Nitrile seals (standard)	0°F to 165°F (-18°C to 74°C)
Fluorocarbon seals*	0°F to 250°F (-18°C to 121°C)
* See fluorocarbon seal option for high temperature applications.	
Filtration requirements:	40 micron, dry filtered air

Ordering information

P5T – J 032 D H S N R 100

Shaft / bearing type	
J	Composite bearing, chrome plated shaft (std)
H	Ball bearing, stainless steel shaft
C	Composite bearing, stainless steel shaft

Bore size	
016	16mm
020	20mm
025	25mm
032	32mm
040	40mm
050	50mm
063	63mm
080	80mm
100	100mm

Port location / mounting	
D	Dowel holes, top ports (std)
R	Dowel holes, rear ports, top plugged (std)
S	Dowel holes, side ports [1] and top ports

Seals	
S	Nitrile (std)
F	Fluorocarbon (high temp)

Options	
N	None (std)
B	High load bearings [2]
A	Bumpers, adjustable stop collars (extend only) and dual tool plate (side ports rec) [3, 4]
E	Bumpers and adjustable stop collars (extend only) [3]
G	High load bearings, bumpers and adjustable stop collars (extend only) [2, 3]
D	Dual tool plate [3, 4]
X	Special

Stroke length
See table below for standard stroke lengths. Consult factory for special stroke lengths.

Port style	
H	NPTF (std)
G	BSPP
P	Flow control, BSPP port, prestolok tube (mm) [1]
F	Flow control, NPTF port, prestolok tube (inch) [1]
B	Flow control, BSPP [1]
N	Flow control, NPTF [1]

Rod lock and stroke type	
Blank	Standard stroke (std hsg), or special stroke (custom hsg)
R	Standard stroke (std hsg) with rod lock
T	Special stroke (std hsg) [5]
B	Special stroke (std hsg) with rod lock [5]

Standard strokes (mm)*										
Bore size (mm)	10	25	40	50	75	100	125	150	175	200
16	•	•	•	•	•	•				
20		•	•	•	•	•	•			
25		•		•	•	•	•	•		
32 -100		•		•	•	•	•	•	•	•

* Consult factory for special stroke lengths.

NOTES:
1. Cannot combine flow controls, side ports and 25mm stroke.
2. Not available with rear mounting and ports.
3. Not available with rear port location (R).
4. Includes high load bearings as standard.
5. Dimensions for special stroke length actuators will be the same as those of the next longest stroke actuator.

Sensors

For sensors see page B339.

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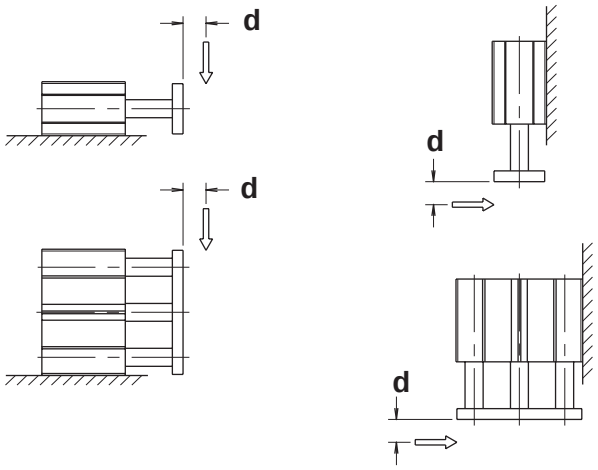
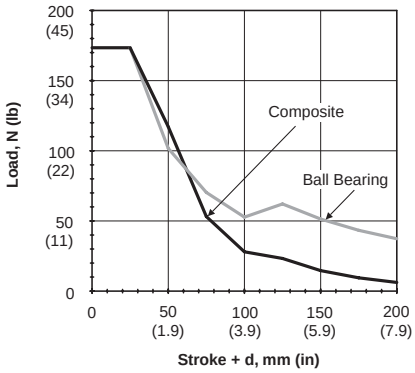
Horizontal Load Capacity
Standard Unit

P5T Series units will have the same load capacity regardless of orientation. The graphs below show maximum load capacity based on a unit life of 10 million cycles .

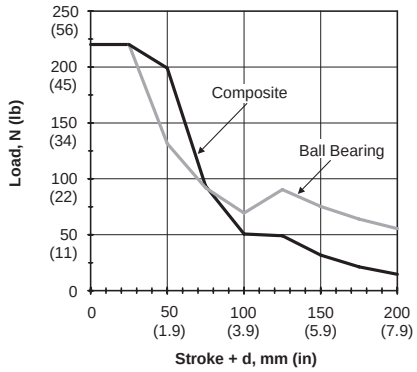
EXAMPLE: A P5T-16 with "stroke + d" of 75mm and composite bushings would have a load capacity of 50N.



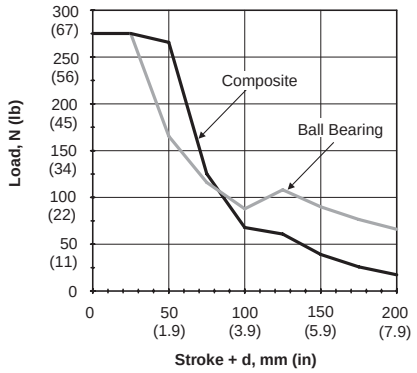
16mm Bore Size



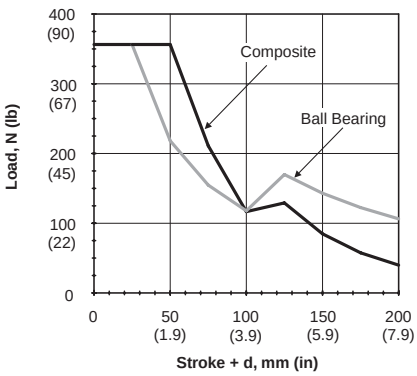
20mm Bore Size



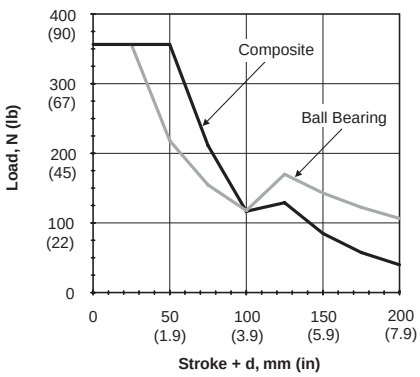
25mm Bore Size



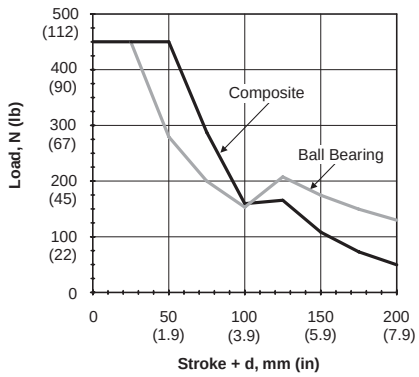
32mm Bore Size



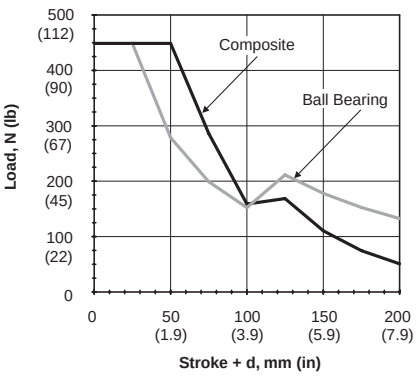
40mm Bore Size



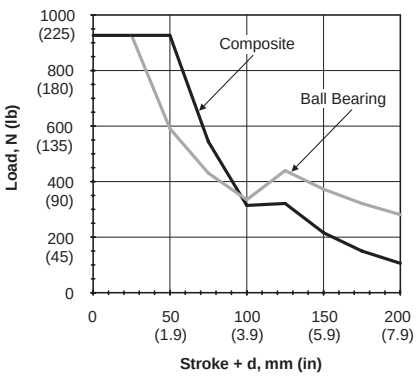
50mm Bore Size



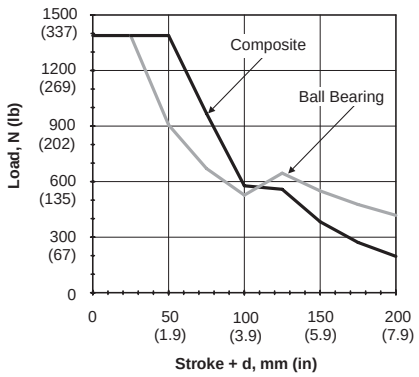
63mm Bore Size



80mm Bore Size



100mm Bore Size



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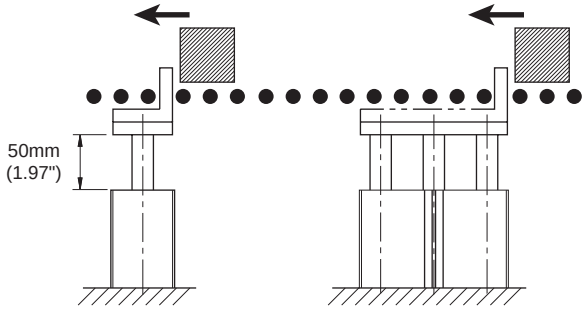
Load Stopping Capacity Standard Unit

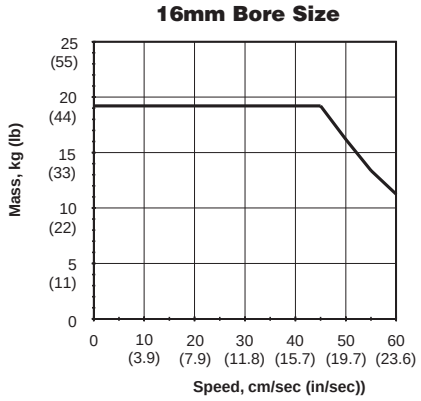
P5T Series actuators are ideal for conveyor stopping applications. Units can be mounted horizontally or vertically.

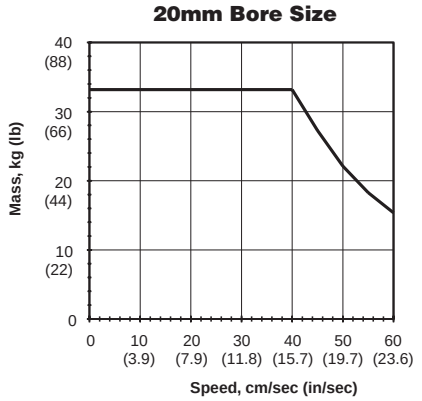
Composite bushings are strongly recommended for this type of application.

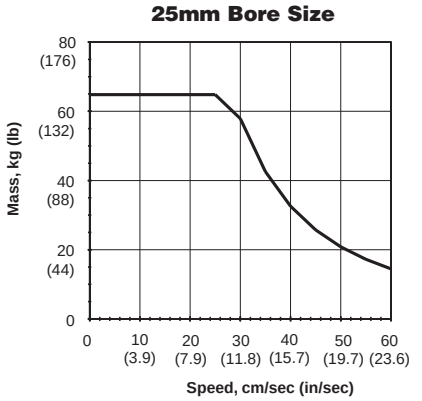
EXAMPLE: A P5T-50 unit with a stroke up to 50mm will stop an object moving at 40 cm/second (15.75 in/s) that weighs up to 50 kg (110 lb).

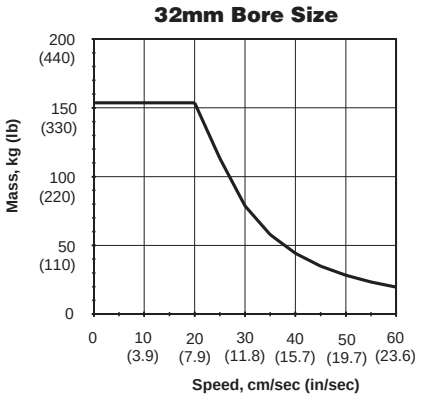
Note: The following graphs are based on 50mm of stroke.

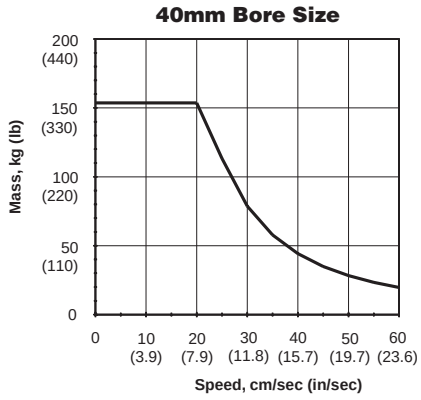


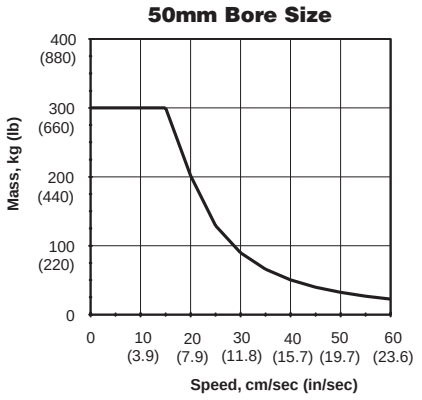


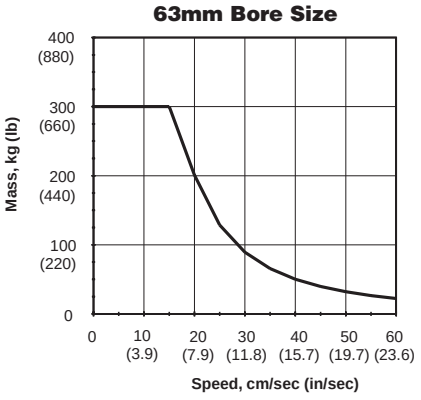


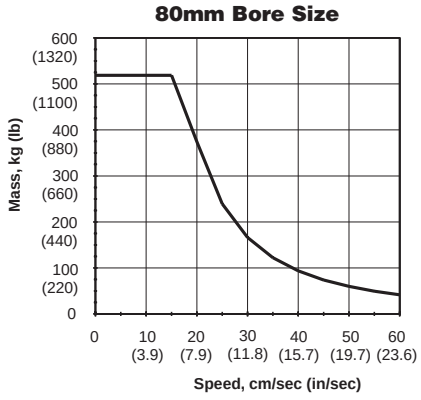


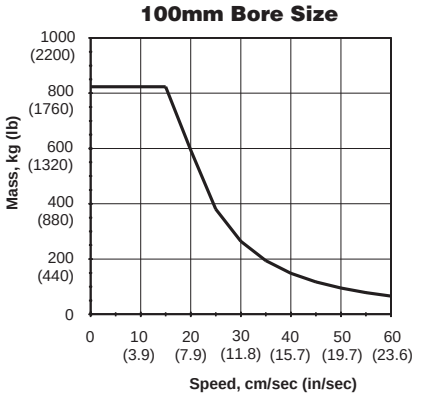












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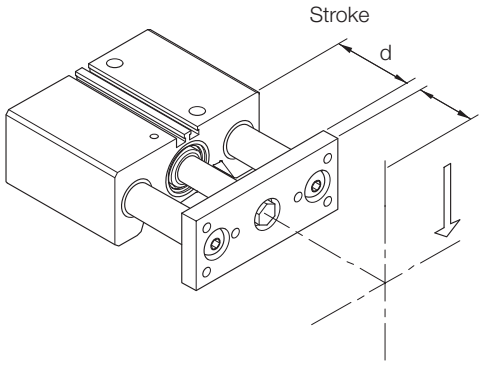
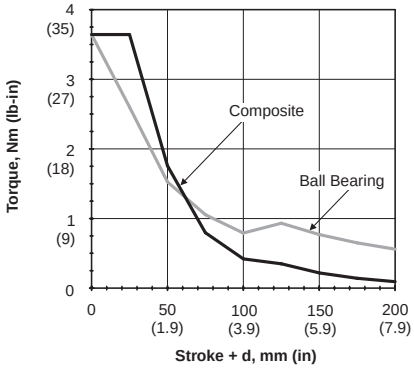
Asymmetrical Torque Capacity Standard Unit

Asymmetrical loading occurs when the load is applied to one side of the unit. P5T Series units can resist torsional loads that are asymmetrical.

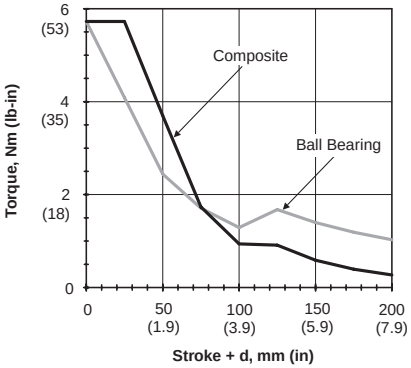
EXAMPLE: A mechanism exerts an asymmetrical load of 15Nm on a P5T-50 with 50mm "stroke+d". The P5T-50 with composite bushings will have adequate torsional capacity.



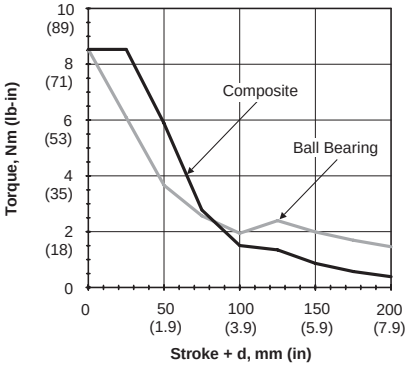
16mm Bore Size



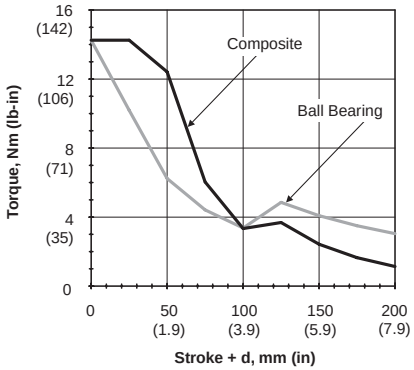
20mm Bore Size



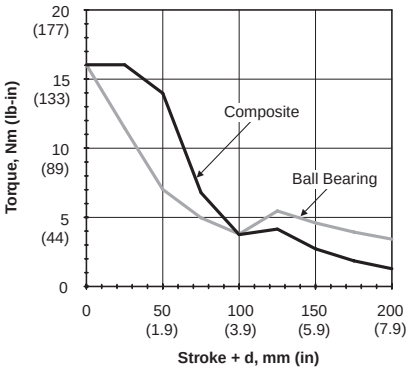
25mm Bore Size



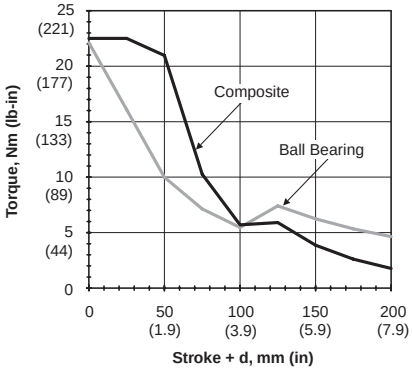
32mm Bore Size



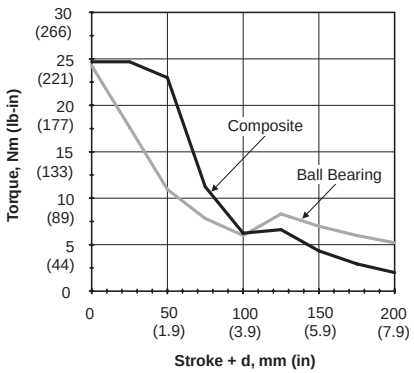
40mm Bore Size



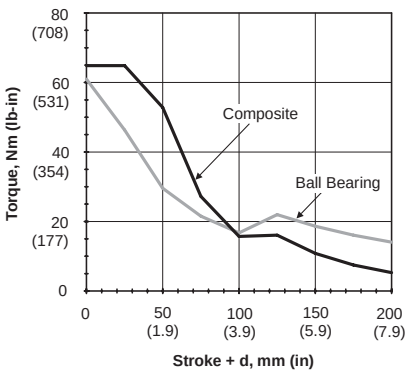
50mm Bore Size



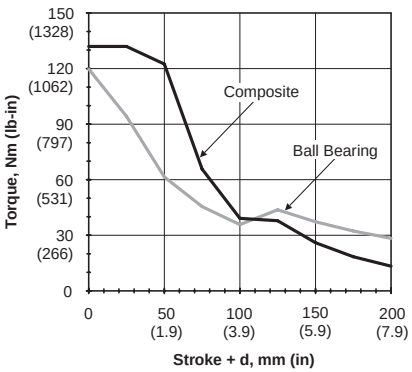
63mm Bore Size



80mm Bore Size



100mm Bore Size



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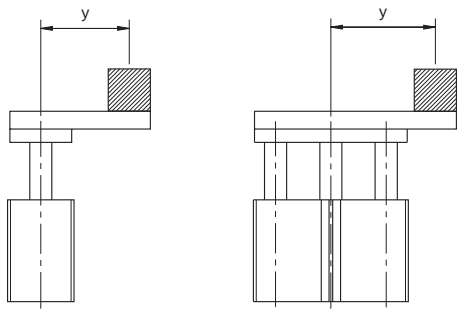
Vertical Eccentric Load Capacity Standard Unit

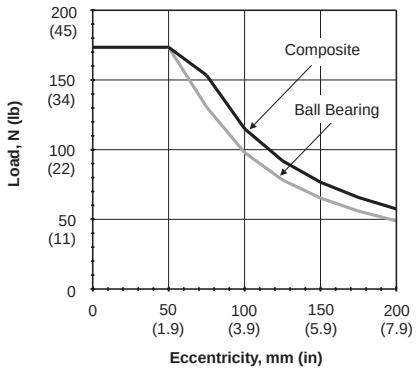
P5T Series units mounted vertically will have the same eccentric load capacity regardless of orientation. The graphs provide maximum load capacity for an eccentric mounted load. The load is assumed to be mounted at the face of the tooling plate.

These load curves illustrate load ratings based on the bearing system of the product. Load rating is a key selection criterion but is not the only one to consider in the selection of a product.

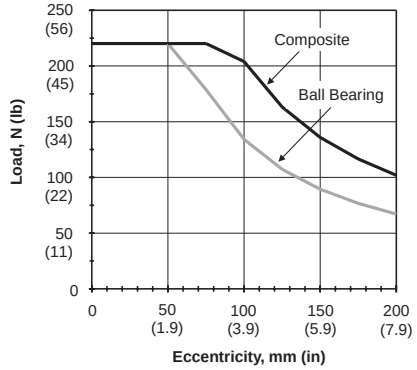


y = eccentricity distance

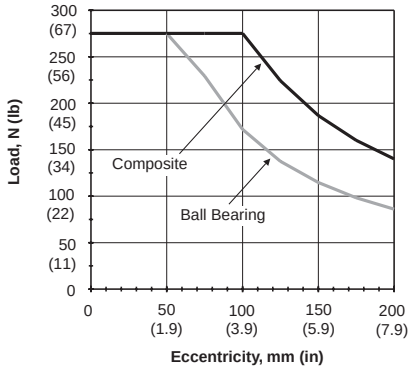
16mm Bore Size



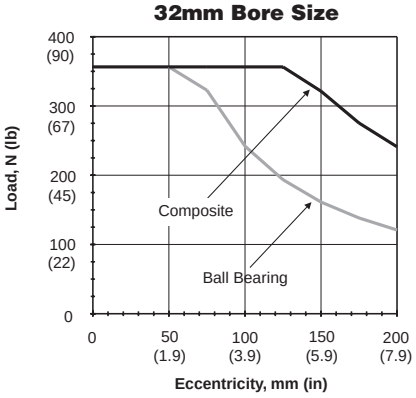
20mm Bore Size



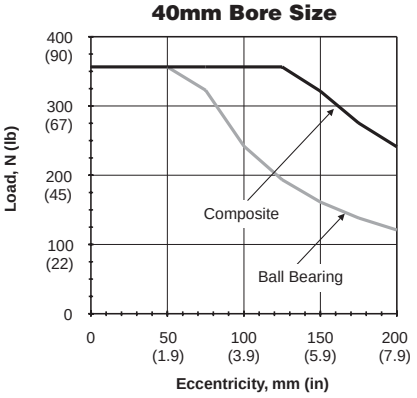
25mm Bore Size



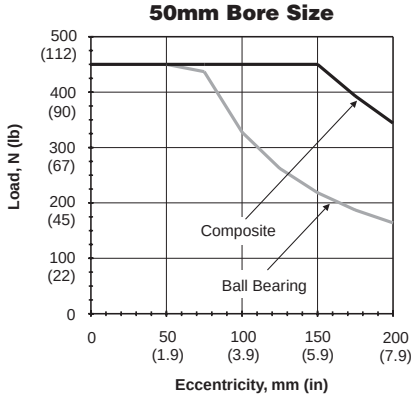
32mm Bore Size



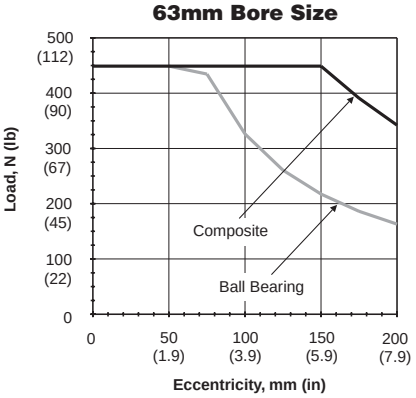
40mm Bore Size



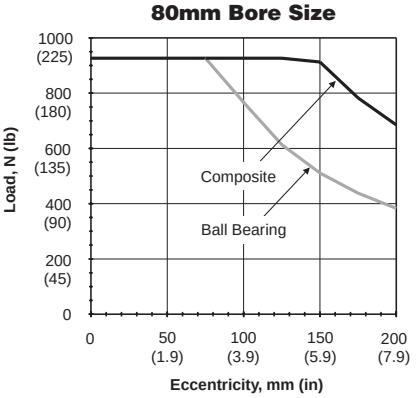
50mm Bore Size



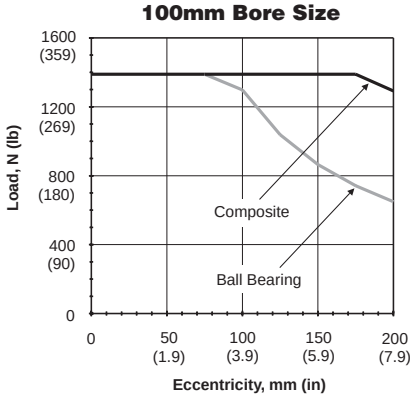
63mm Bore Size



80mm Bore Size



100mm Bore Size



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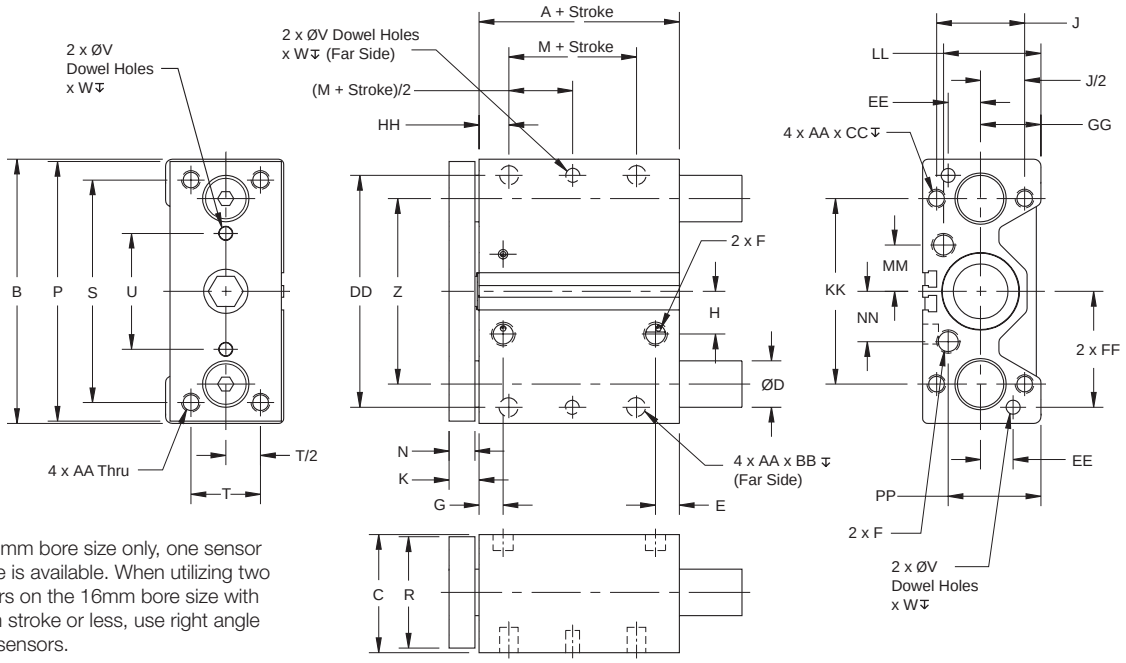

Note: On 16mm bore size only, one sensor groove is available. When utilizing two sensors on the 16mm bore size with 25mm stroke or less, use right angle short sensors.

Dimensions in mm (inch)

Note: Dimensions for special stroke length actuators will be the same as those of the next longest stroke actuator.

Model	A**	B	C	D	D²	E**	F	G	H	J	K
16	37.75 (1.49)	64 (2.52)	31 (1.22)	8 (0.315)	10 (0.394)	10.1 (0.40)	M5/10-32	10.1 (0.40)	6.95 (0.27)	22 (0.866)	9.94 (0.39)
20	36 (1.42)	74 (2.91)	36 (1.42)	10 (0.394)	12 (0.472)	19 (0.75)	1/8 NPTF or BSPP	10 (0.39)	15.8 (0.62)	26 (1.024)	9.94 (0.39)
25	38 (1.50)	88 (3.46	42 (1.65)	12 (0.472)	16 (0.630)	21 (0.83)	1/8 NPTF or BSPP	11.4 (0.45)	15.5 (0.61)	32 (1.260)	9.94 (0.39)
32	36 (1.42)	114 (4.49)	51 (2.00)	16 (0.630)	20 (0.787)	10.26 (0.40)	1/8 NPTF or BSPP	10.35 (0.41)	18.42 (0.73)	38 (1.496)	13.1 (0.52)
40	44 (1.73)	124 (4.88)	52 (2.05)	16 (0.630)	20 (0.787)	12.10 (0.48)	1/8 NPTF or BSPP	14.9 (0.59)	22.53 (0.89)	38 (1.496)	13.1 (.052)
50	44.9 (1.77)	140 (5.51)	62 (2.44)	20 (0.787)	25 (0.984)	14.5 (0.57)	1/4 NPTF or BSPP	16.1 (0.63)	27 (1.06)	44 (1.732)	14.7 (0.58)
63	50.05 (1.97)	150 (5.91)	75 (2.95)	20 (0.787)	25 (0.984)	16.4 (0.65)	1/4 NPTF or BSPP	14.5 (0.57)	33 (1.30)	44 (1.732)	14.7 (0.58)
80	60.3 (2.37)	188 (7.40)	95 (3.74)	25 (0.984)	30 (1.181)	17.5 (0.610)	3/8 NPTF or BSPP	19 (0.75)	37 (1.46)	56 (2.205)	18 (0.71)
100**	67.5 (2.60)	224 (8.82)	115 (4.53)	30 (1.181)	35 (1.38)	21.9 (0.862)	3/8 NPTF or BSPP	23 (0.91)	40 (1.57)	62 (2.441)	18 (0.71)

Model	M	N	P	R	S	T	U	V	W	Z	AA	BB
16	7 (0.276)	7.94 (0.31)	62 (2.44)	25.4 (1.00)	52 (2.047)	16 (.630)	20 (0.787)	3 (0.118)	6 (0.236)	42 (1.654)	M5x0.8	7.5 (0.30)
20	10 (0.394)	7.94 (0.31)	72 (2.83)	31.8 (1.25)	60 (2.362)	18 (.709)	30 (1.181	4 (0.157)	6 (0.236)	52 (2.047)	M5x0.8	7.5 (0.30)
25	10 (0.394)	7.94 (0.31)	86 (3.39)	38 (1.50)	70 (2.756)	26 (1.024)	34 (1.339)	4 (0.157)	6 (0.236)	62 (2.441)	M6x1.0	9 (0.35)
32	5 (0.197)	11.1 (0.44)	112 (4.41)	44.5 (1.75)	96 (3.780)	30 (1.181)	50 (1.969)	6 (0.236)	6 (0.236)	80 (3.150)	M8x1.25	11 (0.43)
40	10 (0.394)	11.1 (0.44)	122 (4.80)	44.5 (1.75)	106 (4.173)	30 (1.181)	60 (2.362)	6 (0.236)	6 (0.236)	90 (3.543)	M8x1.25	11 0.43)
50	10 (0.394)	12.7 (0.50)	138 (5.43)	57.2 (2.25)	120 (4.724)	40 (1.575)	60 (2.362)	8 (0.315)	8 (0.315)	100 (3.937)	M10x1.5	12 (0.47)
63	10 (0.394)	12.7 (0.50)	148 (5.83)	69.9 (2.75)	130 (5.118)	50 (1.969)	72 (2.835)	8 (0.315)	8 (0.315)	110 (4.331)	M10x1.5	15 (0.59)
80	15 (0.591)	16 (0.63)	185 (7.28)	89 (3.50)	160 (6.299)	60 (2.362)	92 (3.622)	10 (0.394)	10 (0.394)	140 (5.512)	M12x1.75	18 (0.71)
100	15 (0.591)	16 (0.63)	221 (8.70)	108 (4.25)	190 (7.480)	80 (3.150)	114 (4.488)	10 (0.394)	10 (0.394)	170 (6.693)	M14x2.0	21 (0.83)

Model	CC	DD	EE	FF	GG	HH	KK	LL	MM	NN	PP	Piston Rod
16	10 (0.39)	54 (2.126)	8 (0.315)	27 (1.063)	15 (0.591)	13.06 (0.514)	42 (1.654)	22.5 (0.88)	11.25 (0.44)	9.7 (0.38)	23.0 (0.91)	8 (0.315)
20	10 (0.39)	64 (2.520)	10 (0.394)	32 (1.260)	17 (0.669)	13.06 (0.514)	52 (2.126)	26.0 (1.02)	15.4 (0.61)	15.4 (0.61)	26.0 (1.0)	10 (0.394)
25	12 (0.47)	76 (2.992)	11 (0.433)	38 (1.496)	21 (0.827)	14.06 (0.553)	62 (2.441)	33.4 (1.31)	17 (0.67)	17 (0.67)	33.4 (1.31)	10 (0.394)
32	16 (0.63)	100 (3.937)	14 (0.551)	50 (1.969)	26 (1.024)	12.9 (0.508)	80 (3.150)	42 (1.65)	20 (0.79)	21.7 (0.85)	38 (1.50)	16 (0.630)
40	16 (0.63)	110 (4.33)	14 (0.551)	55 (2.165)	26 (1.024)	13.9 (0.547)	90 (3.543)	41 (1.61)	24 (0.95)	26.4 (1.04)	37.9 (1.49)	16 (0.630)
50	20 (0.79)	124 (4.882)	16 (0.630)	62 (2.441)	30 (1.181)	14.3 (0.563)	100 (3.937)	51 (2.01)	29 (1.14)	33 (1.30)	44 (1.73)	20 (0.787)
63	20 (0.79)	132 (5.197)	18 (0.709)	66 (2.598)	36.5 (1.437)	16.3 (0.642)	110 (4.331)	62 (2.44)	36 (1.42)	37.75 (1.49)	57.75 (2.27)	20 (0.787)
80	24 (0.94)	166 (6.535)	22 (0.866)	83 (3.268)	46.5 (1.831)	21 (0.83)	140 (5.512)	78 (3.07)	45 (1.77)	48 (1.89)	75.5 (2.97)	25 (0.984)
100	28 (1.10)	200 (7.874)	24 (0.945)	100 (3.937)	56.5 (2.224)	25 (0.98)	170 (6.693)	91.5 (3.60)	53 (2.09)	51 (2.01)	95.5 (3.76)	25 (0.984)

D¹ With linear ball bearing D² With composite bushing

** For Model 100 with 25mm stroke, A = 100.3 (3.95") and E = 28 (1.10")

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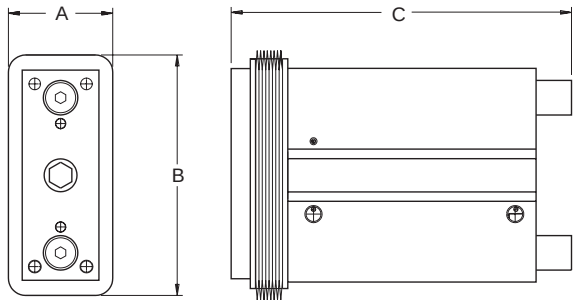
Contaminant & Weld Flash Covers

A contaminant cover protects the guide rods and bearings from particles and fluid that could cause premature failure.

A weld flash cover protects guide rods and bearings from weld spatter.

Cover option can be ordered on models having the bearings both ends option.

Consult factory to order.



Weld Flash Cover Specifications

Coating material (exposed side)		PVC (Black)
Base material		Nomex
Coating material (other side)		PVC (Black)
Material thickness range		.012" - .016" (.3-.4mm)
Temperature resistance (nomex)		
	Briefly	642°F (450°C)
	Continuously	-22° to 572°F (-30° to 300°C)
Temperature resistance (coating)		
	Briefly	392°F (200°C)
	Continuously	-22° to 302°F (-30° to 150°C)
Resistant to		Chemicals, coolants, solvents, oil
Characteristics		self-extinguishing, abrasion resistant
Material weight		400 grams/square meter

Dimensions in mm (inch)

			Standard stroke									
Model	A	B	10	25	40	50	75	100	125	150	175	200
16	42 (1.65)	86 (3.39)	61.2 (2.41)	100.2 (3.94)	135.2 (5.32)	135.2 (5.32)	160.2 (6.31)	200.2 (7.88)	–	–	–	–
20	45 (1.77)	98 (3.86)	–	106.9 (4.21)	141.9 (5.59)	141.9 (5.59)	166.9 (6.57)	216.9 (8.54)	241.9 (9.52)	–	–	–
25	49 (1.93)	112 (4.41)	–	119.9 (4.72)	–	144.9 (5.70)	169.9 (6.69)	194.9 (7.67)	241.9 (9.52)	266.9 (10.51)	–	–
32	62 (2.44)	142 (5.59)	–	127.9 (5.04)	–	152.9 (6.02)	177.9 (7.00)	202.9 (7.99)	266 (10.47)	291 (11.46)	316 (12.44)	341 (13.43)
40	62 (2.44)	152 (5.98)	–	127.9 (5.04)	–	152.9 (6.02)	177.9 (7.00)	202.9 (7.99)	266 (10.47)	291 (11.46)	316 (12.44)	341 (13.43)
50	66 (2.60)	167 (6.57)	–	134 (5.28)	–	159 (6.26)	184 (7.24)	209 (8.23)	274.1 (10.79)	299.1 (11.78)	324.1 (12.76)	349.1 (13.74)
63	77 (3.03)	187 (7.36)	–	134 (5.28)	–	159 (6.26)	184 (7.24)	209 (8.23)	274.1 (10.79)	299.1 (11.78)	324.1 (12.76)	349.1 (13.74)
80	104 (4.09)	244 (9.61)	–	151.8 (5.98)	–	176.8 (6.96)	201.8 (7.94)	226.8 (8.93)	290 (11.42)	315 (12.40)	340 (13.39)	365 (14.37)
100	109 (4.29)	279 (10.98)	–	170.3 (6.70)	–	195.3 (7.69)	220.3 (8.67)	245.3 (9.66)	308.4 (12.14)	333.4 (13.13)	358.4 (14.11)	383.4 (15.09)

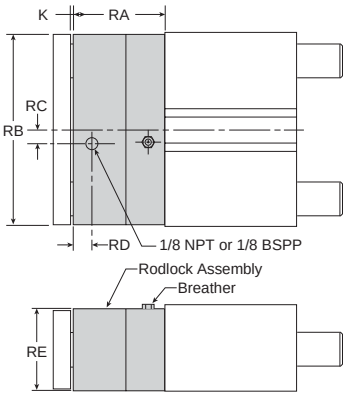
Seal Kits

Bore size	Seal kit part number	
	Nitrile seals	Fluorocarbon seals
16	**PSK-P5T16**	**PSK-P5T16-F**
20	**PSK-P5T20**	**PSK-P5T20-F**
25	**PSK-P5T25**	**PSK-P5T25-F**
32	**PSK-P5T32**	**PSK-P5T32-F**
40	**PSK-P5T40**	**PSK-P5T40-F**
50	**PSK-P5T50**	**PSK-P5T50-F**
63	**PSK-P5T63**	**PSK-P5T63-F**
80	**PSK-P5T80**	**PSK-P5T80-F**
100	**PSK-P5T100**	**PSK-P5T100-F**

P5T Rodlock Dimensions

Bore	RA	RB	RC	RD	RE	K
32	58 (2.28)	112 (4.41)	6 (0.24)	10 (0.39)	49.50 (1.95)	2 (0.08)
40	58 (2.28)	122 (4.80)	6 (0.24)	10 (0.39)	49.50 (1.95)	2 (0.08)
50	66 (2.60)	138 (5.43)	10 (0.39)	13 (0.51)	59.30 (2.33)	2 (0.08)
63	83 (3.27)	148 (5.83)	7 (0.28)	18 (0.71)	69.90 (2.75)	2 (0.08)
80	100 (3.94)	185 (7.28)	10 (0.39)	26 (1.02)	90.70 (3.57)	2 (0.08)
100	116 (4.57)	221 (8.70)	10 (0.39)	43 (1.69)	108.00 (4.25)	2 (0.08)

Dimensions in mm (inch)



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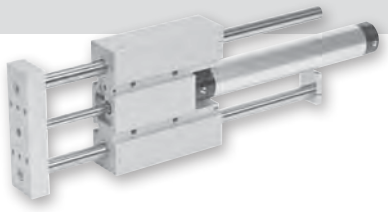
P5L Series

- 3 body styles (Thrust, Reach, Base)
- 8 bore sizes 20mm to 100mm
- Maximum strokes 400 to 1000mm depending on model
- 3 Bearing options: composite, ball bearing, self-aligning ball bearing
- Dowel holes standard on body and tool plate
- Available with adjustable stroke and shock absorbers
- Direct mount of thrust and reach to same size base
- Powered by P1L cylinder



Operating information

Operating pressure:	10 bar (145 PSIG)
Temperature range:	
Standard seals	-17°C to 74°C (0°F to 165°F)
Fluorocarbon seals*	-17°C to 121°C (0°F to 250°F) *
See fluorocarbon seal option for high temperature applications.	
Operating characteristics:	Double acting
Filtration requirements:	40 micron, dry filtered air

Ordering information

P5L	–	R	L	100	J1	A	A	N	F	N	–	0900	–	A

Series

T	Thrust slide
R	Reach slide
B	Base slide

Cylinder type

L	P1L cylinder

Bore size

020	20mm
025	25mm
032	32mm
040	40mm
050	50mm
063	63mm
080	80mm
100	100mm

Bushings

J1	Composite bushing, chrome plated shafts
J2	Composite bushing, oversized chrome plated shafts
J3	Composite bushing, stainless steel shafts
J4	Composite bushing, oversized stainless steel shafts
G1	Composite bushing, chrome plated shafts, contaminent tolerant seals
G3	Composite bushing, stainless steel shafts, contaminent tolerant seals
H3	Linear ball bearings, stainless steel shafts
H5	Linear ball bearings, carbon steel shafts
S3*	Self aligning linear ball bearings, stainless steel shafts
S5*	Self aligning linear ball bearings, carbon steel shafts

* Not available 20mm bore models

Extend options

N	None
A	Shock/stroke adjusters
B	Bumpers (base slides only)
C	Cushions both ends
E	Micro-adjusters and cushions (both ends only)
H	Cushions and bumpers (includes options C & K)
K	Bumpers and adjustable stop collars
L	Shock absorbers and bumpers (N/A on base slides)

Retract options

N	None
A	Shock/stroke adjusters
B	Bumpers only
C	Cushions both ends
E	Micro-adjusters and cushions (both ends only)
H	Cushions and bumpers (includes options C & K)
K	Bumpers and adjustable stop collars
L	Shock absorbers and bumpers (N/A on base slides)

Cylinder seals

N	Nitrile (standard)
V	Fluorocarbon (high temperature)

Proximity sensor options

N	No Sensor
P	PNP, lead type
R	NPN, lead type
S	PNP, plug in type
T	NPN, plug in type
W	Prox ready, 8mm (no sensor supplied)
Z	Prox ready, 12mm (no sensor supplied)

Note: Piston magnet is standard on all cylinders. Inductive proximity sensors are included with Options P, R, S & T.

Cylinder port style

G	BSPT ports
H	NPTF ports
P	BSPT ports w/ Presto-lok flow controls (mm)
F	NPTF ports w/ Presto-lok flow controls (inch)
B	BSPT ports w/ flow controls
N	NPTF ports w/ flow controls

T-slots

–	Standard (Extruded T-slots on sizes 20-40, no T-slots on sizes 50-100)
A **	Machined T-slots (Sizes 50-100)

** Not avaialble on sizes 20-40

Stroke length

Order in 1mm increments.

Design series

A	Current design

Order P8S Series reed and solid state sensors separately from Electronic Sensors Section.

Sensors

For sensors see page B339.

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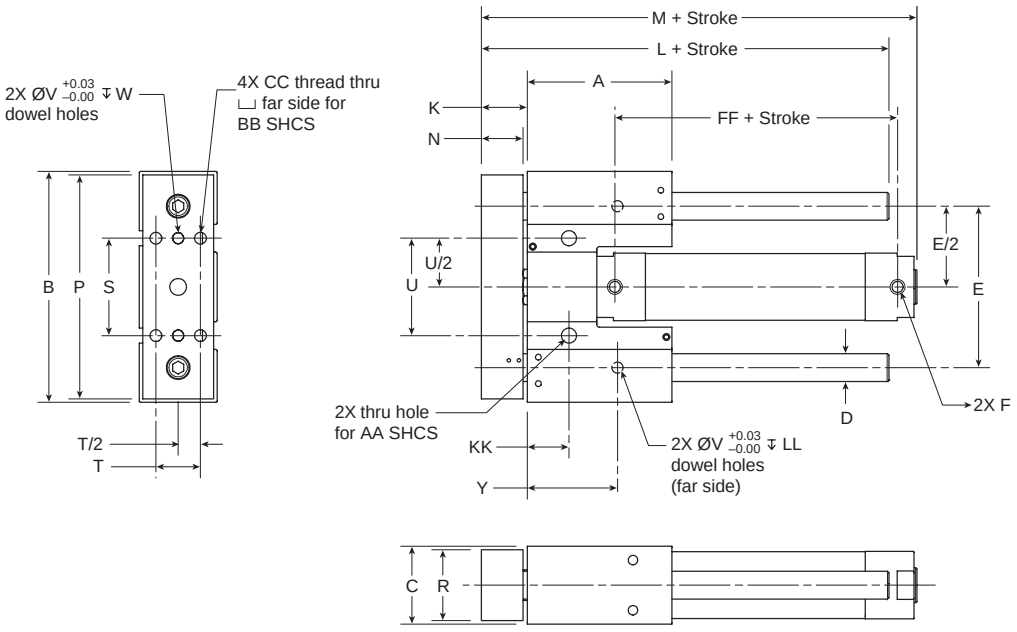
Thrust Slides



Dimensions in mm (inch)

Bore size	A	B	C	Ds*	Do*	E	F**	K	L	M	N	P	R
20	60 (2.4)	98 (3.9)	30 (1.2)	10 (0.4)	12 (0.5)	68 (2.7)	1/8†	20 (0.8)	86 (3.4)	114 (4.5)	17 (0.7)	96 (3.8)	26 (1.0)
25	76 (3.0)	122 (4.8)	38 (1.5)	12 (0.5)	16 (0.6)	84 (3.3)	1/8†	25 (1.0)	107 (4.2)	126 (5.0)	22 (0.9)	119 (4.7)	33 (1.3)
32	84 (3.3)	140 (5.5)	44 (1.7)	16 (0.6)	20 (0.8)	92 (3.6)	1/8	27 (1.1)	117 (4.6)	140 (5.5)	24 (0.9)	137 (5.4)	39 (1.5)
40	104 (4.1)	166 (6.5)	56 (2.2)	20 (0.8)	25 (1.0)	116 (4.6)	1/8	33 (1.3)	143 (5.6)	163 (6.4)	30 (1.2)	161 (6.3)	51 (2.0)
50	130 (5.1)	216 (8.5)	70 (2.8)	25 (1.0)	30 (1.2)	148 (5.8)	1/4	39 (1.5)	175 (6.9)	195 (7.7)	36 (1.4)	211 (8.3)	63 (2.5)
63	152 (6.0)	260 (10.2)	84 (3.3)	30 (1.2)	40 (1.6)	176 (6.9)	1/4	43 (1.7)	203 (8.0)	219 (8.6)	40 (1.6)	255 (10.0)	77 (3.0)
80	180 (7.1)	320 (12.6)	102 (4.0)	40 (1.6)	50 (2.0)	220 (8.7)	3/8	49 (1.9)	237 (9.3)	249 (9.8)	46 (1.8)	315 (12.4)	95 (3.7)
100	222 (8.7)	390 (15.4)	120 (4.7)	50 (2.0)	60 (2.4)	260 (10.2)	1/2	59 (2.3)	289 (11.4)	306 (12.0)	56 (2.2)	383 (15.1)	111 (4.4)

Bore size	S	T	U	V	W	Y	AA	BB	CC	FF	KK	LL
20	40 (1.6)	16 (0.6)	40 (1.6)	4.03 (0.2)	4 (0.2)	36 (1.4)	M5	M4	M5x0.8	45 (1.8)	16 (0.6)	4 (0.2)
25	48 (1.9)	20 (0.8)	48 (1.9)	5.03 (0.2)	5 (0.2)	46 (1.8)	M6	M5	M6x1.0	46 (1.8)	22 (0.9)	5 (0.2)
32	50 (2.0)	24 (0.9)	50 (2.0)	6.03 (0.2)	6 (0.2)	53 (2.1)	M8	M6	M8x1.25	43 (1.7)	28 (1.1)	6 (0.2)
40	70 (2.8)	32 (1.3)	70 (2.8)	8.03 (0.3)	8 (0.3)	65 (2.6)	M10	M8	M10x1.5	49 (1.9)	30 (1.2)	8 (0.3)
50	80 (3.1)	42 (1.7)	80 (3.1)	8.03 (0.3)	8 (0.3)	83 (3.3)	M10	M8	M10x1.5	53 (2.1)	43 (1.7)	8 (0.3)
63	100 (3.9)	52 (2.0)	100 (3.9)	10.03 (0.4)	10 (0.4)	101 (4.0)	M12	M10	M12x1.75	52 (2.0)	51 (2.0)	10 (0.4)
80	124 (4.9)	62 (2.4)	124 (4.9)	12.03 (0.5)	12 (0.5)	127 (5.0)	M16	M14	M16x1.5	64 (2.5)	65 (2.6)	12 (0.5)
100	148 (5.8)	72 (2.8)	148 (5.8)	12.03 (0.5)	12 (0.5)	154 (6.1)	M20	M16	M20x2.5	66 (2.6)	80 (3.1)	12 (0.5)

* s = standard, o = oversized ** NPTF or BSPT † w/cushions M5/10-32

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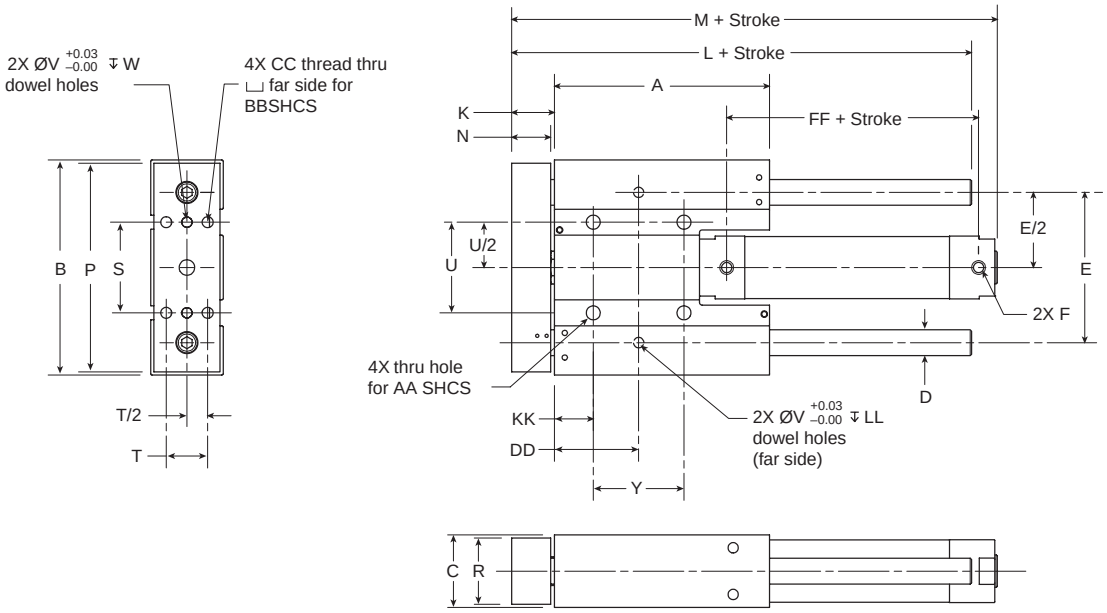
Reach Slides



Dimensions in mm (inch)

Bore size	A	B	C	Ds*	Do*	E	F**	K	L	M	N	P	R
20	98 (3.9)	98 (3.9)	30 (1.2)	10 (0.4)	12 (0.5)	68 (2.7)	1/8†	20 (0.8)	124 (4.9)	152 (6.0)	17 (0.7)	96 (3.8)	26 (1.0)
25	122 (4.8)	122 (4.8)	38 (1.5)	12 (0.5)	16 (0.6)	84 (3.3)	1/8†	25 (1.0)	153 (6.0)	172 (6.8)	22 (0.9)	119 (4.7)	33 (1.3)
32	140 (5.5)	140 (5.5)	44 (1.7)	16 (0.6)	20 (0.8)	92 (3.6)	1/8	27 (1.1)	173 (6.8)	196 (7.7)	24 (0.9)	137 (5.4)	39 (1.5)
40	166 (6.5)	166 (6.5)	56 (2.2)	20 (0.8)	25 (1.0)	116 (4.6)	1/8	33 (1.3)	205 (8.1)	225 (8.9)	30 (1.2)	161 (6.3)	51 (2.0)
50	216 (8.5)	216 (8.5)	70 (2.8)	25 (1.0)	30 (1.2)	148 (5.8)	1/4	39 (1.5)	261 (10.3)	281 (11.1)	36 (1.4)	211 (8.3)	63 (2.5)
63	260 (10.2)	260 (10.2)	84 (3.3)	30 (1.2)	40 (1.6)	176 (6.9)	1/4	43 (1.7)	311 (12.2)	327 (12.9)	40 (1.6)	255 (10.0)	77 (3.0)
80	320 (12.6)	320 (12.6)	102 (4.0)	40 (1.6)	50 (2.0)	220 (8.7)	3/8	49 (1.9)	377 (14.8)	389 (15.3)	46 (1.8)	315 (12.4)	9 (3.7)
100	390 (15.4)	390 (15.4)	120 (4.7)	50 (2.0)	60 (2.4)	260 (10.2)	1/2	59 (2.3)	457 (18.0)	474 (18.7)	56 (2.2)	383 (15.1)	111 (4.4)

Bore size	S	T	U	V	W	Y	AA	BB	CC	DD	FF	KK	LL
20	40 (1.6)	16 (0.6)	40 (1.6)	4.03 (0.2)	4 (0.2)	40 (1.6)	M5	M4	M5X0.8	36 (1.4)	45 (1.8)	16 (0.6)	4 (0.2)
25	48 (1.9)	20 (0.8)	48 (1.9)	5.03 (0.2)	5 (0.2)	48 (1.9)	M6	M5	M6X1.0	46 (1.8)	46 (1.8)	22 (0.9)	5 (0.2)
32	50 (2.0)	24 (0.9)	50 (2.0)	6.03 (0.2)	6 (0.2)	50 (2.0)	M8	M6	M8X1.25	53 (2.1)	43 (1.7)	28 (1.1)	6 (0.2)
40	70 (2.8)	32 (1.3)	70 (2.8)	8.03 (0.3)	8 (0.3)	70 (2.8)	M10	M8	M10X1.5	65 (2.6)	49 (1.9)	30 (1.2)	8 (0.3)
50	80 (3.1)	42 (1.7)	80 (3.1)	8.03 (0.3)	8 (0.3)	80 (3.1)	M10	M8	M10X1.5	83 (3.3)	53 (2.1)	43 (1.7)	8 (0.3)
63	100 (3.9)	52 (2.0)	100 (3.9)	10.03 (0.4)	10 (0.4)	100 (3.9)	M12	M10	M12X1.75	101 (4.0)	52 (2.0)	51 (2.0)	10 (0.4)
80	124 (4.9)	62 (2.4)	124 (4.9)	12.03 (0.5)	12 (0.5)	124 (4.9)	M16	M14	M16X1.5	127 (5.0)	64 (2.5)	65 (2.6)	12 (0.5)
100	148 (5.8)	72 (2.8)	148 (5.8)	12.03 (0.5)	12 (0.5)	148 (5.8)	M20	M16	M20X2.5	154 (6.1)	66 (2.6)	80 (3.1)	12 (0.5)

* s = standard, o = oversized ** NPTF or BSPT † w/cushions M5/10-32

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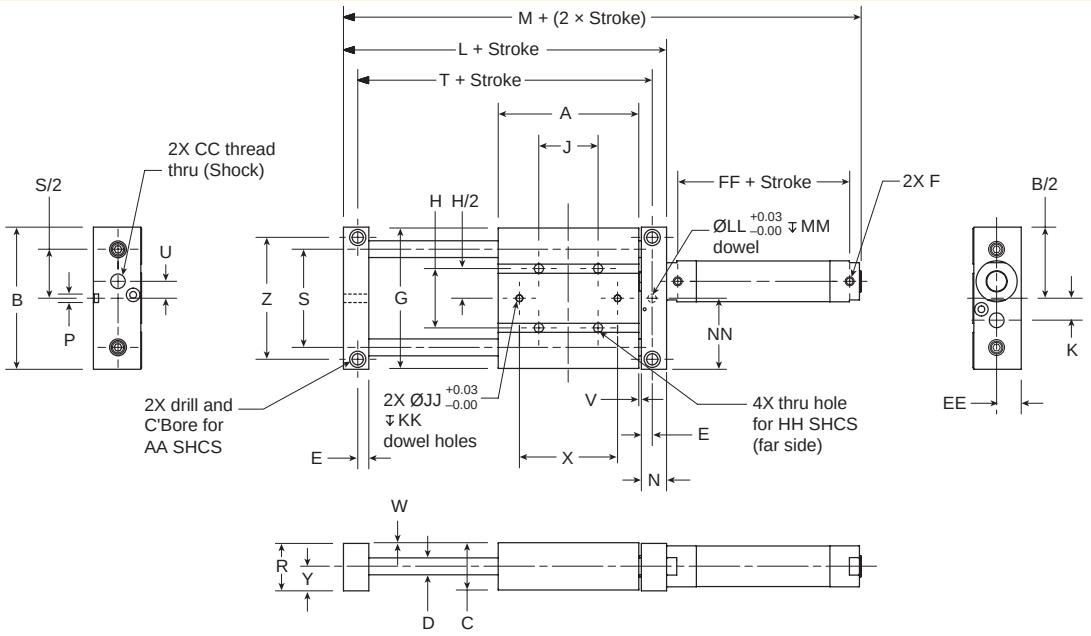
Base Slides



Dimensions in mm (inch)

Bore size	A	B	C	Ds*	Do*	E	F**	G	H	J	K	L	M	N	P+.03	R	S
20	98 (3.9)	100 (3.9)	30 (1.2)	10 (0.4)	12 (0.5)	8 (0.3)	1/8†	98 (3.9)	40 (1.6)	40 (1.6)	18 (0.7)	140 (5.5)	211 (8.3)	18 (0.7)	5.03 (0.2)	30 (1.2)	68 (2.7)
25	122 (4.8)	124 (4.9)	38 (1.5)	12 (0.5)	16 (0.6)	14 (0.6)	1/8†	122 (4.8)	48 (1.9)	48 (1.9)	22 (0.9)	176 (6.9)	247 (9.7)	24 (0.9)	6.03 (0.2)	38 (1.5)	84 (3.3)
32	140 (5.5)	142 (5.6)	44 (1.7)	16 (0.6)	20 (0.8)	12 (0.5)	1/8	140 (5.5)	50 (2.0)	50 (2.0)	22 (0.9)	198 (7.8)	271 (10.7)	26 (1.0)	6.03 (0.2)	44 (1.7)	92 (3.6)
40	166 (6.5)	168 (6.6)	56 (2.2)	20 (0.8)	25 (1.0)	13 (0.5)	1/8	166 (6.5)	70 (2.8)	70 (2.8)	26 (1.0)	232 (9.1)	312 (12.3)	30 (1.2)	10.03 (0.4)	56 (2.2)	116 (4.6)
50	216 (8.5)	218 (8.6)	70 (2.8)	25 (1.0)	30 (1.2)	16 (0.6)	1/4	216 (8.5)	80 (3.1)	80 (3.1)	28 (1.1)	292 (11.5)	384 (15.1)	35 (1.4)	10.03 (0.4)	70 (2.8)	148 (5.8)
63	260 (10.2)	262 (10.3)	84 (3.3)	30 (1.2)	40 (1.6)	19 (0.7)	1/4	260 (10.2)	100 (3.9)	100 (3.9)	42 (1.7)	350 (13.8)	442 (17.4)	42 (1.7)	12.03 (0.5)	84 (3.3)	176 (6.9)
80	320 (12.6)	322 (12.7)	102 (4.0)	40 (1.6)	50 (2.0)	24 (0.9)	3/8	320 (12.6)	124 (4.9)	124 (4.9)	42 (1.7)	434 (17.1)	545 (21.5)	54 (2.1)	16.03 (0.6)	102 (4.0)	220 (8.7)
100	390 (15.4)	392 (15.4)	120 (4.7)	50 (2.0)	60 (2.4)	28 (1.1)	1/2	390 (15.4)	148 (5.8)	148 (5.8)	62 (2.4)	528 (20.8)	639 (25.2)	66 (2.6)	16.03 (0.6)	120 (4.7)	260 (10.2)

Bore size	T	U	V***	W	X	Y	Z	AA	CC	EE	FF	HH	JJ	KK	LL	MM	NN
20	120 (4.7)	11 (0.4)	3 (0.1)	1 (0.0)	68 (2.7)	14 (0.6)	86 (3.4)	M6	M12	16 (0.6)	45 (1.8)	M5	4.03 (0.2)	4 (0.2)	5.03 (0.2)	5 (0.2)	50 (2.0)
25	156 (6.1)	12 (0.5)	3 (0.1)	1 (0.0)	84 (3.3)	18 (0.7)	104 (4.1)	M8	M14	20 (0.8)	46 (1.8)	M6	5.03 (0.2)	5 (0.2)	6.03 (0.2)	6 (0.2)	62 (2.4)
32	170 (6.7)	11 (0.4)	3 (0.1)	1 (0.0)	92 (3.6)	21 (0.8)	120 (4.7)	M10	M14	23 (0.9)	43 (1.7)	M8	6.03 (0.2)	6 (0.2)	6.03 (0.2)	6 (0.2)	71 (2.8)
40	198 (7.8)	20 (0.8)	3 (0.1)	1 (0.0)	116 (4.6)	27 (1.1)	144 (5.7)	M12	M20	29 (1.1)	49 (1.9)	M10	8.03 (0.3)	8 (0.3)	10.03 (0.4)	10 (0.4)	84 (3.3)
50	254 (10.0)	22 (0.9)	3 (0.1)	1 (0.0)	148 (5.8)	34 (1.3)	188 (7.4)	M16	M25	36 (1.4)	53 (2.1)	M10	8.03 (0.3)	8 (0.3)	10.03 (0.4)	10 (0.4)	109 (4.3)
63	304 (12.0)	30 (1.2)	3 (0.1)	1 (0.0)	176 (6.9)	41 (1.6)	224 (8.8)	M20	M25	43 (1.7)	52 (2.0)	M12	10.03 (0.4)	10 (0.4)	12.03 (0.5)	12 (0.5)	131 (5.2)
80	374 (4.7)	36 (1.4)	3 (0.1)	1 (0.0)	220 (8.7)	50 (2.0)	276 (10.9)	M24	M33	52 (2.0)	64 (2.5)	M16	12.03 (0.5)	12 (0.5)	16.03 (0.6)	16 (0.6)	161 (6.3)
100	452 (17.8)	36 (1.4)	3 (0.1)	1 (0.0)	260 (10.2)	59 (2.3)	336 (13.2)	M30	M36	61 (2.4)	66 (2.6)	M20	12.03 (0.5)	12 (0.5)	16.03 (0.6)	16 (0.6)	196 (7.7)

* s = standard, o = oversized ** NPTF or BSPT † w/cushions M5/10-32
*** Space between housing and end plate in both extend and retract positions.

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Horizontal Load Capacity & Deflection with Standard Shafting

- Standard Composite w/ Chrome Plated or Stainless Steel Rods
- Recirculating Ball Bearings w/ Carbon or Stainless Steel Rods
- Self Aligning Ball Bearings w/ Carbon or Stainless Steel Rods

The graphs on the following two pages illustrate the maximum suggested side load at a given actuator stroke and distance (d) from the face of the tooling plate. The graphs include the weight of the support rods and tooling plate and are based on a bearing life of 10 million cycles under a dynamic loading condition. For an equivalent static load capacity multiply the information in these graphs by 1.5.

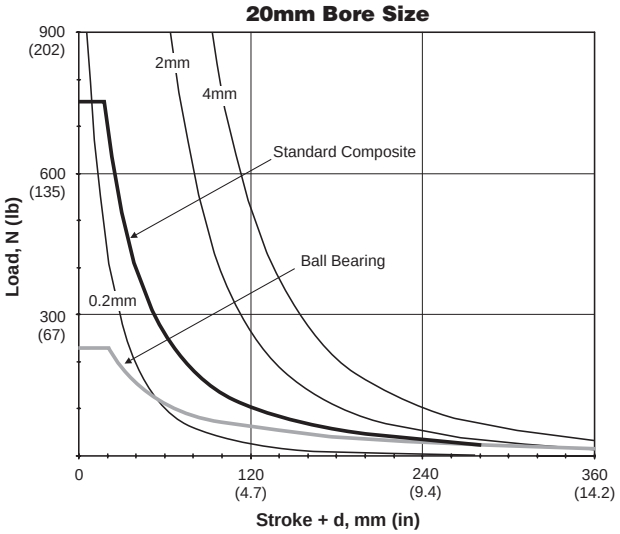
See the P5L options section of this catalog for more bearing selection information.

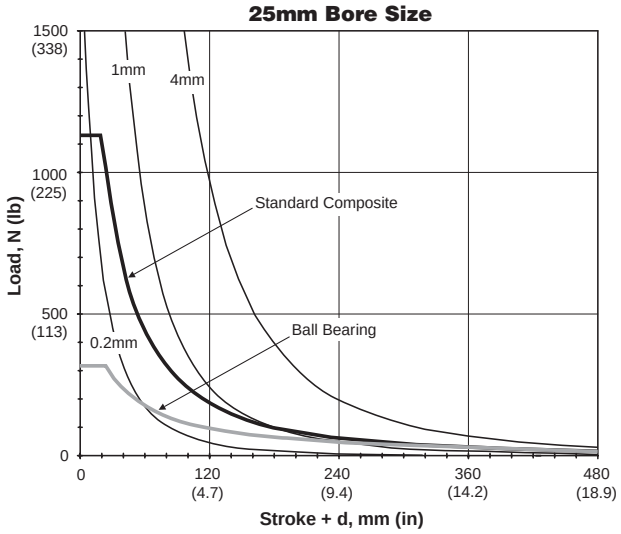
Dynamic loading is defined as a load which is affixed to the actuator tooling plate during the extend or retract motion of the actuator. Capacities are based on bearing and shafts only. Mounting bolts/hardware should be investigated per customer application.

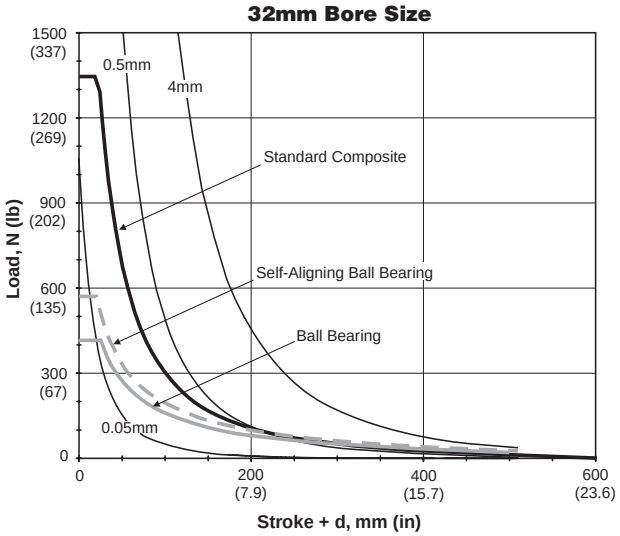
Note: The following variables commonly affect the bearing life of a guided cylinder:

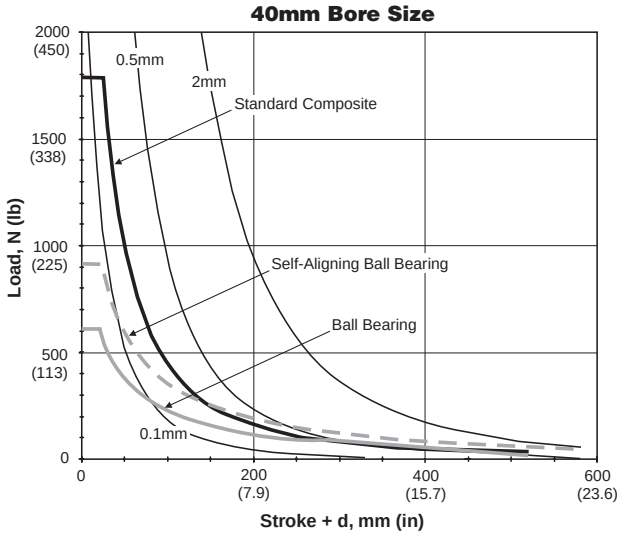
- Velocity
- Vibration
- Orientation
- Environment (Dust, moisture, etc.)

P5L Thrust Slides









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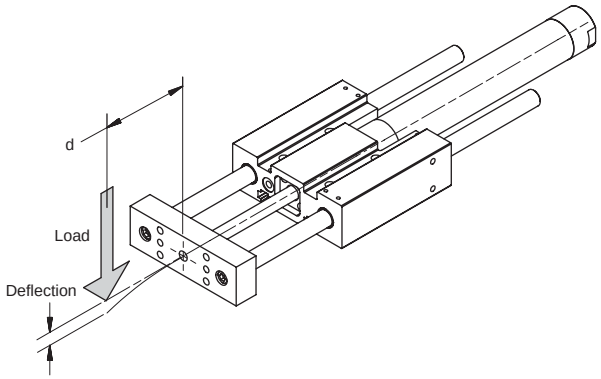
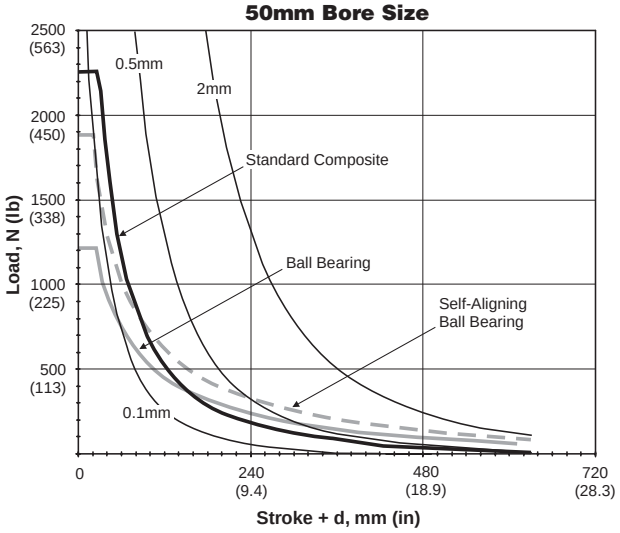
Horizontal Load Capacity & Deflection with Standard Shafting

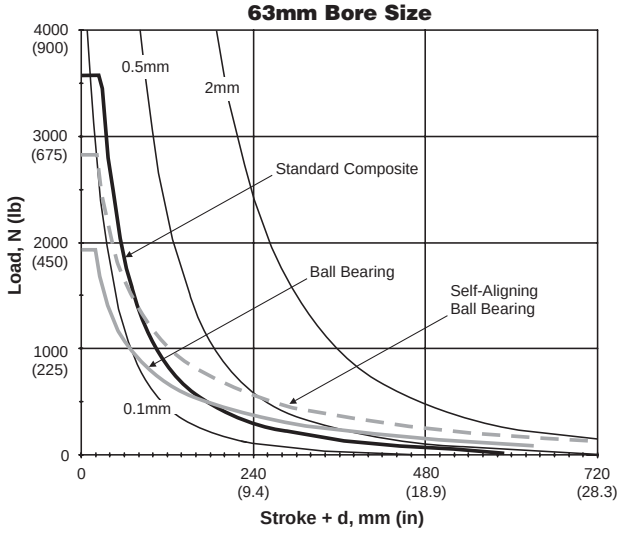


P5L Thrust Slides

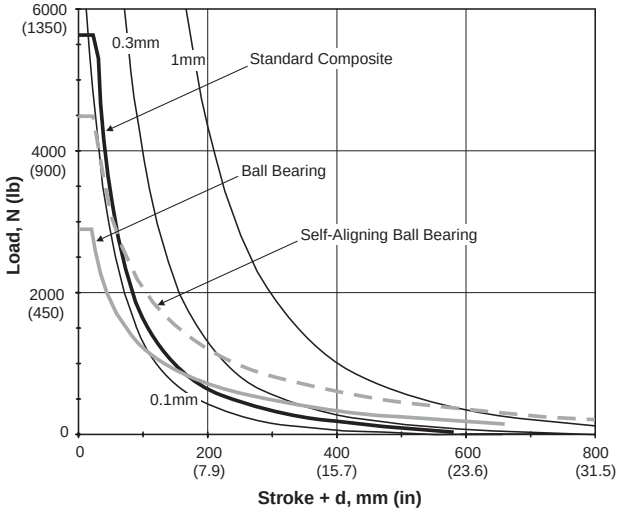
50mm Bore Size



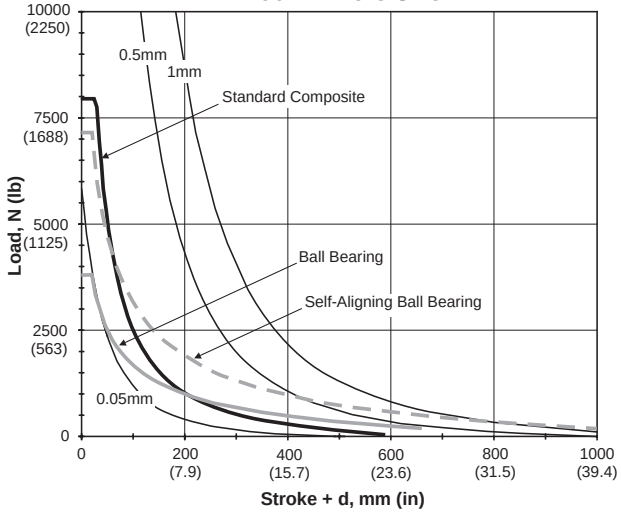
63mm Bore Size



80mm Bore Size



100mm Bore Size



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Horizontal Load Capacity & Deflection with Oversized Shafting

- Oversized Composite w/ Chrome Plated or Stainless Steel Rods

The graphs on the following two s illustrate the maximum suggested side load at a given actuator stroke and distance (d) from the face of the tooling plate. The graphs include the weight of the support rods and tooling plate and are based on a bearing life of 10 million cycles under a dynamic loading condition. For an equivalent static load capacity multiply the information in these graphs by 1.5.

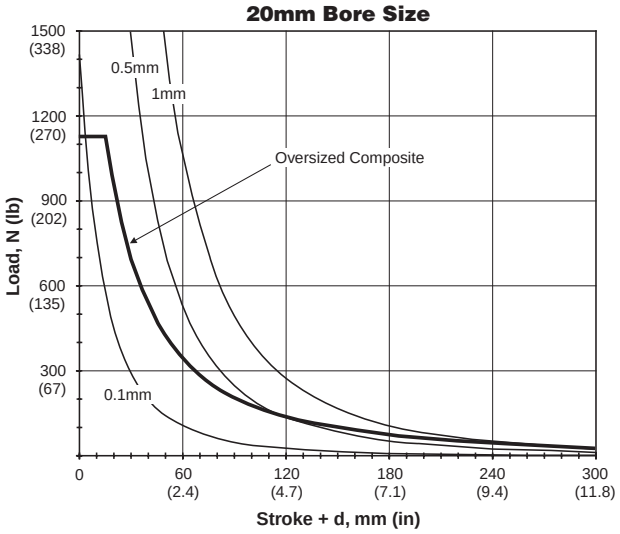
See the P5L options section of this catalog for more bearing selection information.

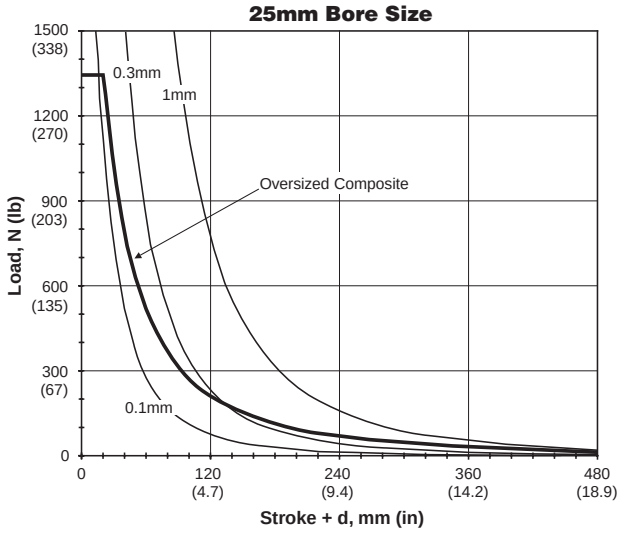
Dynamic loading is defined as a load which is affixed to the actuator tooling plate during the extend or retract motion of the actuator. Capacities are based on bearing and shafts only. Mounting bolts/hardware should be investigated per customer application.

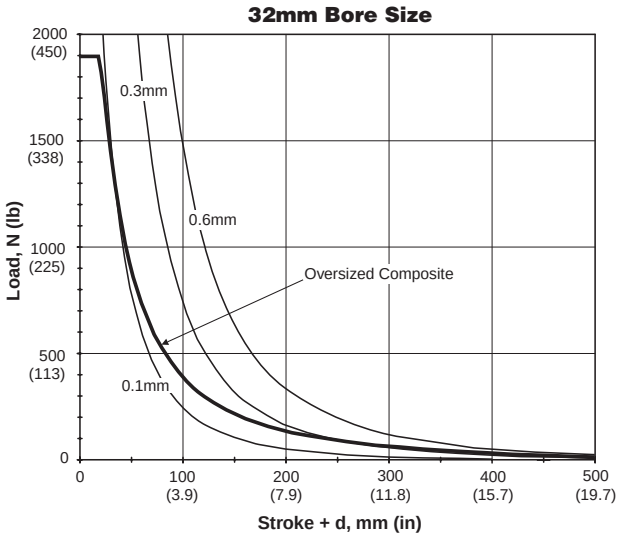
Note: The following variables commonly affect the bearing life of a guided cylinder:

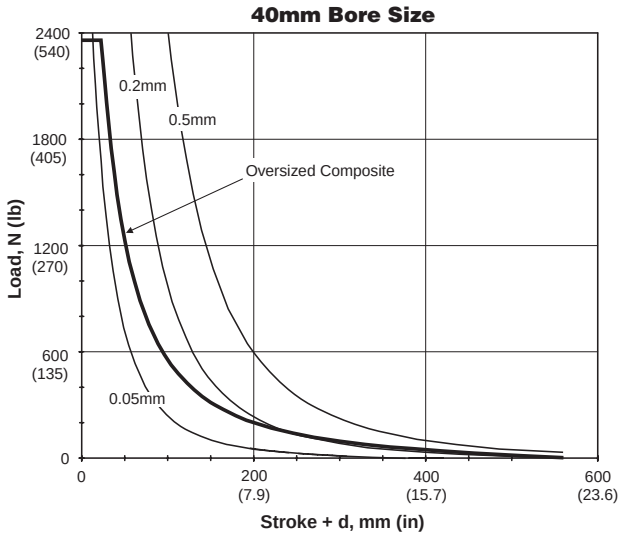
- Velocity
- Vibration
- Orientation
- Environment (Dust, moisture, etc.)

P5L Thrust Slides









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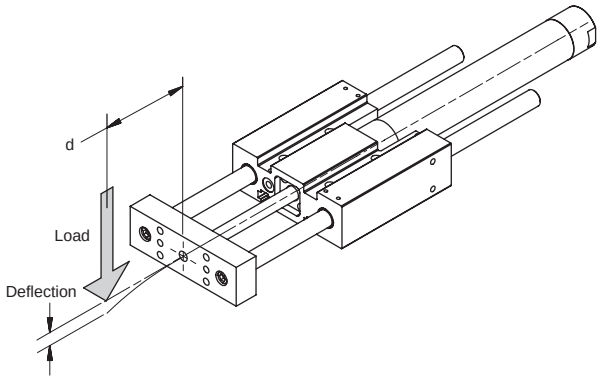
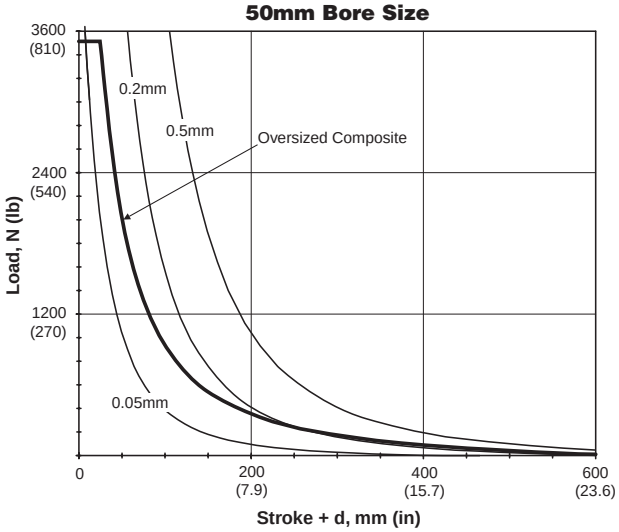
Horizontal Load Capacity & Deflection with Oversized Shafting

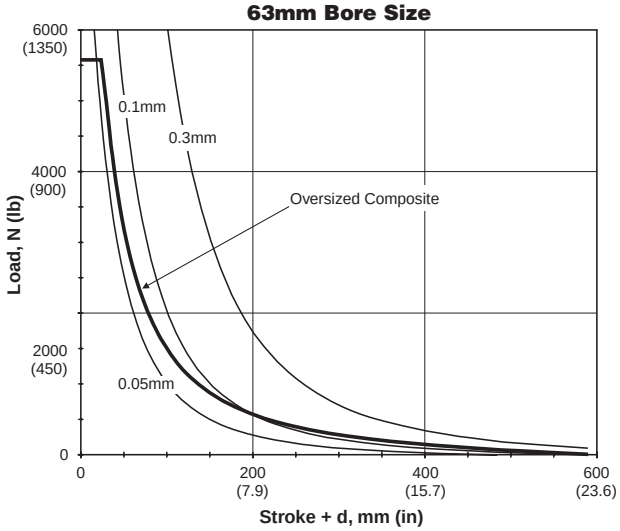


P5L Thrust Slides

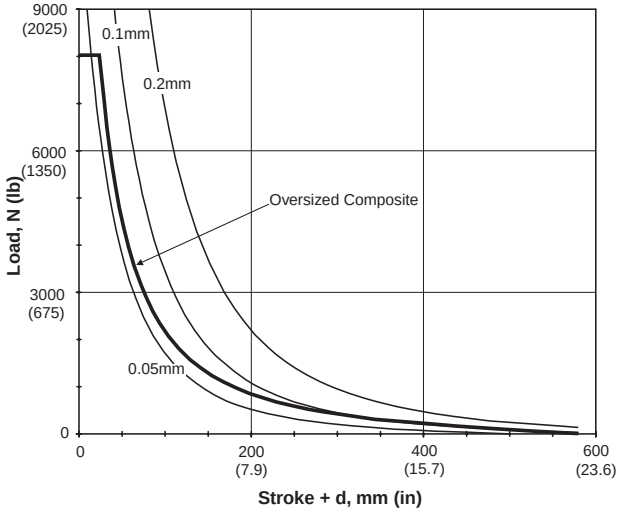
50mm Bore Size



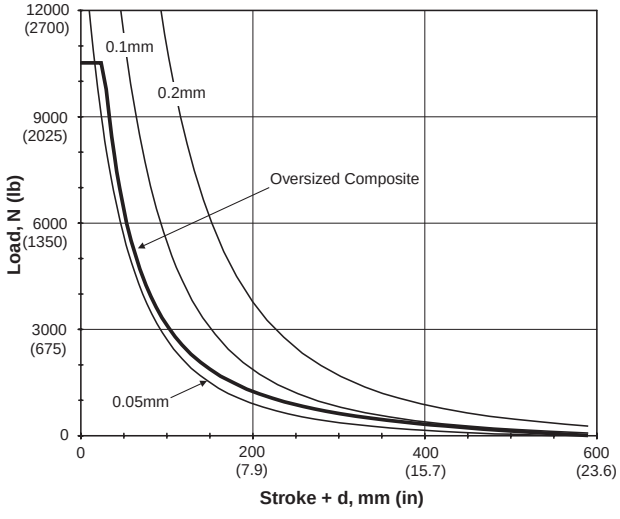
63mm Bore Size



80mm Bore Size



100mm Bore Size



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Horizontal Load Capacity & Deflection with Standard Shafting

- Recirculating Ball Bearings w/ Carbon or Stainless Steel Rods
- Self Aligning Ball Bearings w/ Carbon or Stainless Steel Rods

The graphs on the following two pages illustrate the maximum suggested side load at a given actuator stroke and distance (d) from the face of the tooling plate. The graphs include the weight of the support rods and tooling plate and are based on a bearing life of 10 million cycles under a dynamic loading condition. For an equivalent static load capacity multiply the information in these graphs by 1.5.

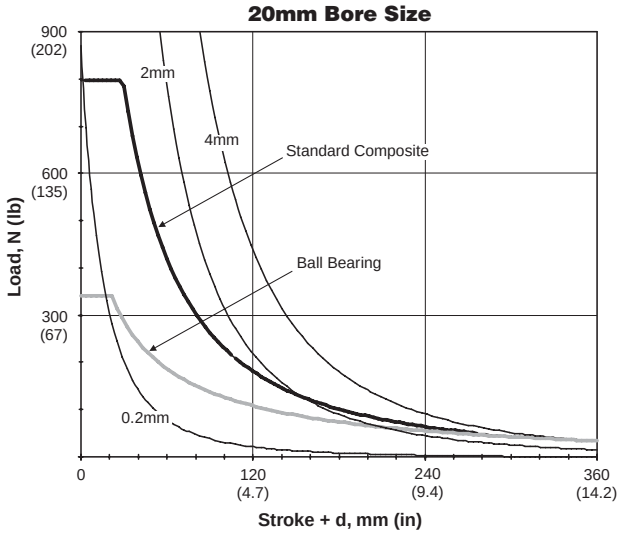
See the P5L options section of this catalog for more bearing selection information.

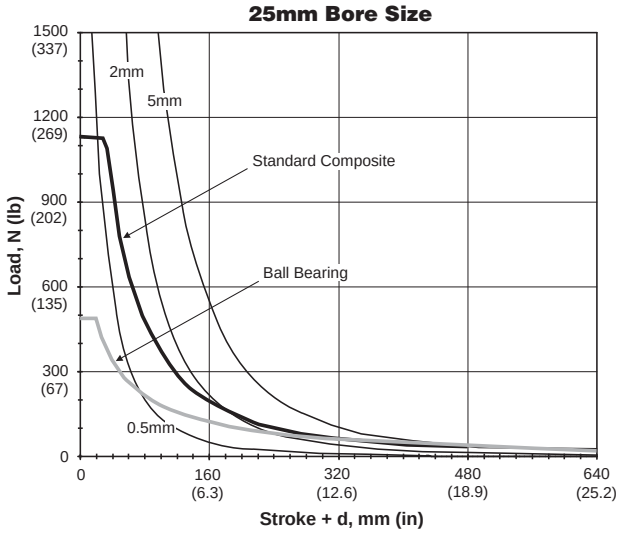
Dynamic loading is defined as a load which is affixed to the actuator tooling plate during the extend or retract motion of the actuator. Capacities are based on bearing and shafts only. Mounting bolts/hardware should be investigated per customer application.

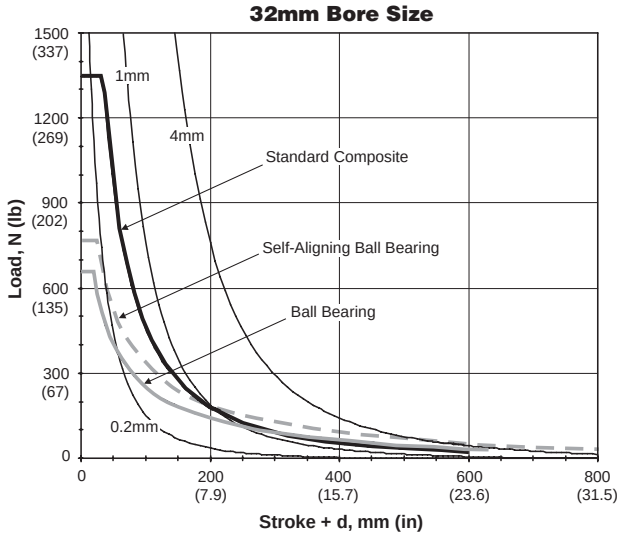
Note: The following variables commonly affect the bearing life of a guided cylinder:

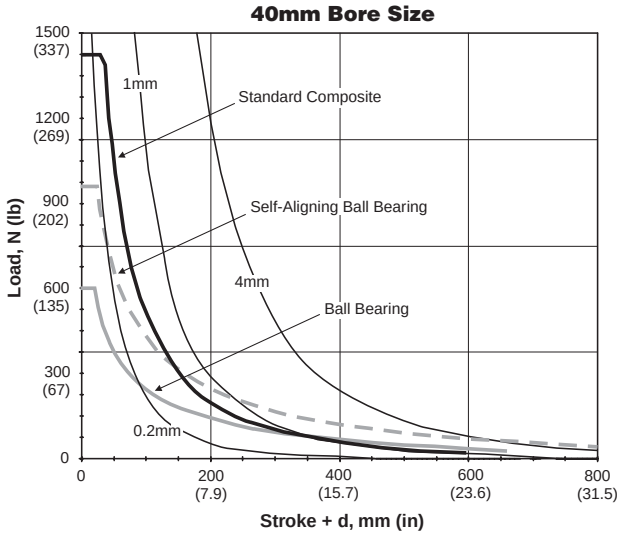
- Velocity
- Vibration
- Orientation
- Environment (Dust, moisture, etc.)

P5L Reach Slides









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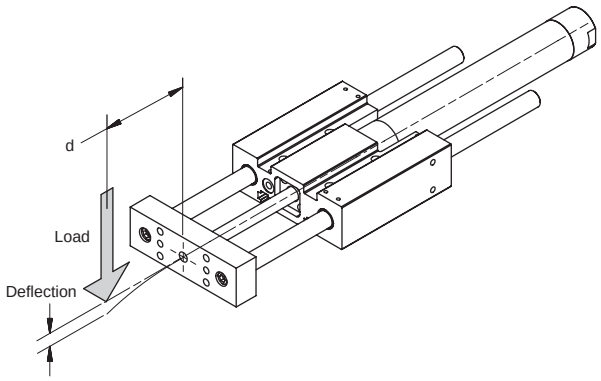
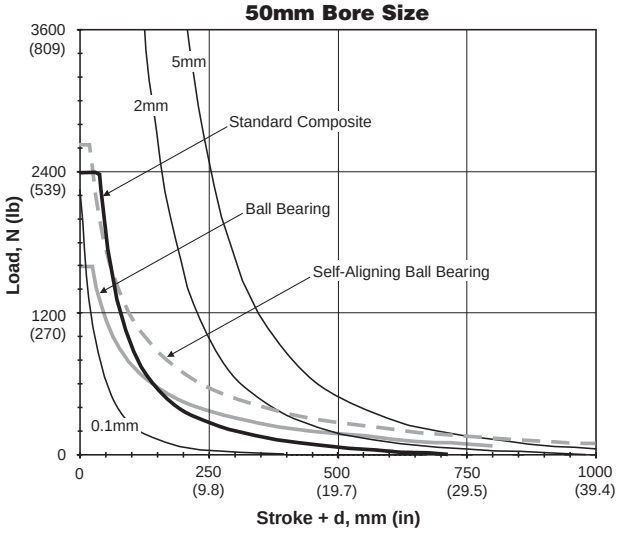
Horizontal Load Capacity & Deflection with Standard Shafting

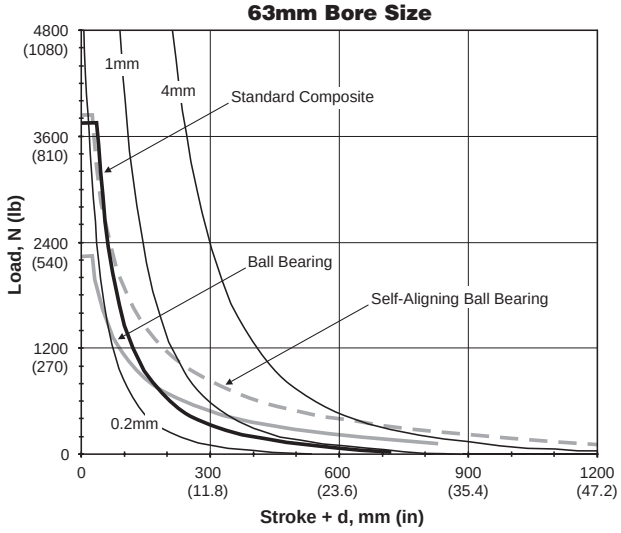


P5L Reach Slides

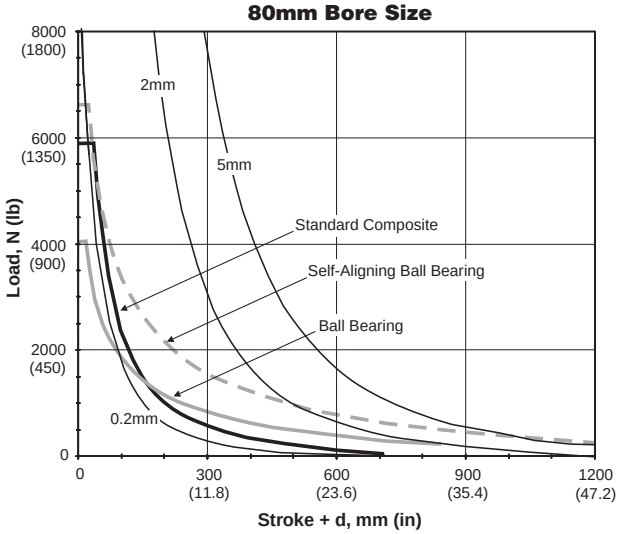
50mm Bore Size



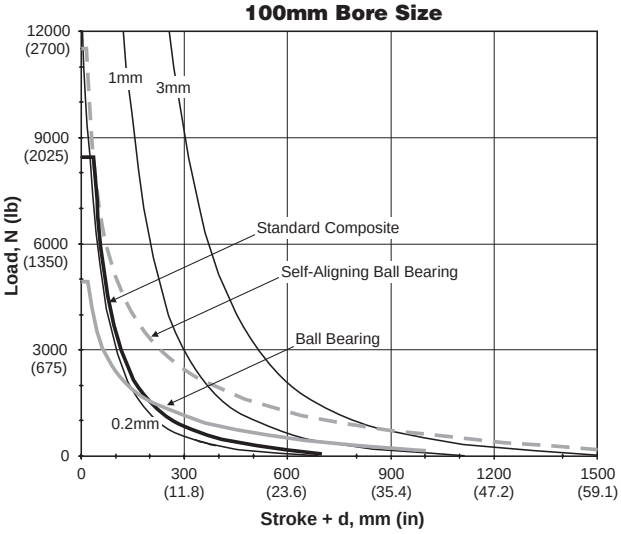
63mm Bore Size



80mm Bore Size



100mm Bore Size



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Horizontal Load Capacity & Deflection with Oversized Shafting

- Oversized Composite w/ Chrome Plated or Stainless Steel Rods

The graphs on the following two pages illustrate the maximum suggested side load at a given actuator stroke and distance (d) from the face of the tooling plate. The graphs include the weight of the support rods and tooling plate and are based on a bearing life of 10 million cycles under a dynamic loading condition. For an equivalent static load capacity multiply the information in these graphs by 1.5.

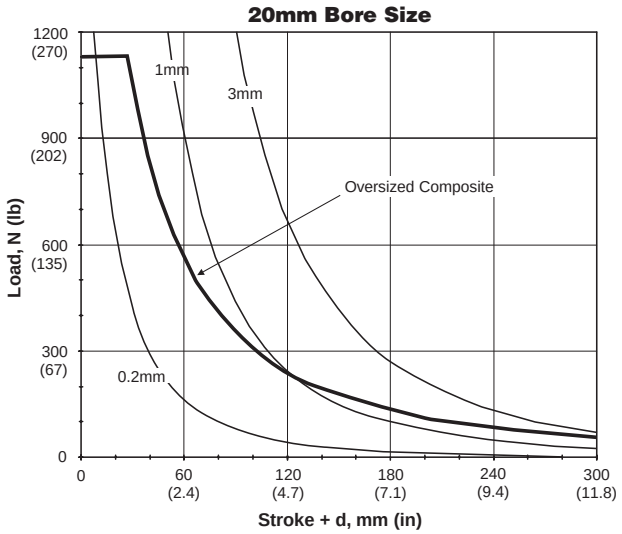
See the P5L options section of this catalog for more bearing selection information.

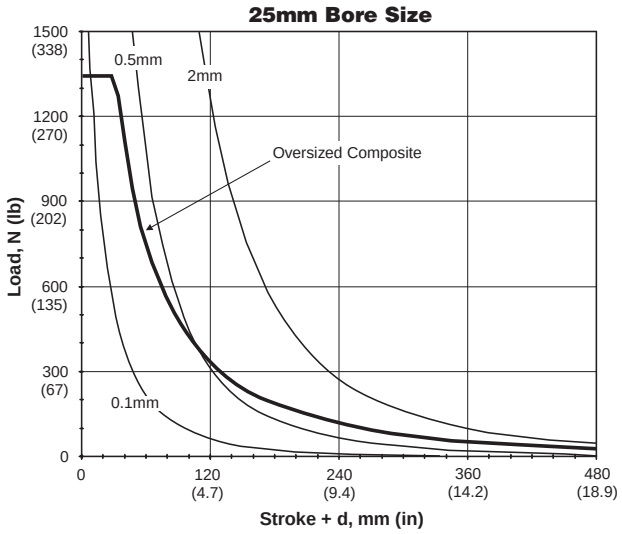
Dynamic loading is defined as a load which is affixed to the actuator tooling plate during the extend or retract motion of the actuator. Capacities are based on bearing and shafts only. Mounting bolts/hardware should be investigated per customer application.

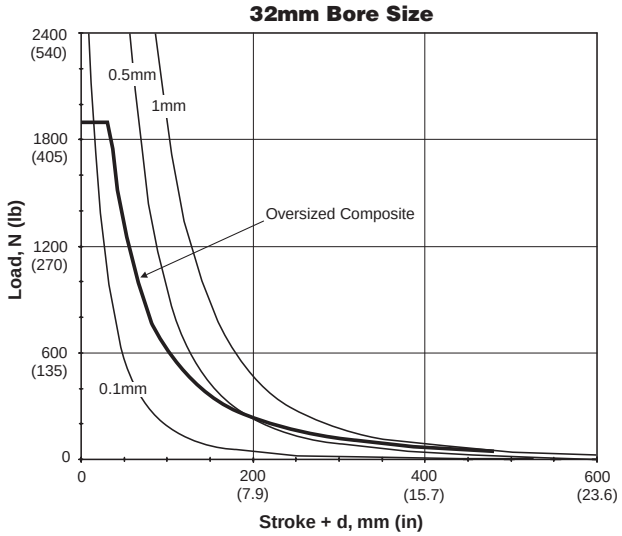
Note: The following variables commonly affect the bearing life of a guided cylinder:

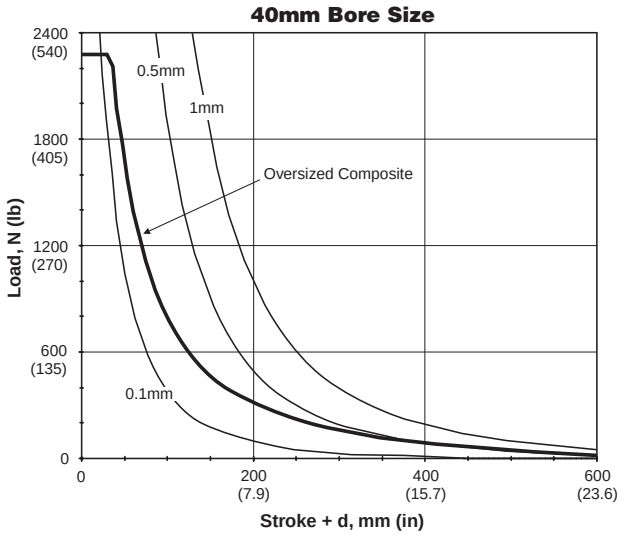
- Velocity
- Vibration
- Orientation
- Environment (Dust, moisture, etc.)

P5L Reach Slides









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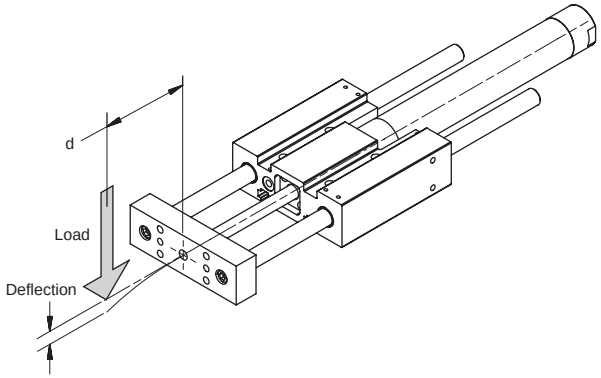
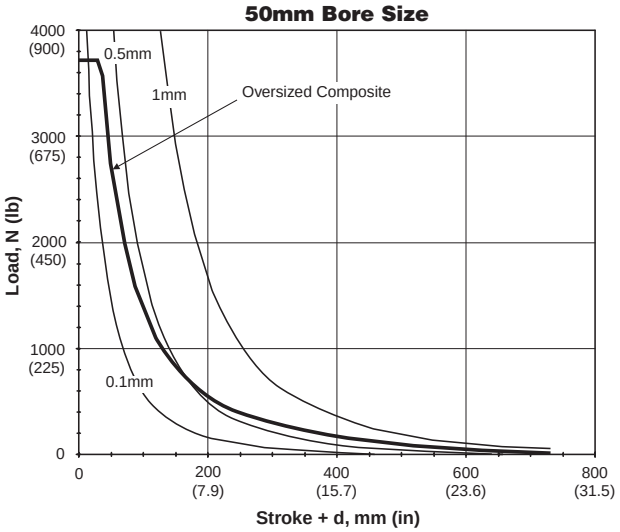
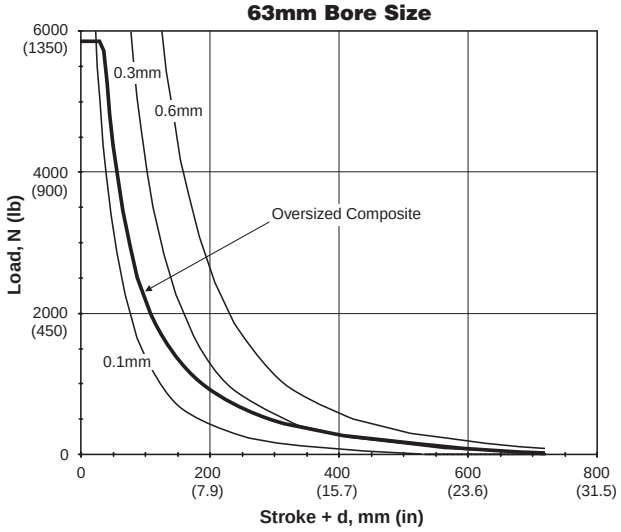
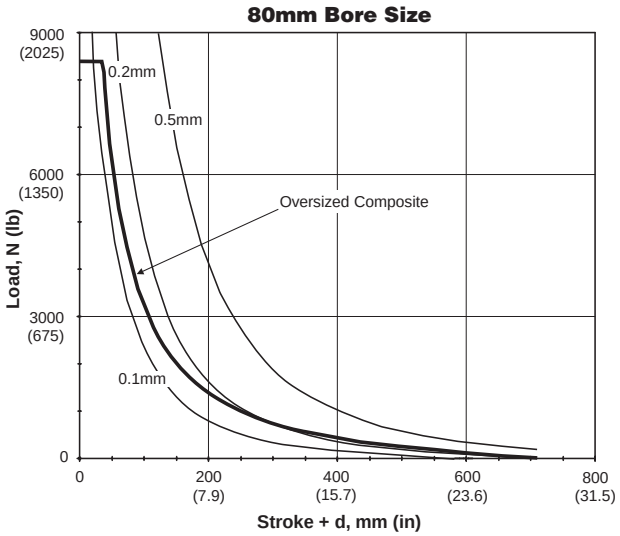
Horizontal Load Capacity & Deflection with Oversized Shafting

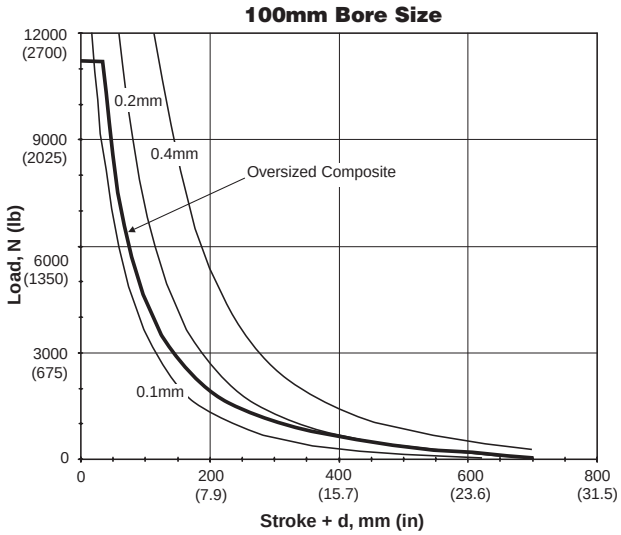


P5L Reach Slides









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Asymmetrical Torque Capacity

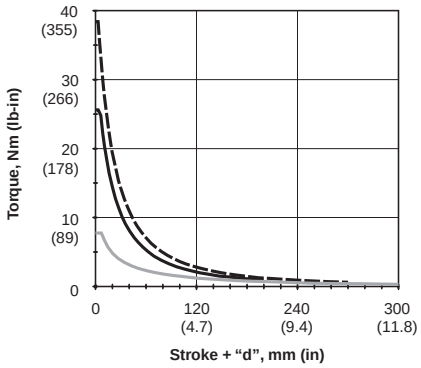
- Standard Composite w/ Chrome Plated or Stainless Steel Rods
- Oversized Composite w/ Chrome Plated or Stainless Steel Rods
- Recirculating Ball Bearings w/ Carbon or Stainless Steel Rods
- Self Aligning Ball Bearings w/ Carbon or Stainless Steel Rods

The graphs on the following two pages illustrate the maximum suggested asymmetrical load at a given actuator stroke and distance (d) from the face of the tooling plate. The graphs include the weight of the support rods and tooling plate and are based on a bearing life of 10 million cycles under a dynamic loading condition. For an equivalent static load capacity multiply the information in these graphs by 1.5.

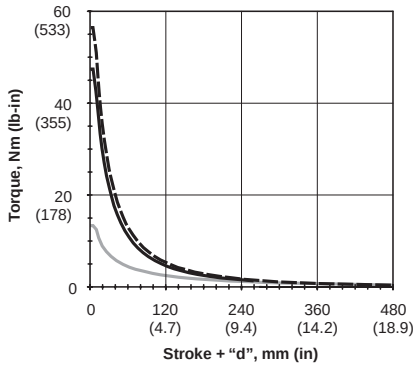
Dynamic loading is defined as a load which is affixed to the actuator tooling plate during the extend or retract motion of the actuator. Capacities are based on bearing and shafts only. Mounting bolts/hardware should be investigated per customer application. An asymmetrical load is defined as a perpendicular load applied at some horizontal distance, “m” from the center of the tooling plate.

P5L Thrust Slides

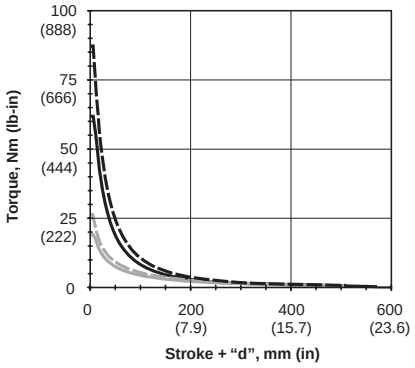
20mm Bore Size



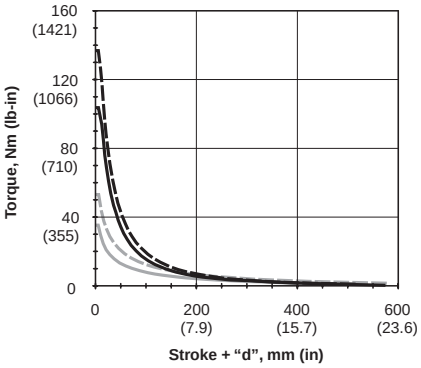
25mm Bore Size



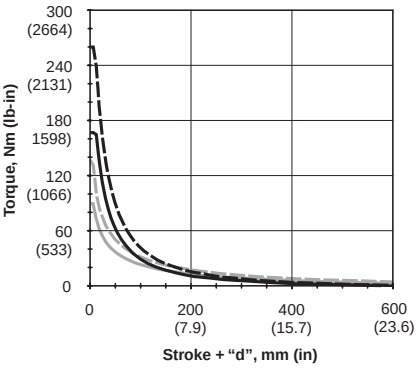
32mm Bore Size



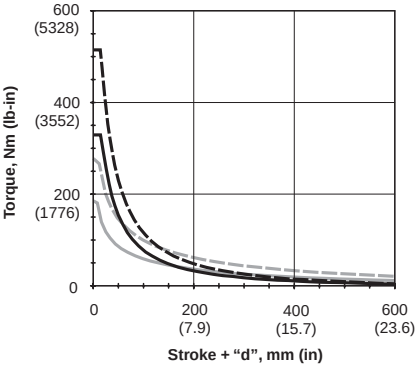
40mm Bore Size



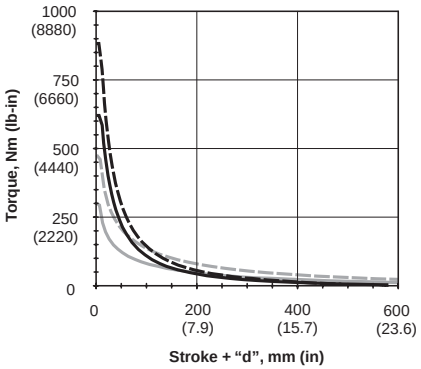
50mm Bore Size



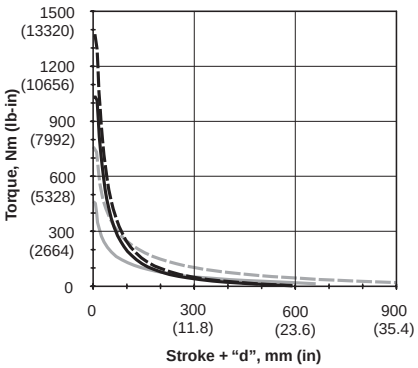
63mm Bore Size

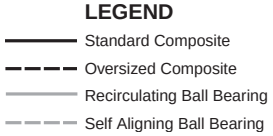


80mm Bore Size



100mm Bore Size





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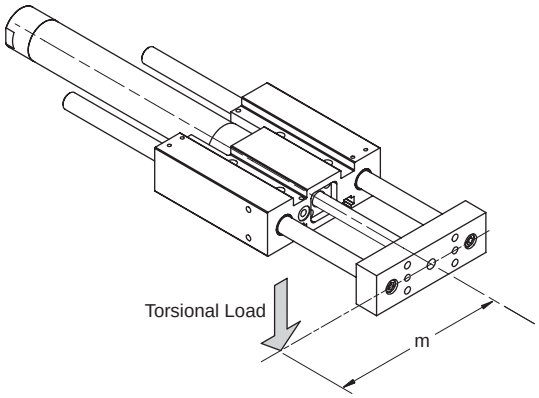
Asymmetrical Torque Capacity

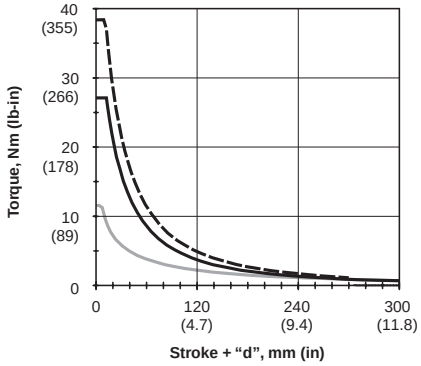
Note: The following variables commonly affect the bearing life of a guided cylinder:

- Velocity
- Vibration
- Orientation
- Environment (Dust, moisture, etc.)

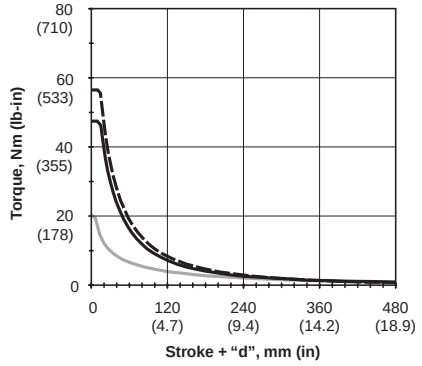


P5L Reach Slides

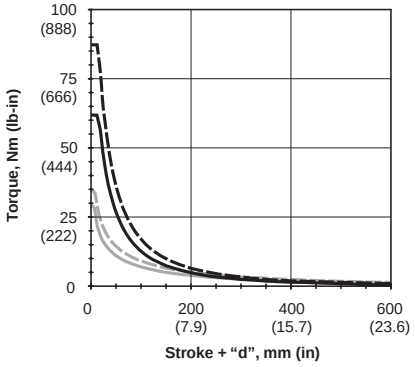
20mm Bore Size



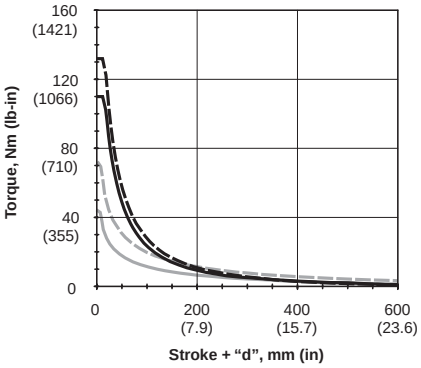
25mm Bore Size



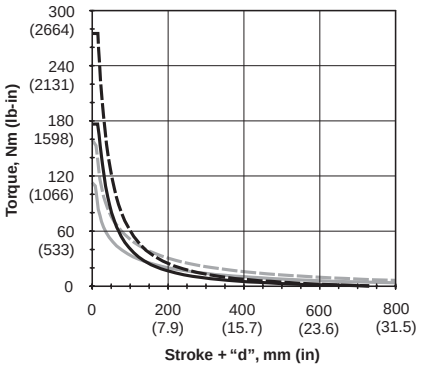
32mm Bore Size



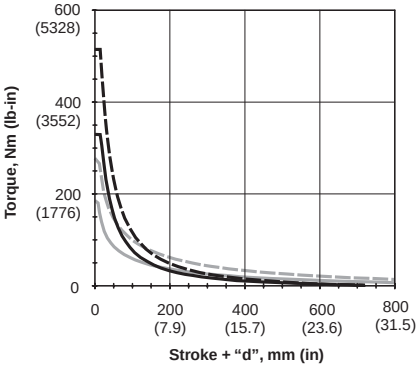
40mm Bore Size



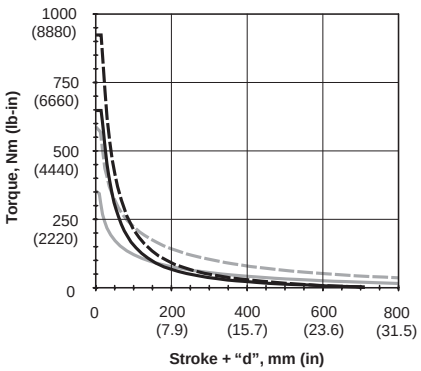
50mm Bore Size



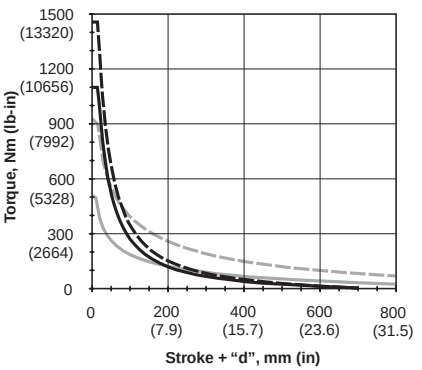
63mm Bore Size



80mm Bore Size



100mm Bore Size



LEGEND

- Standard Composite
- Oversized Composite
- Recirculating Ball Bearing
- Self Aligning Ball Bearing

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Vertical Eccentric Load Capacity

- Standard Composite w/ Chrome Plated or Stainless Steel Rods
- Oversized Composite w/ Chrome Plated or Stainless Steel Rods
- Recirculating Ball Bearings w/ Carbon or Stainless Steel Rods
- Self Aligning Ball Bearings w/ Carbon or Stainless Steel Rods

The graphs on the following two pages illustrate the maximum suggested eccentric load based on a stroke of 100mm (4 inches).

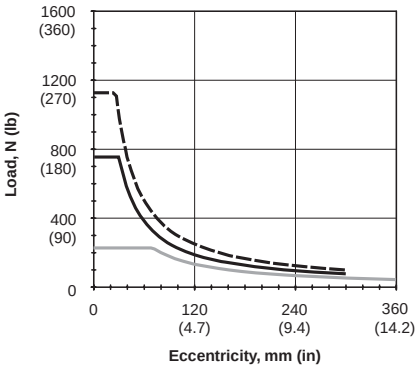
An eccentric load is defined as a load applied in the same direction as the motion of the cylinder however, acting at some distance (eccentricity "h") from the center of the tooling plate. Capacities are based on bearing and shafts only. Mounting bolts/hardware should be investigated per customer application.

Note: The following variables commonly affect the bearing life of a guided cylinder:

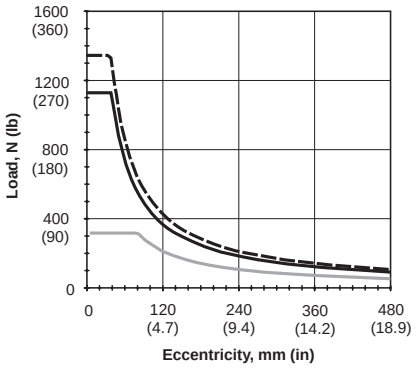
- Velocity
- Vibration
- Orientation
- Environment (Dust, moisture, etc.)

P5L Thrust Slides

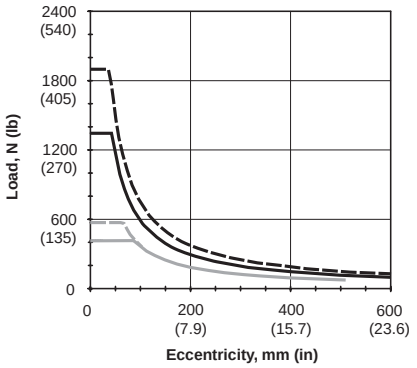
20mm Bore Size



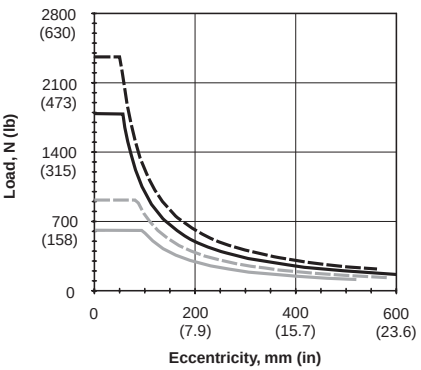
25mm Bore Size



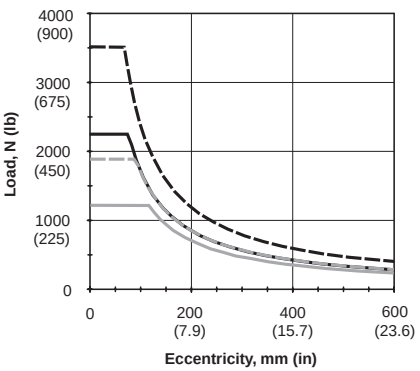
32mm Bore Size



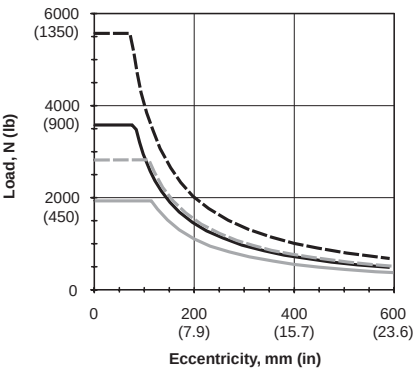
40mm Bore Size



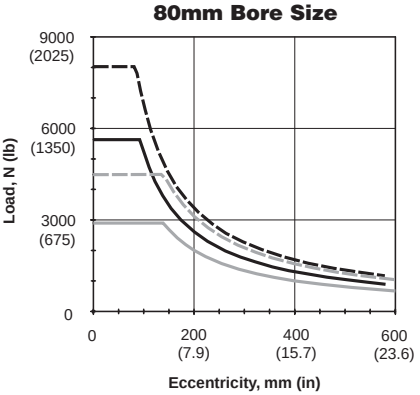
50mm Bore Size



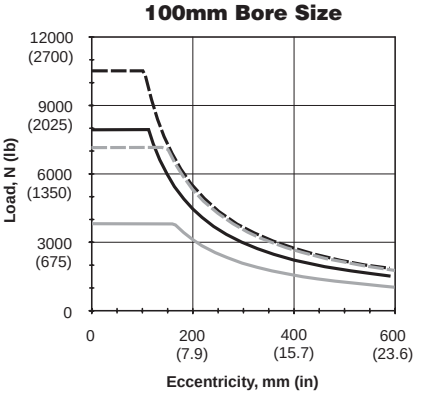
63mm Bore Size

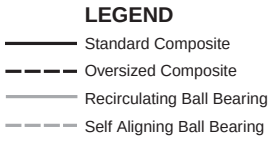


80mm Bore Size



100mm Bore Size





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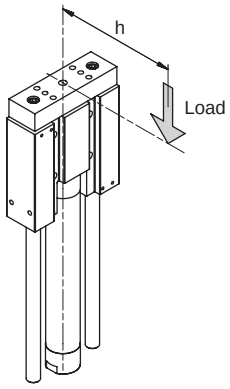
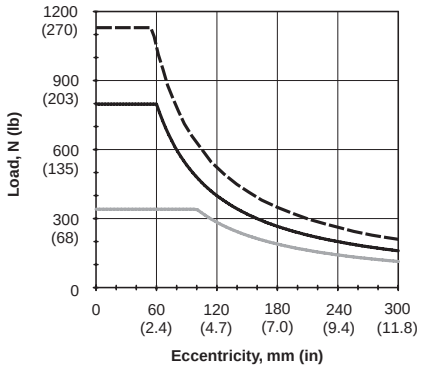
Vertical Eccentric Load Capacity

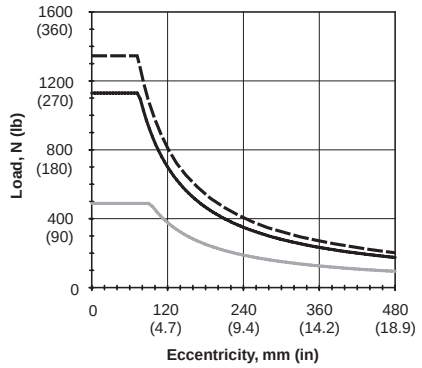


P5L Reach Slides

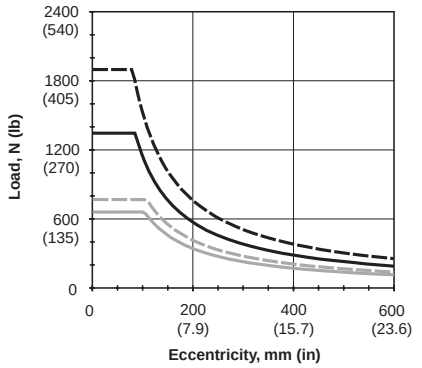
20mm Bore Size



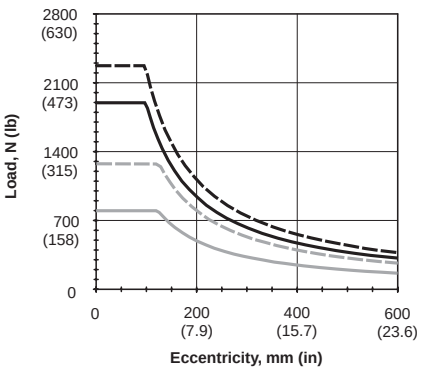
25mm Bore Size



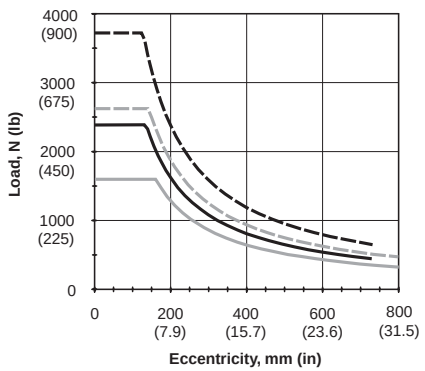
32mm Bore Size



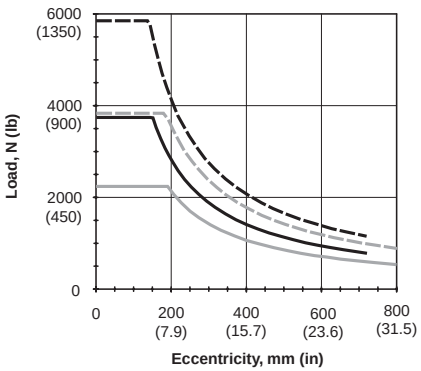
40mm Bore Size



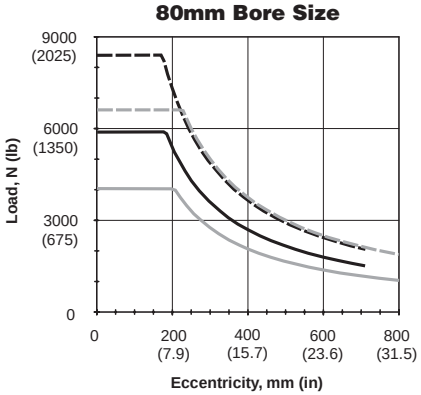
50mm Bore Size



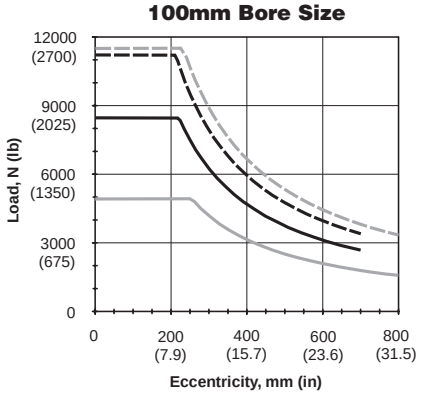
63mm Bore Size

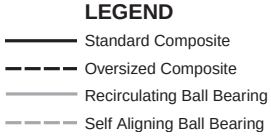


80mm Bore Size



100mm Bore Size





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Horizontal Load Capacity & Deflection with Standard Shafting

- Standard Composite w/ Chrome Plated or Stainless Steel Rods
- Recirculating Ball Bearings w/ Carbon or Stainless Steel Rods
- Self Aligning Ball Bearings w/ Carbon or Stainless Steel Rods

The graphs on the following two pages illustrate the maximum suggested side load at a given actuator stroke. The graphs include the weight of the carriage and are based on a bearing life of 10 million cycles under a dynamic loading condition. For an equivalent static load capacity multiply the information in these graphs by 1.5.

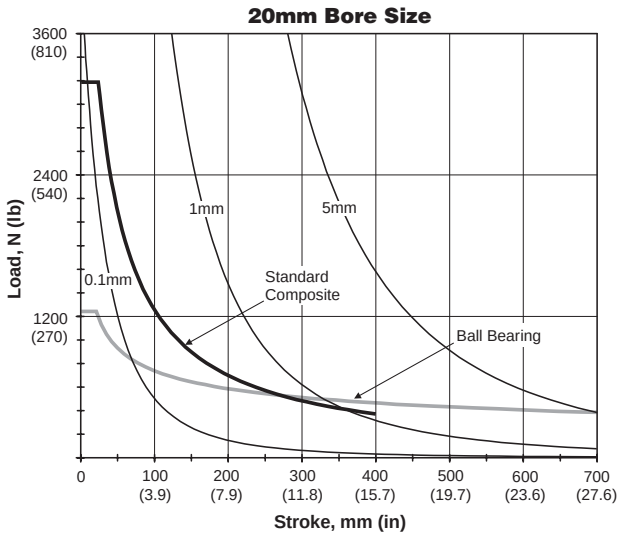
See the P5L options section of this catalog for more bearing selection information.

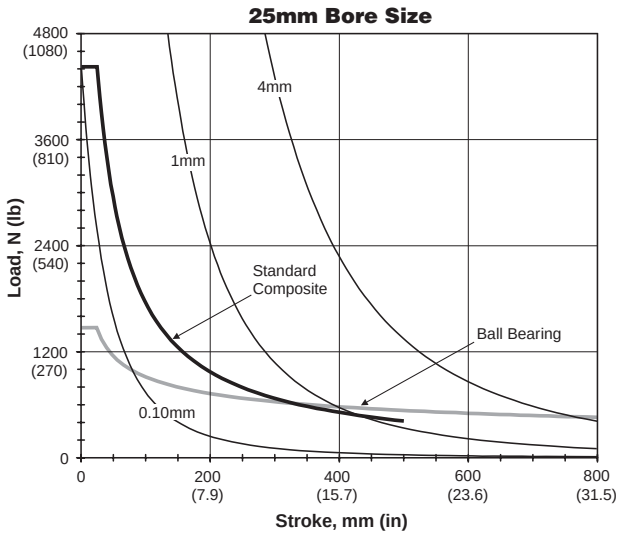
Dynamic loading is defined as a load which is affixed to the actuator tooling plate during the extend or retract motion of the actuator. Capacities are based on bearing and shafts only. Mounting bolts/hardware should be investigated per customer application.

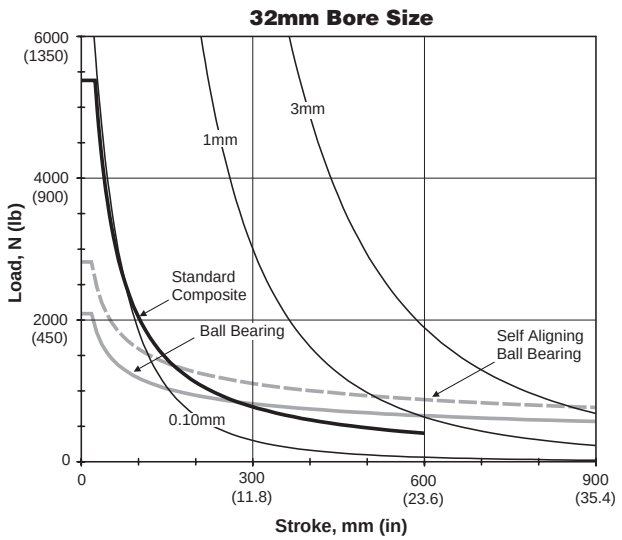
Note: The following variables commonly affect the bearing life of a guided cylinder:

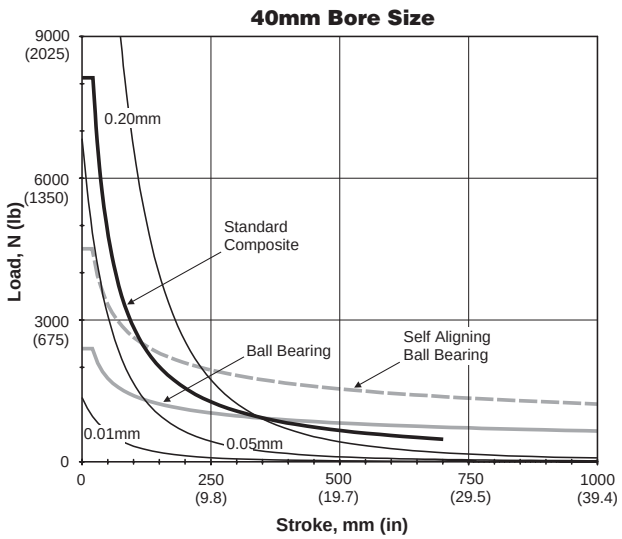
- Velocity
- Vibration
- Orientation
- Environment (Dust, moisture, etc.)

P5L Base Slides









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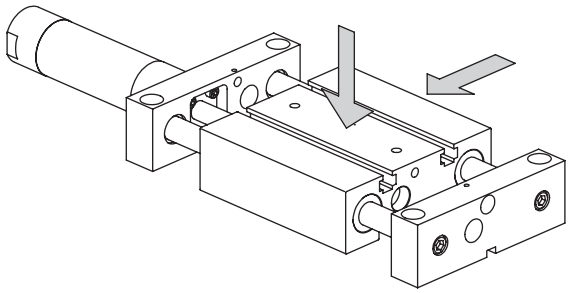
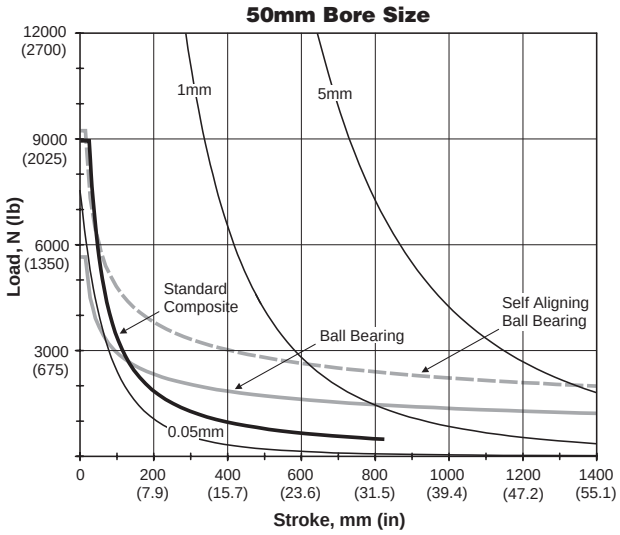
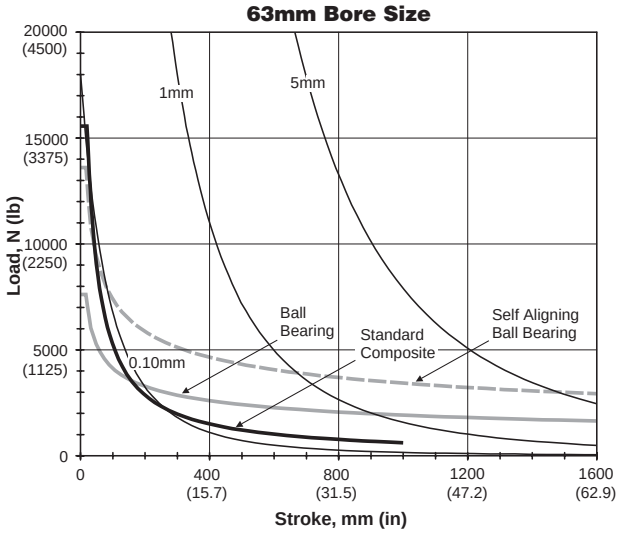
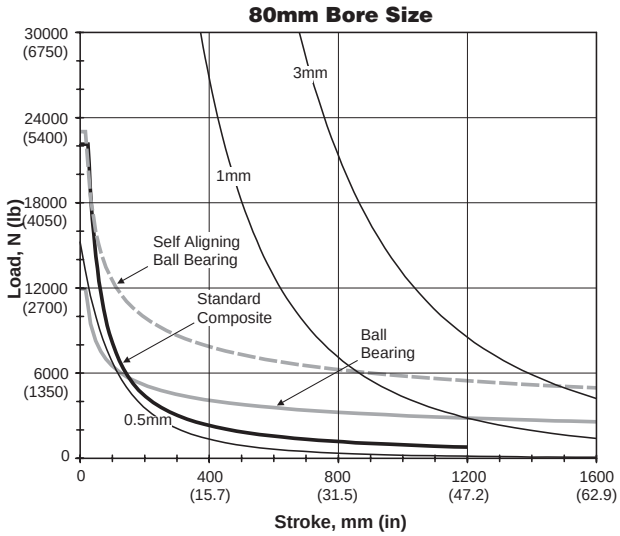
Horizontal Load Capacity & Deflection with Standard Shafting

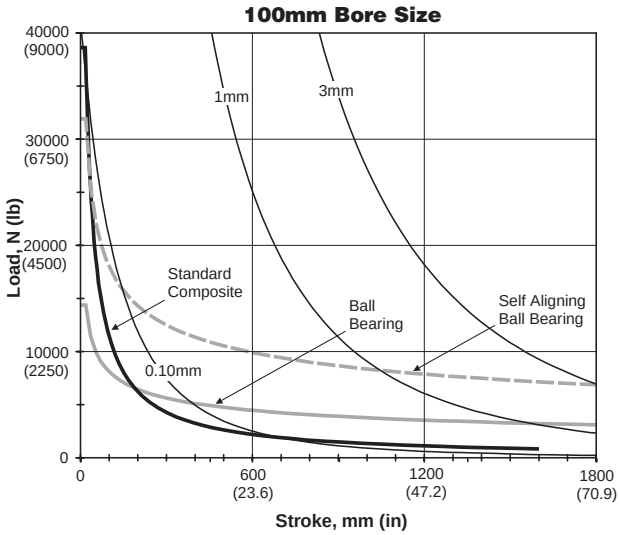


P5L Base Slides









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Horizontal Load Capacity & Deflection with Oversized Shafting

- Oversized Composite w/ Chrome Plated or Stainless Steel Rods

The graphs on the following two pages illustrate the maximum suggested side load at a given actuator stroke. The graphs include the weight of the carriage and are based on a bearing life of 10 million cycles under a dynamic loading condition. For an equivalent static load capacity multiply the information in these graphs by 1.5.

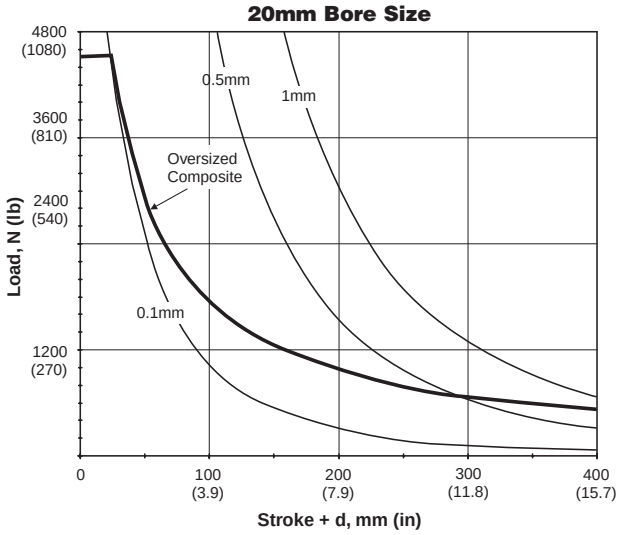
See the P5L options section of this catalog for more bearing selection information.

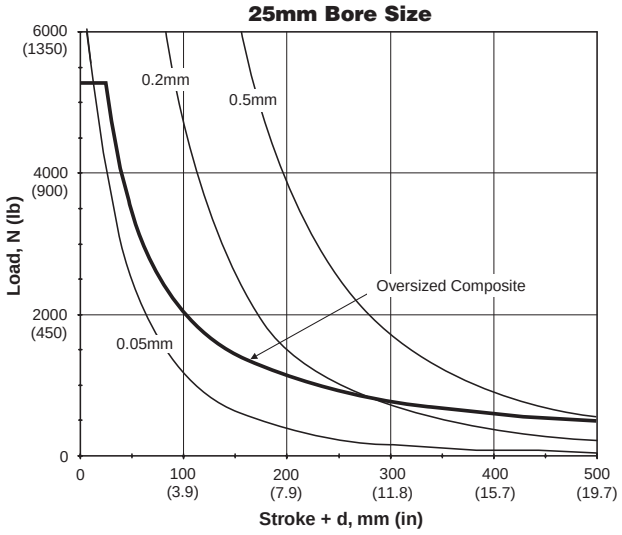
Dynamic loading is defined as a load which is affixed to the actuator tooling plate during the extend or retract motion of the actuator. Capacities are based on bearing and shafts only. Mounting bolts/hardware should be investigated per customer application.

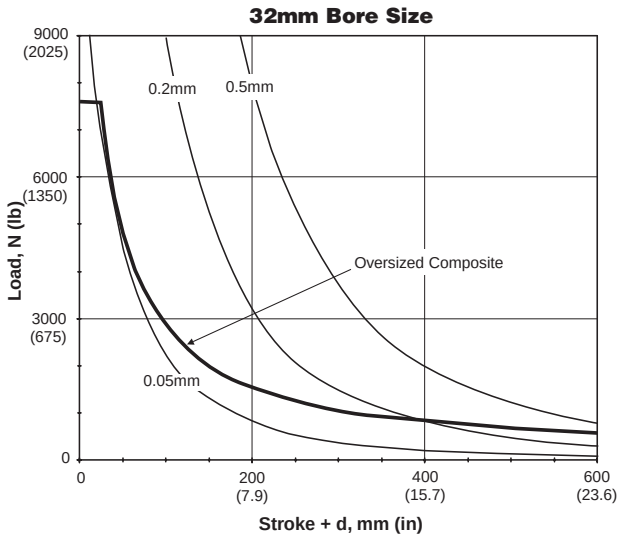
Note: The following variables commonly affect the bearing life of a guided cylinder:

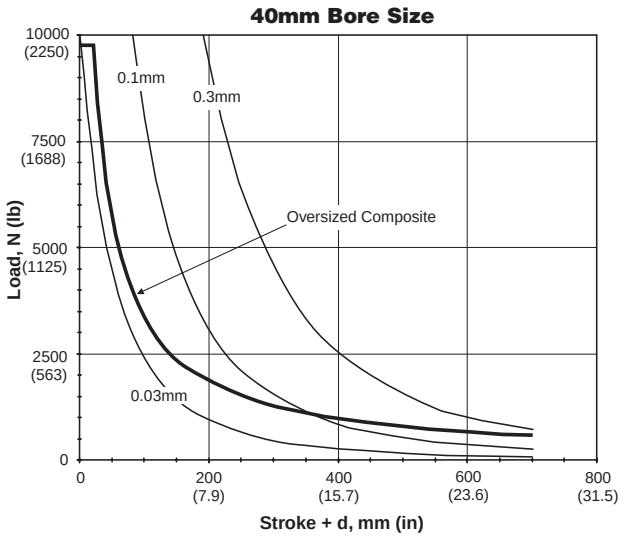
- Velocity
- Vibration
- Orientation
- Environment (Dust, moisture, etc.)

P5L Base Slides









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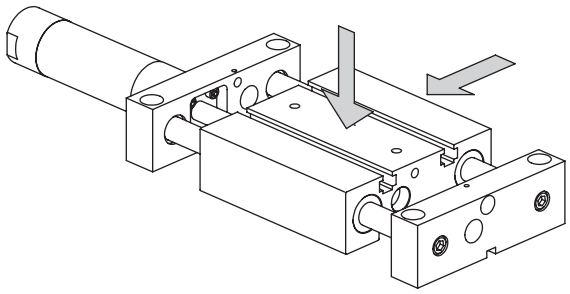
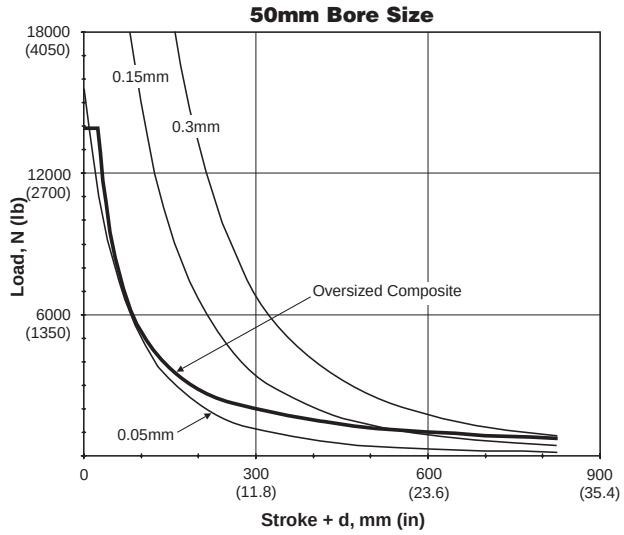
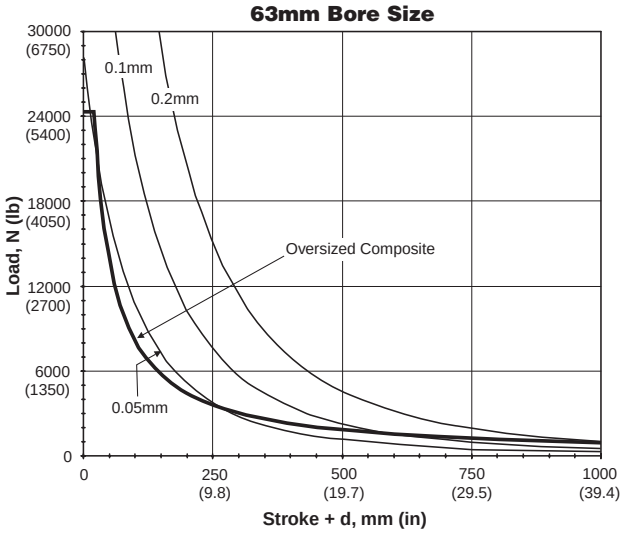
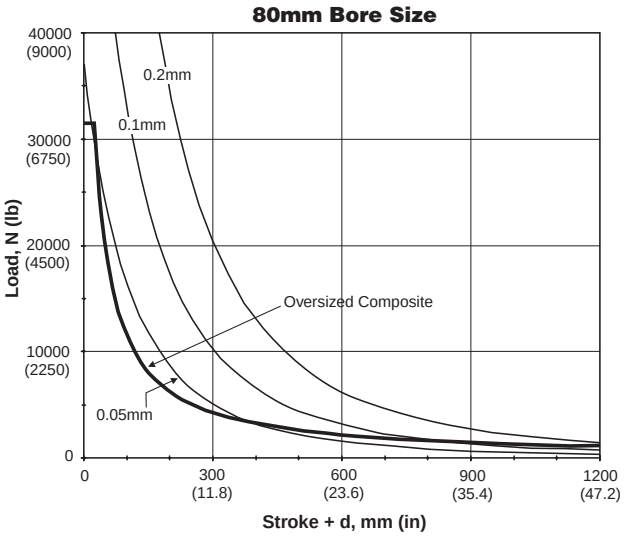
Horizontal Load Capacity & Deflection with Oversized Shafting

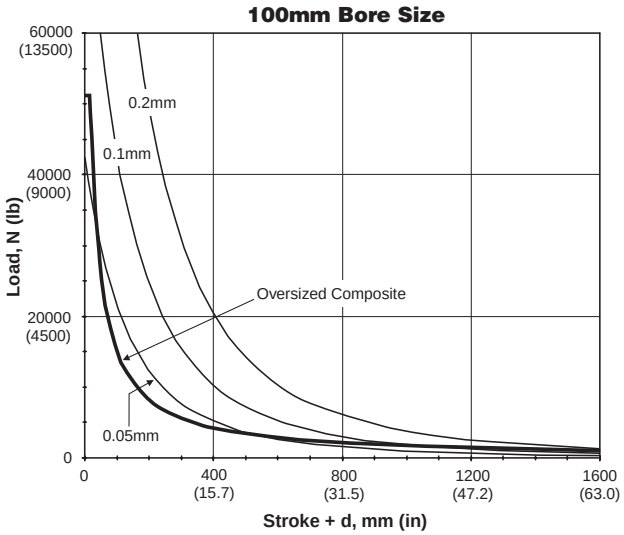


P5L Base Slides









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Symmetrical Roll Torsional Loading

The graphs on the following two pages illustrate the maximum suggested roll load at a given actuator stroke. It is assumed that the moment loading is acting about the centerline of the carriage. The graphs include the weight of the carriage and are based on a bearing life of 10 million cycles under a dynamic loading condition. Capacities are based on bearing and shafts only. Mounting bolts/hardware should be investigated per customer application. For an equivalent static load capacity multiply the information in these graphs by 1.5.

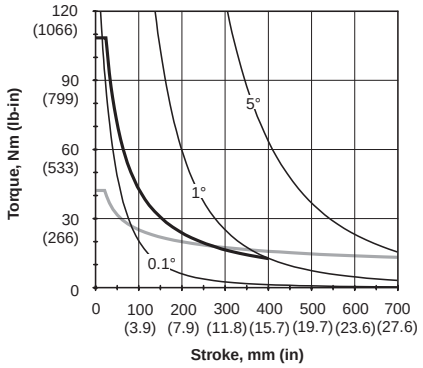
Heavy lines show loading; lighter lines show various degrees of deflection.

Note: The following variables commonly affect the bearing life of a guided cylinder:

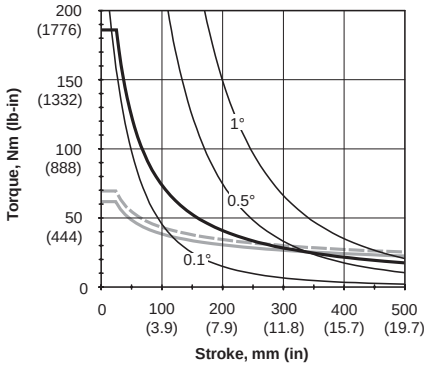
- Velocity
- Vibration
- Orientation
- Environment (Dust, moisture, etc.)

Standard Shafting

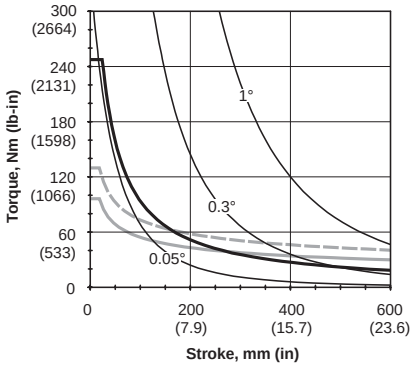
20mm Bore Size



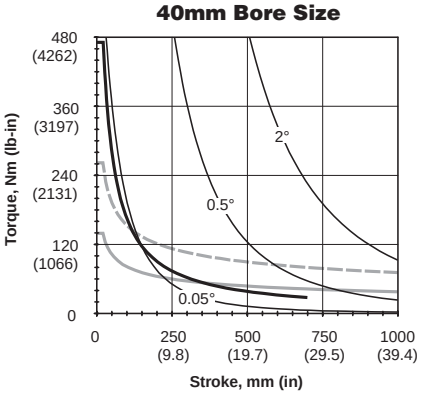
25mm Bore Size



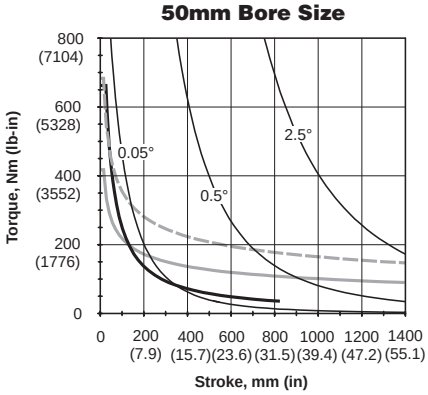
32mm Bore Size



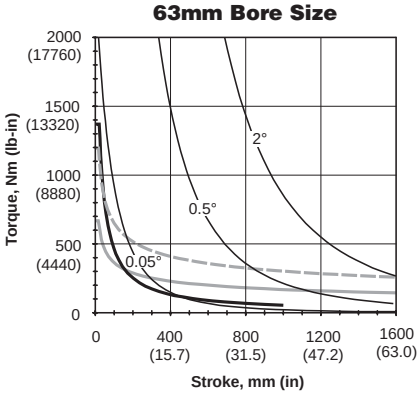
40mm Bore Size



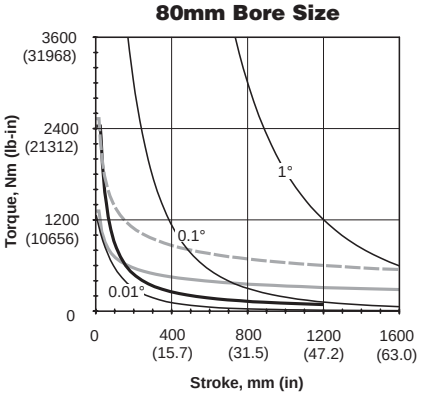
50mm Bore Size



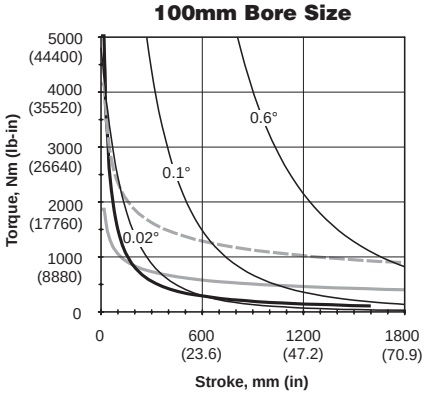
63mm Bore Size

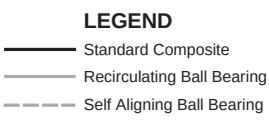


80mm Bore Size



100mm Bore Size





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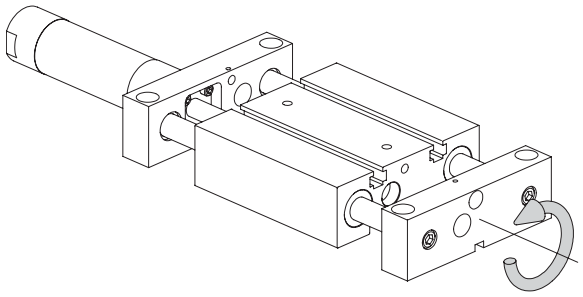
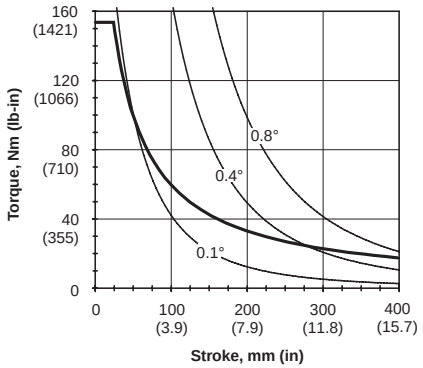
Symmetrical Roll Torsional Loading

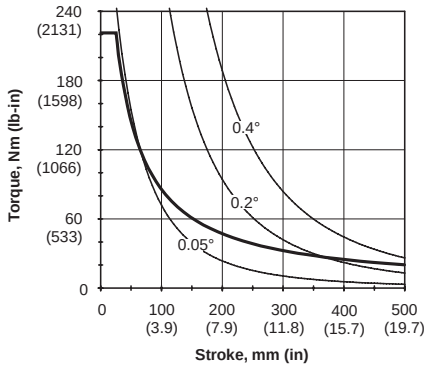


Oversized Shafting

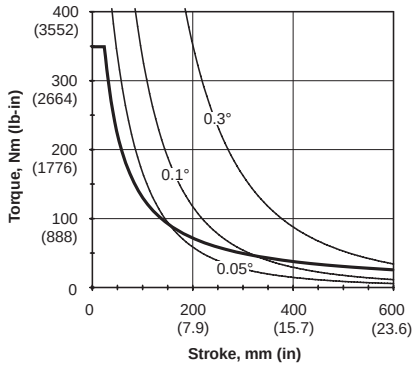
20mm Bore Size



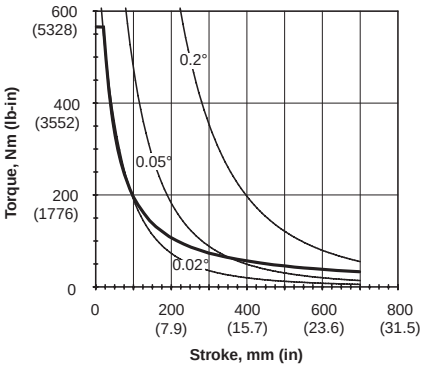
25mm Bore Size



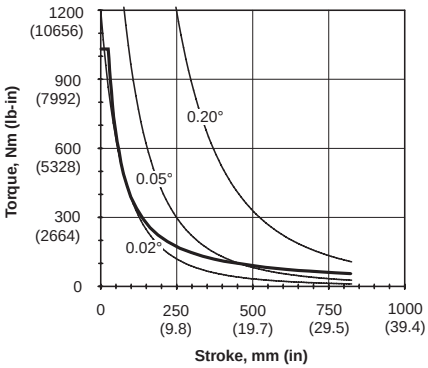
32mm Bore Size



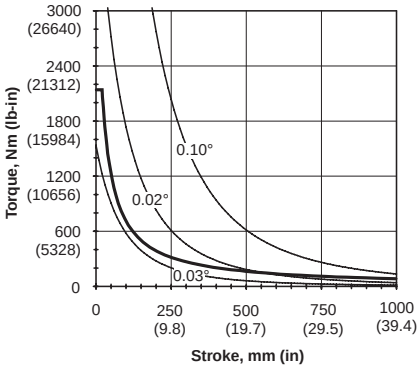
40mm Bore Size



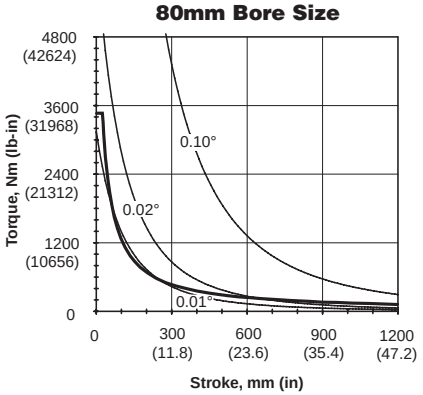
50mm Bore Size



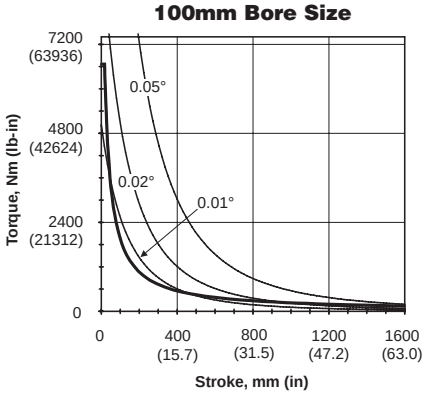
63mm Bore Size



80mm Bore Size



100mm Bore Size



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Symmetrical Pitch Torsional Loading

The graphs on the following two pages illustrate the maximum suggested pitch load at a given actuator stroke. It is assumed that the moment loading is acting about the centerline of the carriage. The graphs include the weight of the carriage and are based on a bearing life of 10 million cycles under a dynamic loading condition. Capacities are based on bearing and shafts only. Mounting bolts/hardware should be investigated per customer application. For an equivalent static load capacity multiply the information in these graphs by 1.5.

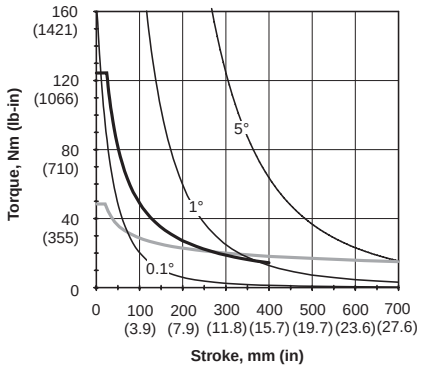
Heavy lines show loading; lighter lines show various degrees of deflection.

Note: The following variables commonly affect the bearing life of a guided cylinder:

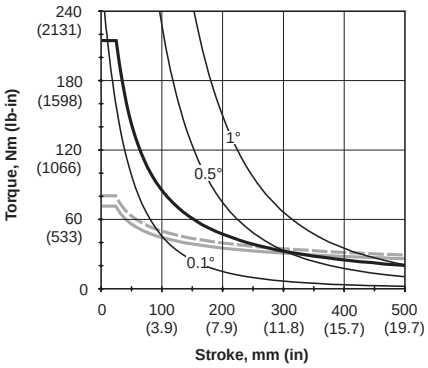
- Velocity
- Vibration
- Orientation
- Environment (Dust, moisture, etc.)

Standard Shafting

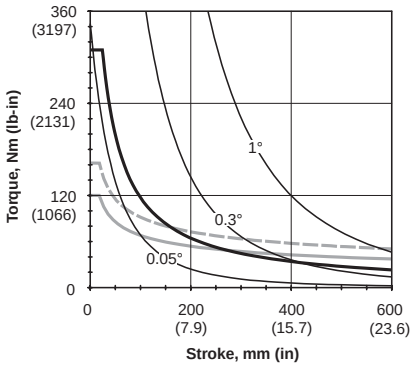
20mm Bore Size



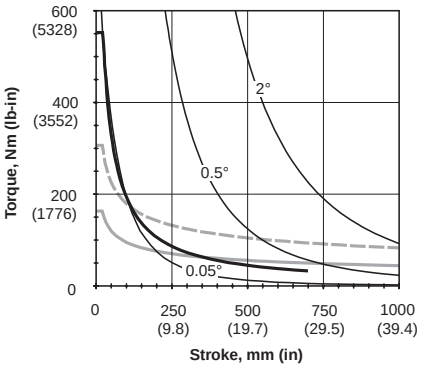
25mm Bore Size



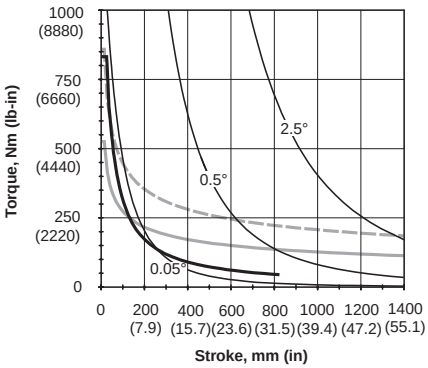
32mm Bore Size



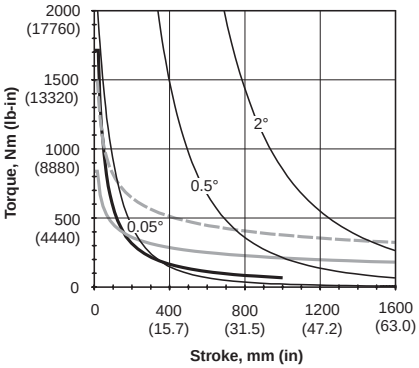
40mm Bore Size



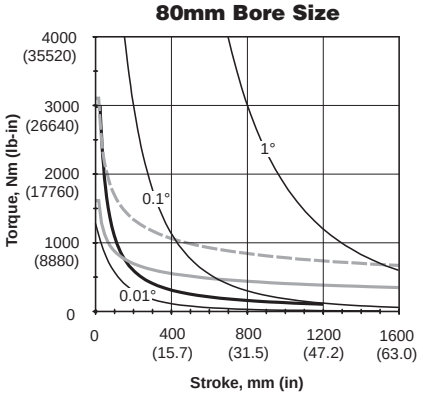
50mm Bore Size



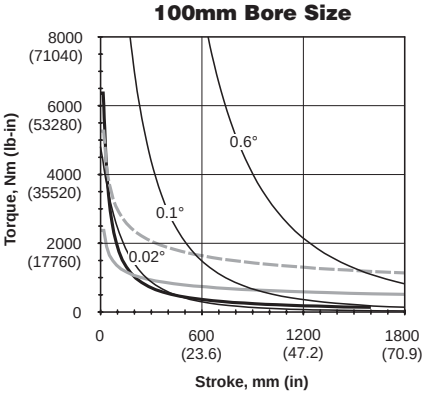
63mm Bore Size



80mm Bore Size



100mm Bore Size



LEGEND

- Standard Composite
- Recirculating Ball Bearing
- Self Aligning Ball Bearing

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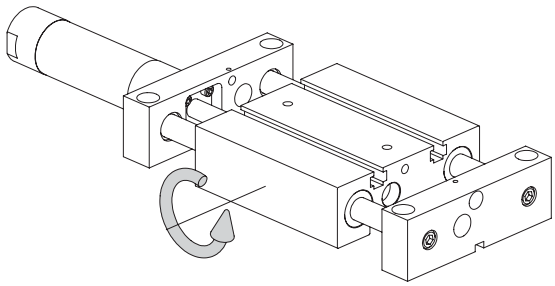
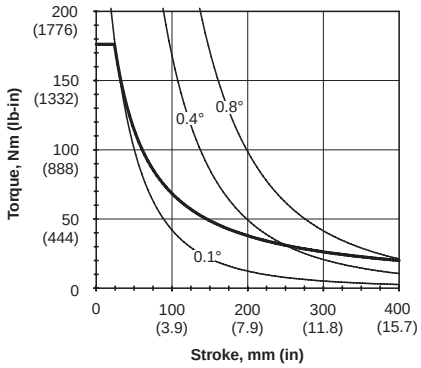
Symmetrical Pitch Torsional Loading

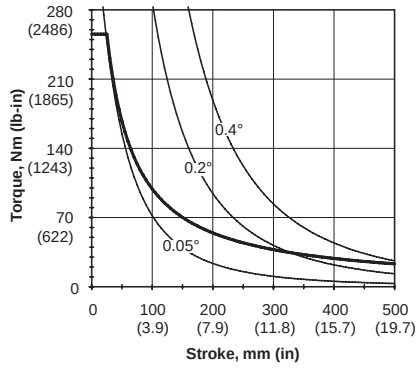


Oversized Shafting

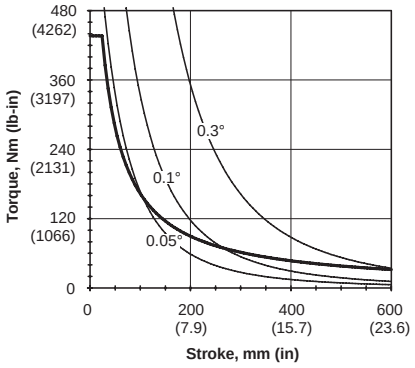
20mm Bore Size



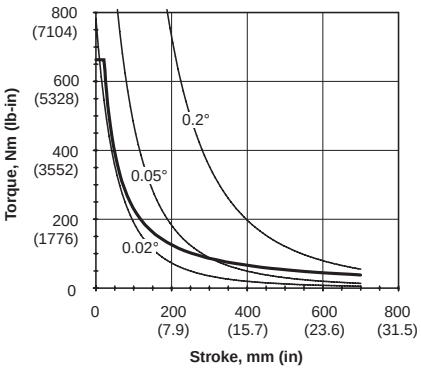
25mm Bore Size



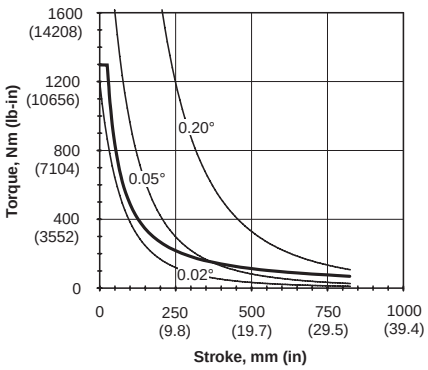
32mm Bore Size



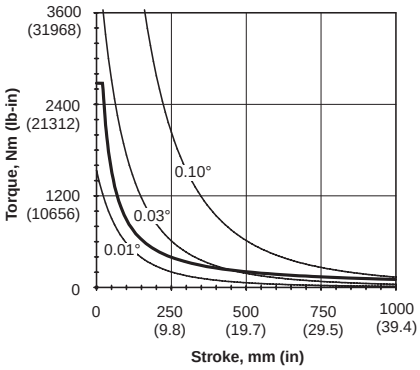
40mm Bore Size



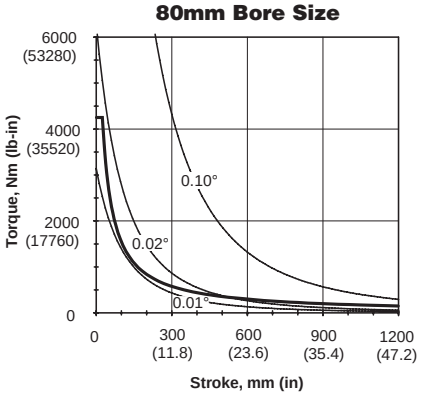
50mm Bore Size



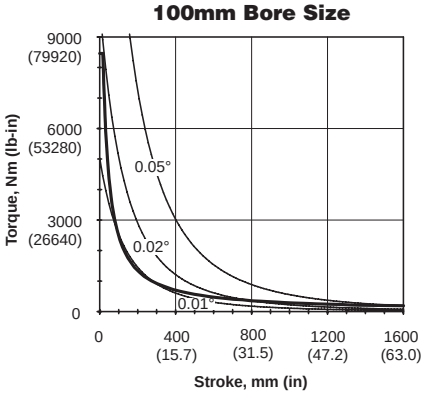
63mm Bore Size



80mm Bore Size



100mm Bore Size



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Symmetrical Yaw Torsional Loading

The graphs on the following two pages illustrate the maximum suggested yaw load at a given actuator stroke. It is assumed that the moment loading is acting about the centerline of the carriage. The graphs include the weight of the carriage and are based on a bearing life of 10 million cycles under a dynamic loading condition. Capacities are based on bearing and shafts only. Mounting bolts/hardware should be investigated per customer application. For an equivalent static load capacity multiply the information in these graphs by 1.5.

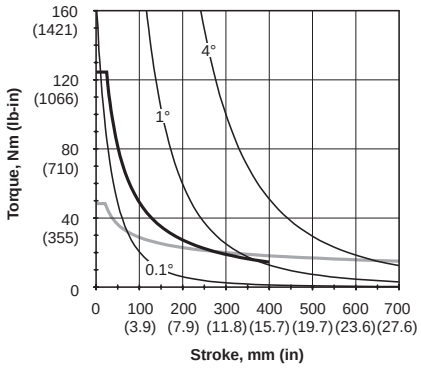
Heavy lines show loading; lighter lines show various degrees of deflection.

Note: The following variables commonly affect the bearing life of a guided cylinder:

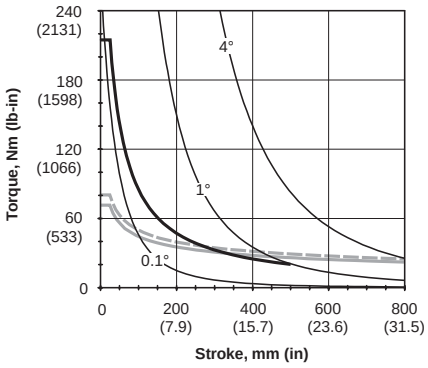
- Velocity
- Vibration
- Orientation
- Environment (Dust, moisture, etc.)

Standard Shafting

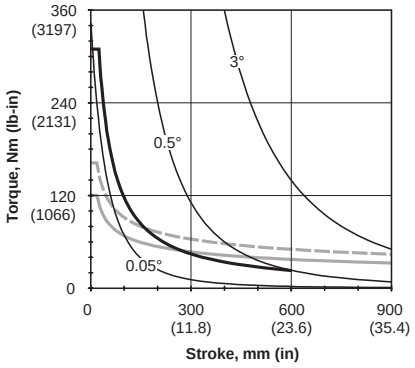
20mm Bore Size



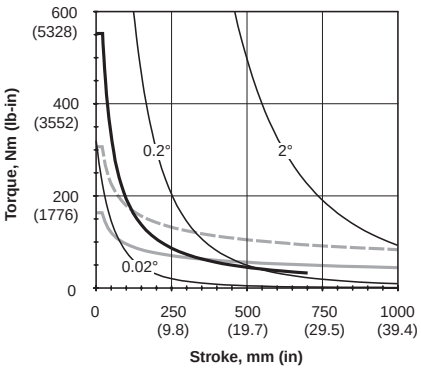
25mm Bore Size



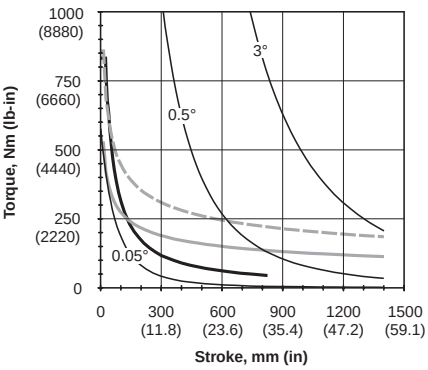
32mm Bore Size



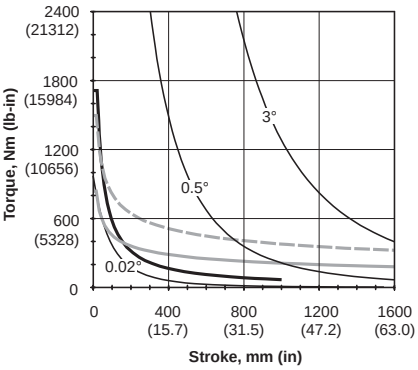
40mm Bore Size



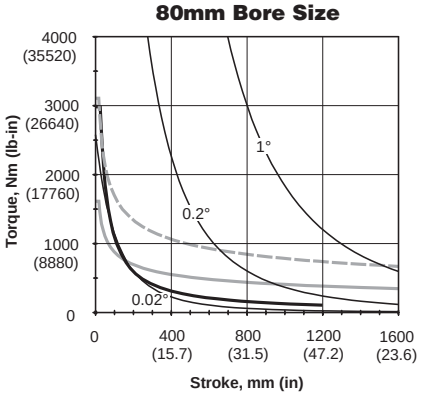
50mm Bore Size



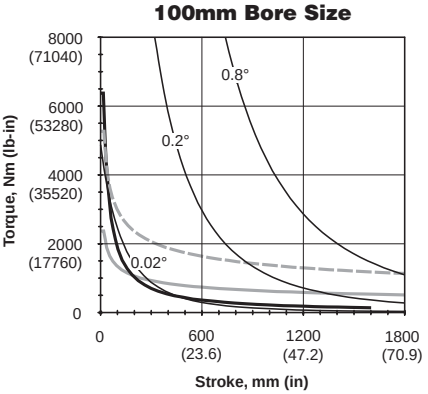
63mm Bore Size

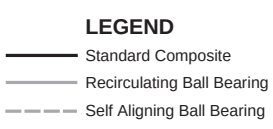


80mm Bore Size



100mm Bore Size





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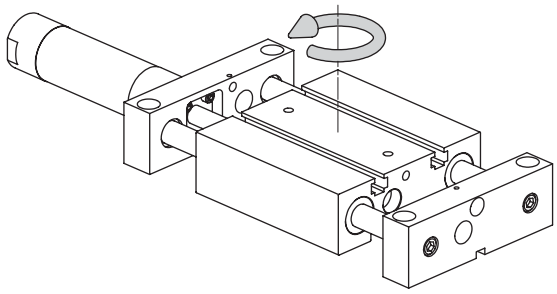
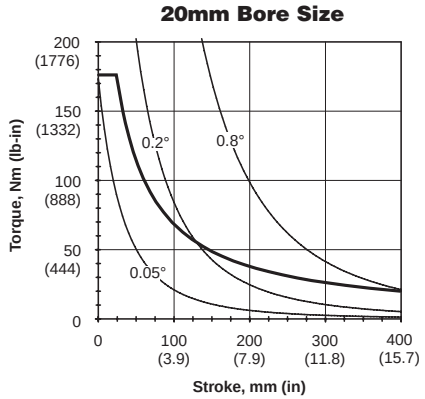
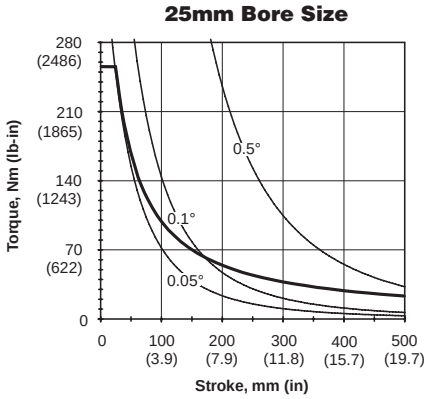
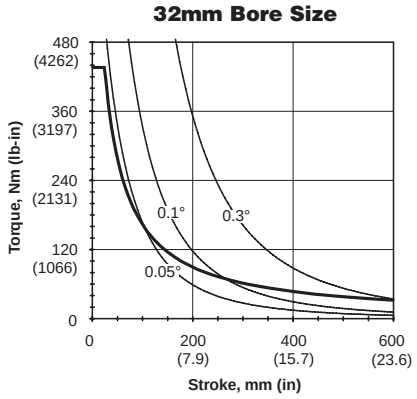
Symmetrical Yaw Torsional Loading

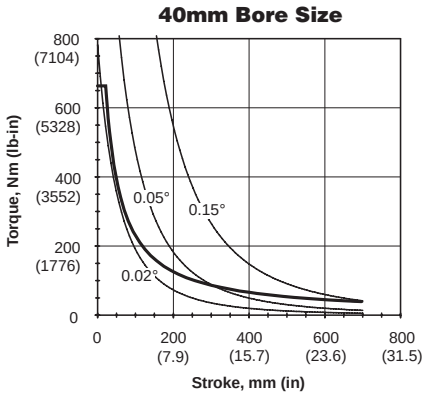


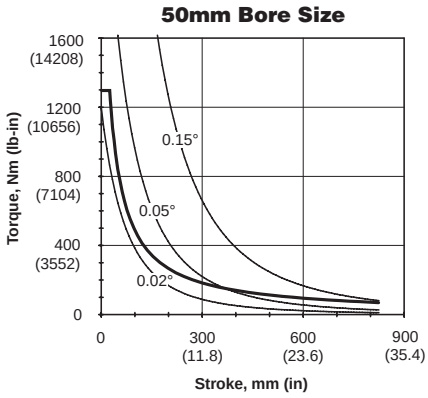
Oversized Shafting

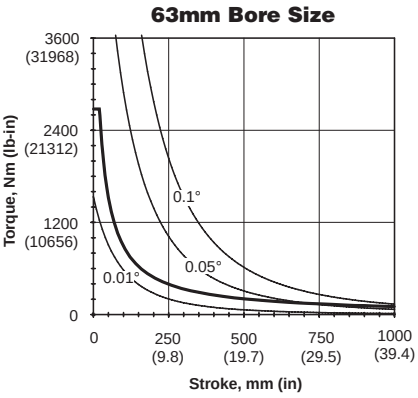


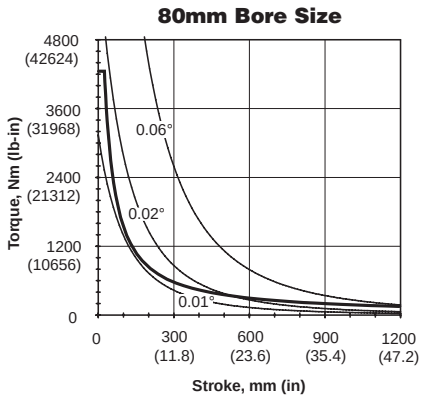


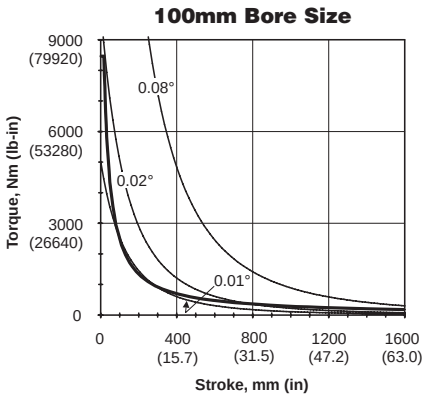












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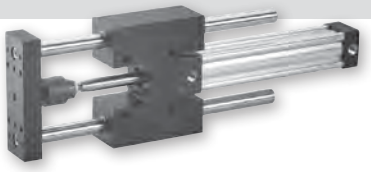
HB Series

- Medium duty to extremely heavy duty linear motion
- Powered by the 3MA or 4MA NFPA cylinder, with ISO options available
- Bore sizes 1-1/2", 2", and 2-1/2"
- Thrust, reach, and compact versions available
- Shock absorber, bumpers/stop collars, and proximity sensor options available



Operating information

Operating pressure:	Maximum	100 PSIG (7 bar), air – 4MAJ cylinder 150 PSIG (10 bar), air – P1D cylinder 250 PSIG (17 bar), air – 3MA, 4MA and 2A cylinders 400 PSIG (28 bar), oil – 4ML cylinder only 750 PSIG (52 bar), oil – 3L cylinder only
Temperature range:	Cylinder	Standard seals 0°F to 165°F (-18°C to 74°C) Fluorocarbon seals* 0°F to 250°F (-18°C to 121°C) * See fluorocarbon seal option for high temperature applications. Not available for 3MA or rod lock cylinders.
Filtration requirements:		40 micron, dry filtered air

Ordering information for HBC, HBT and HBR

HBT	25	–	08	A	P1	T	F	4A		–	B	

Series

HBC	Compact slide
HBT	Thrust slide
HBR	Reach slide

Model

15	1-1/2" bore, 20mm shaft
20	2" bore, 25mm shaft
25	2-1/2" bore, 30mm shaft

Stroke length

Order in 1" increments. [4]

For 3-position units, specify intermediate and total stroke separated by a "/", i.e. 02/06.

Consult factory for strokes over 36".

Bushings

T	Composite (standard)
D	Linear ball bearing
T1	Composite with oversized support shafts
TC	Composite with contaminant-tolerant seals

Design Series

B	Current design level

Special Options

Blank	standard

(Two digit code assigned by factory and applies when any "X" appears in the model number or when special options or features are required.)

Slide Configuration Options

Blank	None
A	Shock absorber, both ends
A1	Shock absorber, extend only
A2	Shock absorber, retract only
A3	Shock ready, both ends
A4	Shock ready, extend
A5	Shock ready, retract
B	Bumpers both ends [1]
B1	Bumper & adjustable stop collar, extend only
B2	Bumper retract only
B3	Bumper & adjustable stop collar, retract only
B4	Bumper & adjustable stop collar, both ends
C	Cushions on cylinder, both ends [2]
C1	Cushion on cylinder, extend only [2]
C2	Cushion on cylinder, retract only [2]
X	Special slide configuration (please specify)

Proximity Sensor Options

Blank	None
P	PNP, flying lead type
N	NPN, flying lead type
P1	PNP, plug-in connector
N1	NPN, plug-in connector
J	8mm sensor mounting bracket, no sensor supplied
J1	12mm sensor mounting bracket, no sensor supplied

Note: 8mm inductive proximity sensors are included with Options P, N, P1, N1. Magnetic piston is standard for 3MA, 4MA, 4MAJ, 4ML and P1D cylinders. Order reed and solid state sensors separately for these cylinders from the Electronic Sensors section.

Other Options
(More than one selection is possible)

Blank	None
F	Flow controls (presto-lok)
G	Flow controls (NPT)
K	Stainless steel support shafting

Cylinder Options
(More than one selection is possible)

Blank	None
V	Fluorocarbon cylinder seals [3]
L1	Left hand assembly
L3	Cylinder ports at position [3]

Cylinder Type

3A	3MA NFPA air cylinder, NPTF ports [2]
4A	4MA NFPA air cylinder, NPTF ports
4J	4MAJ NFPA air cylinder with manual override rodlock, NPTF ports, 100 PSIG max.
D	P1D ISO cylinder w/ removable gland, BSPP ports
D1	P1D ISO cylinder w/ removable gland, Standard Rodlock, BSPP ports
D2	P1D ISO cylinder w/ removable gland, manual override rodlock, BSPP ports
E	P1D ISO cylinder w/ removable gland, NPTF ports
E1	P1D ISO cylinder w/ removable gland, standard rodlock, NPTF ports
E2	P1D ISO cylinder w/ removable gland, manual override rodlock, NPTF ports
4L	4ML NFPA hydraulic cylinder, NPTF ports, 400 PSIG max. [2]
S	2A NFPA steel air cylinder, 250 PSIG max.
S1	3L NFPA steel hydraulic cylinder, 750 PSIG max. (Stop collars, bumpers, and flow controls not available with this option.)
Q	No cylinder, NFPA cylinder mounting
Q1	No cylinder, ISO cylinder mounting
X	Special cylinder type (please specify)

NOTES

1 Option B includes options B1 and B2.
2 Cushions are not available with 4ML cylinders or 3MA cylinders on HB products.
3 Fluorocarbon seals not available with 3MA or rodlock cylinders.
4 P1D cylinders have strokes only in whole mm. The HB inch stroke will be changed (rounded up) to reflect this.

Sensors

For sensors see page B339.

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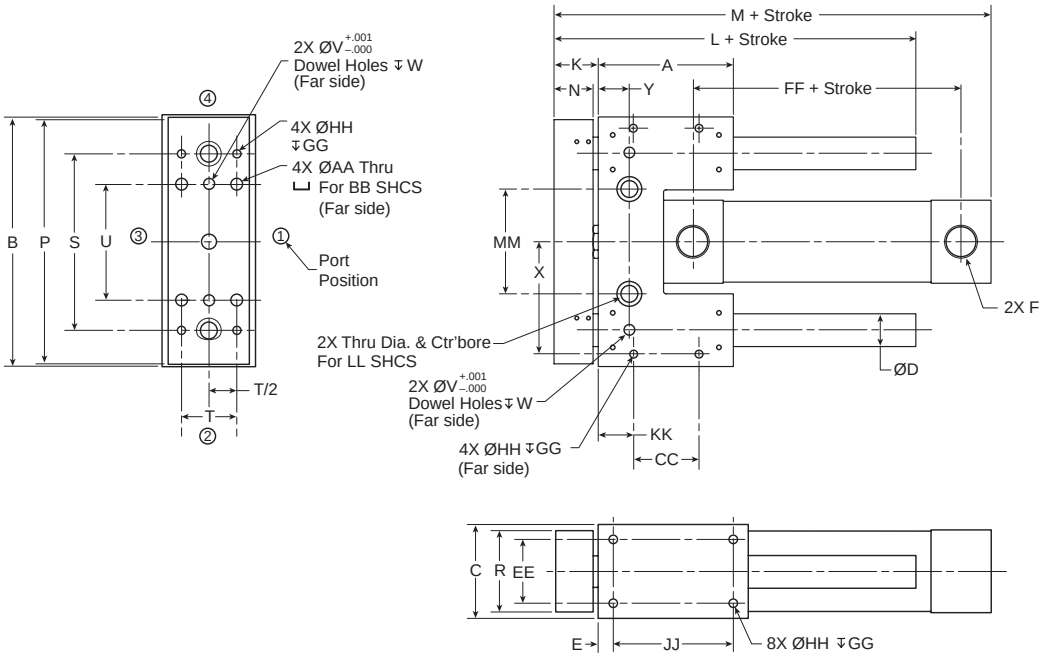
HBC Series



Model number	A	B	C	Ds*	Do**	E	F NPTF	F BSPP	K	L	M	N	P	R	S	T	U
15[1]	3.25	6.00	2.25	20mm (0.79)	25mm (0.98)	0.375	1/4[1]	1/4	1.06	5.19	6.26	0.94	5.88	1.94	4.250	1.375	2.750
20	4.00	7.25	2.75	25mm (0.98)	30mm (1.18)	0.500	3/8	1/4	1.31	6.39	7.00	1.19	7.13	2.44	5.000	1.750	3.250
25	5.00	9.00	3.25	30mm (1.18)	35mm (1.38)	0.500	3/8	3/8	1.56	7.82	8.38	1.44	8.88	2.88	6.500	2.000	3.750

Model number	V	W	X	Y	AA	BB	CC	EE	FF	GG	HH	JJ	KK	LL	MM
15[1]	0.251	0.27	2.750	0.750	0.28	1/4	1.750	1.500	2.31	0.50	1/4-20	2.50	0.75	3/8	2.500
20	0.313	0.33	3.250	0.750	0.34	5/16	2.250	1.750	2.31	0.63	5/16-18	3.00	0.88	3/8	3.000
25	0.376	0.39	4.000	1.532	0.41	3/8	3.000	2.250	2.38	0.75	3/8-16	4.00	1.00	1/2	4.000

* Standard shafting
** Oversized shafting
1 Model 15 with Cylinder Type 3A (3MA cylinder) has 3/8" NPTF ports.

All dimensions in inches unless otherwise noted.

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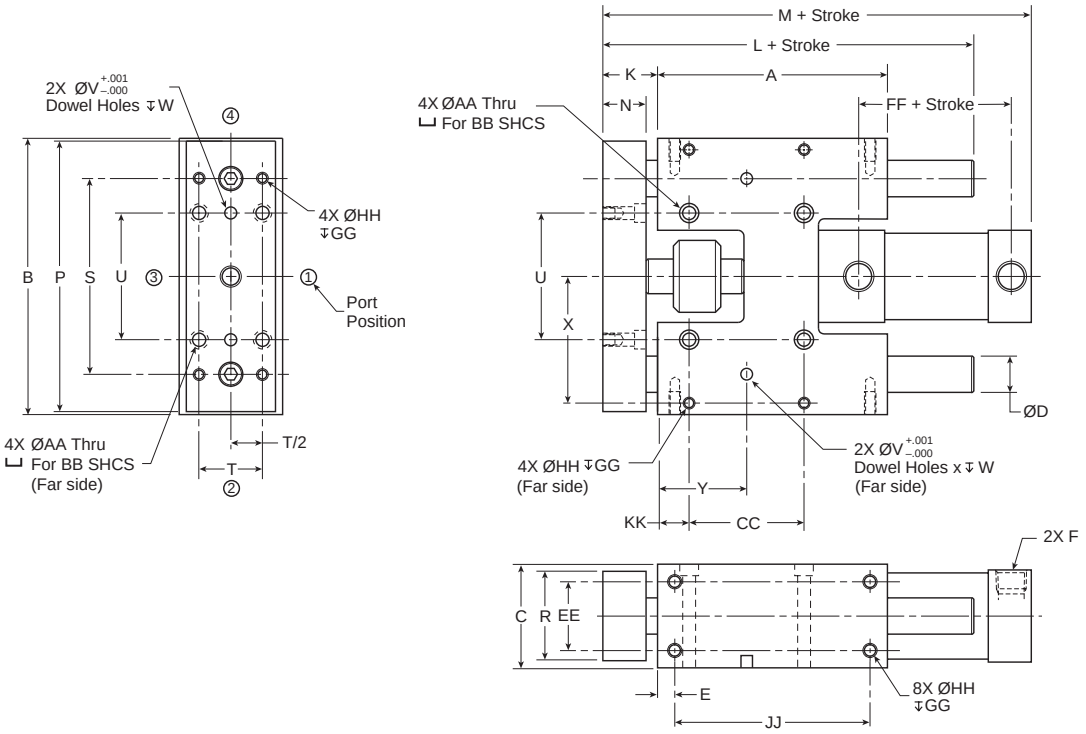
HBT Series



Model number	A	B	C	Ds*	Do**	E	F NPTF	F BSPP	K	L	M	N	P	R	S	T
15	5.0	6.00	2.25	20mm (0.79)	25mm (0.98)	0.375	1/4 1	1/4	1.06	6.94	8.19	0.94	5.88	1.94	4.250	1.375
20	5.5	7.25	2.75	25mm (0.98)	30mm (1.18)	0.500	3/8	1/4	1.31	7.88	8.94	1.19	7.13	2.44	5.000	1.750
25	6.5	9.00	3.25	30mm (1.18)	35mm (1.38)	0.500	3/8	3/8	1.56	9.31	10.31	1.44	8.88	2.88	6.500	2.000

Model number	U	V	W	X	Y	AA	BB	CC	EE	FF	GG	HH	JJ	KK
15	2.750	0.251	0.27	2.750	1.938	0.28	1/4	2.500	1.500	2.31	0.50	1/4-20	4.25	0.69
20	3.250	0.313	0.33	3.250	2.250	0.34	5/16	2.750	1.750	2.31	0.63	5/16-18	4.50	0.88
25	3.750	0.376	0.39	4.000	2.750	0.41	3/8	3.500	2.250	2.38	0.75	3/8-16	5.50	1.00

* Standard shafting
** Oversized shafting
1 Model 15 with Cylinder Type 3A (3MA cylinder) has 3/8" NPTF ports.

All dimensions in inches unless otherwise noted.

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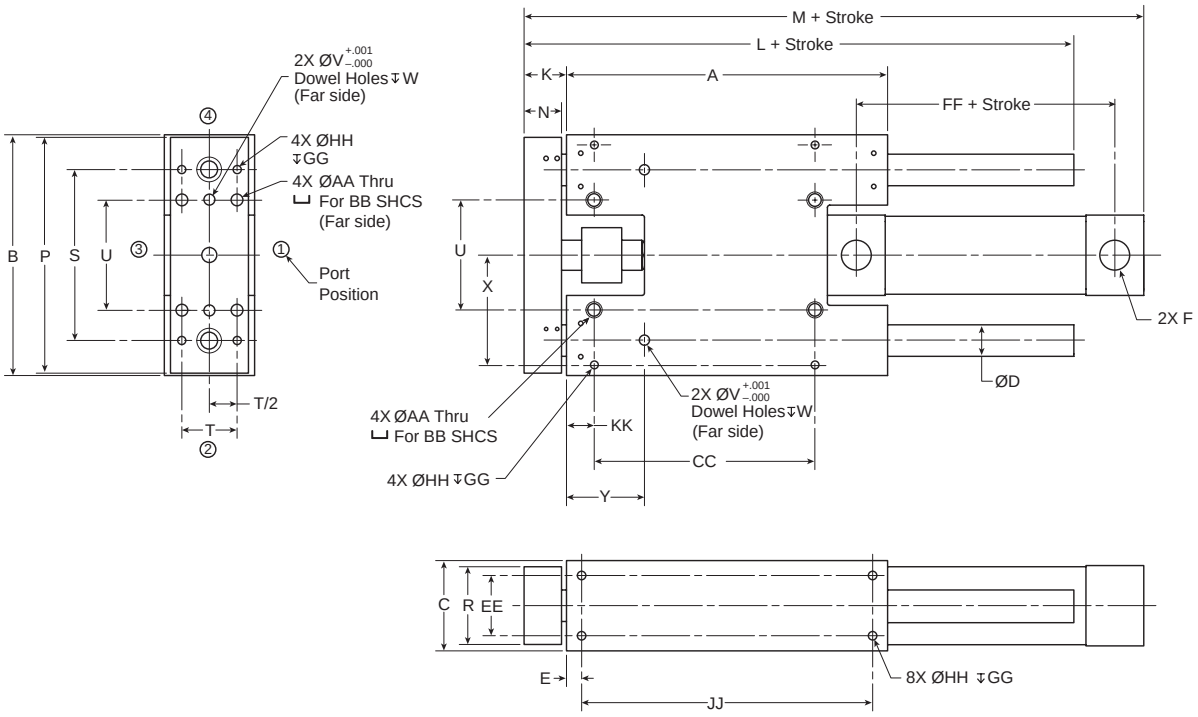
HBR Series



Model number	A	B	C	Ds*	Do**	E	F NPTF	F BSPP	K	L	M	N	P	R	S	T
15	8.00	6.00	2.25	20mm (0.79)	25mm (0.98)	0.375	1/4 1	1/4	1.06	9.94	11.19	0.94	5.88	1.94	4.250	1.375
20	10.00	7.25	2.75	25mm (0.98)	30mm (1.18)	0.500	3/8	1/4	1.31	12.39	13.44	1.19	7.13	2.44	5.000	1.750
25	12.00	9.00	3.25	30mm (1.18)	35mm (1.38)	0.500	3/8	3/8	1.56	14.82	15.82	1.44	8.88	2.88	6.500	2.000

Model number	U	V	W	X	Y	AA	BB	CC	EE	FF	GG	HH	JJ	KK
15	2.750	0.251	0.27	2.750	1.938	0.28	1/4	5.500	1.500	2.31	0.50	1/4-20	7.25	0.69
20	3.250	0.313	0.33	3.250	2.250	0.34	5/16	7.250	1.750	2.31	0.63	5/16-18	9.00	0.88
25	3.750	0.376	0.39	4.000	2.760	0.41	3/8	9.000	2.250	2.38	0.75	3/8-16	11.00	1.00

* Standard shafting
** Oversized shafting
1 Model 15 with Cylinder Type 3A (3MA cylinder) has 3/8" NPTF ports.

All dimensions in inches unless otherwise noted.

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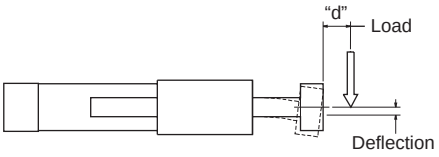
Horizontal Load Capacity & Deflection with Standard Shafting

The graphs illustrate the side load vs. actuator stroke for the three HB slide sizes. Applied loads will cause a slight deflection of the support rods. The graphs include the weight of the support rods and tooling plate and are based on a bearing life equivalent to 10 million cycles for dynamic conditions. Higher dynamic loads will reduce cycle life. For static loads, multiply the information in the graph by 1.5.

Note: Actuator life may vary depending on the severity of the following variables:

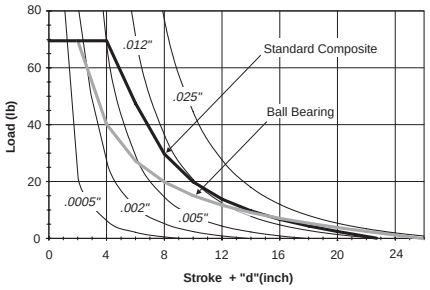
- Acceleration
- Velocity
- Vibration
- Orientation



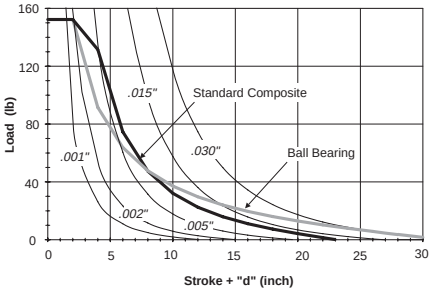
EXAMPLE:

An HBT15 with ball bearings and a "stroke+d" of 12" would have a load capacity of 20 lbs.

HBC15



HBC20



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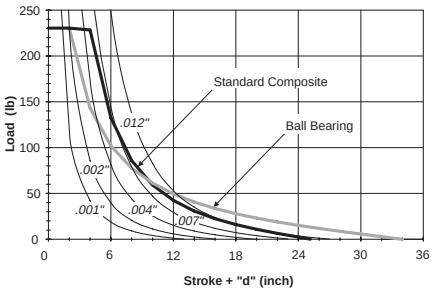
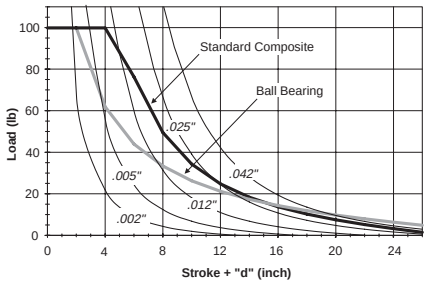


HBT15



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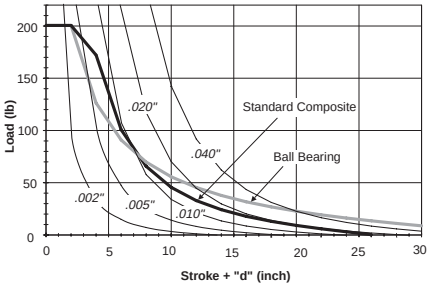

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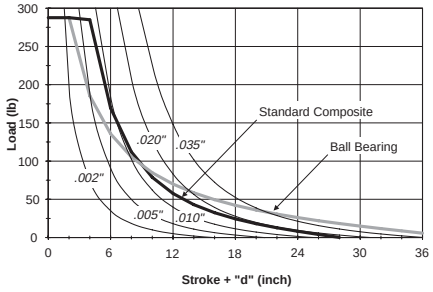

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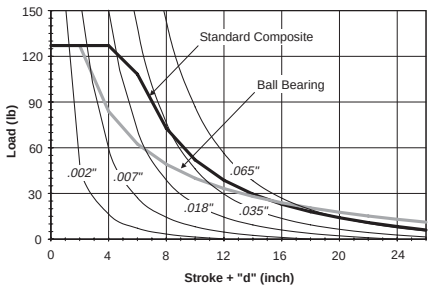

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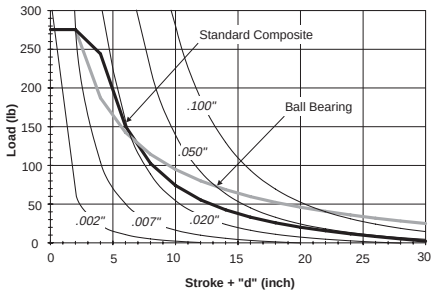

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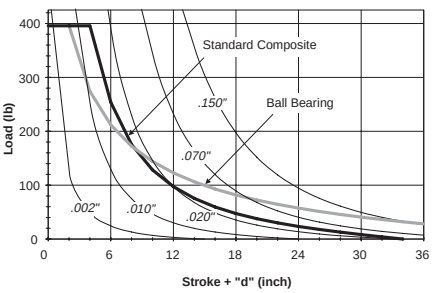

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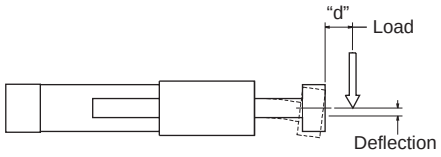
Horizontal Load Capacity & Deflection with Oversized Shafting

The graphs illustrate the side load vs. actuator stroke for the three HB slide sizes. Applied loads will cause a slight deflection of the support rods. Deflection distance is also shown. The graphs include the weight of the support rods and tooling plate and are based on a bearing life equivalent to 10 million cycles for dynamic conditions. Higher dynamic loads will reduce cycle life. For static loads, multiply the information in the graph by 1.5.

Note: Actuator life may vary depending on the severity of the following variables:

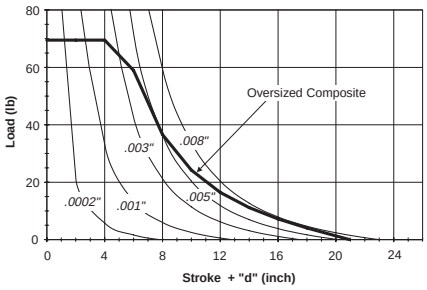
- Acceleration
- Velocity
- Vibration
- Orientation



EXAMPLE:

An HBT15 with oversized composite bushings and a "stroke+d" of 8" would have a load capacity of 60 lbs.

HBC15



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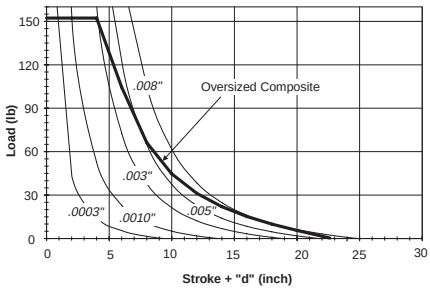

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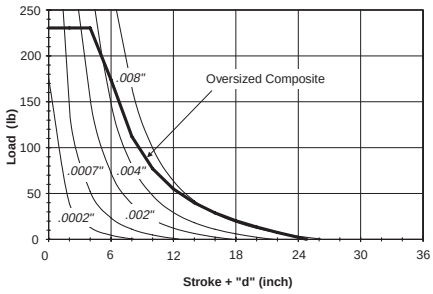
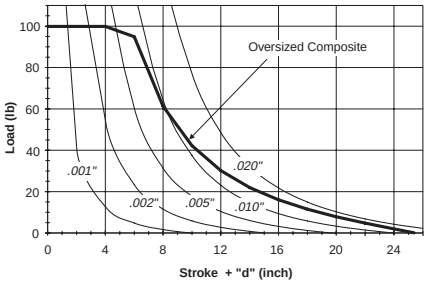


HBT15



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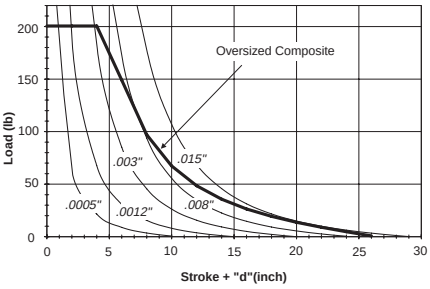

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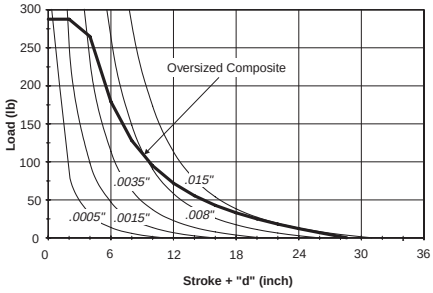

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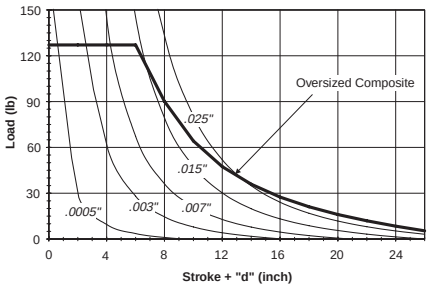

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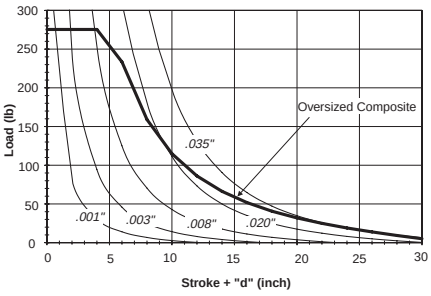

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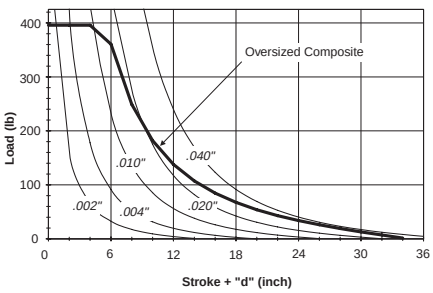

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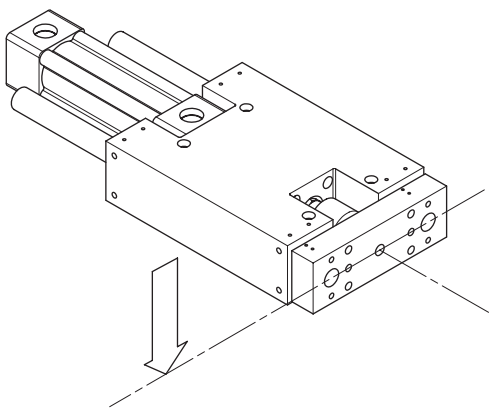
Asymmetrical Torque Capacity

Asymmetrical loading occurs when the load is applied to one side of the unit. HB Series units can resist torsional loads that are asymmetrical. The graphs show torsional load capacity for both standard and oversized shafting under dynamic conditions For static applications, multiply the information in the graphs by 1.5. The vertical load for HBN does not include the weight of the tool plate and support rods.

Note: Actuator life may vary depending on the severity of the following variables:

- Acceleration
- Velocity
- Vibration
- Orientation

Torsional Load



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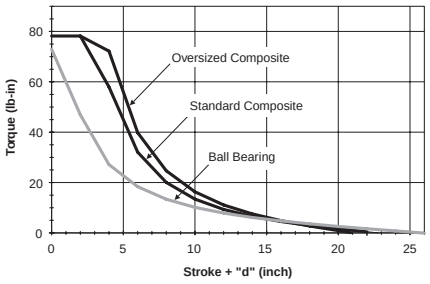

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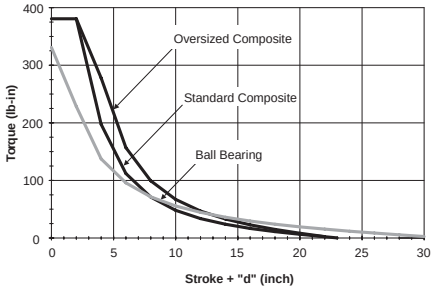

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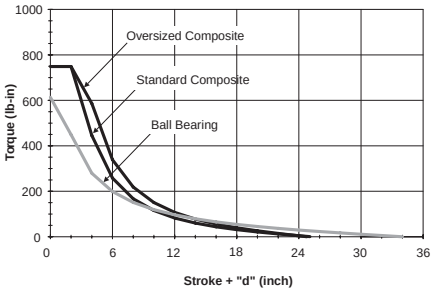

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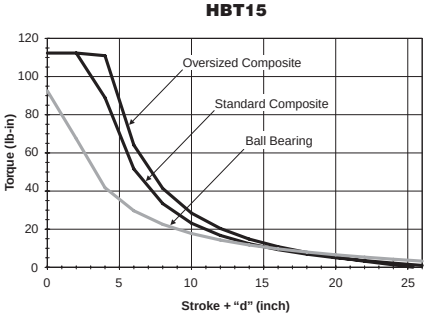

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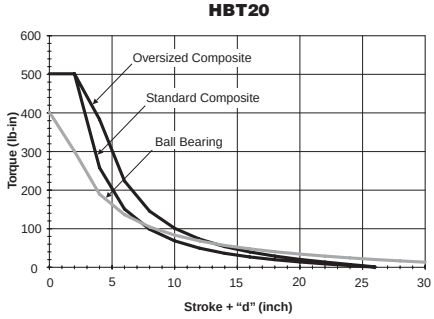

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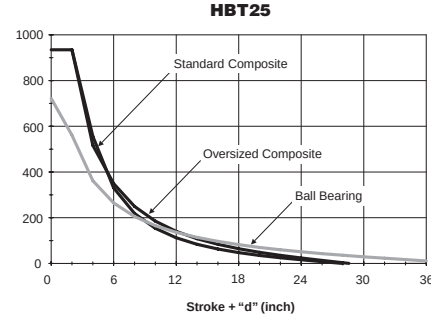

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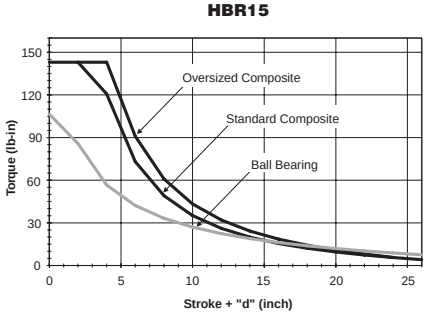

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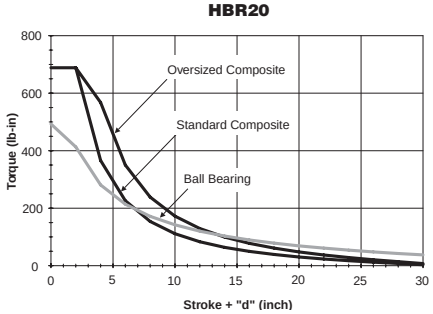

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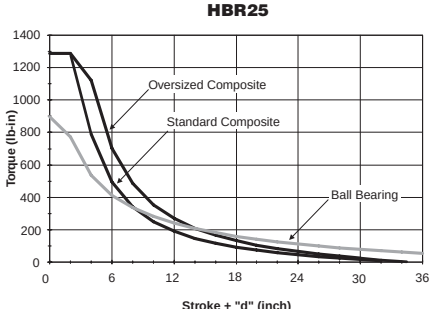

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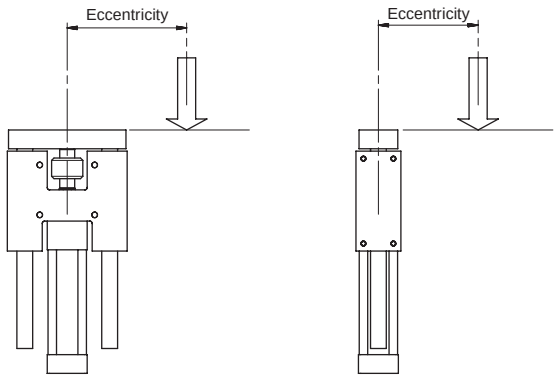
Vertical Eccentric Load Capacity

HB Series units mounted vertically will have the same eccentric load capacity regardless of orientation. The graphs provide maximum load capacity for an eccentric mounted load on a 4" stroke cylinder. The load is assumed to be mounted at the face of the tooling plate.

Note: Actuator life may vary depending on the severity of the following variables:

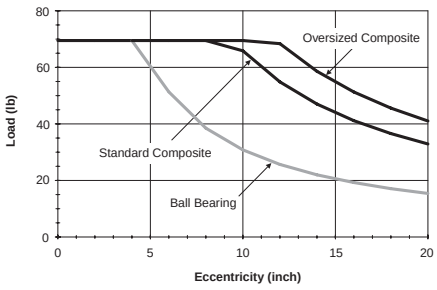
- Acceleration
- Velocity
- Vibration



EXAMPLE:

An HBT15 with ball bearings carrying an eccentric load with an eccentricity distance of 15" would have a load capacity of 40 lbs.

HBC15



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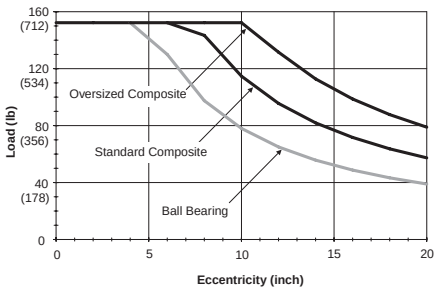

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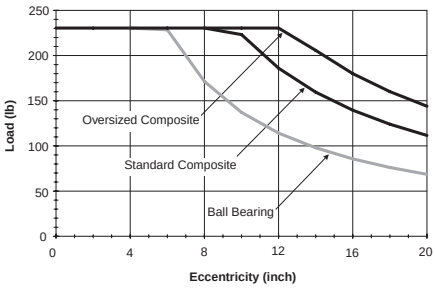
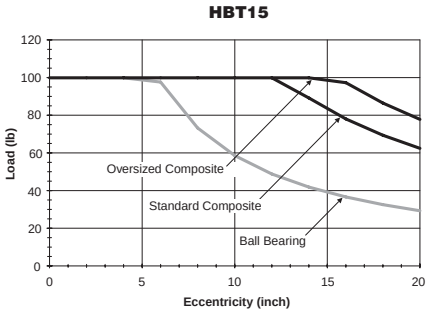


HBT15



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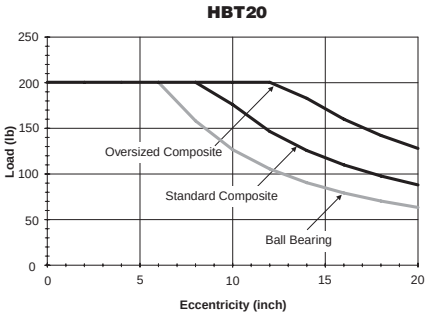

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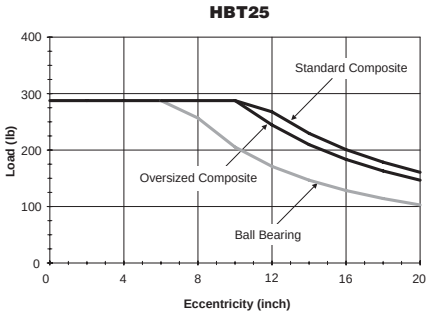
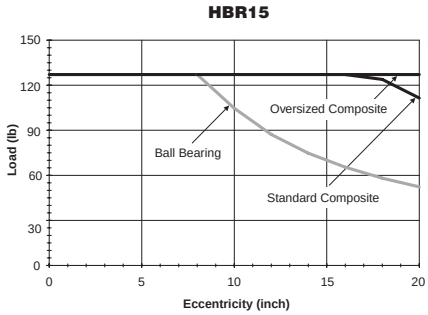


HBR15



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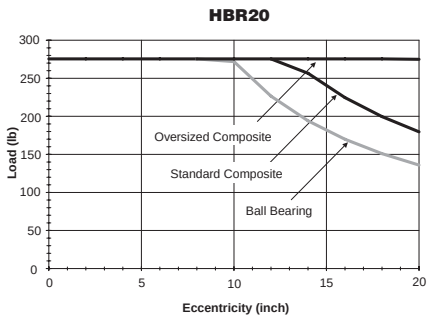

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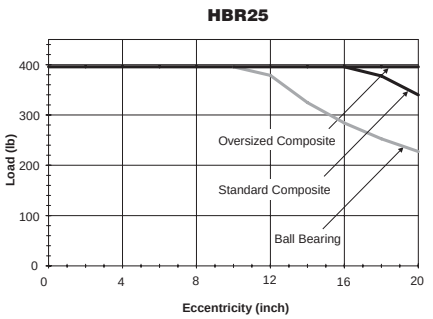

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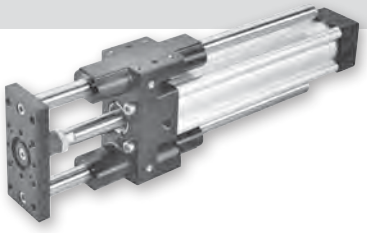
P5E Series

- Low profile guided assembly
- Powered by the P1D cylinder
- Bore sizes 32, 40, 50, 63, 80 and 100mm
- Strokes to any practical length
- Rod lock options available
- Composite and ball bearing options available



Operating information

Operating pressure:	145 PSIG (10 bar) maximum
Temperature range:	14°F to 165°F (-10°C to 74°C)
Filtration requirements:	40 micron, dry filtered air

Ordering information

P5E	–	J	032	F	G	N	0250

Shaft / bearing type

J	Composite bearing, chrome plated standard shaft
M	Composite bearing, chrome plated oversize shaft [1]
C	Composite bearing, stainless steel shaft
H	Ball bearing, stainless steel shaft

Bore size

032	32mm
040	40mm
050	50mm
063	63mm
080	80mm
100	100mm

Cylinder type [3]

F	P1D removable gland cylinder
G	P1D removable gland cylinder with cushions
K	P1D rod lock cylinder with cushions
S	P1D manual override rod lock cylinder with cushions
Q	No cylinder
X	Special – please specify

Port Style

H	NPTF (std)
G	BSPP
N	NPTF with flow controls (std. female ports)
B	BSPP with flow controls (ISO female ports)
F	Flow controls, NPTF port, prestolok tube (inch)
P	Flow controls, BSPP port, prestolok tube (mm)

Bumpers / Adjustable Stop Collars

N	None
B	Bumpers, retract only [2]
E	Bumpers and adjustable stop collars, extend only
T	Bumpers both ends, adjustable stop collars on extend [2]
R	Bumpers and adjustable stop collars on retract [2]
S	Bumpers and adjustable stop collars both ends [2]

Stroke length

Specify whole millimeters, i.e. 0250 = 250mm stroke

[1] Bumpers and adjustable stop collars are not available with oversize shaft option.

[2] These options will increase the cylinder length. To achieve a specific usable stroke length with these options, add the corresponding value(s) in the adder table, please reference catalog 0900P-E, page F156 to the desired stroke length. See Bumper Options for explanation.

Adders are not used when P1D Rod Lock (K) or P1D Manual Override Rod Lock (S) are specified with bumpers.

[3] Tie Rod Version or composite piston option must be specified as Special (X).

Sensors

For sensors see page B339.

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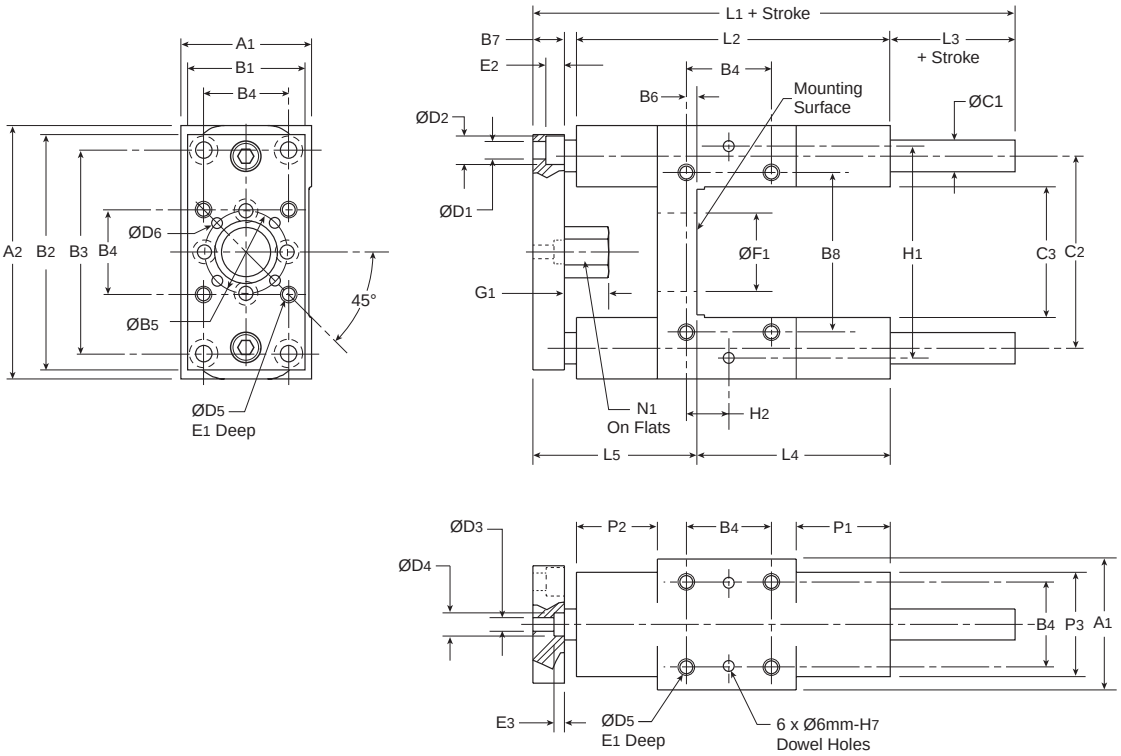

Metric (inch)

Bore size	A1	A2	B1	B2	B3	B4	ØB5	B6	B7	B8	ØC1 std.	ØC1 O.S.	C2	C3	ØD1	ØD2	ØD3	ØD4	ØD5	ØD6
32	50 (1.97)	97 (3.82)	45 (1.77)	92 (3.62)	78 (3.07)	32.5 (1.28)	31.5 (1.24)	4 (0.16)	12.7 (0.50)	61 (2.40)	12 (0.47)	16 (0.63)	73.5 (2.89)	50 (1.97)	6.6 (0.26)	11 (0.43)	5.2 (0.20)	9 (0.35)	M6 x 1.00	4 (0.16)
40	58 (2.28)	115 (4.53)	50.8 (2.00)	110 (4.33)	84 (3.31)	38 (1.50)	31.5 (1.24)	11 (0.43)	12.7 (0.50)	69 (2.72)	16 (0.63)	20 (0.79)	86.5 (3.41)	58 (2.28)	6.6 (0.26)	11 (0.43)	5.2 (0.20)	9 (0.35)	M6 x 1.00	4 (0.16)
50	70 (2.76)	137 (5.39)	63 (2.48)	132 (5.20)	100 (3.94)	46.5 (1.83)	50 (1.97)	19 (0.75)	16 (0.63)	85 (3.35)	20 (0.79)	25 (0.98)	103.5 (4.07)	70 (2.76)	9 (0.35)	14 (0.55)	6.4 (0.25)	11 (0.43)	M8 x 1.25	4 (0.16)
63	85 (3.35)	152 (5.98)	82.5 (3.25)	145 (5.71)	105 (4.13)	56.5 (2.24)	50 (1.97)	15 (0.59)	16 (0.63)	100 (3.94)	20 (0.79)	25 (0.98)	118.5 (4.67)	85 (3.35)	9 (0.35)	14 (0.55)	6.4 (0.25)	11 (0.43)	M8 x 1.25	4 (0.16)
80	105 (4.13)	189 (7.44)	100 (3.94)	180 (7.09)	130 (5.12)	72 (2.83)	76 (2.99)	21 (0.83)	19 (0.75)	130 (5.12)	25 (0.98)	30 (1.18)	147 (5.79)	105 (4.13)	11 (0.43)	17 (0.67)	8.4 (0.33)	14 (0.55)	M10 x 1.50	6 (0.24)
100	130 (5.12)	213 (8.39)	120 (4.72)	200 (7.87)	150 (5.91)	89 (3.50)	76 (2.99)	24.5 (0.97)	19 (0.75)	150 (5.91)	25 (0.98)	30 (1.18)	171.5 (6.75)	130 (5.12)	11 (0.43)	17 (0.67)	8.4 (0.33)	14 (0.55)	M10 x 1.50	6 (0.24)

Bore size	E1	E2	E3	ØF1	G1	H1	H2	L1	L2	L3	L4	L5	N1	P1	P2	P3	Port size	Piston rod thread
32	12 (0.47)	7 (0.28)	4 (0.16)	30 (1.18)	17 (0.67)	81 (3.19)	16 (0.63)	153 (6.02)	120 (4.72)	17 (0.67)	71 (2.80)	64.7 (2.55)	17 (0.67)	36 (1.42)	31 (1.22)	40 (1.57)	1/8	M10 x 1.25
40	12 (0.47)	7 (0.28)	4 (0.16)	35 (1.38)	24 (0.94)	99 (3.90)	19 (0.75)	166 (6.54)	130 (5.12)	20 (0.79)	71 (2.80)	74.7 (2.94)	17 (0.67)	36 (1.42)	36 (1.42)	44 (1.73)	1/4	M12 x 1.25
50	16 (0.63)	9 (0.35)	9 (0.35)	40 (1.57)	27 (1.06)	119 (4.69)	23 (0.91)	194 (7.64)	150 (5.90)	25 (0.98)	79 (3.11)	90 (3.54)	24 (0.94)	42 (1.65)	44 (1.73)	50 (1.97)	1/4	M16 x 1.5
63	16 (0.63)	9 (0.35)	9 (0.35)	45 (1.77)	27 (1.06)	132 (5.20)	28 (1.10)	224 (8.82)	180 (7.09)	25 (0.98)	109 (4.29)	90 (3.54)	24 (0.94)	58 (2.28)	44 (1.73)	60 (2.36)	3/8	M16 x 1.5
80	20 (0.79)	11 (0.43)	5 (0.19)	45 (1.77)	32 (1.26)	166 (6.54)	36 (1.42)	252 (9.92)	200 (7.87)	30 (1.18)	113 (4.45)	109 (4.29)	30 (1.18)	50 (1.97)	52 (2.05)	70 (2.76)	3/8	M20 x 1.5
100	20 (0.79)	11 (0.43)	5 (0.20)	55 (2.17)	32 (1.26)	190 (7.48)	45 (1.77)	272 (10.71)	220 (8.66)	30 (1.18)	128 (5.04)	114 (4.49)	30 (1.18)	49 (1.93)	51 (2.01)	70 (2.76)	1/2	M20 x 1.5

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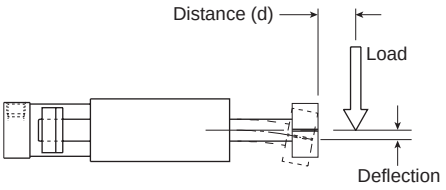
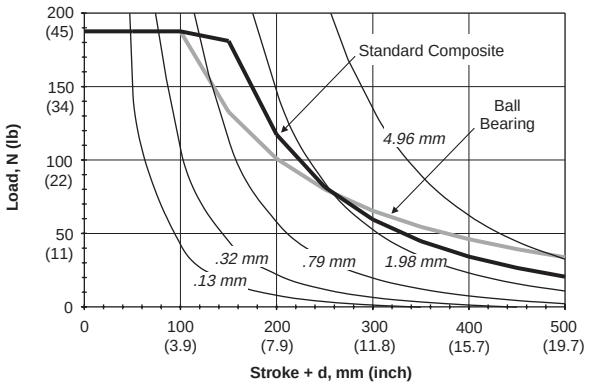
Maximum Load Capacity with Standard Shaft

The following curves are based on 10 million cycles at a speed of 0.20 m/s (40 fpm). Higher dynamic loads will reduce cycle life. For static conditions, multiply the information in the graphs by 1.5.

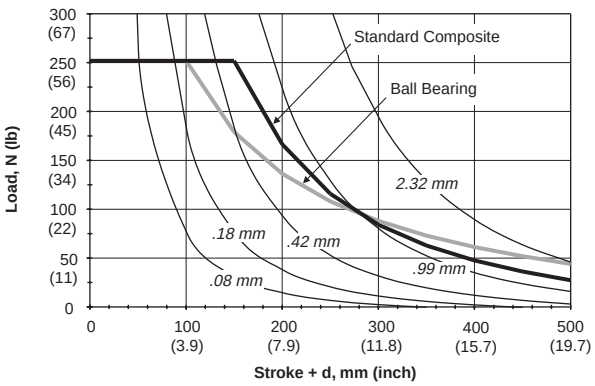
EXAMPLE: A P5E with 40mm bore, composite bushings and a "stroke+d" of 400mm will have a load capacity of 48N.



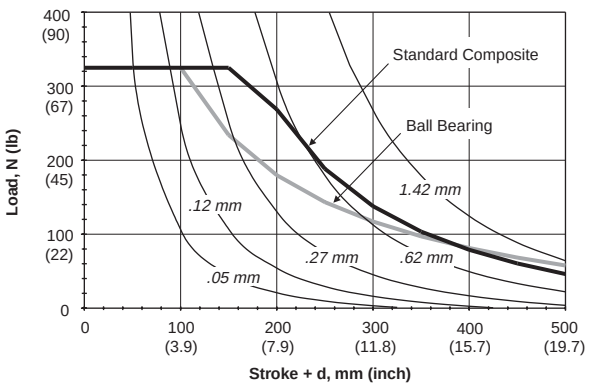
32mm Bore Size



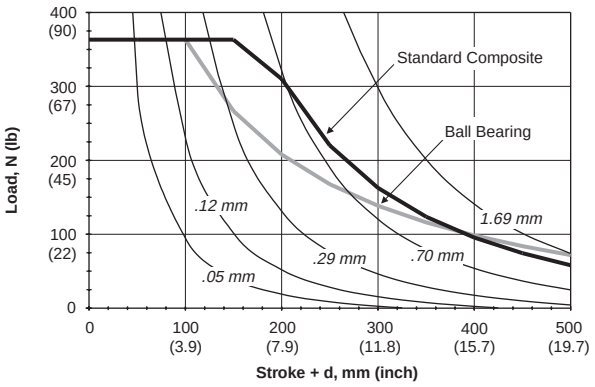
40mm Bore Size



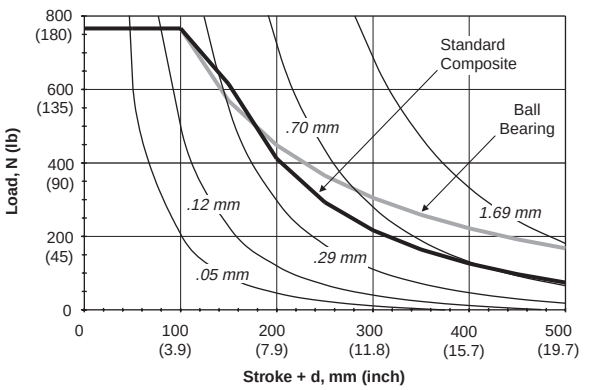
50mm Bore Size



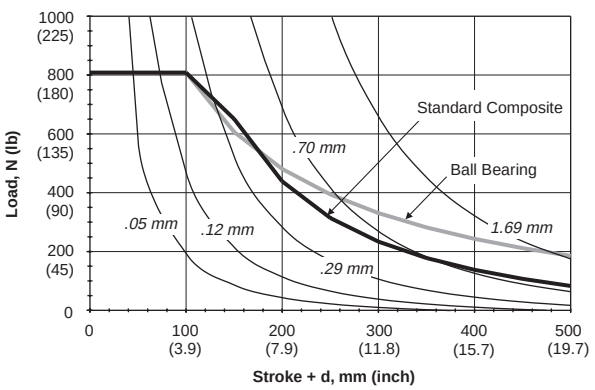
63mm Bore Size



80mm Bore Size



100mm Bore Size



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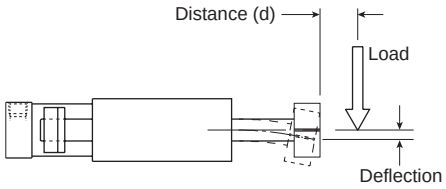
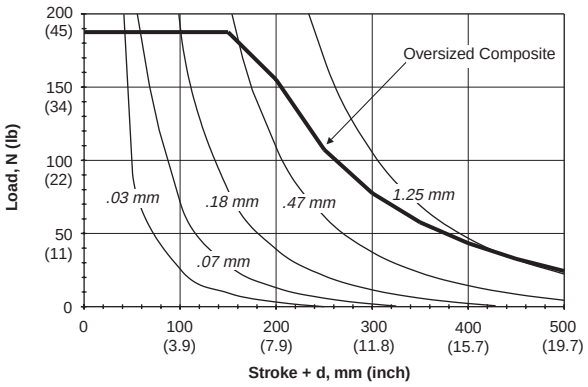
Maximum Load Capacity with Oversized Shaft

The following curves are based on 10 million cycles at a speed of 0.20 m/s (40 fpm). Higher dynamic loads will reduce cycle life. For static conditions, multiply the information in the graphs by 1.5.

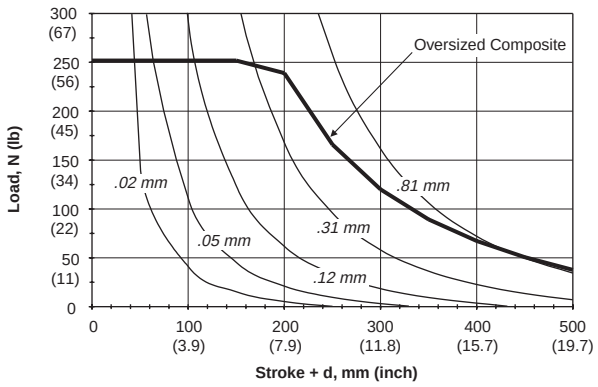
EXAMPLE: A P5E with 63mm bore, oversized support shafts and a "stroke+d" of 300mm would have a load capacity of 200N.



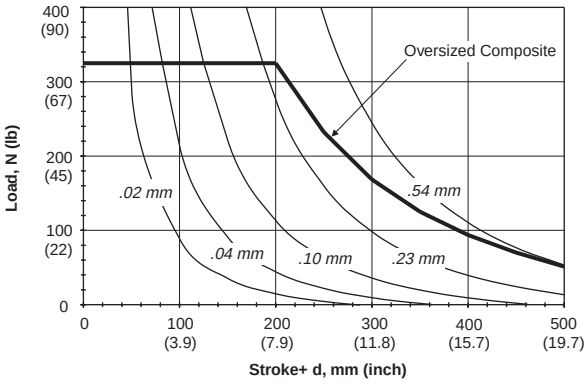
32mm Bore Size



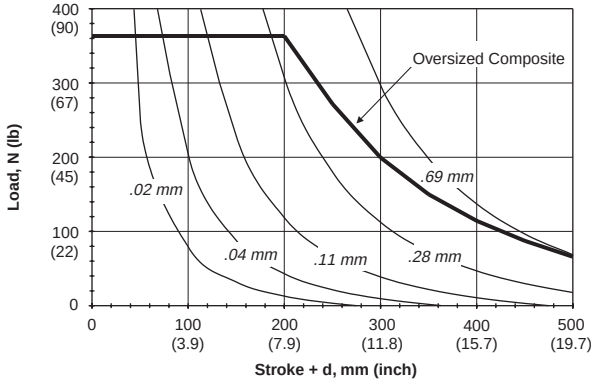
40mm Bore Size



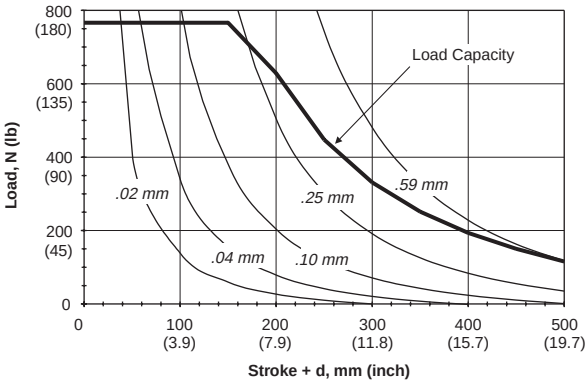
50mm Bore Size



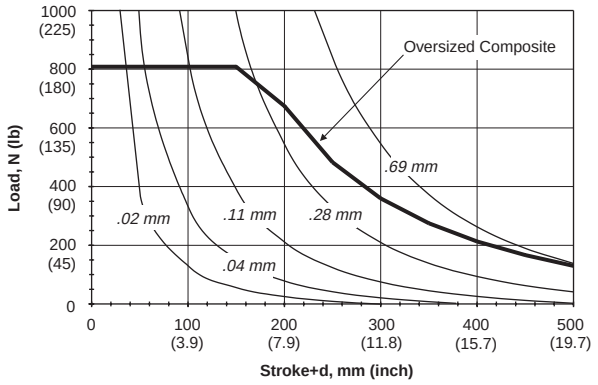
63mm Bore Size



80mm Bore Size



100mm Bore Size



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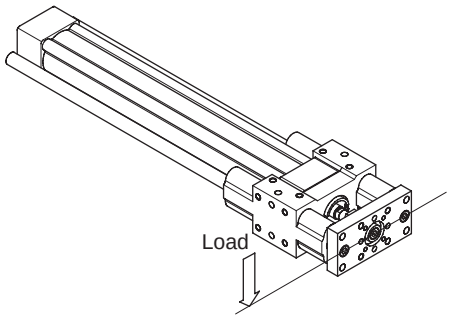
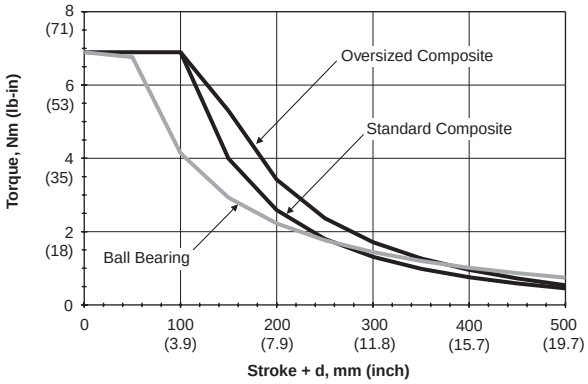
Asymmetrical Torque Capacity

Asymmetrical loading occurs when an off-center load is applied to the unit. P5E Series units can resist torsional loads that are asymmetrical.

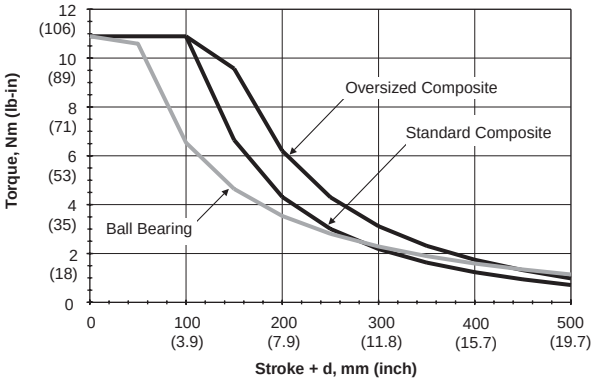
EXAMPLE: A P5E with 63mm bore, ball bearings and a "stroke + d" of 300mm would have an asymmetrical torque capacity of 5 Nm.



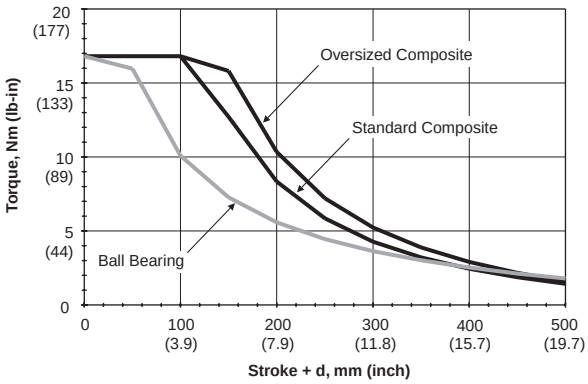
32mm Bore Size



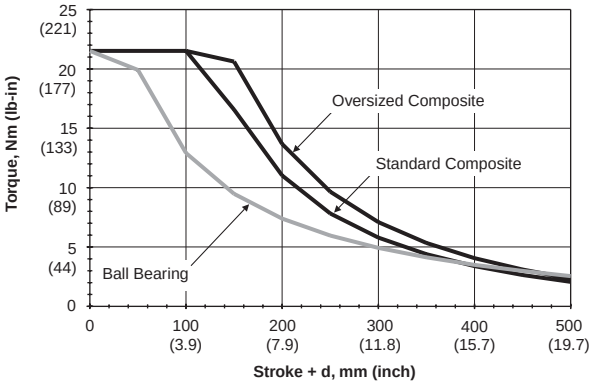
40mm Bore Size



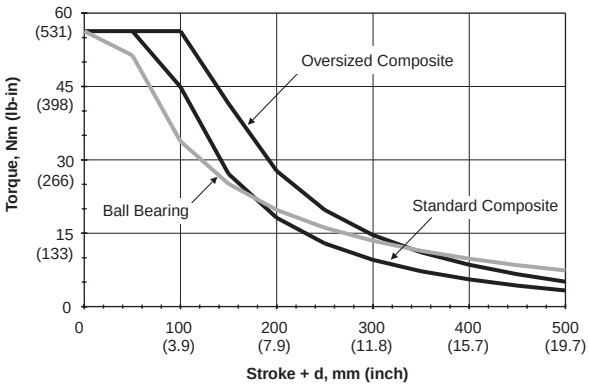
50mm Bore Size



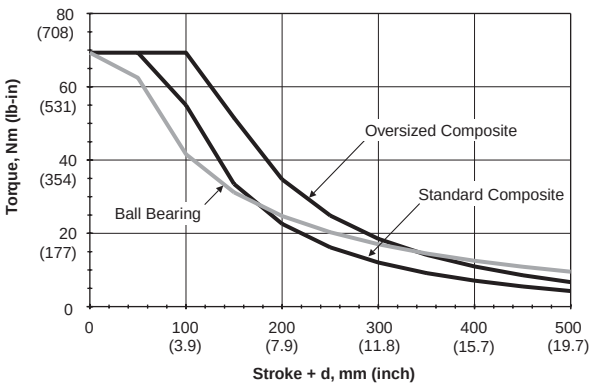
63mm Bore Size



80mm Bore Size



100mm Bore Size



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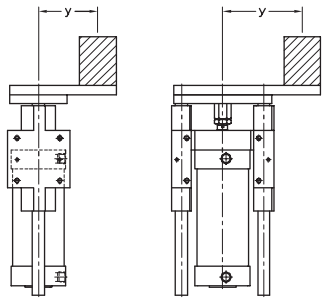
Vertical Eccentric Load Capacity

P5E Series units mounted vertically will have the same eccentric load capacity regardless of orientation. The graphs provide maximum load capacity for an eccentric mounted load. The load is assumed to be mounted at the face of the tooling plate.

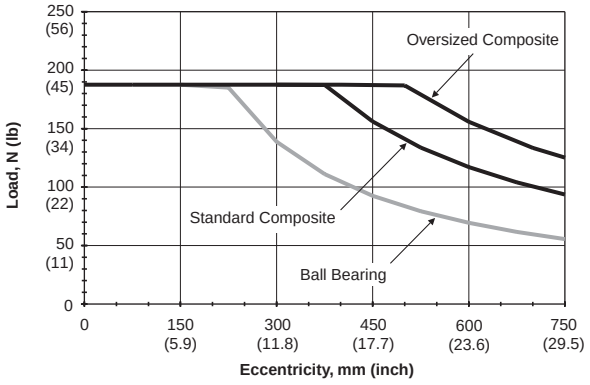
These load curves illustrate load ratings based on the bearing system of the product. Load rating is a key selection criterion but is not the only one to consider in the selection of a product.

Note: Charts are based on 100mm of stroke.

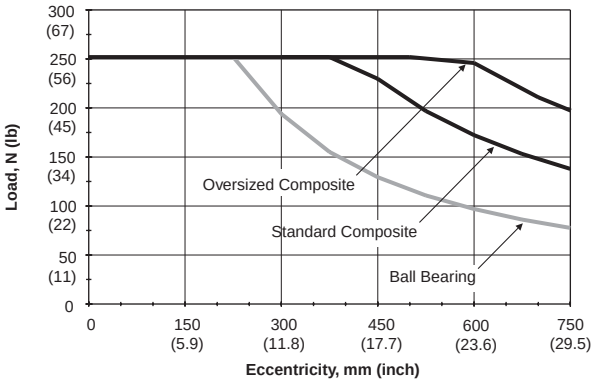
EXAMPLE: A P5E with a 40mm bore carrying an eccentric load located 300mm from the centerline has a capacity of approximately 200N (45 lbs).



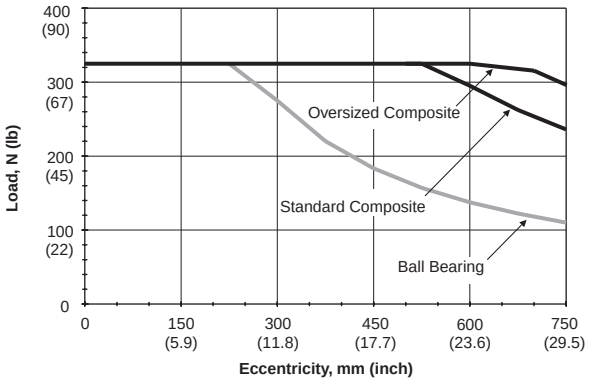
32mm Bore Size



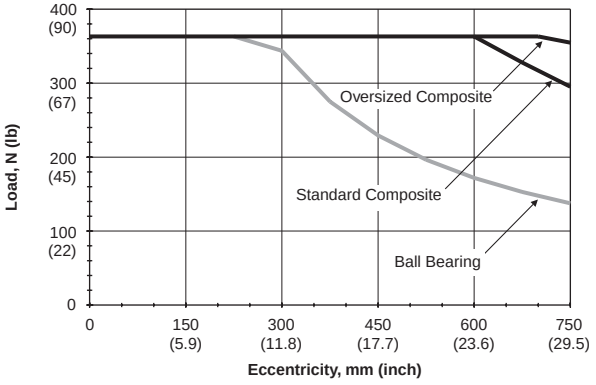
40mm Bore Size



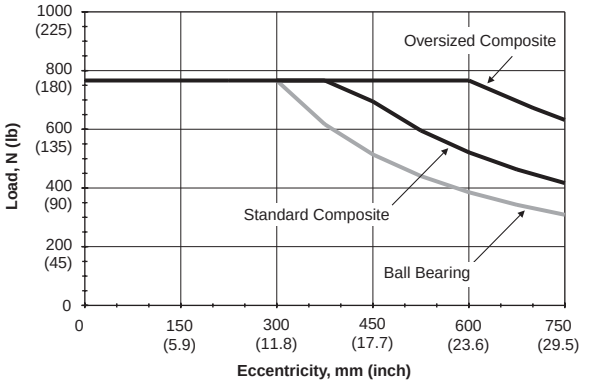
50mm Bore Size



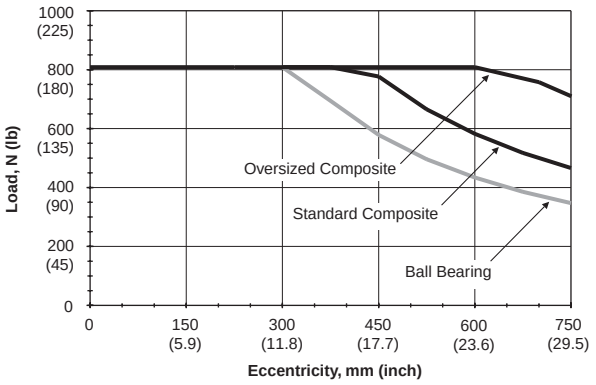
63mm Bore Size



80mm Bore Size



100mm Bore Size



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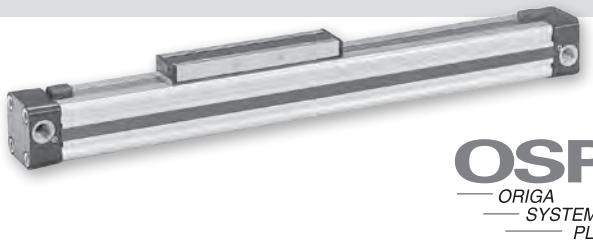
OSP-P Series



Standard Features:

- Double-acting with adjustable cushions
- With magnetic piston for position sensing
- Standard stroke lengths to 6000mm. Long stroke versions available upon request
- End cap can be rotated 4 x 90° to position ports as desired

Optional Features:

- Clean room cylinders
- Stainless steel screws
- Slow speed lubrication
- Fluorocarbon seals
- Single end porting
- Integrated valves
- Integrated bearing options

Operating information

Operating pressure:	117 PSIG (8 bar)
Temperature range:	-10°F to 80°F (14°C to 176°C)
Filtration requirements:	Filtered, nonlubricated compressed air

Material specifications

Cylinder profile	Anodized aluminum
Carrier (piston)	Anodized aluminum
End caps	Aluminum, lacquered / plastic (P10)
Sealing bands	Corrosion resistant steel
Seals	NBR (Option: Fluorocarbon)
Screws	Galvanized steel Option: stainless steel
Dust covers, wipers	Composite

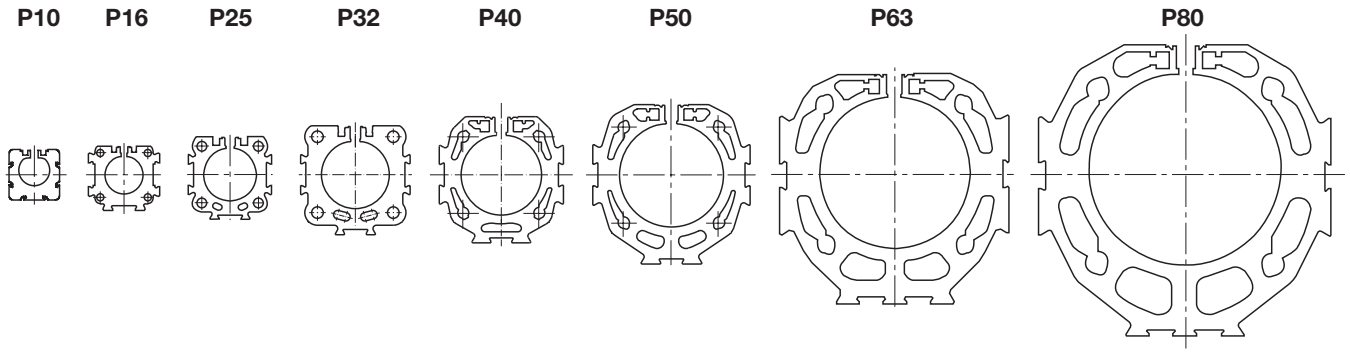
Features

Characteristics	Description
Type	Rodless cylinder
Series	OSP-P
Stroke length	5.5m (216 inches)
System	Double-acting, with cushions and magnetic piston
Mounting	See drawings
Air connection	Threaded
Weight (mass)	See table below
Installation	In any position
Lubrication	Prelubricated at the factory (additional oil mist lubrication not required) Option: special slow speed grease

Weight (mass) kg

Cylinder series (Basic cylinder)	Weight (Mass) kg	
	At 0 mm stroke	per 100 mm stroke
OSP-P10	0.087	0.052
OSP-P16	0.22	0.1
OSP-P25	0.65	0.197
OSP-P32	1.44	0.354
OSP-P40	1.95	0.415
OSP-P50	3.53	0.566
OSP-P63	6.41	0.925
OSP-P80	12.46	1.262

Size Comparison



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ORIGA SYSTEM PLUS – innovation from a proven design

A new generation of linear drives which can be simply and neatly integrated into any machine layout.

A new modular linear drive system

With this second generation linear drive the OSP-P series offers design engineers complete flexibility.

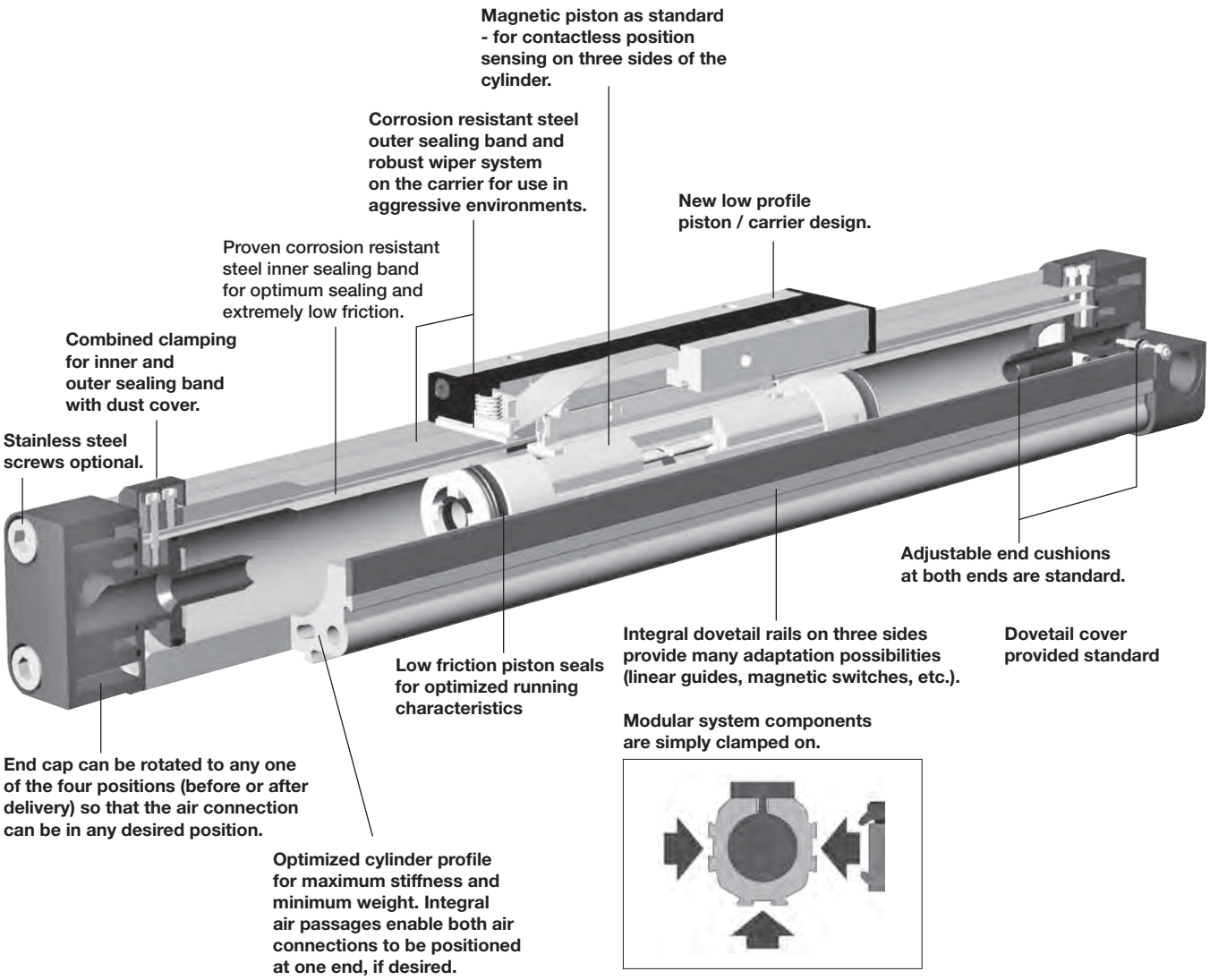
The well known ORIGA cylinder has been further developed into a combined linear actuator, guidance and control package. It forms the basis for the the OSP-P linear drive system.

All additional functions are designed into modular system components which replace the previous series of cylinders.

Mounting rails on 3 sides

Mounting rails on 3 sides of the cylinder enable modular components such as linear guides, brakes, valves, magnetic switches etc. to be fitted to the cylinder itself. This solves many installation problems, especially where space is limited.

The modular system concept forms an ideal basis for additional customer-specific functions.



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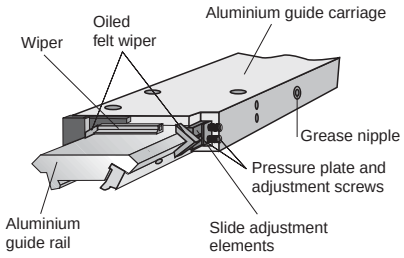
Plain Bearing Guide SLIDELINE

- Available on 16 to 80mm bore

Features:

- Adjustable composite slide elements – optional integral brake
- Integrated sealing system with wiper elements to remove dirt and lubricate the slideways
- Any length of stroke up to 5500 mm

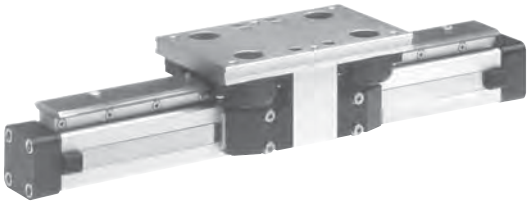


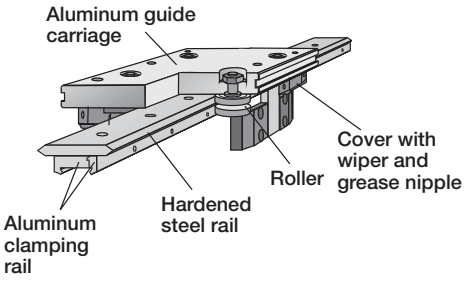
Roller Guide POWERSLIDE

- Available on 16 to 50mm bore

Features:

- Anodized aluminum guide carriage with vee rollers
- Hardened steel guide rail
- Multiple guide sizes can be used on the same drive
- Max. Speed v = 3 m/s
- Integrated wiper and grease nipple
- Any length of stroke up to 3500 mm





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Ordering information / part numbering system for OSP-P rodless basic pneumatic series

1-4	5-6	7	8	9	10	11	12-16	17	18	19	20	21	22	23	24	25
OSPP	25	0	1	0	0	0	01100	0	0	0	0	0	0	1	0	0

Bore
10
16
25
32
40
50
63
80

Piston style
0 Standard
1 Tandem

Porting configurations†
0 Standard
1 End Face (position #5)‡
2 Single End Ports

Seals
0 Buna-N
1 Flurocarbon

Lubrication
0 Standard

Fasteners
0 Chrome plated
1 Stainless steel

Stroke
x x x x x

Port orientation†
0 Position #2 (both ends)
1 Position #3 (both ends)
2 Position #4 (both ends)

Cushions
0 Standard

Piston mounting
0 Standard*
1 Clevis mount

Guides / Brakes
0 None
2 Slideline
3 Slideline with active brake
4 Slideline with multi brake
A Active brake (basic OSP)
E Powerslide (PSXX/25) (16, 25mm bore only)
G Powerslide (PSXX/45) (25, 32, 40mm bore only)
H Powerslide (PSXX/60) (40, 50mm bore only)
I Powerslide (PSXX/76) (50mm bore only)
M Inversion (NR30) (16 - 80mm bore only)

Additional carriages**
0 None
2 Slide / Proline
3 Slide / Proline with AB

Dovetail cover
0 Standard
X No Cover

Mounting
0 None
1 A1 type
4 B1 type
9 C1 type

Version
0 Standard

Switches
0 None, order switches separately

* For Joint Clamp connecting plate, order separately
** When selecting additional carriages, the tandem piston option must also be selected
† Single end ports can not be rotated in the field
‡ Only available on 50mm bore

Sensors
For sensors see page B339.

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Loads, forces and moments

When sizing an OSP cylinder, consideration must be given to:

- Loads, forces and moments
- Performance of the pneumatic end cushions. The main factors are the mass to be cushioned and the piston speed (unless external cushioning is used, e. g. hydraulic shock absorbers)

To determine the maximum values for light, shock-free operation, which must not be exceeded even in dynamic operation.

Load and moment data are based on speeds v ≤ 0.5 m/s.

When working out the action force required, it is essential to take into account the friction forces generated by the specific application or load.

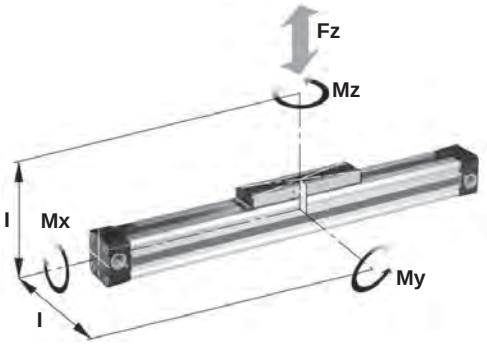
The sum total of each of these types of moments, divided by each of the maximum values, determines a Load-Moment Factor (LMF) should be equal to or less than 1.0. On horizontal mountings, the total load (L) should also be divided by the maximum load allowable and factored into the equation.

Horizontal Mountings:

$$\frac{L}{[L]} + \frac{M}{[M]} + \frac{Ms}{[Ms]} + \frac{Mv}{[Mv]} = LMF \leq 1.0$$

Vertical Mountings:

$$\frac{M}{[M]} + \frac{Ms}{[Ms]} + \frac{Mv}{[Mv]} = LMF \leq 1.0$$



M = F ·l

Bending moments are calculated from the center of the linear actuator

Cylinder series (mm Ø)	Theoretical output force at 6 bar N (lb)	Actual output force F_A at 6 bar N (lb)	Max. moments Mx Nm (in lb)	My Nm (in lb)	Mz Nm (in lb)	Max. load F N (lb)	Cushion length (mm)
OSP-P10	47 (10.6)	32 (7.2)	0.2 (1.8)	1 (8.9)	0.3 (2.7)	20 (4.5)	2.5 * (.09)
OSP-P16	120 (26.9)	78 (17.5)	0.45 (3.9)	4 (35.4)	0.5 (4.4)	120 (26.9)	11 (.43)
OSP-P25	295 (66.3)	250 (56.2)	1.5 (13.3)	15 (132.8)	3 (26.6)	300 (67.4)	17 (.67)
OSP-P32	483 (108.6)	420 (94.4)	3 (26.6)	30 (265.5)	5 (44.3)	450 (101.2)	20 (.79)
OSP-P40	754 (169.5)	640 (143.9)	6 (53.1)	60 (531)	8 (70.8)	750 (168.6)	27 (1.06)
OSP-P50	1178 (264.8)	1000 (224.8)	10 (88.5)	115 (1017.8)	15 (132.8)	1200 (269.8)	30 (1.18)
OSP-P63	1870 (420.4)	1550 (348.5)	12 (106.2)	200 (1771)	24 (212.4)	1650 (370.9)	32 (1.26)
OSP-P80	3016 (678)	2600 (584.5)	24 (212.4)	360 (3186)	48 (424.8)	2400 (539.5)	39 (1.54)

* A rubber element (non-adjustable) is used for end cushioning.
To deform the rubber element enough to reach the absolute end position would require a Dp of 4 bar!

Cushioning diagram

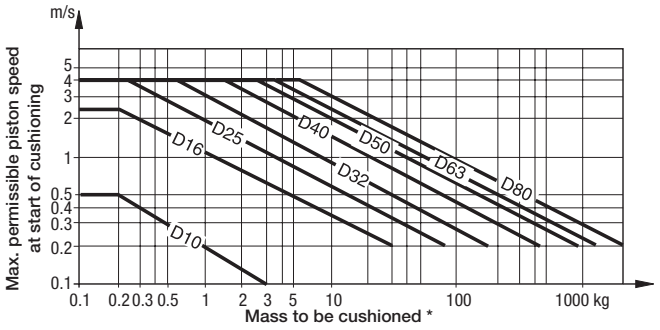
Determine the moving mass and follow the chart below to determine the maximum cylinder velocity.

Alternatively, take your desired velocity and moving mass to determine the required cylinder diameter.

If these maximum permissible values are exceeded, additional shock absorbers must be used.

For sizing a basic cylinder, use the adjacent chart. To size a cylinder with guide bearing, use the charts on the following page.

The peak piston velocity can be determined by assuming it is 50% greater than the average velocity. The peak velocity should be used in sizing the cylinder cushions.



* For cylinders with linear guides or brakes, please be sure to take the mass of the carriage or the brake housing into account.

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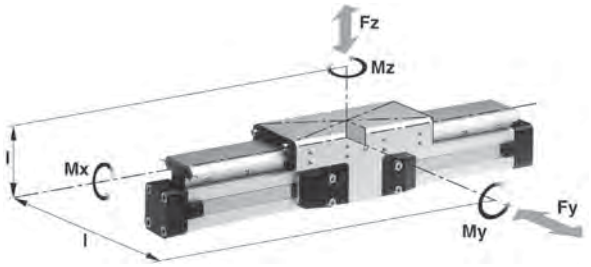
SLIDELINE loads, forces and moments

Stroke up to 5500 mm (longer strokes on request)



Technical data

The table shows the maximum permissible values for smooth operation, which should not be exceeded even under dynamic conditions.

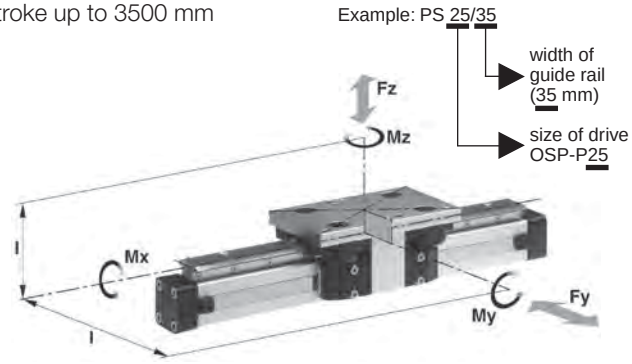
The load and moment figures apply to speeds v < 0.2 m/s.

Series	For linear drive	Max. moments (Nm)			Max. loads (N)	Mass of linear drive with guide (kg)		
		Mx	My	Mz	Fy, Fz	With 0mm stroke	Increase per 100mm stroke	Mass * of guide carriage (kg)
SL16	OSP-P16	6	11	11	325	0.57	0.22	0.23
SL25	OSP-P25	14	34	34	675	1.55	0.39	0.61
SL32	OSP-P32	29	60	60	925	2.98	0.65	0.95
SL40	OSP-P40	50	110	110	1500	4.05	0.78	1.22
SL50	OSP-P50	77	180	180	2000	6.72	0.97	2.06
SL63	OSP-P63	120	260	260	2500	11.66	1.47	3.32
SL80	OSP-P80	120	260	260	2500	15.71	1.81	3.32

* Add the mass of the guide carriage to the mass to be cushioned.

POWERSLIDE loads, forces and moments

Stroke up to 3500 mm



Technical data

The table shows the maximum permissible values for smooth operation, which should not be exceeded even under dynamic conditions.

For further information and technical data see linear drives OSP-P.

*** Please note:**
In the cushioning diagram, add the mass of the guide carriage to the mass to be cushioned.

Series	For linear drive	Max. moments (Nm)			Max. load (N)	Mass of linear drive with guide (kg)		
		Mx	My	Mz	Fy, Fz	With 0 mm stroke	Increase per 100mm stroke	Mass * of guide carriage (kg)
PS 16/25	OSP-P16	14	45	45	1400	0.93	0.24	0.7
PS 25/25	OSP-P25	14	63	63	1400	1.5	0.4	0.7
PS 25/35	OSP-P25	20	70	70	1400	1.7	0.4	0.8
PS 25/44	OSP-P25	65	175	175	3000	2.6	0.5	1.5
PS 32/35	OSP-P32	20	70	70	1400	2.6	0.6	0.8
PS 32/44	OSP-P32	65	175	175	3000	3.4	0.7	1.5
PS 40/44	OSP-P40	65	175	175	3000	4.6	1.1	1.5
PS 40/60	OSP-P40	90	250	250	3000	6	1.3	2.2
PS 50/60	OSP-P50	90	250	250	3000	7.6	1.4	2.3
PS 50/76	OSP-P50	140	350	350	4000	11.5	1.8	4.9

* Add the mass of the guide carriage to the mass to be cushioned.

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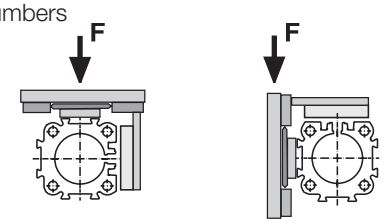
Intermediate supports

To avoid excessive bending and oscillation of the cylinder, intermediate supports may be required. The diagrams below show the maximum permissible support spacing based upon load.

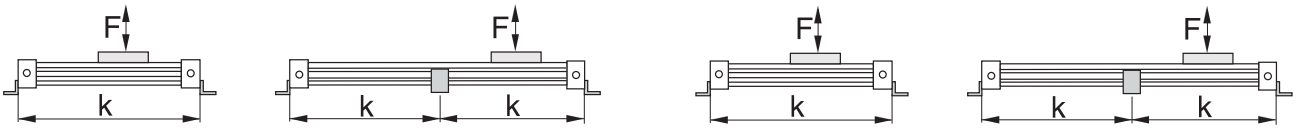
Bending up to 0.5 mm is permissible between supports. The intermediate supports are clamped to the dovetail profile and support the cylinder tube axially.

For cylinders with guide bearings, distinguish between loading scenario 1 and loading scenario 2.

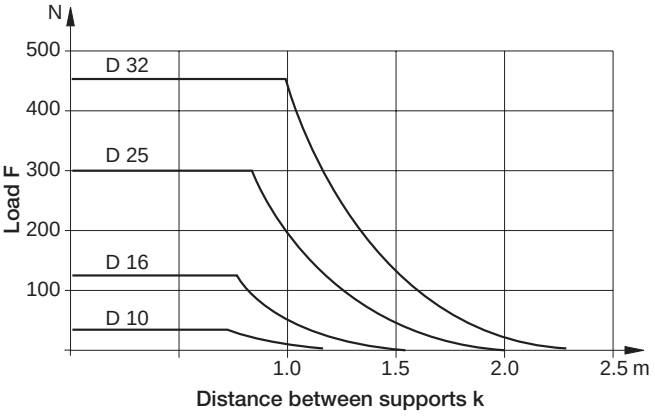
See accessories section for intermediate support dimensions and part numbers



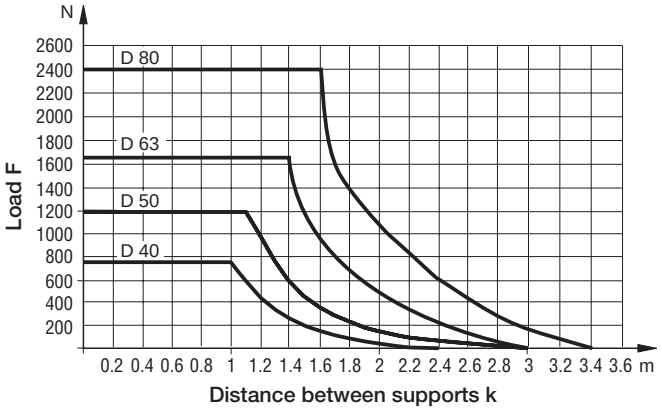
Loading 1 Loading 2



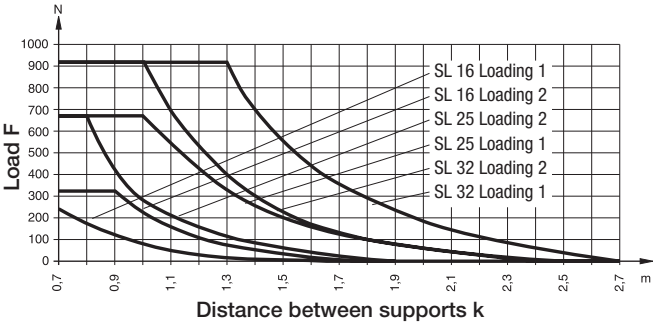
Basic cylinder 10 to 32mm bore intermediate supports



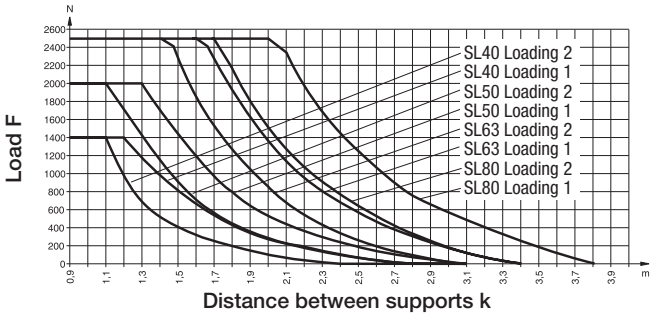
Basic cylinder 40 to 80mm bore intermediate supports



SLIDELINE 16 to 32mm bore intermediate supports



SLIDELINE 40 to 80mm bore intermediate supports



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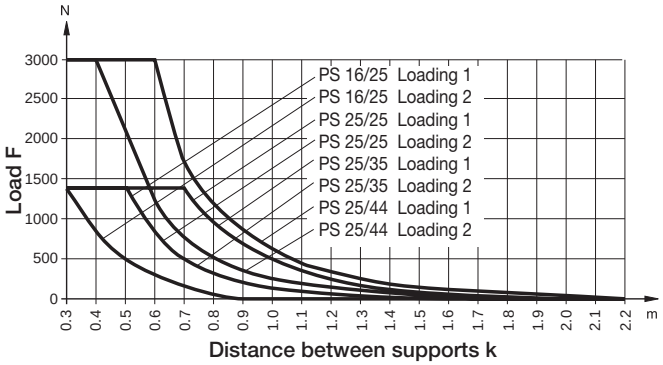
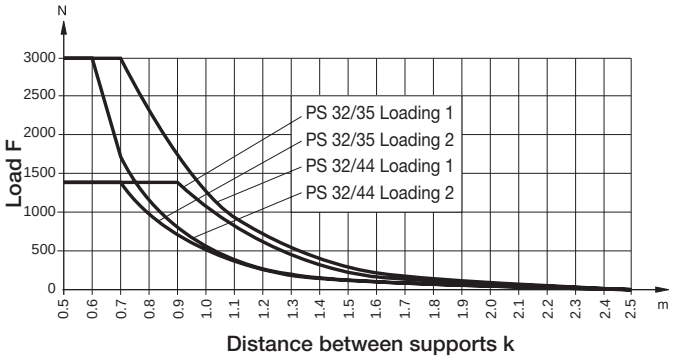
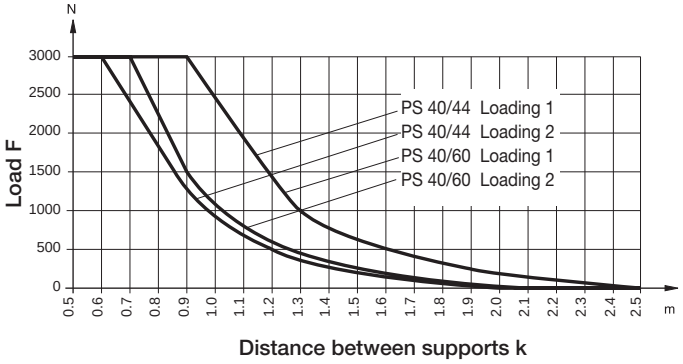
POWERSLIDE 16/25, 25/25, 25/35, 25/44mm bore intermediate supports



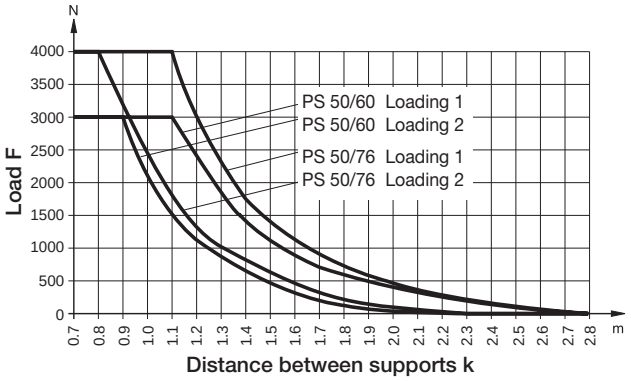
POWERSLIDE 2/35, 32/44mm bore intermediate supports



POWERSLIDE 40/44, 40/60mm bore intermediate supports



POWERSLIDE 50/60, 50/76mm bore intermediate supports



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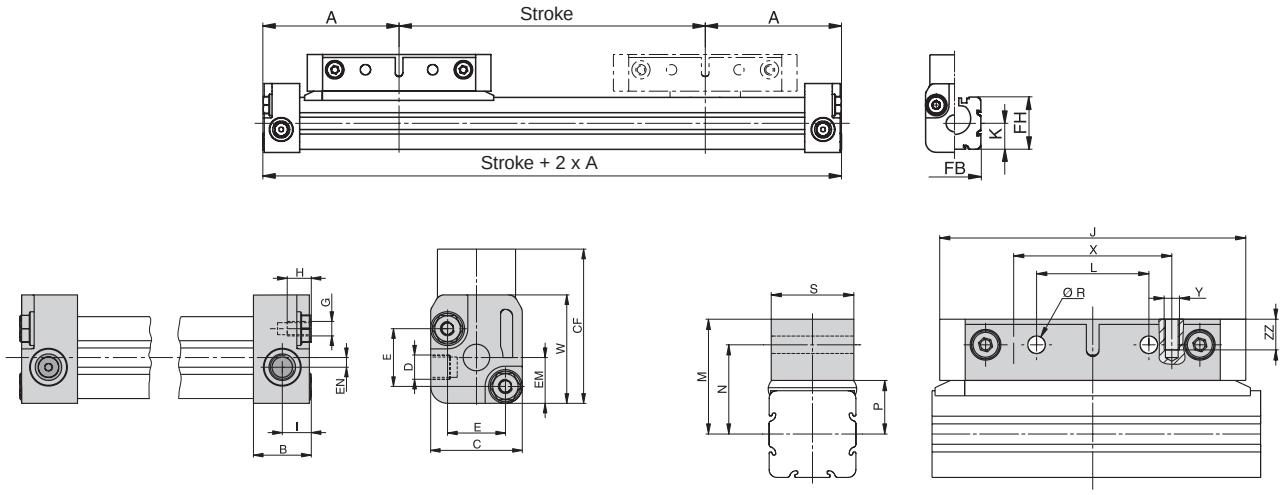
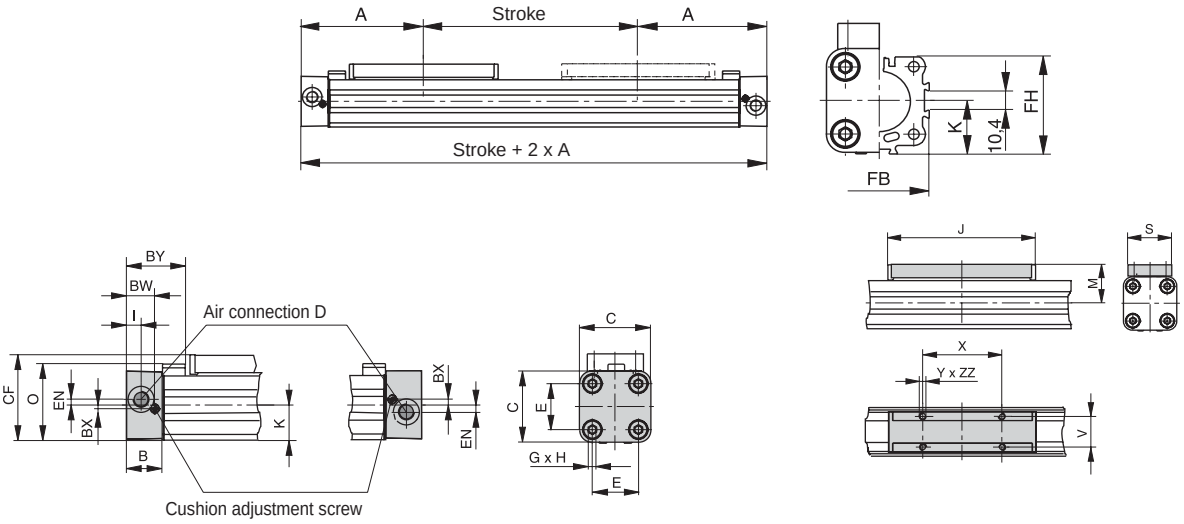
Basic cylinder dimensions – 10mm bore



Dimensions (mm)

Series	A	B	C	D	E	G	H	I	J	K	L	M	N	P	R	S	W	X	Y	Zmin	CF	EM	EN	FB	FH	ZZ
OSP-P10	44.5	12	19	M5	12	M3	5	6	60	8.5	22	22.5	17.5	10.5	3.4	16	22.5	31	M3	64	32	9.5	2	17	17	6

Basic cylinder dimensions – 16 to 80mm bore



Dimensions (mm)

Series	A	B	C	D	E	G	H	I	J	K	M	O	S	V	X	Y	Z	BW	BX	BY	CF	EN	FB	FH	ZZ
OSP-P16	65	14	30	M5	18	M3	9	5.5	69	15	23	33.2	22	16.5	36	M4	81	10.8	1.8	28.4	38	3	30	27.2	7
OSP-P25	100	22	41	G1/8	27	M5	15	9	117	21.5	31	47	33	25	65	M5	128	17.5	2.2	40	52.5	3.6	40	39.5	8
OSP-P32	125	25.5	52	G1/4	36	M6	15	11.5	152	28.5	38	59	36	27	90	M6	170	20.5	2.5	44	66.5	5.5	52	51.7	1
OSP-P40	150	28	69	G1/4	54	M6	15	12	152	34	44	72	36	27	90	M6	212	21	3	54	78.5	7.5	62	63	10
OSP-P50	175	33	87	G1/4	70	M6	15	14.5	200	43	49	86	36	27	110	M6	251	27	–	59	92.5	11	76	77	10
OSP-P63	215	38	106	G3/8	78	M8	21	14.5	256	54	63	107	50	34	140	M8	313	30	–	64	117	12	96	96	16
OSP-P80	260	47	132	G1/2	96	M10	25	22	348	67	80	133	52	36	190	M10	384	37.5	–	73	147	16.5	122	122	20

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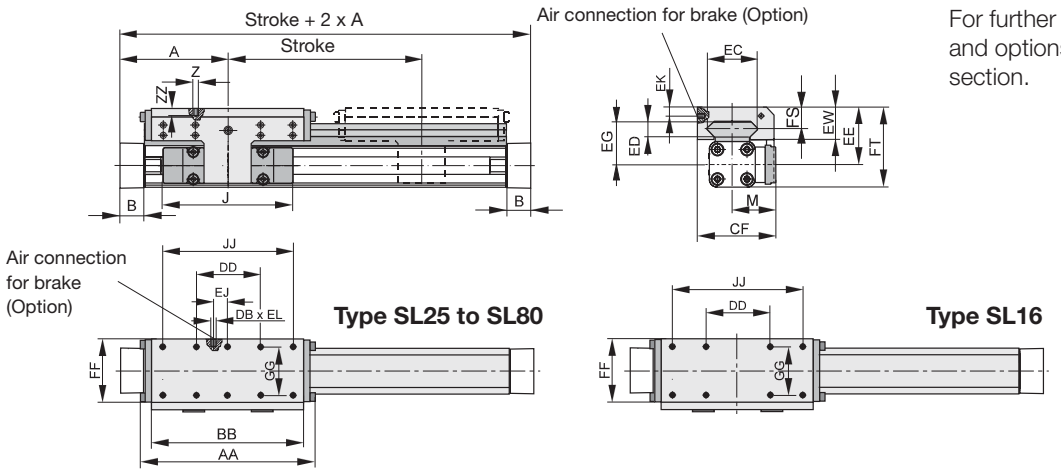
SLIDELINE Dimensions

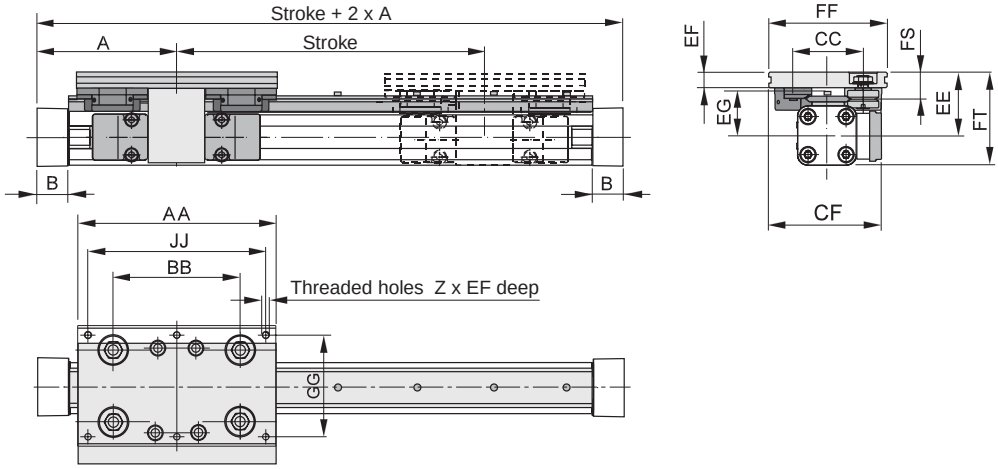


For further mounting accessories and options see accessories section.

Dimensions (mm)

Series	A	B	J	M	Z	AA	BB	DB	DD	CF	EC	ED	EE	EG	EJ	EK	EL	EW	FF	FT	FS	GG	JJ	ZZ
SL 16	65	14	69	31	M4	106	88	–	30	55	36	8	40	30	–	–	–	22	48	55	14	36	70	8
SL 25	100	22	117	40.5	M6	162	142	M5	60	72.5	47	12	53	39	22	6	6	30	64	73.5	20	50	120	12
SL 32	125	25.5	152	49	M6	205	185	M5	80	91	67	14	62	48	32	6	6	33	84	88	21	64	160	12
SL 40	150	28	152	55	M6	240	220	M5	100	102	77	14	64	50	58	6	6	34	94	98.5	21.5	78	200	12
SL 50	175	33	200	62	M6	284	264	M5	120	117	94	14	75	56	81	6	6	39	110	118.5	26	90	240	16
SL 63	215	38	256	79	M8	312	292	–	130	152	116	18	86	66	–	–	–	46	152	139	29	120	260	14
SL 80	260	47	348	96	M8	312	292	–	130	169	116	18	99	79	–	–	–	46	152	165	29	120	260	14

POWERSLIDE Dimensions



Dimensions (mm)

Series	A	B	Z	AA	BB	CC	CF	EE	EF	EG	FF	FS	FT	GG	JJ
PS 16/25	65	14	4xM6	120	65	47	80	49	12	35	80	21	64	64	100
PS 25/25	100	22	6xM6	145	90	47	79.5	53	11	39	80	20	73.5	64	125
PS 25/35	100	22	6xM6	156	100	57	89.5	52.5	12.5	37.5	95	21.5	73	80	140
PS 25/44	100	22	6xM8	190	118	73	100	58	15	39	116	26	78.5	96	164
PS 32/35	125	25.5	6xM6	156	100	57	95.5	58.5	12.5	43.5	95	21.5	84.5	80	140
PS 32/44	125	25.5	6xM8	190	118	73	107	64	15	45	116	26	90	96	164
PS 40/44	150	28	6xM8	190	118	73	112.5	75	15	56	116	26	109.5	96	164
PS 40/60	150	28	6xM8	240	167	89	122.5	74	17	54	135	28.5	108.5	115	216
PS 50/60	175	33	6xM8	240	167	89	130.5	81	17	61	135	28.5	123.5	115	216
PS 50/76	175	33	6xM10	280	178	119	155.5	93	20	64	185	39	135.5	160	250

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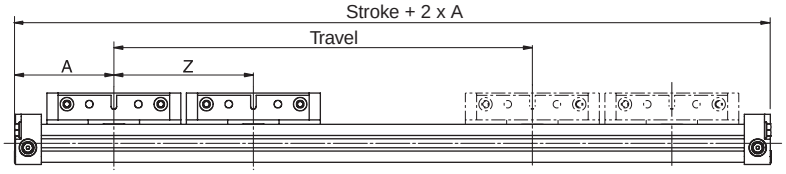
Piston Options

Tandem pistons can be ordered to provide a larger mounting footprint. This option reduces the travel of the piston. When specifying the stroke of the cylinder, include the desired travel + Z dimension.

Please note Zmin dimension.

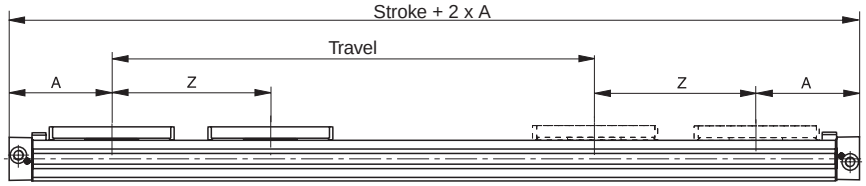
10mm bore



Dimensions (mm)

Series	A	Z_{min}
OSP-P10	44.5	64

16 to 80mm bore



Dimensions (mm)

Series	A	Z min
OSP-P16	65	81
OSP-P25	100	128
OSP-P32	125	170
OSP-P40	150	212
OSP-P50	175	251
OSP-P63	215	313
OSP-P80	260	384

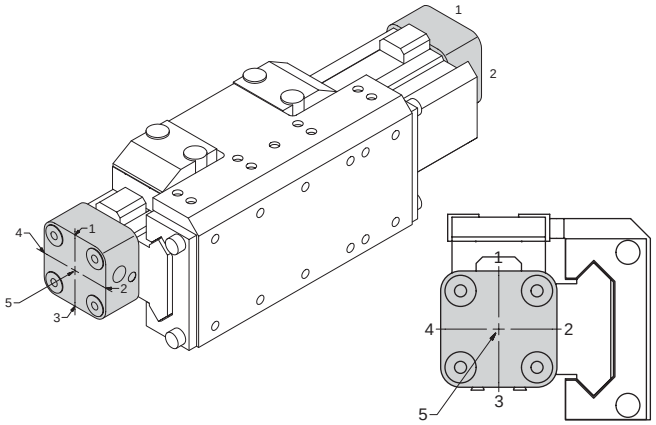
Port orientation

When determining port orientation, the piston carriage is always at position 1. When a bearing system is order, the piston carriage is at position 1 and the bearing carriage is at position 2.

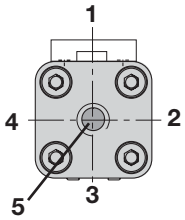
End caps can be field rotated to move port locations, excluding single ended port configurations

Note: Single end ports and port position 5 not available on 10 to 40mm bore.

Cylinder with guide end cap positioning



Basic cylinder end cap positioning



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Joint Clamp Connection ø 25-50 mm

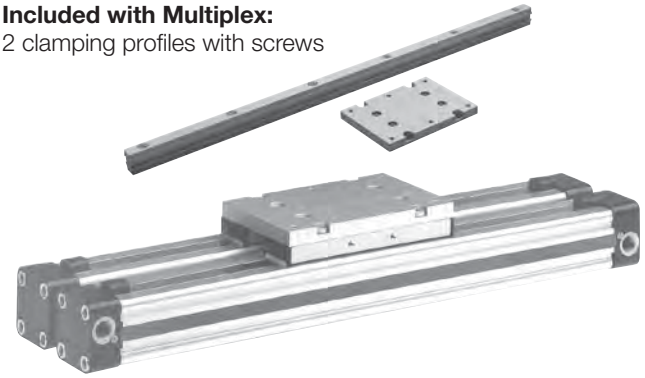
The joint clamp connection combines two OSP-P cylinders of the same size into a compact unit with high performance.

Features
Increased load and torque capacity

Higher driving forces

Included with Joint Clamp:
2 clamping profiles with screws
1 mounting plate

Included with Multiplex:
2 clamping profiles with screws



Series	Order number	
	Joint clamp	Multiplex
OSP-P25	**20153-sssss**	**20035-sssss**
OSP-P32	**20290-sssss**	**20167-sssss**
OSP-P40	**20156-sssss**	**20036-sssss**
OSP-P50	**20292-sssss**	**20168-sssss**

Note: sssss = stroke of cylinder

Clevis Mounting, ø 16-80 mm

When external guides are used, parallelism deviations can lead to mechanical strain on the piston. This can be avoided by the use of a clevis mounting.

In the drive direction, the mounting has very little play.

Freedom of movement is provided as follows:

- Tilting in direction of movement
- Vertical compensation
- Tilting sideways
- Horizontal compensation

	Order number	
Series	Standard	Stainless
OSP-P16	**20462**	**20463**
OSP-P25	**20005**	**20092**
OSP-P32	**20096**	**20094**
OSP-P40	**20024**	**20093**
OSP-P50	**20097**	**20095**
OSP-P63	**20466**	**20467**
OSP-P80	**20477**	**20478**

Inversion Mounting, ø 16-80 mm

In dirty environments, or where there are special space restrictions, inversion of the cylinder is recommended.

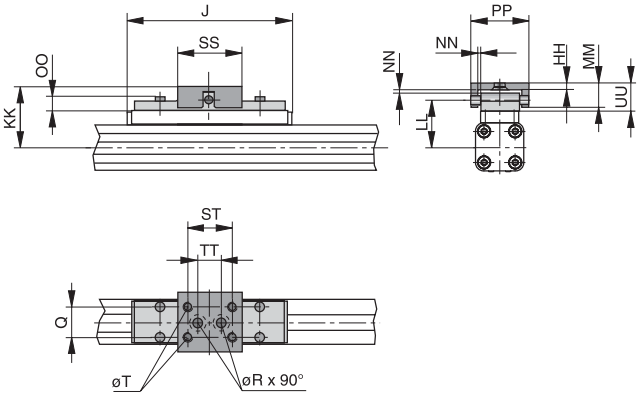
The inversion bracket transfers the driving force to the opposite side of the cylinder. The size and position of the mounting holes are the same as on the standard cylinder.

Please note:
Other components of the OSP system such as **mid-section supports, magnetic switches** and the **external air passage for the 16mm bore**, can still be mounted on the free side of the cylinder.

When combining single end porting with inversion mountings, RS magnetic switches can only be mounted directly opposite to the external air-supply profile.

Series	Order number
OSP-P16	**20446**
OSP-P25	**20037**
OSP-P32	**20161**
OSP-P40	**20039**
OSP-P50	**20166**
OSP-P63	**20459**
OSP-P80	**20490**

Series OSP-P16 to 32



Dimensions (mm)

Series	J	Q	T	ø R	HH	KK	LL	MM	NN*	OO	PP	SS	ST	TT	UU
OSP-P16	69	10	M4	4.5	3	34	26.6	10	1	8.5	26	28	20	10	11
OSP-P25	117	16	M5	5.5	3.5	52	39	19	2	9	38	40	30	16	21
OSP-P32	152	25	M6	6.6	6	68	50	28	2	13	62	60	46	40	30
OSP-P40	152	25	M6	–	6	74	56	28	2	13	62	60	46	–	30
OSP-P50	200	25	M6	–	6	79	61	28	2	13	62	60	46	–	30
OSP-P63	256	37	M8	–	8	100	76	34	3	17	80	80	65	–	37
OSP-P80	348	38	M10	–	8	122	96	42	3	16	88	90	70	–	42

* Dimension NN gives the possible plus and minus play in horizontal and vertical movement, which also makes tilting sideways possible.

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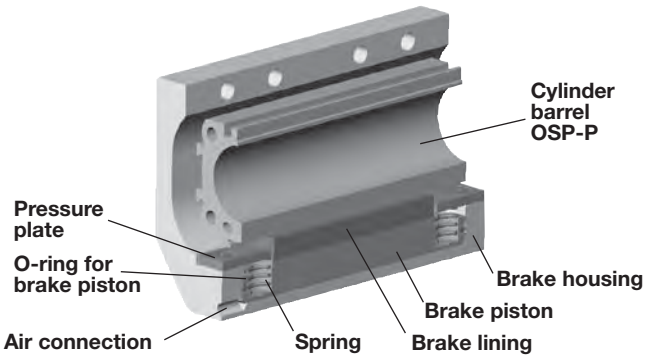
Active Brake (Basic Cylinder)

Series AB25 to 80 for basic cylinder

Features

- Actuated by pressurization
- Released by spring actuation
- Holds position, even under changing load conditions

Note:
Cannot be used in combination with intermediate supports or position sensors.



Forces and Weights (SLIDELINE Guide Required)

Series	Max. braking force (N) (1	Brake pad way (mm)	Mass (kg) Linear drive with brake 0 mm stroke	Increase per 100mm stroke	Brake*	Active brake order number
AB 25	350	2.5	1.0	0.197	0.35	**20806**
AB 32	590	2.5	2.02	0.354	0.58	**20807**
AB 40	900	2.5	2.83	0.415	0.88	**20808**
AB 50	1400	2.5	5.03	0.566	1.50	**20809**
AB 63	2170	3.0	9.45	0.925	3.04	**20810**
AB 80	4000	3.0	18.28	1.262	5.82	**20811**

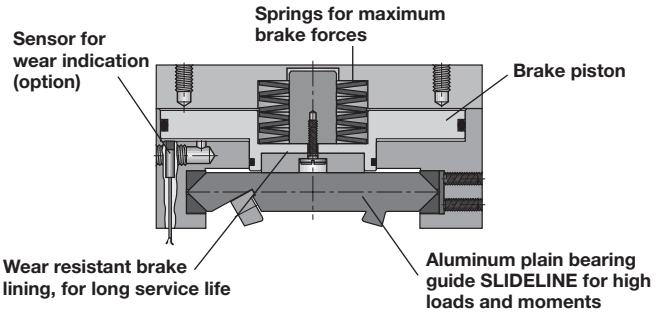
(1 – at 6 bar
both chambers pressurized with 6 bar
– oil on the braking surface will reduce braking effectiveness

*** Please Note:**
The mass of the brake should be added to the total moving mass when using the cushioning diagram.

Multi-Brake

The Multi-Brake is a passive device. When the air pressure is removed the brake is actuated and movement of the cylinder is blocked. The brake is released by pressurization.

The high friction, wear resistant brake linings allow the Multi-Brake to be used as a dynamic brake to stop cylinder movement in the shortest possible time. The powerful springs also allow the Multi-Brake to be used in applications where non-precision positioning is required



Series	Max. brake force N (lb) 1)	Mass of linear drive with guide kg (lb) With 0 mm stroke	Increase per 100 mm stroke	Mass* guide carriage kg (lb)
MB-SL 25	470 (105.7)	2.04 (5.5)	0.39 (1.0)	1.10 (2.9)
MB-SL 32	790 (177.6)	3.82 (10.2)	0.65 (1.7)	1.79 (4.8)
MB-SL 40	1200 (269.8)	5.16 (13.8)	0.78 (2.1)	2.34 (6.3)
MB-SL 50	1870 (420.4)	8.29 (22.2)	0.97 (2.6)	3.63 (9.7)
MB-SL 63	2900 (651.9)	13.31 (35.7)	1.47 (3.9)	4.97 (13.3)
MB-SL 80	2900 (651.9)	17.36 (46.5)	1.81 (4.8)	4.97 (13.3)

1) Braking surface dry – oil on the braking surface will reduce the braking force
* In the cushioning diagram, the mass of the guide carriage has to be added to the total moving mass.

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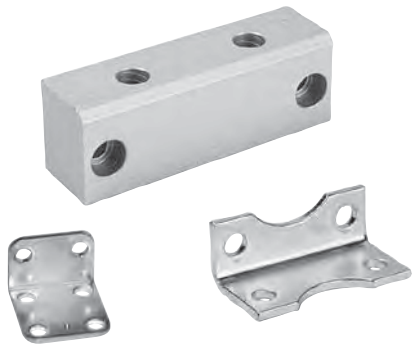
End cap mountings, ø 10-80 mm

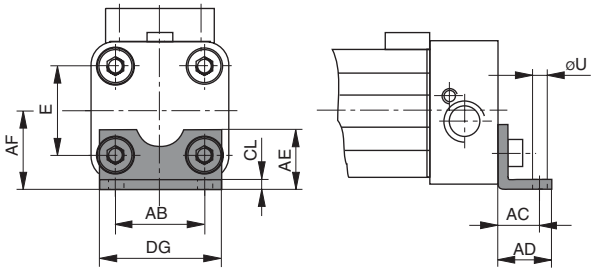
On the face of each end cap there are four threaded holes for mounting the actuator. The hole layout is square, so that the mounting can be fitted to the bottom, top or either side, regardless of the position chosen for the air connection.

Material:
Series OSP-P10 – P32: Galvanized steel.
Series OSP-P40 – P80: Anodized aluminum.

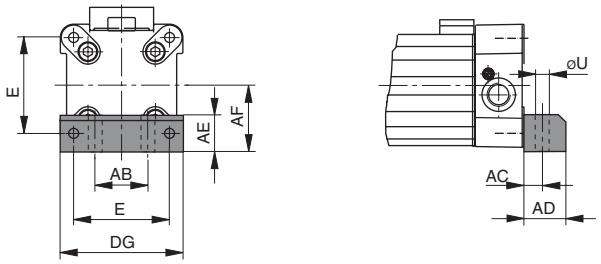
The mountings are supplied in pairs.



Series OSP-P16 to 32: Type A1



Series OSP-P40 to 80: Type C1



Dimensions (mm)

Series	E	ØU	AB	AC	AD	AE	AF	CL	DG
OSP-P10	—	3.6	12	10	14	20.2	11	1.6	18.4
OSP-P16	18	3.6	18	10	14	12.5	15	1.6	26
OSP-P25	27	5.8	27	16	22	18	22	2.5	39
OSP-P32	36	6.6	36	18	26	20	30	3	50
OSP-P40	54	9	30	12.5	24	24	38	—	68
OSP-P50	70	9	40	12.5	24	30	48	—	86
OSP-P63	78	11	48	15	30	40	57	—	104
OSP-P80	96	14	60	17.5	35	50	72	—	130

(*= Pair

Mounting type

Series	A1	B1	C1	D1	E1
OSP-P10	**0240**		—		
OSP-P16	**20408FIL**		—	**20434FIL**	**20435FIL**
OSP-P25	**2010**	**20311FIL**	—	**20008FIL**	**20009FIL**
OSP-P32	**3010**	**20313FIL**	—	**20157FIL**	**20158FIL**
OSP-P50	—		**5010FIL**	**20162FIL**	**20163FIL**
OSP-P63	—		**6010FIL**	**20451FIL**	**20452FIL**
OSP-P80	—		**8010FIL**	**20480FIL**	**20482FIL**

Mounting kits can be ordered via the above part numbers.
Note: Mounting kits are provided in pairs.

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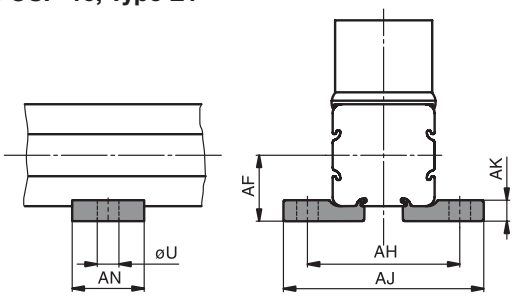
Intermediate supports, ø 10-80 mm

Note on types E1 and D1 (P16 – P80):

The intermediate supports can also be mounted on the underside of the actuator, in which case its distance from the center of the actuator is different.

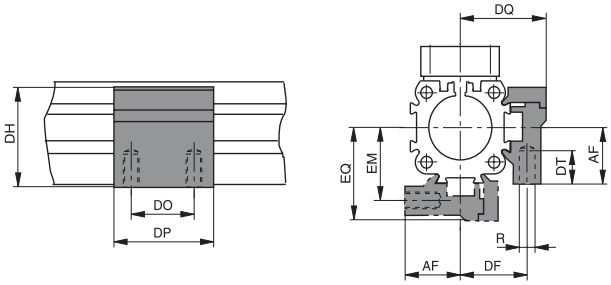
Series OSP-10, Type E1



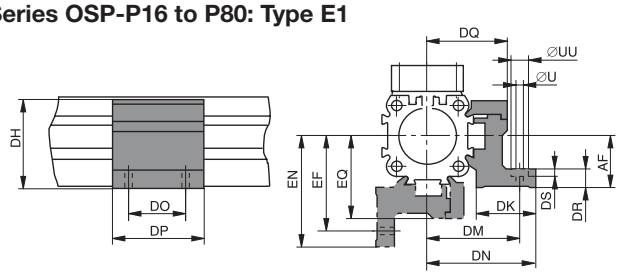
Dimensions (mm) Series OSP-P10

Series	U	AF	AH	AJ	AK	AN
OSP-P10	3.6	11	25.4	33.4	3.5	12

Series OSP-16 to 80, Type D1



Series OSP-P16 to P80: Type E1



Dimension Table (mm) – Series OSP-P16 to P80

Series	R	U	UU	AF	DF	DH	DK	DM	DN	DO	DP	DQ	DR	DS	DT	EF	EM	EN	EQ
OSP-P16	M3	3.4	6	15	20	29.2	24	32	36.4	18	30	27	6	3.4	6.5	32	20	36.4	27
OSP-P25	M5	5.5	10	22	27	38	26	40	47.5	36	50	34.5	8	5.7	10	41.5	28.5	49	36
OSP-P32	M5	5.5	10	30	33	46	27	46	54.5	36	50	40.5	10	5.7	10	48.5	35.5	57	43
OSP-P40	M6	7	–	38	35	61	34	53	60	45	60	45	10	–	11	56	38	63	48
OSP-P50	M6	7	–	48	40	71	34	59	67	45	60	52	10	–	11	64	45	72	57
OSP-P63	M8	9	–	57	47.5	91	44	73	83	45	65	63	12	–	16	79	53.5	89	69
OSP-P80	M10	11	–	72	60	111.5	63	97	112	55	80	81	15	–	25	103	66	118	87

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Adaptor profile, ø 16-50 mm

Adaptor profile OSP
A universal attachment for mounting of valves etc.
Solid material

Series	Order number	
	Standard	Stainless
OSP-P16	**20432FIL**	**20438FIL**
OSP-P25	**20006FIL**	**20186FIL**
OSP-P32	**20006FIL**	**20186FIL**
OSP-P40	**20025FIL**	**20267FIL**
OSP-P50	**20025FIL**	**20267FIL**

T-Slot Profile ø 16-50 mm

T-slot profile OSP
A universal attachment for mounting with standard T-Nuts

Series	Order number	
	Standard	Stainless
OSP-P16	**20433FIL**	**20439FIL**
OSP-P25	**20007FIL**	**20187FIL**
OSP-P32	**20007FIL**	**20187FIL**
OSP-P40	**20026FIL**	**20268FIL**
OSP-P50	**20026FIL**	**20268FIL**

Note: Can be used in conjunction with IPS T-nut (20-058).

Combination of Series OSP-P with system profiles

Connection profile, ø 16-50 mm

For combining
Series OSP-P with system profiles
Series OSP-P with Series OSP-P

Series	Order number
OSP-P16	**20849FIL**
OSP-P25	**20850FIL**
OSP-P32	**20850FIL**
OSP-P40	**20851FIL**
OSP-P50	**20851FIL**

Combination of Series OSP-P with Series OSP-P

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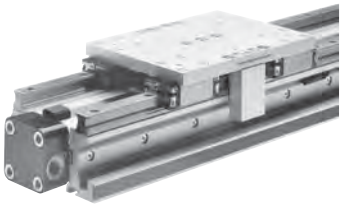
Other Options

PROLINE
The compact aluminum roller guide for high loads and velocities and utilizes the GDL Guide Bearing

STARLINE
Recirculating ball bearing guide for very high loads and precision

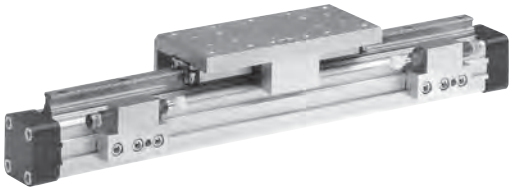
KF Guide
Recirculating ball bearing guide – the mounting dimensions correspond to FESTO Type: DGPL-KF



Heavy Duty Guide HD
for heavy duty applications

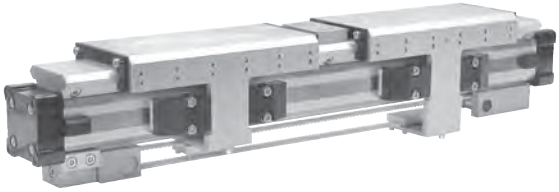
Integrated VOE Valves

SENSOFLEX SFI-plus
Incremental measuring system with 0.1 (1.0) mm resolution



Variable Stop VS
The variable stop provides simple stroke limitation
Available on STARLINE only

Clean Room Version
Certified to DIN EN ISO 14644-1



Rodless Cylinder
For synchronized bi-parting movements
Available on SLIDELINE Guide Bearing only

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Service packs

	Bore sizes						
	16mm	25mm	32mm	40mm	50mm	63mm	80mm
BUNA service pack single piston	**11111xssssss**	**11112xssssss**	**11113xssssss**	**11114xssssss**	**11115xssssss**	**11116xssssss**	**11118xssssss**
Fluorocarbon service pack single piston	**11121xssssss**	**11122xssssss**	**11123xssssss**	**11124xssssss**	**11125xssssss**	**11126xssssss**	**11128xssssss**
BUNA service pack single piston - slow speed grease	**11131xssssss**	**11132xssssss**	**11133xssssss**	**11134xssssss**	**11135xssssss**	**11136xssssss**	**11138xssssss**
Fluorocarbon service pack single piston - slow speed grease	**11141xssssss**	**11142xssssss**	**11143xssssss**	**11144xssssss**	**11145xssssss**	**11146xssssss**	**11148xssssss**

Note: sssss = stroke of cylinder

Service Pack Information

Service Packs contain all the components necessary to completely rebuild a Parker rodless cylinder, are available. Each pack contains a complete seal kit, inner and outer bands, Parker grease tube, cleaning tool and repair instructions. It's all packaged in an easy-to-ship, easy-to-store box clearly labeled to indicate the cylinder type, bore and stroke for which it is intended. Contact your local Parker distributor for more information.

Seal kits

	Bore sizes						
	16mm	25mm	32mm	40mm	50mm	63mm	80mm
BUNA seal kit - standard cylinder	**11052**	**11053**	**11054**	**11055**	**11056**	**11057**	**11058**
Fluorocarbon seal kit - standard cylinder	**11059**	**11060**	**11061**	**11062**	**11063**	**11064**	**11065**
Seal kit - sideline carriage	**11066**	**11067**	**11068**	**11069**	**11070**	—	—
Seal kit active brake - standard cylinder	—	**11822FIL**	**11823FIL**	**11824FIL**	**11825FIL**	**11826FIL**	**11827FIL**
Seal kit - multibrake	—	**11089FIL**	**11090FIL**	**11091FIL**	**11092FIL**	**11093FIL**	—

Seal Kit Information

Seal Kits include all seals, a tube of grease, bearing shoe, scraper and cleaning tool.

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P1X Series

- 7 bore sizes – 16mm through 63mm
- Two port locations standard
- Large carriage for stability
- Integral sensor mounting rail
- Optional adjustable stroke and shock absorbers

Operating information

Maximum pressure:	100 PSIG (7 bar)	
Minimum pressure:	Ø16, Ø20 bores	29 PSI (2 bar)
	Ø25, Ø32, Ø40 bores	14.5 PSI (1 bar)
	Ø50, Ø63 bores	7 PSI (0.5 bar)
Proof pressure:	152 PSI (10.5 bar)	
Temperature range:	40°F to 140°F (5°C to 60°C)	
Filtration requirements:	Filtered, nonlubricated compressed air	

Ordering Information

P1X	N	032	D	A	N	0500	W	D	N	N	N	-B

Series

P1X	Global Rodless

Construction

N	Inch
M	Metric

Bore size

016	16mm
020	20mm
025	25mm
032	32mm
040	40mm
050	50mm
063	63mm

Carriage

D	Double acting

Piston / Shock style

A	Cushions both ends (standard)
R	Cushion right end only*
L	Cushion left end only*
N	No cushions or shock absorbers
H	Shock absorber both ends**
B	Shock absorber right end only**
C	Shock absorber left end only**

* As viewed from port side of cylinder
** Cannot be combined with inverted carriage

Seal material

N	Standard

Stroke length*

Basic or options

B†	Standard
W†	With options
/	Special (for factory use only)

Carriage mounting style

D	Basic mount
J	Inverted basic mount
A	Swivel mount
G	Inverted swivel mount

Porting options

N	NPTF (Std)
G	BSPP
Q	BSPT*

* Not available with N construction

Mounting options

No Foot mount	End mount foot bracket	Bottom mount foot bracket	Intermediate supports
N (std)	F	A††	No support
H	M	B††	One support
K	P	C††	Two supports
T	R	D††	Three supports

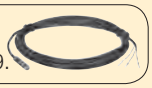
Fastener Type

N	Standard - zinc-plated
S	Stainless steel

* Stroke is ALWAYS in mm.
† When "B" is specified, the remaining digits in the part number are not necessary. If "W" is used, the remaining digits in the part number must be filled out.
†† Not available on 40, 50 and 63mm bore sizes.

Essential Information
Optional Features

Sensors
For sensors see page B339.



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Specifications

Model	P1X (Standard w/switch)			
Bore size mm (inch nominal)	16 (5/8)	20 (3/4), 25 (1)	32 (1-1/4), 40 (1-1/2)	50 (2), 63 (21/2)
Port size – N series	M5 (10-32)	1/8 NPT	1/4 NPT	3/8 NPT
Port size – M series	M5 (10-32)	1/8 Rc	1/4 Rc	3/8 Rc
Stroke tolerance in.	±0.080 to 39"	±0.100 to 118"	±0.120 to 196"	
Piston speed, *in./sec.	2-80 IPS with side ports on each end (Ø16 & Ø20 bores 2-40 IPS with single end porting with 39" stroke) (Ø25, Ø32, Ø40, Ø50 & Ø63 bores 2-40 IPS with single end porting with 78" stroke)			
Cushion	Air cushion standard			
Lubrication	Not required (if you choose to lubricate your system, continuing lubrication will be required.)			

*Actual piston speed with one end port will vary depending on stroke length.

Weight & theoretical force characteristics

		Weights								Theoretical force (lbs)				
		Weight at zero stroke						Weight per 1" (25.4mm) stroke		At pressure (PSI)				
	Area	M00		MLB		MLB1								
Bore	in²	lbs	kg	lbs	kg	lbs	kg	lbs	kg	30	40	60	80	100
16	0.31	0.70	0.3	0.73	0.3	0.77	0.4	0.07	0.03	9	12	19	25	31
20	0.49	1.15	0.5	1.19	0.5	1.28	0.6	0.10	0.04	15	20	29	39	49
25	0.84	2.21	1.0	2.43	1.1	2.43	1.1	0.15	0.07	23	30	46	61	76
32	1.26	3.31	1.5	3.53	1.6	3.75	1.7	0.20	0.09	38	50	69	100	125
40	1.96	5.29	2.4	5.51	2.5	—	—	0.27	0.12	59	78	117	156	195
50	3.08	7.94	3.6	8.16	3.7	—	—	0.40	0.18	91	122	182	243	304
63	4.86	13.67	6.2	14.33	6.5	—	—	0.63	0.28	145	193	290	386	483

Moments

Figure 1 shows the maximum allowable moments for each of the three types of loading: pitch, roll and yaw.

The sum total of each of these types of moments, divided by each of the maximum values, determines a Load-Moment Factor (LMF) should be equal to or less than 1.0. On horizontal mountings, the total load (L) should also be divided by the maximum load allowable (Figure 2) and factored into the equation.

Horizontal mountings:

$$\frac{L}{[L]} + \frac{M}{[M]} + \frac{Ms}{[Ms]} + \frac{Mv}{[Mv]} = LMF \leq 1.0$$

Vertical mountings:

$$\frac{M}{[M]} + \frac{Ms}{[Ms]} + \frac{Mv}{[Mv]} = LMF \leq 1.0$$

Figure 1

Maximum allowable moments n-m (lb-in)

	[M]		[Ms]		[Mv]	
Bore	Pitch moment		Roll moment		Yaw moment	
size	Std.	Inverted	Std.	Inverted	Std.	Inverted
16	5 (44)	3.5 (31)	1 (9)	0.5 (4)	1 (9)	1 (9)
20	10 (89)	7 (62)	1.5 (13)	0.7 (6)	3 (27)	3 (27)
25	17 (150)	12 (106)	5 (44)	2.5 (22)	10 (89)	10 (89)
32	36 (319)	25 (221)	10 (89)	5 (44)	21 (186)	21 (186)
40	77 (682)	54 (478)	23 (204)	11.5 (102)	26 (230)	26 (230)
50	154 (1363)	108 (956)	32 (283)	16 (142)	42 (372)	42 (372)
63	275 (2434)	193 (1708)	52 (460)	26 (230)	76 (673)	76 (673)

Figure 2

Bore	Max. allowable load [L] N (lbs)		Max. unsupported length mm (in)
size	Std.	Inverted	at max. load
16	141 (32)	70 (16)	450 (17.7)
20	198 (45)	101 (23)	551 (21.7)
25	356 (81)	180 (41)	899 (35.4)
32	616 (140)	308 (70)	749 (29.5)
40	959 (218)	480 (109)	1000 (39.4)
50	1456 (331)	726 (165)	1300 (51.2)
63	2297 (522)	1148 (261)	1600 (63.0)

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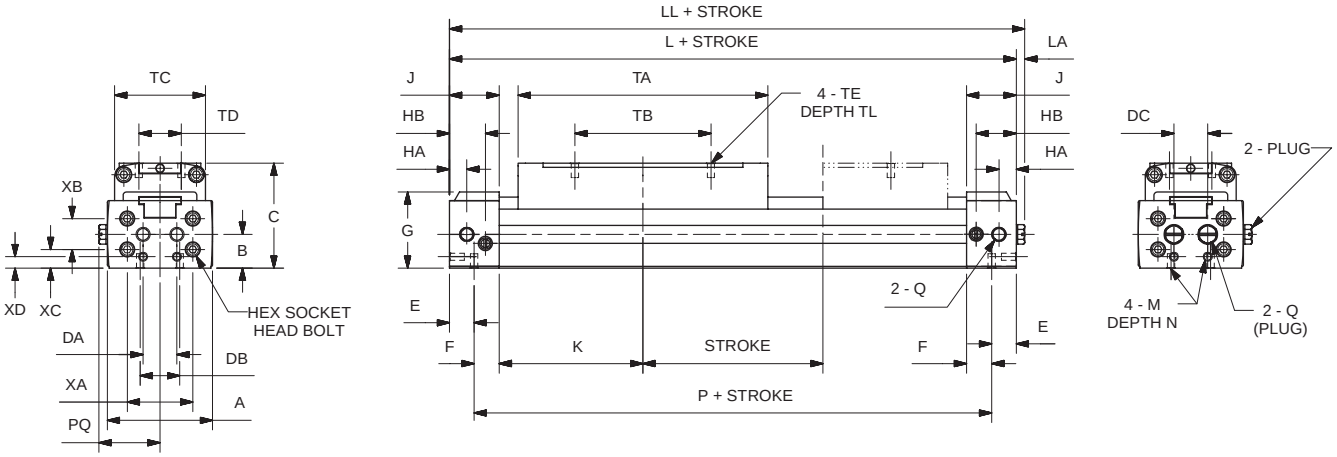
Basic cylinder



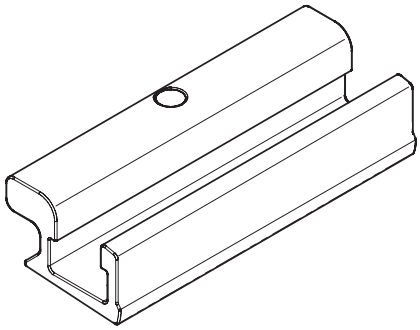
Bore (mm)	A	B	C	DA	DB	DC	E	F	G	HA	HB	J	K	L	LL	LA	M	N
16	1.46 (37)	0.47 (12)	1.46 (37)	0.47 (12)	0.55 (14)	0.47 (12)	0.34 (8.5)	0.35 (9)	1.06 (27)	0.24 (6)	0.55 (14)	0.69 (17.5)	2.24 (57)	5.87 (149)	5.98 (152)	0.12 (3)	5-40 (M3)	0.20 (5)
20	1.73 (44)	0.55 (14)	1.65 (42)	0.55 (14)	0.63 (16)	0.63 (16)	0.41 (10.5)	0.45 (11.5)	1.22 (31)	0.34 (8.5)	0.73 (18.5)	0.87 (22)	2.46 (62.5)	6.65 (169)	6.75 (171.5)	0.10 (2.5)	8-32 (M4)	0.26 (6.5)

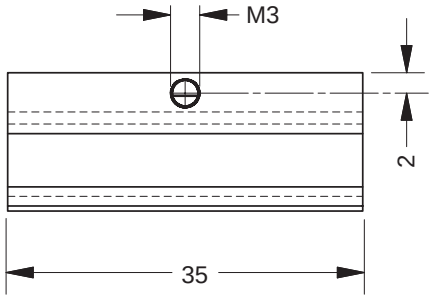
Bore (mm)	P	PQ	Q	TA	TB	TC	TD	TE	TL	XA	XB	XC	XD
16	5.20 (132)	0.83 (21)	10-32 NPT (M5)	3.47 (88)	1.89 (48)	1.26 (32)	0.59 (15)	5-40 (M3)	0.20 (5)	0.91 (23)	0.43 (11)	0.26 (6.5)	0.16 (4)
20	5.83 (148)	0.97 (24.5)	1/8 NPT (1/8 Rc)	3.94 (100)	2.36 (60)	1.50 (38)	0.71 (18)	8-32 (M4)	0.24 (6)	1.10 (28)	0.63 (16)	0.24 (6)	0.20 (5)

inches (mm)

Sensor adapter bracket

Part number P8S-TMA0Y
(Shown larger than actual size)





NOTE: Must be ordered separately when ordering sensors.

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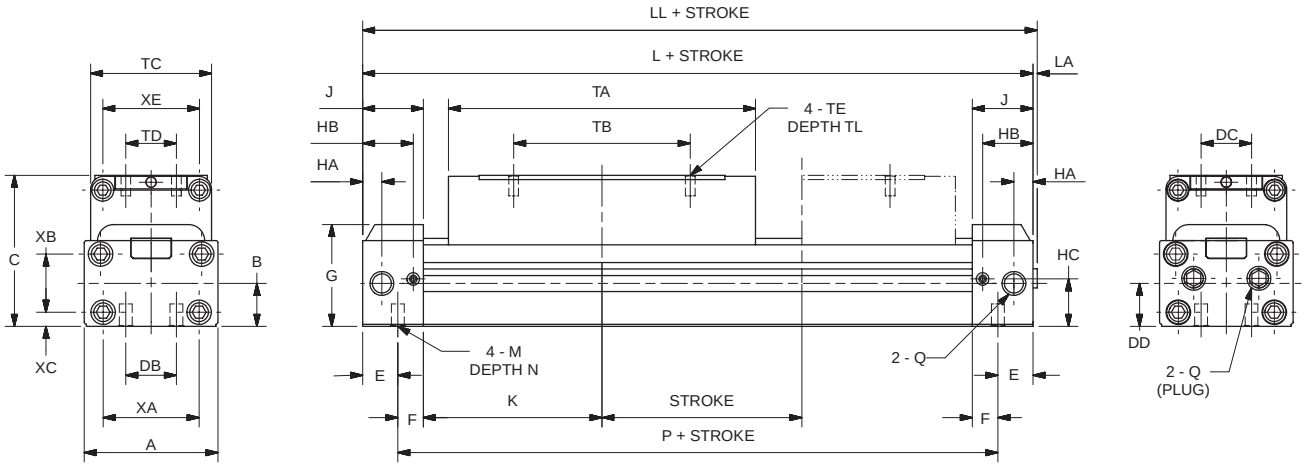
Basic cylinder



Bore (mm)	A	B	C	DB	DC	DD	E	F	G	HA	HB	HC	J	K	L	LL	LA	M	N
25	2.09 (53)	0.67 (17)	2.09 (53)	0.79 (20)	1.02 (26)	0.75 (19)	0.55 (14)	0.39 (10)	1.59 (40.5)	0.30 (7.5)	0.79 (20)	0.74 (18.9)	0.95 (24)	2.80 (71)	7.48 (190)	7.56 (192)	0.08 (2)	1/4-20 (M6)	0.35 (9)
32	2.60 (66)	0.73 (18.5)	2.24 (57)	1.26 (32)	1.06 (27)	0.83 (21)	0.59 (15)	0.51 (13)	1.71 (43.5)	0.39 (10)	0.93 (23.5)	0.85 (21.5)	1.10 (28)	3.35 (85)	8.90 (226)	9.00 (228.5)	0.10 (2.5)	1/4-20 (M6)	0.35 (9)
40	3.15 (80)	0.87 (22)	2.64 (67)	1.42 (36)	1.38 (35)	1.10 (28)	0.67 (17)	0.55 (14)	2.03 (51.5)	0.51 (13)	1.02 (26)	1.06 (27)	1.22 (31)	3.58 (91)	9.61 (244)	9.71 (246.5)	0.10 (2.5)	5/16-18 (M8)	0.47 (12)
50	3.78 (96)	1.10 (28)	3.23 (82)	1.77 (45)	1.38 (35)	1.38 (35)	0.91 (23)	0.63 (16)	2.40 (61)	0.59 (15)	1.30 (33)	1.39 (35.3)	1.54 (39)	3.54 (90)	10.16 (258)	10.26 (260.5)	0.10 (2.5)	5/16-18 (M8)	0.47 (12)
63	4.65 (118)	1.38 (35)	3.74 (95)	1.97 (50)	1.54 (39)	1.65 (42)	0.75 (19)	0.79 (20)	2.91 (74)	0.59 (15)	1.26 (32)	1.69 (43)	1.54 (39)	4.29 (109)	11.65 (296)	11.75 (298.5)	0.10 (2.5)	3/8-16 (M10)	0.59 (15)

Bore (mm)	P	Q	TA	TB	TC	TD	TE	TL	XA	XB	XC	XE
25	6.38 (162)	1/8 NPT (1/8 Rc)	4.80 (122)	2.76 (70)	1.89 (48)	0.79 (20)	10-24 (M5)	0.32 (8)	1.50 (38)	0.91 (23)	0.22 (5.5)	1.58 (40)
32	7.72 (196)	1/4 NPT (1/4 Rc)	5.28 (134)	3.15 (80)	2.21 (56)	0.79 (20)	1/4-20 (M6)	0.35 (9)	1.89 (48)	0.98 (25)	0.24 (6)	1.85 (47)
40	8.27 (210)	1/4 NPT (1/4 Rc)	5.83 (148)	3.54 (90)	2.68 (68)	1.18 (30)	1/4-20 (M6)	0.43 (11)	2.36 (60)	1.18 (30)	0.28 (7)	2.28 (58)
50	8.35 (212)	3/8 NPT (3/8 Rc)	5.98 (152)	3.94 (100)	3.15 (80)	1.18 (30)	5/16-18 (M8)	0.51 (13)	2.91 (74)	1.42 (36)	0.39 (10)	2.76 (70)
63	10.16 (258)	3/8 NPT (3/8 Rc)	6.61 (168)	4.33 (110)	4.02 (102)	1.58 (40)	5/16-18 (M8)	0.51 (13)	3.78 (96)	1.65 (42)	0.55 (14)	3.54 (90)

inches (mm)

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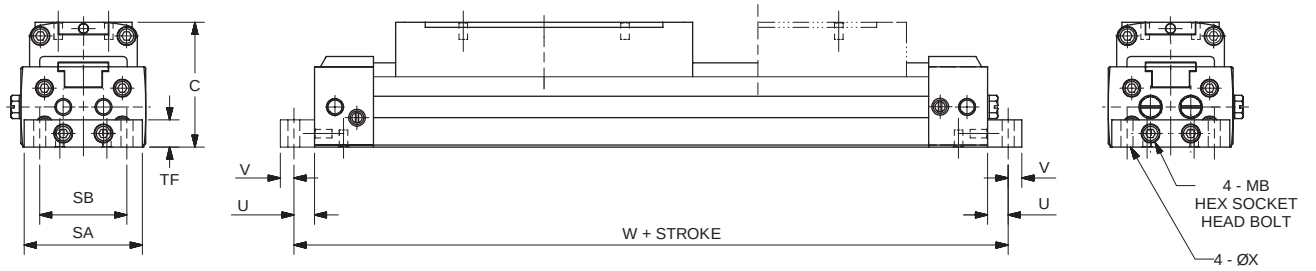
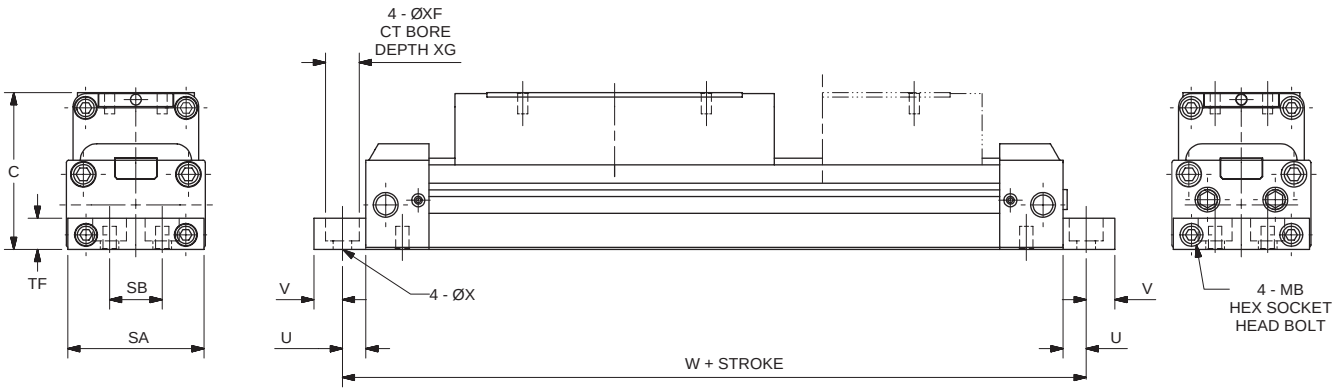
16 to 32 mm bore sizes



40 to 63 mm bore sizes



Bore (mm)	C	SA	SB	TF	U	V	W	X	XF	XG	MB
16	1.46 (37)	1.38 (35)	1.02 (26)	0.32 (8)	0.24 (6)	0.16 (4)	6.34 (161)	0.14 (3.6)	—	—	M3x10
20	1.65 (42)	1.69 (43)	1.30 (33)	0.39 (10)	0.24 (6)	0.24 (6)	7.13 (181)	0.19 (4.7)	—	—	M4x12
25	2.09 (53)	2.05 (52)	0.79 (20)	0.47 (12)	0.35 (9)	0.43 (11)	8.19 (208)	0.28 (7)	—	—	M5x50
32	2.24 (57)	2.52 (64)	1.26 (32)	0.47 (12)	0.35 (9)	0.43 (11)	9.61 (244)	0.28 (7)	—	—	M5x50
40	2.64 (67)	3.15 (80)	1.18 (30)	0.59 (15)	0.49 (12.5)	0.45 (11.5)	10.60 (269)	0.35 (9)	0.51 (13)	0.34 (8.7)	M6x55
50	3.23 (82)	3.70 (94)	1.57 (40)	0.79 (20)	0.49 (12.5)	0.45 (11.5)	11.10 (283)	0.35 (9)	0.51 (13)	0.34 (8.7_	M8x65
63	3.74 (95)	4.57 (116)	1.89 (48)	0.98 (25)	0.59 (15)	0.59 (15)	12.80 (326)	0.43 (11)	0.61 (15.5)	0.41 (10.5)	M8x70

inches (mm)

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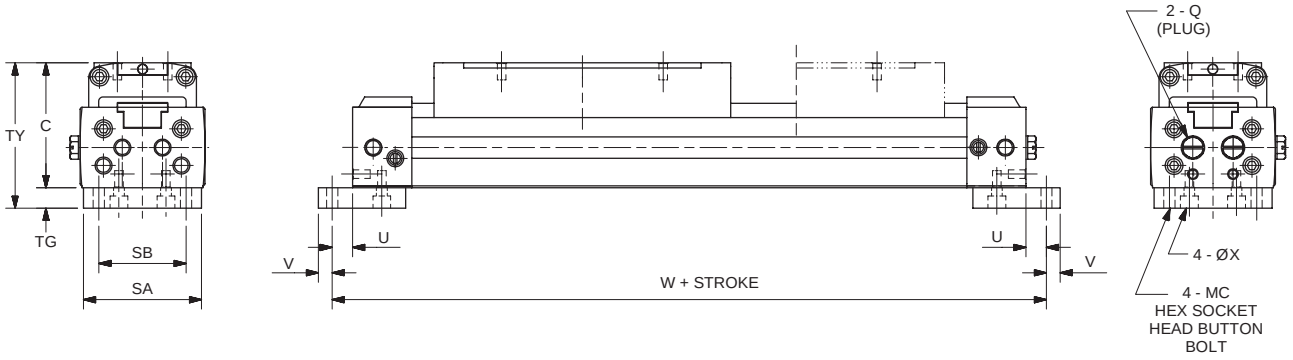
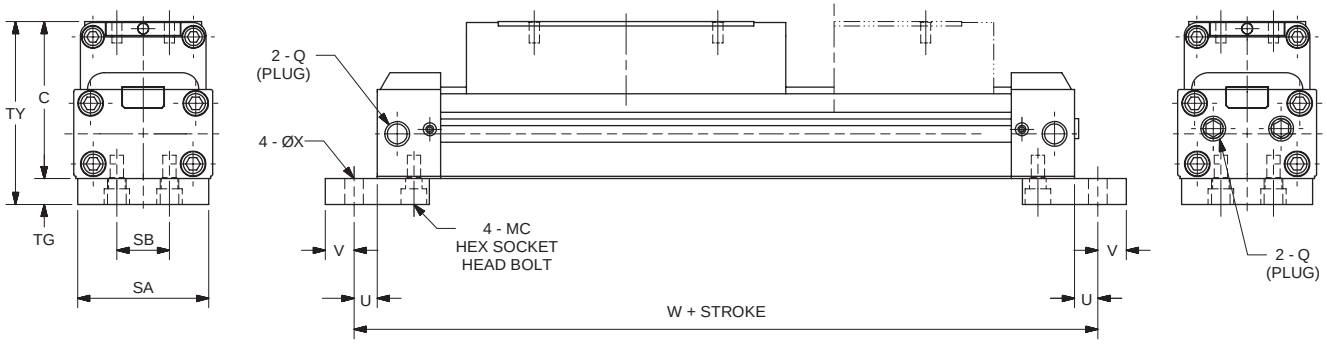
16 to 20 mm bore sizes



25 to 32 mm bore sizes



Bore (mm)	C	Q	SA	SB	TG	TY	U	V	W	X	MC
16	1.46 (37)	10-32 (M5)	1.38 (35)	1.02 (26)	0.24 (6)	1.69 (43)	0.24 (6)	0.16 (4)	6.34 (161)	0.13 (3.4)	5-40, 1/4 LG
20	1.65 (42)	1/8 NPT (1/8 Rc)	1.69 (43)	1.30 (33)	0.32 (8)	1.97 (50)	0.24 (6)	0.24 (6)	7.13 (181)	0.18 (4.5)	8-32, 3/8 LG
25	2.09 (53)	1/8 NPT (1/8 Rc)	1.97 (50)	0.79 (20)	0.39 (10)	2.48 (63)	0.35 (9)	0.43 (11)	8.19 (208)	0.28 (7)	1/4-20 x 1/2 LG
32	2.24 (57)	1/4 NPT (1/4 Rc)	2.52 (64)	1.26 (32)	0.39 (10)	2.64 (67)	0.35 (9)	0.43 (11)	9.61 (244)	0.28 (7)	1/4-20 x 1/2 LG
40	2.64 (67)	1/4 NPT (1/4 Rc)	—	—	—	—	—	—	—	—	—
50	3.23 (82)	3/8 NPT (3/8 Rc)	—	—	—	—	—	—	—	—	—
63	3.74 (95)	3/8 NPT (3/8 Rc)	—	—	—	—	—	—	—	—	—

inches (mm)

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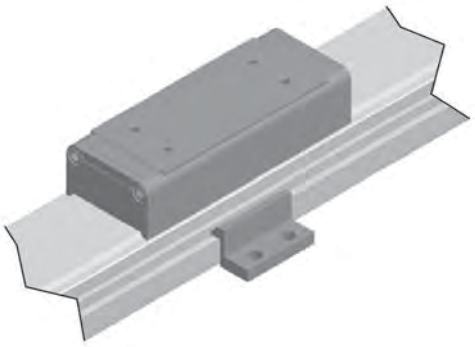
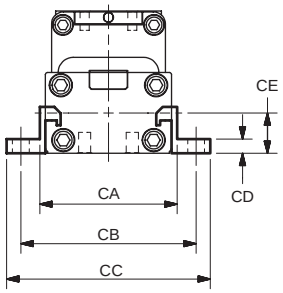
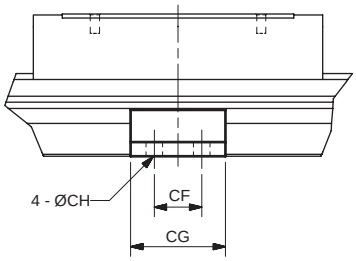
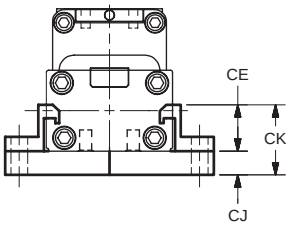
Intermediate support brackets

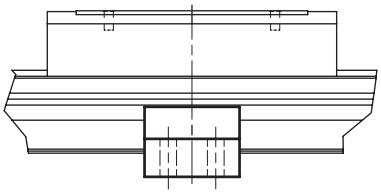
End mount











Intermediate support brackets (2 per kit)

Bore (mm)	CA	CB	CC	CD	CE	CF	CG	CH
16	1.654 (42)	2.205 (56)	2.52 (64)	0.118 (3)	0.472 (12)	0.787 (20)	1.378 (35)	0.157 (4)
20	1.929 (49)	2.52 (64)	2.953 (75)	0.157 (4)	0.551 (14)	0.787 (20)	1.496 (38)	0.197 (5)
25	2.362 (60)	2.992 (76)	3.465 (88)	0.236 (6)	0.768 (19.5)	0.787 (20)	1.575 (40)	0.276 (7)
32	2.913 (74)	3.465 (88)	3.937 (100)	0.236 (6)	0.846 (21.5)	0.787 (20)	1.575 (40)	0.276 (7)
40	3.543 (90)	4.252 (108)	4.882 (124)	0.236 (6)	0.965 (24.5)	1.181 (30)	2.362 (60)	0.354 (9)
50	4.173 (106)	4.882 (124)	5.512 (140)	0.315 (8)	1.201 (30.5)	1.181 (30)	2.362 (60)	0.354 (9)
63	5.118 (130)	5.984 (152)	6.772 (172)	0.394 (10)	1.516 (38.5)	1.969 (50)	3.543 (90)	0.433 (11)

Bore (mm)	CJ	CK	Kit part number	
			End mount or no mount	Bottom mount
16	0.236 (6)	0.709 (18)	**L080180016**	**L080190016**
20	0.315 (8)	0.866 (22)	**L080180020**	**L080190020**
25	0.394 (10)	1.161 (29.5)	**L080180025**	**L080190025**
32	0.394 (10)	1.24 (31.5)	**L080180032**	**L080190032**
40	—	—	**L080180040**	
50	—	—	**L080180050**	
63	—	—	**L080180063**	

inches (mm)

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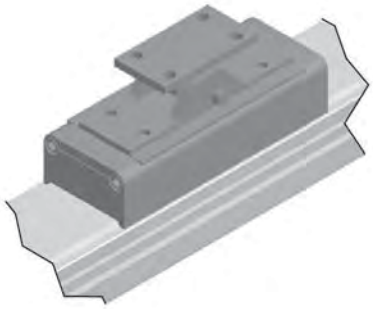
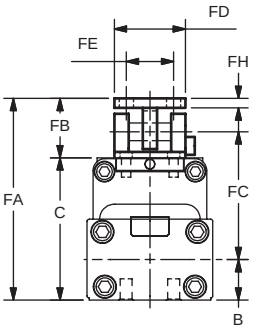
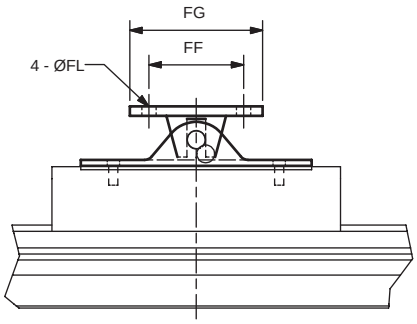
Swivel mount

Absorbs misalignment between cylinder and load





FJ dimension is the maximum horizontal float



FK dimension is the maximum vertical float

Swivel mounts

Bore (mm)	FA	FB	FC	FD	FE	FF	FG	FH
16	2.238 (58)	0.827 (21)	1.339 (34)	0.945 (24)	0.673 (16)	1.181 (30)	1.575 (40)	0.118 (3)
20	2.638 (67)	0.984 (25)	1.535 (39)	1.181 (30)	0.787 (20)	1.575 (40)	2.205 (56)	0.157 (4)
25	3.071 (78)	0.984 (25)	1.85 (47)	1.181 (30)	0.787 (20)	1.575 (40)	2.205 (56)	0.157 (4)
32	3.74 (95)	1.496 (38)	2.185 (55.5)	1.772 (45)	1.181 (30)	1.969 (50)	2.756 (70)	0.236 (6)
40	4.134 (105)	1.496 (38)	2.441 (62)	1.772 (45)	1.181 (30)	1.969 (50)	2.756 (70)	0.236 (6)
50	4.961 (126)	1.732 (44)	2.874 (73)	2.362 (60)	1.575 (40)	2.756 (70)	3.543 (90)	0.315 (8)
63	5.472 (139)	1.732 (44)	3.11 (79)	2.362 (60)	1.575 (40)	2.756 (70)	3.543 (90)	0.315 (8)

inches (mm)

Bore (mm)		FJ	FK	FL	B	C	Part number
16	inches	0.118	0.118	0.134	0.472	1.457	**L078930016**
	mm	3	3	3.4	12	37	
20	inches	0.118	0.118	0.177	0.551	1.654	**L080160020**
	mm	3	3	4.5	14	42	**L08016M020**
25	inches	0.118	0.118	0.236	0.669	2.087	**L080160025**
	mm	3	3	6	17	53	**L08016M025**
32	inches	0.197	0.197	0.276	0.728	2.244	**L080160032**
	mm	5	5	7	18.5	57	**L08016M032**
40	inches	0.197	0.197	0.276	0.866	2.638	**L080160040**
	mm	5	5	7	22	67	**L08016M040**
50	inches	0.197	0.197	0.354	1.102	3.228	**L080160050**
	mm	5	5	9	28	82	**L08016M050**
63	inches	0.197	0.197	0.354	1.378	3.74	**L080160063**
	mm	5	5	9	35	95	**L08016M063**

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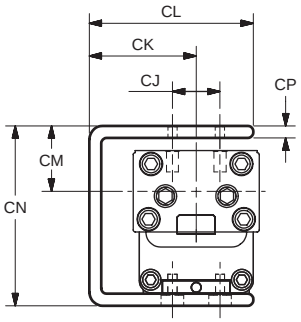
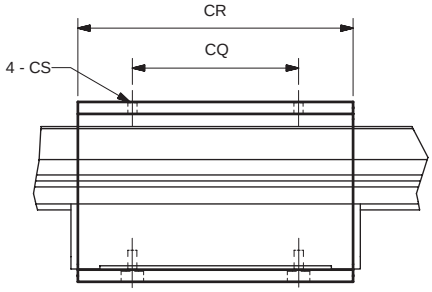
Inverted mount

Provides mounting surface 180° from carriage





Inverted mounts*

Bore (mm)		CJ	CK	CL	CM	CN	CP	CQ	CR	CS	Part number**
16	inches	0.591	1.398	1.969	1.142	2.362	0.236	1.89	3.465	5-40	**L080170016**
	mm	15	35.5	50	29	60	6	48	88		**L08017M016**
20	inches	0.709	1.28	1.969	1.024	2.362	0.236	2.362	3.937	8-32	**L080170020**
	mm	18	32.5	50	26	60	6	60	100		**L08017M020**
25	inches	0.787	1.772	2.717	1.181	2.795	0.197	2.756	4.567	10-24	**L080170025**
	mm	20	45	69	30.0	71	5	70	116		**L08017M025**
32	inches	0.787	2.126	3.209	1.358	3.15	0.276	3.15	5.039	1/4-20	**L080170032**
	mm	20	54	81.5	34.5	80	7	80	128		**L08017M032**
40	inches	1.181	2.48	3.76	1.516	3.602	0.315	3.543	5.433	1/4-20	**L080170040**
	mm	30	63	95.5	38.5	91.5	8	90	138		**L08017M040**
50	inches	1.181	2.913	4.449	1.909	4.429	0.394	3.937	5.591	5/16-18	**L080170050**
	mm	30	74	113	48.5	112.5	10	100	142		**L08017M050**
63	inches	1.575	3.465	5.433	2.283	5.157	0.512	4.331	6.22	5/16-18	**L080170063**
	mm	40	88	138	58	131	13	110	158		**L08017M063**

*Inverted mounts not available with adjustable stroke, shock absorber or tube center support bracket.

**Use this part number when ordering as a separate part. When ordering with cylinder, use "C" option as part of cylinder part number.

End port piping

Refer to Figure 3 to determine when end port piping can be used with various types of mountings relative to fitting clearance.

On all bore sizes with foot mounting, the end port pipe fittings will obstruct the mounting holes. To avoid this problem, mount the cylinder first and tighten the mounting bolts and then attach the pipe fittings to the cylinder ports.

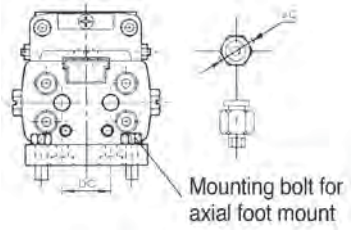


Figure 3

Bore (mm)	øC [O.D. of fittings - mm (in.)]		
	No mount	End mount	Bottom mount
16	12 (0.472)	End Port Piping Not Available	12 (0.472)
20	16 (0.630)		16 (0.630)
25	26 (1.024)		26 (1.024)
32	27 (1.065)		27 (1.063)
40	35 (1.378)	26 (1.024)	
50	35 (1.378)	30 (1.181)	
63	39 (1.535)	34 (1.339)	

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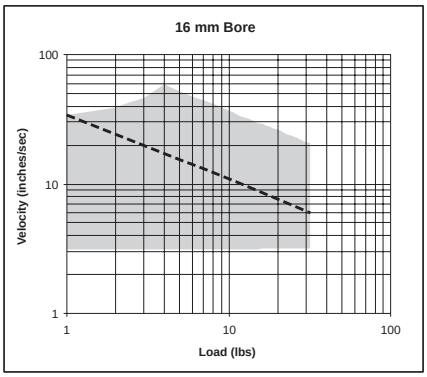
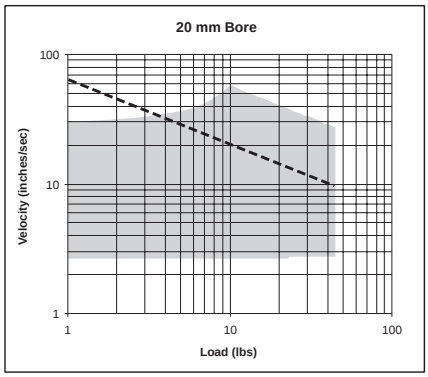
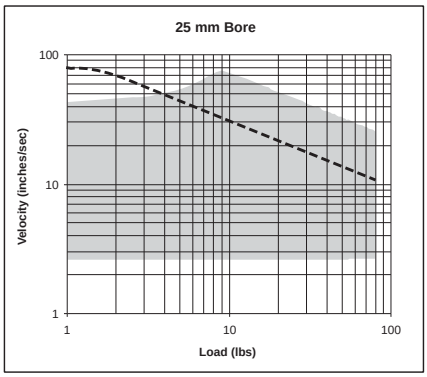
Shock absorber specifications

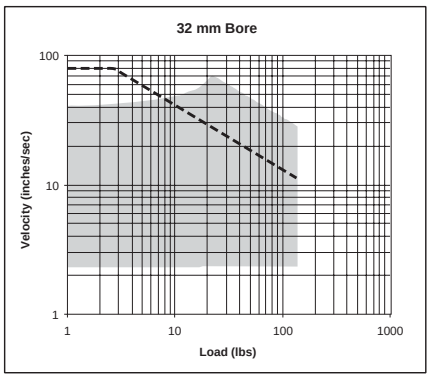
Cylinder	16mm	20mm	25mm	32mm	40mm	50, 63mm
Shock absorber number	**0887790016**	**0887790020**	**0887790025**	**0887790032**	**0887790040**	**0887790050**
Max. energy absorption - in-lbs (kgf·m)	26.0 (0.3)	60.8 (0.7)	104.2 (1.2)	226 (2.6)	608 (7.0)	1042 (12)
Stroke - inches	0.236	0.315	0.394	0.590	0.787	0.984
Energy absorption / hour - in.-lbs / hour	54,700	109,380	187,510	338,560	729,200	750,000
Max. impact velocity - in. / sec.	59	59	78.7	78.7	98.4	118.1
Max. cycle rate per hour	2100	1800	1800	1500	1200	720
Ambient temperature - °F (°C)	41-140 (5-60)					
Spring return force - lb. Extended Compressed	0.65 1.01	0.45 0.97	0.65 1.33	1.33 2.65	2.20 4.86	3.60 7.49
Return time - Sec.	0.3	0.3	0.3	0.3	0.4	0.4

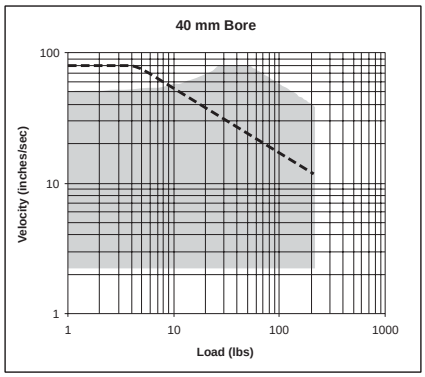
Performance data (16 to 32mm bores)

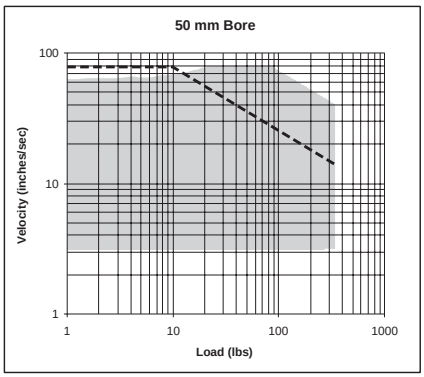


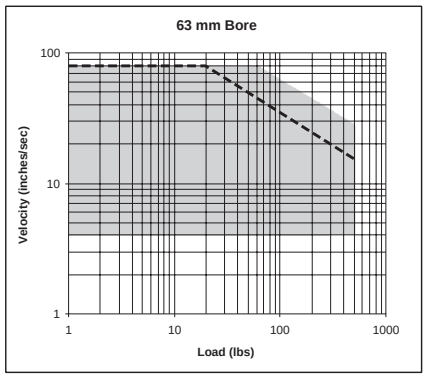












Air Cushion w/back pressure (flow controls or other meter out device)

Shock Absorber

Notes: 1. If the cylinder is vertical in orientation, double the total load for bottom shock absorber.
2. Use the total load that is being moved by shock absorber. If a weight transfer application, this would include La.
3. If final velocity cannot be easily determined, use two times the stroke divided by the stroke time.

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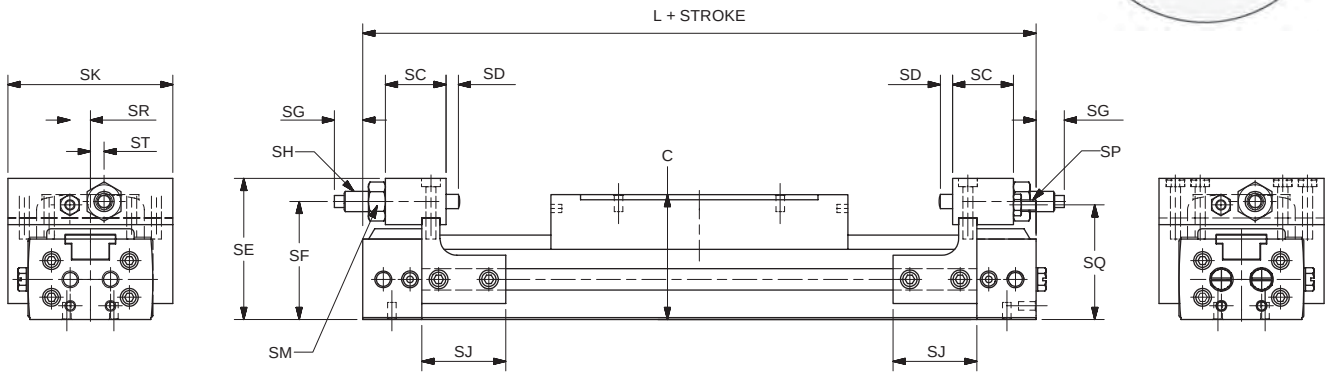
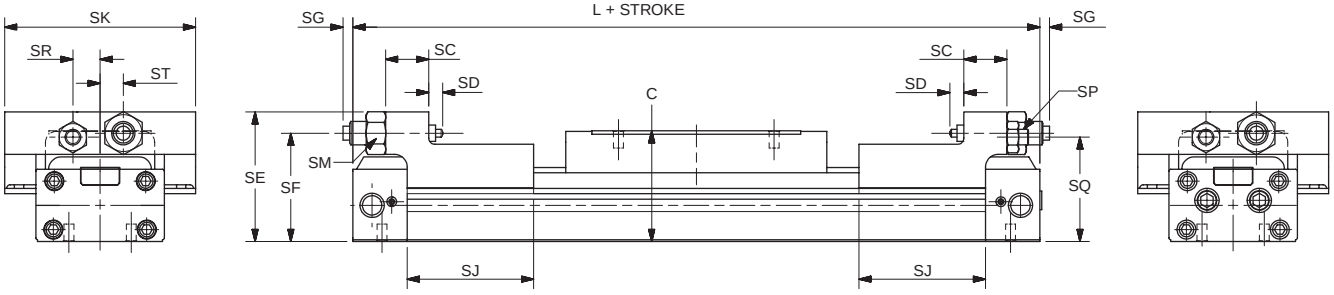
16 to 25 mm bore sizes



Bore (mm)	SC	SD	SE	SF	SG Max	SG Min	SH in-lbs	SJ	SK	SP	SQ	SR	ST	C	L
16	0.71 (18)	0.16 (4)	1.65 (42)	1.38 (35)	0.57 (14.5)	0.18 (4.5)	26	0.98 (25)	1.93 (49)	M3	1.34 (34)	0.24 (6)	0.16 (4)	1.46 (37)	5.87 (149)
20	0.89 (22.5)	0.14 (3.5)	1.89 (48)	1.57 (40)	0.57 (14.5)	0.18 (4.5)	61	1.54 (39)	2.24 (57)	M4	1.50 (38)	0.32 (8)	0.20 (5)	1.65 (42)	6.65 (169)
25	0.79 (20)	0.10 (2.5)	2.46 (62.5)	2.03 (51.5)	0.57 (14.5)	0.18 (4.5)	104	1.97 (50)	3.03 (77)	M6	1.97 (50)	0.47 (12)	0.39 (10)	2.09 (53)	7.48 (190)

inches (mm)
SH = max. energy absorption

32 to 63 mm bore sizes



Bore (mm)	SC	SD	SE	SF	SG Max	SG Min	SH in-lbs	SJ	SK	SP	SQ	SR	ST	C	L
32	0.87 (22)	0.28 (7)	2.62 (66.5)	2.19 (55.5)	1.06 (27)	0.67 (17)	226	2.56 (65)	3.86 (98)	M8	2.11 (53.5)	0.55 (14)	0.47 (12)	2.24 (57)	8.90 (226)
40	1.26 (32)	0.28 (7)	3.09 (78.5)	2.58 (65.5)	1.34 (34)	0.94 (24)	608	2.56 (65)	4.41 (112)	M10	2.50 (63.5)	0.67 (17)	0.47 (12)	2.64 (67)	9.61 (244)
50	1.50 (38)	0.32 (8)	3.90 (99)	3.15 (80)	2.17 (55)	1.77 (45)	1042	2.76 (70)	5.35 (136)	M12	3.05 (77.5)	0.87 (22)	0.67 (17)	3.23 (82)	10.16 (258)
63	1.50 (38)	0.32 (8)	4.41 (112)	3.68 (93.5)	1.73 (44)	1.34 (34)	1042	2.76 (70)	6.22 (158)	M16	3.50 (89)	0.98 (25)	0.79 (20)	3.74 (95)	11.65 (296)

inches (mm)
SH = max. energy absorption

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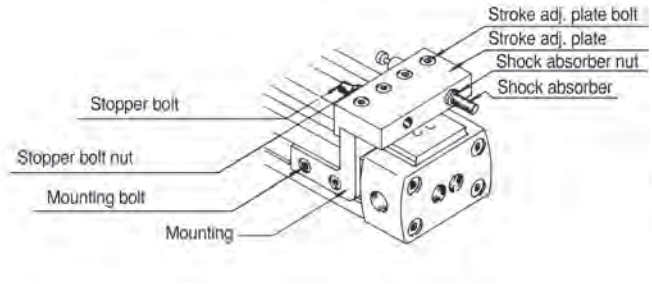
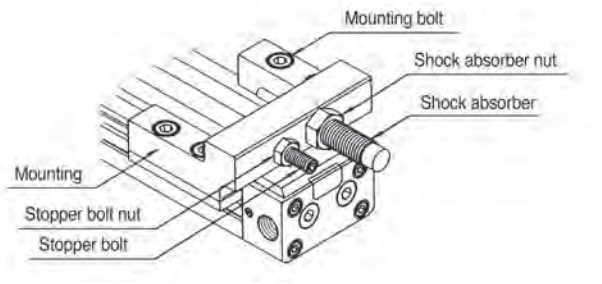
Positioning of stroke adjustment unit



ø16~ø25



ø32~ø63

(1) Moving the stroke adjustment unit.
The stroke adjustment unit can be moved by loosening the mounting bolts.

(2) Locking of stroke adjustment unit.
After moving the stroke adjustment unit to the appropriate position, lock it there by tightening the mounting bolts to the torque values shown in Figure 4. Insufficient torque may cause the stroke adjustment unit to slip out of position.

Figure 4
Torque values for tightening stroke adjustment unit.

	Tightening torque	
Bore size	Mounting bolt (lb-in)	Stroke adj. plate bolt (lb-in)
16mm	9-11	4-6
20mm	22-24	
25mm	46-50	22-24
32mm	195-213	–
40mm	390-415	–
50, 63mm	682-735	–

(3) Stroke adjustment using the stopper bolt.
Adjust the stroke by loosening the stopper bolt nut and turning the stopper bolt. After adjusting the stroke, tighten the stopper bolt nut to the torque values shown in Figure 5. When adjusting the 16-25 mm cylinders, due to the small amount of clearance between the table and the stroke adjustment plate, adjust the stroke by moving the complete stroke adjustment unit.

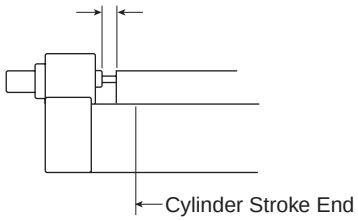
Figure 5
Torque values for tightening stopper bolt nut and shock absorber nut.

	Tightening torque	
Bore size	Stopper bolt nut (lb-in)	Shock absorber nut (lb-in)
16mm	10-11	12-16
20mm	22-24	26-35
25mm	73-84	40-53
32mm	195-213	66-89
40mm	390-425	195-266
50mm	682-735	487-620
63mm	1772-1914	487-620

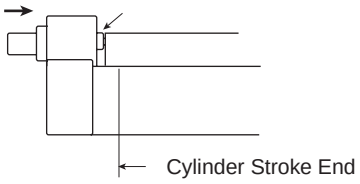
(4) Adjustment of shock absorber.
Adjust the absorption energy of the shock absorber by changing the operating stroke of the shock absorber. This is done by loosening the shock absorber nut and turning the unit. When adjustment is complete, tighten the shock absorber nut to the torque values shown in Figure 12a.

(5) Notes on usage.
The shock absorber absorbs rated energy with rated stroke. The factory setting allows a small amount of shock absorber stroke before it bottoms out. Readjust the location of the shock absorber so that the complete stroke of the absorber is utilized.

Absorption energy as set at factory:
Small margin with stroke of shock absorber.



Adjust the position of the shock absorber until the plunger of the shock absorber is fully depressed.



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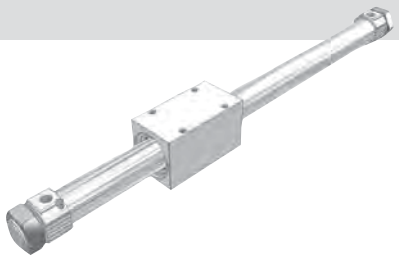
P1Z Series

- Available in 3 bores with stroke lengths up to 2000 mm
- Adjustable air cushioning is available on all cylinderS
- The load is fixed onto the mobile carriage by 4 tapped holes
- The cylinder is attached by the ends with jam nuts, flanges or foot mounts



Technical data

Bore size		Weights			
		Weight at zero stroke		Weight per 25mm of stroke	
mm	inch	kg	lbs	kg	lbs
16	5/8	0.28	0.62	0.01	0.02
20	3/4	0.46	1.01	0.02	0.05
32	1-1/4	1.35	2.98	0.04	0.08

Operating information

Maximum pressure:	100 PSIG (7 bar)
Minimum pressure:	29 PSI (2 bar)
Temperature range:	14°F to 140°F (-10°C to 60°C)
Filtration requirements:	Dry, filtered compressed air to ISO 8573-1 class 3. 4. 3. or better

If external lubrication is added, this must always be continued.

Specifications for P1Z series magnetically coupled rodless

Bore size mm (inch nominal)	16 (5/8)	20 (3/4)	32 (1 1/4)
Port size	M5 BSPP, 10-32 NPT	1/8 BSPP, 1/8 NPT	1/8 BSPP, 1/8 NPT
Maximum stroke mm (inch)	1000 (39.4)	1500 (59.1)	2000 (78.7)
Stroke tolerance mm	+1.5/-0	<=1000 +1.5/-0; >1000 +2/-0	
Piston speed m/s (inch/sec)	0.1 to 0.4 (4 to 15.75)		
Max. coupling force N (lbs)	157 (35)	236 (53)	703 (158)
Cushion	Air cushion standard		
Lubrication	Not required (If you choose to lubricate your system, continuing lubrication will be required.)		

Ordering information

Standard cylinder (15 positions) | **Options (16 positions)**

P	1	Z	M	0	1	6	S	N	N	0	5	0	0	B	F	M	N

Bore

016	Ø 16 mm
020	Ø 20 mm
032	Ø 32 mm

Cushioning

N	None (Ø 16 only)
A	Adjustable Cushions

Strokes

0200	200 mm
1000	1000 mm

Options *

B†	None
W	With options

† Standard when "B" option is used.

Mounting kit*

F	Footmount
L	Flanges
N	None (std.)

Cylinder port type

M†	Metric (Ø 16 only)
B†	BSPP (Ø 20 & 32)
N	NPTF (Ø 20 & 32)

* Cylinders are supplied with mounting nuts fitted on each endplate.

Ø	Stroke (mm)	(in)
16	0 to 1000	0 to 39.4
20	0 to 1500	0 to 59.1
32	0 to 2000	0 to 78.7

Order code examples:

- P1ZM016SNN0100B Ø 16 mm bore 100 mm stroke cylinder supplied with mounting nut on each endplate
- P1ZM020SAN1000WFBN Ø 20 mm bore 1 m stroke cylinder with foot mount on each endplate

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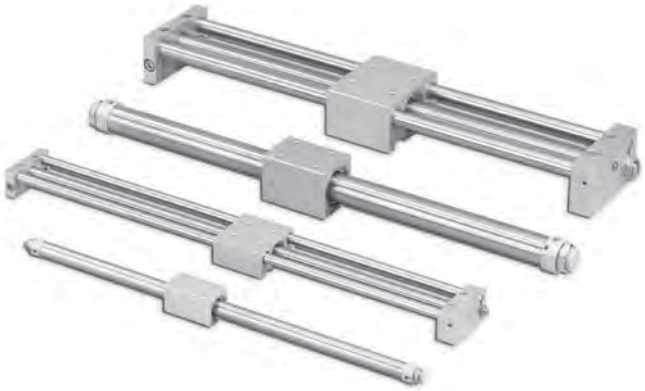
Basic Version

The magnetic rodless cylinder is a pneumatic cylinder featuring a mobile piston fitted with annular magnets.

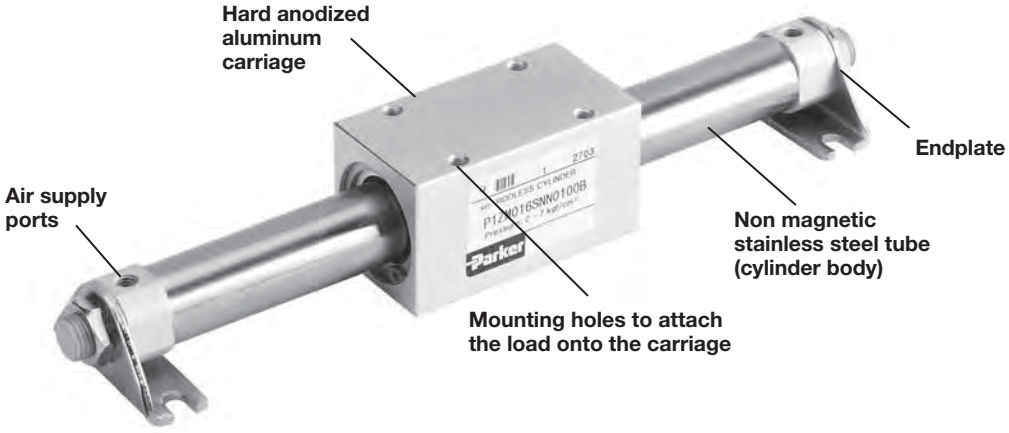
The mobile carriage is also equipped with magnets to provide magnetic coupling between the piston and carriage.

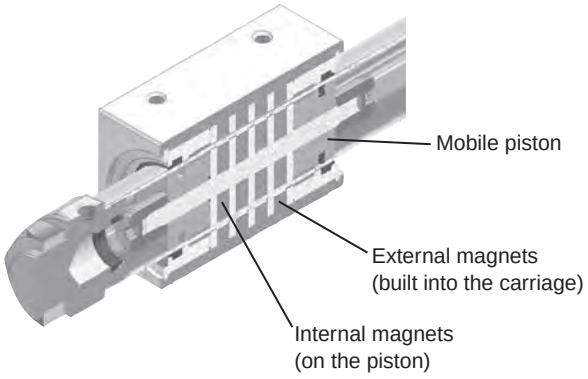
It incorporates the following features:

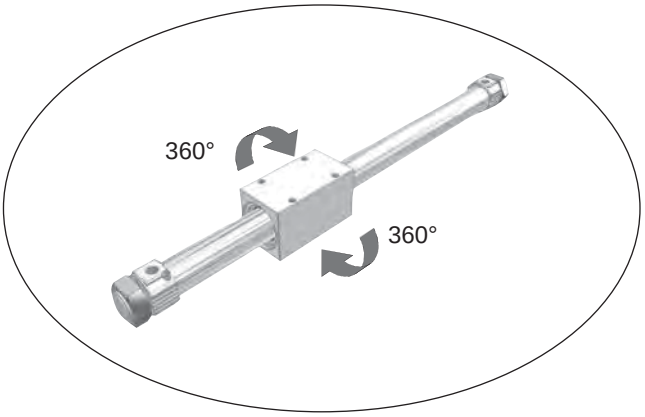
- end of stroke cushioning/bumpers
- mounting:
  – threaded endcaps
  – optional foot mount
  – optional flange mount



Sensors
For sensors see page B339.







Cushioning

Ø 16 mm: non-adjustable bumper or adjustable pneumatic cushioning

Ø 20 and 32 mm: adjustable pneumatic cushioning

Mounting

The mobile carriage is free to rotate 360° around the cylinder axis. This feature facilitates the adaptation of the cylinder to various mounting arrangements.

The load must be guided by an external device.

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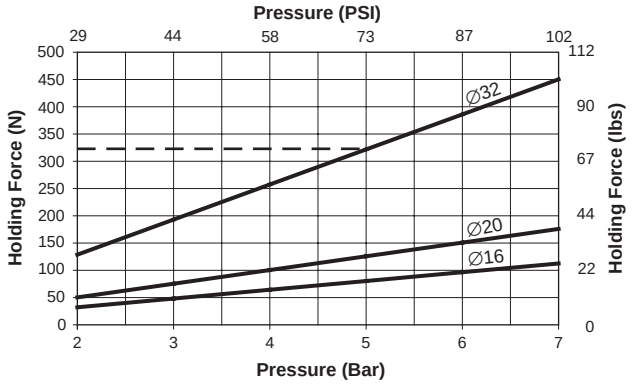
Technical data



Example:
Pressure: 5 bar

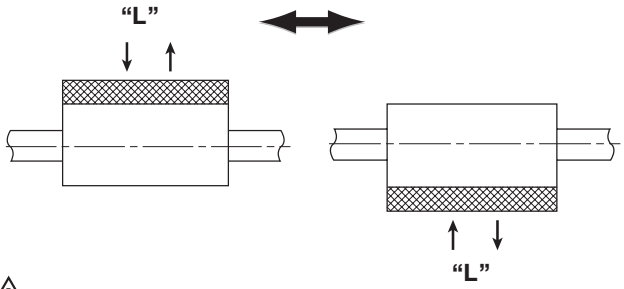
F_{max} = 322 N for Ø 32 mm cylinder

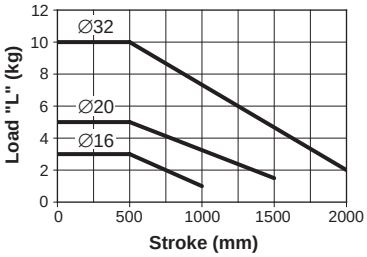
⚠ Calculate the kinetic energy due to the load moved

Acceleration or deceleration should not exceed the magnetic coupling force of cylinder

Load diagrams

Permissible radial loads, horizontal mounting

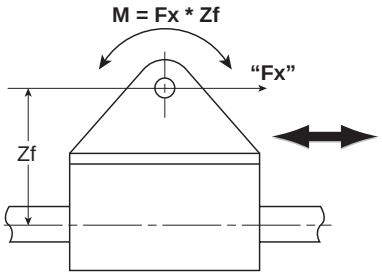


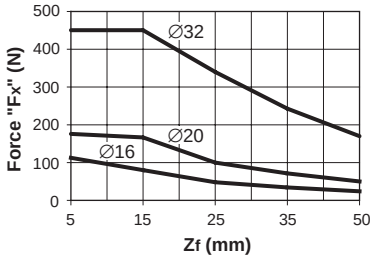


Ø	L Max. (kg)	(lbs.)
16	3	6.6
20	5	11.0
32	10	22.0

⚠ The load must be guided by a device from outside the cylinder

Permissible axial loads, horizontal mounting



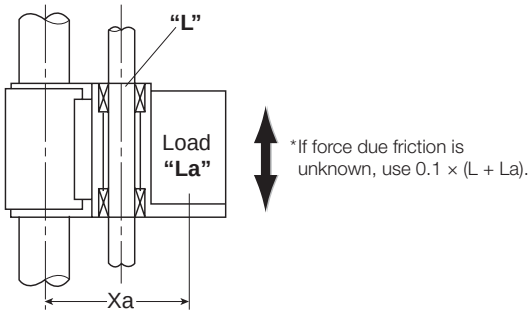


Ø	Max. Moment M (Nm)	(in-lbs.)	Max. Fx* (N	(lbs.)
16	1.2	11	112	25
20	2.5	22	175	39
32	8.5	75	450	101

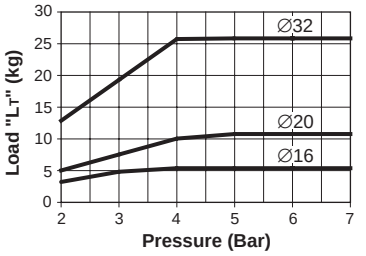
* at 7 bar

⚠ The load must be guided by a device from outside the cylinder

Permissible axial loads, vertical mounting



*If force due friction is unknown, use 0.1 × (L + La).



Ø	Max. load T (kg)	(lbs.)	Max. XA (mm)	(in.)
16	5	11	122	4.8
20	10	22	142	5.6
32	24	53	174	6.8

* at 6.5 bar

L = Load guided by external device
La = Direct mounting onto the cylinder
Ff = Force due to friction*

LT = Load weight + guiding device weight + force due to friction

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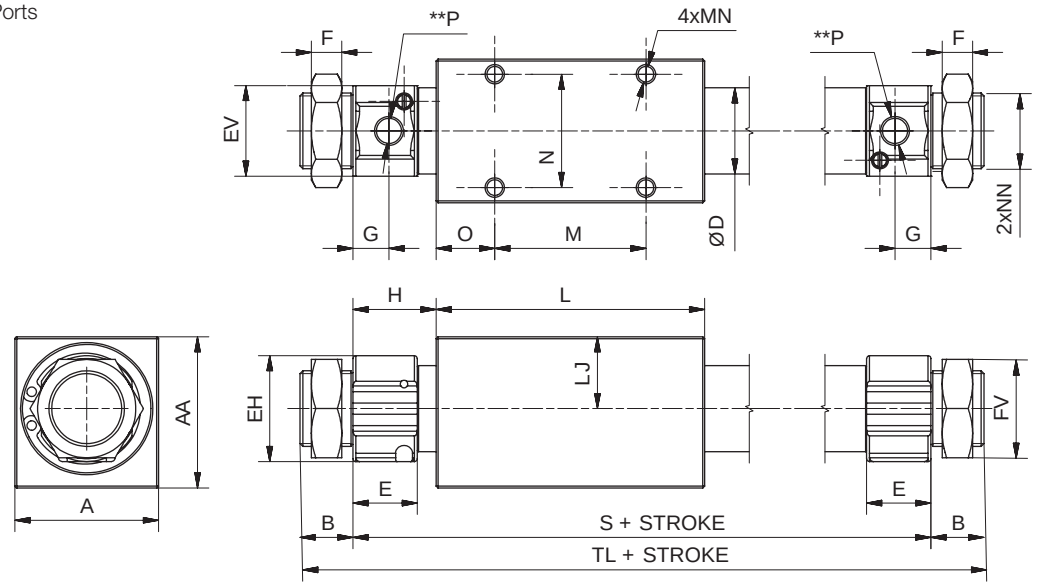
Dimensions

** = Air supply Ports



Ø	A	AA	B	ØD	E	Ø EH	Ø EV	F	FV	G	H	L	LJ	M	N	O
16	32 (1.26)	34 (1.34)	10 (0.39)	18 (0.71)	11 (0.43)	18 (0.71)	18 (0.71)	4 (0.16)	14 (0.55)	5.5 (0.22)	15.5 (0.61)	61 (2.40)	16 (0.63)	34 (1.34)	25 (0.98)	13.5 (0.53)
20	38 (1.50)	40 (1.57)	14 (0.55)	22.8 (0.90)	17 (0.67)	28 (1.10)	24 (0.94)	8 (0.31)	26 (1.02)	9.5 (0.37)	22 (0.87)	71 (2.80)	19 (0.75)	40 (1.57)	30 (1.18)	15.5 (0.61)
32	60 (2.36)	60 (2.36)	16 (0.63)	35 (1.38)	17 (0.67)	40 (1.57)	36 (1.42)	8 (0.31)	32 (1.26)	9.5 (0.37)	23 (0.91)	87 (3.43)	30 (1.18)	50 (1.97)	40 (1.57)	18.5 (0.73)

Ø	P	MN	NN	S	TL
16	M5 x 0.8 (10-32)	M4 x 0.7 x 6	M10 x 1 x 6	92 (3.62)	112 (4.41)
20	G 1/8 (1/8)	M5 x 0.8 x 8	M20 x 1.5 x 7	115 (4.53)	143 (5.63)
32	G 1/8 (1/8)	M6 x 1 x 10	M26 x 1.5 x 7	133 (5.24)	165 (6.50)

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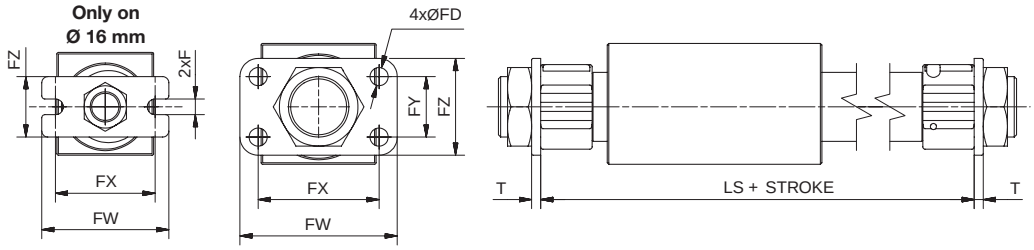
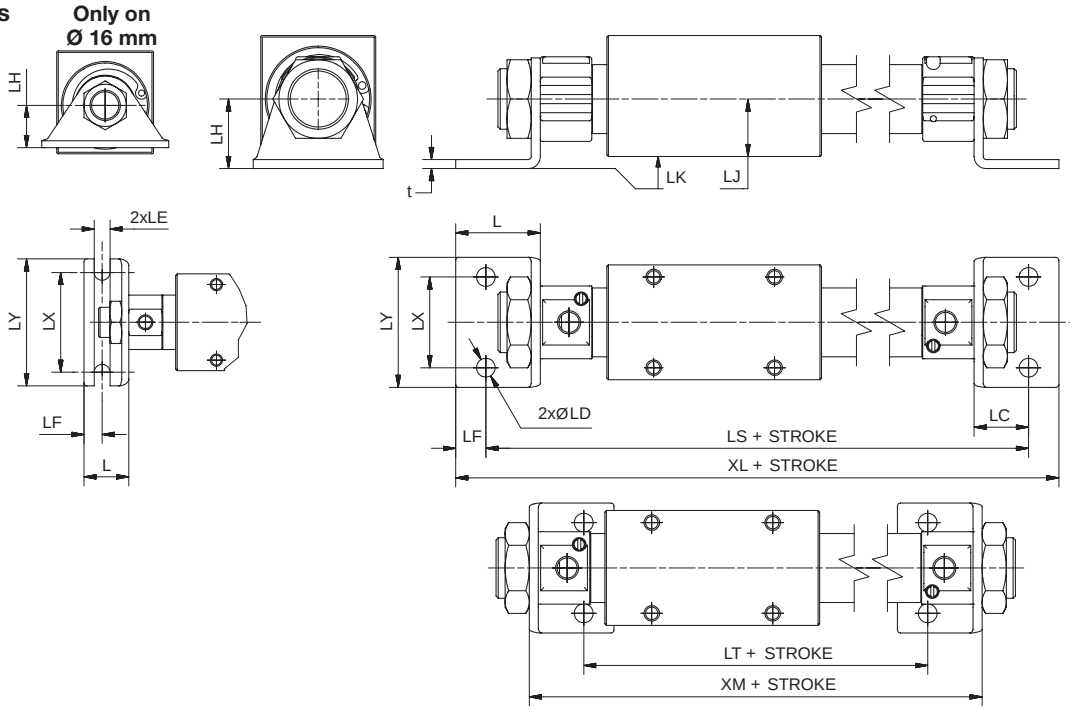
Mountings

Flanges



Ø	F	ØFD	FW	FX	FY	FZ	T	LS	Order code
16	5.2 (0.20)	–	42 (1.65)	33 (1.30)	–	20 (0.79)	2.3 (0.09)	92 (3.62)	**PDC15-FH**
20	–	6 (0.24)	52 (2.05)	40 (1.57)	20 (0.78)	32 (1.26)	3 (0.12)	115 (4.53)	**PK1A20-FH**
32	–	7 (0.28)	80 (3.15)	64 (2.52)	28 (1.10)	44 (1.73)	5 (0.20)	133 (5.24)	**PK1A25-FH**

Brackets



Ø	t	L	LC	ØLD	LE	LF	LH	LJ	LK	LX	LY	LS	LT	XL	XM	Order code
16	2.3 (0.09)	14.8 (0.58)	8.8 (0.35)	–	5.2 (0.20)	6 (0.24)	14 (0.55)	16 (0.63)	-2 (-0.08)	33 (1.30)	42 (1.65)	109.6 (4.32)	79 (3.11)	121.6 (4.79)	96.6 (3.80)	**PDC15-LB***
20	3 (0.12)	28 (1.10)	18 (0.71)	6.2 (0.24)	–	10 (0.39)	23 (0.91)	19 (0.75)	4 (0.16)	30 (1.18)	43 (1.69)	151 (5.94)	85 (3.35)	171 (6.73)	121 (4.76)	**PK1A20-LB***
32	3 (0.12)	35 (1.38)	23 (0.91)	7 (0.28)	–	12 (0.47)	30 (1.18)	30 (1.18)	0 (0)	46 (1.81)	62 (2.44)	179 (7.05)	**	203 (7.99)	**	**PK1A25-LB***

* Set of 2 pcs
** Impossible mounting

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P1Z Series - Guided Version

The magnetic rodless cylinder is a pneumatic cylinder featuring a mobile piston with annular magnets.

The mobile carriage is also equipped with magnets to give magnetic coupling between the piston and carriage. The carriage slides along the main tube and is guided by two guide rods.

It incorporates the following features:

- Built-in guide rods
- Adjustable end-of-stroke bumpers
- Optional magnetic piston sensing
- Optional transfer porting

Guidance

The guided version consists of a carriage fitted with 4 plain bearings, guided on 2 rods.

This design provides high rigidity, accurate guidance and smooth movement of the carriage.

End of stroke

Each endplate can be fitted with an adjustable bumper or self-compensating shock absorbers.

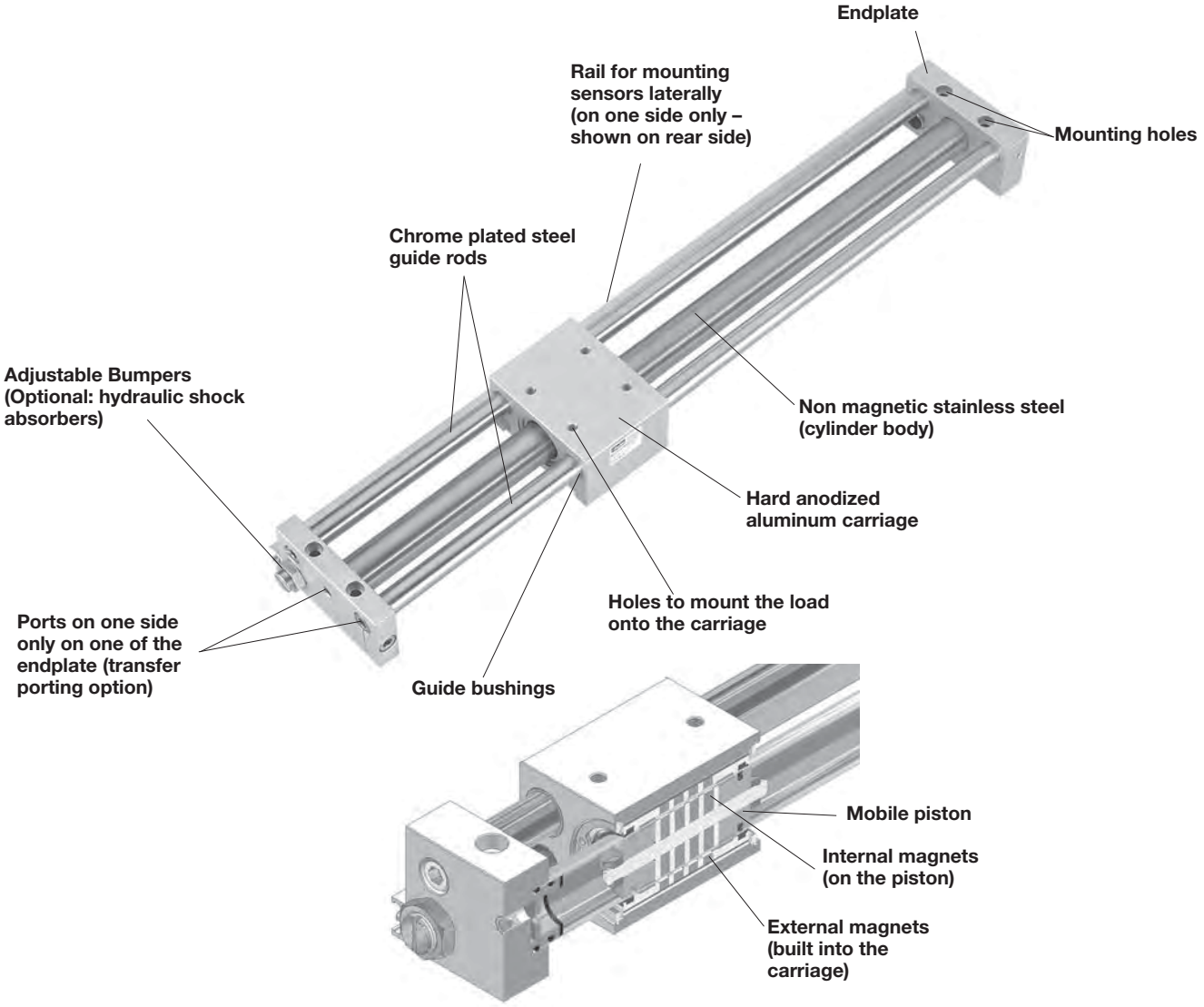
Optional transfer porting

Cylinder air supply is located on one end only to facilitate cylinder installation and avoid long tube lengths for longer strokes.

Options

The following options are available to enhance the Magnetic Rodless cylinder functions:

- External bumpers: when low operating pressure, light loads and short strokes.
- External hydraulic shock absorbers: recommended for arduous applications.
- Reed and solid state sensors: provide sensing at an adjustable position along the entire stroke of the cylinder.



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Ordering information

Standard cylinder (15 positions)															Options (16 positions)	
P	1	Z	M	0	1	6	T	C	N	0	5	0	0	B	N	M	L

Bore	
016	Ø 16 mm
020	Ø 20 mm
032	Ø 32 mm

Cushioning	
C	Adjustable stop
H	Hydraulic shock absorber

Strokes	
0200	200 mm
1000	1000 mm

Cylinder port type	
M†	Metric (Ø 16 only)
B†	BSPP (Ø 20 & 32)
N	NPTF (Ø 20 & 32)

† Standard when "B" option is used.

Function	
G	Guided
T	Guided with transfer porting

Options	
B†	None
W	With options

End of stroke sensing			
NPN	PNP	Reed	Sensors type (Qty: 2)
L			With rail, no sensor
N† (std.)			No sensor rail

Note: Order Sensors separately.

Ø	Stroke (mm)	(in)
16	0 to 750	0 to 29.5
20	0 to 1000	0 to 39.4
32	0 to 1000	0 to 59.1

Order code examples:

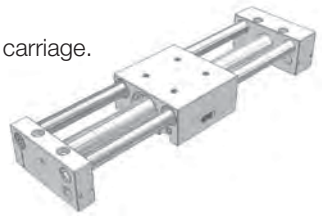
- P1ZM016GCN0100B Ø 16 mm bore 100 mm stroke cylinder supplied with adjustable stop
- P1ZM020GHN1000WNBL Ø 20 mm bore 1 m stroke cylinder with hydraulic shock absorbers and rail for sensors

Range

Magnetic rodless cylinder, guided version
Available in 3 diameters with possible strokes up to 1500 mm (59 in).

4 tapped mounting holes on the carriage.

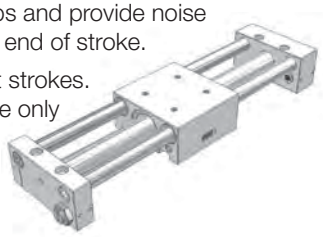
Endcap mounting provided by 4 tapped and counterbored holes.



Options

External adjustable bumpers
Can be fitted on cylinder endcaps and provide noise reduction and adjustment at the end of stroke.

Used when light loads and short strokes. Pneumatic air supply on one side only (transfer porting option).

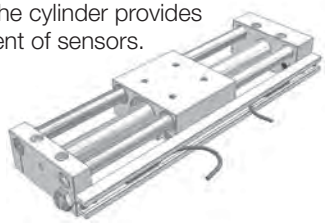


External hydraulic shock absorbers
Self-compensating hydraulic shock absorbers can be used instead of bumpers for a greater cushioning effect at the end of stroke.

They are recommended for arduous applications.

Reed or solid state sensors:
A rail fitted on one side only of the cylinder provides mounting and position adjustment of sensors.

The rail is located on same side as the end of stroke stops.



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General features

Specifications for P1Z series magnetically coupled rodless

Operating medium	Compressed Air		
Maximum pressure	100 PSIG (7 bar)		
Minimum pressure bar (IPS)	29 PSIG (2 bar)		
Bore size mm (inch nominal)	16 (5/8)	20 (3/4)	32 (1 1/4)
Port size	M5 BSPP, 10-32 NPT	1/8 BSPP, 1/8 NPT	1/8 BSPP, 1/8 NPT
Ambient temperature	14°F to 140°F (-10°C to 60°C)		
Maximum stroke mm (inch)	750 (29.5)	1000 (39.4)	1500 (59.1)
Stroke tolerance mm	+1.5/-0	<=1000 +1.5/-0; >1000 +2/-0	
Piston speed m/s (inch/sec)	0.1 to 0.4 (4 to 15.75)		
Max. coupling force N (Lbs)	157 (35)	236 (53)	703 (158)
Cushion	Air cushion standard		
Lubrication	Not required (If you choose to lubricate your system, continuing lubrication will be required.)		

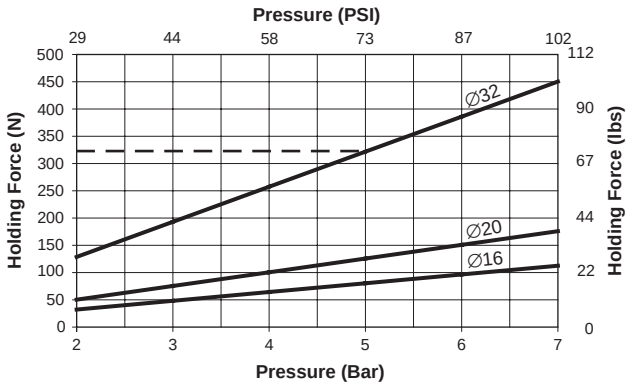
Weights

Bore size		Weight at zero stroke		Weight per 25mm of stroke	
mm	inch	kg	lbs	kg	lbs
16	5/8	0.9	1.98	0.05	0.11
20	3/4	1.52	3.35	0.08	0.17
32	1-1/4	3.63	8.00	0.13	0.29

Options

Function	Description
Detection	Sensors mounting in T-slot
	Reed or solid state sensors (PNP or NPN)
External rubber bumpers	Supplied pre-fitted in endplates if chosen
Hydraulic shock absorbers	Self-compensating shock absorbers supplied pre-fitted in endplates if chosen

Pressure in the cylinder / pneumatic holding force



Example:
Pressure: 5 bar (73 PSI)

F_{max} = 322 N (72 lbs.) for Ø 32 mm cylinder

⚠ Calculate the kinetic energy due to the load moved.

Acceleration or deceleration should not exceed the magnetic coupling force of cylinder.

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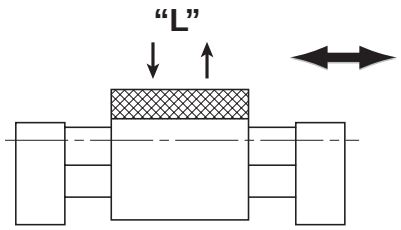
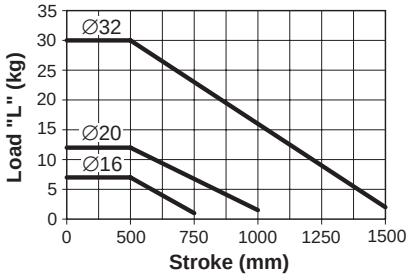
Load diagrams

Permissible radial loads, horizontal mounting

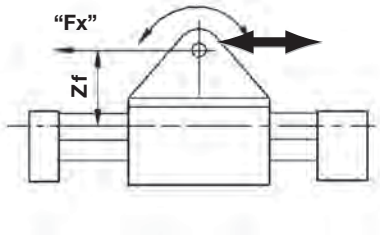




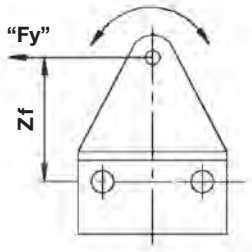
Ø	L Max. (kg)	(lbs.)
16	7	15
20	12	26
32	30	66

Permissible axial loads, horizontal mounting

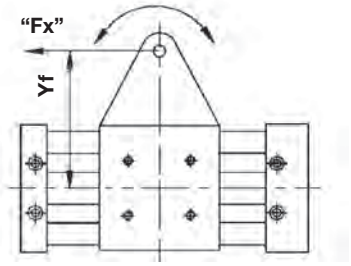
M = Fx * Zf



Ms = Fy * Zf

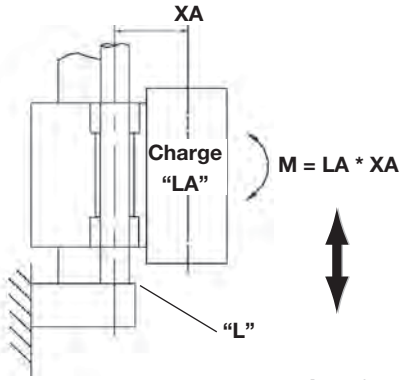


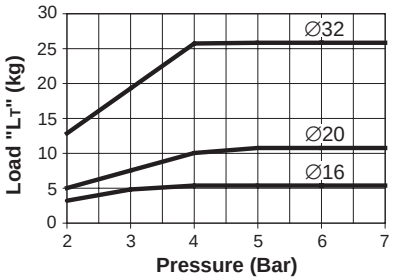
Mv = Fx * Yf



Ø	Max. moment M (Nm)	(in-lbs.)	Max. moment Ms (Nm)	(in-lbs.)	Max. moment Mv (Nm)	(in-lbs.)
16	2.4	21	0.5	4.4	2.4	21
20	5	44	1	8.9	5	44
32	15	133	3	26.6	15	133

Permissible axial loads, vertical mounting

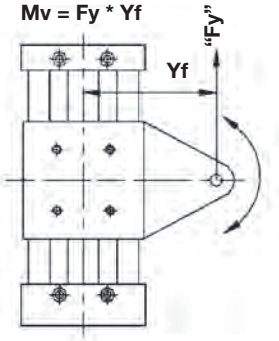




Ø	Max. load LT* (kg)	Max. XA (mm)
16	5	122
20	10	142
32	24	174

* at 6.5 bar

Mv = Fy * Yf



L = Load guided by external device

LA = Mounting direct onto cylinder

LT = Load weight + guiding device weight + force due to friction

Ff* = Force due to friction

*If force due to friction is unknown, use 0.1 * (L + LA)

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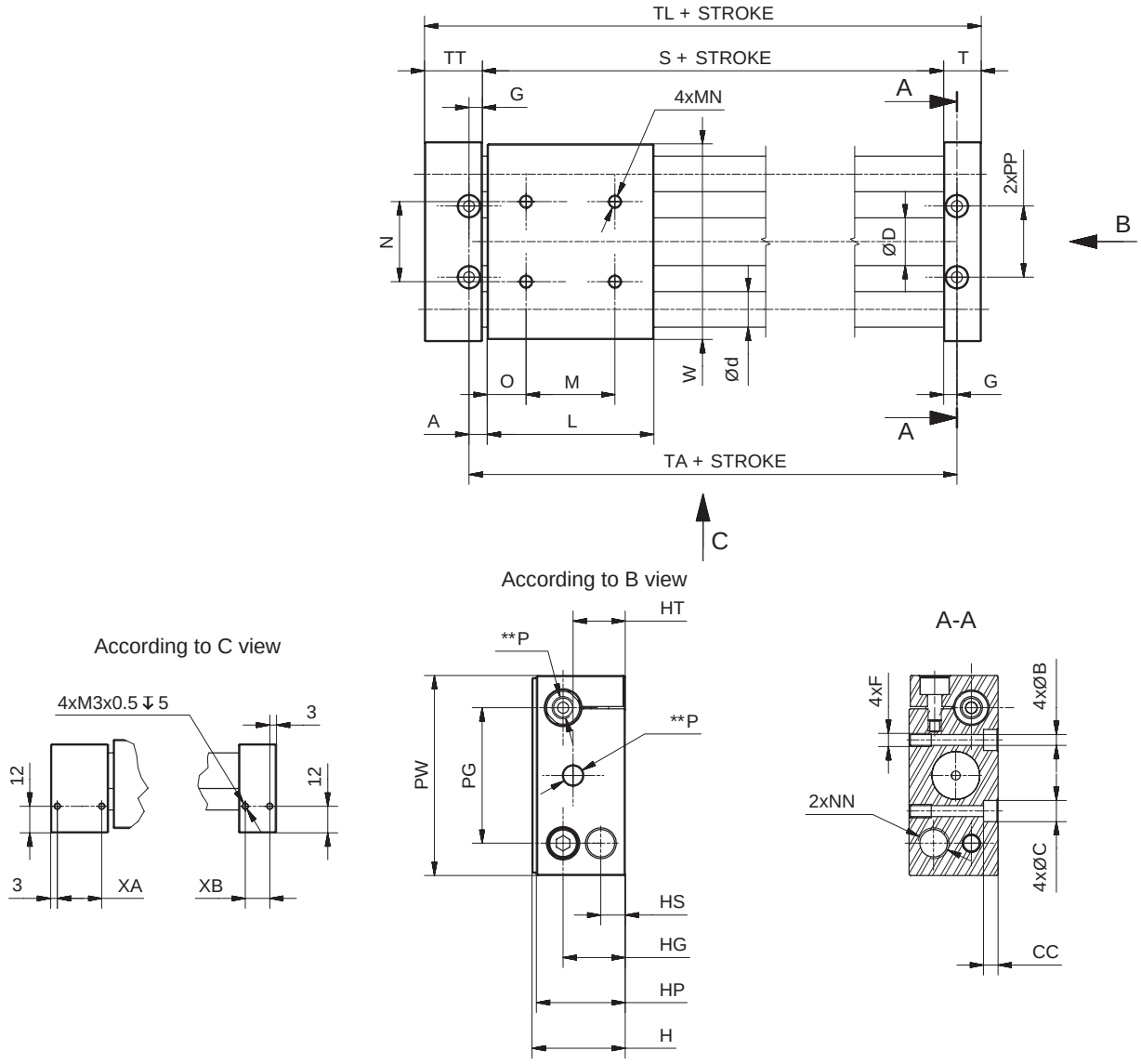
Dimensions

** = Air supply ports



Ø	A	ØB	ØC	CC	ØD	Ød	F	G	H	HP	HG	HS	HT	L	M	N	MN
16	8 (.31)	4.3 (.17)	8 (.31)	4.5 (.18)	17.4 (.69)	12 (.47)	M5x0.8 x 10	6 (.24)	34 (1.34)	33.5 (1.32)	25 (0.98)	12 (.47)	21.5 (0.85)	65 (2.56)	34 (1.34)	30 (1.18)	M5 x 0.8 x 8
20	8 (.31)	5.5 (.22)	9.5 (.37)	6.5 (.26)	21.4 (.84)	16 (.63)	M6x1 x 10	6 (.24)	42 (1.65)	40 (1.57)	28 (1.10)	12 (.47)	23.5 (.93)	75 (2.95)	40 (1.57)	36 (1.42)	M6 x 1 x 10
32	13.5 (.53)	8.7 (.34)	14 (.55)	8 (.31)	33.6 (1.32)	20 (.79)	M10x1.5 x 15	10 (.39)	66 (2.60)	64 (2.52)	46 (1.81)	20 (.79)	41 (1.61)	91 (3.58)	60 (2.36)	50 (1.97)	M8 x 1.25 x 12

Ø	NN	O	P	PG	PW	PP	T	TT	S	TA	TL	W	XA	XB
16	M10 x 1 x 6	15.5 (0.61)	M5 x 0.8	50 (1.97)	70 (2.76)	27 (1.06)	14 (0.55)	23 (0.91)	69 (2.76)	81 (3.19)	106 (4.17)	68 (2.68)	17 (0.67)	8 (0.31)
20	M14 x1.5 x 7	17.5 (0.69)	G1/8	61 (2.40)	90 (3.54)	32 (1.26)	17 (0.67)	26 (1.02)	79 (3.11)	91 (3.58)	122 (4.80)	88 (3.46)	20 (0.79)	11 (0.43
32	M20 x 1.5 x 7	15.5 (0.61)	G1/8	86 (3.39)	122 (4.80)	50 (1.97)	20 (0.79)	28 (1.10)	97 (3.82)	117 (4.61)	145 (5.71)	118 (4.65)	22 (0.87)	14 (0.55)

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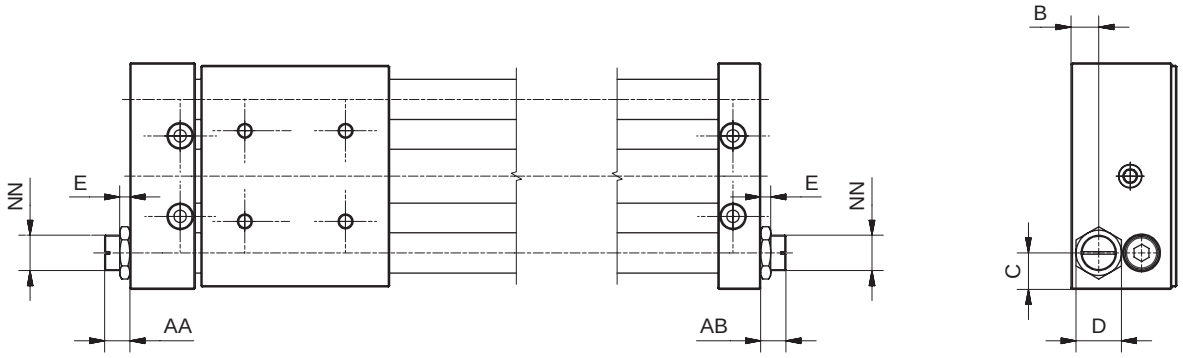
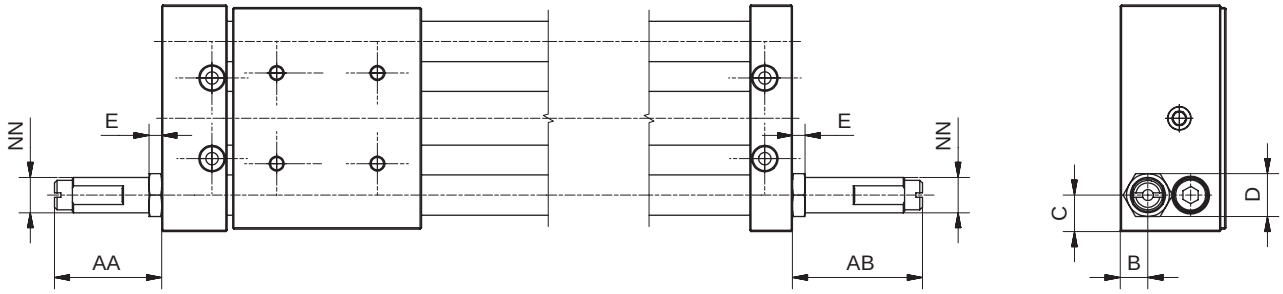
Optional external adjustable bumpers



Ø	AA	AB	B	C	D	E	NN
16	7.5 (0.30)	6.5 (0.26)	12 (0.47)	10 (0.39)	14 (0.55)	4 (0.16)	M10 x 1
20	10 (0.39)	10 (0.39)	11 (0.43)	14.5 (0.57)	18 (0.71)	4 (0.16)	M14 x 1.5
32	11 (0.43)	12 (0.47)	20 (0.79)	18 (0.71)	26 (1.02)	8 (0.31)	M20 x 1.5

External hydraulic shock absorbers



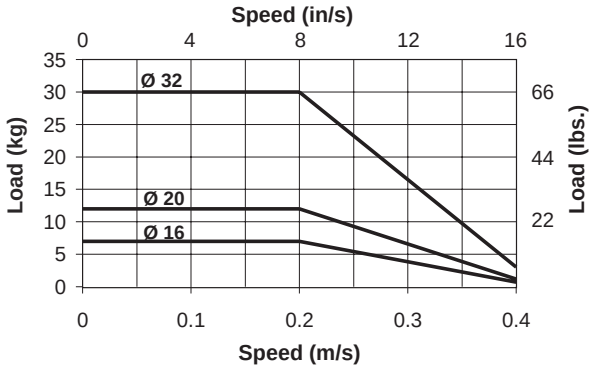
Ø	AA	AB	B	C	D	E	NN
16	18 (0.71)	27 (1.06)	12 (0.47)	10 (0.39)	13 (0.51)	3 (0.12)	M10 x 1
20	50 (1.97)	59 (2.32)	11 (0.43)	14.5 (0.57)	17 (0.67)	5 (0.20)	M14 x 1.5
32	56 (2.20)	66 (2.60)	20 (0.79)	18 (0.71)	24 (0.94)	6 (0.24)	M20 x 1.5

Loads / speeds diagram

The diagram to the right exhibits the P1Z cylinders maximum capacities with an adjustable bumper.

If the intersection exhibits between speed and load is above the curves, it is imperative to use hydraulic shock absorbers to prevent cylinder damage.

Example:
Ø 32 mm cylinder with a 0.3 m/s speed and 25 kg load
Choose the hydraulic shock absorber option
Ø 20mm cylinder with 0.2 m/s speed and 10 kg load
Choose the adjustable bumpers option



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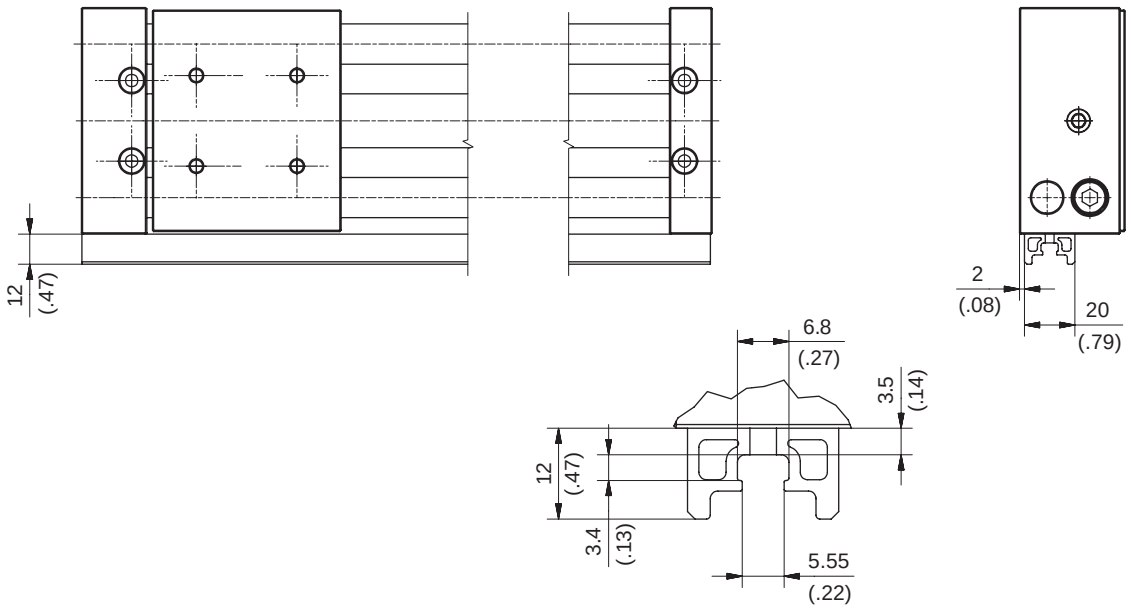
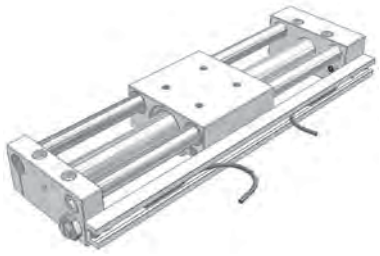
Optional sensor rail



Detection

Reed or solid state sensor mounting is possible on one cylinder side only.

External aluminum profile integrates 1 T-slot for sensor mounting.



Repair kits

Ø	Basic version	Guided version
16 (Cushioned)	**P1ZM016SAN-R**	**–**
16 (Non-cushioned)	**P1ZM016SNN-R**	**P1ZM016GNN-R**
20	**P1ZM020SAN-R**	**P1ZM020GNN-R**
32	**P1ZM032SAN-R**	**P1ZM032GNN-R**

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GDL Series

High Performance Series:
(Sizes FDC12HP-... thru FDC45HP-...)

The High Performance series is the basis for GDL's development, which is used in the majority of applications. High Performance guides consist of 8 axial needle roller bearings, running on precision polished and hardened alloy spring steel guideways. These guide bearings are grease packed and shielded, while offering the highest load and moment rating capacities within the GDL product line.

Standard Performance Series:
(Sizes FDC12SP-... thru FDC45SP-...)

The Standard Performance series is intended for minor loads and moments for particularly economical guidance solutions. Standard Performance guides consist of 8 radial ball roller bearings, running on precision polished and hardened alloy spring steel guideways. These guide bearings are grease packed and sealed, while offering the lowest load and moment ratings available within the GDL product line, with the exception of the Grease-Free and the Anti-Friction / Corrosion Resistant series. Standard Performance series is the second most commonly used GDL guides for various applications and also provides excellent running behavior.

Material specifications

Rail	Aluminum alloy
Guideways	Hardened high alloy spring steel
Cassettes / rollershoes / top plates	Aluminum alloy
Rollers	Bearing steel / Stainless steel bearing steel

Specifications

Characteristic	Unit	Description
Full profile wipers		Rollershoes and cassette are provided with snap-on full profile wipers. The snap-on full profile wipers are easily replaceable with available wipers kits.
Acceleration and deceleration	m/s^2 (ft/sec^2)	40 m/s^2 maximum (131 ft/s^2 maximum)
Guide installation		Possible in any position.
Drag adjustment set screw		Cassettes can be adjusted at the factory or by the customer.
		Rollershoes can be set-up by the customer to incorporate the drag adjustment set screw feature. The drag adjustment set screw components are supplied with each pair of rollershoes.
Standard lubrication		Lifetime lubrication with standard grease-packed roller bearings.
Speed	m/s (ft/s)	Up to 10 m/s (or up to 33 ft/s)
Bearing types		Steel axial needle, Specials on request (ex: anti-magnetic, grease free, high dynamics) - consult factory
Operating temperature	C (F)	-10°C to 80°C (14°F to 176°F) temperature range
Specials available		Custom length cassettes and rollershoes for 100 piece lots minimum.
		Keyed butt-jointed rail sections up to 4000mm.
		Solid continuous length rails between 4000.
		Offset or non-standard "L11" dimensions on opposite ends of cut rails.
		Integrated metal scraper with standard full profile wiper currently available.
		Rail underside blind mounting holes.

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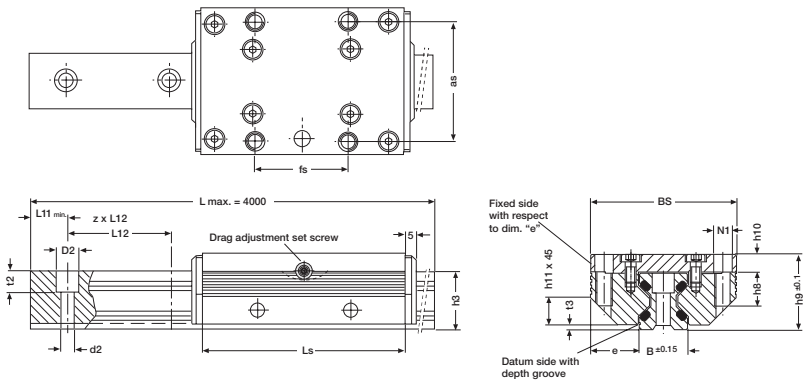
Cassette with double sided rail



Dimensions for both standard FDC version guides

Size	Length Ls	B	BS	h3	h9	as	d2	D2	e	fs	h8	h10	h11	L11 min.	L12	t2	t3	N1
12	64	12.0	37	14.7	19	30	3.4	6	12.50	25	8	4.0	6	10	40	5.5	1.4	M4
15	78	15.5	47	18.7	24	38	4.5	8	15.75	30	10	5.0	8	10	60	6.0	2.0	M5
20	92	21.0	63	22.6	30	53	5.5	10	21.00	40	12	7.0	11	10	60	7.0	2.0	M6
25	98	23.0	70	27.0	36	57	6.6	11	23.50	45	16	8.5	13	10	60	10.0	2.5	M8
35	135	32.0	100	37.0	48	82	9.0	15	34.00	62	20	10.5	20	12	80	11.5	3.5	M10
45	165	45.0	120	46.0	60	100	11.0	18	37.50	80	24	13.5	22	16	105	14.5	4.0	M12

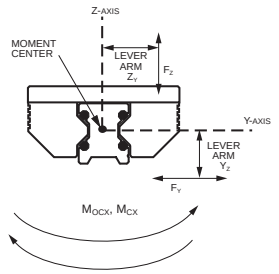
Dimensions (mm)

Dimensions for both underside mounting hole FDC version guides (Ref. ordering instructions)

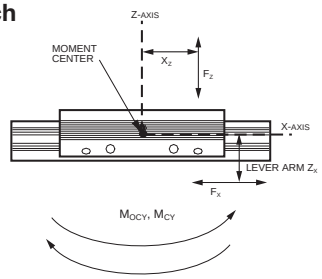
Size	Length Ls	B	BS	h3	h9	as	d2	D2	e	fs	h8	h10	h11	L11 min.	L12	t2	t3	N1
12	64	12.0	37	14.7	19	30	3.4	6	12.50	29	8	4.0	6	10	40	5.5	1.4	M4
15	78	15.5	47	18.7	24	38	4.5	8	15.75	34	10	5.0	8	10	60	6.0	2.0	M5
20	92	21.0	63	22.6	30	53	5.5	10	21.00	40	12	7.0	11	10	60	7.0	2.0	M6
25	98	23.0	70	27.0	36	57	6.6	11	23.50	45	16	8.5	13	10	60	10.0	2.5	M8
35	135	32.0	100	37.0	48	82	9.0	15	34.00	62	20	10.5	20	12	80	11.5	3.5	M10
45	165	45.0	120	46.0	60	100	11.0	18	37.50	90	24	13.5	22	16	105	14.5	4.0	M12

Dimensions (mm)

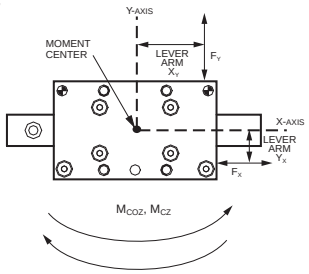
Roll



Pitch



Yaw



Load & moment rating capacities (for cassettes on double sided rail)

Dynamic load rating C (N)	Static load rating Co (N)	Static moment rating capacities: Roll Mocx (Nm)	Pitch Mocy (Nm)	Yaw Mocz (Nm)	Dynamic moment rating capacities: Roll Mcx (Nm)	Pitch Mcy (Nm)	Yaw Mcz (Nm)	Cassette weight (kg)	Rail weight (kg)	Cassette series
High performance series										
2800	3000	27	43	43	25	40	40	0.1	0.4	**FDC12HP-...**
4200	3400	37	58	58	45	72	72	0.3	0.8	**FDC15HP-...**
5400	5400	76	111	111	76	111	111	0.4	0.9	**FDC20HP-...**
9000	10100	158	222	222	142	198	198	0.6	1.8	**FDC25HP-...**
12500	18000	423	559	559	294	388	388	1.5	3.2	**FDC35HP-...**
21200	25900	827	983	983	678	806	806	2.9	5.5	**FDC45HP-...**

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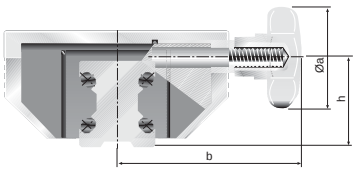
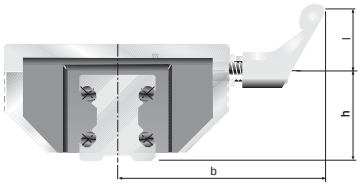
GDL Aluminum roller guides

High performance cassettes with lock device

Special cassette types





The locking cassette with star grip handle can be stopped at any desired location on the rail. The clamping device does not exert forces on the rail guideways.

The clamping device is used in fixtures which are movable manually, clamping and stop ledgers, feeding of tools and work pieces. Also available with L-ratchet handle.

Star grip handle dimensions

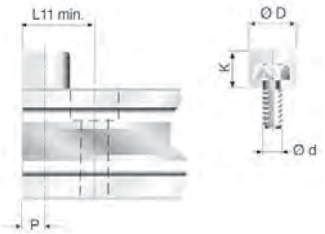
Size	Øa	b	h	Clamp force	Part numbers star grip knob
12	N/A				
15	25	41	19.0	200	**FDC15HP-00020000**
20	25	49	23.0	250	**FDC20HP-00020000**
25	32	56	28.0	250	**FDC25HP-00020000**
35	50	83	38.5	350	**FDC35HP-00020000**
45	63	101	48.0	750	**FDC45HP-00020000**

Dimensions (mm), Force (N) with normal manual tightening.

L-ratchet handle dimensions

Size	l	b	h	Clamp force	Part numbers L-ratchet handle
12	N/A				
15	45	59.5	19.0	200	**FDC15HP-00010000**
20	45	67.5	23.0	250	**FDC20HP-00010000**
25	45	71	28.0	250	**FDC25HP-00010000**
35	63	96	38.5	350	**FDC35HP-00010000**
45	78	116	48.0	750	**FDC45HP-00010000**

End of stroke stop screws



The stop screws are screwed into threads (option) on the guide rails. The end of stroke stopping energy is reduced by a rubber cap. With guide rails where the L11 is less than the standard minimum, we offset the mounting hole by half of its diameter.

Note: Customer must drill and tap the holes for the stop screws.

Size	Ød	ØD	K	L11 min.	P	Order number
12	M5	12	8	15.0	6.0	**63504A**
15	M5	12	8	16.0	6.0	**63504A**
20	M5	12	8	17.0	6.0	**63504A**
25	M6	15	10	20.5	7.5	**63505A**
35	M8	19	13	26.5	9.5	**63506A**
45	M10	24	16	33.0	12.0	**63507A**

Dimensions (mm)

GDL accessories

Rail mounting screw covers

Material: Wear resistant plastic, resistant to oil and aging.

Mounting: Put a plastic plate on top and pound in uniformly. Remove residual burrs with a soft brush or fingernail.

Note: Use respective order numbers for ordering separately or include in rail part number.

Size	Cylindrical screw DIN912	Ø D	Order number
12	M3	6	**87752A**
15	M4	8	**87753A**
20	M5	10	**87754A**
25	M6	11	**87755A**
35	M8	15	**87756A**
45	M10	18	**87757A**

Dimensions (mm)

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GDL Aluminum roller guides

Version with wipers
Integrated into an additional cover, a felt wiper is saturated with oil. Although dependent on the degree of contaminants, these wipers last for some 6000km, after which the felt wipers can either be washed or replaced.

For optimal cassette rolling performance, all holes in the guide rails should be filled with the plastic rail mounting screw covers.

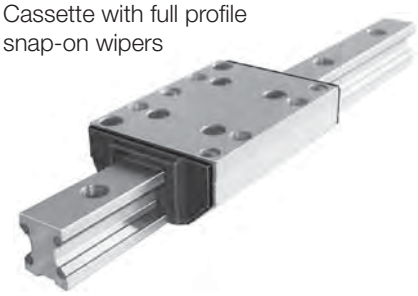
Order numbers for replacement wiper kits

FDC series and size	Respective order number
12	**84457B**
15	**84480B**
20	**84481B**
25	**84482B**
35	**84483B**
45	**84484B**

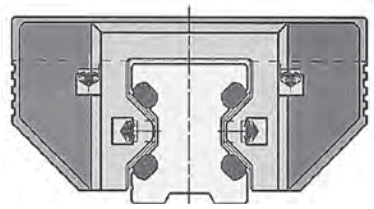
*wiper kits are sold in pairs

NOTE: Use respective order numbers for ordering separately as replacements, or specify in cassette part number.

Cassette with full profile snap-on wipers



Full profile snap-on wiper



GDL's keyed butt-jointed rail option

GUIDELINE rails can be precisely fastened together using a factory offered keyed butt-joint option for continuous rail lengths, as shown in Figures 1 & 2.

Two rail sections are clamped together with mating round bar stock pieces that seat tangent to both rail section guideways on each side of the rail. While the rail sections are clamped together, a keyway slot is machined in the top and bottom sides of the rail, across the butt- joint. Screw holes are then drilled through the rail inside the keyway slot, so the opposing keyways can be drawn together tightly with screws. The round bar stock clamp is then removed, providing a rigid and well aligned keyed butt-joint.

The keyed butt-joint option provides optimum alignment of all guideways from one rail section to the next. This allows for optimum "smooth" guidance of the cassette bearings, while crossing rail butt-joints.

The keyed butt-jointed rail option is currently available in the FDR version 25, 35, & 45 mm rail sizes. For a keyed butt-joint on rail sizes 25, 35 or 45 mm, specify P/N:# GDL-BJK

Consult factory for other size possibilities.

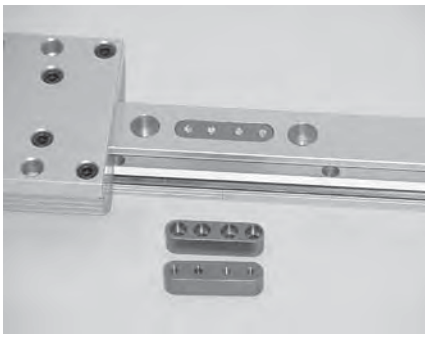


Figure 1

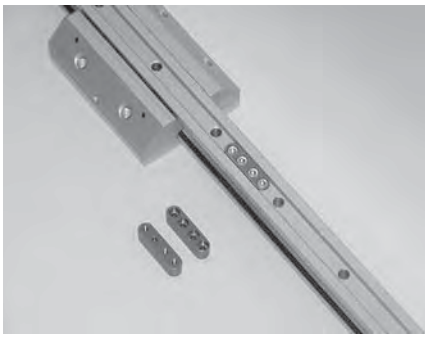


Figure 2

GDL coupled with structural aluminum extrusion material and OSP-E actuator

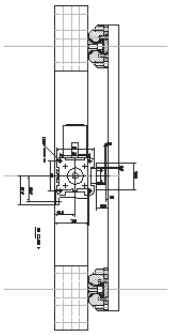


Figure 3

GDL linear guides couple well with various structural aluminum extrusions and Parker-Origa OSP-P and OSP-E actuators. Mounting can be easily accomplished using standard fasteners and mounting brackets. See Figure 3 above.

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Ordering Information / Part Numbering System for GDL Rails

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
F	D	R	1	2	H	0	0	0	0	0	0	–	0	0	0	0	0

Series

FD	Double sided rail guide* (standard)

Rail

R	Standard

Rail Size

1	2*
1	5*
2	0*
2	5*
3	5*
4	5*

Guideway Material

H	High performance alloy steel* (standard)
S	Stainless steel

Coatings

0	Anodized aluminum* (standard)
Z	Custom (consult factory)

Mounting Holes

0	Topside thru hole* (standard)
1	Underside blind thread
Z	Custom (consult factory)

"L11" Dimension

00	Equal on both sides* (standard)
??	Actual dimension (mm)**

** As measured from left side while viewing the depth groove line.

Long Rail Joining Option

0	None* (standard)
1	Keyed butt joint (size 25-45 only)
2	Unkeyed butt joint

Screw Covers

0	None* (standard)
1	Yes*

Note: Quantity supplied to cover all rail holes.

Length (mm)

–	0	0	0	0	0

Note: Maximum length is 4 meters on Size 12.

*Stocked Item

Ordering Information / Part Numbering System for GDL Cassettes

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
F	D	C	1	2	H	P	–	0	0	0	0	0	0	0	0

Series

FD	Double sided rail cassette* (standard

Cassette

C	Standard

Rail Size

1	2*
1	5*
2	0*
2	5*
3	5*
4	5*

Bearing Options

HP	Axial needle - high performance alloy steel* (standard)
SP	Single row radial ball - standard performance - alloy steel* (standard)
ZZ	Factory** (consult factory

Grease

0	High performance* (standard)
Z	Custom (consult factory)

Lubrication Options

0	None* (standard)
Z	Custom (consult factory)**

Coatings

0	Anodized and standard hardware* (standard)
1	Anodized and stainless steel hardware*
Z	Custom (consult factory)

Locking Mechanism

0	None* (standard)
1	"L" ratchet handle*
2	Star grip handle*

* Locking mechanism only available on FD Series size 15 thru 45 with Axial Needle Bearing - High Performance - Alloy Steel.

Mounting Holes

0	Topside threaded thru* (standard)
1	Underside hole thru (unthreaded)
2	Underside hole thru (threaded)

Wiper Options

0	With felt wipers* (standard)
1	Without*
2	With felt wipers and scrapers*

Cassette Length

0	Normal length* (standard)
Z	Custom (consult factory)**

Adjustment

0	None* (standard)
1	Adjusted to specific rail*

*Stocked Item
**Minimum Order Quantity Required

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PV Series

- Single or double vane rotary actuator
- 8 model sizes
- Output torque @ 100 PSIG: 8 to 1800 lb-in
- Standard rotations:
  Single vane units: 280° ± 1°
  (except size 10 & 11: 275° ± 2.5°)
  Double vane units: 100° ± 1°
  (except size 10 & 11: 95° ± 2.5°)
  Available with stroke adjusters and internal stops to provide 90° and 180° rotation
- Stainless steel shaft
- Optional radial ball bushing shaft bearing

Operating information

Operating pressure:	150 PSIG (10.3 bar)
Temperature range: †	
Nitrile seals	30°F to 180°F (-1°C to 82°C)
Fluorocarbon seals*	30°F to 250°F (-1°C to 121°C)

* See fluorocarbon seal option for high temperature applications.
† Fow low temperature version, please consult factory.

Filtration requirements:	40 micron, dry filtered air

Ordering information

PV 22 D – 090BS – B B 2 V – B

Model

10	22	33	42
11		36	44
			46

Vanes / maximum rotation

Omit	Single Vane, 280° Rotation (275° on PV10, PV11)
D	Double Vane, 100° Rotation (95° on PV10, PV11)

Rotation Options
(may order more than one)

Omit	Standard Units (no stroke adjusters, bumpers or switches)
090A	Stroke Adjusters adjustable from 60° to maximum unit rotation (preadjusted to 90°)
180A	Stroke Adjusters (single vane only) adjustable from 60° to 190° (preadjusted to 180°)
090B	Internal bumpers, 90° rotation [4]
180B	Internal bumpers, 180° rotation (single vane only)
090S	Magnets[1] added, 90° setting
180S	Magnets[1] added, 180° setting (single vane only)

Mounting

B	Base / Front (Std)
R	Rear Flange [2, 3]
F	Front Flange
S	Base / Rear Face [2]

Shaft

B	Single male keyed (Std)
C	Double end male keyed [2]

Ports

2	NPTF Top (Std) (10-32 on PV10 & PV11)
7	NPTF Rear [2] (10-32 on PV10 & PV11)

Options

Omit	None
L	Radial ball bushings
V	Fluorocarbon seals

Design series

B	Current design series

Special options

Omit	Standard

Two digit code assigned by factory when any "X" appears in the model number or when special options or features are required.

1. Switches can be used with stroke adjusters or bumpers (example: PV22D-090BS-BB2-B).
2. Not available with switches or stroke adjusters.
3. No tapped mounting holes in face opposite the flange.
4. 90° bumpers (090B) not available on PV10/11 sizes.

Note:
Order Hall effect sensors and reed switches separately from the Electronic Sensors section.

Sensors
For sensors see page B339.

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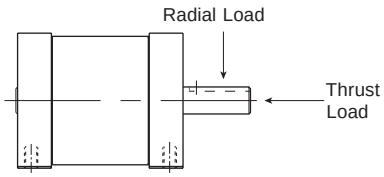
Quick reference data

Model number	Maximum rotation (Degrees)	Actual output torque (lb-in) at specified input pressure (PSI) 50	75	100	Displacement (in^3)	Maximum breakaway pressure (PSI)	Maximum bypass leakage @100 psi (CFM)	Unit weight (lb)
10	275°	4	6	8	0.52	25	0.15	0.38
10D	95°	8	12	16	0.37	20	0.20	0.38
11	275°	8	12	16	1.04	20	0.15	0.50
11D	95°	17	25	33	0.74	15	0.20	0.50
22	280°	32	48	64	3.67	15	0.20	0.50
22D	100°	68	101	135	2.62	10	0.25	1.75
33	280°	75	112	150	8.70	15	0.20	3.44
33D	100°	155	235	315	6.20	10	0.25	3.56
36	280°	150	220	300	17.40	15	0.20	5.19
36D	100°	315	470	630	12.40	10	0.25	5.50
42	280°	140	210	285	17.80	15	0.20	7.13
42D	100°	300	450	600	14.58	10	0.25	7.50
44	280°	285	425	570	35.61	15	0.20	8.81
44D	100°	600	900	1200	29.17	10	0.25	9.38
46	280°	425	640	850	53.41	15	0.20	10.50
46D	100°	900	1350	1800	43.75	10	0.25	10.75



Kinetic energy ratings and bearing load capacities

Model number	Composite bushing load capacities (lb)* Radial	Thrust	Radial ball bushing load capacities (lb)* Radial	Thrust	Distance between centerline bearings	Maximum kinetic energy rating for models based on configuration (in-lb) Standard	Stroke adjusters	Bumpers
10	15	7	50	15	0.88	0.03	0.12	0.05
11	15	7	50	15	1.50	0.06	0.12	0.09
22	50	25	Consult factory		2.38	0.25	0.50	0.38
33	100	50	Consult factory		3.50	0.75	1.50	1.13
36	100	50	Consult factory		6.50	1.00	1.50	1.50
42	200	75	Consult factory		2.75	2.00	4.00	3.00
44	200	75	Consult factory		4.75	2.50	4.00	3.75
46	200	75	Consult factory		6.75	3.00	4.00	4.75

* Bearing capacities only. Check Kinetic Energy ratings to determine if actuator will stop load.

Seal kit ordering information

PSK | **PV22D** | **V**

Series	
PSK	Parker seal kit

Model number	
PV22D	Model number

Material	
Omit	Nitrile
V	Fluorocarbon

Seal kit installation tool

Model (S)	Items	Seal guide kit number
PV10 &11 (D)	21, 22	ATS-PV1
PV22 (D)	21, 22	ATS-PV2
PV33 & 36 (D)	21, 22	ATS-PV3

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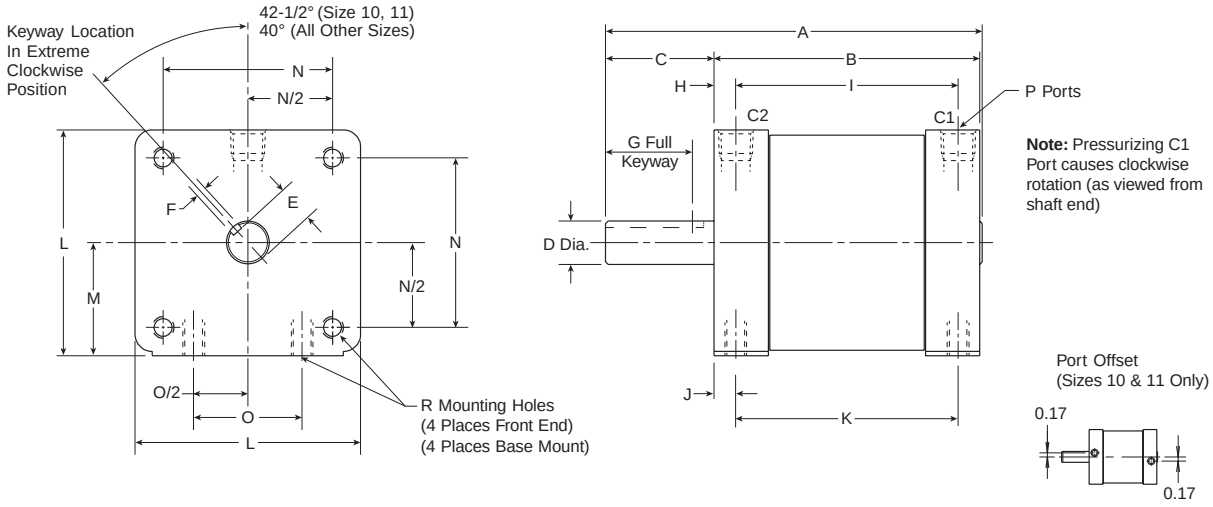
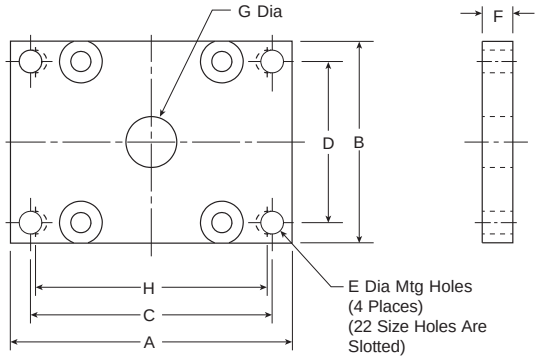
Standard Face/Base Mount (B) and Male Keyed Shaft (B)



Model number	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	R
10	2.280	1.38	0.88	0.312 0.311	0.258 0.253	0.094 0.095	0.63	0.19	1.00	0.19	1.000	1.62	0.810	1.220	0.750	10-32	8-32 x 0.25 DP
11	2.905	2.00	0.88	0.312 0.311	0.258 0.253	0.094 0.095	0.63	0.19	1.63	0.19	1.625	1.62	0.810	1.220	0.750	10-32	8-32 x 0.25 DP
22	4.340	3.06	1.25	0.500 0.499	0.423 0.418	0.125 0.126	0.94	0.25	2.56	0.25	2.560	2.50	1.250	2.000	1.250	1/8 NPTF	1/4-20NC x 0.38 DP
33	6.180	4.40	1.75	0.749 0.748	0.644 0.639	0.188 0.189	1.38	0.35	3.70	0.26	3.875	3.00	1.500	2.436	1.500	1/4 NPTF	5/16-18NC x 0.47 DP
36	9.180	7.40	1.75	0.749 0.748	0.644 0.639	0.188 0.189	1.38	0.35	6.70	0.26	6.875	3.00	1.500	2.436	1.500	1/4 NPTF	5/16-18NC x 0.47 DP
42	6.280	4.00	2.25	0.999 0.998	0.859 0.854	0.250 0.251	2.00	0.50	3.00	0.50	3.000	4.50	2.250	3.500	2.375	1/4 NPTF	3/8-16NC x 0.75 DP
44	8.280	6.00	2.25	0.999 0.998	0.859 0.854	0.250 0.251	2.00	0.50	5.00	0.50	5.000	4.50	2.250	3.500	2.375	1/4 NPTF	3/8-16NC x 0.75 DP
46	10.280	8.00	2.25	0.999 0.998	0.859 0.854	0.250 0.251	2.00	0.50	7.00	0.50	7.000	4.50	2.250	3.500	2.375	1/4 NPTF	3/8-16NC x 0.75 DP

Flange Mount (F, R)*



Model number	A	B	C	D	E	F	G	H
10	2.50	1.62	2.000	1.250	0.203	0.19	0.41	N/A
11	2.50	1.62	2.000	1.250	0.203	0.19	0.41	N/A
22	3.50	2.50	3.000	2.000	0.281	0.25	0.66	2.875
33	4.50	3.00	3.750	2.000	0.344	0.38	0.84	N/A
36	4.50	3.00	3.750	2.000	0.344	0.38	0.84	N/A
42	7.32	4.51	5.905	2.953	0.551	0.63	1.61	N/A
44	7.32	4.51	5.905	2.953	0.551	0.63	1.61	N/A
46	7.32	4.51	5.905	2.953	0.551	0.63	1.61	N/A

Note: The face opposite the flange mount does not contain tapped mounting holes. Consult factory if needed.

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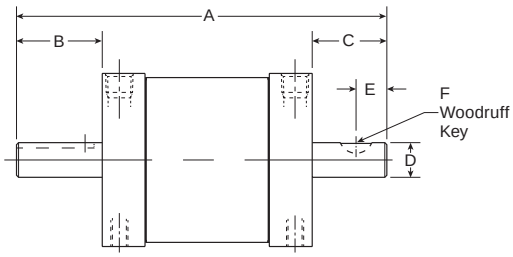
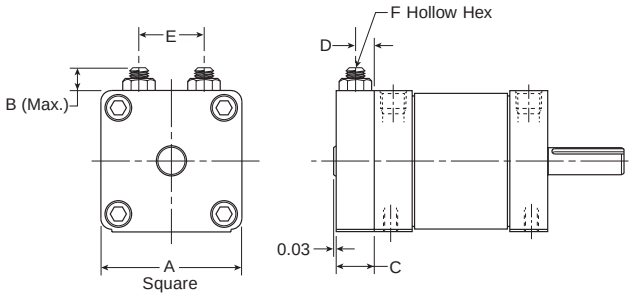
Double End Male Keyed Shaft (C)



Note: Not available with switches or stroke adjustment. Consult factory for rear port option.

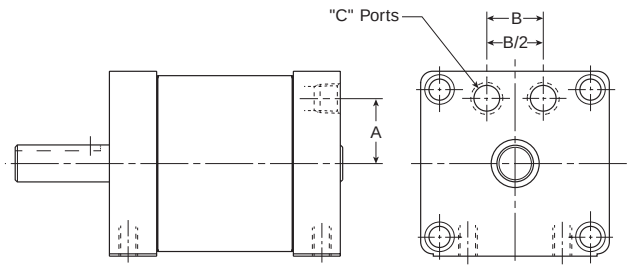
Model number	A	B	C	D	E	F
10	2.75	0.88	0.50	0.312 0.311	0.28	#302.5
11	3.38	0.88	0.50	0.312 0.311	0.28	#302.5
22	5.06	1.25	0.75	0.500 0.499	0.44	#404
33	7.15	1.75	1.00	0.749 0.748	0.56	#606
36	10.15	1.75	1.00	0.749 0.748	0.56	#606
42	7.53	2.25	1.28	0.999 0.998	0.72	#808
44	9.53	2.25	1.28	0.999 0.998	0.72	#808
46	11.53	2.25	1.28	0.999 0.998	0.72	#808

Adjustable Rotation Stop (090A, 180A)



Model number	A	B	C	D	E	F
10	1.62	0.63	0.47	0.24	0.75	3/32
11	1.62	0.63	0.47	0.24	0.75	3/32
22	2.50	1.00	0.72	0.36	1.25	5/32
33	3.00	1.16	0.97	0.48	1.56	3/16
36	3.00	1.16	0.97	0.48	1.56	3/16
42	4.50	1.38	1.25	0.56	2.25	7/32
44	4.50	1.38	1.25	0.56	2.25	7/32
46	4.50	1.38	1.25	0.56	2.25	7/32

Rear Port (7)



Model number	A	B	C
10	0.54	0.50	10-32
11	0.54	0.50	10-32
22	0.88	0.75	1/8 NPTF
33	1.09	0.90	1/8 NPTF
36	1.09	0.90	1/8 NPTF
42	1.68	1.00	1/4 NPTF
44	1.68	1.00	1/4 NPTF
46	1.68	1.00	1/4 NPTF

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PRN Series

- Single or double vane rotary actuator
- 3 standard rotations: 90°, 180°, or 270°
- Output torque @ 0.7 MPa:
  16 to 1120 N•cm (1.4 to 99 in-lb)
- Internal bumpers are standard
- Shock absorbers are available for high inertia loads

Operating information

Operating pressure:	100 PSIG (6.9 bar)
Temperature range:	-5°C to 80°C (-23°F to 176°F)
Filtration requirements:	40 micron, dry filtered air

Ordering information

PRNA – **20** – **S** – **90** – **90** – **S**

Type	
PRNA	Sizes 1-20
PRN	Sizes 30-800

Size
1
3
10
20
30
50
150
300
800

Type	
S	Single vane
D	Double vane

Rotation angle	
90	90° (all sizes, single and double vane)
100	100° (sizes 50 through 800, double vane only)
180	180° (all sizes, single vane only)
270	270° (single vane only, not available on size 1)
280	280° (sizes 50 through 800, single vane only)

Oscillating reference point*	
40	40°
45	45°
90	90°

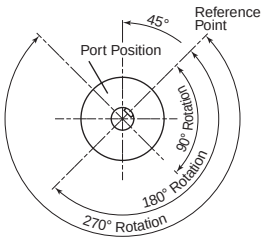
* See specification tables for availability of rotation angle /reference point combinations for the selected model.

Porting	
Omit	Standard porting
S	Rear porting (sizes 3-20 only)

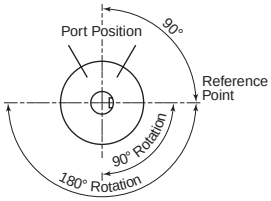
Sensors
For sensors see page B339.

Reference point and rotation orientations

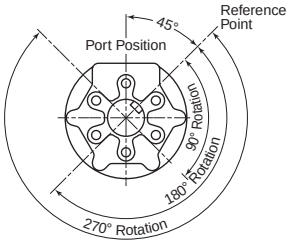
PRNA1S/D, PRNA3S/D, PRNA10S/D PRNA20S/D, PRN30S/D
Reference point at 45°



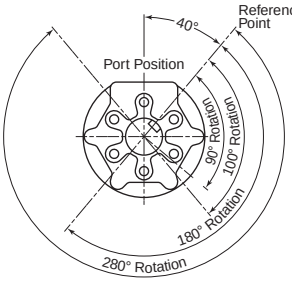
PRN1AS, PRNA3S PRNA10S, PRNA20S
Reference point at 90°



PRN50, 150, 300, 800
Reference point at 45°



PRN50, 150, 300, 800
Reference point at 40°



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Quick reference data – PRNA miniature

Type	Model number	Theoretical output torque 0.3 MPa (45 PSI) Ncm	(in-lb)	0.5 MPa (75 PSI) Ncm	(in-lb)	0.7 MPa (100 PSI) Ncm	(in-lb)	1.0 MPa (145 PSI) Ncm	(in-lb)	Maximum breakaway pressure MPa	PSI	Unit weight kg	lb
Single vane	**PRNA1S**	8	(0.7)	13	(1.2)	19	(1.6)	—		0.08	(12)	0.04	(0.08)
	PRNA3S	17	(1.5)	31	(3)	45	(4.0)	—		0.10	(15)	0.07	(0.15)
	PRNA10S	46	(4.1)	86	(7.6)	127	(11)	—		0.10	(15)	0.14	(0.31)
	PRNA20S	80	(7.1)	159	(14)	240	(21)	350	(31)	0.10	(15)	0.25	(0.55)
Double vane	**PRNA1D**	17	(1.5)	28	(2.5)	41	(3.6)	—		0.10	(15)	0.04	(0.09)
	PRNA3D	32	(2.9)	54	(4.8)	76	(6.7)	—		0.07	(10)	0.07	(0.16)
	PRNA10D	101	(8.9)	168	(15)	235	(21)	—		0.07	(10)	0.15	(0.33)
	PRNA20D	165	(15)	330	(29)	530	(47)	800	(71)	0.06	(9)	0.26	(0.57)

Quick reference data – PRN

Type	Model number	Theoretical output torque 0.3 Mpa (45 PSI) Ncm	(in-lb)	0.5 MPa (75 PSI) Ncm	(in-lb)	0.7 MPa (100 PSI) Ncm	(in-lb)	1.0 MPa (145 PSI) Ncm	(in-lb)	Maximum breakaway pressure MPa	PSI	Unit weight kg	(lb)
Single vane	**PRN30S**	180	(16)	319	(28)	480	(42)	720	(64)	0.10	(15)	0.47	(1.04)
	PRN50S	259	(23)	479	(42)	700	(62.0)	1060	(94)	0.10	(15)	0.8	(1.8)
	PRN150S	850	(75)	1500	(133)	2100	(186)	3050	(270)	0.08	(12)	2.0	(4.4)
	PRN300S	1650	(146)	2850	(252)	4050	(358)	5750	(509)	0.08	(12)	3.7	(8.2)
	PRN800S	5910	(523)	10200	(903)	14400	(1274)	20500	(1814)	0.05	(7)	13	(28)
Double vane	**PRN30D**	440	(39)	770	(68)	1120	(99)	1660	(147)	0.08	(12)	0.48	(1.06)
	PRN50D	579	(51)	1040	(92.0)	1510	(134)	2250	(199)	0.08	(12)	0.8	(1.8)
	PRN150D	1900	(168)	3500	(310)	4800	(425)	6900	(611)	0.06	(9)	2.0	(4.4)
	PRN300D	3900	(345)	6800	(602)	9700	(858)	1370	(121)	0.06	(9)	4.3	(9.5)
	PRN800D	12000	(1062)	20600	(1823)	28800	(2549)	41100	(3637)	0.05	(7)	13	(28)

Kinetic energy ratings and bearing load capacities – sizes 1 to 30

Model number	Bearing load capacities Thrust load N	lb	Radial load N	lb	Distance between centerline bearings mm	in	Maximum kinetic energy rating mJ	in-lb
PRNA1S	1	0.2	10	2	15	0.6	0.8	0.01
PRNA3S	4	0.9	40	9	20	0.8	4	0.03
PRNA10S	4	0.9	50	11	30	1.2	8	0.07
PRNA20S	25	5.6	300	67	42	1.7	40	0.35
PRN30S	30	6.7	400	90	48	1.9	67	0.60

Kinetic energy ratings and bearing load capacities – sizes 50 to 800

Model	Bearing load capacities Thrust load N	lb	Radial load N	lb	Distance between centerline bearings mm	in	Maximum kinetic energy rating Standard unit J	in-lb	Shock absorber (per cycle) J	in-lb	Shock absorber (per cycle) J/hr	in-lb/hr
PRN50S/D	44.1	9.9	588	132	66	2.6	0.13	1.2	7.8	69	3100	27000
PRN150S/D	88.2	19.8	1176	264	79.5	3.1	0.6	5.3	10	231	11300	100000
PRN300S/D	147	33.0	1960	441	97.5	3.8	8.0	70	20	462	22000	194000
PRN800S/D	490	110.2	4900	1102	138.5	5.5	10.5	92	156	1387	56500	500000

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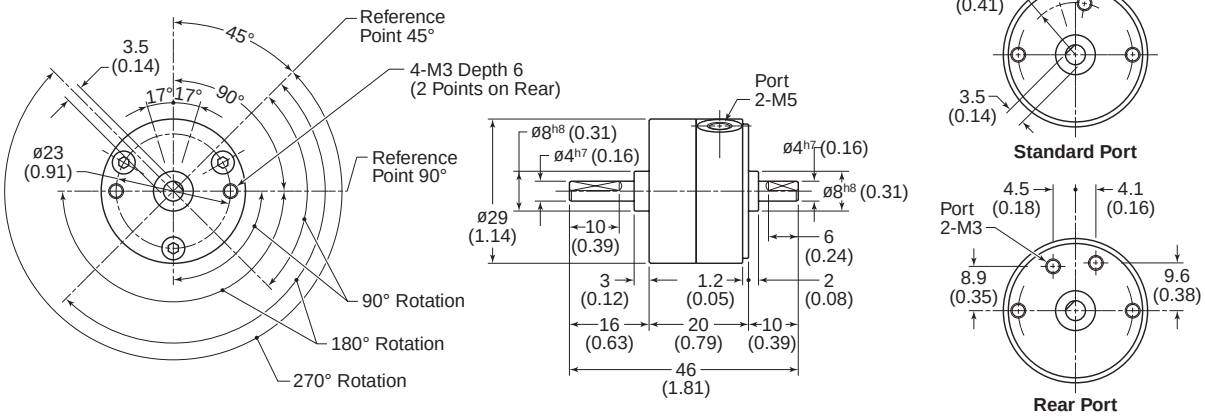
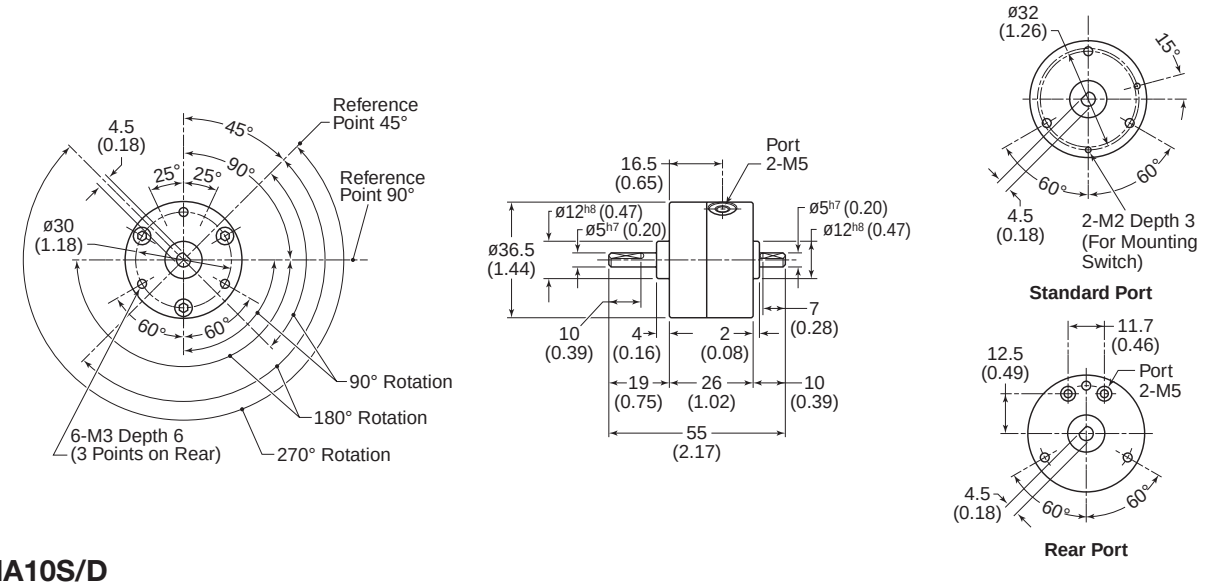
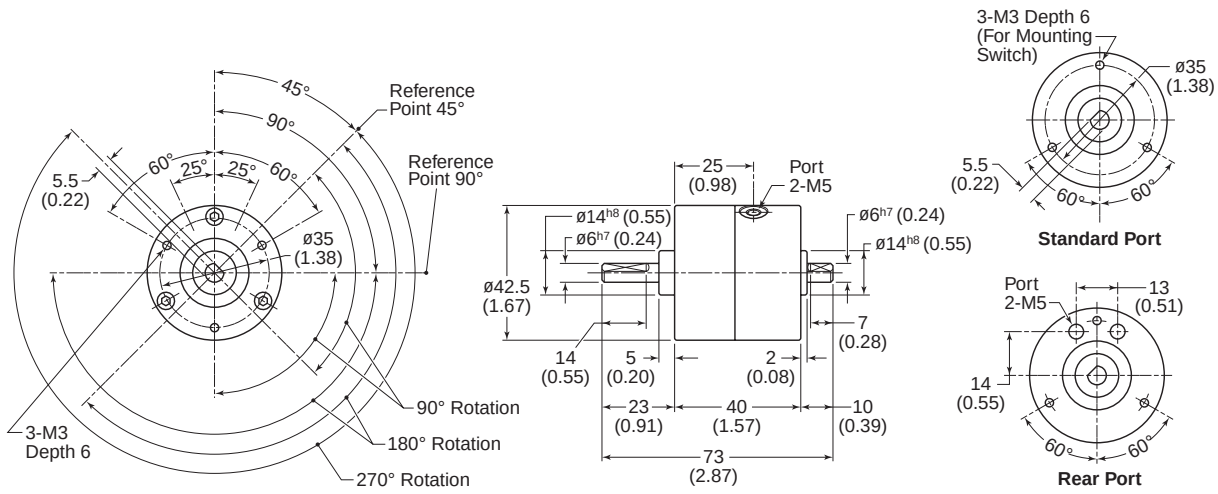
PRNA1S



PRNA3S/D



PRNA10S/D



Dimensions in mm (inch)

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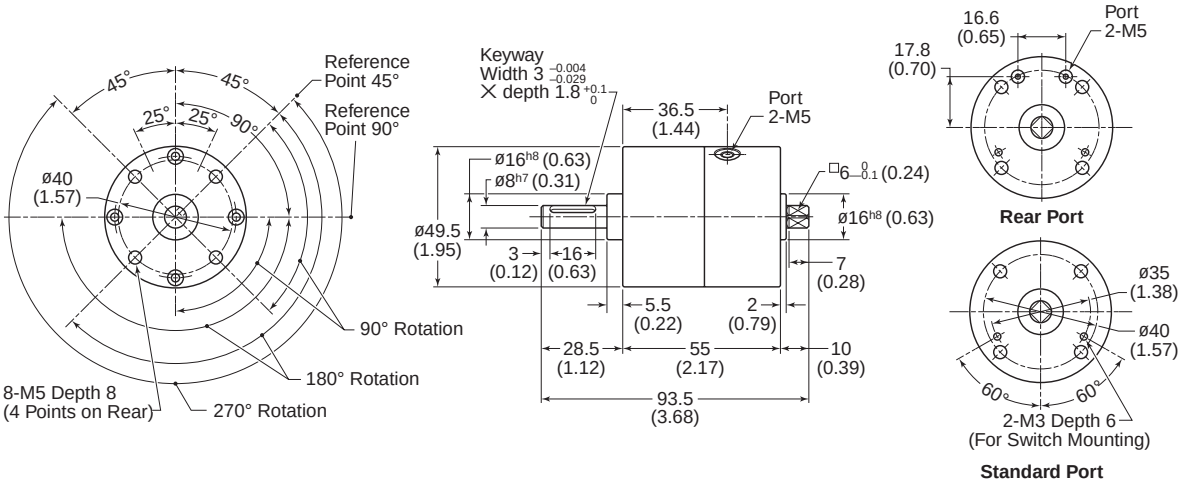
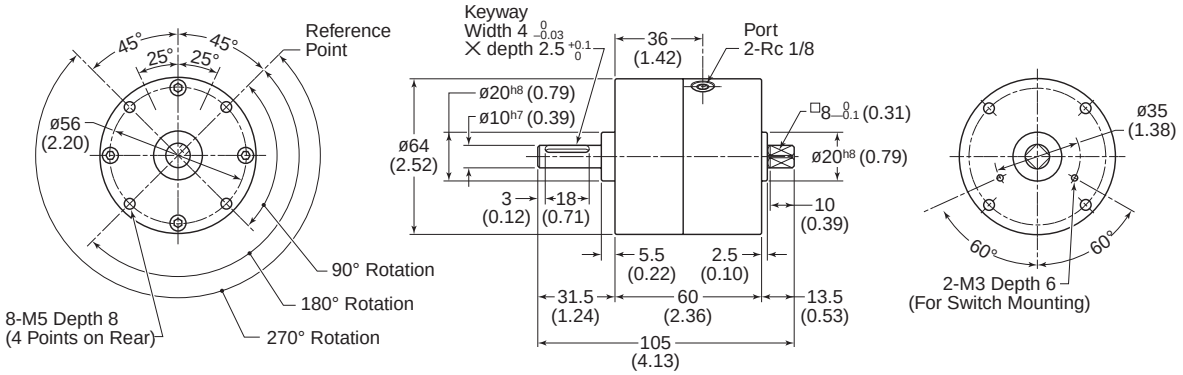
PRNA20S/D



PRN30S/D



Dimensions in mm (inch)

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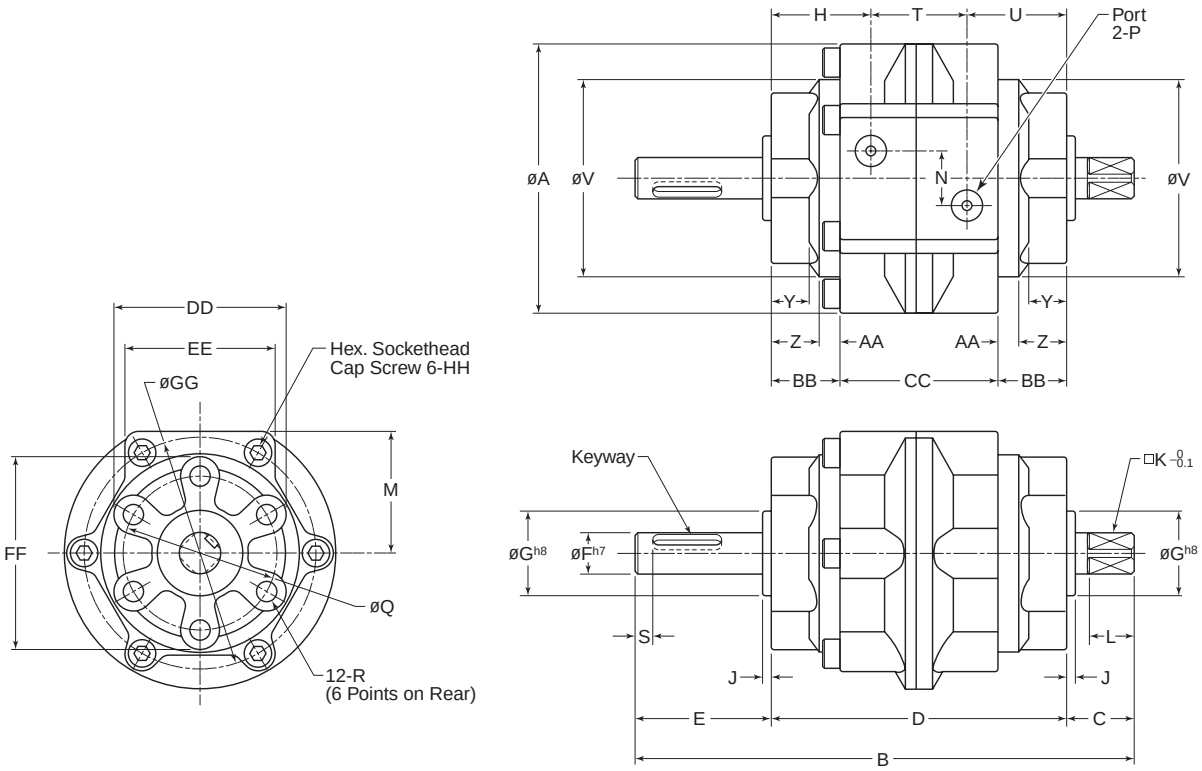
PRN Sizes 50 to 800



Dimensions in mm (inch)

Model number	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S
PRN50	79 (3.11)	145 (5.71)	19.5 (0.77)	86 (3.39)	39.5 (1.56)	12 (0.47)	25 (0.98)	29 (1.14)	2.5 (0.10)	10 (0.39)	13 (0.51)	36 (1.42)	16 (0.63)	Rc1/8	45 (1.77)	M6 x 1, Depth 9	5 (0.20)
PRN150	110 (4.33)	180 (7.09)	23.5 (0.93)	103 (4.06)	53.5 (2.11)	17 (0.67)	30 (1.18)	34.5 (1.36)	3 (0.12)	13 (0.51)	16 (0.63)	51 (2.01)	24 (0.94)	Rc1/4	70 (2.76)	M8 x 1.25, Depth 12	5 (0.20)
PRN300	141.5 (5.57)	220 (8.66)	30 (1.18)	125 (4.92)	65 (2.56)	25 (0.98)	45 (1.77)	41.5 (1.63)	3.5 (0.14)	19 (0.75)	22 (0.87)	66 (2.60)	32 (1.26)	Rc3/8	80 (3.15)	M10 x 1.5, Depth 15	5 (0.20)
PRN800	196 (7.72)	285 (11.22)	44.5 (1.75)	171 (6.73)	69.5 (2.74)	40 (1.57)	70 (2.76)	53.5 (2.11)	4.5 (0.18)	32 (1.26)	35 (1.38)	90 (3.54)	44 (1.73)	Rc1/2	120 (4.72)	M12 x 1.75, Depth 18	10 (0.39)

Model number	T	U	V	Y	Z	AA	BB	CC	DD	EE	FF	GG	HH	Keyway width x depth x length
PRN50	28 (1.10)	29 (1.14)	58 (2.28)	11 (0.43)	14 (0.55)	6 (0.24)	20 (0.79)	46 (1.81)	51 (2.01)	44 (1.73)	57 (2.24)	68 (2.68)	M5 x 30	$4\,^{0}_{-0.03}$ x $2.5\,^{+0.1}_{0}$ x 20
PRN150	34 (1.34)	34.5 (1.36)	85.2 (3.35)	10.5 (0.41)	15.5 (0.61)	8 (0.31)	23.5 (0.93)	56 (2.20)	75 (2.95)	61 (2.40)	85 (3.35)	97 (3.82)	M6 x 35	$5\,^{0}_{-0.03}$ x $3\,^{+0.1}_{0}$ x 36
PRN300	42 (1.65)	41.5 (1.63)	110 (4.33)	13 (0.51)	17.5 (0.69)	10 (0.39)	27.5 (1.08)	70 (2.76)	88.5 (3.48)	78 (3.07)	98.5 (3.88)	125 (4.92)	M8 x 45	$7\,^{0}_{-0.03}$ x $4\,^{+0.1}_{0}$ x 40
PRN800	64 (2.52)	53.5 (2.11)	152 (5.98)	14.5 (0.57)	21.1 (0.83)	11.4 (0.45)	32.5 (1.28)	106 (4.17)	130 (5.12)	110 (4.33)	145 (5.71)	173 (6.81)	M12 x 70	$12\,^{0}_{-0.043}$ x $5\,^{+0.2}_{0}$ x 40

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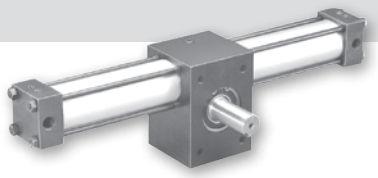
PTR Series



- Rack and pinion rotary actuator
- 5 bore sizes from 1" to 3-1/4"
- Output torque @ 100 PSIG: 39 lb-in to 2281 lb-in
- Standard rotations: 90°, 180°, 270°, 360°
- Available as single or double rack, 3 position, air/oil, anitbacklash
- Optional bumpers, cushions, stroke adjusters, shock absorbers

Operating information

Operating pressure:	250 PSIG (17 bar)
Temperature range:	
Nitrile seals	0°F to 180°F (-18° to 82°C)
Fluorocarbon seals	0°F to 250°F (-18° to 121°C)
Filtration requirements:	40 micron, dry filtered air

Sensors
For sensors see page B339.

Ordering information

PTR	25	1	–	090	3	F	P	–	A	B	2	1	M	V	–	C	

Model [1]

10	1" Bore
15	1-1/2" Bore
20	2" Bore
25	2-1/2" Bore
32	3-1/4" Bore

Rotation [2]

090	90°
180	180°
270	270°
360	360°
Or specify any other rotation.	

Configuration

1	Single Rack
2	Double Rack
3	Three Position Actuator
6	Air/Oil Operation
7	Antibacklash

Cushion / Bumpers

Omit	None
1	Cushioned CW rotation [3]
2	Cushioned CCW rotation [3]
3	Cushioned both rotations
4	Four cushions [4]
5	Bumper CW rotation [3]
6	Bumper CCW rotation [3]
7	Bumper both rotations
9	Special

Stroke adjusters

Omit	None
D	0-30° CW rotation [3, 5]
E	0-30° CCW rotation [3, 5]
F	0-30° both rotations [5]
H	Shock/stroke adj. CW rotation [3, 7]
K	Shock/stroke adj. CCW rotation [3, 7]
L	Shock/stroke adj. both rotations [7]
X	Special

Port flow controls

Omit	None
P	Flow control both rotations
R	Flow control CW rotation [3]
S	Flow control CCW rotation [3]

Mounting

A	Face/base (standard)
F	Front flange
G	Foot flange
P	Pilot ring
R	Rear flange
X	Special

Shaft

A	Female keyed
B	Single male keyed (standard)
C	Double male keyed
R	Preload keyway
X	Special

Port type

1	SAE straight thread
2	NPTF
4	BSPP (ISO 1179-1 with ISO 228-1 threads)
9	Special

Port location

1	Position 1 (standard)
2	Position 2
3	Position 3
4	Position 4 [8]
5	Position 5 [6]
9	Special

Standard options

Omit	None
M	Magnetic piston ring
S	Shaft seal cover
Q	Prepped for external air/oil tank
L	Air/oil cushion & flow control adj. at location 1 (opposite standard)

Seals

Omit	Nitrile
V	Fluorocarbon
X	Special

Design Series

C	Current

Special Options

Omit	Standard

(Two-digit code assigned by factory and applies when any "X" or "9" appears in the model number or when special options or features are required.)

Other options

Detail in clear text:
- Proximity Sensors
- Feedback Potentiometer

Notes:

1 Cylinder bore size. See appropriate tables for torque output.

2 For 3-position units, specify middle and total rotation separated by a "/", ie 090/180. To obtain equal rotation both sides of midstroke (theoretical 12:00), order unit with 5° longer rotation than standard with stroke adjusters.

3 Viewed from shaft end.

4 Double rack models only.

5 Reduces to 10° with cushions.

6 Not available with cushions or stroke adjusters.

7 Refer to Catalog 0900-E page H45 for option configuration compatibility.

8 Not available on double rack models

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Quick reference data

Model		Typ. actual output torque @ 100 PSI (lb-in)	Theoretical output torque* (lb-in) versus input pressure (PSI)				Displacement per degree rotation ($in^3/°$)	Maximum angular backlash (minutes)	Tolerance (degrees)
Single rack	Double rack		50	75	100	250			
101		35	19	29	39	98	0.007	60	-0, +5
	102	70	39	59	79	197	0.014	60	-0, +5
151		100	59	88	118	294	0.021	45	-0, +4
	152	200	118	177	236	590	0.042	45	-0, +4
201		250	141	212	282	705	0.049	35	-0, +3
251		375	215	322	430	1074	0.075	35	-0, +3
	202	500	282	423	565	1410	0.099	35	-0, +3
	252	750	430	644	859	2148	0.150	35	-0, +3
321		1000	570	856	1141	2852	0.199	25	-0, +2
	322	2000	1141	1711	2281	5703	0.398	25	-0, +2

* Allow 10% for friction loss. Allow 20% on air/oil units. Use the single rack torque values for all air/oil, three position, and anti-backlash actuators.

Bearing load capacities and kinetic energy ratings

Model	Bearing load capacities* (lb)		Distance between bearings	Maximum kinetic energy absorption rating for models based on configuration (lb-in)			
	Radial	Thrust		Standard or stroke adjusters	Bumper	Cushion**	Shock absorbers (per cycle / per hour)
10	100	50	1.40	0.5	0.75	5.00	15/150,000
15	250	125	2.15	1.50	2.25	15.00	35/200,000
20	500	250	2.15	3.00	4.50	35.00	140/350,000
25	750	375	2.50	5.50	8.25	55.00	140/300,000
32	1000	500	3.75	12.00	18.00	155.00	N/A

* Bearing capacities only. Check Kinetic Energy ratings to determine if actuator will stop load.
** Assuming positive back pressure provided by meter-out flow control.

Seal kit ordering information

- Standard units are equipped with Nitrile seals.
- Optional seal compounds are available.
- Seal kit part numbers as shown:

PSK	—	PTR322
Parker seal kit		Base model

V	
Omit	Standard
V	Fluorocarbon
Q	Quad ring piston seals
W	Corboxilated nitrile piston seals

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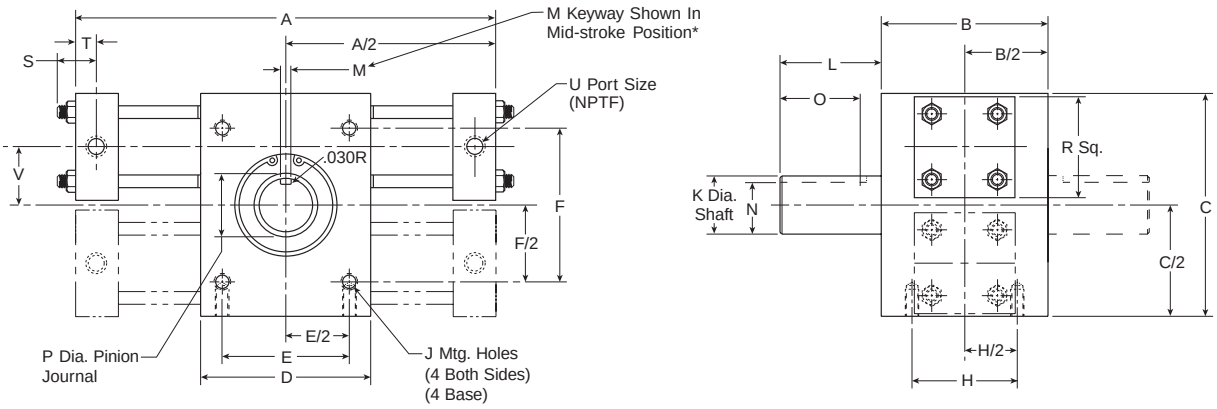
Standard Face Base Mount (A) and Male Keyed Shaft (B)

Double Male Keyed Shaft (C) shown in phantom



Model number	Rotation (Degrees)	A	B	C	D	E	F	H	J	K	L	M	N
10	90°	6-11/16	2	3	2	1.500	2.000	1.500	1/4-20 x 3/8 DP	0.500 0.499	7/8	0.125 0.127	0.430 0.425
	180°	8-1/4											
	360°	11-7/16											
15	90°	9-1/8	3	4-1/4	3	2.000	3.000	2.000	5/16-18 x 1/2 DP	0.875 0.874	1-7/8	0.188 0.190	0.771 0.761
	180°	11-3/16											
	360°	15-3/8											
20	90°	11-3/16	3	5	4	2.500	3.500	2.000	3/8-16 x 1/2 DP	1.125 1.124	1-7/8	0.250 0.252	0.986
	180°	14-1/16											
	360°	19-11/16											
25	90°	12-9/16	3-1/2	6	4	2.500	4.500	2.000	1/2-13 x 3/4 DP	1.375 1.374	2-1/4	0.313 0.315	1.201 1.191
	180°	15-1/2											
	360°	20-5/8											
32	90°	16-5/8	5	8	5	3.000	5.000	2. 500	3/4-10 x 1 DP	1.750 1.749	3-1/2	0.375 0.377	1.542 1.532
	180°	21-1/8											
	360°	29-3/8											

Model number	O	P	R	S	T	U	V
10	5/8	0.59	1-1/2	1/4	0.31	1/8	3/4
15	1-1/2	0.98	2	5/16	0.41	1/4	1-1/16
20	1-1/2	1.18	2-1/2	3/8	0.41	1/4	1-1/4
25	1-3/4	1.38	3	3/8	0.41	1/4	1-1/2
32	3	1.77	3-3/4	7/16	0.56	3/8	1-15/16

* To obtain equal rotation both sides of midstroke (theoretical 12:00), order 5° longer rotation than standard with stroke adjusters.

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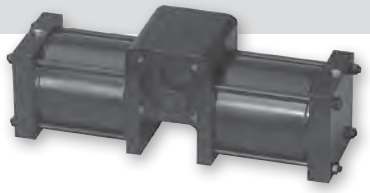
HP Series

- Rack and pinion rotary actuator
- 2 large bore models
- 3 standard rotations: 90°, 180°, 360°
- Standard output torque at 100 PSIG: 4,500 and 10,000 lb-in
- Large female pinion
- Available with adjustable cushions and stroke adjusters



Operating information

Operating pressure:	100 PSIG (6.9 bar)
Temperature range:	
Nitrile seals	0°F to 180°F (-18° to 82°C)
Fluorocarbon seals	0°F to 250°F (-18° to 121°C)
Filtration requirements:	40 micron, dry filtered air

Ordering information

HP	10	–	090	3	C	–	A	A	2	V	–	

Model

4.5	4,500 lb-in output torque
10	10,000 lb-in output torque

Rotation [1]

090	90°
180	180°
360	360°

Specify other rotations.

Cushions

Omit	None
1	CW rotation [2]
2	CCW rotation [2]
3	Both rotation
9	Special

Stroke adjusters

Omit	None
A	0-5° CW rotation [2]
B	0-5° CCW rotation [2]
C	0-5° both rotation
D	0-30° CW rotation [2, 3]
E	0-30° CCW rotation [2, 3]
F	0-30° both rotation [3]
X	Special

Mounting style

A	Face (standard)
X	Special

Shaft configuration

A	Female keyed shaft
B	Male keyed shaft
D	Female SAE 10B spline
E	Male SAE 10B spline
X	Special

Port type

2	NPTF (standard)
9	Special

Seals

Omit	Nitrile (standard)
V	Fluorocarbon
X	Special

Special options

Omit	Standard

Two digit code assigned by factory when any "X" or "9" appears in the model number or when special options or features are required.

Notes:

1 To obtain equal rotation both sides of midstroke (theoretical 12:00), order 5° longer rotation than standard with stroke adjusters.

2 Viewed from shaft end.

3 Cannot combine with cushions.

Sensors

For sensors see page B339.

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Quick reference data

Model	Rotation* (Degrees)	Displacement (Cubic inches)	Weight (lb)	Bore size	Actual torque output at 100 psi (lb-in)	Maximum rotational tolerance (degrees)	Maximum angular backlash (minutes)
	90°	79.93	63				
4.5	180°	159.86	75	6"	4,500	-0, +2	15
	360°	319.72	95				
	90°	177.64	125				
10	180°	355.28	147	8"	10,000	-0, +2	15
	360°	710.56	190				

* To obtain equal rotation both sides of midstroke (theoretical 12:00), order 5° longer rotation than standard with stroke adjusters.

Bearing load capacities and kinetic energy ratings

	Radial load (lb) per bearing		Thrust load (lb)		Distance between bearings (in.)	Maximum kinetic energy rating for models based on configuration (in-lb)		
Model	Dynamic	Static	Dynamic	Static		Standard	Stroke adjusters	Cushion
4.5	2,000	3,000	300	450	2.77	45	45	650
10	2,000	3,000	500	750	3.63	100	100	1450

Seal kit ordering information

- Standard units are equipped with Nitrile seals.
- Optional seal compounds are available.
- Seal kit part numbers as shown:

PSK	—	HP4.5	V	
Parker seal kit		Base model	Omit	Standard
			V	Fluorocarbon
			N	Non-Lube

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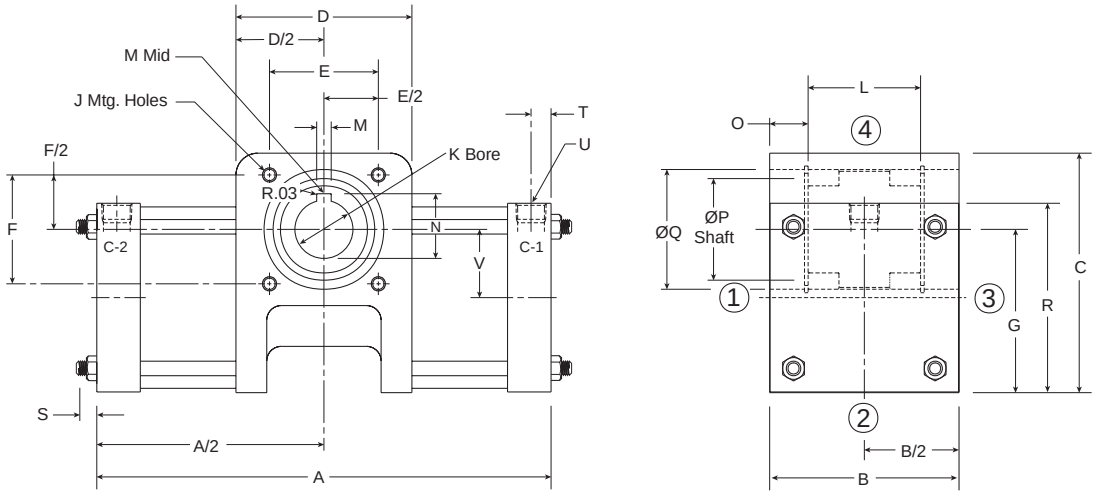
Standard face mount (A) and female keyed shaft (A) shown



Numbers above represent possible mounting and port positions.

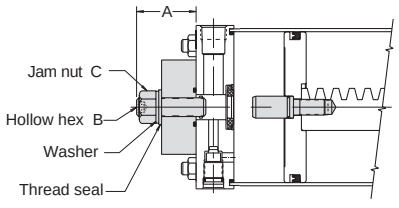
Notes: Pressure on C-1 port gives clockwise rotation.
Pressure on C-2 port gives counterclockwise rotation.

Model number	Rotation (Degrees)	A	B	C	D	E	F	G	J	K
4.5	90°	15-5/8	6.525	8-1/4	6.063	3.750	3.750	5.615	7/16-14 x 21/32 DP	2.000 2.003
	180°	22-1/4								
	360°	33								
10	90°	18	8.525	10-1/2	7.813	5.000	5.000	7.265	5/8-11 x 15/16 DP	2.250 2.253
	180°	26-3/4								
	360°	39-5/8								

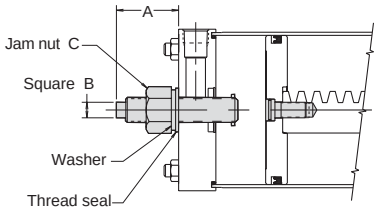
Model number	L	M	N	O	P	Q	R	S	T	U	V
4.5	3-7/8	0.500 0.502	2.223 2.233	1-5/16	3-1/2	4-1/8	6-1/2	5/8	0.69	3/4 NPTF	2.35
10	5	0.625 0.628	2.525 2.535	1-3/4	4-1/2	5-1/4	8-1/2	3/4	0.69	3/4 NPTF	3.00

Stroke Adjusters (A - F)

5° stroke adjust option
with cushion option

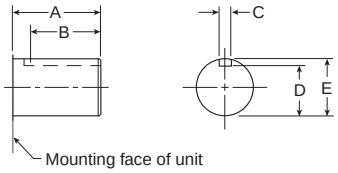


5° or 30° stroke adjust option
without cushion option



Model number	Cushioned end cap (1) Turn Adjust	A	B	C	Non-cushioned end cap (1) Turn Adjust	A 5°	A 30°	B	C
4.5	2.5°	2.50	5/8	1.00-14	2.0°	2.00	2.81	3/8	3/4-16
10	2.0°	2.50	15/16	1.50-12	1.5°	2.56	3.50	15/16	1-/2-12

Male Shaft (B)



Model number	A	B
4.5	2.61	2.38
10	4.38	3.38

Model number	C	D	E
4.5	0.561	1.928	2.249
	0.562	1.933	2.250
10	0.625	1.888	2.249
	0.627	1.893	2.250

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P1V-S Series

- Stainless steel air motor
- Approved for use in food grade applications
- Seven different sizes
- Powers ranging from 20 to 1,200 watts
- Speeds from 5 to 24,000 rpm
- Fluor rubber seals

Operating information

Operating pressure:	Max. 7 bar (Max. 6 bar in explosive atmospheres) Ex
Temperature range:	-30°C to 100°C (-22°F to 212°F)
Ambient temperature:	-20°C to 40°C (-4°F to 104°F) in explosive atmospheres Ex
Filtration requirements:	40 µm filtered, oil mist or dry unlubricated compressed air

Ordering Information

P	1	V	-	S	0	2	0	A	0	E	5	0

Air Motor Range

P1V-S	Stainless Vane Motor

Motor Size

002	20 W
008	80 W
012	120 W
020	200 W
030	300 W
060	600 W
120	1200 W

Function

A	Keyed Shaft, Reversible
D	Threaded Shaft, Reversible

Optional Functions

0	Standard
C*	Continuous Lubrication - Free Operation
Z*	Spring Loaded Vanes
M*	Multi: Combination of C+Z
D**	Standard with Brake
E**	Option C with Brake
F**	Option Z with Brake
G**	Option M with Brake

* Not for P1V-S002 and P1V-S008
** Only for P1V-S020 and P1V-S030

Free Speed per min

0005	5
001 | 999	10 | 9990
A00 | E00	10000 | 14000
E50 | N00	14500 | 22000
Q00	24000

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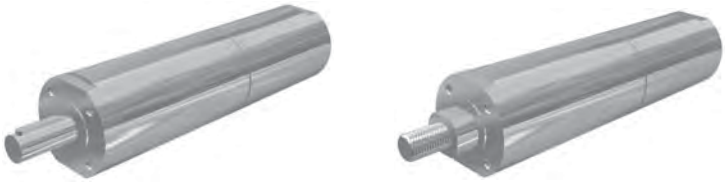
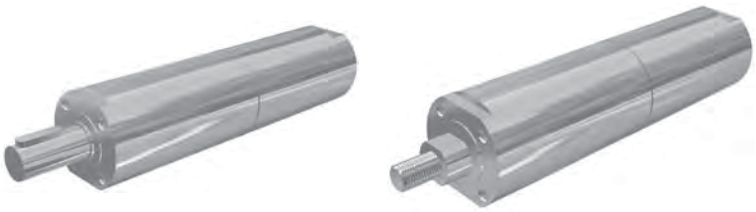
Series		Watts	Air motors in diagram on previous page	
P1V-S002A		20	▽1	**P1V-S002A0130**
			▽2	**P1V-S002A0095**
P1V-S008A		80	△1	**P1V-S008A0Q00**
			△2	**P1V-S008A0700**
			△3	**P1V-S008A0190**
			△4	**P1V-S008A0130**
P1V-S012A P1V-S012D		120	▲1	**P1V-S012A0N00, P1V-S012D0N00**
			▲2	**P1V-S012A0550, P1V-S012D0550**
			▲3	**P1V-S012A0360, P1V-S012D0360**
			▲4	**P1V-S012A0140, P1V-S012D1400**
			▲5	**P1V-S012A0090, P1V-S012D0090**
			▲6	**P1V-S012A0060, P1V-S012D0060**
			▲7	**P1V-S012A0010, P1V-S012D0010**
P1V-S020A P1V-S020D		200		
			O1	**P1V-S020A0E50, P1V-S020D0E50**
			O2	**P1V-S020A0460, P1V-S020D0460**
			O3	**P1V-S020A0240, P1V-S020D0240**
			O4	**P1V-S020A0140, P1V-S020D0140**
			O5	**P1V-S020A0070, P1V-S020D0070**
			O6	**P1V-S020A0035, P1V-S020D0035**
			O7	**P1V-S020A0018, P1V-S020D0018**
			O8	**P1V-S020A0011**
			O9	**P1V-S020A0006**
			O10	**P1V-S020A0005, P1V-S020D0005**
			O11	**P1V-S020A0002**
			O12	**P1V-S020A0001**
			O13	**P1V-S020A00005**
P1V-S030A P1V-S030D		300	●1	**P1V-S030A0E50, P1V-S030D0E50**
			●2	**P1V-S030A0460, P1V-S030D0460**
			●3	**P1V-S030A0240, P1V-S030D0240**
			●4	**P1V-S030A0140, P1V-S030D0140**
			●5	**P1V-S030A0060, P1V-S030D0060**
			●6	**P1V-S030A0028, P1V-S030D0028**
			●7	**P1V-S030A0023**
			●8	**P1V-S030A0018, P1V-S030D0018**
			●9	**P1V-S030A0010**
			●10	**P1V-S030A0005, P1V-S030D0005**
P1V-S060A		600	■1	**P1V-S060A0E00**
			■2	**P1V-S060A0400**
			■3	**P1V-S060A0270**
			■4	**P1V-S060A0170**
			■5	**P1V-S060A0072**
			■6	**P1V-S060A0048**
			■7	**P1V-S060A0030**
			■8	**P1V-S060A0010**
P1V-S120A		1200	□1	**P1V-S120A0800**
			□2	**P1V-S120A0270**
			□3	**P1V-S120A0110**
			□4	**P1V-S120A0078**
			□5	**P1V-S120A0032**
			□6	**P1V-S120A0012**

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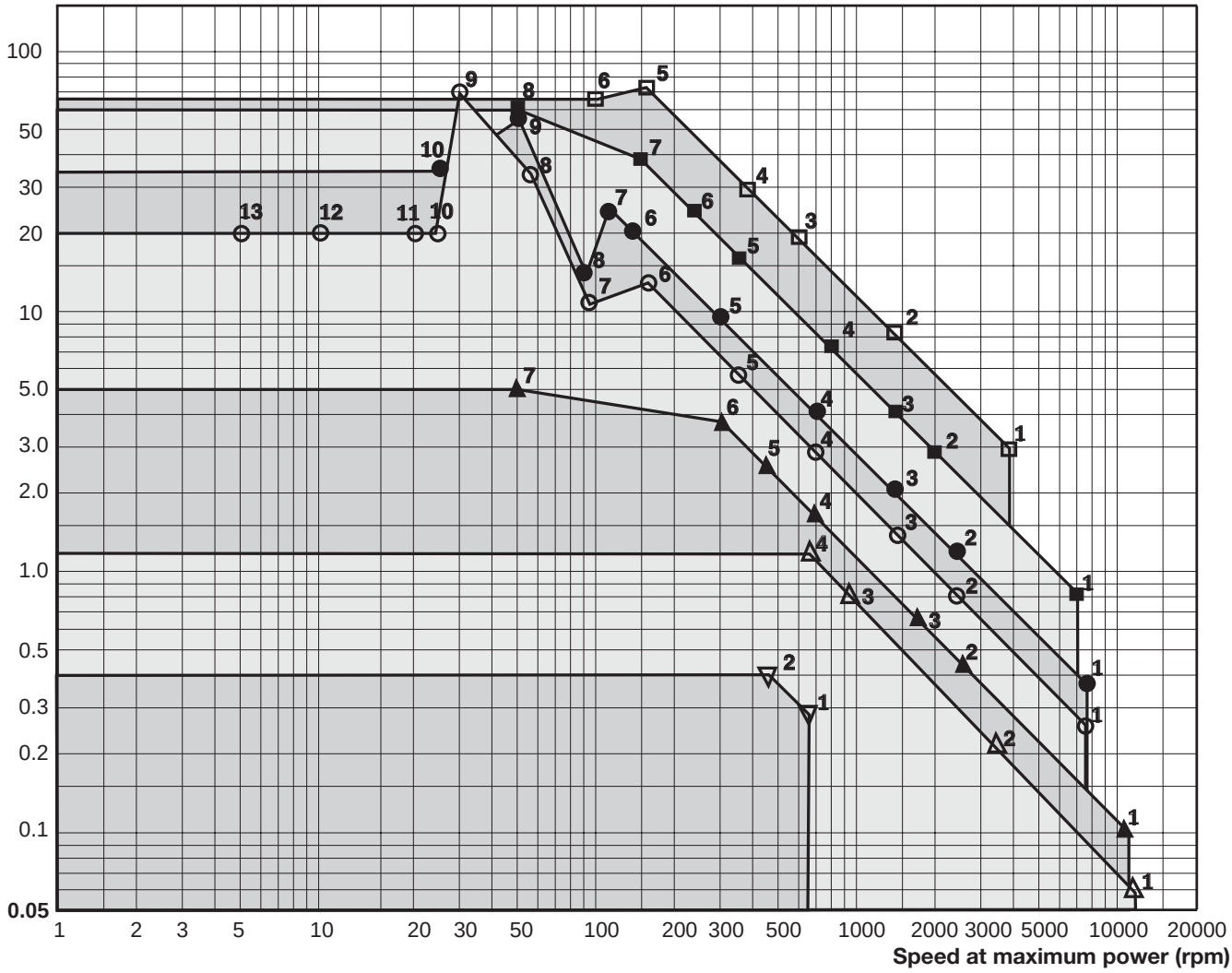
Choice of Air Motor

Torque at Maximum Power [Nm]



The motor to be used should be selected by starting with the torque needed at a specific shaft speed. Since maximum power is reached at half the motor's free speed, the motor should be chosen so that the operating point is as close as possible to the maximum power of the motor.
Use the above graph to choose the correct motor size. The graph contains the points for the maximum torque of each motor at maximum output. Add your operating point to the graph, then select a marked point above and to the right of your point.
Then use the correct working diagram of the chosen motor to get more detailed technical data. Always select a motor whose requisite technical data are in the shaded area. Also use the correction diagram to find out what operation with different supply pressures would mean for the motor.
Tip: Select a motor which is slightly too fast and powerful, then regulate its speed and torque with a pressure regulator and/or throttle to achieve the optimum working point.

Important!
Before carrying out service activities, make sure the air motor is vented. Before disassembling the motor, disconnect the primary air hose to ensure that the air supply is interrupted.

NOTE!
All technical data in the catalog are typical values.

The air quality is a major factor in the service life of the motor, see ISO 8573-1.

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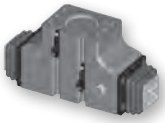
Grippers

	Series	Type	Grip force max.	mm or degrees of stroke	Spring open	Spring close	Clean room	Page number
	P5GA	Angular	13N to 194N	-10° to 30°	No	No	No	B282
	P5GB	Parallel	16N to 130N	6mm to 16mm	No	No	No	B284
	P5GV	Parallel	36N	3.2mm to 6.3mm	No	No	Yes	B286
	P5GR	Parallel	120N to 458N	6.4mm to 38.1mm	No	Yes	Yes	B288
	P5GU	Parallel	116N to 160N	6.5mm to 25.4mm	No	No	Yes	B291
	P5GN	Parallel	62N to 445N	1.6mm to 9.5mm	No	No	Yes	B294
	**P5GM**	Parallel	62N to 445N	4.8mm to 25.4mm	No	No	Yes	B297
	P5GS	Parallel	222N to 800N	19.1mm to 73.5mm	No	No	No	B300
	P5GT	Parallel	178N to 2669N	6.4mm to 50.8mm	No	No	No	B303
	P5GP	Electric	111N	0mm to 25mm	No	No	No	B306
	P5GQ	Electric	445N to 1334N	10mm to 20mm	No	No	No	B308
	P5GW	3-Jaw	682N to 44354N	4.0mm to 35mm	No	Yes	Yes	B310

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P5GA Angular Gripper Series - Economy

- Angular gripper, 2-finger - economy
- Comprehensive range of bore sizes, 12mm to 32mm
- Magnetic piston standard

Operating information

Operating pressure:	1.5 to 7 bar (21.8 to 102 PSIG)
Temperature range:	-5° to 60° C (23° to 140° F)
Maximum frequency:	180 cycles/min

Ordering Information: P5GA Angular Gripper Series - Economy

Function	Bore size (mm)	Ports (BSPP)	Rotation	Weight (g)	Part number
Double acting magnetic	12	M3	-10 to 30 degrees	53	**P5GA-012MSG030B**
Double acting magnetic	16	M5	-10 to 30 degrees	103	**P5GA-016MSG030B**
Double acting magnetic	20	M5	-10 to 30 degrees	193	**P5GA-020MSG030B**
Double acting magnetic	25	M5	-10 to 30 degrees	327	**P5GA-025MSG030B**
Double acting magnetic	32	M5	-10 to 30 degrees	525	**P5GA-032MSG030B**

Sensor part numbers: Page 330.

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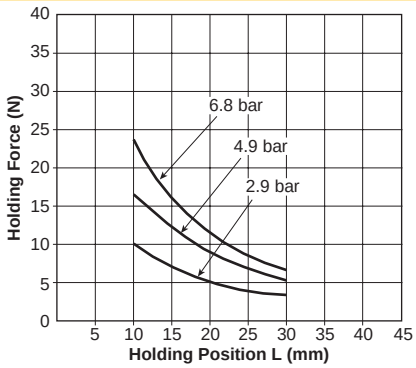
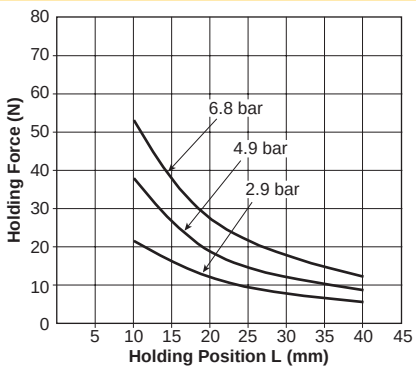
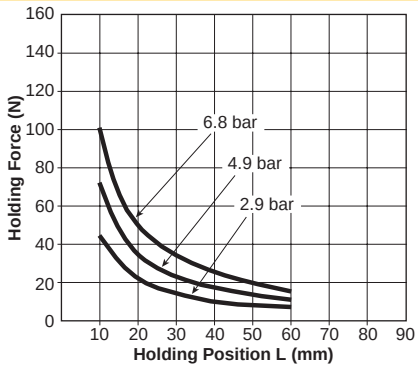
Clamp Force - P5GA-012



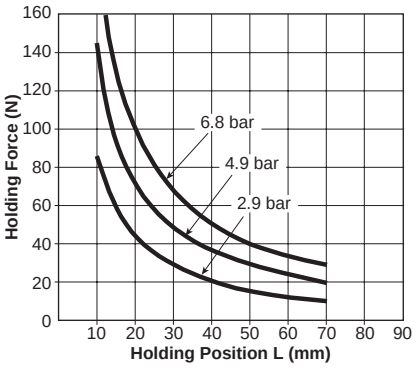
Clamp Force - P5GA-016



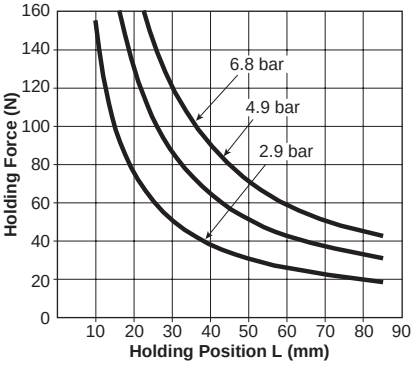
Clamp Force - P5GA-020



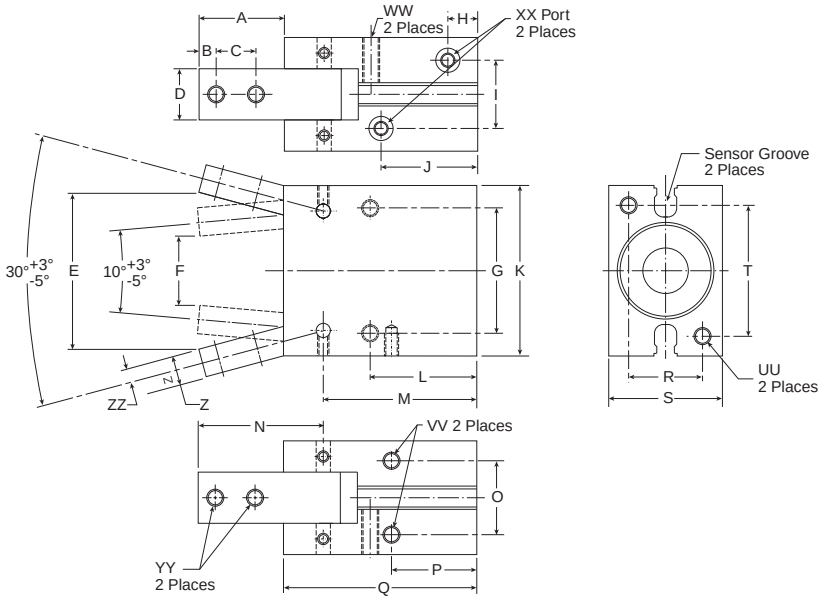
Clamp Force - P5GA-025



Clamp Force - P5GA-032



Dimensions: P5GA Angular Gripper Series - Economy



Tube

I.D.	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	UU	VV	WW	XX	YY	Z	ZZ
12	15.4	3	6	7	26.3	9	20	7.5	10.2	23.5	28	20	32.9	21.5	10.2	16	39	10	16	22	M3	M3	M3	M3	M3	5	2.5
16	17.5	3	8	9	31.1	14	24	7.5	12	22	34	22.5	35	25	14	18	42.5	14	22	26	M4	M4	M4	M5	M3	6	3
20	22	4	10	12	40.1	18	30	8	13	25	45	25	39.5	32.5	16	19	50	16	26	35	M5	M5	M5	M5	M4	7	3.5
25	26	5	12	14	47.9	21	36	8.5	18	28	52	28.5	45.5	38.5	20	21.5	58	20	32	40	M6	M6	M6	M5	M5	9	4
32	30	6	14	18	55.1	24	44	10.5	24	34	60	37.5	54	44	26	30	68	26	40	46	M6	M6	M6	M5	M6	10	5

Dimensions in millimeters

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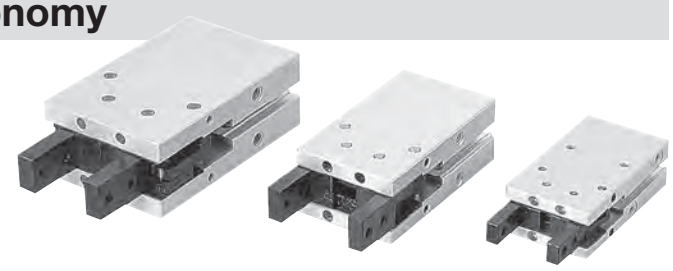
P5GB Parallel Gripper Series - Economy

- Parallel gripper, 2-finger - economy
- Comprehensive range of bore sizes, 12mm to 32mm
- Magnetic piston standard



Operating information

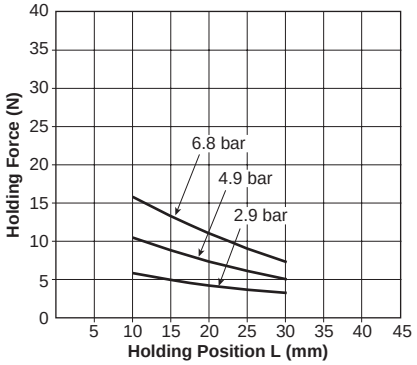
Operating pressure:	1.5 to 7 bar (21.8 to 102 PSIG)
Temperature range:	-5° to 60° C (23° to 140° F)
Maximum frequency:	180 cycles/min

Ordering Information: P5GB Parallel Gripper Series - Economy

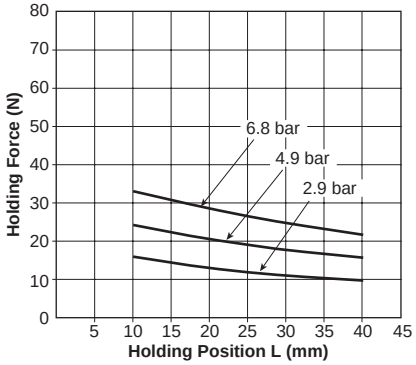
Function	Bore size (mm)	Ports (BSPP)	Stroke (mm)	Weight (g)	Part number
Double acting magnetic	12	M3	6	66	**P5GB-012MSG006B**
Double acting magnetic	16	M5	8	144	**P5GB-016MSG008B**
Double acting magnetic	20	M5	12	255	**P5GB-020MSG012B**
Double acting magnetic	25	M5	14	419	**P5GB-025MSG014B**
Double acting magnetic	32	M5	16	719	**P5GB-032MSG016B**

Sensor part numbers: Page 330.

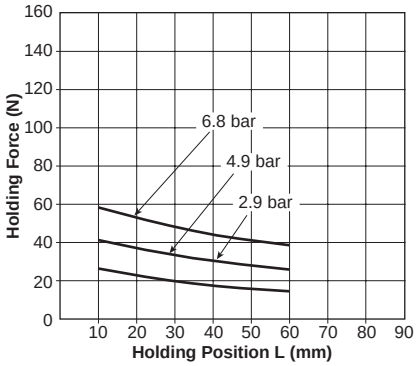
Clamp Force - P5GB-012



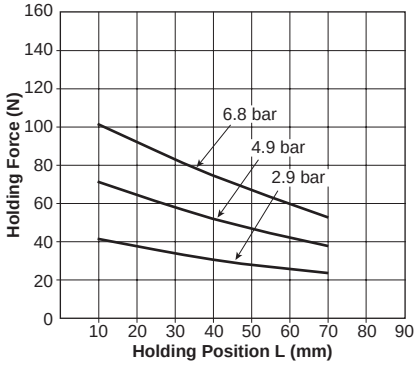
Clamp Force - P5GB-016



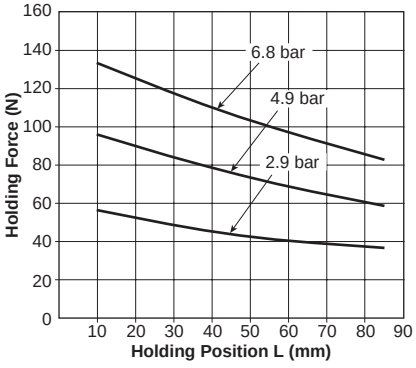
Clamp Force - P5GB-020



Clamp Force - P5GB-025



Clamp Force - P5GB-032



Most popular.

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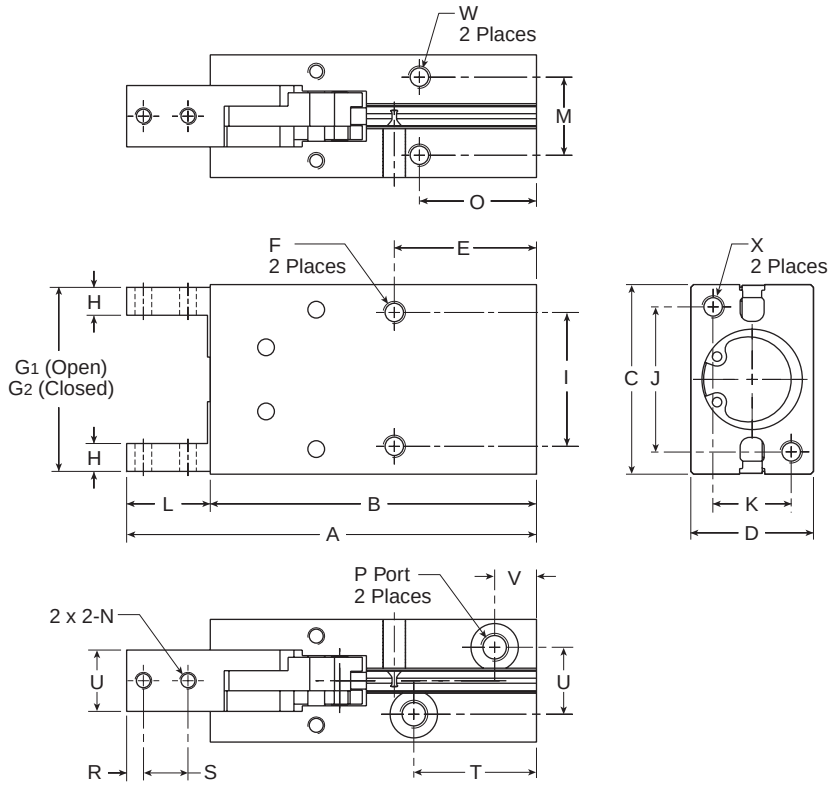
Dimensions: P5GB Parallel Gripper Series - Economy



Tube I.D.	A	B	C	D	E	F	G1	G2	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
12	63.5	50.5	28	16	20	M3 x 0.5 x 5 Dp	27	21	4	18	17	10	13	10	M3 x 0.5	16	M3	7	3	6	23	10.2
16	73.5	58.5	34	22	25.5	M4 x 0.7 x 11 Dp	33	25	5	24	26	14	15	14	M3 x 0.5	21	M5	11	3	8	22	12
20	88.5	69.5	45	26	25	M5 x 0.8 x 8 Dp	44	32	6	30	35	16	19	16	M3 x 0.7	19	M5	12	4	10	26	13
25	102.5	78.5	52	32	28	M6 x 1.0 x 10 Dp	51	37	8	36	40	20	24	20	M3 x 0.8	22	M5	14	5	12	29	18
32	120.5	90.5	60	40	34	M6 x 1.0 x 10 Dp	59	43	10	44	46	24	30	26	M3 x 1.0	26	M5	20	7	15	35	24

Tube I.D.	V	W	X
12	7.5	M3 x 0.5 x 5 Dp	M3 x 0.5 x 5 Dp
16	7.5	M4 x 0.7 x 7 Dp	M4 x 0.7 x 7 Dp
20	8	M5 x 0.8 x 8 Dp	M5 x 0.8 x 8 Dp
25	8.5	M6 x 1.0 x 10 Dp	M6 x 1.0 x 10 Dp
32	10.5	M6 x 1.0 x 10 Dp	M6 x 1.0 x 10 Dp

Dimensions in millimeters

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Pneumatic Division
Richland, Michigan
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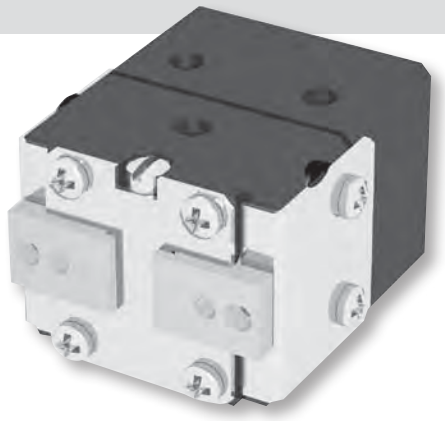
P5GV Miniature Clean Room Series

- One piece lightweight aluminum body
- Stationary and non-contacting stainless steel cover eliminates the possibility of particle generation
- Bearings are preloaded for maximum support and zero side play
- The body has hard-coat anodize 60 RC with PTFE impregnation
- Units are lubricated with a clean-room grade grease
- Purge / scavenge port for extreme environments from dirty and gritty to clean-room class 10 or better
- Adjustable preload screw allows for adjustment of preload on roller bearings
- External components are made from corrosion resistant materials for resistance to de-ionized water or for use in FDA and medical parts handling applications
- Slip fit dowel pin holes located in body and jaws



Operating information

Operating pressure:	3 to 7 bar (44 to 102 PSIG)
Temperature range:	
Nitrile seals (standard)	-35° to 80° C (-30° to 180° F)
Fluorocarbon seals (optional)	-30° to 120° C (-20° to 250° F)
Filtration requirements:	
Air filtration	40 micron or better
Air lubrication	Not necessary*
Air humidity	Low moisture content (dry)

*Addition of lubrication will greatly increase service life

Ordering Information: P5GV Miniature Clean Room Series

Function	Bore size (mm)	Ports (BSPP)	Stroke (mm)	Grip force @ 7 bar (N)	Accuracy +/- mm	Repeatability +/-mm	Weight (kg)	Part number
Double acting, Nitrile	10	M3	3.2	36	0.05	0.03	0.024	**P5GV-010MSG003B**
Double acting, Fluorocarbon	10	M3	3.2	36	0.05	0.03	0.024	**P5GV-010MFG003B**
Double acting, Nitrile	10	M3	4.8	36	0.05	0.03	0.026	**P5GV-010MSG005B**
Double acting, Fluorocarbon	10	M3	4.8	36	0.05	0.03	0.026	**P5GV-010MFG005B**
Double acting, Nitrile	10	M3	6.3	36	0.05	0.03	0.034	**P5GV-010MSG006B**
Double acting, Fluorocarbon	10	M3	6.3	36	0.05	0.03	0.034	**P5GV-010MFG006B**

Not available with sensors.

☐ Most popular.

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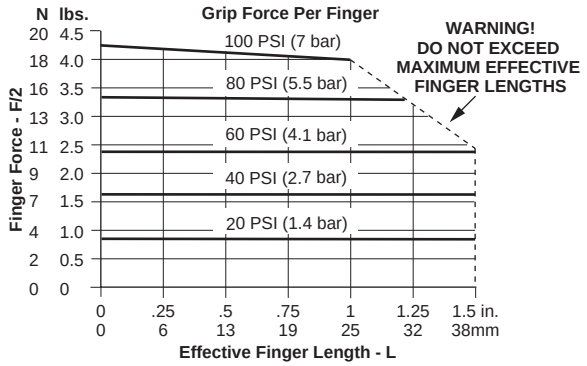
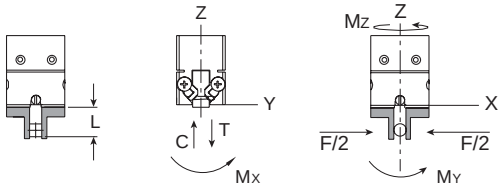
Loading information - P5GV



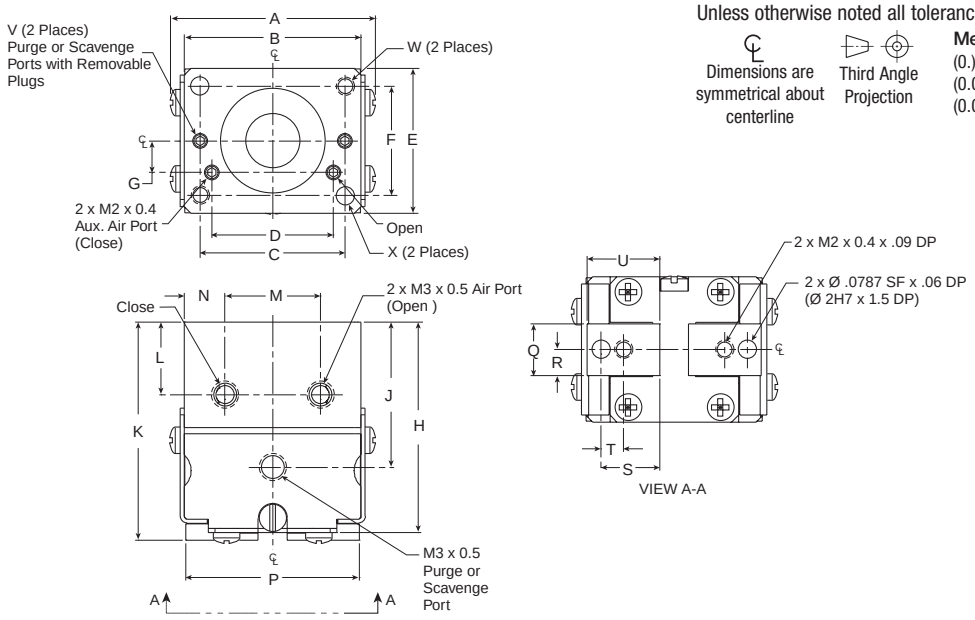
Loading capacity† - P5GV

	Static (metric)	Dynamic (metric)
Maximum tensile T	89 N	31 N
Maximum compressive C	89 N	31 N
Maximum moment Mx	1 Nm	0.5 Nm
Maximum moment My	2 Nm	0.6 Nm
Maximum moment Mz	1 Nm	0.5 Nm

† Capacities are per set of jaws and are not simultaneous



Dimensions: P5GV Miniature Clean Room Series



Unless otherwise noted all tolerances are as shown below

Dimensions are symmetrical about centerline

Third Angle Projection

Metric (mm)
(0.) = (±.25)
(0.0) = (±.13)
(0.00) = (±.013)

Part number	A	B	C	D	E	F	G	H	J	K	L	M
P5GV-010MS(F)G003B	23	19.5	16.0	13.4	16.0	12.00	3.5	23	16	24.0	8	10.5
P5GV-010MS(F)G005B	24	21.0	16.0	13.4	16.0	12.00	3.5	25	17	25.5	9	10.5
P5GV-010MS(F)G006B	30	26.5	20.0	13.4	16.0	11.00	3.5	25	18	25.5	10	10.5

Part number	N	P	Q	R	S	T	U	V	W	X
P5GV-010MS(F)G003B	4.5	Open 19.2 Closed 16	.569 ±0.03	2.8	6.50	2.5	8	M2 x 0.4	M2 x .18 4.5 Dp	Ø 2H7 x 3.3 Dp
P5GV-010MS(F)G005B	5.2	Open 20.8 Closed 16	.569 ±0.03	2.8	6.50	2.5	8	M2 x 0.4	M2 x 0.4 .18 Dp	Ø 2H7 x 3.3 Dp
P5GV-010MS(F)G006B	8.0	Open 126.4 Closed 20	.569 ±0.03	2.8	7.50	2.5	10	M2 x 0.5	M3 x 0.5 .20 Dp	Ø 3H7 x 5.0 Dp

Dimensions in millimeters

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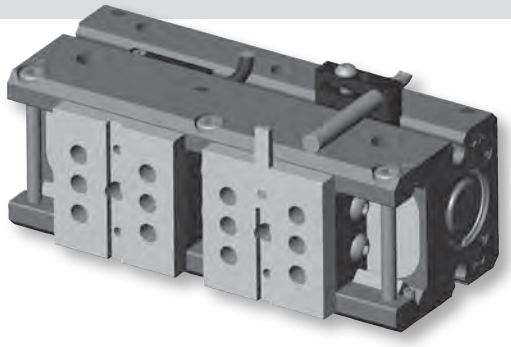
P5GR High Precision Series

- Excellent parallelism and accuracy between gripper mounting surface and jaw surfaces
- H7 dowel pin holes in body and jaws. Jaws also have key slot for better finger alignment.
- Hardened plated jaws for wear resistance and longer life
- Top manifold air ports eliminates the need for airlines
- "Dual-V" roller bearings provide low friction motion and are preloaded for maximum support and zero side play
- One piece, aircraft quality aluminum body, has hard-coat anodized 60 RC with PTFE impregnation
- Standard purge / scavenge port used with vacuum for clean room environments or positive pressure for harsh environments and jaw surfaces
- Adjustable pre-load screws allows for adjustment of preload on roller bearings
- 4 standard air port locations; front, top and both sides
- Shielded design repels contamination from penetrating the "Dual-V" roller bearings
- Magnetic piston standard



Operating information

Pressure range (without springs):	0.3 to 7 bar (4 to 102 PSIG)
Pressure range (with springs):	
P5GR-010MSG006B & P5GR-010MSG013B	1.4 to 7 bar (20 to 102 PSIG)
P5GR-014MSG016B & P5GR-014MSG025B	3.4 to 7 bar (49 to 102 PSIG)
P5GR-021MSG025B	2.8 to 7 bar (41 to 102 PSIG)
P5GR-021MSG038B	2.1 to 7 bar (30 to 102 PSIG)
Temperature range:	
Nitrile seals (standard)	-35° to 80° C (-30° to 180° F)
Filtration requirements:	
Air filtration	40 micron or better
Air lubrication	Not necessary*
Air humidity	Low moisture content (dry)

*Addition of lubrication will greatly increase service life

Ordering Information: P5GR High Precision Series

Function	Bore size (mm)	Ports (BSPP)	Stroke (mm)	Grip force @ 7 bar (N)	Accuracy +/- mm	Repeatability +/-mm	Weight (kg)	Part number
Double acting magnetic	10	M3	6.4	120	0.001	0.00005	0.16	**P5GR-010MSG006B**
Spring closing, magnetic	10	M3	6.4	120	0.001	0.00005	0.16	**P5GR-010DSG006B**
Double acting magnetic	10	M3	12.7	120	0.001	0.00005	0.20	**P5GR-010MSG013B**
Spring closing, magnetic	10	M3	12.7	120	0.001	0.00005	0.20	**P5GR-010DSG013B**
Double acting magnetic	14	M3	15.9	227	0.001	0.00005	0.48	**P5GR-014MSG016B**
Spring closing, magnetic	14	M3	15.9	227	0.001	0.00005	0.48	**P5GR-014DSG016B**
Double acting magnetic	14	M3	25.4	214	0.001	0.00005	0.57	**P5GR-014MSG025B**
Spring closing, magnetic	14	M3	25.4	214	0.001	0.00005	0.57	**P5GR-014DSG025B**
Double acting magnetic	21	M5	25.4	458	0.001	0.00005	1.02	**P5GR-021MSG025B**
Spring closing, magnetic	21	M5	25.4	458	0.001	0.00005	1.02	**P5GR-021DSG025B**
Double acting magnetic	21	M5	38.1	449	0.001	0.00005	1.41	**P5GR-021MSG038B**
Spring closing, magnetic	21	M5	38.1	449	0.001	0.00005	1.41	**P5GR-021DSG038B**

Sensor part numbers: Page 330.

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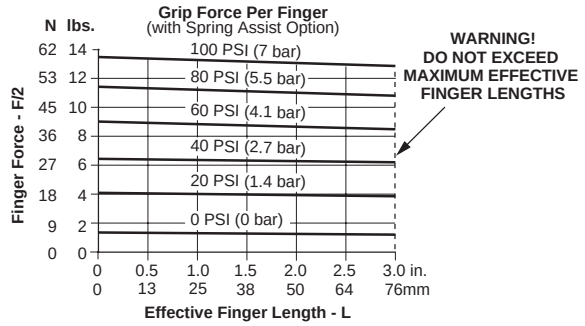
Loading information - P5GR-010***006



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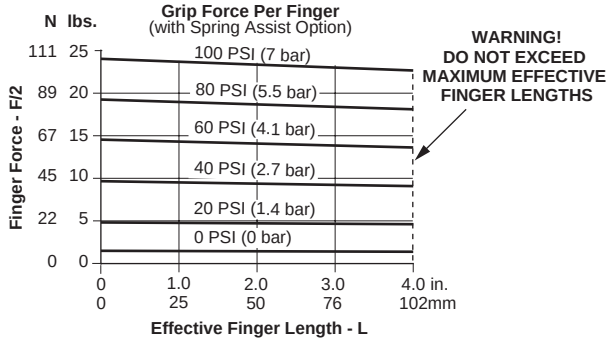

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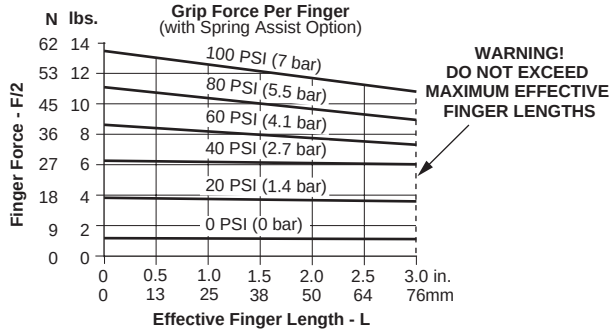

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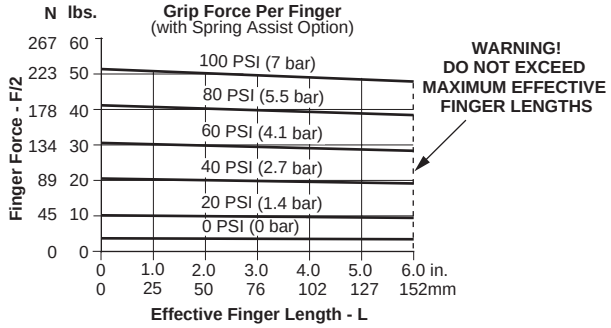

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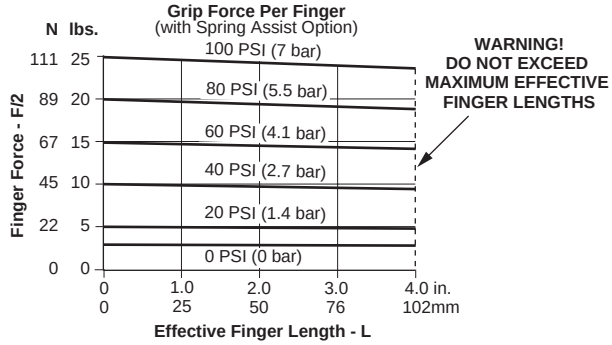

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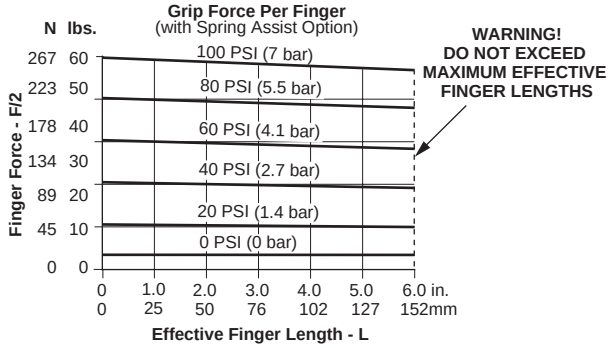
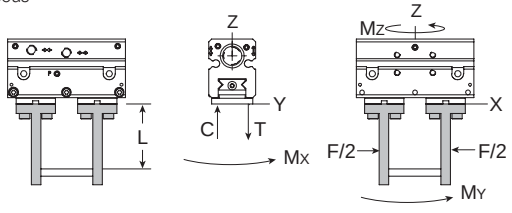


Loading capacity† - P5GR High Precision Series

	P5GR-010***006		P5GR-010***013		P5GR-014***016		P5GR-014***025		P5GR-021***025		P5GR-021***038	
	Static (metric)	Dynamic (metric)	Static (metric)	Dynamic (metric)	Static (metric)	Dynamic (metric)	Static (metric)	Dynamic (metric)	Static (metric)	Dynamic (metric)	Static (metric)	Dynamic (metric)
Maximum tensile T	267 N	89 N	311 N	102 N	556 N	187 N	734 N	245 N	667 N	222 N	890 N	245 N
Maximum compressive C	267 N	89 N	311 N	102 N	556 N	187 N	734 N	245 N	667 N	222 N	890 N	245 N
Maximum moment Mx	4.0 Nm	1.4 Nm	5.6 Nm	1.9 Nm	9.0 Nm	3.1 Nm	11 Nm	3.7 Nm	34 Nm	11 Nm	45 Nm	15 Nm
Maximum moment My	5.6 Nm	1.9 Nm	7.3 Nm	4.0 Nm	12 Nm	4.0 Nm	14 Nm	4.7 Nm	40 Nm	4.7 Nm	51 Nm	17 Nm
Maximum moment Mz	4.0 Nm	1.4 Nm	5.6 Nm	1.9 Nm	9.0 Nm	3.1 Nm	11 Nm	3.7 Nm	34 Nm	11 Nm	45 Nm	15 Nm

† Capacities are per set of jaws and are not simultaneous



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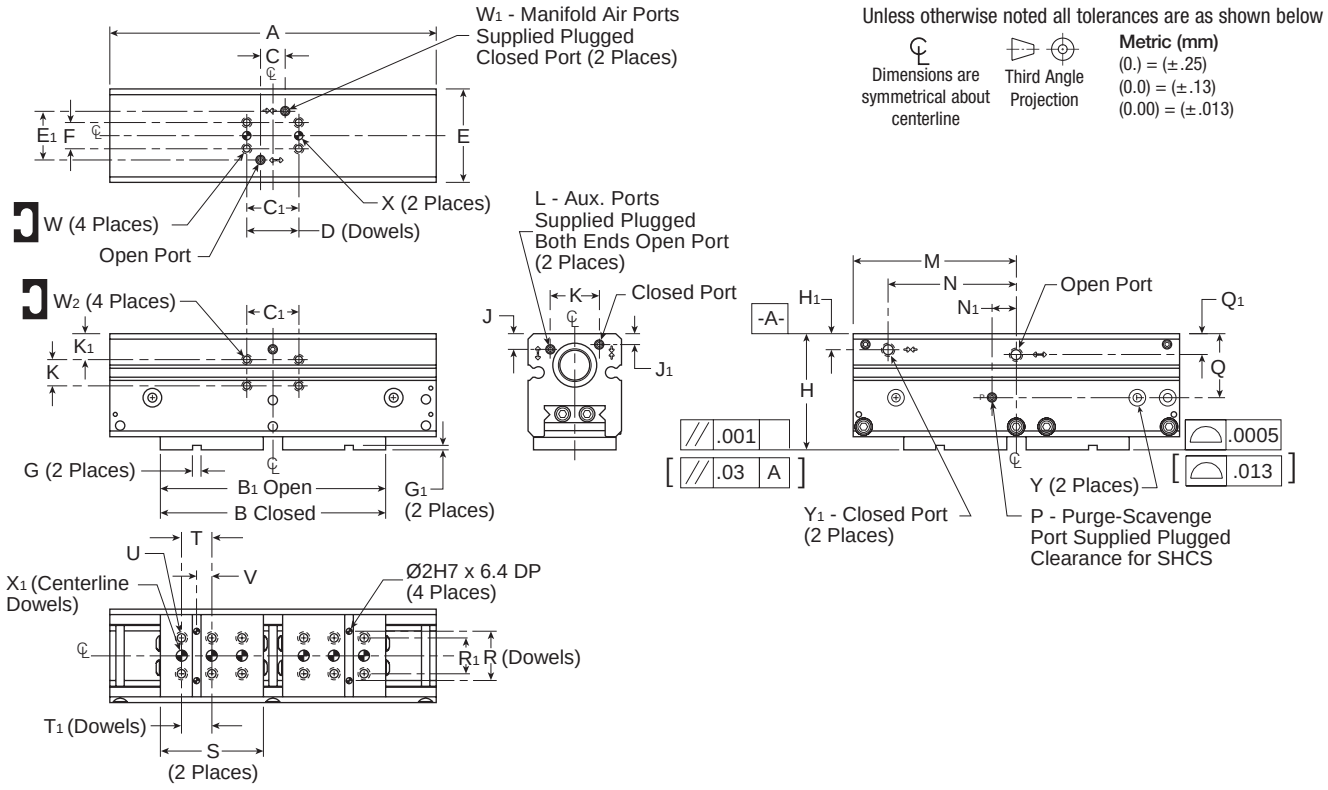
Dimensions: P5GR High Precision Series



Unless otherwise noted all tolerances are as shown below

Dimensions are symmetrical about centerline

Third Angle Projection

Metric (mm)
(0.) = (±.25)
(0.0) = (±.13)
(0.00) = (±.013)

Part number	A	B	B1	C	C1	D	E	E1	F	G	G1	H	H1	J	J1	K	K1	L	M	N	N1	P
P5GR-010*006**	62.9	47	53	8.9	19.1	19.05	25.0	15.2	9.5	3.15 +.02 .00	1.52 +.02 .00	34.67 +.02 .00	5.8	4.4	3.8	9.5	8.5	M3 x 3 Dp	31.4	18.7	5.1	M3 x 3 Dp
P5GR-010*013**	73.7	49	62	8.9	19.1	19.05	25.0	15.2	9.5	3.15 +.02 .00	1.52 +.02 .00	34.67 +.02 .00	5.8	4.4	3.8	9.5	8.5	M3 x 3 Dp	36.8	24.1	5.1	M3 x 3 Dp
P5GR-014*016**	90.2	63	79	8.9	19.1	19.05	34.0	17.8	9.5	3.15 +.02 .00	1.52 +.02 .00	42.21 +.02 .00	5.8	5.7	3.9	9.5	9.5	M3 x 3 Dp	45.1	32.4	8.9	M3 x 3 Dp
P5GR-014*025**	118.7	82	107	8.9	19.1	19.05	34.0	17.8	9.5	3.15 +.02 .00	1.52 +.02 .00	42.21 +.02 .00	5.8	5.7	3.9	9.5	9.5	M3 x 3 Dp	59.4	46.7	8.9	M3 x 3 Dp
P5GR-021*025**	129	89	115	12.7	38.1	38.10	46.0	28.7	19.1	3.15 +.02 .00	1.52 +.02 .00	55.63 +.02 .00	5.8	7.0	5.8	19.1	9.5	M5 x 5 Dp	64.5	45.5	14.0	M5 x 5 Dp
P5GR-021*038**	175.5	123	161	12.7	38.1	38.10	46.0	28.7	19.1	3.15 +.02 .00	1.52 +.02 .00	55.63 +.02 .00	5.8	7.0	5.8	19.1	9.5	M5 x 5 Dp	87.8	68.7	14.0	M5 x 5 Dp

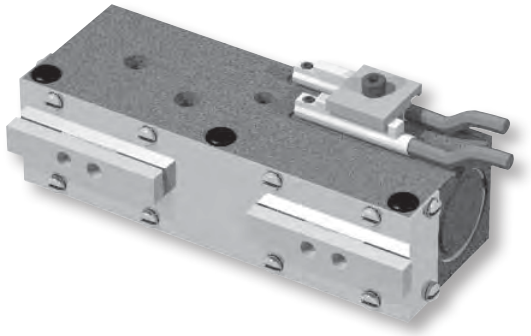
Part number	Q	Q1	R	R1	S	T	T1	U	V	W	W1	W2	X	X1	Y	Y1
P5GR-010*006**	18.5	7.4	9.19	9.0	21	12	11.99	M3 x 5 Dp	6.0	M3 x 4 Dp	M3 x 3 Dp	M3 x 4 Dp	Ø3H7 x 2.5 Dp	Ø2H7 x 3.6 Dp	Ø6.35 x 3 Dp	M5 x 4 Dp
P5GR-010*013**	18.5	7.4	9.20	9.0	21	12	11.99	M3 x 5 Dp	6.0	M3 x 4 Dp	M3 x 3 Dp	M3 x 4 Dp	Ø3H7 x 2.5 Dp	Ø2H7 x 3.6 Dp	Ø6.35 x 3 Dp	M5 x 4 Dp
P5GR-014*016**	23.2	8.0	17.98	13.0	28	16	16.00	M4 x 7 Dp	8.0	M3 x 4 Dp	M3 x 3 Dp	M3 x 5 Dp	Ø3H7 x 2.5 Dp	Ø4H7 x 3.6 Dp	Ø6.35 x 3 Dp	M5 x 5 Dp
P5GR-014*025**	23.2	8.0	17.98	13.0	37.5	11	11.00	M4 x 7 Dp	5.5	M3 x 4 Dp	M3 x 3 Dp	M3 x 5 Dp	Ø3H7 x 2.5 Dp	Ø4H7 x 3.6 Dp	Ø6.35 x 3 Dp	M5 x 5 Dp
P5GR-021*025**	31.1	11.2	25.78	17.0	40.0	12.5	12.50	M5 x 10 Dp	6.2	M5 x 5 Dp	M5 x 5 Dp	M5 x 5 Dp	Ø5H7 x 3.0 Dp	Ø5H7 x 5.3 Dp	Ø6.35 x 3 Dp	M5 x 5 Dp
P5GR-021*038**	31.1	11.2	25.78	17.0	58.0	16.0	16.00	M5 x 10 Dp	8.0	M5 x 5 Dp	M5 x 5 Dp	M5 x 5 Dp	Ø5H7 x 3.0 Dp	Ø5H x 5.3 Dp	Ø6.35 x 3 Dp	M5 x 5 Dp

Dimensions in millimeters

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

P5GU Clean Room Harsh Environment Series

- Internal components are made from hardened bearing and tool steels. External components are made from corrosion resistant materials for resistance to de-ionized water or for use in FDA and medical parts handling applications.
- Stationary and non-contacting stainless steel shields eliminate the possibility of particle generation
- Adjustable preload screws allow for adjustment of preload on roller bearings
- The body has hard-coat anodized 60 RC with PTFE impregnation
- Dual "V" roller bearings provide low friction rolling motion. Roller bearings are preloaded for maximum support and zero side play.
- Units are lubricated with a clean room grade grease
- Slip fit dowel pin holes in body
- Purge / scavenge port for extreme environments from dirty and gritty to clean room Class 10 or better
- Stainless steel screws provide protection against corrosion
- Magnetic piston standard



Operating information

Operating pressure:	0.3 to 7 bar (4 to 102 PSIG)
Temperature range:	
Standard seals	-35° to 80° C (-30° to 180° F)
Fluorocarbon seals	-30° to 120° C (-20° to 248° F)
Filtration requirements:	
Air filtration	40 micron or better
Air lubrication	Not necessary*
Air humidity	Low moisture content (dry)

*Addition of lubrication will greatly increase service life

Ordering Information: Clean Room Harsh Environment Series

Function	Bore size (mm)	Ports (BSPP)	Stroke (mm)	Grip force @ 7 bar (N)	Accuracy +/- mm	Repeatability +/-mm	Weight (kg)	Part number
Double acting magnetic	11	M5	6.4	116	0.05	0.03	0.07	**P5GU-011MSG006B**
Double acting magnetic	11	M5	6.4	116	0.05	0.03	0.07	**P5GU-011MFG006B**
Double acting magnetic	11	M5	12.7	116	0.05	0.03	0.09	**P5GU-011MSG013B**
Double acting magnetic	11	M5	12.7	116	0.05	0.03	0.09	**P5GU-011MFG013B**
Double acting magnetic	13	M5	19.1	160	0.05	0.03	0.15	**P5GU-013MSG019B**
Double acting magnetic	13	M5	19.1	160	0.05	0.03	0.15	**P5GU-013MFG019B**
Double acting magnetic	13	M5	25.4	160	0.05	0.03	0.17	**P5GU-013MSG025B**
Double acting magnetic	13	M5	25.4	160	0.05	0.03	0.17	**P5GU-013MFG025B**

Sensor part numbers: Page 330.

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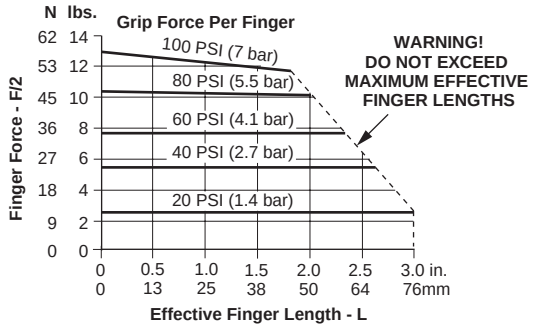
Loading information - P5GU-011***006



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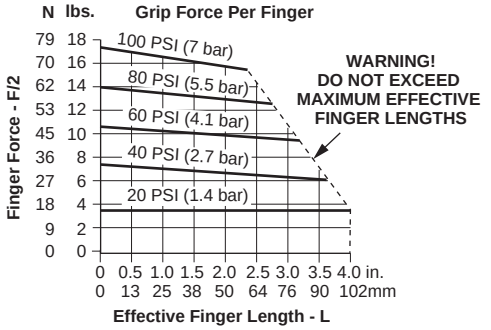

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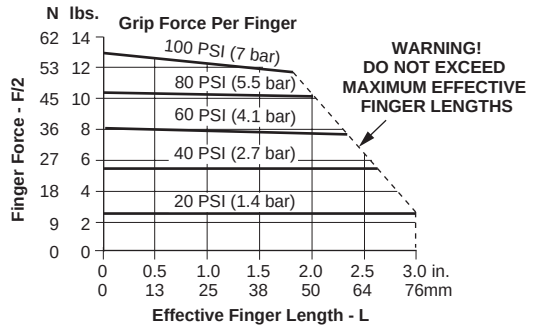

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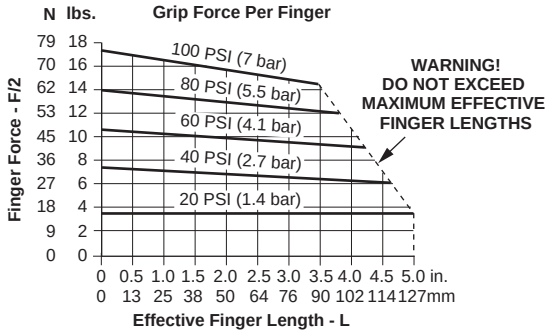
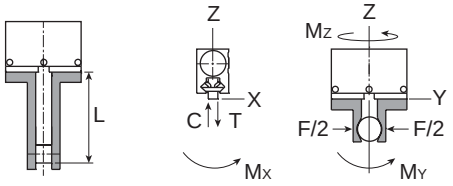


Loading capacity† - P5GU Clean Room Harsh Environment Series

	P5G-011***006		P5GU-011***013		P5GU-013***019		P5GU-013***025	
	Static (metric)	Dynamic (metric)	Static (metric)	Dynamic (metric)	Static (metric)	Dynamic (metric)	Static (metric)	Dynamic (metric)
Maximum tensile T	222 N	67 N	289 N	89 N	400 N	133 N	534 N	178 N
Maximum compressive C	222 N	67 N	289 N	89 N	400 N	133 N	534 N	178 N
Maximum moment Mx	3.4 Nm	1.1 Nm	5.1 Nm	1.7 Nm	6.8 Nm	2.3 Nm	8.5 Nm	2.8 Nm
Maximum moment My	4.5 Nm	1.4 Nm	6.8 Nm	2.3 Nm	9.0 Nm	2.8 Nm	11.3 Nm	4.0 Nm
Maximum moment Mz	3.4 Nm	1.1 Nm	5.1 Nm	1.7 Nm	6.8 Nm	2.3 Nm	8.5 Nm	2.8 Nm

† Capacities are per set of jaws and are not simultaneous



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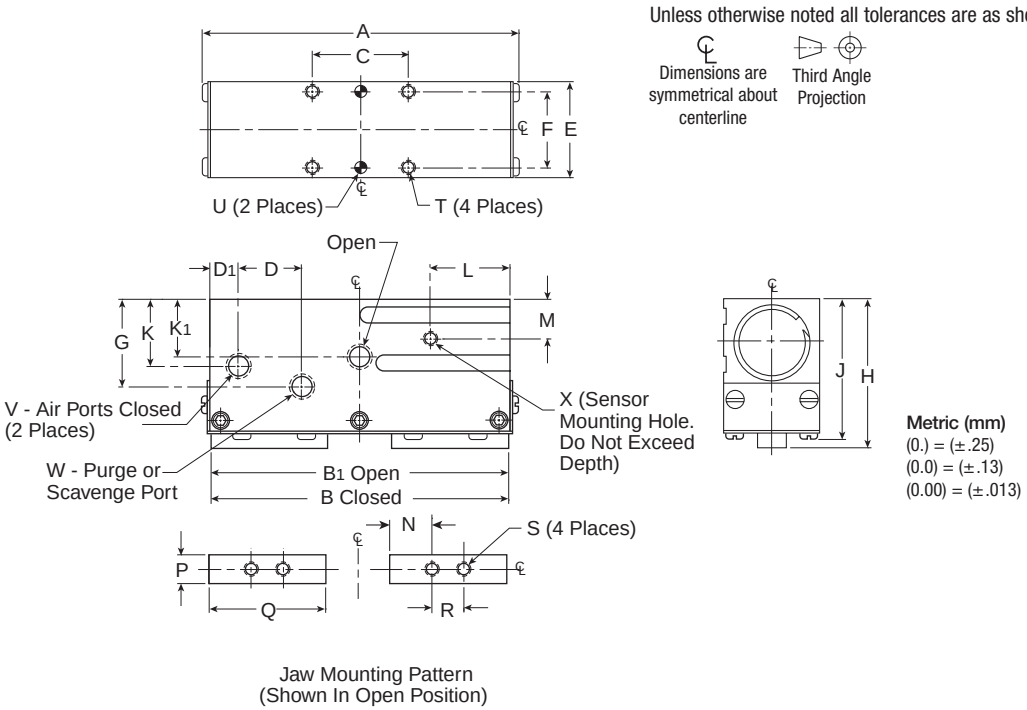
Dimensions: P5GU Clean Room Harsh Environment Series



Part number	A	B	B1	C	D	D1	E	F	G	H	J	K	K1	L	M	N	P	Q	R
P5GU-011(006)	48.3	38	44	19.1	8	6	19.1	15.09	17	29.5	27.8	13	11	11	8	6.4	$5.69^{+.003}_{-.003}$	19.1	6.4
P5GU-011(013)	62.9	46	59	19.1	13	6	19.0	15.09	17	29.5	27.8	13	11	16	8	8.3	$5.69^{+.003}_{-.003}$	23.2	6.4
P5GU-013(019)	83.4	63	83	25.4	14	15	22.2	16.66	18	32.6	30.3	13	11	19	8	12.7	$5.69^{+.003}_{-.003}$	31.8	6.4
P5GU-013(025)	101.8	76	101	25.4	14	24	22.2	16.66	18	32.6	30.3	13	11	25	8	15.9	$5.69^{+.003}_{-.003}$	38.1	6.4

Part number	S	T	U	V	W	X
P5GU-011(006)	M3 x 4 Dp	M3 x 4 Dp	Ø 3 SF x 4 Dp	M5	M5	M3 x 3 Dp
P5GU-011(013)	M3 x 4 Dp	M3 x 4 Dp	Ø 3 SF x 4 Dp	M5	M5	M3 x 4 Dp
P5GU-013(019)	M3 x 4 Dp	M3 x 8 Dp	Ø 3 SF x 6 Dp	M5	M5	M3 x 4 Dp
P5GU-013(025)	M3 x 4 Dp	M3 x 8 Dp	Ø 3 SF x 6 Dp	M5	M5	M3 x 4 Dp

Dimensions in millimeters

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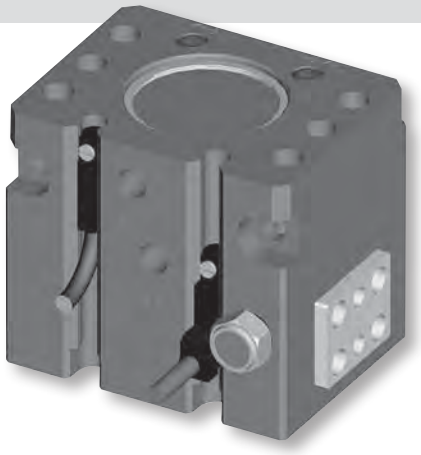
P5GN Compact Series

- One piece lightweight aircraft quality aluminum body
- The body and bottom plate have hard-coat anodize 60 RC with PTFE impregnation
- 3 standard air port locations (front, back, and top)
- Back and top air ports can be o-ring manifold sealed to eliminate air lines
- Standard mounting slots for magneto resistive (sensors sold separately)
- Slip fit dowel pin holes in body and jaws
- Jaws are supported throughout the length of the body
- Purge / scavenge port used with vacuum for clean room environments or positive pressure with harsh environments
- Jaw components made from hardened and precision ground steel for minimum jaw play with hard plating for wear resistance and long life
- Front-to-back thru counterbores for socket head cap screw mounting
- Magnetic piston standard



Operating information

Operating pressure:	1.5 to 7 bar (22 to 102 PSIG)
Temperature range:	
Nitrile seals (standard)	-35° to 80° C (-30° to 180° F)
Filtration requirements:	
Air filtration	40 micron or better
Air lubrication	Not necessary*
Air humidity	Low moisture content (dry)

*Addition of lubrication will greatly increase service life

Ordering Information: P5GN Compact Series

Function	Bore size (mm)	Ports (BSPP)	Stroke (mm)	Grip force @ 7 bar (N)	Accuracy +/- mm	Repeatability +/-mm	Weight (kg)	Part number
Double acting magnetic	12	M3	1.6	62	0.05	0.03	0.04	**P5GN-012MSG001B**
Double acting magnetic	12	M3	2.4	62	0.05	0.03	0.04	**P5GN-012MSG002B**
Double acting magnetic	12	M3	3.2	62	0.05	0.03	0.04	**P5GN-012MSG003B**
Double acting magnetic	14	M3	2.4	98	0.05	0.03	0.07	**P5GN-014MSG002B**
Double acting magnetic	14	M3	3.2	98	0.05	0.03	0.07	**P5GN-014MSG003B**
Double acting magnetic	14	M3	4.8	98	0.05	0.03	0.07	**P5GN-014MSG005B**
Double acting magnetic	22	M5	3.2	222	0.05	0.03	0.23	**P5GN-022MSG003B**
Double acting magnetic	22	M5	4.8	222	0.05	0.03	0.23	**P5GN-022MSG005B**
Double acting magnetic	22	M5	6.4	222	0.05	0.03	0.23	**P5GN-022MSG006B**
Double acting magnetic	32	M5	4.8	445	0.08	0.03	0.46	**P5GN-032MSG005B**
Double acting magnetic	32	M5	6.4	445	0.08	0.03	0.46	**P5GN-032MSG006B**
Double acting magnetic	32	M5	9.5	445	0.08	0.03	0.46	**P5GN-032MSG010B**

Sensor part numbers: Page 330.

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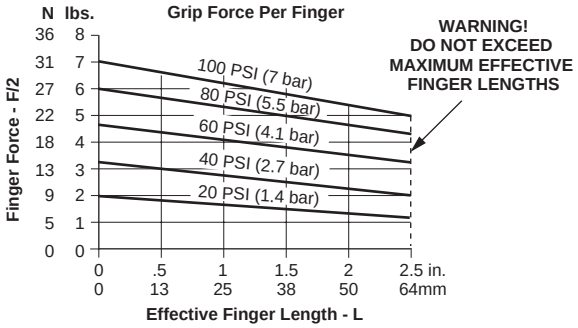
Loading information - P5GN-012



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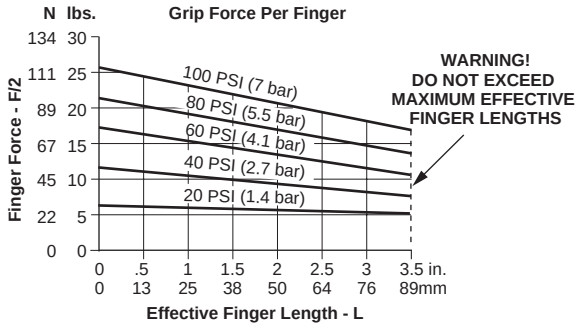

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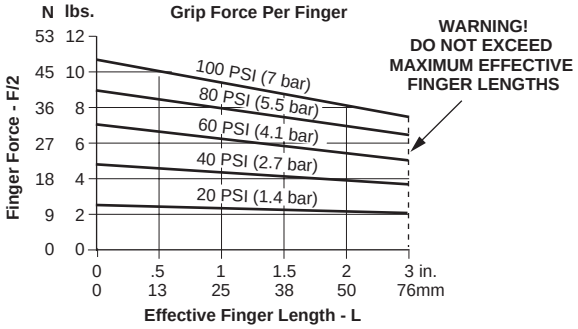

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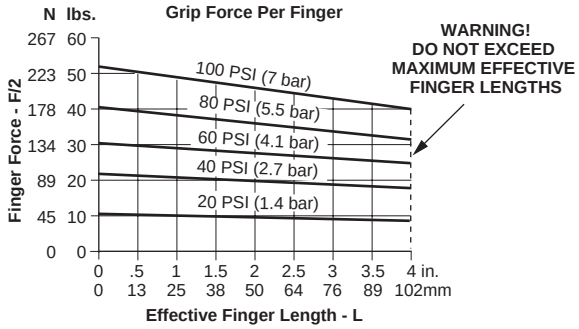
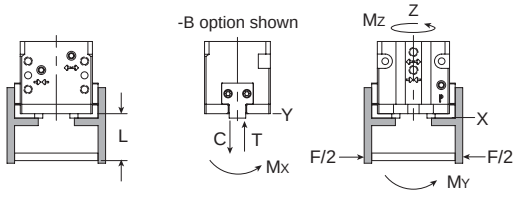


Loading capacity† - P5GN Compact Series

	P5GN-012		P5GN-014		P5GN-022		P5GN-032	
	Static (metric)	Dynamic (metric)	Static (metric)	Dynamic (metric)	Static (metric)	Dynamic (metric)	Static (metric)	Dynamic (metric)
Maximum tensile T	134 N	27 N	267 N	45 N	614 N	111 N	2225 N	289 N
Maximum compressive C	223 N	45 N	401 N	67 N	1224 N	111 N	4228 N	289 N
Maximum moment Mx	2 Nm	0.6 Nm	5 Nm	8 Nm	14 Nm	2 Nm	48 Nm	8 Nm
Maximum moment My	2 Nm	0.6 Nm	5 Nm	8 Nm	14 Nm	2 Nm	48 Nm	8 Nm
Maximum moment Mz	2 Nm	0.6 Nm	5 Nm	8 Nm	14 Nm	2 Nm	48 Nm	8 Nm

† Capacities are per set of jaws and are not simultaneous



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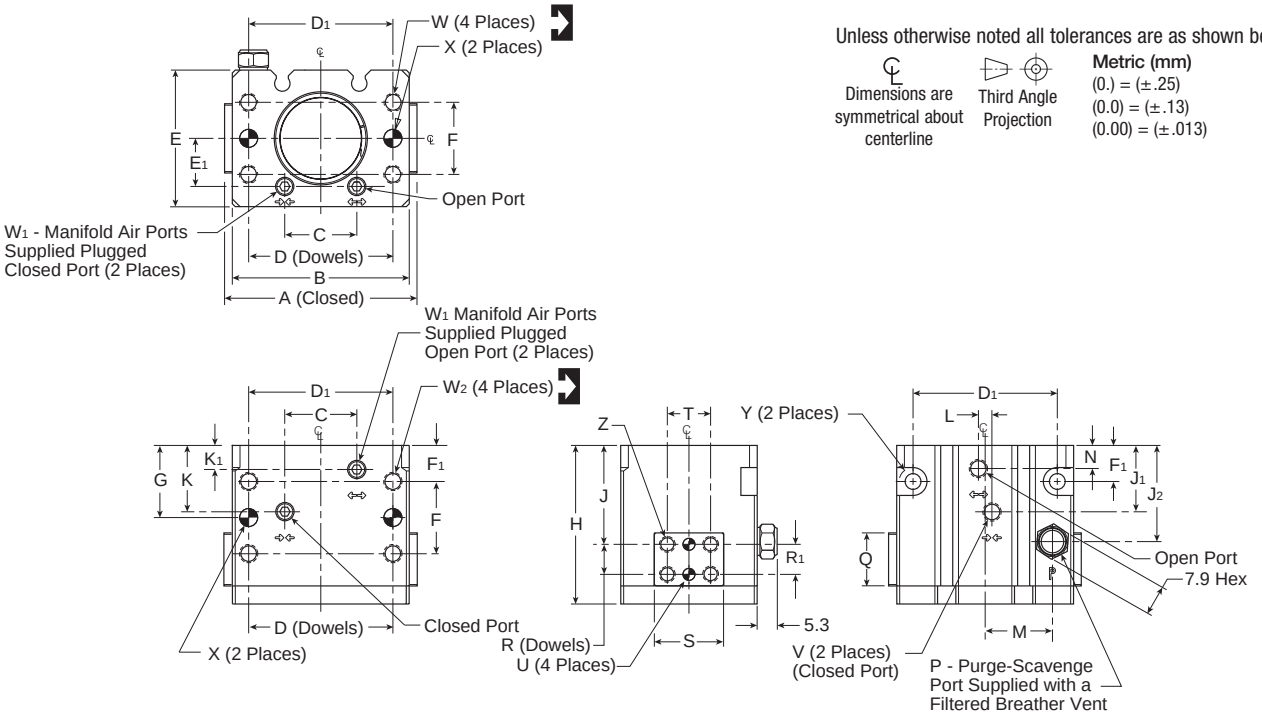
Dimensions: P5GN Compact Series



Unless otherwise noted all tolerances are as shown below

Dimensions are symmetrical about centerline

Third Angle Projection

Metric (mm)
(0.) = (±.25)
(0.0) = (±.13)
(0.00) = (±.013)

Part number	A	B	C	D	D1	E	E1	F	F1	G	H	J	J1	J2	K	K1	L	M	N	P
P5GN-012	28	24.4	10.2	19.05	19.1	22.2	7.9	9.5	6.7	11.4	24.4	17.6	9.7	14.7	9.7	3.6	–	9.4	3.6	M3 x 3 Dp
P5GN-014	35	31.2	10.2	19.05	19.1	24.1	8.6	9.5	8.0	12..7	27.4	19.9	11.2	17.0	11.2	3.6	–	11.7	3.6	M3 x 3 Dp
P5GN-022	51	46.7	19.1	38.10	38.1	36.1	12.7	19.1	9.5	19.1	41.9	26.1	17.5	25.4	17.5	6.1	3.6	17.8	6.1	M5 x 4 Dp
P5GN-032	64	59.7	22.9	38.10	38.1	43.2	16.5	19.1	12.7	22.2	51.2	31.3	19.8	30.5	19.8	6.4	4.1	22.4	6.4	M5 x 4 Dp

Part number	Q	R	R1	S	T	U	V	W	W1	W2	X	Y	Z
P5GN-012	$7.11^{+.000}_{-.003}$	3.81	–	$10.67^{+.000}_{-.003}$	6.4	Ø 2.0 H7 x 3 Dp	M3 x 3 Dp	M3 x 4 Dp	M3 x 3 Dp	M3 x 4 Dp	Ø 3 H7 x 3 Dp	Ø 5 x 4 Dp C'bore (for M2.5 SHCS)	M3 x 4 Dp (4 Places)
P5GN-014	$8.64^{+.000}_{-.003}$	4.76	–	$12.19^{+.000}_{-.003}$	7.1	Ø 2.5 H7 x 3 Dp	M3 x 3 Dp	M3 x 4 Dp	M3 x 3 Dp	M3 x 4 Dp	Ø 3 H7 x 3 Dp	Ø 5 x 3 Dp C'bore (for M2.5 SHCS)	M4 x 5 Dp (4 Places)
P5GN-022	$13.97^{+.000}_{-.003}$	7.94	8.0	$18.29^{+.000}_{-.003}$	11.4	Ø 3 H7 x 5 Dp	M5 x 4 Dp	M5 x 8 Dp	M5 x 5 Dp	M5 x 6 Dp	Ø 5 H7 x 5 Dp	Ø 7 x 4 Dp C'bore (for M4 SHCS)	M4 x 6 Dp (8 Places)
P5GN-032	$19.05^{+.000}_{-.003}$	11.11	11.1	$25.40^{+.000}_{-.003}$	15.9	Ø 4 H7 x 6 Dp	M5 x 4 Dp	M5 x 8 Dp	M5 x 5 Dp	M5 x 6 Dp	Ø 5 H7 x 6 Dp	Ø 7 x 4 Dp C'bore (for M4 SHCS)	M5 x 8 Dp (8 Places)

Dimensions in millimeters

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Pneumatic Division
Richland, Michigan
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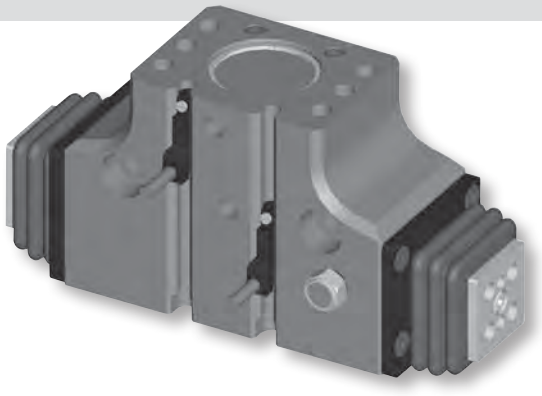
P5GM Parallel Series

- One piece lightweight aircraft quality aluminum body
- The body and bottom plate have hard-coat anodize 60 RC with PTFE impregnation
- 3 standard air port locations (front, back, and top)
- Back and top air ports can be o-ring manifold sealed to eliminate air lines
- Standard mounting slots for magneto resistive (sensors sold separately)
- Slip fit dowel pin holes in body and jaws
- Jaws are supported throughout the length of the body
- Purge / scavenge port used with vacuum for clean room environments or positive pressure with harsh environments
- Jaw components made from hardened and precision ground steel for minimum jaw play with hard plating for wear resistance and long life
- Front-to-back thru counterbores for socket head cap screw mounting
- Magnetic piston standard



Operating information

Operating pressure:	1.5 to 7 bar (22 to 102 PSIG)
Temperature range:	
Nitrile seals (standard)	-35° to 80° C (-30° to 180° F)
Filtration requirements:	
Air filtration	40 micron or better
Air lubrication	Not necessary*
Air humidity	Low moisture content (dry)

*Addition of lubrication will greatly increase service life

Ordering Information: P5GM Parallel Series

Function	Bore size (mm)	Ports (BSPP)	Stroke (mm)	Grip force @ 7 bar (N)	Accuracy +/- mm	Repeatability +/-mm	Weight (kg)	Part number
Double acting magnetic	10	M3	4.8	62	0.05	0.03	0.04	**P5GM-010MSG005B**
Double acting magnetic	10	M3	6.4	62	0.05	0.03	0.04	**P5GM-010MSG006B**
Double acting magnetic	10	M3	9.5	62	0.05	0.03	0.04	**P5GM-010MSG010B**
Double acting magnetic	14	M3	6.4	98	0.05	0.03	0.14	**P5GM-014MSG006B**
Double acting magnetic	14	M3	9.5	98	0.05	0.03	0.14	**P5GM-014MSG010B**
Double acting magnetic	14	M3	12.7	98	0.05	0.03	0.14	**P5GM-014MSG013B**
Double acting magnetic	22	M5	9.5	222	0.05	0.03	0.43	**P5GM-022MSG010B**
Double acting magnetic	22	M5	12.7	222	0.05	0.03	0.43	**P5GM-022MSG013B**
Double acting magnetic	22	M5	19.1	222	0.05	0.03	0.43	**P5GM-022MSG019B**
Double acting magnetic	32	M5	12.7	445	0.08	0.03	0.90	**P5GM-032MSG013B**
Double acting magnetic	32	M5	19.1	445	0.08	0.03	0.90	**P5GM-032MSG019B**
Double acting magnetic	32	M5	25.4	445	0.08	0.03	0.90	**P5GM-032MSG032B**

Sensor part numbers: Page 330.

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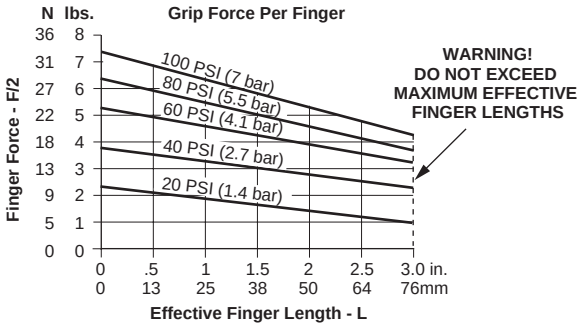
Loading information - P5GM-010



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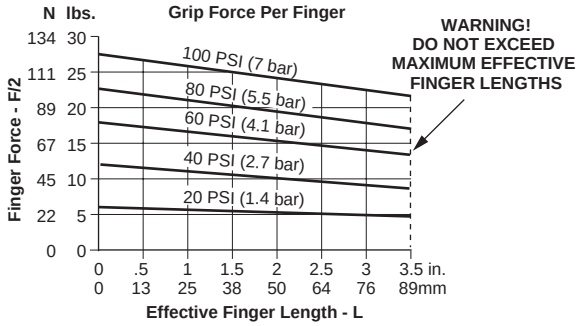

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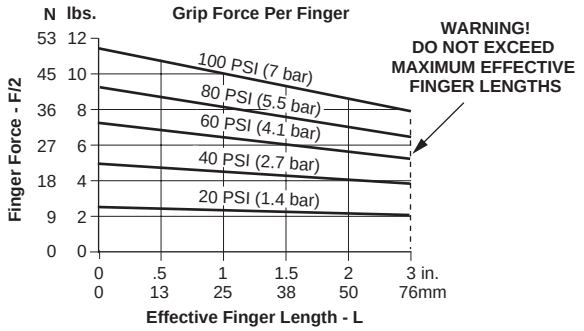

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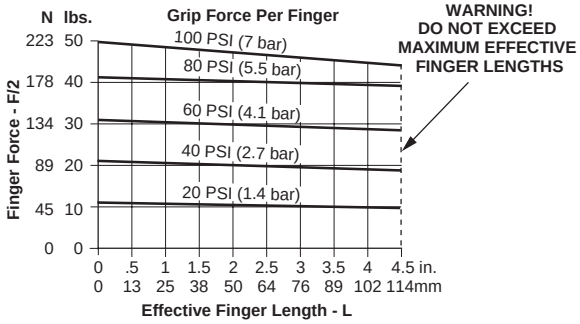
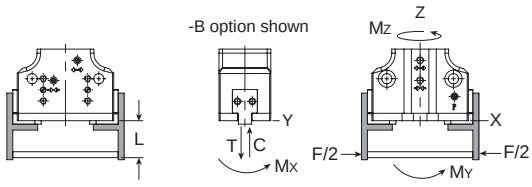


Loading capacity† - P5GM Parallel Series

	P5GM-010		P5GM-014		P5GM-022		P5GM-032	
	Static (metric)	Dynamic (metric)	Static (metric)	Dynamic (metric)	Static (metric)	Dynamic (metric)	Static (metric)	Dynamic (metric)
Maximum tensile T	445 N	67 N	556 N	111 N	1558 N	178 N	3004 N	401 N
Maximum compressive C	668 N	111 N	1113 N	111 N	2893 N	178 N	5785 N	401 N
Maximum moment Mx	10 Nm	2 Nm	13 Nm	2 Nm	28 Nm	5 Nm	73 Nm	12 Nm
Maximum moment My	10 Nm	2 Nm	13 Nm	2 Nm	28 Nm	5 Nm	73 Nm	12 Nm
Maximum moment Mz	10 Nm	2 Nm	13 Nm	2 Nm	28 Nm	5 Nm	73 Nm	12 Nm

† Capacities are per set of jaws and are not simultaneous



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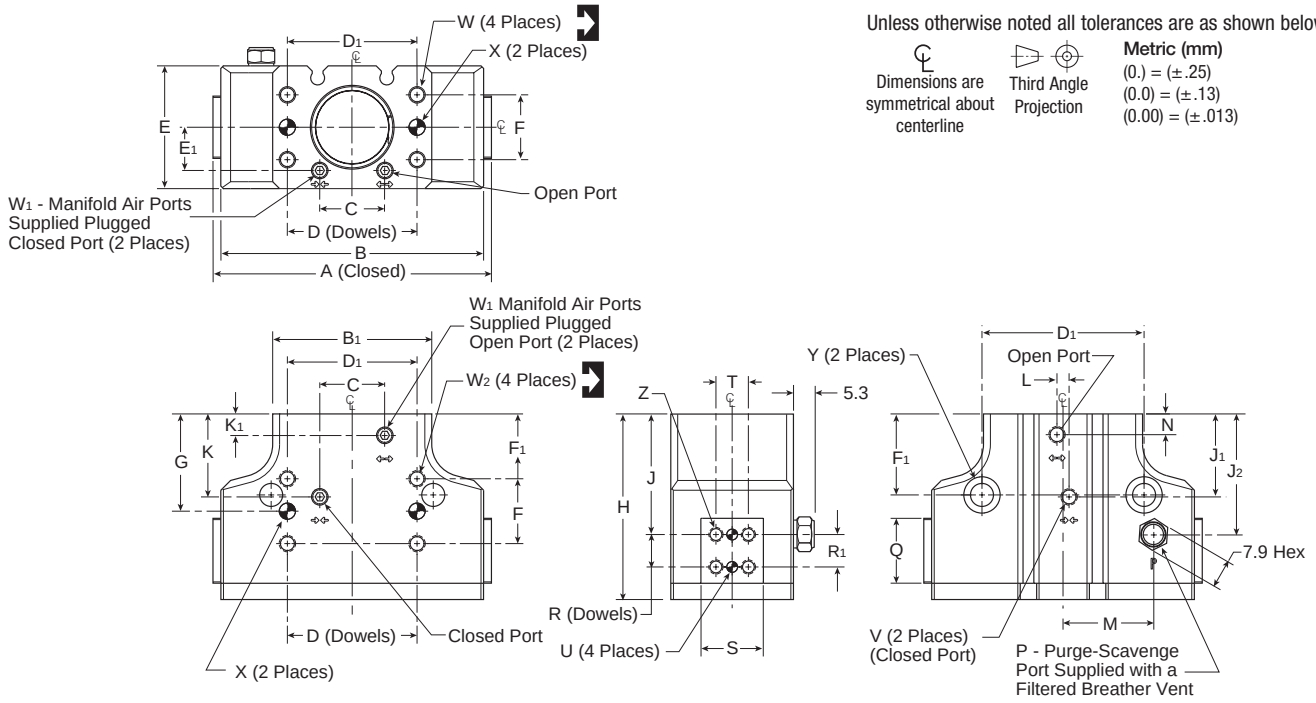
Dimensions: P5GM Parallel Series



Unless otherwise noted all tolerances are as shown below

Dimensions are symmetrical about centerline

Third Angle Projection

Metric (mm)
(0.) = (±.25)
(0.0) = (±.13)
(0.00) = (±.013)

Part number	A	B	B1	C	D	D1	E	E1	F	F1	G	H	J	J1	J2	K	K1	L	M	N	P
P5GM-010	45	41.4	24.4	10.2	19.05	19.1	22.2	7.9	9.5	12.7	17.5	30.7	22.4	13.5	20.3	13.5	3.6	–	14.7	3.6	M3 x 3 Dp
P5GM-014	56	52.6	31.2	10.2	19.05	19.1	24.1	8.6	9.5	15.8	20.6	36.2	26.6	15.7	23.4	15.7	3.6	–	17.3	3.6	M3 x 3 Dp
P5GM-022	82	77.2	46.7	19.1	38.10	38.1	36.1	12.7	19.1	19.1	28.6	54.5	35.4	24.4	35.6	24.4	6.1	3.6	26.7	6.1	M5 x 4 Dp
P5GM-032	103	98.8	59.7	22.9	38.10	38.1	43.2	16.5	19.1	28.6	38.1	67.0	41.6	29.2	43.2	29.2	6.4	4.1	35.1	6.4	M5 x 4 Dp

Part number	Q	R	R1	S	T	U	V	W	W1	W2	X	Y	Z
P5GM-010	10.67 $^{+.000}_{-.003}$	4.76	–	10.67 $^{+.000}_{-.003}$	6.4	Ø 2.0 H7 x 3 Dp	M3 x 3 Dp	M3 x 4 Dp	M3 x 3 Dp	M3 x 4 Dp	Ø 3 H7 x 3 Dp	Ø 7 x 4 Dp C'bore (for M4 SHCS)	M3 x 4 Dp (4 Places)
P5GM-014	12.70 $^{+.000}_{-.003}$	4.76	–	12.19 $^{+.000}_{-.003}$	7.1	Ø 2.5 H7 x 3 Dp	M3 x 3 Dp	M3 x 4 Dp	M3 x 3 Dp	M3 x 4 Dp	Ø 3 H7 x 3 Dp	Ø 7 x 4 Dp C'bore (for M4 SHCS)	M4 x 5 Dp (4 Places)
P5GM-022	19.05 $^{+.000}_{-.003}$	9.53	9.5	18.29 $^{+.000}_{-.003}$	9.5	Ø 3 H7 x 5 Dp	M5 x 3Dp	M5 x 8 Dp	M5 x 5 Dp	M5 x 6 Dp	Ø 5 H7 x 5 Dp	Ø 11 x 7 Dp C'bore (for M6 SHCS)	M4 x 6 Dp (8 Places)
P5GM-032	25.40 $^{+.000}_{-.003}$	15.88	15.9	25.40 $^{+.000}_{-.003}$	15.9	Ø 4 H7 x 6 Dp	M5 x 4 Dp	M5 x 8 Dp	M5 x 5 Dp	M5 x 6 Dp	Ø 5 H7 x 5 Dp	Ø 11 x 7 Dp C'bore (for M6 SHCS)	M5 x 8 Dp (8 Places)

Dimensions in millimeters

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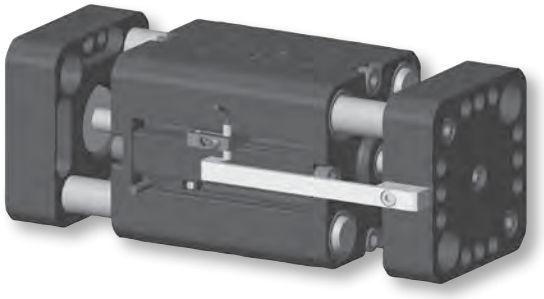
P5GS Wide Body Series

- C'bores on inside of jaws for thru mounting to increase range of applications
- Standard sensor mounting slots for magneto resistive and inductive sensors (sensors sold separately)
- End of stroke cushions reduce shock of fully open and close strokes
- Each jaw is supported by 2 shafts that extend the entire length of the body and are guided by 2 oil impregnated bronze bushings per shaft
- Hardened precision stainless steel shafting for wear resistance and long life
- Magneto resistive sensors are an alternative option to inductive sensors (magnets supplied standard)
- Top air ports can be o-ring manifold sealed to eliminate air lines
- 2 standard air port locations (front and top)
- Slip fit dowel pin holes in body and jaws
- Large jaw configuration allows for simplified finger mounting



Operating information

Operating pressure:	3 to 7 bar (44 to 102 PSIG)
Temperature range:	
Nitrile seals (Standard)	-35° to 80° C (-30° to 180° F)
Filtration requirements:	
Air filtration	40 micron or better
Air lubrication	Not necessary*
Air humidity	Low moisture content (dry)

*Addition of lubrication will greatly increase service life

Ordering Information: P5GS Wide Body Series

Function	Bore size (mm)	Ports (BSPP)	Stroke (mm)	Grip force @ 7 bar (N)	Accuracy +/- mm	Repeatability +/-mm	Weight (kg)	Part number
Double acting magnetic	16	M3	19.1	222	0.08	0.03	0.30	**P5GS-016MSG019B**
Double acting magnetic	16	M3	31.8	222	0.08	0.03	0.39	**P5GS-016MSG032B**
Double acting magnetic	24	M5	25.4	445	0.08	0.03	0.81	**P5GS-024MSG025B**
Double acting magnetic	24	M5	50.8	445	0.08	0.03	1.20	**P5GS-024MSG051B**
Double acting magnetic	32	M5	38.1	800	0.08	0.03	1.48	**P5GS-032MSG038B**
Double acting magnetic	32	M5	73.5	800	0.08	0.03	2.0	**P5GS-032MSG074B**

Sensor part numbers: Page 330.

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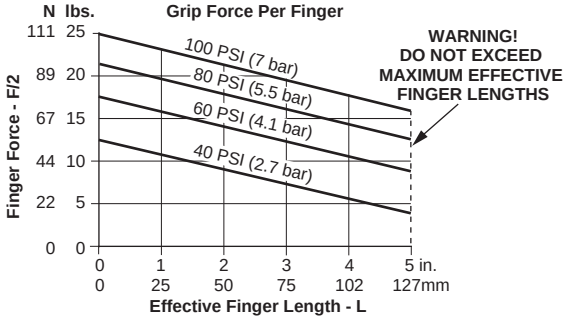
Loading information - P5GS-016MSG019B



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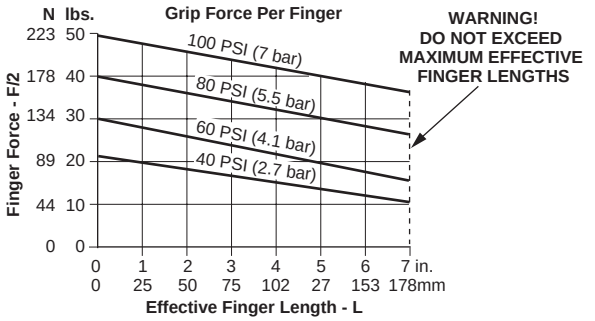

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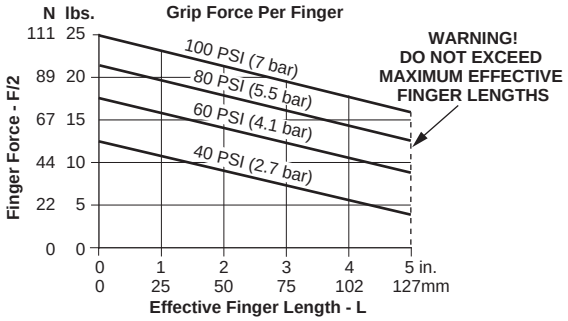

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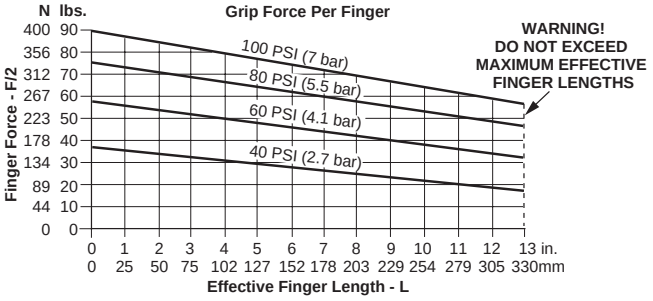

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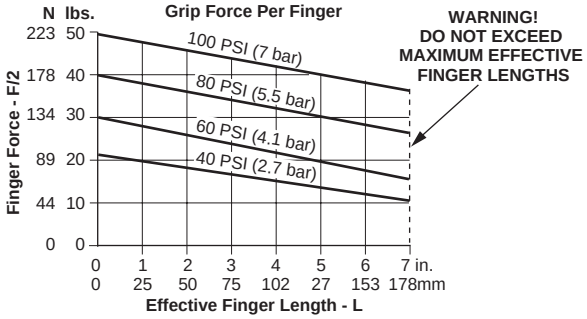

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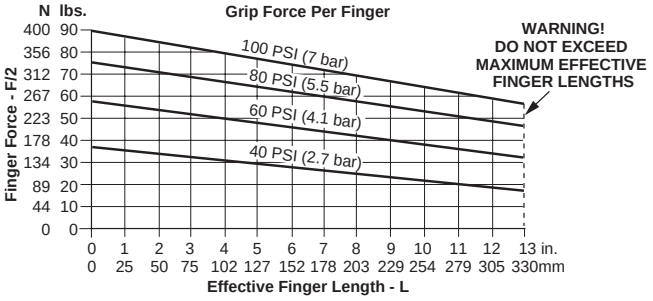
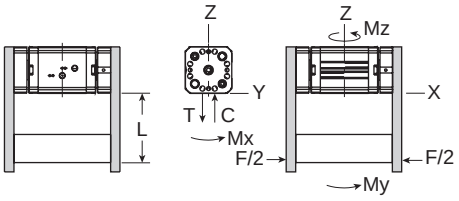


Loading capacity† - P5GS Wide Body Series

	P5GS-016M***19B		P5GS-016M***32B		P5GS-024M***25B		P5GS-024M***51B		P5GS-032M***38B		P5GS-032M***74B	
	Static (metric)	Dynamic (metric)	Static (metric)	Dynamic (metric)	Static (metric)	Dynamic (metric)	Static (metric)	Dynamic (metric)	Static (metric)	Dynamic (metric)	Static (metric)	Dynamic (metric)
Maximum tensile T	267 N	53 N	267 N	53 N	534 N	107 N	534 N	107 N	2668 N	267 N	2668 N	267 N
Maximum compressive C	267 N	53 N	267 N	53 N	534 N	107 N	534 N	107 N	2668 N	267 N	2668 N	267 N
Maximum moment Mx	14 Nm	3 Nm	14 Nm	3 Nm	24 Nm	5 Nm	24 Nm	5 Nm	68 Nm	7 Nm	68 Nm	7 Nm
Maximum moment My	20 Nm	4 Nm	20 Nm	4 Nm	34 Nm	7 Nm	34 Nm	7 Nm	102 Nm	10 Nm	102 Nm	10 Nm
Maximum moment Mz	14 Nm	3 Nm	14 Nm	3 Nm	24 Nm	5 Nm	24 Nm	5 Nm	68 Nm	7 Nm	68 Nm	7 Nm

† Capacities are per set of jaws and are not simultaneous



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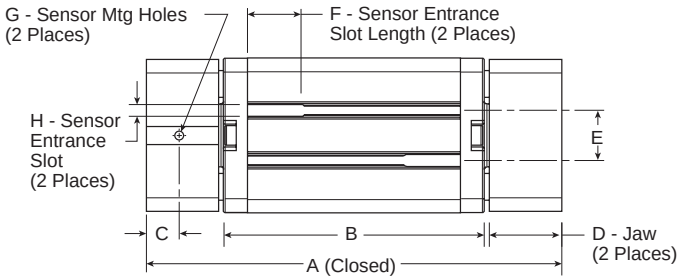
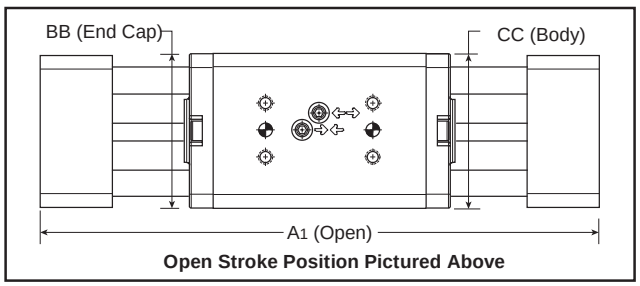
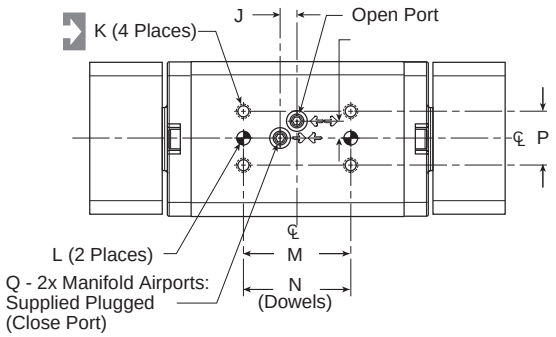
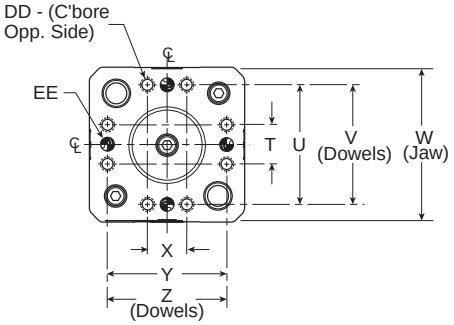
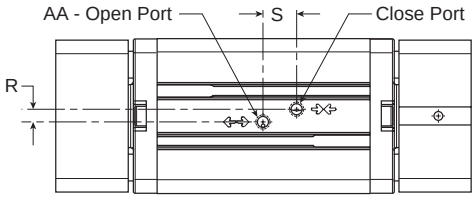
Dimensions: P5GS Wide Body Series











Unless otherwise noted all tolerances are as shown below

℄ Dimensions are symmetrical about centerline

Third Angle Projection

Metric (mm)
(0.) = (±.25)
(0.0) = (±.13)
(0.00) = (±.013)

Part number	A	A1	B	C	D	E	F	G	H	J	K	L	M	N	P	Q
P5GS-016MSG019B	79	98	54.4	5.8	10.5	7.9	19.1	M3 x 3 Dp	4.2	4	M3 x 5 Dp	Ø 3h7 x 5 Dp	19.0	19.05	9.5	M3 x 5 Dp
P5GS-016MSG032B	104	136	67.1	7.3	16.9	7.9	19.1	M3 x 3 Dp	4.2	4	M3 x 5 Dp	Ø 3h7 x 5 Dp	19.1	19.05	9.5	M3 x 5 Dp
P5GS-024MSG025B	97	122	67.1	6.7	13.0	17.8	19.1	M3 x 4 Dp	4.2	6	M3 x 7 Dp	Ø 5h7 x 5 Dp	38.1	38.10	19.1	M5 x 7 Dp
P5GS-024MSG051B	147	198	92.5	11.7	25.7	17.8	19.1	M3 x 4 Dp	4.2	6	M3 x 7 Dp	Ø 5h7 x 5 Dp	38.1	38.10	19.1	M5 x 7 Dp
P5GS-032MSG038B	125	164	82.8	12.1	19.2	18.8	19.1	M3 x 4 Dp	4.2	6	M3 x 8 Dp	Ø 5h7 x 5 Dp	38.1	38.10	19.1	M5 x 5 Dp
P5GS-032MSG074B	177	240	108.2	14.9	39.1	18.8	19.1	M3 x 4 Dp	4.2	6	M3 x 8 Dp	Ø 5h7 x 5 Dp	38.1	38.10	19.1	M5 x 7 Dp

Part number	R	S	T	U	V	W	X	Y	Z	AA	BB	CC	DD	EE
P5GS-016MSG019B	6	10	10.0	30.0	30.00	37.6	10.0	30.0	30.00	M5 x 5 Dp	37.6	38.0	M4 x 8 Dp	Ø 4h7 x 5 Dp
P5GS-016MSG032B	6	12	10.0	30.0	30.00	37.6	10.0	30.0	30.00	M5 x 5 Dp	37.6	38.0	M4 x 8 Dp	Ø 4h7 x 5 Dp
P5GS-024MSG025B	5	11	14.0	42.5	42.50	54.0	14.0	42.5	42.50	M5 x 6 Dp	54.7	55.0	M5 x 10 Dp	Ø 5h7 x 5 Dp
P5GS-024MSG051B	5	12	14.0	42.5	42.50	54.0	14.0	42.5	42.50	M5 x 6 Dp	54.7	55.0	M5 x 10 Dp	Ø 5h7 x 5 Dp
P5GS-032MSG038B	5	15	18.0	51.0	51.00	63.0	18.0	51.0	51.00	M5 x 6 Dp	63.7	64.0	M6 x 13 Dp	Ø 6h7 x 8 Dp
P5GS-032MSG074B	5	15	18.0	51.0	51.00	63.0	18.0	51.0	51.00	M5 x 6 Dp	63.7	64.0	M6 x 13 Dp	Ø 6h7 x 8 Dp

Dimensions in millimeters

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P5GT Double Wedge Series

- Extremely compact and robust package
- One piece 7075 -T6 aircraft quality aluminum body
- Dynamic components are hardened for wear resistance and long life
- Accessory mounting holes mount sensors to unit
- Slip fit dowel pin holes in body and jaws
- Jaws are supported throughout the length of the body and are precision ground for minimal jaw play
- A double acting piston is connected by a shaft to a double sided wedge
- The wedge slides in a slot located in each of the jaws converting vertical motion of the wedge into horizontal synchronous motion of the jaws
- The large surface area of the wedge minimizes frictional wear
- Magnetic piston standard

Operating information

Operating pressure:	3 to 7 bar (44 to 102 PSIG)
Temperature range:	
Nitrile seals (standard)	-35° to 80° C (-30° to 180° F)
Fluorocarbon seals (optional)	-30° to 150° C (-20° to 300° F)
Filtration requirements:	
Air filtration	40 micron or better
Air lubrication	Not necessary*
Air humidity	Low moisture content (dry)

*Addition of lubrication will greatly increase service life

Ordering Information: P5GT Double Wedge Series

Function	Bore size (mm)	Ports (BSPP)	Stroke (mm)	Grip force @ 7 bar (N)	Accuracy +/- mm	Repeatability +/-mm	Weight (kg)	Part number
Double acting magnetic, Nitrile	25	M5	6.4	178	0.05	0.03	0.12	**P5GT-025MSG006B**
Double acting magnetic, Fluorocarbon	25	M5	6.4	178	0.05	0.03	0.12	**P5GT-025MFG006B**
Double acting magnetic, Nitrile	25	M5	9.5	178	0.05	0.03	0.25	**P5GT-025MSG010B**
Double acting magnetic, Fluorocarbon	25	M5	9.5	178	0.05	0.03	0.25	**P5GT-025MFG010B**
Double acting magnetic, Nitrile	32	M5	12.7	311	0.05	0.03	0.57	**P5GT-032MSG013B**
Double acting magnetic, Fluorocarbon	32	M5	12.7	311	0.05	0.03	0.57	**P5GT-032MFG013B**
Double acting magnetic, Nitrile	46	1/8	19.1	979	0.08	0.03	1.0	**P5GT-046MSG019B**
Double acting magnetic, Fluorocarbon	46	1/8	19.1	979	0.08	0.03	1.0	**P5GT-046MFG019B**
Double acting magnetic, Nitrile	64	1/8	31.8	1779	0.08	0.03	3.5	**P5GT-064MSG032B**
Double acting magnetic, Fluorocarbon	64	1/8	31.8	1779	0.08	0.03	3.5	**P5GT-064MFG032B**
Double acting magnetic, Nitrile	89	1/4	50.8	2669	0.08	0.03	9.5	**P5GT-089MSG051B**
Double acting magnetic, Fluorocarbon	89	1/4	50.8	2669	0.08	0.03	9.5	**P5GT-089MFG051B**

Sensor part numbers: Page 330.

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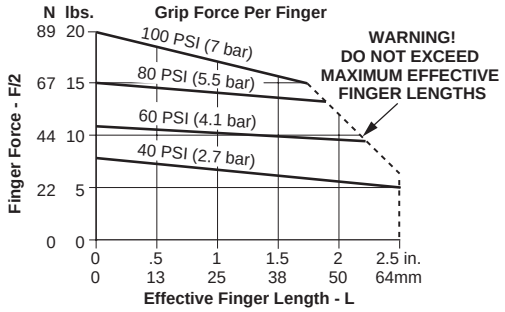
Loading information - P5GT-025/006



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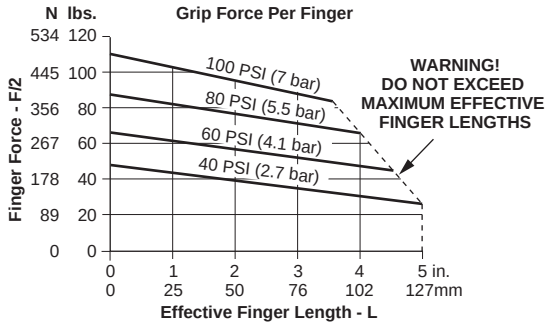

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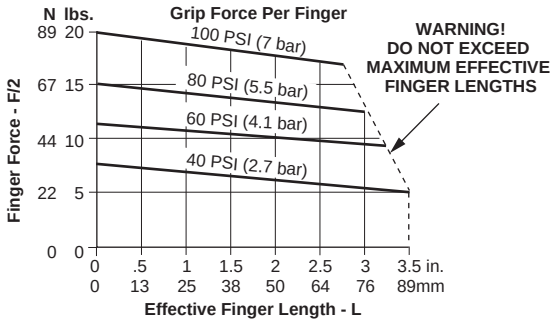
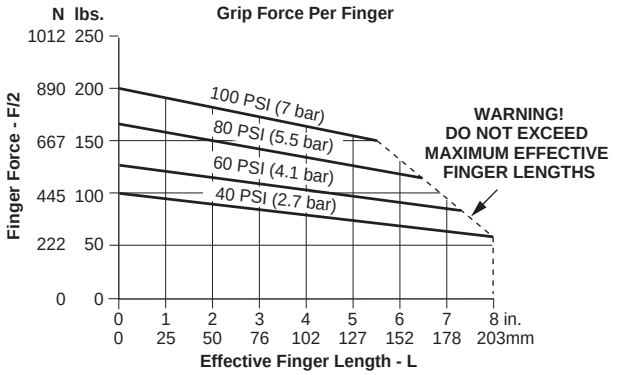


Loading information - P5GT-064



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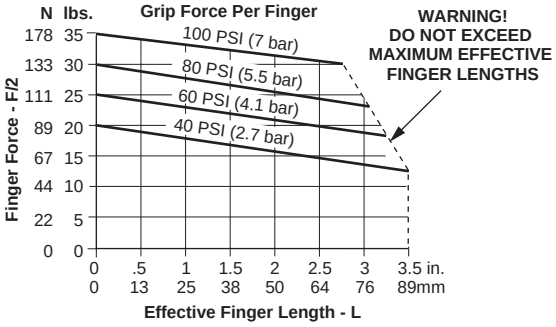
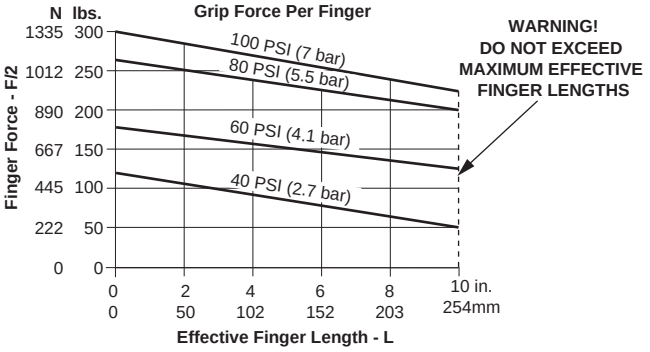


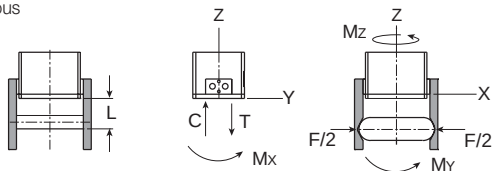
Loading information - P5GT-089



Loading capacity† - P5GT Double Wedge Series

	P5GT-025(006)		P5GT-025(010)		P5GT-032		P5GT-046		P5GT-064		P5GT-089	
	Static (metric)	Dynamic (metric)	Static (metric)	Dynamic (metric)	Static (metric)	Dynamic (metric)	Static (metric)	Dynamic (metric)	Static (metric)	Dynamic (metric)	Static (metric)	Dynamic (metric)
Maximum tensile T	445 N	111 N	890 N	111 N	1779 N	222 N	3336 N	445 N	6672 N	1112 N	13345 N	1334 N
Maximum compressive C	890 N	111 N	1779 N	111 N	3336 N	222 N	6672 N	445 N	13345 N	1112 N	26689 N	1334 N
Maximum moment Mx	11 Nm	2 Nm	17 Nm	3 Nm	34 Nm	6 Nm	85 Nm	14 Nm	170 Nm	28 Nm	565 Nm	56 Nm
Maximum moment My	11 Nm	2 Nm	17 Nm	3 Nm	34 Nm	6 Nm	85 Nm	14 Nm	170 Nm	28 Nm	565 Nm	56 Nm
Maximum moment Mz	11 Nm	2 Nm	17 Nm	3 Nm	34 Nm	6 Nm	85 Nm	14 Nm	170 Nm	28 Nm	565 Nm	56 Nm

† Capacities are per set of jaws and are not simultaneous



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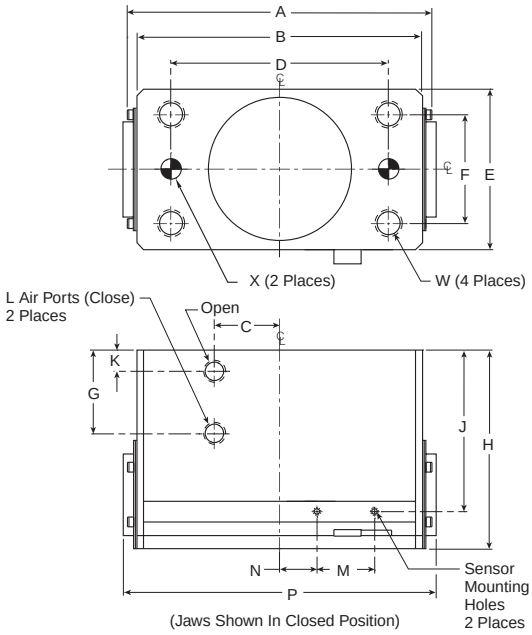
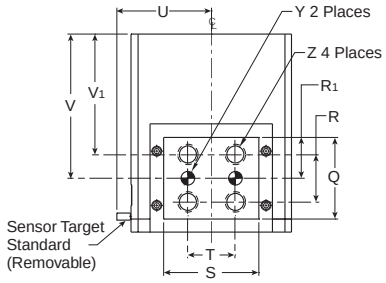
Dimensions: P5GT Double Wedge Series





Unless otherwise noted all tolerances are as shown below

Dimensions are symmetrical about centerline

Third Angle Projection

Metric (mm)
(0.) = (±.25)
(0.0) = (±.13)
(0.00) = (±.013)

Part number	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q
P5GT-025(006)	–	38.1	20	31.75	31.8	12.70	17	28.6	9	5	M5	25	–	Open 48 Closed 41	9.55 $^{+.000}_{-.003}$
P5GT-025(010)	–	50.8	23	38.10	38.1	25.40	12	35.6	14	9	M5	14	6	Open 63 Closed 54	12.34 $^{+.000}_{-.003}$
P5GT-032	70.4	63.50	30	50.80	41.3	19.05	14.4	47.3	18	7	M5	17	3	Open 81 Closed 68	18.69 $^{+.000}_{-.003}$
P5GT-046	89.6	82.55	25	63.50	54.0	25.40	25	61.9	46	8	G1/8	27	5	Open 108 Closed 85	25.43 $^{+.000}_{-.003}$
P5GT-064	142.2	133.35	–	101.60	74.9	50.8	39	92.8	75	10	G1/8	27	17	Open 177 Closed 146	38.10 $^{+.000}_{-.003}$
P5GT-089	214.7	203.20	–	152.40	100.3	69.9	47	118.2	98	11	G1/4	56	25	Open 266 Closed 216	47.63 $^{+.000}_{-.003}$

Part number	R	S	T	U	V	W	X	Y	Z	Z_1
P5GT-025(006)	6.35	15.88 $^{+.000}_{-.003}$	7.9	22.2	21.5	M4 x 9 Dp	Ø 3H7 x 6 Dp	Ø 2H7 x 4 Dp	M4 x 4.7 Dp	M3 x 4 Dp
P5GT-025(010)	7.95	18.67 $^{+.000}_{-.003}$	12.7	25.4	26.3	M6 x 12 Dp	Ø 5H7 x 6 Dp	Ø 2.5H7 x 4 Dp	M4 x 7 Dp	M3 x 4 Dp
P5GT-032	9.53	25.01 $^{+.000}_{-.003}$	17.5	27.0	28.5	M6 x 12 Dp	Ø 5H7 x 6 Dp	Ø 4H7 x 4 Dp	M5 x 9 Dp	M3 x 4 Dp
P5GT-046	12.70	31.78 $^{+.000}_{-.003}$	19.1	33.3	38.1	M10 x 19 Dp	Ø 6H7 x 12 Dp	Ø 5H7 x 9 Dp	M6 x 12 Dp	M3 x 6 Dp
P5GT-064	22.2	44.48 $^{+.000}_{-.003}$	22.23	44.2	67.4	M12 x 25 Dp	Ø 10H8 x 12 Dp	Ø 8H7 x 12 Dp	M10 x 19 Dp	M3 x 9 Dp
P5GT-089	28.57	57.10 $^{+.000}_{-.003}$	34.9	56.9	70.7	M20 x 38 Dp	Ø 12H8 x 19 Dp	Ø 6H7 x 12 Dp	M12 x 28 Dp	M3 x 9 Dp

Dimensions in millimeters

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

P5GP Electric Gripper Series

- One piece, lightweight aircraft quality aluminum body ensures product accuracy
- The body and jaws are hard-coat anodized to 60 RC with PTFE impregnation
- Ridged design and full body support of the jaws allows for long finger lengths
- Versatile mounting on top, side front and back of body.
- IP54 rating for tough application environments
- Slip fit dowel pin holes located in body and jaws for precision mounting
- Precision rack and pinion drive components for smooth actuation. Zero backlash while gripping ensures excellent repeatability and accuracy.
- Built in electronics, no external control board needed
- Magnetic piston standard

Operating information

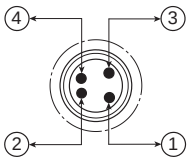
Voltage:	24VDC
Power Req. @ 100% Duty Cycle:	4.2 Watts
Current - Peak:	1.5 Amps Max.
Current - Continuous:	0.175 Amps
Temperature range:	5° to 60° C (41° to 140° F)

Ordering Information: P5GP Electric Gripper Series

Function	Stroke (mm)	Grip force (N)	Accuracy +/- mm	Repeatability +/-mm	Weight (kg)	Part number
Electric	25	111	0.051	0.025	0.53	**P5GP-000ESX025B**

Sensor part numbers: Page 330.

Electrical Interface



Pin Out (Looking Into Header Connector On Gripper)

1 ..... Brown (+ 24 VDC)
2 ..... White (Open Gripper) +24 VDC = Active
3 ..... Blue (Ground)
4 ..... Black (Close Gripper) +24 VDC = Active

4-Wire Power & Signal Cable: P8S-CABL-046

Most popular.

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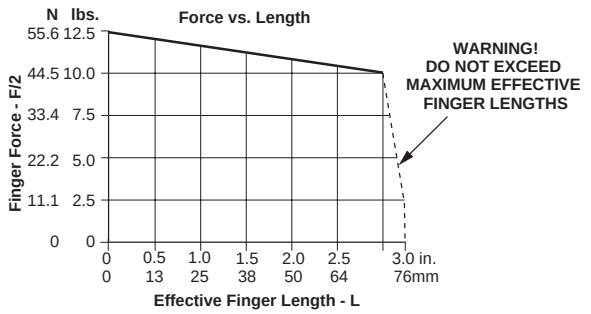
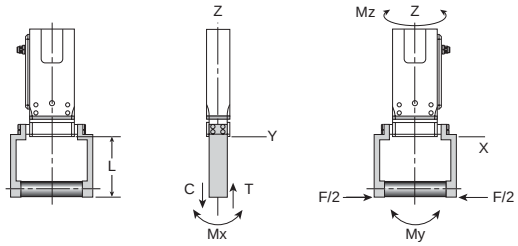
Loading information - P5GP-000



Loading capacity† - P5GP Electric Gripper

	Static (metric)
Maximum tensile T	10 N
Maximum compressive C	10 N
Maximum moment Mx	14 Nm
Maximum moment My	17 Nm
Maximum moment Mz	14 Nm

† Capacities are per set of jaws and are not simultaneous



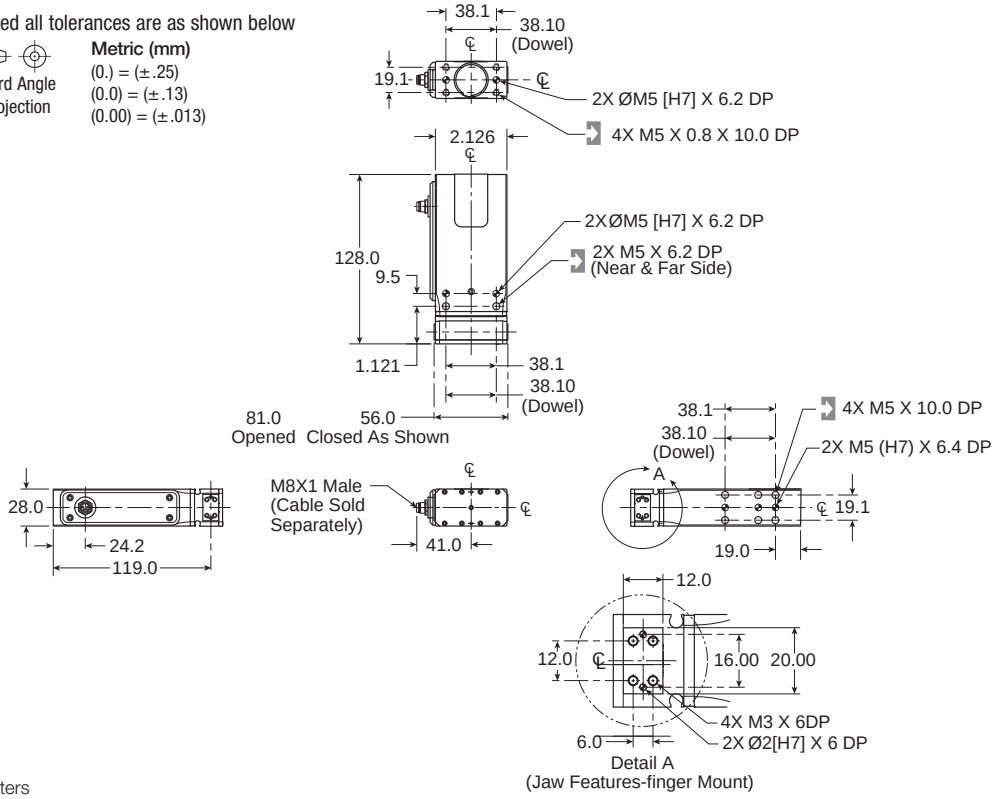
Dimensions: P5GP Electric Gripper Series

Unless otherwise noted all tolerances are as shown below

℄ Dimensions are symmetrical about centerline

Third Angle Projection

Metric (mm)
(0.) = (±.25)
(0.0) = (±.13)
(0.00) = (±.013)



Dimensions in millimeters

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

P5GQ Electric Gripper Series - High Force

- Gripper is available in two stroke lengths, standard and extended stroke
- Ridged design and full body support of the jaws allows for long finger lengths
- Finger locating sleeves for precise finger mounting (standard)
- Slip fit dowel pin holes located in body and jaws for precision mounting
- Jaw components hardened and precision ground steel for minimum jaw play with hard plating for wear resistance and long life
- IP50
- Grip force can be changed on the fly using 0-5V analog input
- No external controller needed, 8-pin cable sold seperately
- Magnetic piston standard

Operating information

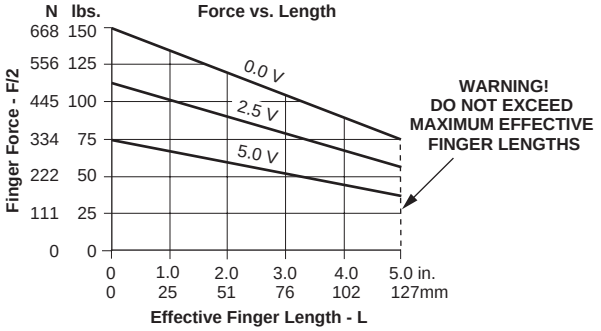
Voltage:	24VDC
Power Req. @ 100% Duty Cycle:	10 Watts
Current - Peak:	2 Amps Max.
Current - Continuous:	0.4 Amps
Temperature range:	0° to 55° C (32° to 131° F)

Ordering Information: P5GQ Electric Gripper Series - High Force

Function	Gripping mode	Stroke (mm)	Grip force @ 7 bar (N)	Accuracy +/- mm	Repeatability +/-mm	Weight (kg)	Part number
Electric	ID	10.0	667-1334	0.05	0.025	2.52	**P5GQ-000RSX010B**
Electric	ID	20.0	445-890	0.05	0.025	2.52	**P5GQ-000RSX020B**
Electric	OD	10.0	667-1334	0.05	0.025	2.52	**P5GQ-000QSX010B**
Electric	OD	20.0	445-890	0.05	0.025	2.52	**P5GQ-000QSX020B**

Sensor part numbers: Page 330.

Loading information - P5GQ-000*010



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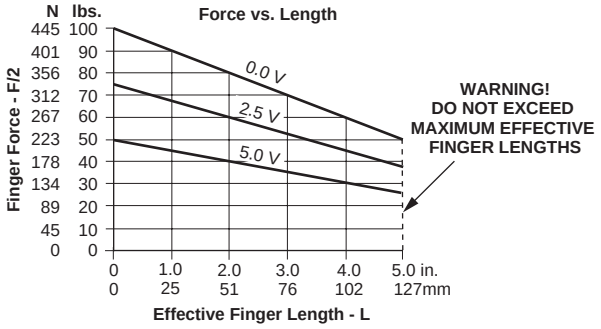
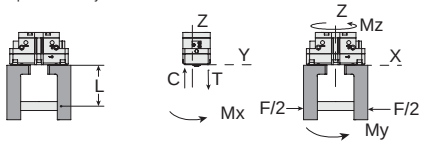


Loading capacity† - P5GQ-000*010

	Static (metric)	Dynamic (Metric)
Maximum tensile T	1564 N	259 N
Maximum compressive C	2070 N	259 N
Maximum moment Mx	76 Nm	10 Nm
Maximum moment My	106 Nm	14 Nm
Maximum moment Mz	70 Nm	14 Nm

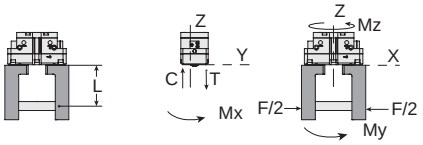
† Capacities are per set of jaws and are not simultaneous



Loading capacity† - P5GQ-000*020

	Static (metric)	Dynamic (Metric)
Maximum tensile T	1394 N	168 N
Maximum compressive C	1845 N	168 N
Maximum moment Mx	68 Nm	6 Nm
Maximum moment My	84 Nm	8 Nm
Maximum moment Mz	56 Nm	8 Nm

† Capacities are per set of jaws and are not simultaneous



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Pneumatic Division
Richland, Michigan
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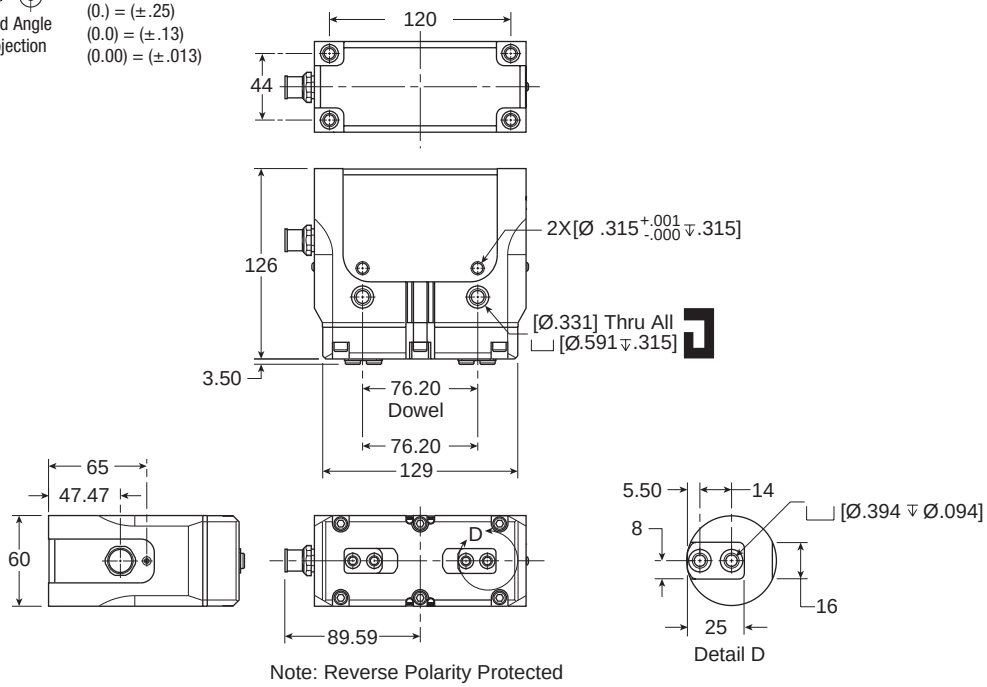
Dimensions: P5GQ Electric Gripper Series - High Force

Unless otherwise noted all tolerances are as shown below

Dimensions are symmetrical about centerline

Third Angle Projection

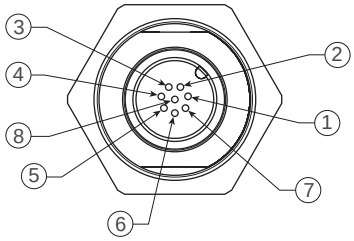
Metric (mm)
(0.) = (±.25)
(0.0) = (±.13)
(0.00) = (±.013)



Note: Reverse Polarity Protected

P8S-CABL-052: 8 Wire power and signal cable, 5m long, straight M12 connector

P8S-CABL-053: 8 Wire power and signal cable, 5m long, 90 degree M12 connector



Electrical interface: Pin out (Looking into the head of the connector on gripper)

Pin #	Color	Signal	Description	Current
1	White	Force	0-5 VDC (Analog)	5mA
2	Brown	+24V	Motor power	2A (max), 0.4 A (avg)
3	Green	Open	24 VDC active (Inputs)	10mA
4	Yellow	Open sense	NPN / PNP (Outputs)	300mA (max)
5	Gray	Close	24 VDC active (Inputs)	10mA
6	Pink	Close sense	NPN / PNP (Outputs)	300mA (max)
7	Blue	Ground	Motor ground	2A (max)
8	Red	I/O power	24 VDC (PNP outputs only)	300mA (max)

Dimensions in millimeters

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
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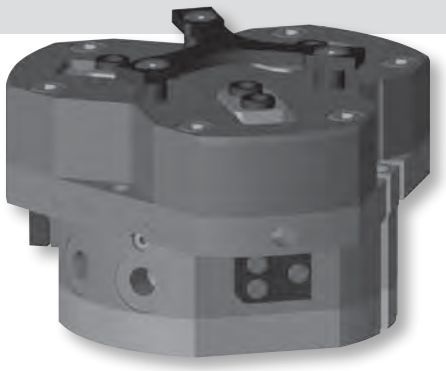
P5GW 3-Jaw Centering Series

- Multiple side or top air ports (top ports require o-ring)
- Optional spring assist retains the component should the air supply fail, to assist the gripper for internal (-O) or external (-C) gripping, or in single acting or spring assist mode
- Finger locating sleeves for precise finger mounting
- Jaw components hardened and precision ground steel for minimum jaw play with hard plating for wear resistance and long life
- Standard purge / scavenge port used with vacuum for clean room environments or positive pressure for harsh environments
- Gripper can be mounted from the top or bottom
- Gripper body is shielded to repel chips and other particulate from internal drive mechanism
- Magnetic piston standard



Operating information

Operating pressure:	0.3 to 7 bar (4 to 102 PSIG)
Temperature range:	
Nitrile seals (Standard)	-35° to 80° C (-30° to 180° F)
Fluorocarbon seals (Optional)	-30° to 150° C (-20° to 300° F)
Filtration requirements:	
Air filtration	40 micron or better
Air lubrication	Not necessary*
Air humidity	Low moisture content (dry)

*Addition of lubrication will greatly increase service life

Ordering Information: P5GW 3-Jaw Centering Series

Function	Bore size (mm)	Stroke (mm)	Grip force @ 7 bar (N)	Accuracy +/- mm	Repeatability +/-mm	Weight (kg)	Part number Fluorocarbon	Part number Nitrile
Double acting magnetic	32	4.0	682	0.04	0.02	0.25	**P5GW-032MFG004B**	**P5GW-032MSG004B**
Double acting magnetic	43	6.0	1238	0.04	0.02	0.53	**P5GW-043MFG006B**	**P5GW-043MSG006B**
Double acting magnetic	55	8.0	2078	0.04	0.02	1.08	**P5GW-055MFG008B**	**P5GW-055MSG008B**
Double acting magnetic	72	10.0	3644	0.06	0.03	1.95	**P5GW-072MFG010B**	**P5GW-072MSG010B**
Double acting magnetic	95	13.0	6353	0.06	0.03	3.9	**P5GW-095MFG013B**	**P5GW-095MSG013B**
Double acting magnetic	120	16.0	10202	0.08	0.04	7.89	**P5GW-120MFG016B**	**P5GW-120MSG016B**
Double acting magnetic	156	25.0	17165	0.10	0.05	15.7	**P5GW-156MFG025B**	**P5GW-156MSG025B**
Double acting magnetic	225	35.0	35288	0.10	0.05	43.9	**P5GW-225MFG035B**	**P5GW-225MSG035B**

Function	Bore size (mm)	Stroke (mm)	Grip force @ 7 bar (N)	Accuracy +/- mm	Repeatability +/-mm	Weight (kg)	Part number Spring close
Spring closing magnetic	32	4.0	889	0.04	0.02	0.25	**P5GW-032DSG004B**
Spring closing magnetic	43	6.0	1490	0.04	0.02	0.53	**P5GW-043DSG006B**
Spring closing magnetic	55	8.0	2627	0.04	0.02	1.08	**P5GW-055DSG008B**
Spring closing magnetic	72	10.0	4562	0.06	0.03	1.95	**P5GW-072DSG010B**
Spring closing magnetic	95	13.0	7877	0.06	0.03	3.9	**P5GW-095DSG013B**
Spring closing magnetic	120	16.0	13786	0.08	0.04	7.89	**P5GW-120DSG016B**
Spring closing magnetic	156	25.0	22093	0.10	0.05	15.7	**P5GW-156DSG025B**
Spring closing magnetic	225	35.0	44354	0.10	0.05	43.9	**P5GW-225DSG035B**

Sensor part numbers: Page 330.

Most popular.

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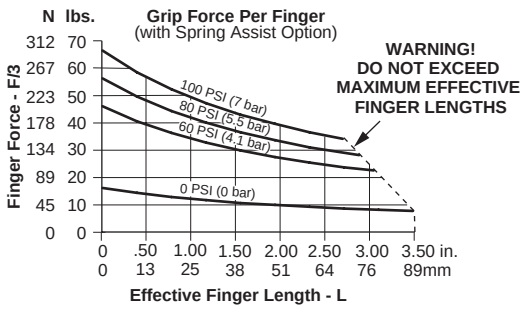
Loading information - P5GW-032



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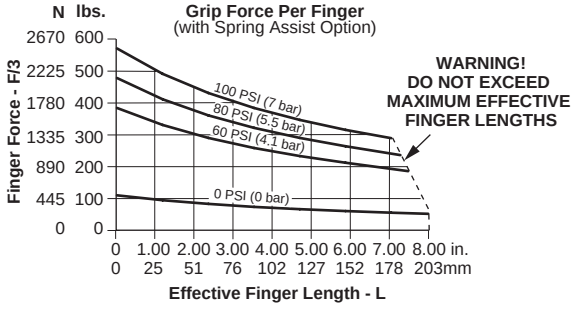

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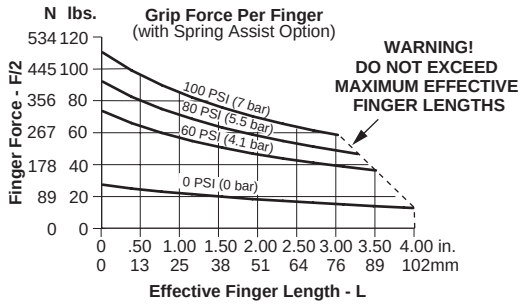

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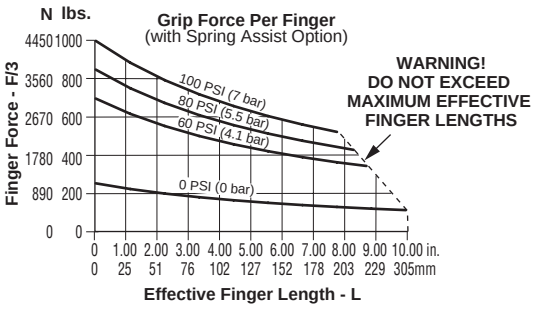

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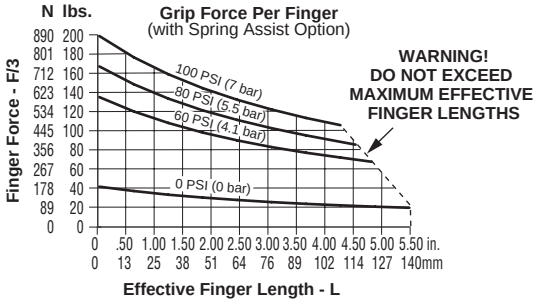

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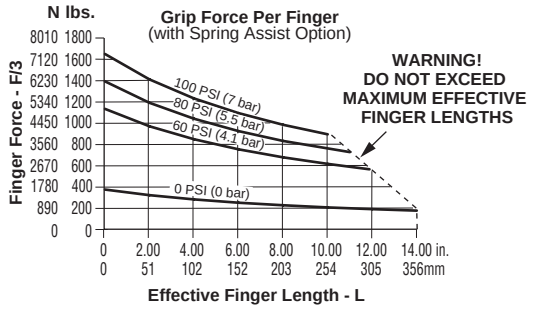

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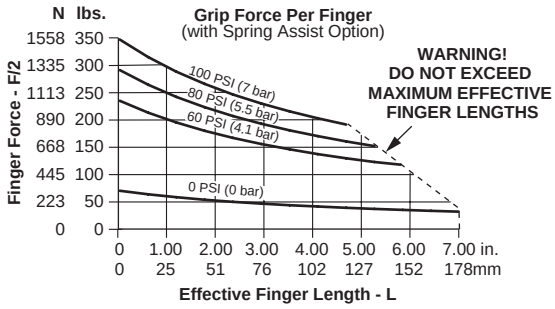

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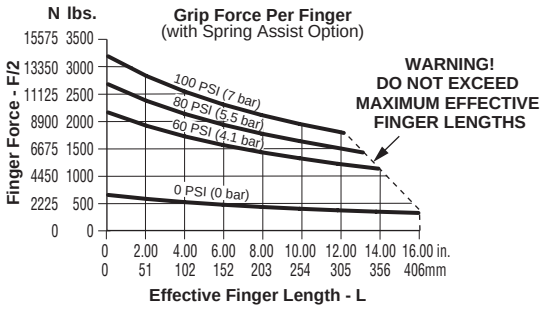

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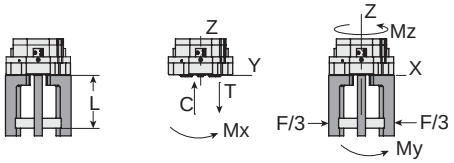
Loading capacity† - P5GW 3-Jaw Centering Series

	P5GW-32		P5GW-43		P5GW-55		P5GW-72	
	Static (metric)	Dynamic (metric)	Static (metric)	Dynamic (metric)	Static (metric)	Dynamic (metric)	Static (metric)	Dynamic (metric)
Maximum tensile T	810 N	89 N	1200 N	129 N	1680 N	302 N	2110 N	425 N
Maximum compressive C	1060 N	89 N	1560 N	129 N	2180 N	302 N	2790 N	425 N
Maximum moment Mx	22 Nm	2 Nm	45 Nm	4 Nm	72 Nm	11 Nm	92 Nm	16 Nm
Maximum moment My	28 Nm	3 Nm	64 Nm	6 Nm	102 Nm	16 Nm	182 Nm	22 Nm
Maximum moment Mz	18 Nm	3 Nm	41 Nm	6 Nm	66 Nm	16 Nm	84 Nm	22 Nm

	P5GW-95		P5GW-120		P5GW-156		P5GW-225	
	Static (metric)	Dynamic (metric)	Static (metric)	Dynamic (metric)	Static (metric)	Dynamic (metric)	Static (metric)	Dynamic (metric)
Maximum tensile T	2990 N	674 N	4320 N	1315 N	5400 N	1763 N	8230 N	2733 N
Maximum compressive C	3980 N	674 N	5810 N	1315 N	7120 N	1763 N	10700 N	2733 N
Maximum moment Mx	127 Nm	25 Nm	172 Nm	45 Nm	215 Nm	60 Nm	455 Nm	131 Nm
Maximum moment My	179 Nm	35 Nm	250 Nm	65 Nm	305 Nm	86 Nm	578 Nm	167 Nm
Maximum moment Mz	117 Nm	35 Nm	164 Nm	65 Nm	208 Nm	86 Nm	362 Nm	167 Nm

† Capacities are per set of jaws and are not simultaneous



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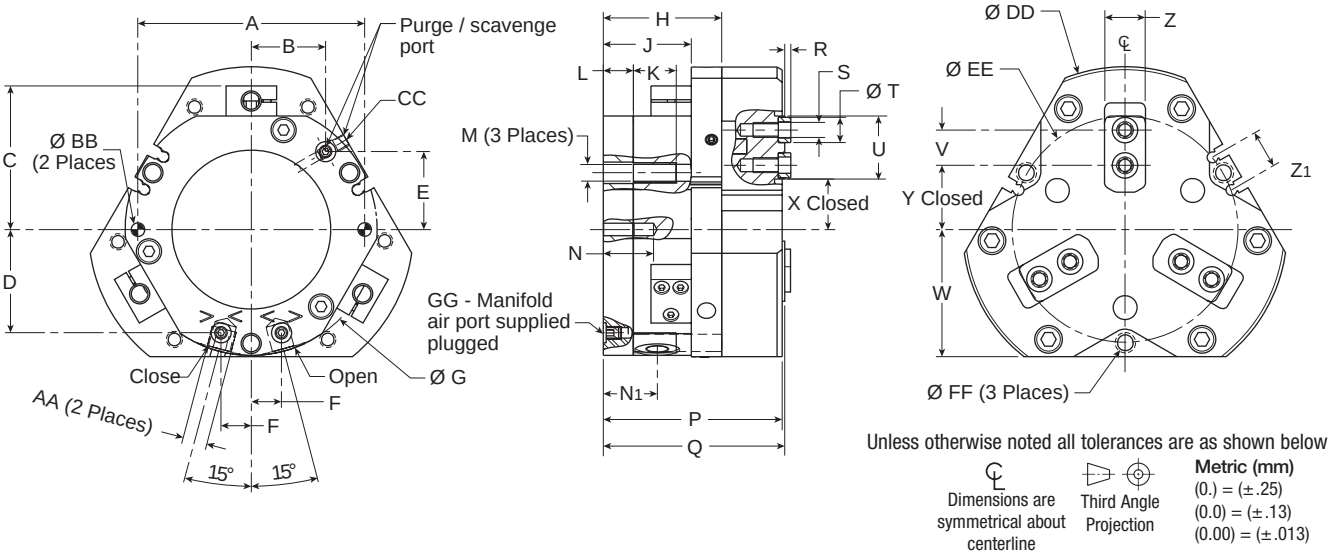
Dimensions: P5GW 3-Jaw Centering Series



Unless otherwise noted all tolerances are as shown below

℄ Dimensions are symmetrical about centerline

Third Angle Projection

Metric (mm)
(0.) = (±.25)
(0.0) = (±.13)
(0.00) = (±.013)

Part number	A	B	C	D	E	F	G	H	J	K	L	M	N	N1	P	Q	R	S
P5GW-032	45.00	13.4	—	19.5	15.8	7.0	51	24.5	18.5	9	6.0	M4	12	11.5	36.5	37.0	1.5	M3 x 5 Dp
P5GW-043	56.00	17.2	37.7	25.0	20.3	9.0	64	32.5	25.5	13	9.0	M6	15	15.5	48.5	49.0	1.5	M4 x 6 Dp
P5GW-055	70.00	23.2	46.7	32.0	23.8	9.0	80	43.5	33.5	17	12.0	M8	20	20.0	63.5	64.0	2.0	M5 x 9 Dp
P5GW-072	90.00	29.5	57.0	41.0	30.9	12.0	100	47.0	35.0	17	12.0	M8	20	21.5	71.0	72.0	2.5	M6 x 10 Dp
P5GW-095	112.00	38.4	71.0	53.0	39.5	15.0	125	57.0	42.0	22	14.0	M10	24	25.0	87.0	88.0	2.5	M6 x 10 Dp
P5GW-120	146.00	49.0	87.0	67.5	50.2	19.0	160	72.0	53.0	22	20.0	M10	30	33.0	109.0	110.0	3.0	M8 x 17 Dp
P5GW-156	184.00	64.3	106.0	87.5	63.7	23.0	200	92.0	70.0	26	24.0	M12	36	43.0	142.0	143.0	4.0	M12 x 17 Dp
P5GW-225	270.00	90.5	150.0	123.0	89.2	32.0	300	125.0	99.0	40	30.0	M20	46	60.0	195.0	196.0	5.0	M16 x 21 Dp

Part number	T	U	V	W	X	Y	Z	Z1	AA	BB	CC	DD	EE	FF	GG
P5GW-032	5h7	14.0	8.00	26.0	9.0	12.0	8.0	12.0	M5 x 5 Dp	3h7	M5 x 5 Dp	63	45	3.3	M3 x 4
P5GW-043	6h7	16.0	9.00	32.5	13.0	16.5	10.0	15.0	M5 x 5 Dp	4h7	M5 x 5 Dp	83	56	5.2	M3 x 4
P5GW-055	8h7	20.0	11.00	40.5	16.0	20.5	12.5	15.0	M5 x 5 Dp	5h7	M5 x 5 Dp	104	70	6.8	M4 x 6
P5GW-072	10h7	25.0	14.00	50.5	20.0	25.5	16.0	15.0	M5 x 5 Dp	5h7	M5 x 5 Dp	129	90	6.8	M5 x 6
P5GW-095	10h7	32.0	20.00	63.0	24.5	30.5	20.0	18.0	G1/8 x 8 Dp	6h7	M5 x 5 Dp	162	112	8.5	M5 x 6
P5GW-120	12h7	40.0	25.00	83.5	32.0	39.5	25.0	18.0	G1/8 x 8 Dp	6h7	M5 x 5 Dp	205	146	8.5	M5 x 6
P5GW-156	16h7	43.0	25.00	105.0	42.0	51.0	31.0	21.0	G1/8 x 8 Dp	8h7	G1/8 x 8 Dp	258	184	10.3	M5 x 6
P5GW-225	22h7	58.0	34.00	155.0	57.0	69.0	46.0	29.0	G1/8 x 12 Dp	10h7	G1/8 x 8 Dp	355	260	17.5	M8 x 10

Dimensions in millimeters

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P5SS Slide Tables

- Combination of dual bore cylinder and linear rail
- Magnetic piston standard
- Rubber bumper standard
- Available with stroke adjusters
- Available with shock absorbers

Operating information

Operating pressure:	1.5 to 7 bar (21.8 to 102 PSIG)
Temperature range:	-5° to 60° C (23° to 140° F)
Filtration requirements:	
Air filtration	40 micron or better
Air lubrication	Not necessary*
Air humidity	Low moisture content (dry)

*Addition of lubrication will greatly increase service life

Ordering Information: P5SS Slide Tables

P5	S	S	–	***	D	S	G	***	B	N	A	N	N	N

Family

S	Slide

Series

S	Slide table

Spare

–

Function

D	Double acting magnetic

Temperature / Finish

S	Standard

Ports

G	BSPP

Stroke

010	10mm
020	20mm
030	30mm
040	40mm
050	50mm
075	75mm
100	100mm
125	125mm
150	150mm

Options

B	No options
W	With specified options pos 16-20

Fitting

N	None

Spare

N	None

Spare

N	None

Spare

N	None

Bore size

006	6mm bore: 10, 20, 30, 40, 50mm stroke
008	8mm bore: 10, 20, 30, 40, 50, 75mm stroke
012	12mm bore: 10, 20, 30, 40, 50, 75, 100mm stroke
016	16mm bore: 10, 20, 30, 40, 50, 75, 100, 125mm stroke
020	20mm bore: 10, 20, 30, 40, 50, 75, 100, 125, 150mm stroke
025	25mm bore: 10, 20, 30, 40, 50, 75, 100, 125, 150mm stroke

Options

A	5mm adjuster extension
B	5mm adjuster retraction
C	5mm adjuster both ends
D	15mm adjuster extension
E	15mm adjuster retraction
F	15mm adjuster both ends
G†	25mm adjuster extension
H†	25mm adjuster retraction
J	25mm adjuster both ends
K*	Shock absorber extension
L*	Shock absorber retraction
M*	Shock absorber both ends
N	None

* Option K, L & M shock absorber is not available on 6mm bore
† Option G & H 25mm adjuster is not available on 6mm bore

Theoretical force

(Unit: N)

Tube I.D. (mm)	Piston rod (mm)	Operating direction	Piston area (mm^2)	Operating pressure MPa 0.2	0.3	0.4	0.5	0.6	0.7
6	3	OUT	57	11	17	23	29	34	40
		IN	42	8	13	17	21	25	29
8	4	OUT	101	20	30	40	51	61	71
		IN	75	15	23	30	38	45	53
12	6	OUT	226	45	68	90	113	136	158
		IN	170	34	51	68	85	102	119
16	8	OUT	402	80	121	161	201	241	281
		IN	302	60	91	121	151	181	211
20	10	OUT	628	126	188	251	314	377	400
		IN	471	94	141	188	236	283	330
25	12	OUT	982	196	295	393	491	589	687
		IN	756	151	227	302	378	454	529

Sensor part numbers: Page 330.

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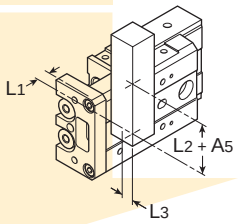
Selection Flow Chart

Operating conditions	Formula and charts	Selection example
List out the operating conditions according to mounting position and shape of the workpiece	Model used	Cylinder: P5SS-6-10
	Cushion style	Cushion: Cushion pad
	Workpiece install position	Workpiece table mounting
	Mounting position	Mounting: Lateral mounting
	Average speed Va (mm/s)	Average speed: Va = 150mm/s
	Allowable load W (kg) *(Figure 1)*	Load: W = 0.3kg
	Overhang Ln (mm) *(Figure 2)*	L_1 = 4mm
		L_2 = 4mm
		L_3 = 4mm



Kinetic energy

Calculate kinetic energy E(J) of work	$E = 1/2 \bullet W (V/1000)^2$	$E = 1/2 \bullet 0.3 (210/1000)^2 = 0.0066$
	Collision speed $V = 1.4 \bullet Va$	Collision speed $V = 1.4 \bullet 150 = 210$
Calculate allowable kinetic energy Ea(J)	$Ea = K \bullet Emax$	$Ea = 1 \bullet 0.015 = 0.015$
	Workpiece mounting coefficient K: *Figure 3*	Possible to use by $E = 0.0066 \leq Ea = 0.015$
Make sure that kinetic energy of work is less / lower than allowable kinetic energy.	Max. allowable kinetic energy Emax: *Table 1*	
	Kinetic energy (E) ≤ Allowable kinetic energy (Ea)	

Load rate

Load rate of work

Calculate static work Wa(kg)	$Wa = K \bullet \beta \bullet Wmax$	$Wa = 1 \times 1 \times 0. = 0.66$
	Workpiece mounting coefficient K: *Figure 3*	$K = 1$
	Allowable load coefficient β: *Figure 4*	$\beta = 1$
	Maximum allowable moment Wmax: *Table 2*	$Wmax = 0.6$
Calculate load rate α_1 of static work	$\alpha_1 = W/Wa$	$\alpha_1 = 03/0.6 = 0.5$

Load rate of static moment		**Yawing**	**Rolling**
Calculate static moment M(Nm).	$M = W \times 9.8 (Ln + An)/1000$	Calculate My	Calculate Mr
	Correction value for moment center distance An: *Table 3*	$My = W \times 9.8 (L_1 + A_3)/1000 = 0.3 \times 9.8 (4 +13)/1000 = 0.05$	$Mr = W \times 9.8 (L_3 + A_2)/1000 = 0.3 \times 9.8 (5 + 6)/1000 = 0.033$
Calculate allowable static moment Ma(Nm).	$Ma = K \bullet \gamma \bullet Mmax$	$A_3 = 13$	$A_2 = 6$
	Workpiece mounting coefficient K: *Figure 3*	$May = 1 \times 1 \times 0.7 = 0.7$	$Mar = 0.7$ (Same value as Ma)
	Allowable moment coefficient γ : *Figure 5*	$Mymax = 0.7$	
	Max. allowable moment Mmax: *Table 4*	$K = 1$	
Calculate load rate α_2 of static moment	$\alpha_2 = M/Ma$	$\gamma = 1$	
		$\alpha_2 = 0.05/0.7 = 0.072$	$\alpha'_2 = 0.033/0.7 = 0.047$

Load rate of kinetic moment		**Pitching**	**Yawing**
Calculate kinetic moment Me(Nm).	$Me = 1/3 \bullet We \bullet 9.8 (Ln + An)/1000$	Calculate Mep	Calculate Mey
	Collision equivalence load $We = \delta \bullet W \bullet V$	$Mep = 1/3 \times 2.52 \times 9.8 \times (5 + 6)/1000 = 0.09$	$Mey = 1/3 \times 2.52 \times 9.8 \times (4 + 16)/1000 = 0.165$
	δ: Cushion coefficient with cushion pad (Standard) = 4/100 with shock absorber = 1/100	$We = 4/100 \times 0.3 \times 210 = 2.52$	$We = 2.52$
Calculate allowable kinetic moment Mea(Nm).	Correction value for moment center distance An: *Table 3*	A2 = 6	A4 = 16
	$Mea = K \gamma Mmax$	$Meap = 1 \times 0.97 \times 0.7 = 0.679$	Meay = 0.679 (Same value as Meap)
	Workpiece mounting coefficient t K: *Figure 3*	$K = 1$	
	Allowable moment coefficient γ: *Figure 5*	$\gamma = 0.97$	
	Max. allowable moment Mmax: *Table 4*	Mpmax = 0.	
Calculate load rate α_3 of kinetic moment.	$\alpha_3 = Me/Mea$	$\alpha_3 = 0.09/0.679 = 0.13$	$\alpha'_3 = 0.165/0.679 = 0.243$

Sum of load rate		
When sum of load rate does not exceed 1, it is possible to use.	$\sum\alpha_n = \alpha_1 + \alpha_2 + \alpha_3 \leq 1$	$\sum\alpha_n = \alpha_1 + \alpha_2 + \alpha'_2 + \alpha_3 + \alpha'_3 \leq 1$ $= 0.5 + 0.072 + 0.047 + 0.133 + 0.243 = 0.995 \leq 1$ And it is possible to use.

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Table 1: Maximum allowable kinetic energy: Emax (J)

Allowable kinetic energy		
Cushion pad	Shock absorber	Model
0.015	—	**P5SS-006**
0.023	0.041	**P5SS-008**
0.05	0.105	**P5SS-012**
0.104	0.214	**P5SS-016**
0.153	0.313	**P5SS-020**
0.232	0.472	**P5SS-025**

Table 2: Maximum allowable static load: Wmax (kg)

Max. allowable kinetic energy	Model
0.6	**P5SS-006**
0.8	**P5SS-008**
2	**P5SS-012**
3.7	**P5SS-016**
6	**P5SS-020**
8.5	**P5SS-025**

Table 3: Correction value for moment center distance: An (mm) (Refer to Figure 2)

A_1	A_2	A_3	A_4	A_5	Model
11	6	13	16	16	**P5SS-006**
11	8	13	20	20	**P5SS-008**
24	9.5	26	25	25	**P5SS-012**
27	10.5	30	31	31	**P5SS-016**
34	15.5	36	38	38	**P5SS-020**
42	20.5	44	46	46	**P5SS-025**

Figure 3: Workpiece mounting coefficient: K

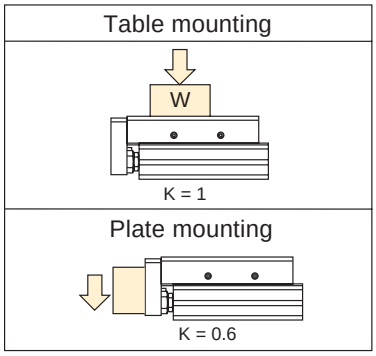


Figure 1: Allowable load: W (kg)

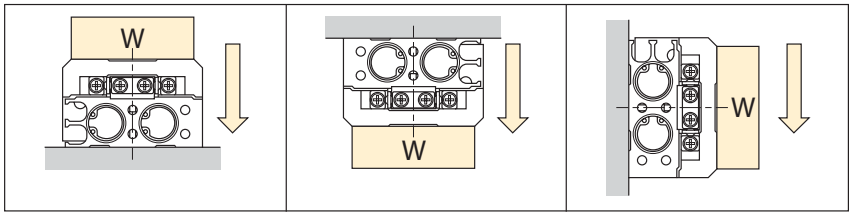
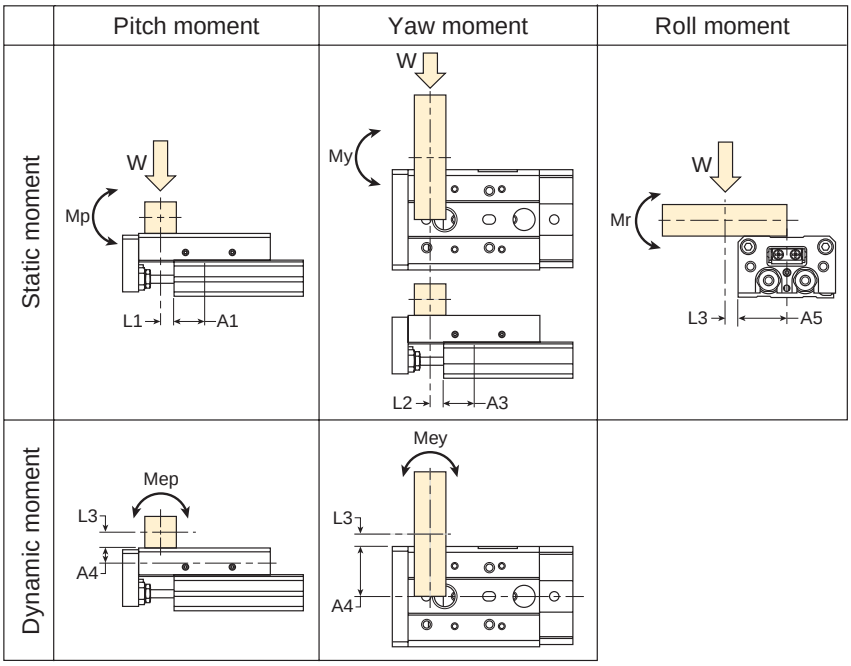


Figure 2: Overhang: Ln (mm) Correction value for moment center distance: An (mm)



Note: Static moment: Moment by gravity.
Kinetic moment: Moment by stopper collision.

Figure 4: Allowable static load coefficient: β

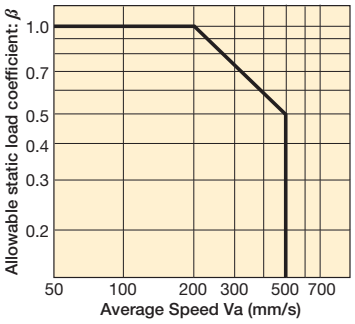
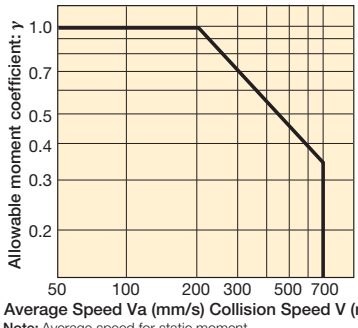


Figure 5: Allowable moment coefficient: γ



Note: Average speed for static moment.
Collision speed for kinetic moment.

Table 4: Maximum allowable moment: Mmax (Nm)

Stroke (mm)									
10	20	30	40	50	75	100	125	150	Model
0.7	1.0	1.1	1.1	1.1	—	—	—	—	**P5SS-006**
2.0	2.0	2.6	3.5	3.9	3.9	—	—	—	**P5SS-008**
3.9	3.9	3.9	5.5	6.8	9.6	9.6	—	—	**P5SS-012**
9.8	9.8	9.8	9.8	12.0	21.0	30.0	30.0	—	**P5SS-016**
16.4	16.4	16.4	16.4	24.2	31.4	45.5	45.5	45.5	**P5SS-020**
26.5	26.5	26.5	26.5	37.8	49.8	62.2	62.2	62.2	**P5SS-025**

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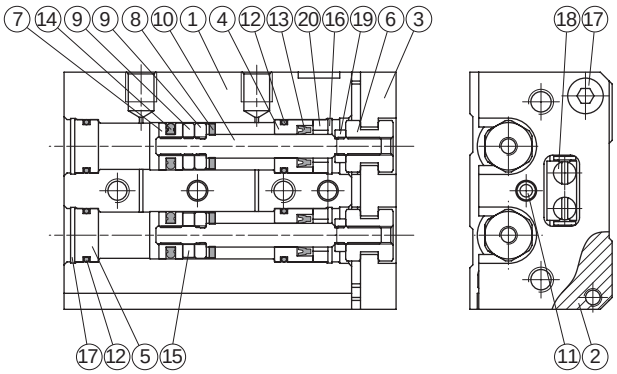
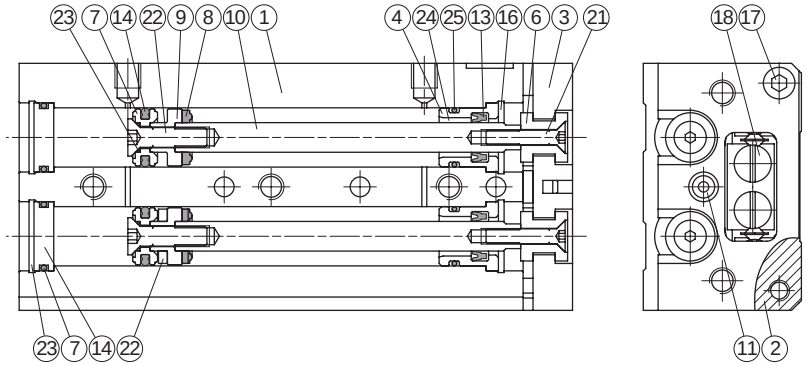
Material

Ø 6, Ø 8



Ø 12 thru Ø 25



No.	Part name	6	8	12 to 25
1	Body	Aluminum alloy		
2	Table	Aluminum alloy		
3	Plate	Aluminum alloy		
4	Rod cover	Aluminum alloy		
5	Head cover	Aluminum alloy		
6	Floating connector	Stainless steel		
7	Piston	Stainless steel		Aluminum alloy
8	Cushion pad	NBR		
9	Spacer ring	Aluminum alloy	Stainless steel	Aluminum alloy
10	Piston rod	Stainless steel		
11	End cushion	PU		
12	Cover ring	NBR		
13	Rod packing	NBR		

No.	Part name	6	8	12 to 25
14	Piston packing	NBR		
15	Magnet ring	Magnet material		
16	Snap ring	Spring steel	Stainless steel	
17	Bolt	Stainless steel		
18	Slide way	Bearing steel		
19	Nut	Copper	—	
20	Rod cover washer	Stainless steel	—	
21	Floating connector bolt	Stainless steel	—	
22	Piston screw	—		Stainless steel
23	Piston gasket	—		NBR
24	Rod bush	Copper		
25	Cover ring	NBR		

Weight (g)

Stroke (mm)	Tube I.D.					
	Ø6	Ø8	Ø12	Ø16	Ø20	Ø25
10	78	137	335	536	1001	1573
20	98	148	339	546	1012	1587
30	111	171	343	552	1020	1605
40	147	216	393	630	1098	1735
50	172	255	482	723	1254	1930
75	—	367	684	1030	1690	2553
100	—	—	910	1341	2214	3180
125	—	—	—	1646	2729	4082
150	—	—	—	—	3310	4420

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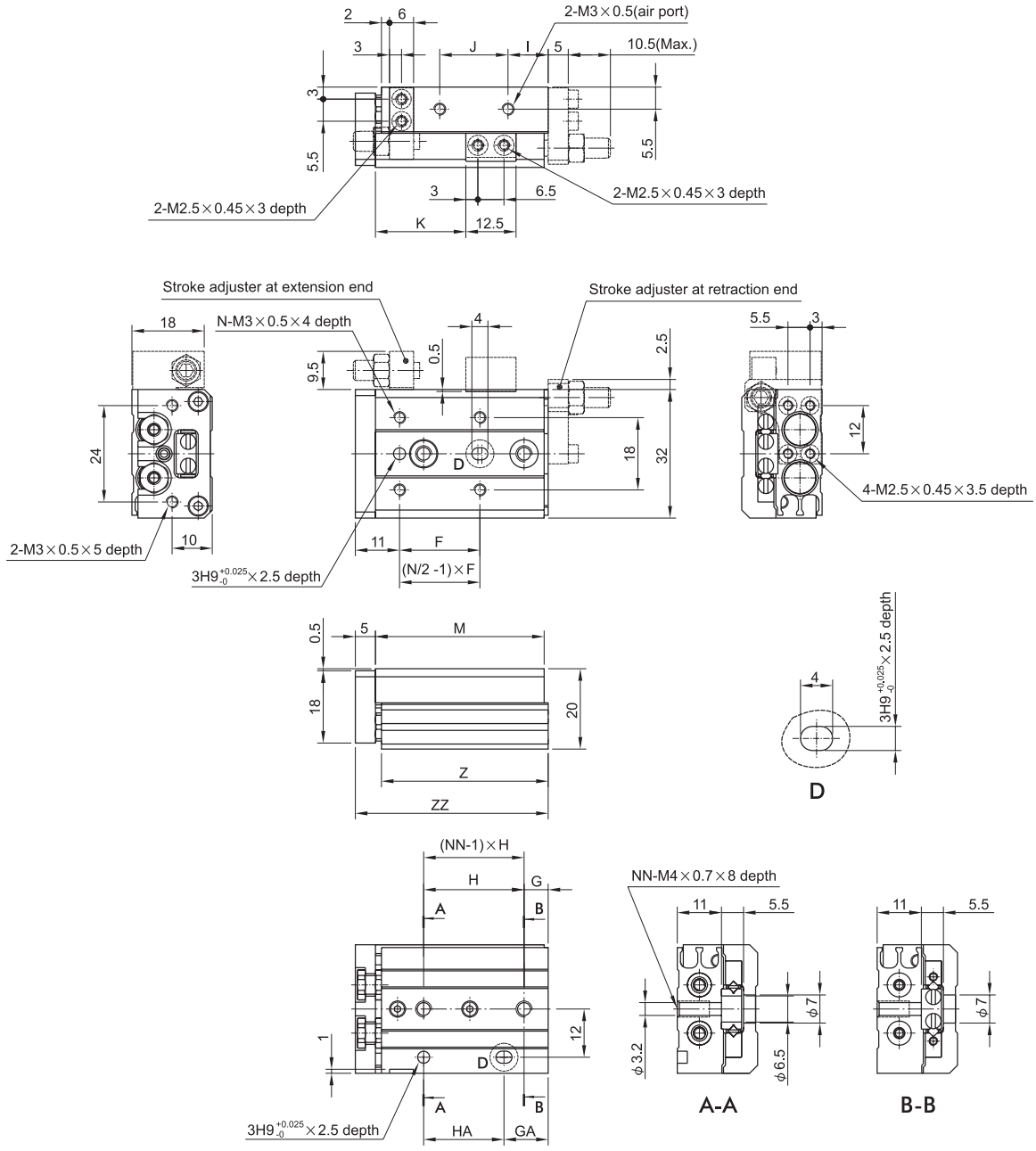
Dimensions: P5SS Slide Table - Ø 6



Stroke (mm)	F	G	GA	H	HA	I	J	K	M	N	NN	Z	ZZ
10	20	6	11	25	20	10	17	22.5	42	4	2	41.5	48
20	30	6	21	35	20	10	27	32.5	52	4	2	51.5	58
30	20	11	31	20	20	7	40	42.5	62	6	3	61.5	68
40	28	13	43	30	30	19	50	52.5	84	6	3	83.5	90
50	38	17	41	24	48	25	60	62.5	100	6	4	99.5	106

Dimensions in millimeters

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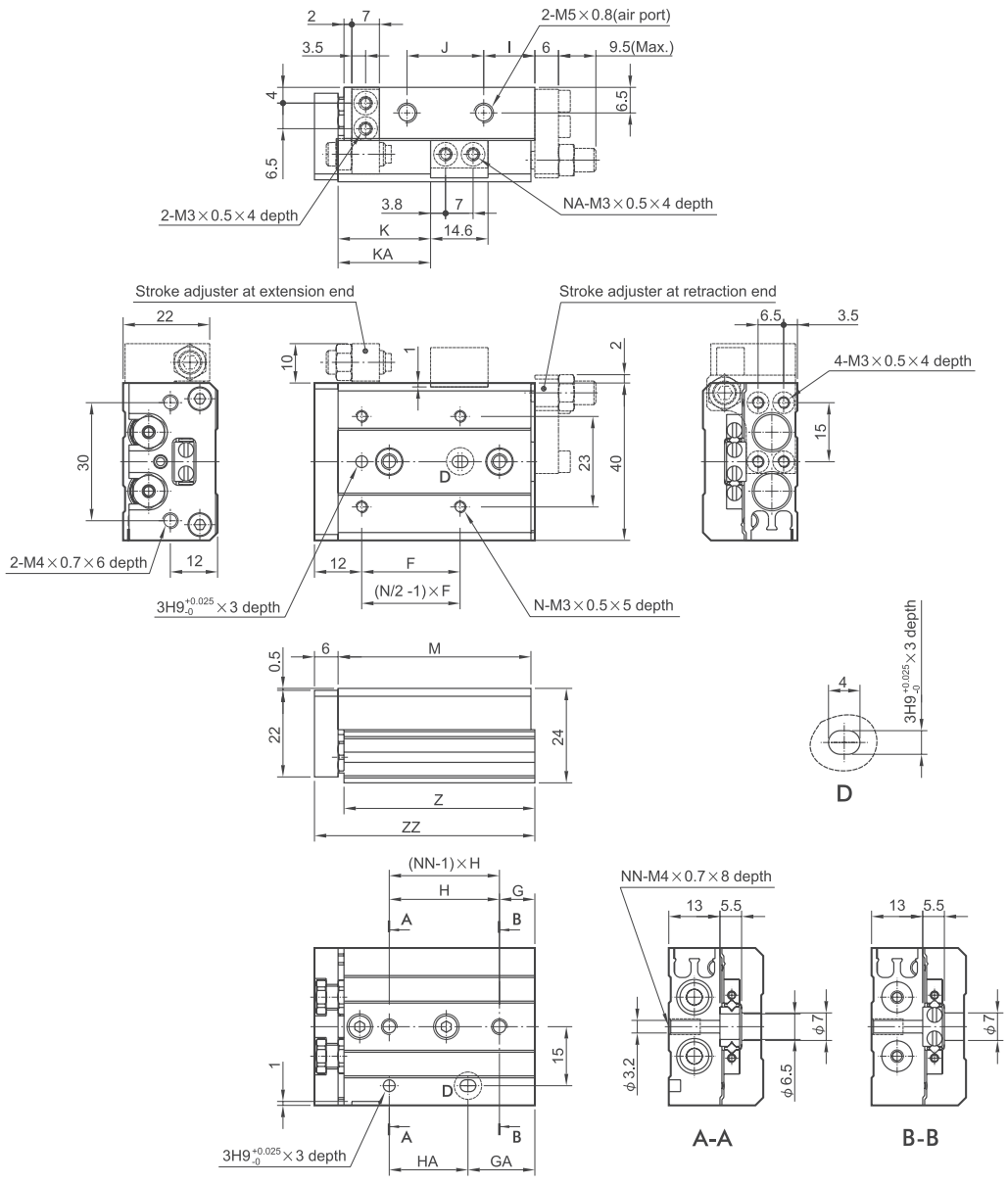
Dimensions: P5SS Slide Table - Ø 8



Stroke (mm)	F	G	GA	H	HA	I	J	K	KA	M	N	NA	NN	Z	ZZ
10	25	9	17	28	20	13	19.5	23.5	—	49	4	2	2	48.5	56
20	25	12	12	30	30	8.5	29	33.5	—	54	4	2	2	53.5	61
30	40	13	33	20	20	9.5	39	43.5	—	65	4	2	3	64.5	72
40	50	15	43	28	28	10.5	56	53.5	—	83	4	2	3	82.5	90
50	38	20	43	23	46	24.5	60	63.5	82.5	101	6	4	4	100.5	108
75	50	27	83	28	56	38.5	96	88.5	132.5	151	6	4	5	150.5	158

Dimensions in millimeters

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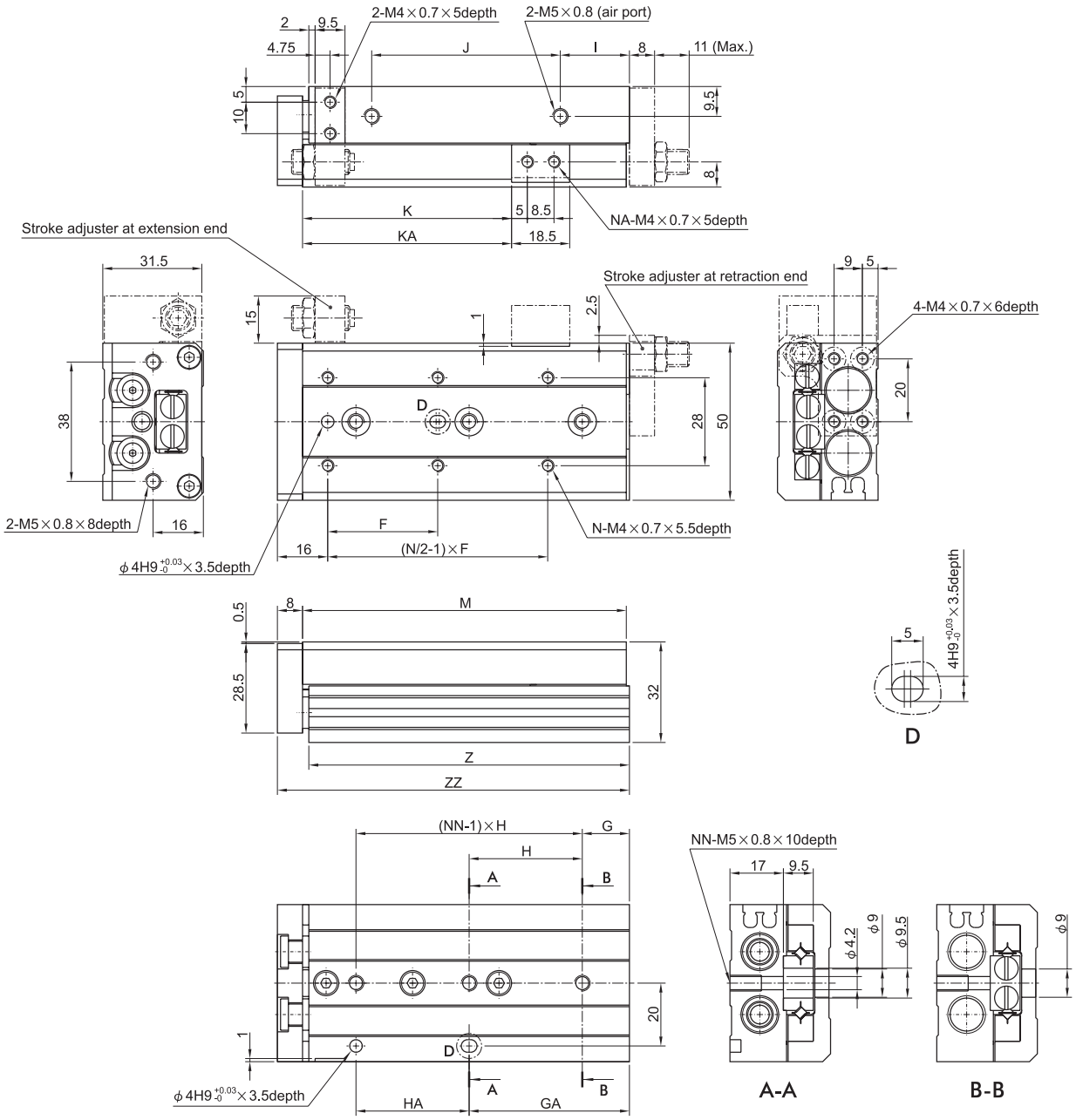
Dimensions: P5SS Slide Table - Ø 12



Stroke (mm)	F	G	GA	H	HA	I	J	K	KA	M	N	NA	NN	Z	ZZ
10	35	15	15	40	40	10	40	26.5	—	71	4	2	2	70	80
20	35	15	15	40	40	10	40	36.5	—	71	4	2	2	70	80
30	35	15	15	40	40	10	40	46.5	—	71	4	2	2	70	80
40	50	17	42	25	25	10	52	56.5	—	83	4	2	3	82	92
50	35	15	51	36	36	22	60	66.5	—	103	6	2	3	102	108
75	55	25	61	36	72	43	85	91.5	125.5	149	6	4	4	148	158
100	65	35	111	38	76	52	130	116.5	179.5	203	6	4	5	202	212

Dimensions in millimeters

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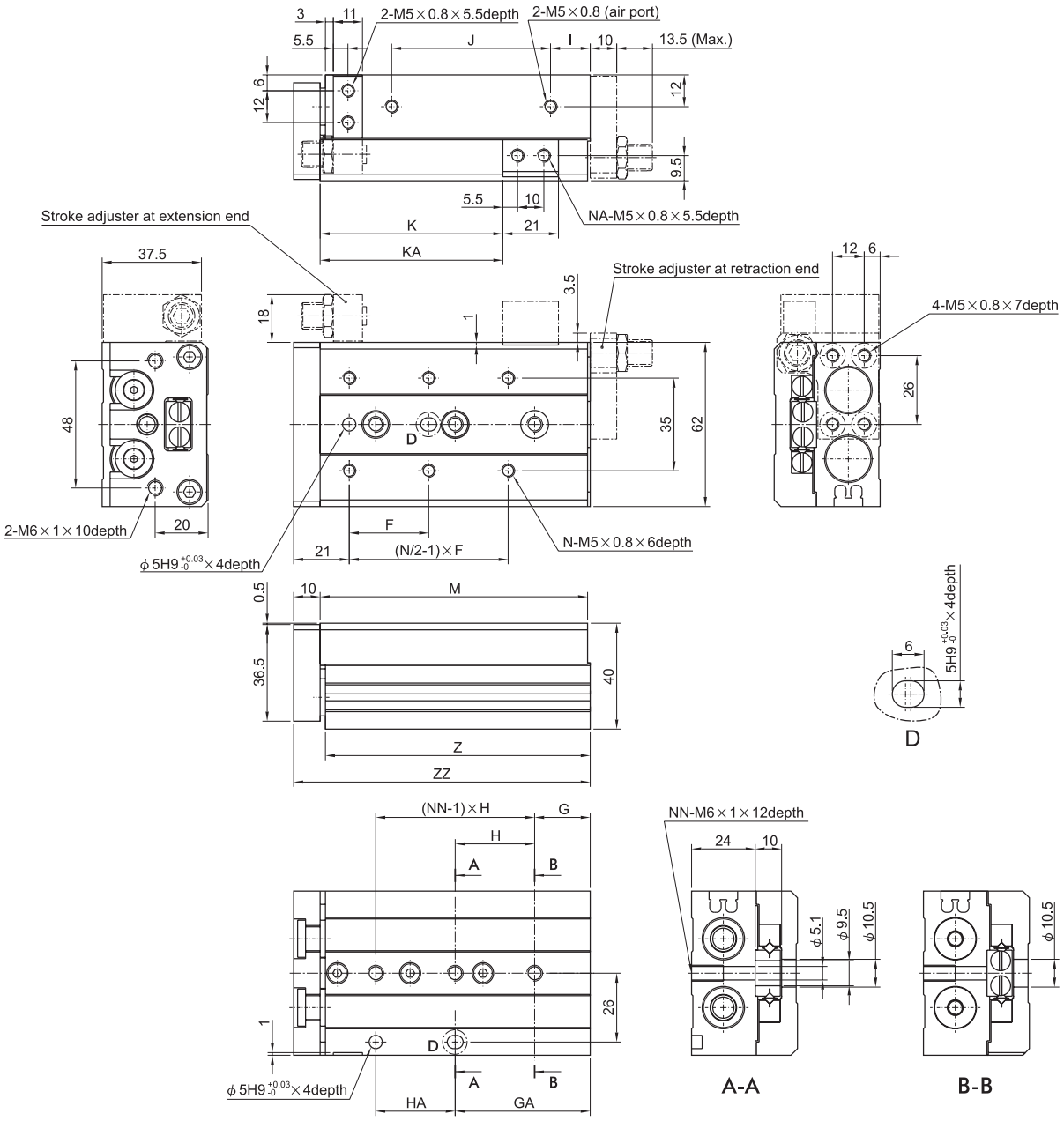
Dimensions: P5SS Slide Table - Ø 16



Stroke (mm)	F	G	GA	H	HA	I	J	K	KA	M	N	NA	NN	Z	ZZ
10	35	16	16	40	40	10	40	29	—	76	4	2	2	75	87
20	35	16	16	40	40	10	40	39	—	76	4	2	2	75	87
30	35	16	16	40	40	10	40	49	—	76	4	2	2	75	87
40	40	16	16	50	50	10	50	59	—	86	4	2	2	85	97
50	30	21	51	30	30	15	60	69	—	101	6	2	3	100	112
75	55	26	61	35	70	40	85	94	125	151	6	4	4	150	162
100	65	39	109	35	70	55	118	119	173	199	6	4	5	198	210
125	70	19	159	35	70	68	155	144	223	249	8	4	7	248	260

Dimensions in millimeters

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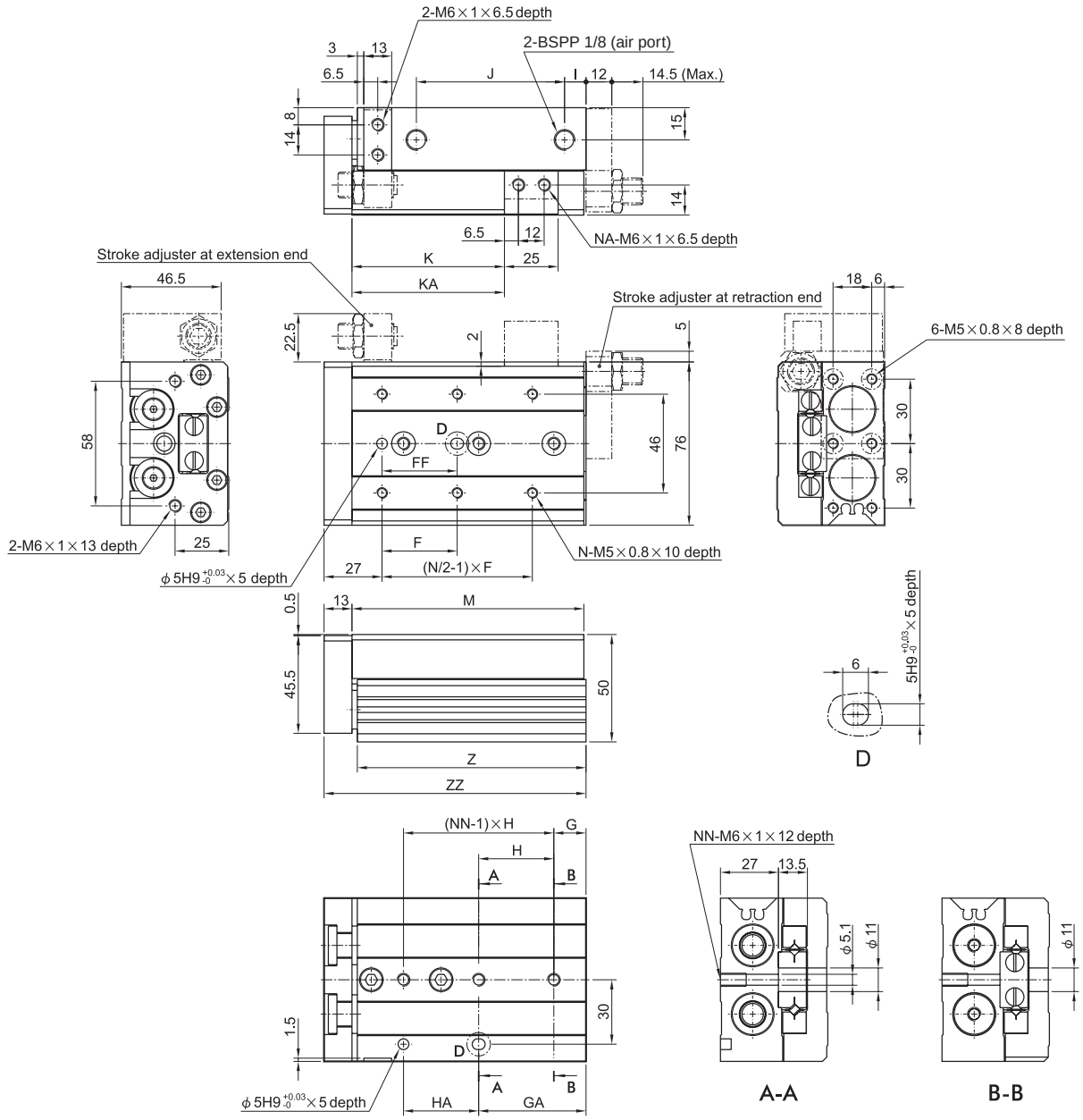
Dimensions: P5SS Slide Table - Ø 20



Stroke (mm)	F	FF	G	GA	H	HA	I	J	K	KA	M	N	NA	NN	Z	ZZ
10	50	40	15	25	45	35	10	44	31	—	83	4	2	2	81.5	97
20	50	40	15	25	45	35	10	44	41	—	83	4	2	2	81.5	97
30	50	40	15	25	45	35	10	44	51	—	83	4	2	2	81.5	97
40	60	50	15	35	55	35	10	54	61	—	93	4	2	2	91.5	107
50	35	35	15	50	35	36	10	69	71	—	108	6	2	3	106.5	122
75	60	60	19	54	35	70	10	108	96	—	147	6	2	4	145.5	161
100	70	70	37	107	35	70	58	113	121	169	200	6	4	5	198.5	214
125	70	70	41	155	38	76	70	155	146	223	254	8	4	6	252.5	268
150	80	80	19	195	44	88	87	190	171	275	306	8	4	7	304.5	320

Dimensions in millimeters

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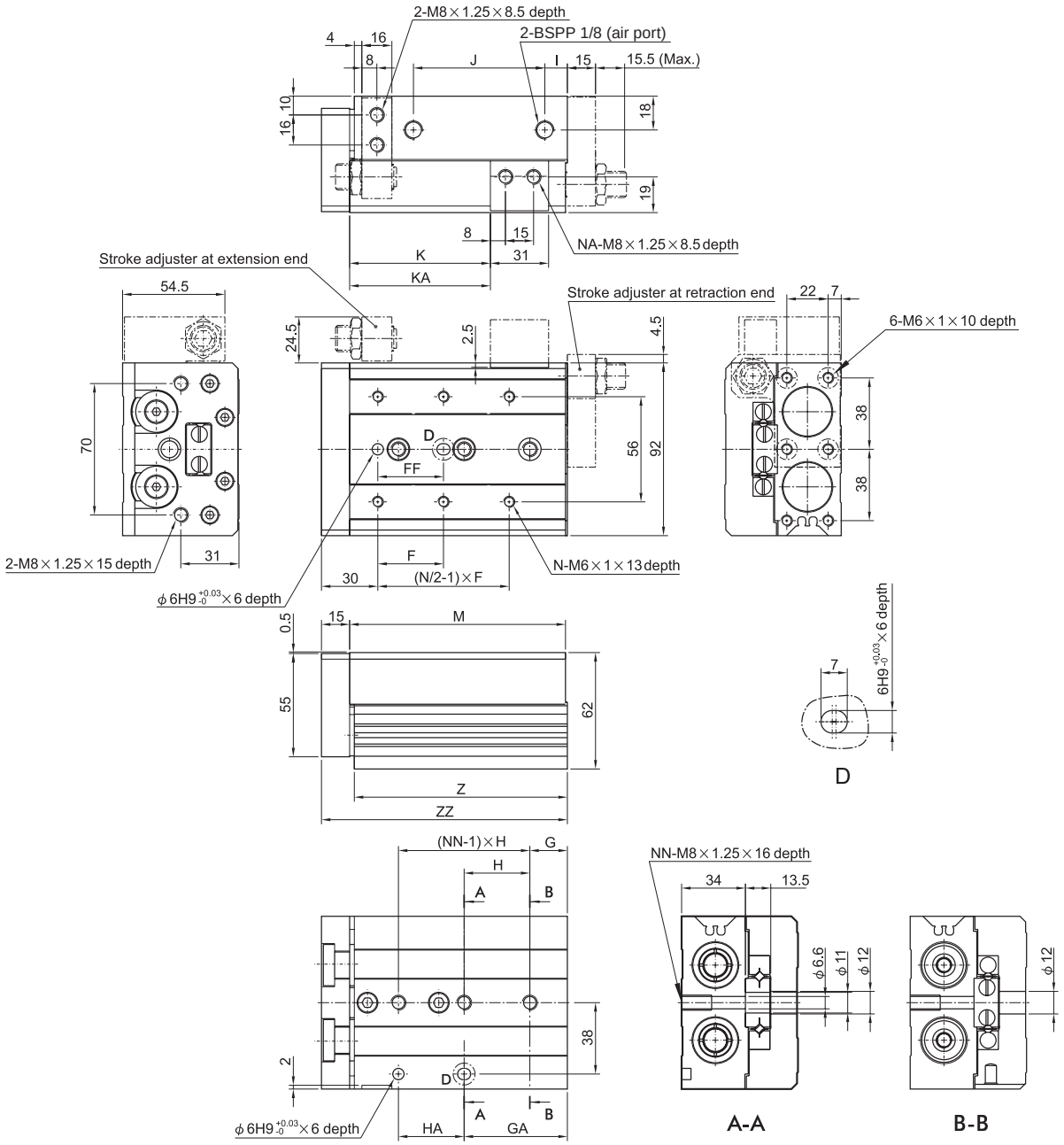
Dimensions: P5SS Slide Table - Ø 25



Stroke (mm)	F	FF	G	GA	H	HA	I	J	K	KA	M	N	NA	NN	Z	ZZ
10	50	40	22	22	45	45	12	47	35	—	92	4	2	2	90.5	108
20	50	40	22	22	45	45	12	47	45	—	92	4	2	2	90.5	108
30	50	40	22	22	45	45	12	47	55	—	92	4	2	2	90.5	108
40	60	50	22	22	55	55	12	57	65	—	102	4	2	2	100.5	118
50	35	35	20	55	35	35	12	70	75	—	115	6	2	3	113.5	131
75	60	60	26	61	35	70	33	90	100	—	156	6	2	4	154.5	172
100	70	70	32	102	35	70	50	114	125	162	197	6	4	5	195.5	213
125	75	75	40	154	38	76	67	155	150	218	255	8	4	6	253.5	271
150	80	80	30	190	40	80	82	180	175	258	295	8	4	7	293.5	311

Dimensions in millimeters

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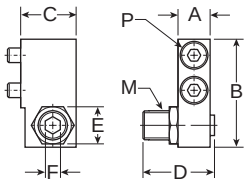
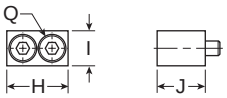
Stroke Adjusters

Stroke Adjuster at Extension End

Mounted to Body



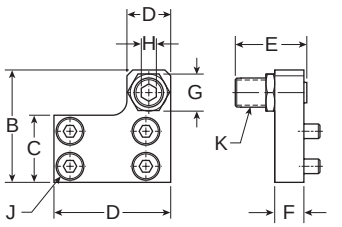
Mounted to Table



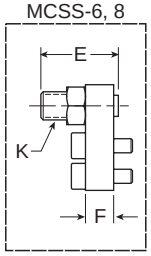
Tube I.D.	Part number	Adjustable stroke range (mm)	Mounted to body								Mounted to table			
			A	B	C	D	E	F	M	P*	H	I	J	Q*
6	P5SS-006-EA-05	5	6	17.8	10.5	16.5	7	2.5	M5 x .08	M2.5 x10	12.5	6	8.5	M2.5 x .08
	P5SS-006-EA-15	15				26.5								
8	P5SS-008-EA-05	5	7	21.5	11	16.5	8	3	M6 x 1	M3 x 10	14.6	7	10	M3 x 10
	P5SS-008-EA-15	15				26.5								
	P5SS-008-EA-25	25				36.5								
12	P5SS-012-EA-05	5	9.5	31	16	20	11	4	M8 x 1	M4 x 16	18.5	10	13	M4 x 12
	P5SS-012-EA-15	15				30								
	P5SS-012-EA-25	25				40								
16	P5SS-016-EA-05	5	11	37	19	24.5	14	5	M10 x 1	M5 x 16	21	12	16.5	M5 x 16
	P5SS-016-EA-10	15				34.5								
	P5SS-016-EA-25	25				44.5								
20	P5SS-020-EA-05	5	13	45.5	24	27.5	17	6	M12 x 1.25	M6 x 20	25	13	21	M6 x 20
	P5SS-020-EA-15	15				37.5								
	P5SS-020-EA-25	25				47.5								
25	P5SS-025-EA-05	5	16	53.5	26.5	32.5	19	6	M14 x 1.5	M8 x 25	31	17	25.5	M8 x 25
	P5SS-025-EA-15	15				42.5								
	P5SS-025-EA-25	25				52.5								

*Size of hexagon socket head cap screws

Stroke Adjuster at Retraction End



MCSS-6, 8



Tube I.D.	Part number	Adjustable stroke range (mm)	A	B	C	D	E	F	G	H	J*	K
6	P5SS-006-RA-05	5	21	19	10.5	8	16.5	5	7	2.5	M2.5 x8	M5 x .08
	P5SS-006-RA-15	15					26.5					
8	P5SS-008-RA-05	5	25	22.5	12.5	9	16.5	6	8	3	M3 x 10	M6 x 1
	P5SS-008-RA-15	15					26.5					
	P5SS-008-RA-25	25					36.5					
12	P5SS-012-RA-05	5	32	31	18.5	13	20	8	12	4	M4 x 8	M8 x 1
	P5SS-012-RA-15	15					30					
	P5SS-012-RA-25	25					40					
16	P5SS-016-RA-05	5	40	38.5	12	15	24.5	10	14	5	M5 x 10	M10 x 1
	P5SS-016-RA-15	15					34.5					
	P5SS-016-RA-25	25					44.5					
20	P5SS-020-RA-05	5	50	48	29	21	27.5	12	17	6	M5 x 12	M12 x 1.25
	P5SS-020-RA-15	15					37.5					
	P5SS-020-RA-25	25					47.5					
25	P5SS-025-RA-05	5	60	58	35	23	32.5	15	19	6	M6 x 16	M14 x 1.5
	P5SS-025-RA-15	15					42.5					
	P5SS-025-RA-25	25					52.5					

*Size of hexagon socket head cap screws

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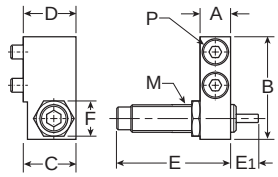
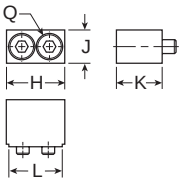
Shock Absorbers

Shock Absorber at Extension End

Mounted to Body



Mounted to Table

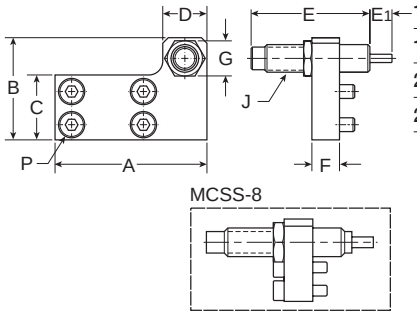


Tube I.D.	Part number	Mounted to body A	B	C	D	E	E1	F	M	P*	Mounted to table H	J	K	L	Q*
8	**P5SS-008-ESK**	7	23	14	15.5	40.8	8	11	M8 x 1	M3 x 16	16.6	7	15.5	14.6	M3 x 16
12	**P5SS-012-ESK**	9.5	31	14.5	16	40.8	8	11	M8 x 1	M4 x 16	20.5	10	15	18.5	M4 x 12
16	**P5SS-016-ESK**	11	37	17.5	19	43.2	6.6	12.7	M10 x 1	M5 x 16	23	12	18.5	21	M5 x 16
20	**P5SS-020-ESK**	13	45.5	23.5	26	86.6	12.7	19	M14 x 1.5	M6 x 25	25.5	13	25.5	25	M6 x 25
25	**P5SS-025-ESK**	16	53.5	23.5	26.5	86.6	12.7	19	M14 x 1.5	M8 x 25	25.5	17	25.5	31	M8 x 25

*Size of hexagon socket head cap screws

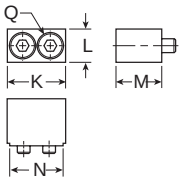
Shock Absorber at Retraction End

Mounted to Body



MCSS-8

Mounted to Table



Tube I.D.	Part number	Mounted to body A	B	C	D	E	E1	F	G	M	P*	Mounted to table K	L	M	N	Q*
8	**P5SS-008-RSK**	38	23	12.5	14	40.8	8	8	12	M8 x 1	M3 x 12	16.6	7	15.5	14.6	M3 x 16
12	**P5SS-012-RSK**	45	31	18	14	40.8	8	8	11	M8 x 1	M4 x 8	20.5	10	15	18.5	M4 x 12
16	**P5SS-016-RSK**	55	37	23.5	16	43.2	6.6	10	12.7	M10 x 1	M5 x 10	23	12	18.5	21	M5 x 16
20	**P5SS-020-RSK**	70	47	29	23	86.6	12.7	12	19	M14 x 1.5	M5 x 12	25.5	13	25.5	25	M6 x 25
25	**P5SS-025-RSK**	80	54	35	23	86.6	12.7	15	19	M14 x 1.5	M6 x 16	25.5	17	25.5	31	M8 x 25

*Size of hexagon socket head cap screws

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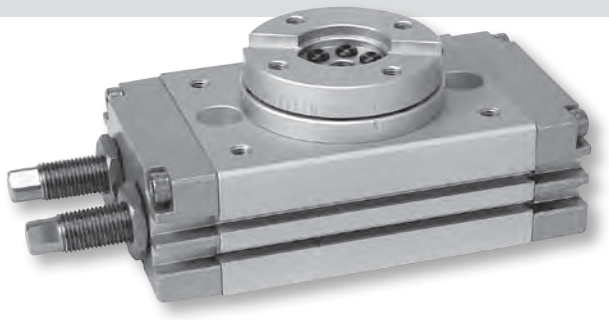
P5RS Rotary Tables

- Twin rack and pinion
- Adjustable between 0° and 190°
- Magnetic piston standard
- Stroke adjusters standard
- Available with shock absorbers



Operating information

Operating pressure:	1 to 9 bar (14.5 to 130.5 PSIG)
Temperature range:	-5° to 60° C (23° to 140° F)
Filtration requirements:	
Air filtration	40 micron or better
Air lubrication	Not necessary*
Air humidity	Low moisture content (dry)

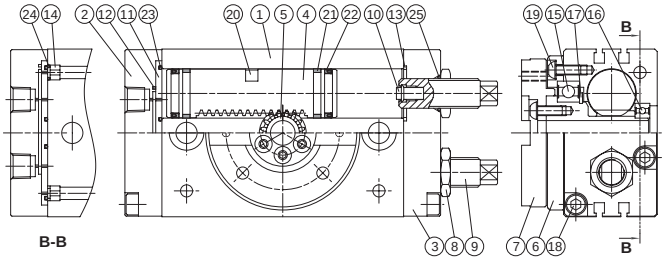
*Addition of lubrication will greatly increase service life

Ordering Information: P5RS Rotary Tables

Description	Ports (BSPP)	Rotation	Torque (N-m at 7 bar)	Weight (kg)	Part number
Rotary table, stroke adjusters	1/8	190 degrees	1.69	0.7	**P5RS-016DSG190B**
Rotary table, stroke adjusters	1/8	190 degrees	3.52	1.16	**P5RS-020DSG190B**
Rotary table, stroke adjusters	1/8	190 degrees	6.87	1.57	**P5RS-025DSG190B**
Rotary table, stroke adjusters	1/8	190 degrees	13.52	3.07	**P5RS-032DSG190B**
Rotary table, shock absorber	1/8	190 degrees	1.69	0.7	N/A
Rotary table, shock absorber	1/8	190 degrees	3.52	1.16	N/A
Rotary table, shock absorber	1/8	190 degrees	6.87	1.57	**P5RS-025DSG190WNSNNN**
Rotary table, shock absorber	1/8	190 degrees	13.52	3.07	**P5RS-032DSG190WNSNNN**

Sensor part numbers: Page 330.

Material



No.	Part name	Material	No.	Part name	Material
1	Body	Aluminum alloy	14	Fixed	Copper
2	Cover	Aluminum alloy	15	Ball bearing	Bearing steel
3	End cover	Aluminum alloy	16	Ball bearing	Bearing steel
4	Piston	Stainless steel	17	Snap ring	Spring steel
5	Pinion	SCM	18	Screw	SCM
6	Bearing retainer	Aluminum alloy	19	Screw	SCM
7	Table	Aluminum alloy	20	Magnet	Magnet material
8	Seal nut	Stainless steel	21	Wearing	PTFE
9	Shock absorber	Stainless steel	22	Piston packing	NBR
10	Cushion pad	NBR	23	O-ring	NBR
11	Plate	Aluminum alloy	24	O-ring	NBR
12	Packing	NBR	25	O-ring	NBR
13	Gasket	NBR			

☐ Most popular.

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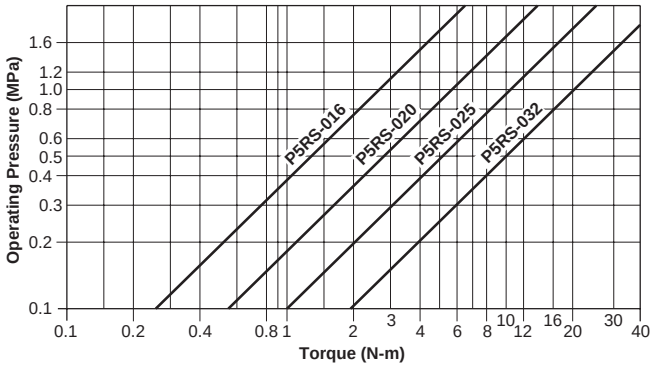
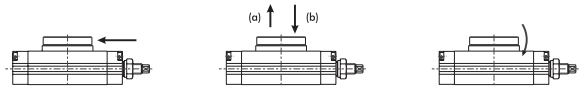
Load capacity - P5RS Rotary Table



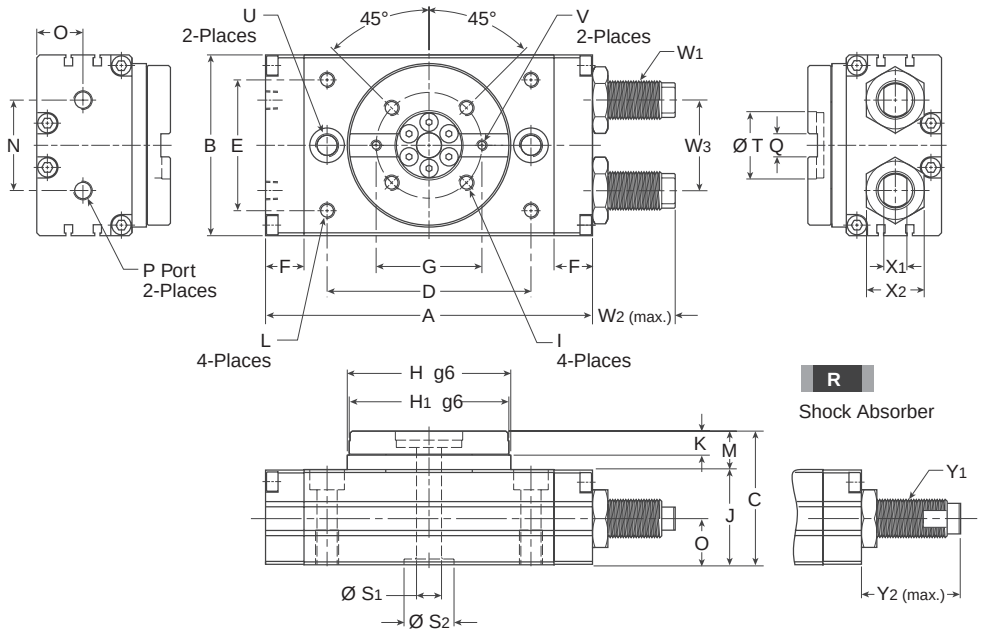
Allowable load

Set the load and moment to be applied to the table within the allowable values shown in the table below.
(Values outside of limitations will cause excessive play, deterioate accuracy, and shorten service life)



Bore	Allowable radial load (N)	Allowable thrust load (N) (a)	Allowable thrust load (N) (b)	Allowable moment (Nm)
16	78	74	78	2.4
20	147	137	137	4.0
25	196	197	363	5.3
32	314	296	451	9.7

Dimensions: P5RS Rotary Tables



Tube I.D.	A	B	C	D	E	F	G	H	H1	I	J	K	L	M	N	O	P	Q
16	108	58	47	62	38	15	38	50	48	M5 x 7 Dp, P.C.D38	33	8	M5 x 8 Dp	14	26	15.5	BSPP 1/8	$8^{+0.03}_{-0}$ (wide) x 3.3 Dp
20	128	68	55	78	47	15	46	62.5	60	M6 x 7 Dp, P.C.D46	38	10	M6 x 8 Dp	17	27	18.5	BSPP 1/8	$10^{+0.03}_{-0}$ (wide) x 3.5 Dp
25	135.5	77	58.5	84	55	15.5	48	67	65	M6 x 9 Dp, P.C.D48	41.5	10	M6 x 8 Dp	17	37	20	BSPP 1/8	$12^{+0.03}_{-0}$ (wide) x 4 Dp
32	170	94	69.5	106	68	20	55	85	83	M8 x 10 Dp, P.C.D55	49.5	12.5	M8 x 8.5 Dp	20	47	24	BSPP 1/8	$12^{+0.03}_{-0}$ (wide) x 5 Dp

Tube I.D.	S1	S2	T	U	V	W1	W2	W3	X1	X2	Y1	Y2
16	6	17 (H7) x 2.5 Dp	24 (H7) x 3 Dp	2-Ø 6.8 thru, Ø 11 x 6.5 Dp, M8 x 12 Dp (Sink)	M3 x 4 Dp	M10 x 1.0	27	26	7	17	N/A	31
20	10	22 (H7) x 2.5 Dp	32 (H7) x 3 Dp	2-Ø 8.6 thru, Ø 14 x 8.5 Dp, M10 x 15 Dp (Sink)	M4 x 6 Dp	M12 x 1.0	23	32	8	19	N/A	36
25	13	22 (H7) x 3 Dp	32 (H7) x 3.7 Dp	2-Ø 8.6 thru, Ø 14 x 8.5 Dp, M10 x 15 Dp (Sink)	M4 x 8 Dp	M14 x 1.5	36	37	8	22	MC150M-NB	52
32	13	26 (H7) x 3 Dp	35 (H7) x 4.7 Dp	2-Ø 10.5 thru, Ø 18 x 10.5 Dp, M12 x 18 Dp (Sink)	M5 x 8.5 Dp	M20 x 1.5	43	47	12	30	MC225M-NB	62

Dimensions in millimeters

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Pneumatic Division
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P5MD Feed Escapements

- Most effective mechanism for separating parts fed from a track or conveyor
- 7075-T6 aircraft quality aluminum body hard-coat anodized 60 RC with PTFE impregnation
- Adjustable retract stops
- Built-in sensor mounting slots
- Built-in sensor magnet for use with Hall Effect sensors
- Sealed design repels contaminants
- Slip fit dowel holes in body for precision applications
- Dynamic components are precision ground and hardened for wear resistance and long life
- Locking key ensures part separation and eliminates jams

Operating information

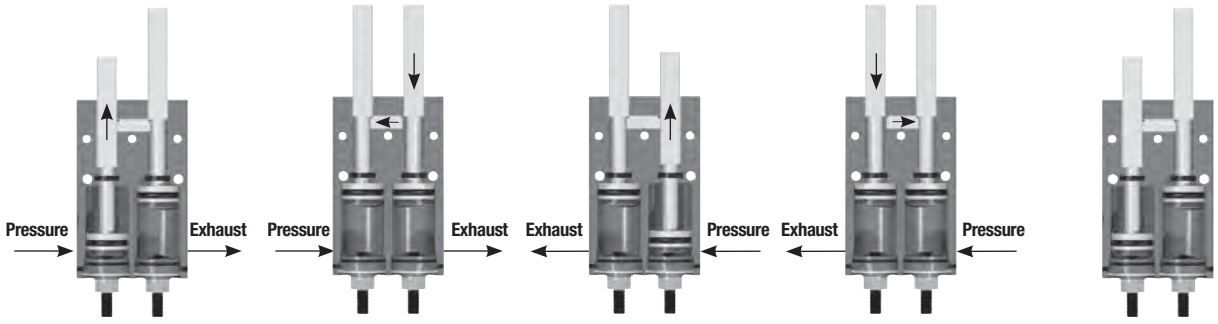
Operating pressure:	3 to 7 bar (44 to 102 PSIG)
Temperature range:	
Nitrile seals (Standard)	-35° to 80° C (-30° to 180° F)
Filtration requirements:	
Air filtration	40 micron or better
Air lubrication	Not necessary*
Air humidity	Low moisture content (dry)

*Addition of lubrication will greatly increase service life

Ordering Information: P5MD Feed Escapements

Stroke (mm)	Thrust force @ 7 Bar (N)	Parts escaped per minute	Weight (kg)	Side finger mount	Top finger mount
15.9	111	150	0.15	**P5MD-014SSG016B**	**P5MD-014TSG016B**
25.4	222	100	0.39	**P5MD-020SSG025B**	**P5MD-020TSG025B**
31.8	400	85	0.83	**P5MD-027SSG032B**	**P5MD-027TSG032B**

Sensor part numbers: Page 330.



- Dual double acting pistons slide in opposite directions within the body through the use of internal porting.
- When pressure is applied, one piston extends and passes a port in its cylinder wall which is linked to the retract side of the other piston's cylinder.
- The second piston then begins to retract and pushes the locking key aside into the cavity on the side of the first finger.
- Locking Key ensures only 1 finger can be retracted at a time.
- Finger must be allowed to fully extend for proper operation.

☐ Most popular.

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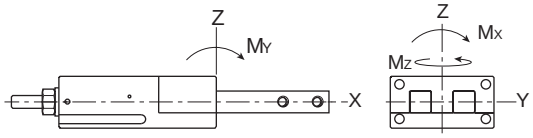
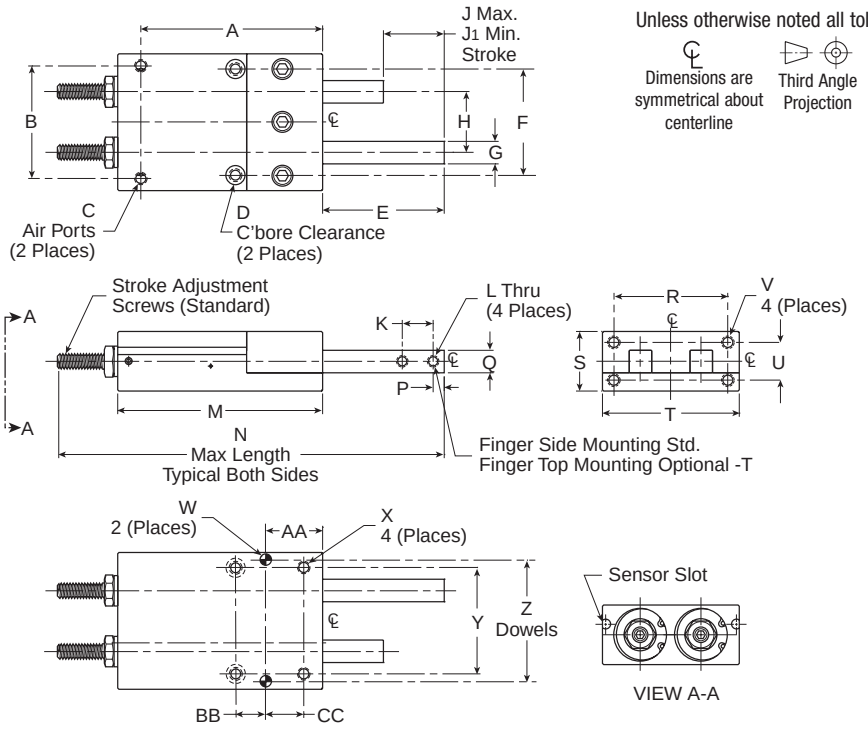
Loading capacity - P5MD Feed Escapements

	P5MD-014		P5MD-020		P5MD-027	
	Static (metric)	Dynamic (metric)	Static (metric)	Dynamic (metric)	Static (metric)	Dynamic (metric)
Maximum moment Mx	6 Nm	0.57 Nm	17 Nm	1.70 Nm	28 Nm	2.83 Nm
Maximum moment My	6 Nm	0.57 Nm	17 Nm	1.70 Nm	28 Nm	2.83 Nm
Maximum moment Mz	6 Nm	0.57 Nm	17 Nm	1.70 Nm	28 Nm	2.83 Nm



Dimensions: P5MD Feed Escapements



Unless otherwise noted all tolerances are as shown below

Dimensions are symmetrical about centerline

Third Angle Projection

Metric (mm)
(0.) = (±.25)
(0.0) = (±.13)
(0.00) = (±.013)

Part number	A	B	C	D	E	F	G	H	J	J1	K	L	M	N	P	Q	R	S	T
P5MD-014	51	30	M5	Ø 5.64 x 3.2 Dp	41.3	38.1	7.9	15.9	15.9	4.8	12.7	M4	57.9	117	4.8	7.9	38.1	19.1	31.8
P5MD-020	76	47	M5	Ø 7.95 x 1.6 Dp	50.8	44.5	9.5	25.4	25.4	6.4	12.7	M5	85.5	162	4.8	9.5	47.6	24.9	57.2
P5MD-027	100	57.1	M5	Ø 8.9 x 5 Dp	57.2	57.1	12.7	31.8	31.8	12.7	12.7	M6	112.3	197	6.4	12.7	60.3	34.5	69.9

Part number	U	V	W	X	Y	Z	AA	BB	CC
P5MD-014	12.7	M4 x 5.5 Dp	Ø 3 H7 x 3.8 Dp	M4 x 5 Dp	31.8	31.75	15.1	9.5	9.5
P5MD-020	15.9	M5 x 10 Dp	Ø 5 H7 x 5 Dp	M5 x 7 Dp	44.5	50.80	23.8	12.7	15.9
P5MD-027	25.4	M6 x 10 Dp	Ø 5 H7 x 6 Dp	M6 x 11 Dp	57.1	57.15	31.0	19.0	19.0

Dimensions in millimeters

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Sensors

Magnetic

Series	PNP with quick disconnect M8	NPN with quick disconnect M8	PNP with quick disconnect (90 degrees) M8	NPN with quick Disconnect (90 Degrees) M8	Page
P5GM	**P8S-HHSP-017**	**P8S-HHSN-017**	**P8S-HHSP-011**	**P8S-HISN-011**	B332
P5GN	**P8S-HHSP-017**	**P8S-HHSN-017**	**P8S-HHSP-011**	**P8S-HISN-011**	B332
P5GP	**P8S-HHSP-017**	**P8S-HHSN-017**	NA	NA	B332
P5GQ	**P8S-HHSP-017**	**P8S-HHSN-017**	NA	NA	B332
P5GR	**P8S-HHSP-017**	**P8S-HHSN-017**	**P8S-HHSP-011**	**P8S-HISN-011**	B332
P5GS	**P8S-HHSP-017**	**P8S-HHSN-017**	**P8S-HHSP-011**	**P8S-HISN-011**	B332
P5GT	NA	NA	NA	NA	
P5GU	**P8S-HHSP-017**	**P8S-HHSN-017**	NA	NA	B332
P5GV	NA	NA	NA	NA	B332
P5GW	**P8S-HHSP-017**	**P8S-HHSN-017**	**P8S-HHSP-011**	**P8S-HISN-011**	B332
P5MD	**P8S-HHSP-017**	**P8S-HHSN-017**	NA	NA	B332

Inductive

Series	PNP M8 disconnent	NPN M8 disconnect	PNP M12 disconnent	NPN M12 disconnect	Inductive sensor mounting kit	Page
P5GR-010	**P8S-HISP-014**	**P8S-HISN-014**	NA	NA	**P8S-HSMK-119**	B333
P5GR-014					**P8S-HSMK-119**	
P5GR-021					**P8S-HSMK-120**	
P5GS-016	**P8S-HISP-019**	**P8S-HISN-019**	NA	NA	**P8S-HSMK-116**	
P5GS-024					**P8S-HSMK-117**	
P5GS-032					**P8S-HSMK-118**	
P5GT-025	**P8S-HISP-019**	**P8S-HISN-019**	NA	NA	**P8S-HSMK-003**	
P5GT-025					**P8S-HSMK-003**	
P5GT-032					**P8S-HSMK-003**	
P5GT-046	**P8S-HISP-011**	**P8S-HISN-011**	NA	NA	**P8S-HSMK-072**	B332
P5GT-064					**P8S-HSMK-072**	
P5GT-089					**P8S-HSMK-073**	
P5GW-072	**P8S-HISP-011**	**P8S-HISN-011**	NA	NA	NA	B332
P5GW-95					NA	
P5GW-120					NA	
P5GW-156	NA	NA	**P8S-HISN-017**	**P8S-HISP-017**	NA	B333
P5GW-220					NA	

Sensors for Economy Grippers, Slide Tables, Rotary Tables

Series	Reed switch 5-120 V AC/DC	Reed switch 5-120 V AC/DC M8	NPN 5-30 VDC	NPN 5-30 VDC M8	PNP 5-30 VDC	PNP 5-30 VDC M8	Page
P5SS	**P8S-ERFXS**	**P8S-ERSUS**	**P8S-ENFXS**	**P8S-ENSUS**	**P8S-EPFXS**	**P8S-EPSUS**	B331
P5GA	**P8S-ERFXS**	**P8S-ERSUS**	**P8S-ENFXS**	**P8S-ENSUS**	**P8S-EPFXS**	**P8S-EPSUS**	B331
P5GB	**P8S-ERFXS**	**P8S-ERSUS**	**P8S-ENFXS**	**P8S-ENSUS**	**P8S-EPFXS**	**P8S-EPSUS**	B331
P5RS	**P8S-FRFXS**	**P8S-FRSUS**	**P8S-FNFXS**	**P8S-FNSUS**	**P8S-FPFXS**	**P8S-FPSUS**	B331

Cables

2 meter cable M8	5 meter cable M8	2 meter cable M12	5 meter cable M12
P8S-CABL-010	**P8S-CABL-013**	**P8S-CABL-014**	**P8S-CABL-018**

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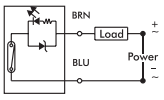
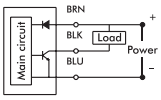
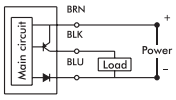
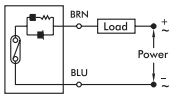
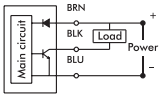
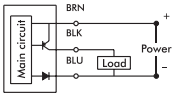
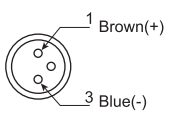
Model	P8S-FRFXS P8S-FRSUS (M8)	P8S-FNFXS	P8S-FPFXS
Wiring method	2 wire	3 wire	
Switching logic	SPST normally open	Solid state output, normally open	
Switch type	Reed switch	NPN current sinking	PNP current sourcing
Operating voltage	5 to 120 V DC/AC	5 to 30 VDC	
Switching voltage	100 mA max.	200 mA max.	
Contact rating	10 W max.	6 W max.	
Current consumption	—	8 mA @ 24 V max. (Switch active)	
Voltage drop	3.5 V max.	1 V @ 200 mA max.	
Leakage current	—	0.01 mA max.	
Indicator	Red LED	Red LED	Green LED
Cable	2.8 Ø, 2C	2.8 Ø, 3C	
Magnet frequency (1)	60 Gauss	40 Gauss	
Temperature range	-10°C to 70°C (14°F to 158°F)		
Shock (2)	30 G	50 G	
Vibration (3)	9 G		
Enclosure classification	IEC 529, IP67		
Protection circuit	None	Power source reverse polarity; surge suppression	
Connect diagram			

(1) Measuring standard target: Ø 15.5 x Ø 8 x 5t (Anisotropy rubber magnet).
(2) Sine wave / X.Y.Z 3 directions / 3 times each direction / 11ms each time.
(3) Double amplitude 1.5 mm / 10 Hz -55 Hz-10 Hz (Sweep 1min / X.Y.Z. 3 directions / 1 hour each time.

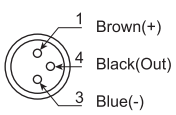
Model	P8S-ERFXS P8S-ERSUS (M8)	P8S-ENFXS P8S-ENSUS (M8)	P8S-EPFXS P8S-EPSUS (M8)
Switch type	Reed switch	NPN current sinking	PNP current sourcing
Contacts	Normal open		
Voltage range	5 to 120 V DC/AC	5 to 30 VDC	
Current range	100 mA max.	50 mA max.	
Contact rating	6 W max.	1.5 W max.	
Shock resistance	30 G	50 G	
Voltage drop	0.5 V max.		1.5V max.
Response time	Max. 1 ms		
Temperature range	-10°C to 70°C (14°F to 158°F)		
Lead wire	2.8 Ø, 3C		3.0 Ø, 3C, PU
Lead wire length	2 m		
Indicator lamp	LED lights up when ON		
Enclosure classification	IP67 (NEMA 6)		IEC 529, IP67
Indicator	Red LED		Green LED
Connect diagram			

Wiring of the QD

2 wire QD wiring



3 wire QD wiring



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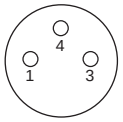
P8S-HHSP-011 and P8S-HISN-011 Sensors

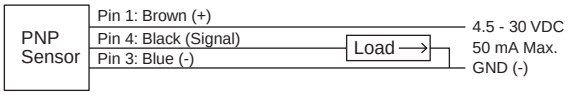
P8S-HHSP-011 ⟷ P8S-HISN-011

Description: ..... Solid state magnetoresistive (MR) sensor
Function: .....PNP (N.O.) or NPN (N.O.)
Voltage supply range:.....4.5 - 30 VDC
Current consumption: ..... Max. 9 mA @ 24 V
Voltage drop: ..... Max. 1.2 V
Max. switching current:.....50 mA
Reverse polarity protection:.....Yes
Short circuit (transient) protection:.....Yes
Temperature range: ..... -10°C to 70°C (14°F to 158°F)
Protection class:.....IP67
Response frequency: ..... 1 kHz

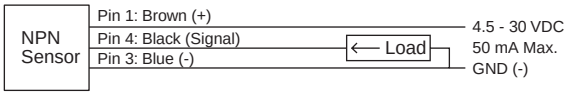


Pin 1: Brown (+)
Pin 3: Blue (-)
Pin 4: Black (Signal)

P8S-HHSP-011



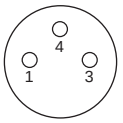
P8S-HISN-011



P8S-HHSP-017 and P8S-HHSN-017 Sensors

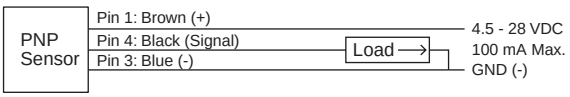
P8S-HHSP-017 ⟷ P8S-HHSN-017

Description: .....Magnetoresistive 4mm Dovetail
Function: .....PNP (N.O.) or NPN (N.O.)
Voltage supply range:.....4.5 - 28 VDC
Current consumption: ..... Max. 10 mA @ 24 V
Voltage drop: ..... Max. 0.5 V
Max. switching current:.....100 mA
Reverse polarity protection:.....Yes
Short circuit (transient) protection:.....Yes
Temperature range: ..... -10°C to 70°C (14°F to 158°F)
Protection class:.....IP67
Response frequency: ..... 1 kHz
Hysteresis: .....<0.2 mm
Repeatability:.....<0.1 mm)
Insulation resistance: ..... Min 100 M OHM (Lead to case @ 500 VDC)
Withstand voltage: ..... (Lead to case) 1000 VAC RMS for 1 min or 1500 VAC RMS for 2 sec

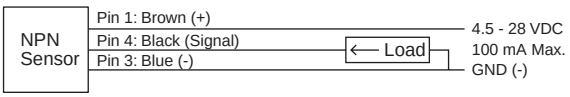


Pin 1: Brown (+)
Pin 3: Blue (-)
Pin 4: Black (Signal)

P8S-HHSP-017



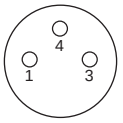
P8S-HHSN-017



P8S-HISP-011 and P8S-HISN-011 Sensors

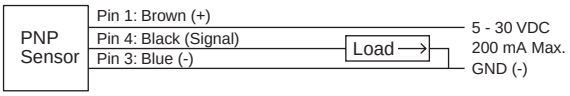
P8S-HISP-011 ⟷ P8S-HISN-011

Description: .....Inductive 8mm proximity sensor
Connection: .....3-pole quick disconnect
Function: .....PNP (N.O.) or NPN (N.O.)
Indicator:.....LED
Load current: ..... 200 mA max.
Internal voltage drop: .....< 1 V
Current consumption: ..... 15 mA max.
Operating voltage:.....5 - 30 VDC
Reverse polarity protection:.....Yes
Response frequency: .....800 - 1000 Hz
Relative humidity:.....35 - 95%
Shielded design:.....Yes
Sensing range:..... 1.5 mm
Temperature range: .....-25°C to 7°C (-13°F to 45°F)
NEMA rating:..... 6
IEC rating: IP67
Ratings:.....CE, ISO 9001

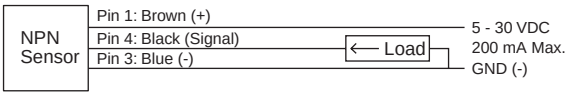


Pin 1: Brown (+)
Pin 3: Blue (-)
Pin 4: Black (Signal)

P8S-HISP-011



P8S-HISN-011



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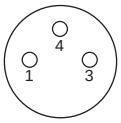
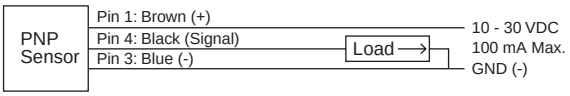
P8S-HISP-014 and P8S-HISN-014 Sensors

P8S-HISP-014 ◄——► P8S-HISN-014
Description: ..... Inductive 4mm proximity sensor
Connection: ..... 3-pole quick disconnect
Function: ..... PNP (N.O.) or NPN (N.O.)
Indicator: ..... LED
Load current: ..... 100 mA max.
Internal voltage drop: ..... < 2.5 V
Current consumption: ..... 18 mA
Operating voltage: ..... 10 - 30 VDC
Reverse polarity protection: ..... Yes
Response frequency: ..... 5 kHz
Relative humidity: ..... 35 - 95%
Shielded design: ..... Yes
Sensing range: ..... 1.0 mm
Temperature range: ..... -25°C to 75°C (-13°F to 167°F)
NEMA rating: 6
IEC rating: IP67
Ratings: ..... CE, ISO 9001

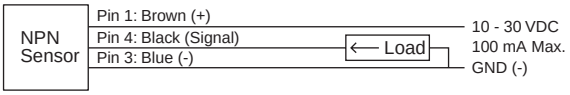


Pin 1: Brown (+)
Pin 3: Blue (-)
Pin 4: Black (Signal)

P8S-HISP-014

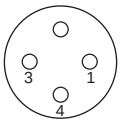


P8S-HISN-014



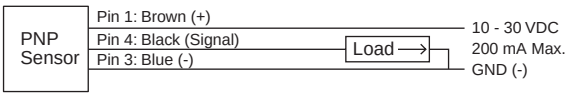
P8S-HISP-017 and P8S-HISN-017 Sensors

P8S-HISP-017 ◄——► P8S-HISN-017
Description: ..... Inductive 12mm proximity sensor
Connection: ..... 4-pole quick disconnect
Function: ..... PNP (N.O.) or NPN (N.O.)
Indicator: ..... 360° LED
Load current: ..... 200 mA max.
Internal voltage drop: ..... < 2.0 V
Current consumption: ..... 10 mA max.
Operating voltage: ..... 10 - 30 VDC
Reverse polarity protection: ..... Yes
Response frequency: ..... 2 kHz
Shielded design: ..... Yes
Sensing range: ..... 4 mm
Temperature range: ..... -25°C to 75°C (-13°F to 167°F)
NEMA rating: 6
IEC rating: IP67
Ratings: ..... UL, CSA, CE

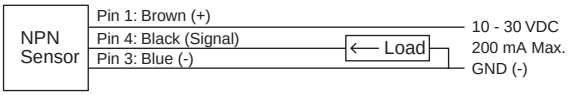


Pin 1: Brown (+)
Pin 3: Blue (-)
Pin 4: Black (Signal)

P8S-HISP-017



P8S-HISN-017



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Fittings

Male Connector	Thread (BSPP) / Tube	3mm	4mm (5/32 in)	6mm	8mm (5/16 in)	10mm	12mm
	M3	**68LF-3M-M3**					
	M5	**68LF-3M-M5**	**68LF-4M-M5**	**68LF-6M-M5**			
	1/8		**68LF-4M-2G**	**68LF-6M-2G**	**68LF-8M-2G**		
	1/4		**68LF-4M-4G**	**68LF-6M-4G**	**68LF-8M-4G**	**68LF-10M-4G**	**68LF-12M-4G**
	3/8			**68LF-6M-6G**	**68LF-8M-6G**	**68LF-10M-6G**	**68LF-12M-6G**
	1/2			**68LF-6M-8G**	**68LF-8M-8G**	**68LF-10M-8G**	**68LF-12M-8G**

Male Elbow 90° Swivel	Thread (BSPP) / Tube	3mm	4mm (5/32 in)	6mm	8mm (5/16 in)	10mm	12mm
	M3	**369PLP-3M-M3**	**369PLP-4M-M3**				
	M5	**369PLP-3M-M5**	**369PLP-4M-M5**	**369PLP-6M-M5**			
	1/8		**369PLP-4M-2G**	**369PLP-6M-2G**	**369PLP-8M-2G**		
	1/4		**369PLP-4M-4G**	**369PLP-6M-4G**	**369PLP-8M-4G**	**369PLP-10M-4G**	**369PLP-12M-4G**
	3/8			**369PLP-6M-6G**	**369PLP-8M-6G**	**369PLP-10M-6G**	**369PLP-12M-6G**
	1/2			**369PLP-6M-8G**	**369PLP-8M-8G**	**369PLP-10M-8G**	**369PLP-12M-8G**

Flow Control Right Angle	Thread (BSPP) / Tube	3mm	4mm (5/32 in)	6mm	8mm (5/16 in)	10mm	12mm
	M3	**FCM731-3M-M3**	**FCM731-4M-M3**				
	M5	**FCM731-3M-M5**	**FCM731-4M-M5**	**FCM731-6M-M5**			
	1/8		**FCM731-4M-2G**	**FCM731-6M-2G**	**FCM731-8M-2G**		
	1/4			**FCC731-6M-4G**	**FCC731-8M-4G**	**FCC731-10M-4G**	
	3/8				**FCC731-8M-6G**	**FCC731-10M-6G**	**FCC731-12M-6G**
	1/2						**FCC731-12M-8G**

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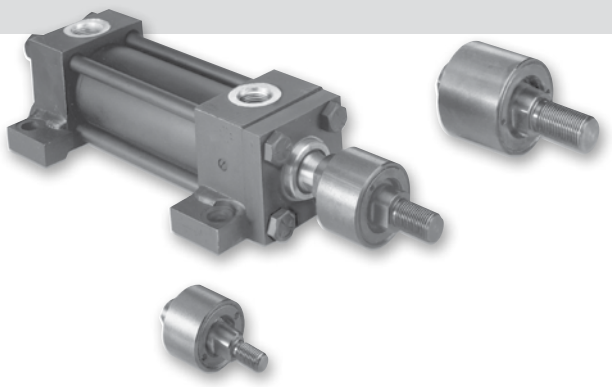
Linear Alignment Couplers

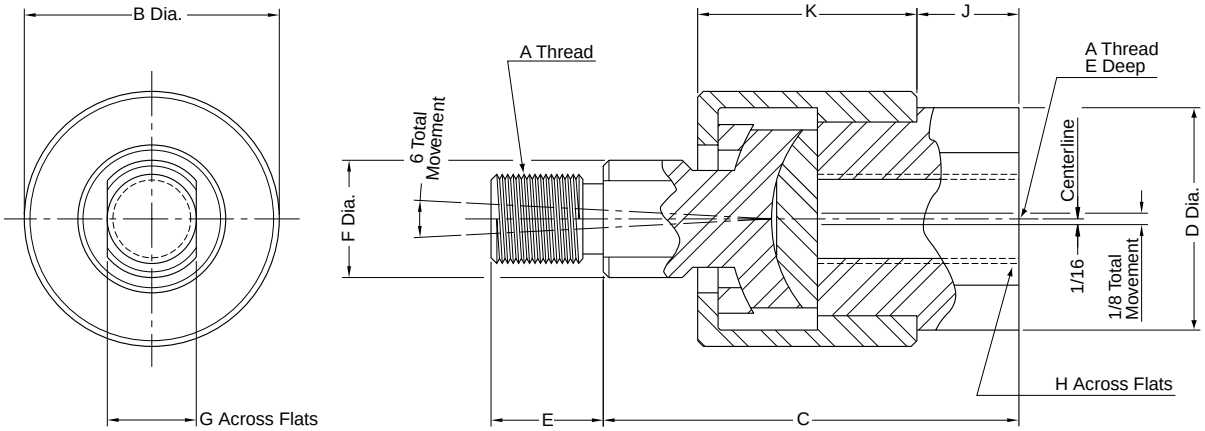


Linear Alignment Couplers are available in 12 standard thread sizes...

Cost Saving Features and Benefits Include...

- Maximum reliability for trouble-free operation, long life and lower operating costs
- Increased cylinder life by reducing wear on piston and rod bearings
- Stainless steel versions available. Please consult factory.
- Simplifying cylinder installation and reducing assembly costs
- Increase rod bearing and rod seal life for lower maintenance costs

Alignment coupler



See table 1 for part numbers and dimensions

Table 1 — Part numbers and dimensions

A	B	C	D	E	F	G	H	J	K	Max. pull load (lbs.)	Approx. weight (Lbs.)	Part number
5/16 -24	1-1/8	1-3/4	15/16	1/2	1/2	3/8	3/4	3/8	15/16	1200	0.35	**1347570031**
3/8 -24	1-1/8	1-3/4	15/16	1/2	1/2	3/8	3/4	3/8	15/16	2425	0.35	**1347570038**
7/16 -20	1-3/8	2	1-1/8	3/4	5/8	1/2	7/8	3/8	1-3/32	3250	0.55	**1347570044**
1/2 -20	1-3/8	2	1-1/8	3/4	5/8	1/2	7/8	3/8	1-3/32	4450	0.55	**1347570050**
5/8 -18	1-3/8	2	1-1/8	3/4	5/8	1/2	7/8	3/8	1-3/32	6800	0.55	**1347570063**
3/4 -16	2	2-5/16	1-5/8	1-1/8	1-5/16	3/4	1-5/16	7/16	1-9/32	9050	1.4	**1347570075**
7/8 -14	2	2-5/16	1-5/8	1-1/8	1-5/16	3/4	1-5/16	7/16	1-9/32	14450	1.4	**1347570088**
1-14	3-1/8	3	2-3/8	1-5/8	1-7/16	1-1/4	1-7/8	3/4	1-25/32	19425	4.8	**1347570100**
1-1/4 -12	3-1/8	3	2-3/8	1-5/8	1-7/16	1-1/4	1-7/8	3/4	1-25/32	30500	4.8	**1347570125**
1-1/4 -12	3-1/2	4	2	2	1-1/2	1-1/4	1-11/16	3/4	2-1/2	30500	6.9	**1337390125**
1-1/2 -12	4	4-3/8	2-1/4	2-1/4	1-3/4	1-1/2	1-15/16	7/8	2-3/4	45750	9.8	**1337390150**
1-3/4 -12	4	4-3/8	2-1/4	2-1/4	1-3/4	1-1/2	1-15/16	7/8	2-3/4	58350	9.8	**1337390175**
1-7/8 -12	5	5-5/8	3	3	2-1/4	1-15/16	2-5/8	1-3/8	3-3/8	67550	19.8	**1337390188**

How to order linear alignment couplers

When ordering a cylinder with a threaded male rod end, specify the coupler of equal thread size by part number as listed in Table 1, i.e.; Piston Rod “KK” or “CC” dimension is 3/4" - 16", specify coupler part number 1347570075.

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4TK Air-Oil Tanks

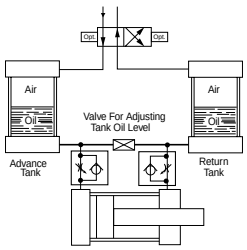
4TK Air-Oil Tanks – For Smoother Hydraulic Flow

Parker Air-Oil tanks provide a means to convert shop air pressure into hydraulic pressure. Compressed air is applied directly to the oil in the air-oil tank to convert it into hydraulic pressure. The hydraulic pressure is at a 1-to-1 ratio, i.e. 80 PSIG air produces 80 PSIG hydraulic pressure.

All Parker Air-Oil tanks have a fiberglass tube which shows the proper oil level. They also contain two fluid flow baffles. The top baffle disperses the incoming air over the surface of the oil in such a way to avoid agitation and aeration. The bottom baffle insures a smooth flow pattern that minimizes oil turbulence and eliminates swirling, funneling or splashing which in turn could cause oil aeration or the oil to be blown from the tank into the exhaust air.

Air-Oil tanks are used to smooth out the cylinder piston rod travel and to prevent chatter. They are mainly used in slow speed circuits. Since each tank is designed for a specific port size, increasing the port size in a tank to lower the fluid velocity is not recommended. A tank with a larger port size should be selected.

Fluid velocity in or out of the tank through standard ports should be less than 6 feet per second to prevent aeration of the oil. To limit the fluid velocity, flow controls should be applied to the air side of the tank to restrict the exhaust. Metered-in flow controls on the air side may aid in the reduction of aeration. Additional flow controls on the oil side may aid in controlling the actuator motion.



In a basic air-oil circuit the advance tank is connected to the cap end port of a hydraulic cylinder and the return tank to the head end port. Shop air is applied alternately to the two tanks through a 4-way air control valve. The oil in the advance tank is forced into the cap end of the cylinder to cause the piston rod to extend. At the same time, oil from the head end port is forced into the return tank, the air side of which is open to exhaust. To return the cylinder to retract position, air pressure is applied to the oil in the return tank.

Operating information

Operating pressure	17 bar (250 PSIG) maximum
Operating temperature	74°C (165°F) maximum
Filtration requirements	40 micron, dry filtered air

Table A – Rated capacities - cubic inches (in^3)

Bore size	Usable tank volume (Cu. In.) per internal height of tank											
	4	6	8	10	12	14	16	18	20	24	28	32
2-1/2	9	17	27	35	44	52	62	70	79	97	115	132
3-1/4	16	30	46	60	76	91	107	121	137	167	198	228
4	18	33	58	73	98	120	144	166	191	237	283	330
5	29	53	92	116	155	189	228	261	300	373	446	519
6	42	77	133	168	224	273	329	378	434	539	645	750
8	75	137	237	300	400	487	587	675	775	963	1150	1338

Ordering information

Example: 4.00CB4TKU 6.000

4.00			U		6.000
Tank diameter (inches)	Tank mounting style		Ports	Special modification	Tank height*
2.50	TEF Sleeve nut with side tap		U NPTF	S Special	Internal height in inches
3.25	TE Sleeve nut				
4.00	TB Tie rods extended, air end				
5.00	TC Tie rods extended, oil end				
6.00	TD Tie rods extended, both ends				
8.00	C Side lug (3MA style)				
	CB Side end angles				
	NB Base bar				

* Less than 4 Inches, Consult Factory

Note: Standard air-oil tanks are designed for use with petroleum base hydraulic oil. If other fluids will be used, please consult the factory. For larger than 8" Bore Sizes consult factory.

For ordering purposes, when special options or common modifications are requested, the factory will assign a sequential part number in place of the model number.

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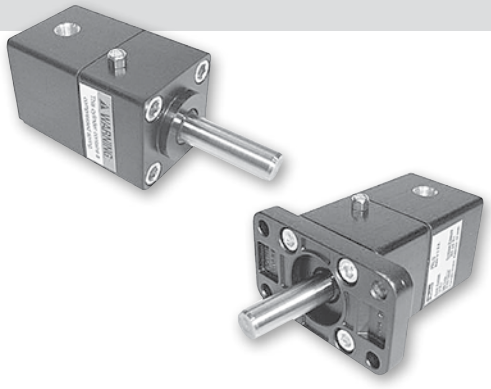
PRL Series



The PRL Series rod lock is used in applications where the locking of linear travel is required. It is commonly used in workholding applications and for locking tools and fixtures in the event of air pressure or electrical control failure.

Application

- Clamping: Without an appropriate air signal to the rod lock pressure port, the rod lock clamps to the precision metric rod and prevents rod movement in the axial direction.
- Delatching: When 4 Bar (58 PSIG) of air pressure is applied to the port, the rod lock releases and allows free movement of the rod. This will be required for installation.
- Locking Direction: The rod lock is designed specifically to prevent rod movement in the axial direction only. It is not recommended for locking rotary rod motion.
- Rod Material: The Series PRL rod lock is a precision locking device, therefore strict rod tolerances and rod material specifications are required to ensure safe and proper operation. Minimum requirements for the rod material include a chrome plated surface finish of 10 microinches or less and a surface hardness of 52 Rc. Rod material may be ordered separately in custom lengths. See next page for how to order.
- Environment: The rod lock is recommended for use in dry, clean conditions. Please take precautions to prevent moisture from entering the pressure port or the exhaust port of the locking device.

There should be no relative motion between the rod and the Rod Lock Device when the locking device is activated. The locking device is not intended to brake a movement in repeated sequences.

Considerations for Rod Sizing

When applying a rod lock device, it is important to consider the loading forces which will be imposed on the rod in the axial direction.

For applications where the rod lock and its associated load impose a compressive force on the rod, please consider the axial compression force and rod length to select the appropriate rod diameter for preventing rod buckling.

In situations where the rod lock and its associated load place the rod in tension, please take care to securely fasten the rod ends to the machine member.

Operating information

Working pressure	Max. 10 bar (145 PSIG)
Working temperature	-20° to 80°C (-4°F to 176°F)
Locking pressure	4 bar (58 PSIG) ±10%
Filtration requirements	40 micron, dry filtered air

Holding Forces

Model number	Holding force	
	Pounds (lbs.)	Newtons (N)
12PRL*	123	550
16PRL*	193	860
20PRL*	481	2140
25PRL*	1211	5390
32PRL*	1894	8425

* Character reserved for port style

Ordering information

Example: 25PRLU

25	PRL	U	
Rod diameter Specify 12, 16, 20, 25 or 32 (mm)		**Ports** **U** NPTF **R** BSPP	**S** **Specials** Leave blank if no specials

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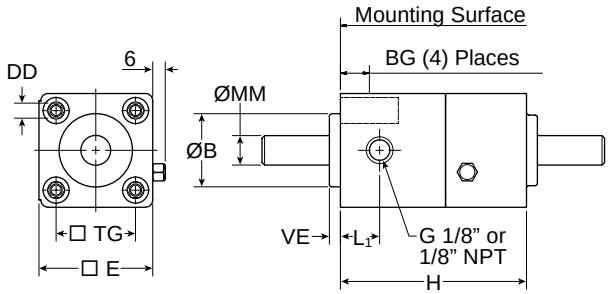
Basic rod lock



Rod lock with flange mount

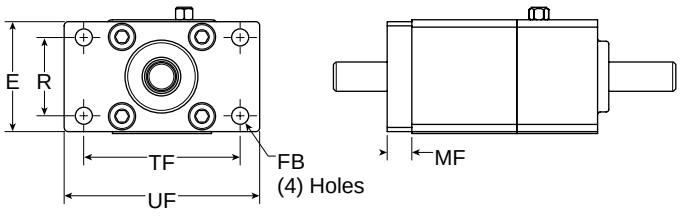


Table 1 – Mounting dimensions

Part	Rod dia. MM	B D11	BG	DD	E	FB	H	L1	MF	R	TF	TG	UF	VE
12PRL*	12.00 (-.04)	30	16	M6	46.5	7	76	16	10	32	64	32.5	80	4.5
16PRL*	16.00 (-.04)	35	16	M6	51	9	81.1	16	10	36	72	38	92	4.5
20PRL*	20.00 (-.04)	45	16	M8	76	9	100.8	26	12	50	100	56.5	129	5
25PRL*	25.00 (-.04)	55	16	M10	114.5	14	146	50	16	75	150	89	186	4
32PRL*	32.00 (-.04)	60	20	M12	140	16	165.2	60	20	90	180	110	220	6

* Character reserved for port style

Flange mounting kit

Mounting kits are available separately from the rod lock device. Please use the following part numbers to order. Mounting fasteners are included with the kits.

Model number	Flange mount
12PRL*	**L075370032**
16PRL*	**L075370040**
20PRL*	**L075370063**
25PRL*	**L075370100**
32PRL*	**L075370125**

* Character reserved for port style

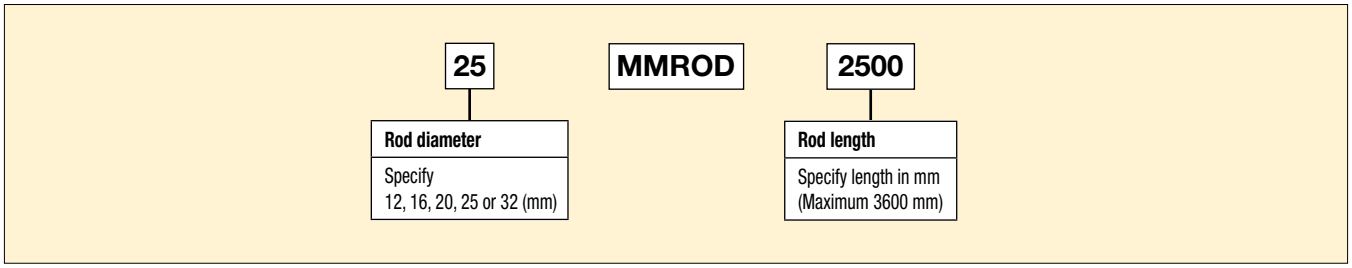
Metric rod material

Rods will be supplied in the specified length with chamfered ends. Please note, the rod material is case hardened and requires annealing prior to machining. Parker is pleased to quote custom machined rods per customer supplied drawings.

⚠ **Caution:** Using piston rod material which does not meet the tolerance and finished conditions as listed on the previous page may prevent the locking device from properly holding the intended load.

How to order

Example: 25MMROD2500



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Electronic Sensors

Solid State, Reed and Proximity Sensors

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PNP Solid State Sensor Selection Guide

Series		Bore size or type	3M flying leads	10m flying leads	8mm quick connect*	8mm quick connect w/ 1 m lead*	12mm quick connect*	Bracket	Sensor page #	Bracket page #
Compact cylinders	P1Q	12mm - 100mm	P8S-EPFXS [1]	N/A	P8S-EPSUS	N/A	N/A	N/A	N/A	N/A
	P1M standard sensor	All	P8S-GPFLX	P8S-GPFTX	P8S-GPSHX	P8S-GPSCX	P8S-GPMHX	N/A	B343	N/A
	P1M right angle sensor	All	N/A	P8S-SPETXD	P8S-SPTHXD	N/A	N/A	N/A	B346	N/A
	LPM	9/16"	L076990000 [2]	N/A	L07699000C	N/A	N/A	N/A	B350	N/A
		3/4" - 1-1/8"	L077000000 [2]	N/A	L07700000C	N/A	N/A	N/A	B350	N/A
		1-1/2" - 2"	L077010000 [2]	N/A	L07701000C	N/A	N/A	N/A	B350	N/A
		2-1/2" - 4"	L077020000 [2]	N/A	L07702000C	N/A	N/A	N/A	B350	N/A
Round body cylinders	P1L	20 - 25mm	P8S-GPFLX	P8S-GPFTX	P8S-GPSHX	P8S-GPSCX	P8S-GPMHX	P8S-TMC01	B343	B345
		32 - 63mm	P8S-GPFLX	P8S-GPFTX	P8S-GPSHX	P8S-GPSCX	P8S-GPMHX	P8S-TMC02	B343	B345
		80 - 100mm	P8S-GPFLX	P8S-GPFTX	P8S-GPSHX	P8S-GPSCX	P8S-GPMHX	P8S-TMC03	B343	B345
	SRM/SRDM	9/16" - 3/4"	P8S-GPFLX	P8S-GPFTX	P8S-GPSHX	P8S-GPSCX	P8S-GPMHX	P8S-TMC01	B343	B345
		1-1/16" - 2-1/2"	P8S-GPFLX	P8S-GPFTX	P8S-GPSHX	P8S-GPSCX	P8S-GPMHX	P8S-TMC02	B343	B345
	P	1-1/8" - 2-1/2"	P8S-GPFLX	P8S-GPFTX	P8S-GPSHX	P8S-GPSCX	P8S-GPMHX	P8S-TMC02	B343	B345
		3" - 4"	P8S-GPFLX	P8S-GPFTX	P8S-GPSHX	P8S-GPSCX	P8S-GPMHX	P8S-TMC03	B343	B345
Tie rod cylinders	3MA/4MA standard sensor	1-1/2" - 5"	P8S-GPFLX	P8S-GPFTX	P8S-GPSHX	P8S-GPSCX	P8S-GPMHX	N/A	B343	N/A
	3MA/4MA	6" - 8"						P8S-TMA0X	B343	N/A
Iso cylinders	P1A standard sensor	10-25mm	P8S-GPFLX	P8S-GPFTX	P8S-GPSHX	P8S-GPSCX	P8S-GPMHX	P8S-TMC01	B343	B345
	P1A right angle sensors	10mm	P1A-2XMK [1]	N/A	N/A	N/A	N/A	P1A-2CCC	B349	B349
		12mm	P1A-2XMK [1]	N/A	N/A	N/A	N/A	P1A-2DCC	B349	B349
		16mm	P1A-2XMK [1]	N/A	N/A	N/A	N/A	P1A-2FCC	B349	B349
		20mm	P1A-2XMK [1]	N/A	N/A	N/A	N/A	P1A-2HCC	B349	B349
		25mm	P1A-2XMK [1]	N/A	N/A	N/A	N/A	P1A-2JCC	B349	B349
	P1D standard & clean profiles	All	P8S-GPFLX	P8S-GPFTX	P8S-GPSHX	P8S-GPSCX	P8S-GPMHX	N/A	B343	N/A
	P1D tie rod version	All	P8S-GPFLX	P8S-GPFTX	P8S-GPSHX	P8S-GPSCX	P8S-GPMHX	P8S-TMA0X	B343	N/A
Rodless cylinders	P1X	All	P8S-GPFLX	P8S-GPFTX	P8S-GPSHX	P8S-GPSCX	P8S-GPMHX	P8S-TMA0Y	B343	N/A
	P1Z	All	P8S-GPFLX	P8S-GPFTX	P8S-GPSHX	P8S-GPSCX	P8S-GPMHX	N/A	B343	N/A
	OSP-P	All	KL3308 [1]	KL3309 [4]	KL3312	N/A	N/A	Included w/ sensor	B348	N/A
Guided cylinders	P5T	Flush mount	P8S-GPFLX	P8S-GPFTX	P8S-GPSHX	P8S-GPSCX	P8S-GPMHX	N/A	B343	N/A
		Right angle	N/A	P8S-SPETXD	P8S-SPTHXD	N/A	N/A	N/A	B346	N/A
	P5E	All	P8S-GPFLX	P8S-GPFTX	P8S-GPSHX	P8S-GPSCX	P8S-GPMHX	N/A	B343	N/A
	HB	All	P8S-GPFLX	P8S-GPFTX	P8S-GPSHX	P8S-GPSCX	P8S-GPMHX	N/A	B343	N/A
	P5L	20 - 25mm	P8S-GPFLX	P8S-GPFTX	P8S-GPSHX	P8S-GPSCX	P8S-GPMHX	P8S-TMC01	B343	B345
		32 - 63mm	P8S-GPFLX	P8S-GPFTX	P8S-GPSHX	P8S-GPSCX	P8S-GPMHX	P8S-TMC02	B343	B345
		80 - 100mm	P8S-GPFLX	P8S-GPFTX	P8S-GPSHX	P8S-GPSCX	P8S-GPMHX	P8S-TMC03	B343	B345
Rotary actuators	PV WR XR	Normally open	SMH-1P [2]	N/A	SMH-1PC	N/A	N/A	N/A	B352	N/A
		Normally closed	SMC-1P [2]	N/A	SMC-1PC	N/A	N/A	N/A	B352	N/A
	PRN(A)	All	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	PTR	10, 15	SWH-1P [3]	N/A	SWH-1PC	N/A	N/A	Included w/ sensor	B353	N/A
		20, 25, 32	SWH-2P [3]	N/A	SWH-2PC	N/A	N/A	Included w/ sensor	B353	N/A

1. Flying leads are 2 meters in length
2. Flying Leads are 1.5 meters in length
3. Flying leads are 1 meter in length
4. Flying leads are 5 meter in length

Note: See page B354 for Weld Immune Sensors.
* See page B355 for cord sets.

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NPN Solid State Sensor Selection Guide

Series		Bore size or type	3m flying leads	10m flying leads	8mm quick connect*	8mm quick connect w/ 1m lead*	12mm quick connect*	Bracket	Sensor page #	Bracket page #
Compact cylinders	**P1Q**	12mm - 100mm	**P8S-ENFXS** [1]	N/A	**P8S-ENSUS**	N/A	N/A	N/A	N/A	N/A
	P1M standard sensor	All	**P8S-GNFLX**	**P8S-GNFTX**	**P8S-GNSHX**	**P8S-GNSCX**	**P8S-GNMHX**	N/A	B343	N/A
	P1M right angle sensor	All	N/A	**P8S-SNETX**	**P8S-SNTHX**	N/A	N/A	N/A	B346	N/A
	LPM	9/16"	**L076950000** [2]	N/A	**L07695000C**	N/A	N/A	N/A	B350	N/A
		3/4" - 1-1/8"	**L076960000** [2]	N/A	**L07696000C**	N/A	N/A	N/A	B350	N/A
		1-1/2" - 2"	**L076970000** [2]	N/A	**L07697000C**	N/A	N/A	N/A	B350	N/A
		2-1/2" - 4"	**L076980000** [2]	N/A	**L07698000C**	N/A	N/A	N/A	B350	N/A
Round body cylinders	**P1L**	20 - 25mm	**P8S-GNFLX**	**P8S-GNFTX**	**P8S-GNSHX**	**P8S-GNSCX**	**P8S-GNMHX**	**P8S-TMC01**	B343	B345
		32 - 63mm	**P8S-GNFLX**	**P8S-GNFTX**	**P8S-GNSHX**	**P8S-GNSCX**	**P8S-GNMHX**	**P8S-TMC02**	B343	B345
		80 - 100mm	**P8S-GNFLX**	**P8S-GNFTX**	**P8S-GNSHX**	**P8S-GNSCX**	**P8S-GNMHX**	**P8S-TMC03**	B343	B345
	SRM/SRDM	9/16" - 3/4"	**P8S-GNFLX**	**P8S-GNFTX**	**P8S-GNSHX**	**P8S-GNSCX**	**P8S-GNMHX**	**P8S-TMC01**	B343	B345
		1-1/16" - 2-1/2"	**P8S-GNFLX**	**P8S-GNFTX**	**P8S-GNSHX**	**P8S-GNSCX**	**P8S-GNMHX**	**P8S-TMC02**	B343	B345
	P	1-1/8" - 2-1/2"	**P8S-GNFLX**	**P8S-GNFTX**	**P8S-GNSHX**	**P8S-GNSCX**	**P8S-GNMHX**	**P8S-TMC02**	B343	B345
		3" - 4"	**P8S-GNFLX**	**P8S-GNFTX**	**P8S-GNSHX**	**P8S-GNSCX**	**P8S-GNMHX**	**P8S-TMC03**	B343	B345
Tie rod cylinders	**3MA/4MA standard sensor**	1-1/2" - 5"	**P8S-GNFLX**	**P8S-GPNFTX**	**P8S-GNSHX**	**P8S-GPNSCX**	**P8S-GNMHX**	N/A	B343	N/A
	3MA/4MA	6" - 8"						**P8S-TMA0X**	B343	N/A
ISO cylinders	**P1A standard sensor**	10-25mm	**P8S-GNFLX**	**P8S-GNFTX**	**P8S-GNSHX**	**P8S-GNSCX**	**P8S-GNMHX**	**P8S-TMC01**	B343	B345
	P1A right angle sensors	10mm bore	**P1A-2XLK** [1]	N/A	N/A	N/A	N/A	**P1A-2CCC**	B349	B349
		12mm bore	**P1A-2XLK** [1]	N/A	N/A	N/A	N/A	**P1A-2DCC**	B349	B349
		16mm bore	**P1A-2XLK** [1]	N/A	N/A	N/A	N/A	**P1A-2FCC**	B349	B349
		20mm bore	**P1A-2XLK** [1]	N/A	N/A	N/A	N/A	**P1A-2HCC**	B349	B349
		25mm bore	**P1A-2XLK** [1]	N/A	N/A	N/A	N/A	**P1A-2JCC**	B349	B349
	P1D standard & clean profiles	All	**P8S-GNFLX**	**P8S-GNFTX**	**P8S-GNSHX**	**P8S-GNSCX**	**P8S-GNMHX**	N/A	B343	N/A
	P1D tie rod version	All	**P8S-GNFLX**	**P8S-GNFTX**	**P8S-GNSHX**	**P8S-GNSCX**	**P8S-GNMHX**	**P8S-TMA0X**	B343	N/A
Rodless Cylinders	**P1X**	All	**P8S-GNFLX**	**P8S-GNFTX**	**P8S-GNSHX**	**P8S-GNSCX**	**P8S-GNMHX**	**P8S-TMA0Y**	B343	N/A
	P1Z	All	**P8S-GNFLX**	**P8S-GNFTX**	**P8S-GNSHX**	**P8S-GNSCX**	**P8S-GNMHX**	N/A	B343	N/A
	OSP-P	All	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Guided cylinders	**P5T**	Flush mount	**P8S-GNFLX**	**P8S-GNFTX**	**P8S-GNSHX**	**P8S-GNSCX**	**P8S-GNMHX**	N/A	B343	N/A
		Right angle	N/A	**P8S-SNETX**	**P8S-SNTHX**	N/A	N/A	N/A	B346	N/A
	P5E	All	**P8S-GNFLX**	**P8S-GNFTX**	**P8S-GNSHX**	**P8S-GNSCX**	**P8S-GNMHX**	N/A	B343	N/A
	HB	All	**P8S-GNFLX**	**P8S-GNFTX**	**P8S-GNSHX**	**P8S-GNSCX**	**P8S-GNMHX**	N/A	B343	N/A
	P5L	20 - 25mm	**P8S-GNFLX**	**P8S-GNFTX**	**P8S-GNSHX**	**P8S-GNSCX**	**P8S-GNMHX**	**P8S-TMC01**	B343	B345
		32 - 63mm	**P8S-GNFLX**	**P8S-GNFTX**	**P8S-GNSHX**	**P8S-GNSCX**	**P8S-GNMHX**	**P8S-TMC02**	B343	B345
		80 - 100mm	**P8S-GNFLX**	**P8S-GNFTX**	**P8S-GNSHX**	**P8S-GNSCX**	**P8S-GNMHX**	**P8S-TMC03**	B343	B345
Rotary actuators	**PV WR XR**	Normally open	**SMH-1N** [2]	N/A	**SMC-1NC**	N/A	N/A	N/A	B352	N/A
		Normally closed	**SMC-1N** [2]	N/A	**SMC-1NC**	N/A	N/A	N/A	B352	N/A
	PRN(A)	All	See page B308							
	PTR	10, 15	**SWH-1N** [3]	N/A	**SWH-1NC**	N/A	N/A	Included w/ sensor	B351	N/A
		20, 25, 32	**SWH-2N** [3]	N/A	**SWH-2NC**	N/A	N/A	Included w/ sensor	B351	N/A

1 Flying leads are 2 meters in length
2 Flying Leads are 1.5 meters in length
3 Flying leads are 1 meter in length

Note: See page B354 for Weld Immune Sensors.
* See page B355 for cord sets.

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Reed Sensor Selection Guide

Series		Bore size or type	3m flying leads	10m flying leads	8mm quick connect*	8 mm quick connect w/ 1 m lead*	12mm quick connect*	Bracket	Sensor page #	Bracket page #
Compact cylinders	**P1Q**	12mm - 100mm	**P8S-ERFXS** [1]	N/A	**P8S-ERSUS**	N/A	N/A	N/A	N/A	N/A
	P1M standard sensor	All	**P8S-GRFLX**	**P8S-GRFTX**	**P8S-GRSHX**	**P8S-GRSCX**	**P8S-GRMHX**	N/A	B344	N/A
	P1M right angle sensor	All	N/A	**P8S-SRETX**	**P8S-SRTHX**	N/A	N/A	N/A	B346	N/A
	LPM	9/16"	**L077030000** [1]	N/A	**L07703000C**	N/A	N/A	N/A	B348	N/A
		3/4" - 1-1/8"	**L077040000** [1]	N/A	**L07704000C**	N/A	N/A	N/A	B348	N/A
		1-1/2" - 2"	**L077050000** [1]	N/A	**L07705000C**	N/A	N/A	N/A	B348	N/A
		2-1/2" - 4"	**L077060000** [1]	N/A	**L07706000C**	N/A	N/A	N/A	B348	N/A
Round body cylinders	**P1L**	20 - 25mm	**P8S-GRFLX**	**P8S-GRFTX**	**P8S-GRSHX**	**P8S-GRSCX**	**P8S-GRMHX**	**P8S-TMC01**	B344	B345
		32 - 63mm	**P8S-GRFLX**	**P8S-GRFTX**	**P8S-GRSHX**	**P8S-GRSCX**	**P8S-GRMHX**	**P8S-TMC02**	B344	B345
		80 - 100mm	**P8S-GRFLX**	**P8S-GRFTX**	**P8S-GRSHX**	**P8S-GRSCX**	**P8S-GRMHX**	**P8S-TMC03**	B344	B345
	SRM/SRDM	9/16" - 3/4"	**P8S-GRFLX**	**P8S-GRFTX**	**P8S-GRSHX**	**P8S-GRSCX**	**P8S-GRMHX**	**P8S-TMC01**	B344	B345
		1-1/16" - 2-1/2"	**P8S-GRFLX**	**P8S-GRFTX**	**P8S-GRSHX**	**P8S-GRSCX**	**P8S-GRMHX**	**P8S-TMC02**	B344	B345
	P	1-1/8" - 2-1/2"	**P8S-GRFLX**	**P8S-GRFTX**	**P8S-GRSHX**	**P8S-GRSCX**	**P8S-GRMHX**	**P8S-TMC02**	B344	B345
		3" - 4"	**P8S-GRFLX**	**P8S-GRFTX**	**P8S-GRSHX**	**P8S-GRSCX**	**P8S-GRMHX**	**P8S-TMC03**	B344	B345
Tie rod cylinders	**3MA/4MA standard sensor**	1-1/2" - 5"	**P8S-GRFLX**	**P8S-GRFTX**	**P8S-GRSHX**	**P8S-GRSCX**	**P8S-GRMHX**	N/A	B344	N/A
	3MA/4MA	6" - 8"						**P8S-TMA0X**	B342	N/A
ISO cylinders	**P1A standard sensor**	10-25mm	**P8S-GRFLX**	**P8S-GRFTX**	**P8S-GRSHX**	**P8S-GRSCX**	**P8S-GRMHX**	**P8S-TMC01**	B342	B345
	P1A alternate sensors	10mm bore	**P1A-2XRL**	N/A	**P1A-2XSH**	N/A	N/A	**P1A-2CCB**	B349	B349
		12mm bore	**P1A-2XRL**	N/A	**P1A-2XSH**	N/A	N/A	**P1A-2DCB**	B349	B349
		16mm bore	**P1A-2XRL**	N/A	**P1A-2XSH**	N/A	N/A	**P1A-2FCB**	B349	B349
		20mm bore	**P1A-2XRL**	N/A	**P1A-2XSH**	N/A	N/A	**P1A-2HCB**	B349	B349
		25mm bore	**P1A-2XRL**	N/A	**P1A-2XSH**	N/A	N/A	**P1A-2JCB**	B349	B349
	P1D standard & clean profiles	All	**P8S-GRFLX**	**P8S-GRFTX**	**P8S-GRSHX**	**P8S-GRSCX**	**P8S-GRMHX**	N/A	B344	N/A
	P1D tie rod version	All	**P8S-GRFLX**	**P8S-GRFTX**	**P8S-GRSHX**	**P8S-GRSCX**	**P8S-GRMHX**	**P8S-TMA0X**	B344	N/A
Rodless cylinders	**P1X**	All	**P8S-GRFLX**	**P8S-GRFTX**	**P8S-GRSHX**	**P8S-GRSCX**	**P8S-GRMHX**	**P8S-TMA0Y**	B344	N/A
	P1Z	All	**P8S-GRFLX**	**P8S-GRFTX**	**P8S-GRSHX**	**P8S-GRSCX**	**P8S-GRMHX**	N/A	B344	N/A
	OSP-P	All	**KL3302** [3]	**KL3300** [4]	**KL3302**	N/A	N/A	Included w/ sensor	B344	N/A
Guided cylinders	**P5T**	Flush mount	**P8S-GRFLX**	**P8S-GRFTX**	**P8S-GRSHX**	**P8S-GRSCX**	**P8S-GRMHX**	N/A	B344	N/A
		Right angle	N/A	**P8S-SRETX**	**P8S-SRTHX**	N/A	N/A	N/A	B344	N/A
	P5E	All	**P8S-GRFLX**	**P8S-GRFTX**	**P8S-GRSHX**	**P8S-GRSCX**	**P8S-GRMHX**	N/A	B344	N/A
	HB	All	**P8S-GRFLX**	**P8S-GRFTX**	**P8S-GRSHX**	**P8S-GRSCX**	**P8S-GRMHX**	N/A	B344	N/A
	P5L	20 - 25mm	**P8S-GRFLX**	**P8S-GRFTX**	**P8S-GRSHX**	**P8S-GRSCX**	**P8S-GRMHX**	**P8S-TMC01**	B344	B344
		32 - 63mm	**P8S-GRFLX**	**P8S-GRFTX**	**P8S-GRSHX**	**P8S-GRSCX**	**P8S-GRMHX**	**P8S-TMC02**	B344	B344
		80 - 100mm	**P8S-GRFLX**	**P8S-GRFTX**	**P8S-GRSHX**	**P8S-GRSCX**	**P8S-GRMHX**	**P8S-TMC03**	B344	B344
Rotary actuators	**PV WR XR**	N.O. high amp	**SMR-1** [1]	N/A	**SMR-1C**	N/A	N/A	N/A	B352	N/A
		N.O. low amp	**SMR-1L** [1]	N/A	**SMR-1LC**	N/A	N/A	N/A	B352	N/A
		N.C.	**SMD-1L** [1]	N/A	**SMD-1LC**	N/A	N/A	N/A	B352	N/A
	PRN	50 - 800	See model code						B351	N/A
	PTR	10, 15	**SWR-1** [2]	N/A	**SWR-1C**	N/A	N/A	Included w/ sensor	B353	N/A
		20, 25, 32	**SWR-2** [2]	N/A	**SWR-2C**	N/A	N/A	Included w/ sensor	B353	N/A

1. Flying leads are 1.5 meters in length
2. Flying Leads are 1 meters in length
3. Flying leads are 2 meter in length
4. Flying leads are 5 meter in length

Note: See page B354 for Weld Immune Sensors.
* See page B355 for cord sets.

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
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P8S Global Drop-In Solid State Sensors

CE

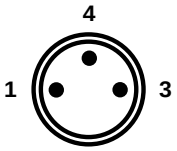
Wiring	PNP sensor	NPN sensor	PNP sensor ATEX certified
3m flying leads	**P8S-GPFLX**	**P8S-GNFLX**	**P8S-GPFLX/EX**
10m flying leads	**P8S-GPFTX**	**P8S-GNFTX**	
0.3m lead with 8mm connector	**P8S-GPSHX**	**P8S-GNSHX**	N/A
0.3m lead with 12mm connector	**P8S-GPMHX**	**P8S-GNMHX**	
1m lead with 8mm connector	**P8S-GPSCX**	**P8S-GNSCX**	

Specifications

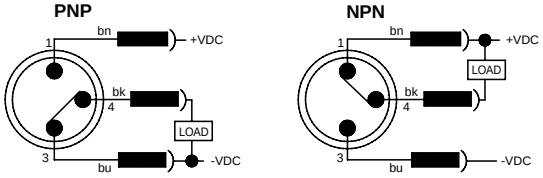
Switch classification	Standard PNP or NPN	ATEX certified PNP
Type	Electronic	
Output function	Normally open	
Sensor output	PNP/NPN	PNP
Operating voltage	10 - 30VDC	180 - 30VDC
Continuous current	100 mA max.	70 mA max.
Response sensitivity	28 Gauss min.	
Switching frequency	1 KHz	
Power consumption	10 mA max.	
Voltage drop	2.5 VDC max.	
Ripple	10% of operating voltage	
Hysteresis	1.5 mm max.	
Repeatability	0.1 mm max.	
EMC	EN 60 947-5-2	
Short-circuit protection	Yes	
Power-up pulse suppression	Yes	
Reverse polarity protection	Yes	
Enclosure rating	IP 68	
Shock and vibration stress	30g, 11 ms, 10 to 55 Hz, 1 mm	
Operating temperature range	-25°C to +75°C (-13°F to 167°F)	-20°C to +45°C (-4°F to 113°F)
Housing material	PA 12, black	
Connector cable	PVC	
Connector	PUR	—
Approval for ATEX	—	3D/3G

Wiring connection

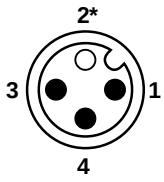
Flying lead or 8 mm connector (shown)



Pin	Wire	Function
1	Brown	Operating voltage (+VDC)
4	Black	Output signal (N.O.)
3	Blue	-VDC

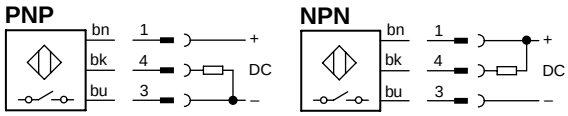


12 mm connector

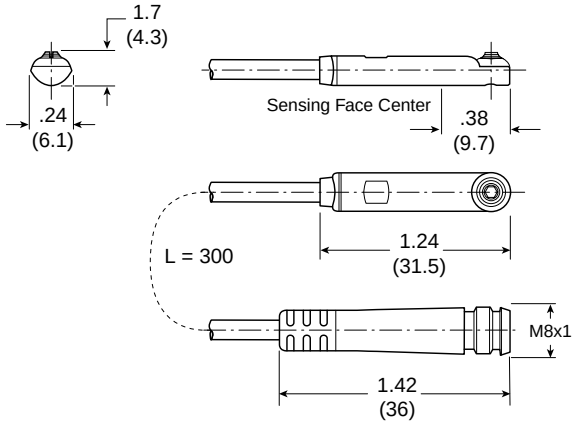


* Pin 2 not present.

Pin	Wire	Function
1	Brown	Operating voltage (+VDC)
4	Black	Output signal (N.O.)
2*	White	Not used
3	Blue	-VDC



Dimensions



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P8S Global Drop-In Reed Sensors

CE

Wiring	Reed sensor
3m flying leads	**P8S-GRFLX**
10m flying leads	**P8S-GRFTX**
0.3m lead with 8mm connector	**P8S-GRSHX**
0.3m lead with 12mm connector	**P8S-GRMHX**
1m lead with 8mm connector	**P8S-GRSCX**

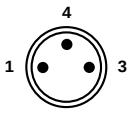
Specifications

Type	2-Wire Reed
Output function	Normally open
Operating voltage	10 - 120 VAC*, 10 - 30 VDC
Switching power	6 W/VA
Continuous current	100 mA max.
Response sensitivity	30 Gauss min.
Switching frequency	400 Hz
Voltage drop	2.5 V max.
Ripple	10% of operating voltage
Hysteresis	1.5 mm max.
Repeatability	0.2 mm max.
Emc	EN 60 947-5-2
Reverse polarity protection	Yes
Enclosure rating	IP 68
Shock and vibration stress	30g, 11 ms, 10 to 55 Hz, 1 mm
Operating temperature range	-25°C to +75°C (-13°F to 167°F)
Housing material	PA 12, Black
Connector cable	PVC
Connector	PUR cable with 8 or 12 mm connector

* 8mm connector rated for 50 vac max.

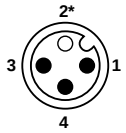
Wiring connection

Flying Lead or 8 mm Connector



Pin	Wire	Function
1	Brown	Operating voltage (+V)
4	Black	Not used
3	Blue	Output signal (-V or ground)

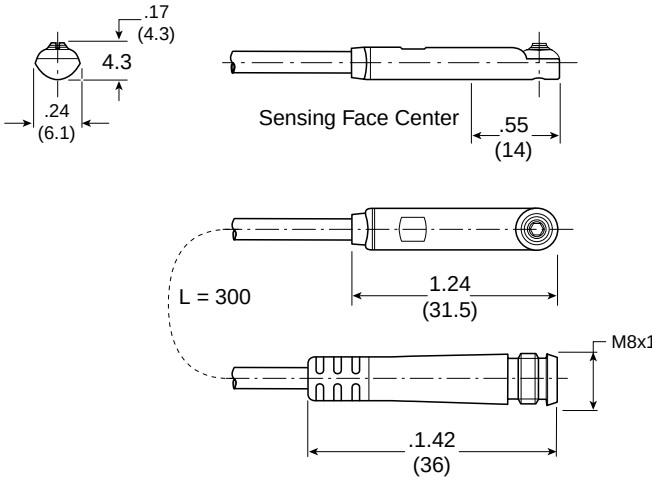
12 mm Connector



Pin	Wire	Function
1	Brown	Operating voltage (+V)
2*	White	Not used
3	Blue	Output signal (-V or ground)
4	Black	Not used

* Pin 2 not present.

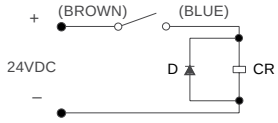
Dimensions



Circuit for switching contact protection (for inductive loads, e.g. solenoids, relays)

(Required for proper operation 24VDC)

Put diode parallel to load (CR) following polarity as shown.

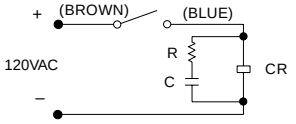


D: Diode: select a diode with the breakdown voltage and current rating according to the load.

Typical Example – 100 volt, 1 amp diode
CR: Relay coil (under 0.5W coil rating)

(Recommended for longer life 120 VAC)

Put a resistor and capacitor in parallel with the load (CR). Select the resistor and capacitor according to the load.



Typical Example:
CR: Relay coil (under 2W coil rating)
R: Resistor 1 KΩ - 5 KΩ, 1/4 W
C: Capacitor 0.1 ΩF, 600 V

⚠ Caution

- Use an ampmeter to test reed sensor current. Testing devices such as incandescent light bulbs may subject the reed sensor to high in-rush loads.
- **NOTE:** When checking an unpowered reed sensor for continuity with a digital ohmmeter the resistance reading will change from infinity to a very large resistance (2 M ohm) when the sensor is activated. This is due to the presence of a diode in the reed sensor.
- Anti-magnetic shielding is recommended for reed sensors exposed to high external RF or magnetic fields.
- The magnetic field strength of the piston magnet is designed to operate with our sensors. Other manufacturers' sensors may not operate correctly in conjunction with these magnets.
- Use relay coils for reed sensor contact protection.
- The operation of some 120 VAC PLC's (especially some older Allen-Bradley PLC's) can overload the reed sensor. The sensor may fail to release after the piston magnet has passed. This problem may be corrected by the placement of a 700 to 1K OHM resistor between the sensor and the PLC input terminal. Consult the manufacturer of the PLC for appropriate circuit.
- Sensors with long wire leads (greater than 15 feet) can cause capacitance build-up and sticking will result. Attach a resistor in series with the reed sensor (the resistor should be installed as close as possible to the sensor). The resistor should be selected such that R (ohms) >E/0.3.

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Tie Rod Bracket Assembly Part Number and Dimensions

Tie Rod Bracket Assembly is necessary for Global and Mini-Global Sensor installation on all tie rod construction cylinders. This includes all Intermediate Trunnion mounts (Style DD or MT4); some 1-1/8" bore 3MA Series mounts; and all 6"-8" bore Sensors and bracket assemblies must be ordered separately.

Part number P8S-TMA0X fits 1-1/2" to 8" bores and 32-200mm bores for Global Sensors

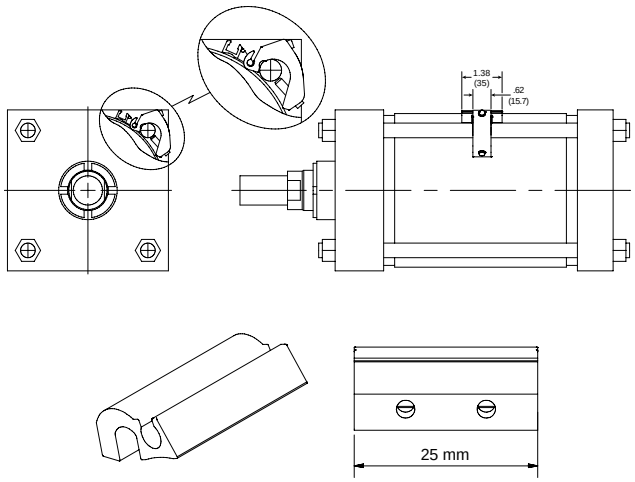
Part number P8S-TMA0Z fits 1-1/8" bore for Mini-Global Sensors

Round body bracket assembly part numbers

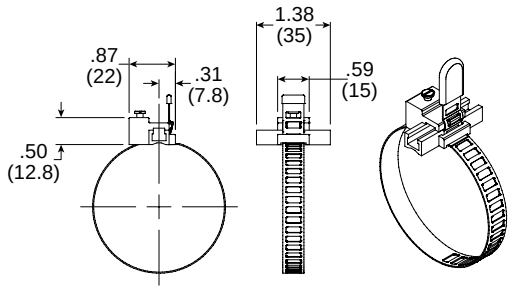
Sensors and brackets must be ordered separately

Bore size	Round body bracket
9/16" - 1-1/16"	**P8S-TMC01**
20 - 25mm	**P8S-TMC01**
1-1/8" - 2-1/2"	**P8S-TMC02**
32 - 63mm	**P8S-TMC02**
3" - 4"	**P8S-TMC03**
80 - 100mm	**P8S-TMC03**

P8S-TMA0X



P8S-TMA0Z



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P8S Right Angle Solid State Sensors

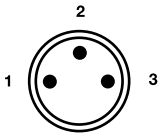
CE

Specifications

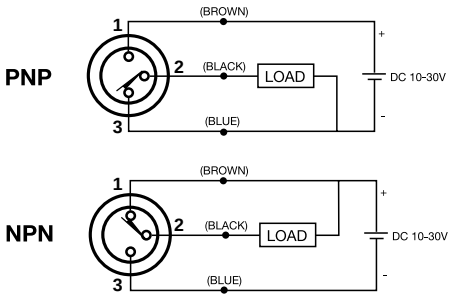
Type	Electronic
Output function	Normally open
Switching output	PNP/NPN
Operating voltage	10 - 30VDC
Continuous current	≤ 150 mA
Response sensitivity	30 Gauss min.
Switching frequency	5kHz
Power consumption	15 mA
Voltage drop	≤ 2 VDC
Ripple	≤ 10% of operating voltage
Delay time (24v)	Approx. 20 ms
Time delay before availability	≤ 2 ms
Hysteresis	≤ 1.5 mm
Repeatability	≤ 0.2 mm
EMC	EN 60 947-5-2
Short-circuit protection	Yes
Power-up pulse suppression	Yes
Reverse polarity protection	Yes
Enclosure rating	IP 67 DIN 40050
Shock and vibration stress	30g, 11ms, 10 to 55 Hz, 1 mm
Ambient temperature range	-25°C to +75°C (-13°F to 167°F)
Housing material	PA 12, black
Connector cable	PVC
Connector	PUR cable w/8 mm connector

Wiring	PNP sensors	NPN sensors
0.2m lead with 8mm connector	**P8S-SPTHXD**	**P8S-SNTHX**
10m flying leads	**P8S-SPETXD**	**P8S-SNETX**

Wiring connection



Pin	Wire	Function
1	Brown	Operating voltage (+VDC)
2	Black	Output signal (N.O.)
3	Blue	-VDC



P8S Right Angle Reed Sensors

CE

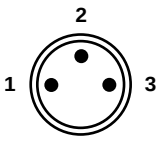
Specifications

Type	2-wire reed
Output function	Normally open
Output voltage	10 - 110* VAC, 10 - 30 VDC
Continuous current	≤ 100 mA
Response sensitivity	30 Gauss min.
Switching frequency	400 Hz
Voltage drop	≤ 3 V
Ripple	≤ 10% of operating voltage
Time delay (24v)	Approx. 20 ms
Hysteresis	≤ 1.0 mm
Repeatability	≤ 0.2 mm
EMC	EN 60 947-5-2
Reverse polarity protection	Yes
Enclosure rating	IP 67
Shock and vibration stress	30g, 11ms, 10 to 55 Hz, 1 mm
Ambient temperature range	-25°C to +75°C (-13°F to 167°F)
Housing material	PA 12, black
Connector cable	PVC
Connector	PUR cable w/8 mm connector

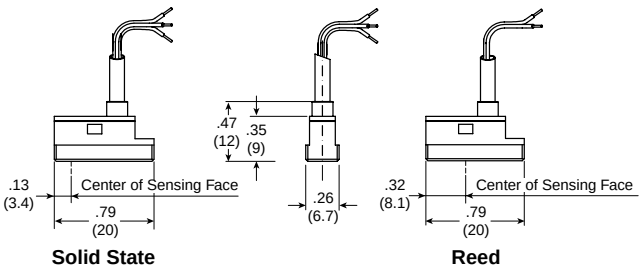
* 8Mm connector rated for 50 vac max.

Wiring	Reed sensors
0.2m lead with 8mm connector	**P8S-SRTHX**
10m flying leads	**P8S-SRETX**

Wiring connection



Pin	Wire	Function
1	Brown	Operating voltage (+V)
3	Black	Not used
2	Blue	Output signal (-V or Ground)



Solid State **Reed**

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OSP-P Magnetic Switches

OSP-P Magnetic Switches for T-Slot – Series RST & EST

Magnetic switches are used for electrical sensing of the position of the piston, e.g. at its end positions. They can also be used for sensing of intermediate positions.

Sensing is contactless, based on magnets which are built-in as standard. A yellow LED indicates operating status.

The universal magnetic switches are suitable for all OSP-P Actuators.

1) For the magnetic switch temperature range, please take into account the surface temperature and the self-heating properties of the linear drive.

Characteristics

Electrical characteristics	Unit	Type RST	Type EST
Switching output		Reed	PNP
Operating voltage	V	10-30 AC/DC	10-30 DC
Ripple		—	≤ 10%
Voltage drop	V	≤ 3	≤ 2
Electrical configuration		Two wire	Three wire
Output function		normally open normally closed	normally open
Permanent current	mA	≤ 100	≤ 100
Breaking capacity	W	≤ 6 peak	—
Power consumption at UB = 24V, switched on, without load	mA	—	≤ 10
Function indicator		LED, yellow (not for normally closed)	
Response time	ms	≤ 2	≤ 0.5
Sensitivity	mT	2 – 4	2 – 4
Time delay before availability	ms	—	≤ 2
Reverse polarity protection		Yes	Yes
Short-circuit protection		No	Yes (pulsed)
Switchable capacity load	µF	0.1 at 100 W, 24 VDC	
Switching frequency	Hz	≤ 400	≤ 5k
Repeatability	mm	≤ 0.2	≤ 0.2
Hysteresis	mm	≤ 1.5	≤ 1.5
EMC	EN	60947-5-2	
Lifetime		≥ 35 Mio. cycles with PLC load	Unlimited
Power-up pulse suppression		—	Yes
Protection for inductive load		—	Yes
Mechanical characteristics	**Unit**	**Type RST**	**Type EST**
Housing		Plastic / PA66 + PA6I red	
Cable cross section	mm2	2 x 0.14	3 x 0.14
Cable type*		PUR, black	PUR, black
Bending radius	mm	≥ 36	≥ 30
Weight (Mass)	kg	ca. 0.030 RST-K ca. 0.010 RST-S	ca. 0.030 EST-K ca. 0.010 EST-S
Degree of protection	IP	67 to DIN EN 60529	
Ambient temperature range*†	°C	-25°C to +80°C	-25°C to +75°C at UB=10 – 30 V -25°C to +80°C at UB=10 – 28 V
– with adapter	°C	-25°C to +60°C	
Adapter tightening torque	Nm	0.15 (tightening torque of screwing adapter onto magnetic switch)	
Shock resistance			
Vibration to EN 60068-2-6	G	15, 11 ms, 10 to 55 Hz, 1 mm	
Shock to EN 60068-2-27	G	50, 11 ms	
Bump to EN 60068-2-29	G	30, 11 ms, 1000 bumps each axis	

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Ordering Information

Version	Voltage	Type	Order number
Magnetic switch, reed contact, normally open, LED indicator, cable 2 m	10-30 V AC / DC	**RST-K**	**KL3302**
Magnetic switch, reed contact, normally open, LED indicator, cable 5 m	10-30 V AC / DC	**RST-K**	**KL3300**
Magnetic switch, reed contact, normally open, snap connector M8, LED indicator, cable 0.24 m	10-30 V AC / DC	**RST-S**	**KL3302**
Magnetic switch, reed contact, normally open, screw connector M8, LED indicator, cable 0.24 m	10-30 V AC / DC	**RST-S**	**KL3303**
Magnetic switch, reed contact, normally closed, cable 5 m	10-30 V AC / DC	**RST-K**	**KL3305**
Magnetic switch, electronic, PNP LED indicator, cable 2 m	10-30 V DC	**EST-K**	**KL3308**
Magnetic switch, electronic, PNP LED indicator, cable 5 m	10-30 V DC	**EST-K**	**KL3309**
Magnetic switch, electronic, PNP snap connector M8, LED indicator	10-30 V DC	**EST-S**	**KL3312**
Magnetic switch, electronic, PNP screw connector M8, LED indicator	10-30 V DC	**EST-S**	**KL3306**

Included in delivery: 1 magnetic switch
1 adapter for dovetail groove mounting

Accessories

Description	Type	Order number
Cable M8, 2.5 m without lock nut	**KS 25**	**KY3240**
Cable M8, 5.0 m without lock nut	**KS 50**	**KY3241**
Cable M8, 10.0 m without lock nut	**KS 100**	**KY3140**
Cable M8, 2.5 m with lock nut	**KSG 25**	**KC3102**
Cable M8, 5.0 m with lock nut	**KSG 50**	**KC3104**
Adapter for dovetail groove (pack of 10)		**KL3333**

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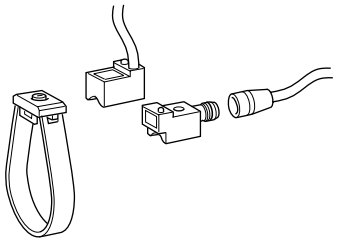
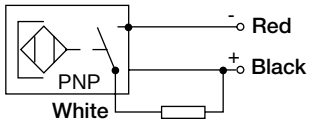
P1A Series Solid State Sensors

These sensors are of solid-state type, with no moving parts. Short-circuit and transient protection is incorporated as standard. The integral electronics make these sensors suitable for applications with very high switching frequencies.

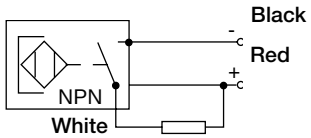


Wiring connection

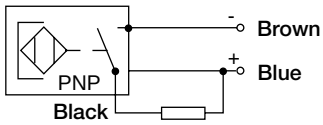
P1A-2XMK



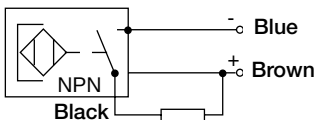
P1A-2XLK



P1A-2XHK,P1A-2XJH



P1A-2XEK, P1A-2XFH



Electronic Sensors

Output	Cable length	Weight (lb)	Part number
PNP, N.O.	2 m	0.09	**P1A-2XMK, Rt. angle**
NPN, N.O.	2 m	0.09	**P1A-2XLK, Rt. angle**
PNP, N.O.	2 m	0.022	**P1A-2XHK**
NPN, N.O.	2 m	0.022	**P1A-2XEK**
PNP, N.O.	*	0.033	**P1A-2XJH**
NPN, N.O.	*	0.033	**P1A-2XFH**

Mounting Brackets

Fits cylinder bore size	Weight (lb)	Part number
10mm	0.01	**P1A-2CCC**
12mm	0.01	**P1A-2DCC**
16mm	0.0176	**P1A-2FCC**
20mm	0.0176	**P1A-2HCC**
25mm	0.022	**P1A-2JCC**

Cable for Sensors

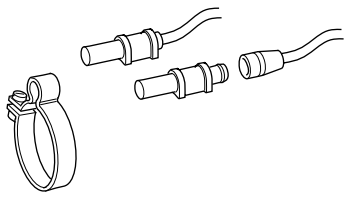
Cable length	Weight (lb)	Part number
3 m	0.12	**9126344341****
10 m	0.4	**9126344342****

* Cable ordered separately

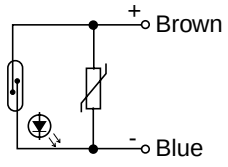
** Cable includes female part connector for sensor

P1A Series Reed Sensors

The reed sensors incorporate a well-proven, universal-voltage, compact reed switch element; making them suitable for a wide range of applications. They can work with electronic control systems or conventional relay systems.



Wiring connection



Electronic Sensors

Output	Cable length	Weight (lb)	Part number
Making (N.O.)	3m	0.12	**P1A-2XRL**
Making (N.O.)	*	0.004	**P1A-2XSH**

Mounting Brackets

Fits cylinder bore size	Weight (lb)	Part number
10mm	0.004	**P1A-2CCB**
12mm	0.005	**P1A-2DCB**
16mm	0.006	**P1A-2FCB**
20mm	0.009	**P1A-2HCB**
25mm	0.010	**P1A-2JCB**

Cable for Sensors

Cable length	Weight (lb)	Part number
3 m	0.12	**9126344341****
10 m	0.4	**9126344342****

* Cable ordered separately

** Cable includes female part connector for sensor

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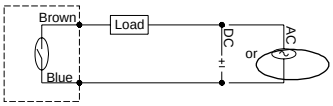
LP/LPM Series Sensors

Bore size	Reed (Low AMP)	NPN sinking	PNP sourcing
9/16"	**L077030000**	**L076950000**	**L076990000**
3/4", 1-1/8"	**L077040000**	**L076960000**	**L077000000**
1-1/2", 2"	**L077050000**	**L076970000**	**L077010000**
2-1/2", 3", 4"	**L077060000**	**L076980000**	**L077020000**

Note: For sensors with an 8mm connector, replace the last digit with a 'C'. For example: L07696000C.

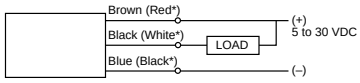
Circuits

Reed Sensor
NOTE: Polarity must be observed for DC operation only.

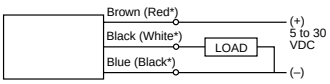


*Number in parentheses pertains to inductive loads.

NPN Sensor – Sinking Output
Color of Cable .....Black
"On" State Voltage Drop ..... 1.5V Maximum

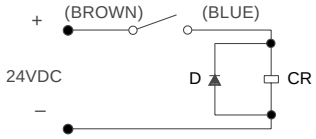


PNP Sensor – Sourcing Output
Color of Cable ..... Black
"On" State Voltage Drop .....1.5V Maximum



Circuit for Switching Contact Protection (Inductive Loads) – for Reed Sensor Only
(Required for proper operation 24V DC)

Put Diode parallel to load (CR) following polarity as shown below.

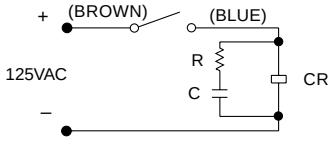


D: Diode: select a Diode with the breakdown voltage and current rating according to the load.

Typical Example – 100 Volt, 1 Amp Diode
CR: Relay coil (under 0.5W coil rating)
(Recommended for longer life 125 VAC)

*Wire colors in parentheses pertain to sensors manufactured before 10/15/93.

Put a resistor and capacitor in parallel with the load (CR). Select the resistor and capacitor according to the load.



Typical Example:
CR: Relay coil (under 2W coil rating)
R: Resistor 1 KΩ – 5 KΩ, 1/4 W
C: Capacitor 0.1 µF, 600 V

⚠ Caution

- Use an ampmeter to test reed sensor current. Testing devices such as incandescent light bulbs may subject the reed sensor to high in-rush loads.
- NOTE: When checking an unpowered reed sensor for continuity with a digital ohmmeter the resistance reading will change from infinity to a very large resistance (2 M ohm) when the sensor is activated. This is due to the presence of a diode in the reed sensor.
- Anti-magnetic shielding is recommended for reed sensors exposed to high external RF or magnetic fields.
- The magnetic field strength of the piston magnet is designed to operate with our sensors. Other manufacturers' sensors may not operate correctly in conjunction with these magnets.
- Current capabilities are relative to operational temperatures.
- Use relay coils for reed sensor contact protection.
- The operation of some 120 VAC PLC's (especially some older Allen-Bradley PLC's) can overload the reed sensor. The sensor may fail to release after the piston magnet has passed. This problem may be corrected by the placement of a 700 to 1K OHM resistor between the sensor and the PLC input terminal. Consult the manufacturer of the PLC for appropriate circuit.
- Sensors with long wire leads (greater than 15 feet) can cause capacitance build-up and sticking will result. Attach a resistor in series with the reed sensor (the resistor should be installed as close as possible to the sensor). The resistor should be selected such that R (ohms) >E/0.3.

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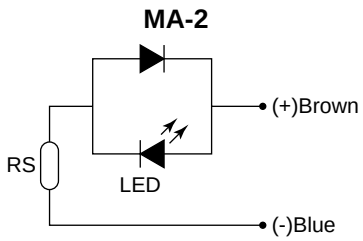
PRNA Sizes 3 to 30 Sensors

Fixed position sensor



Variable position sensor

Size	Part number
1	**FR-1PRN**
3	**FR-3PRN**
10	**FR-10PRN**
20	**FR-20PRN**
30	**FR-30PRN**

Model code and ordering information

Example: SR20 - 180 - 90

SR **20** – **180** – **90**

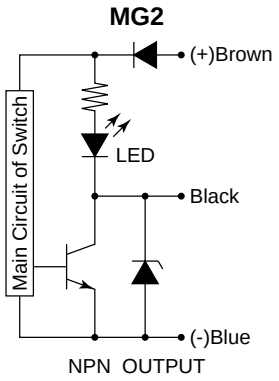
Size
3
10
20
30

Rotation	
090	90°
100	100°
180	180°
270	270°

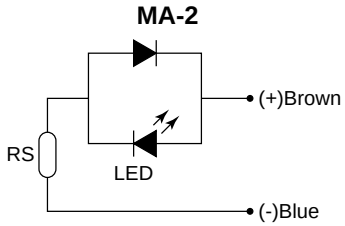
Reference point	
45	45°
90	90°

PRN Sizes 50 to 800 Sensors

Solid state sensors



Reed sensors



Model code and ordering information

Example: FM50 - 90 - 45 - MA2

FM **50** – **90** – **45** – **MA** **2**

Size
50
150
300
800

Rotation	
090	90°
180	180°
270	270°

Reference point	
45	45°
90	90°

Sensor type	
MA	Reed
MG	Solid State

Number sensors	
2	Standard

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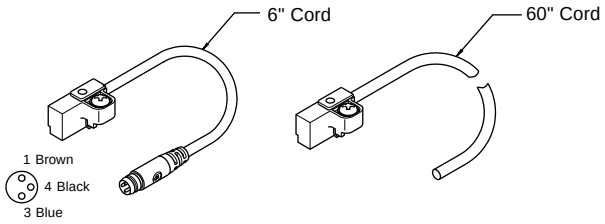
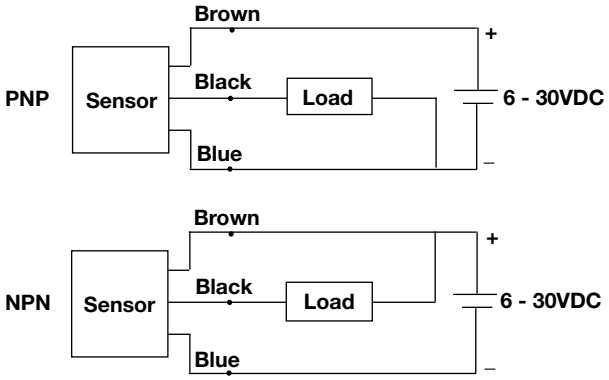
PV, WR & WR Series Solid State (Hall Effect) Sensors

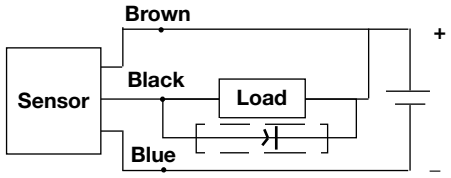
Type	LED color	Logic	Cable/Connector	Part number
N.O.	Green	PNP	1.5m black with leads	**SMH-1P**
N.O.	Red	NPN		**SMH-1N**
N.C.	Yellow	PNP		**SMC-1P**
N.C.	White/Red	NPN		**SMC-1N**
N.O.	Green	PNP	0.15m black with connector	**SMH-1PC**
N.O.	Red	NPN		**SMH-1NC**
N.C.	Yellow	PNP		**SMC-1PC**
N.C.	White/Red	NPN		**SMC-1NC**



Wiring connection



Protection circuit*



* When connecting an inductive load (relay, solenoid valve, etc.), a protection circuit is recommended. Use a 100V, 1A diode. (NPN connection shown.)

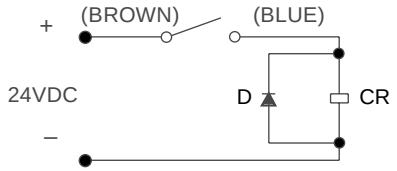
PV, WR & WR Series Reed Sensors

Reed sensors are available in a normally open or normally closed configuration. The low amp sensor is suitable for connection to PLCs or other low current devices. The high amp sensor can be used to drive sequencers, relays, coils, or other devices directly.

Type	LED color	Rating	Cable/Connector	Part number
N.O.	Green	High Amp	1.5m Gray with Leads	**SMR-1**
N.O.	Red	Low Amp		**SMR-1L**
N.C.	Yellow	Low Amp		**SMD-1L**
N.O.	Green	High Amp	0.15m Gray with Connector	**SMR-1C**
N.O.	Red	Low Amp		**SMR-1LC**
N.C.	Yellow	Low Amp		**SMD-1LD**

Integral circuit for switching contact protection

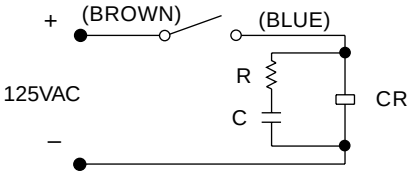
(Required for proper operation 24V DC)
Put Diode parallel to load (CR) with polarity as shown below.



D: Diode: select a Diode with the breakdown voltage and current rating according to the load.

CR: Relay coil (under 0.5 W coil rating)

(Recommended for longer sensor life 125V AC)
Put resistor and capacitor parallel to load (CR).



CR: Relay coil (under 2 W coil ratings)

R: Resistor under 1 K ohm

C: Capacitor 0.1 µF

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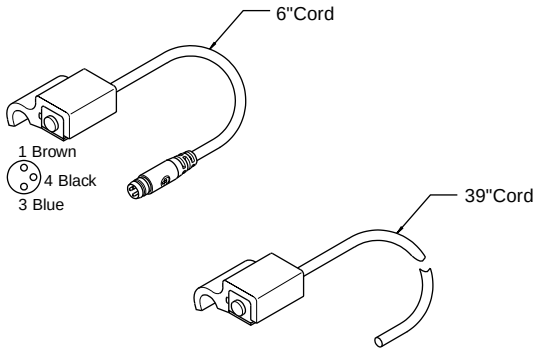
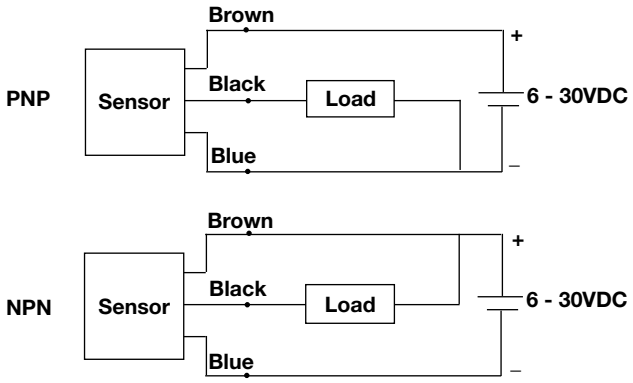
PTR Series Solid State (Hall Effect) Sensors

PTR model	PNP		NPN	
	With 6" male quick connect	With 39" potted-in leads	With 6" male quick connect	With 39" potted-in leads
10	**SWH-1PC**	**SWH-1P**	**SWH-1NC**	**SWH-1N**
15	**SWH-1PC**	**SWH-1P**	**SWH-1NC**	**SWH-1N**
20	**SWH-2PC**	**SWH-2P**	**SWH-2NC**	**SWH-2N**
25	**SWH-2PC**	**SWH-2P**	**SWH-2NC**	**SWH-2N**
32	**SWH-2PC**	**SWH-2P**	**SWH-2NC**	**SWH-2N**

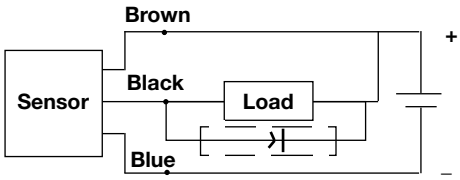
Note: Sensors with male quick connect option require female cordsets to be ordered separately. Please reference catalog 0900P-E, page M22.



Wiring connection



Protection circuit*



* When connecting an inductive load (relay, solenoid valve, etc.), a protection circuit is recommended. Use a 100V, 1A diode. (NPN connection shown.)

PTR Series Reed Sensors

PTR model	With 6" male quick connect	With 39" potted-in leads
10	**SWR-1C**	**SWR-1**
15	**SWR-1C**	**SWR-1**
20	**SWR-2C**	**SWR-2**
25	**SWR-2C**	**SWR-2**
32	**SWR-2C**	**SWR-2**

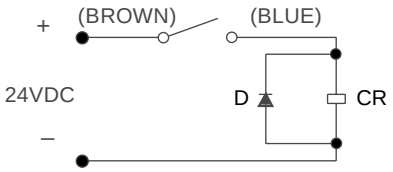
Sensors with male quick connect option require female cordsets to be ordered separately.

Note: Please reference catalog 0900P-E, page M22

Protection circuit (Inductive loads)

(Required for proper operation 24VDC)

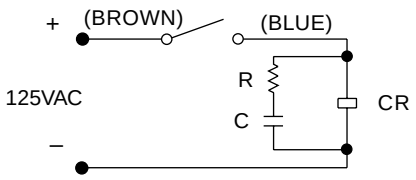
Select a diode with a breakdown voltage and current rating according to the load (CR). Place a diode in parallel to the load with the polarity as indicated:



CR: Relay coil (under 0.5W coil rating)

(Recommended for longer sensor life 125VAC)

Select a resistor and capacitor according to the load (CR). Place a resistor and capacitor in parallel to the load:



CR: Relay coil (under 2W coil rating)

R: Resistor under 1 K ohm

C: Capacitor 0.1 µF

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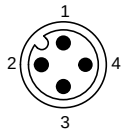
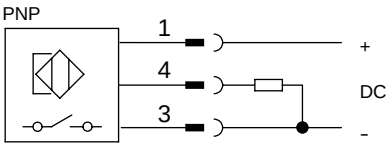
Weld Immune Sensor

CE

- Weld immune in all welding applications (AC, DC and medium frequency welding).
- Sensor locks the output during the welding process; when welding process stops, the sensor updates the output accordingly.
- NOTE: Tie rod construction of the P1D Series can be ordered directly in the model code.

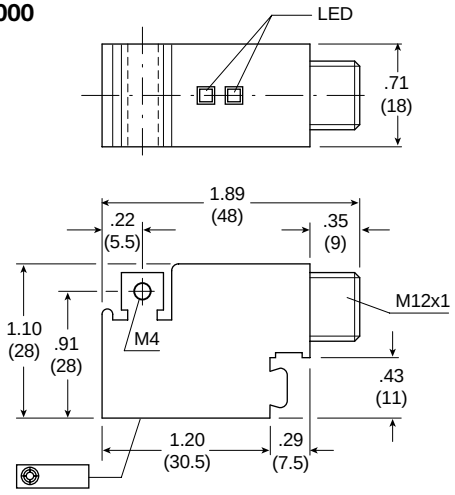


Pin	Function
1	Operating voltage (+VDC)
4	Output signal (N.O.)
3	-VDC
2	Not used

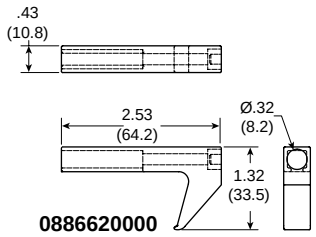


Description	Part number
Weld immune sensor	**0886600000**
Tie rod bracket kit	**0886620000**

0886600000



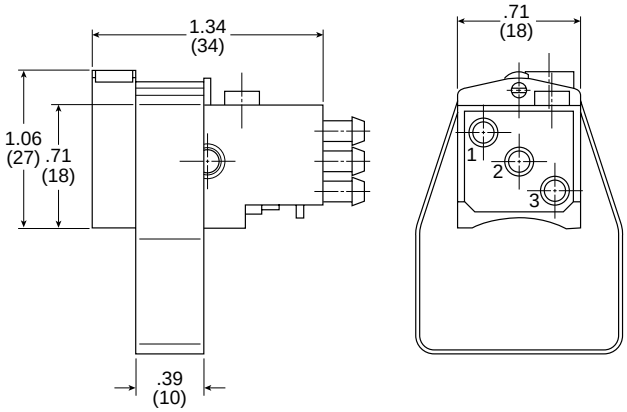
0886620000



Air Piloted Switch

Features	
Converts a magnetic field to an air pilot signal	
Band clamp allows for mounting to tie rod cylinders	
Fits 32 to 100mm bore (1.5 to 4 inch bore)	
Type	3/2 valve - NC, 2-position / spring return 3-way
Construction materials	
Body	Macrolon, glass fiber
Mounting bracket	Aluminum, anodized
Connection	3 - 3mm OD barbs
Characteristics	
Operating temperature	14°F to 140°F (-10°C to +60°C)
Operating pressure	30 PSI to 90 PSI (2 bar to 6 bar)
Normal operating pressure	90 PSI (6 bar)
Flow	0.04 Cv (40 l/min)
Cycle rate	40 hz
Switching accuracy	± 0.008" (0.2 mm) w/o air
Filtration	40 micron
Media	Filtered and regulated compressed air
Installation	In any position
Weight	Sensor 0.49 ozs (0.014 Kg) Sensor & bracket 0.99 Ozs (0.028 Kg)

Description	Part number
Sensor – Air type	**KZ 2364**
Mounting bracket	**KZ 8255**



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Quick Connect Cordset

8mm Cordset with Female Quick Connect

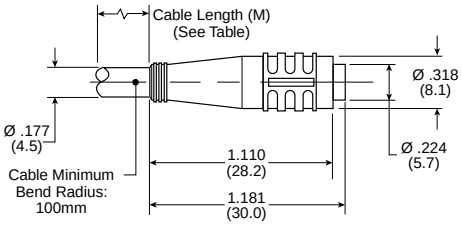
A female connector is available for all sensors with the male 8mm quick connect option. The male plug will accept a snap-on or threaded connector. Cordset part numbers are listed below:

Cable length	Threaded connector	Snap on connector
5 meters	**086620T005**	**086620S005**
2 meters	**086620T002**	**086620S002**

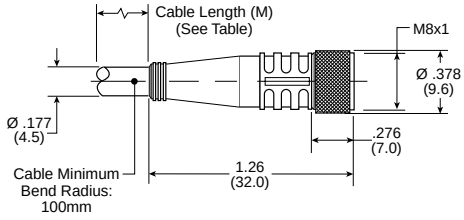
Cordset Specifications

Connector ..... Oil resistant polyurethane body material, PA 6 (Nylon) contact carrier, spacings to VDE 0110 Group C, (150 AC/DC)
Contacts .....Gold plated beryllium copper, machined from solid stock
Coupling Method..... Snap-Lock or chrome plated brass nut
Cord Construction ..... Oil resistant black PUR jacket, non-wicking, non-hygroscopic, 300V.
Cable end is stripped and tinned.
Conductors .....Extra high flex stranding, PVC insulation
Temperature ..... -40 to 194°F (-40 to 90°C)
Protection..... NEMA 1, 3, 4, 6P and IEC IP67
Cable Length..... 6.56 ft (2m) or 16.4 ft (5m)

Snap-On Straight Connector



Threaded Straight Connector



12mm Cordset with Female Quick Connect

M12 Straight connector

Cable length	Part number
5 meters	**9126487205**
2 meters	**9126487202**

M12 Right angle Connector

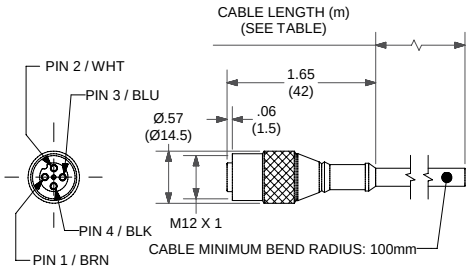
Cable length	Part number
5 meters	**9126487205**
2 meters	**9126487202**

A female connector is available for all sensors with the male 12mm quick connect option. The cordsets are available with a right angle or straight connector. Cordset part numbers are listed above.

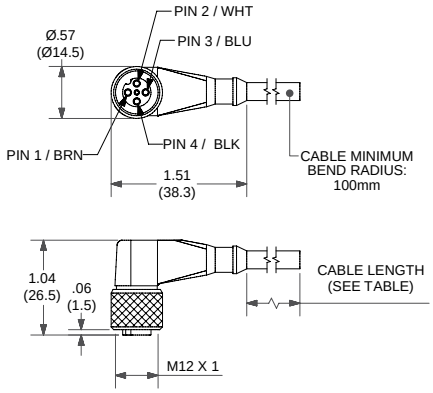
Cordset Specifications

Connector ..... Polyvinylchloride (PVC) body material, PVC contact carrier, spacing to VDE 0110 Group C, (250VAC / 300VDC)
Contacts ..... Gold Plated Copper Tin (CuSn), stamped from stock.
Coupling Method.....Threaded nut: Chrome plated brass.
Cord Construction ..... PVC non-wicking, non-hygroscopic, 250VAC / 300VDC. Cable end is stripped.
Conductors ..... Extra high flex stranding with PVC insulation
Temperature .....-13°F to 158°F (-25°C to 70°C)
Protection..... NEMA 1, 3, 4, 6P and IEC IP67
Cable Length..... 6.56 ft (2m) or 16.4 ft (5m)

Straight Connector



Right Angle Connector



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EPS-5, 6 & 7 / CLS-1 & 4

End-of-Stroke Proximinity Sensors

Ordering information

Sensor type	Inductive proximity			Non-contacting magnetically actuated	
Style	**EPS-7**	**EPS-5**	**EPS-6**	**CLS-1**	**CLS-4**
Sensor part number	**148897******	**146617******	**148896******	**148275******	**149109******
6' Cable	**0853550006**	**0853550006**	**0859170006**	**0853550006**	—
12' Cable	**0853550012**	**0853550012**	**0859170012**	**0853550012**	—
6' Cable, right angle	**0875470006**	**0875470006**	**—**	**0875470006**	—

**** Part number suffix: **** 4-digit suffix indicates probe length: 0125=1.25", 0206=2.06", 0288=2.875", 0456=4.562"

Specifications

Style	EPS-7	EPS-5	EPS-6	CLS-1	CLS-4
Code designator	H	R	D	F	B
Sensor type	Inductive proximity	Inductive proximity	Inductive Proximity	Non-contacting magnetically actuated	Non-contacting magnetically actuated
Description	Economical, General Purpose, 2 wire device, primarily for AC applications, not suitable for 24 VDC applications. Use EPS-5 only for automotive industry customers who specify them.		Economical, General Purpose, 3 wire, DC sensor, dual output: sinking and sourcing	Functional replacement for AB (Mechanical) Limit Switches in many applications, or where customer needs NC contacts, zero leakage, zero voltage drop, higher or lower load current than EPS-style.	Functional replacement for AB (Mechanical) Limit Switches in many High Temperature applications, or where customer needs NC contacts, zero leakage, zero voltage drop, higher or lower load current than EPS-style.
Supply voltage	20 to 250 VAC/DC	20 to 230 VAC/DC	10 to 30 VDC	24 to 240 VAC/DC	24 to 240 VAC/DC
Load current, min	8 mA	5 mA	NA	NA	NA
Load current, max	300 mA	500 mA	200 mA	4 AMPS @ 120 VAC 3 AMPS @ 24 VDC	4 AMPS @ 120 VAC 3 AMPS @ 24 VDC
Leakage current:	1.7 mA, max.	1.7 mA, max.	10 micro amps max.	—	—
Voltage drop	7 V, max.	10 V, max	2 VDC max.	NA	NA
Operating temperature	-14° to 158° F	-4° to 158° F	-14° to 158° F	-40°F to 221° F	-40° F to 400° F
Connection	3-pin mini	3-pin mini	5-pin mini	3-pin mini	144" PTFE coated flying leads with 1/2" conduit hub
Enclosure rating	IEC IP67	NEMA 4, 6, 12, 13	IEC IP67	NEMA 1, 2, 3, 4, 4x, 5, 6, 6P, 11, 12, 12K, 13	NEMA 1, 2, 3, 4, 4x, 5
Led indication	Yes	Yes	Yes	No	No
Short circuit protection	Yes	Yes	Yes	No	No
Weld field immunity	Yes	Yes	Yes	Yes	Yes
Output	2 wire, Normally Open with leakage current	2 wire, Normally Open with leakage current	Dual output: DC Sinking and DC Sourcing, user selectable via wiring	SPDT (Single pole double throw), Normally Open/ Normally Closed, Form C	SPDT (Single pole double throw), Normally Open/ Normally Closed, Form C
Approvals / marks	CE, UL, CSA	UL	CE, UL, CSA	UL or CSA	UL or CSA
Make / break location	0.125" from end of stroke, typical. Tolerance is 0/-0.125"				
Wiring instructions	Pin 1: AC ground (Green)	Pin 1: AC ground (Green)	Pin 1: +10 to 30 VDC (White)	Pin 1: Common (Green)	Common: (Black)
	Pin 2: Output (Black)	Pin 2: Output (Black)	Pin 2: Sourcing output (Red)	Pin 2: Normally Closed (Black)	Normally Open: (Blue)
	Pin 3: AC line (White)	Pin 3: AC line (White)	Pin 3: Grounded (not connected or required)	Pin 3: Normally Open (White)	Normally Closed: (Red)
			Pin 4: Sinking output (Orange)		
			Pin 5: DC common (Black)		

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Series and parallel wiring

When Parker EPS-5, 6 or 7 proximity sensors are used as inputs to programmable controllers, the preferred practice is to connect each sensor to a separate input channel of the PC. Series or parallel operations may then be accomplished by the internal PC programming.

Parker EPS-5, 6 or 7 sensors may be hard wired for series operation, but the voltage drop through the sensors (see specifications) must not reduce the available voltage below what is needed to actuate the load.

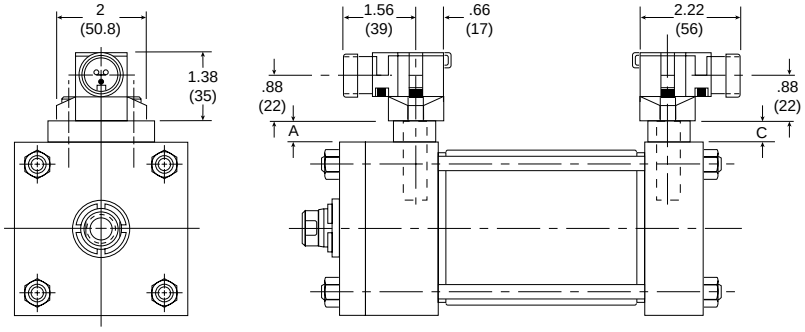
Parker EPS-5, 6 or 7 sensors may also be hard wired for parallel operation. However, the leakage current of each sensor will pass through the load. The total of all leakage currents must not exceed the current required to actuate the load. In most cases, the use of two or more EPS-5, 6 or 7 sensors in parallel will require the use of a bypass (shunt) resistor.

EPS-5
Automotive applications

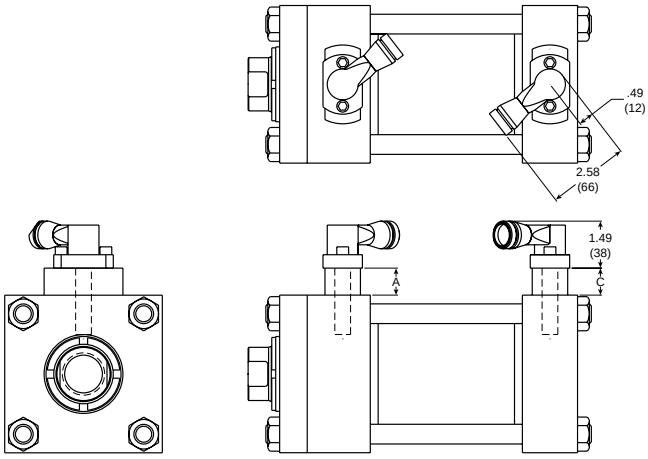
(Meets some Automotive Manufacturer's Specifications)

Series	A max.	C max.
2A, 4MA, 4MAJ	1.55"	1.30"

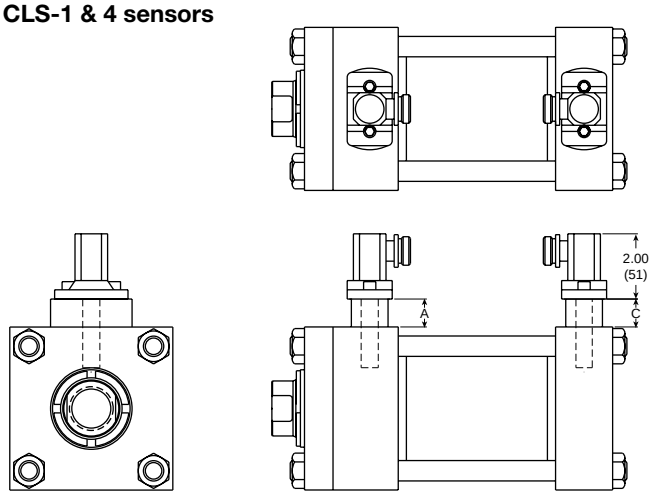
For exact dimensions, see Bulletin 0840-G-E1



EPS-7 & EPS-6 sensors

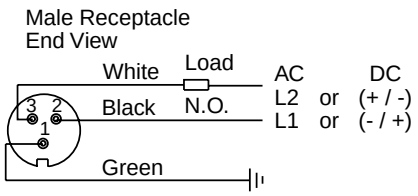


CLS-1 & 4 sensors

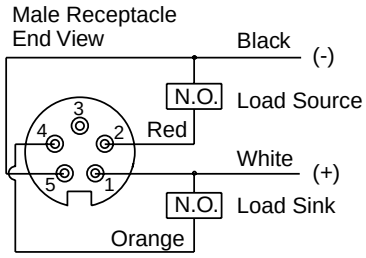


Connector pin numbering

3-pin mini



5-pin mini



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How to specify EPS sensors

Parker EPS proximity sensors may be ordered on 2A, 2AN, 4MA and 4MAJ Series cylinders as follows:

1) Complete the basic cylinder model number.
2) Place an "S" in the model number to denote sensors and/or special features.
3) Mounting styles D, DB, JB, or HB should be used with caution because of possible mounting interferences. Consult bulletin 0840-G-E1 for additional information.
4) Special modifications to cylinders other than sensors must have a written description.
5) Specify letter prefix "H" for EPS-7, "D" for EPS-6, "R" for EPS-5, "F" for CLS-1, or "B" for CLS-4, then fill in the four fields specifying port location, sensor orientation and actuation point for both head and cap. If only one sensor is used, place "XXXX" in the unused fields.

   Example = H13CGG-XXXX denotes a sensor on the head end only, EPS-7

   Example = BXXXX-42BGG denotes a sensor on the cap end only, CLS-4

Head end

R	1	3	A	GG
Specify: R = EPS-5 H = EPS-7 D = EPS-6 F = CLS-1 B = CLS-4 |N = Prep for sensors only	Port Location See Figure 1.	Sensor Location See Figure 1.	Sensor Orientation See Figure 2 for EPS-7 and EPS-6 only.	Actuation Point GG = End of Stroke See Bulletin 0840-G-E1 for stroke remaining.

Cap end

4	2	B	GG
Port Location See Figure 1.	Sensor Location See Figure 1.	Sensor Orientation See Figure 2 for EPS-7 and EPS-6 only.	Actuation Point GG = End of Stroke See Bulletin 0840-G-E1 for stroke remaining.

Note: All specified sensor and port locations are as seen from rod end of cylinder.
*EPS-5 sensors will be oriented so that the connectors face each other.
**Consult the Wadsworth, Ohio facility for this option with 4MA and 4MAJ Series cylinders.

Figure 1

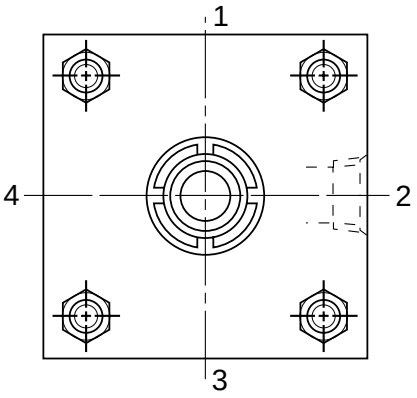
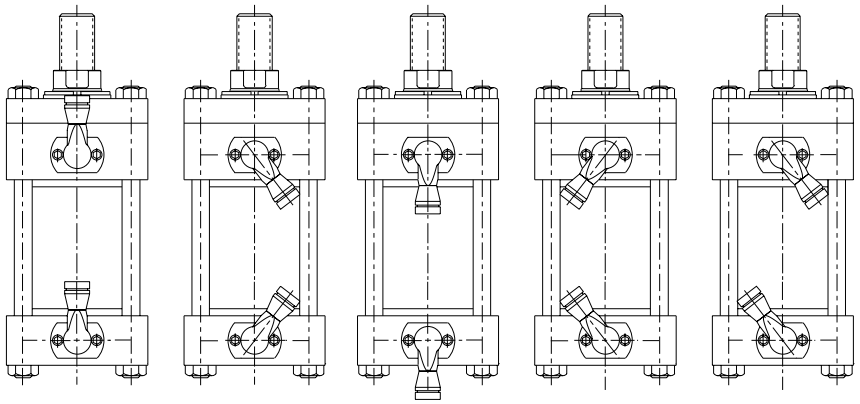


Figure 2



Example:
4.00 CJ4MAUS14AC 12.000
S = H13CGG-13CGG

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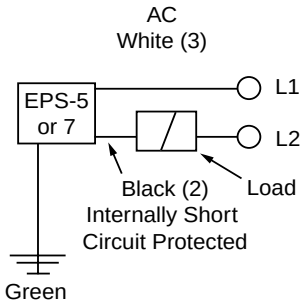
EPS-5 & EPS-7

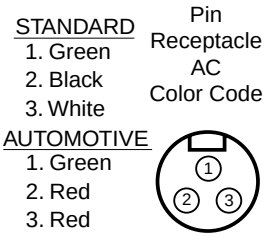
Connectors

The male quick disconnect on the Parker EPS-5 or 7 is a Brad Harrison 40909 connector.

Female connects must be purchased with one of the following cable lengths.

Cable length	Part number	
	Automotive	Standard
3'	085356003	0853550003
6'	085356006	0853550006
9'	085356009	–
12'	0853560012	0853550012





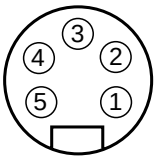
EPS-6

Connectors

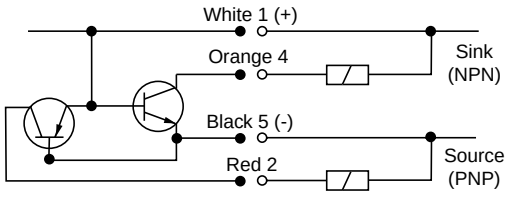
The male quick disconnect on the Parker EPS-6 is a Brad Harrison 41310 connector.

Plug pin and cable identification

1) +10 to 30 VDC (White)
2) Source (Red)
3) Grounded not connected nor required
4) Sink (Orange)
5) Common (Black)



Cable length	Part number
3	0859170003
6	0859170006
12	0859170012



LED Function	"Ready"	"Target"
Power Applied (No Target)	ON	OFF
Target Present	OFF	ON
Short Circuit Condition	FLASH	FLASH

CLS

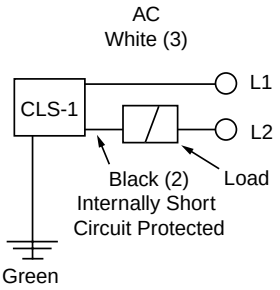
Connectors

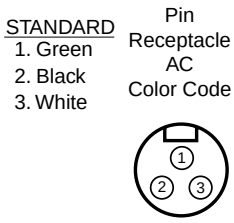
The male quick disconnect on the Parker CLS-1 is a Brad Harrison 40909 connector.

Female connects must be purchased with one of the following cable lengths.

Cable length	Part number
3'	0853550003
6'	0853550006
9'	–
12'	0853550012

The connection for the CLS-4 are 144" PTFE insulated flying leads with 1/2" conduit hub. 3-wire: Common (black), Normally open (blue), and Normally closed (red).





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End-of-Stroke Proximinity Sensors

PTR and HP Series Proximity Sensors

The inductive type proximity sensor provides end of rotation indication. The non-contact probe senses the presence of the ferrous cushion spear and has no springs, plungers, cams or dynamic seals that can wear out or go out of adjustment. The sensor is solid state and meets NEMA 3, 4, & 13 specifications. For ease of wiring, the connector housing is rotatable through 360°. To rotate, lift the cover latch, position, and release.

A standard proximity sensor controls 20-230 VAC/DC loads from 5 to 500 mA. The low 1.7 mA off-state leakage current can allow use for direct PLC input. The standard short circuit protection (SCP) protects the sensor from a short in the load or line upon sensing such a condition (5 amp or greater current) by assuming a non-conductive mode. The fault condition must be corrected and the power removed to reset the sensor preventing automatic restarts.

The low voltage DC sensor is also available for use with 10-30 VDC. This sensor is in a non-rotatable housing, but does incorporate the short circuit protection.

Both sensors are equipped with two LEDs, “Ready” and “Target”. The “Ready” LED is lit when power is applied and the cushion spear is not present. The “Target” LED will light and the “Ready” LED will go out when the sensor is closed, indicating the presence of the cushion spear. Both LEDs flashing indicates a short circuit condition.

Notes:

1. Available with or without cushions.
2. Not available with stroke adjusters.
3. Pressure rating: 3000 PSIG
4. Operating temperature: -4°F to 150°F
5. Specify sensor type, orientation and voltage when ordering.
6. The low voltage DC sensor is available in non-rotatable style only, consult representative for further information.

Inductive Proximity Sensors – 8mm Barrel Type

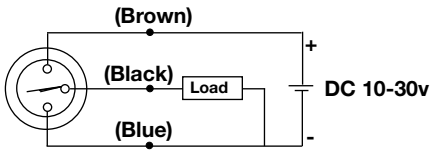
Proximity sensors are normally ordered with the unit as part of the model number. Use these part numbers for replacement parts only.

Ordering information

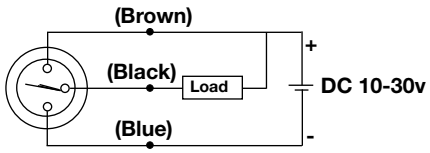
Series	PNP		NPN	
	Quick* connect	Flying leads	Quick ** connect	Flying leads
HB	B8830-P	913090000	B8830-N	913090100
P5L	B8830-P	913090000	B8830-N	913090100
WR	B8830-P	913090000	B8830-N	913090100

* Order cordset B8757-P separately.
** Order cordset B8757-N separately.

PNP wiring connection



NPN wiring connection



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Shock Absorbers

The use of one piece / closed end bodies and inner pressure chambers provides extremely strong construction, which can withstand much higher internal pressures and overload forces without mechanical damage.

The closed end / one piece bodies and inner pressure chambers, reduces the chance of sudden failure, or machine damage in the event of an overload.

Specifications

	Oil type	Materials	Mechanical stop	Lock nut
MC 9 - MC 75	Silicone	Steel body: Black oxide finish. Piston rod: Hardened stainless steel.		Included
MC 150 - MC 600	Silicone	Steel body: Black oxide finish. Piston rod: Hardened stainless steel. Rolling seal: EPDM*	Must be provided 0.02 to 0.04 inch (0.5 to 1 mm) before end of stroke.	Included
SC 190 - SC 925	#5	Steel body: Black oxide finish. Piston rod: Hardened stainless steel.	Integral mechanical stop built into front of units.	Included
SC 300 - SC 650	#5	Steel body: Black oxide finish. Piston rod: Hardened stainless steel.	Integral mechanical stop built into front of units.	Included
MA 35 - MA 900	MA 35: #5 MA 150: Silicone MA 225, 600, 900: ATF	Steel body: Black oxide finish. Piston rod: Hardened stainless steel.	Adjustment screw for optimum deceleration.	Included
MC 33 - MC 64 Self-Compensating	ATF	Steel body: Black oxide finish. Piston rod: Hardened, high tensile steel, chrome plated. Rod end button: Hardened steel with black oxide finish. Return spring: Zinc plated		Included
MC 33 - MC 64 Adjustable	ATF		Turn front stop collar or rear adjuster against the scale marked 0 to 9 for optimum deceleration	Included
1-1/2" Bore Series	American 46	Steel body: Black oxide finish. Piston rod: Hardened, high tensile steel, chrome plated. Return spring: Zinc plated	Must be provided .09 inch (2.3 mm) before end of stroke.	
CA 2 - CA 4 Self-Compensating	ATF	Steel body: Black oxide finish. Piston rod: Hardened, high tensile steel, chrome plated. Return spring: Zinc plated	Must be provided .09 inch (2.3 mm) before end of stroke.	
A 2 - A 3 Adjustable	ATF		Must be provided .09 inch (2.3 mm) before end of stroke.	

* Seal not compatible with petroleum based fluids) If unit to be used in contact with such fluids specify neoprene rolling seal. Consider the SC2 Series as an alternative.

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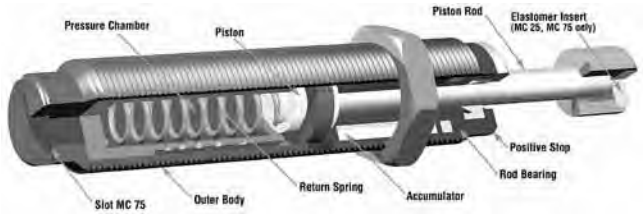
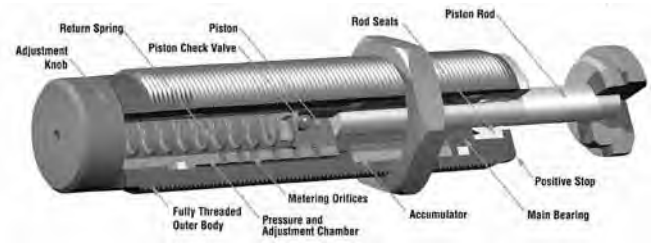
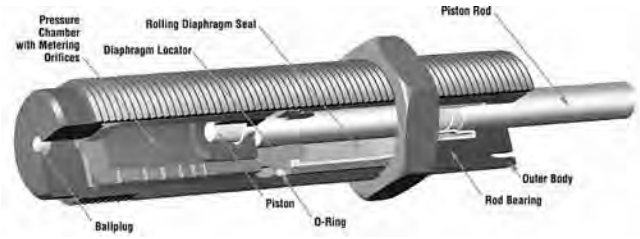
Miniature shock absorbers
MC 9 to MC 75
Self-compensating



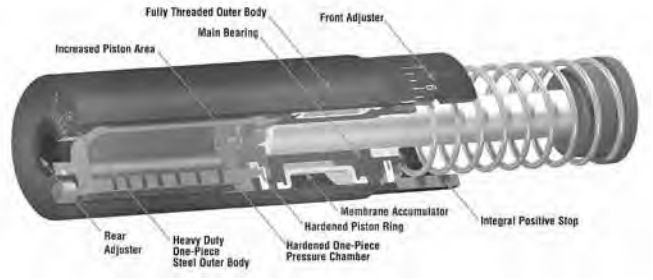
MA series 225-900 shock absorbers
(Miniature adjustable)
Adjustable



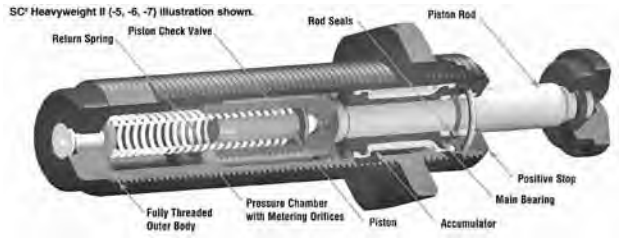
Miniature shock absorbers
MC 150, MC 225 and MC 600
Self-Compensating



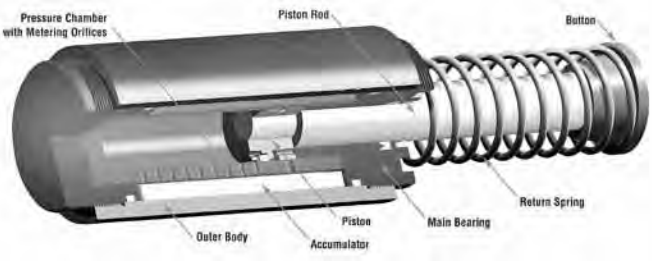
Magnum series MA and ML 33 to 64
Adjustable



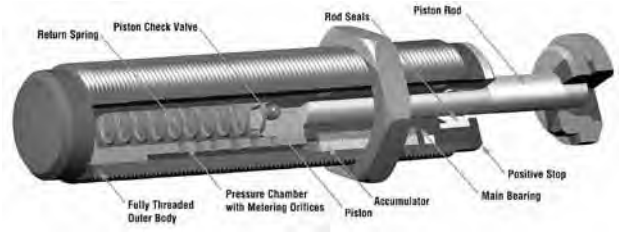
Heavyweight shock absorbers
SC 300 and SC 650
Soft Contact and Self-Compensating



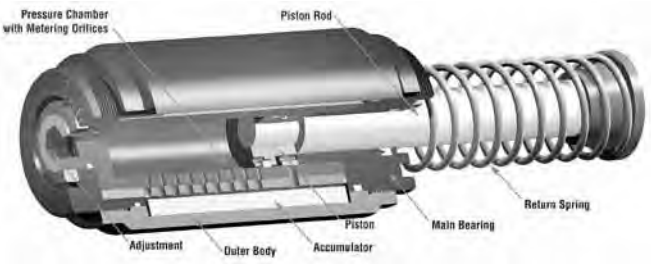
Heavy industrial shock absorbers
CA to CA 4
Self-Compensating



Miniature shock absorbers
SC 190 to SC 925
Soft Contact and Self-Compensating



Heavy industrial shock absorbers
A2 to A3
Adjustable



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Miniature Shock Absorbers MC 9 to MC 75 - *Self-Compensating*

Miniature Shock Absorbers are self-contained hydraulic units. The MC 9 to MC 75 model range has a very short overall length and low return force. Its small size allows for high energy absorption in confined spaces, while the wide effective weight ranges accommodate a variety of load conditions. With threaded outer bodies and multiple accessories, MC models can be mounted in numerous configurations.

Operating information

Impact velocity range:
MC 9: 0.5 to 6 ft/sec (0.15 to 1.8 m/sec)
MC 10: 0.5 to 5 ft/sec (0.15 to 1.5 m/sec)
MC 25: 0.5 to 8 ft/sec (0.15 to 2.4 m/sec)
MC 75: 0.5 to 12 ft/sec (0.15 to 3.66 m/sec)

Operating temperature:
MC 9 and MC 10: 14°F to 158°F (-10°C to 70°C)
MC 25: 32°F to 150°F (0°C to 66°C)
MC 75: 32°F to 150°F (0°C to 66°C)

Ordering information – Miniature MC series, self compensating

MC — MC series

75 — Model number

9
10
25
75

[ ] — Mounting thread

MC9	
M	M6 x 1.0 metric
MC10	
M	M8 x 1.0 metric
E	M8 x 0.75 metric
MC25 Standard (UNEF)	
M	Metric
MC75 Standard (UNEF)	
M	Metric

-1 — Effective weight

MC9	
-1	Light
-2	Medium
MC10	
L	Light range
H	Heavy range
MC25	
L	Light range
	Standard range
H	Heavy range
MC75	
-1	Light
-2	Medium
-3	Heavy

[ ] — Button options

MC9 & MC10	
	Standard, no button
-B	Delrin button
MC25 & MC75	
	Standard, with button
-NB	*No button, short rod
-880	No button, standard rod

* Consult factory for dimensional details.

Stroke inches 1 inch = 25.4 mm	E3 max. energy per cycle, inch lbs 1 in lb = .11 Nm	We effective weight lbs, 1 lb = .45 kg	E4 max. energy per hour, in lbs/hour 1 in lb/hour = .11 Nm/hour			Model number
			Self-contained	A/O tank	A/O Re-circulating	
0.20	9	1.35-7.0	18,000	N/A	N/A	**MC 9-1**
0.20	9	1.75-9.0	18,000			**MC 9-2**
0.20	4	0.75-6.0	35,000	N/A	N/A	**MC 10L**
0.20	7	1.5-11	35,000			**MC 10H**
0.25	20	1.5-5	120,000			**MC 25L**
0.25	20	4-12	120,000	N/A	N/A	**MC 25**
0.25	20	10-30	120,000			**MC 25H**
0.40	75	0.5-2.5	250,000			**MC 75-1**
0.40	75	2-14	250,000	N/A	N/A	**MC 75-2**
0.40	75	6-80	250,000			**MC 75-3**

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Miniature Shock Absorbers MC 150 to MC 600 - *Self-Compensating*

Miniature Shock Absorbers
MC 150 to MC 600 model range, feature a hermetically sealed rolling diaphragm seal system that provides the highest possible cycle lifetime and an extremely low rod return force. These models can be directly mounted into the end cover of pneumatic cylinders to provide superior damping compared to normal cylinder cushions. Use of the optional stop collar is recommended to provide a positive mechanical stop. By adding the optional side load adapter (metric threaded models only), it is possible to accept side loads up to 25° from the axis.

Operating information

Impact velocity range:	0.26 to 19.7 ft/sec (0.08 to 6 m/sec)
Operating temperature:	32°F to 150°F (0°C to 66°C)

Note: MC 150 to MC 600 models may be mounted into pressure chambers of pneumatic actuators.

Ordering information – Miniature MC series, self compensating

MC	225	[ ]	-1	[ ]
MC series	Model number	Mounting thread	Effective weight	Button options
	150	– Standard (UNF)	MC150, MC255. MC600	Standard, no button
	255	M Metric	Standard range	-B Delrin button
	600	ME* Fine metric	H Heavy range	-BS Steel button
		ML** Course metric	H2 Extra heavy range	

*MC 150 only **MC 600 only

Stroke inches 1 inch = 25.4 mm	E3 max. energy per cycle, inch lbs 1 in lb = .11 Nm	We effective weight lbs, 1 lb = .45 kg	E4 max. energy per hour, in lbs/hour 1 in lb/hour = .11 Nm/hour			Model number
			Self-contained	A/O tank	A/O Re-circulating	
0.50	150	2-22	300,000			**MC 150**
0.50	150	20-200	300,000	N/A	N/A	**MC 150H**
0.50	150	150-450	300,000			**MC 150H2**
0.50	225	5-55	400,000			**MC 225**
0.50	225	50-500	400,000	N/A	N/A	**MC 225H**
0.50	225	400-2,000	400,000			**MC 225H2**
1.00	600	20-300	600,000			**MC 600**
1.00	600	250-2,500	600,000	N/A	N/A	**MC 600H**
1.00	600	880-5,000	600,000			**MC 600H2**

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SC² Series SC 190 to SC 925 - *Soft Contact & Self-Compensating*

SC² Series Miniature Shock Absorbers provide dual performance benefits. They offer **soft contact deceleration** where initial impact reaction forces are very low, with the advantages of **self-compensation** to react to changing energy conditions, without adjustment. They have long stroke lengths, **SC² 925 with 1.58 inch (40 mm) superstroke**, to provide smooth deceleration and low reaction forces.

Operating information

Impact velocity range: 0.5 to 12 ft/sec (0.15 to 3.66 m/sec)

Operating temperature: 32°F to 150°F (0°C to 66°C)

Note: Integral mechanical stop built into front of units.

Ordering information – Miniature SC² series, soft contact and self compensating

SC	300		-1	
SC² series	Model number	Mounting thread	Effective weight	Button options
Soft Contact Self Compensating	190	– Standard (UNF)	-1 Ultra light	Standard with button
	300	M Metric	-2 Light	-NB No button, short rod
	650		-3 Medium	-BS No button, standard rod
	925		-4 Heavy	

Stroke inches 1 inch = 25.4 mm	E3 max. energy per cycle, inch lbs 1 in lb = .11 Nm	We effective weight lbs, 1 lb = .45 kg	E4 max. energy per hour, in lbs/hour 1 in lb/hour = .11 Nm/hour			Model number
			Self-contained	A/O tank	A/O Re-circulating	
0.63	225	3-15	300,000	N/A	N/A	**SC 190-1**
0.63	225	8-40	300,000			**SC 190-2**
0.63	225	20-100	300,000			**SC 190-3**
0.63	225	50-225	300,000			**SC 190-4**
0.75	300	3-18	400,000	N/A	N/A	**SC 300-1**
0.75	300	10-60	400,000			**SC 300-2**
0.75	300	30-180	400,000			**SC 300-3**
0.75	300	70-450	400,000			**SC 300-4**
1.00	650	17-100	600,000	N/A	N/A	**SC 650-1**
1.00	650	50-300	600,000			**SC 650-2**
1.00	650	150-900	600,000			**SC 650-3**
1.00	650	450-2,600	600,000			**SC 650-4**
1.58	975	30-200	800,000	N/A	N/A	**SC 925-1**
1.58	975	90-600	800,000			**SC 925-2**
1.58	975	250-1,600	800,000			**SC 925-3**
1.58	975	750-4,600	800,000			**SC 925-4**

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SC² Heavyweight Series SC 300 to SC 650 - *Soft Contact & Self-Compensating*

SC² 300 and SC² 650 Heavyweight Series Shock Absorbers deliver up to 950% of the effective weight capacity and 280% of the energy absorption capability of standard models. These durable units are ideal for decelerating heavy weights moving at low velocities. The Heavyweight Series design combines the piston and the inner tube into a single component, the piston tube. It acts as both the pressure creating and pressure controlling device.

Operating information

Impact velocity range:	0.3 to 12 ft/sec (0.9 to 3.66 m/sec)
Operating temperature:	32°F to 150°F (0°C to 66°C)

Note: Integral mechanical stop built into front of units.

Ordering information – SC² series, soft contact and self compensating

SC — **300** — [ ] — **-1** — [ ]

SC² series	Model number	Mounting thread		Effective weight		Button options	
Soft Contact Self Compensating	300	–	Standard (UNF)	-5	Heavy		Standard with button
	650	M	Metric	-6	Heavy plus	-NB	No button, short rod
				-7	Heavy duty	-880	No button, standard rod
				-8	Extra heavy		
				-9	Ultra heavy		

Stroke inches 1 inch = 25.4 mm	E3 max. energy per cycle, inch lbs 1 in lb = .11 Nm	We effective weight lbs, 1 lb = .45 kg	E4 max. energy per hour, in lbs/hour 1 in lb/hour = .11 Nm/hour			Model number
			Self-contained	A/O tank	A/O Re-circulating	
0.59	650	25-100	400,000			**SC 300-5**
0.59	650	75-300	400,000			**SC 300-6**
0.59	650	200-400	400,000	N/A	N/A	**SC 300-7**
0.59	620	300-1,500	400,000			**SC 300-8**
0.59	620	700-4,300	400,000			**SC 300-9**
0.91	1,860	50-250	600,000			**SC 650-5**
0.91	1,860	200-800	600,000			**SC 650-6**
0.91	1,860	700-2,400	600,000	N/A	N/A	**SC 650-7**
0.91	1,860	1,700-5,800	600,000			**SC 650-8**
0.91	1,860	4,000-14,000	600,000			**SC 650-9**

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Miniature Shock Absorbers MA 35 to MA 900 - *Adjustable*

MA Series miniature shock absorbers offer a compact design with true linear deceleration, and are adjustable over a wide range of conditions.
If your preference is a fully adjustable shock absorber rather than a self-compensating model on your application, then the MA Series provides a directly interchangeable alternative.

Operating information

Impact velocity range:
MA35 3.3 ft/sec (1.0 m/sec)
MA150, 225, 600, 900 0.5 to 12 ft/sec (0.15 to 3.66 m/sec)
Operating temperature: 32°F to 150°F (0°C to 66°C)

Ordering information – MA series, adjustable

MA — **225** — **–** — [ ]

MA series
MA – Miniature Adjustable

Model number
35
150
225
600
900

Mounting thread	
–	Standard (UNF)
M	Metric
ME	Fine metric (MA 150 Only)

Button options	
MA35	
	Standard with button
-NB	No button, short rod
MA150	
	Standard, no button
-B	Nylon button
-BS	Steel button
MA 225-900	
	Standard steel button
-NB	No button, short rod
-880	No button, standard rod

Stroke inches 1 inch = 25.4 mm	E3 max energy per cycle, inch lbs 1 in lb = .11 Nm	We effective weight lbs, 1 lb = .45 kg	E4 max energy per hour, in lbs/hour 1 in lb/hour = .11 Nm/hour			Model number
			Self-contained	A/O tank	A/O Re-circulating	
0.40	35	13-125	53,000	N/A	N/A	**MA 35**
0.50	150	2-200	300,000			**MA 150**
0.75	225	5-500	400,000			**MA 225**
1.00	600	20-3,000	600,000			**MA 600**
1.58	900	30-4,500	800,000	1,100,000 1,200,000	1,500,000 1,600,000	**MA 900**

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Magnum Series MC 33 to MC 64 - *Self-Compensating*

The Magnum Series offer you the capability to mount shock absorbers that contain the highest energy capacity ratings in the industry. **Up to 150% of the energy per cycle** of previous models in the same package size, means increased safety factors in a wider range of applications.

Up to 390% of the effective weight capacity of previous models, may allow a smaller, lower priced shock absorber to be mounted, to meet your application requirements.

Operating information

Impact velocity range:
MC Models: 0.5 to 16.5 ft/sec (0.15 to 5 m/sec)
Operating temperature: 10°F to 150°F (-12°C to 66°C)

Ordering information – MC series, self compensating

MC — **3325** — **–** — **1** — **C**

Return method and accumulator style	
MC	Self-contained spring return, internal accumulator
MCA	Air return, external accumulator
MCS	Spring return, external accumulator
MCN	Self return (clevis), internal accumulator

Model number		
3325	**4525**	**6450**
3350	**4550**	**64100**
3625	**4575**	**64150**
3650		

Mounting thread	
–	Standard (UNF)
M	Metric

Effective weight	
-1	Light range
-2	Medium range
-3	Heavy range
-4	Heavier range

* Welded versions available upon request.
** Not available on MC 3625 and 3650 models.

Mounting options	
	Standard mount
	Flanged stop collar
	Rectangular flange*
	Square flange*
-C	Clevis mount**
-S	Side-foot mount**
-P	Side port
-Z	Within air cylinder

Self-Compensating Models

Stroke inches 1 inch = 25.4 mm	E3 max. energy per cycle, inch lbs 1 in lb = .11 Nm	We effective weight lbs, 1 lb = .45 kg	E4 max. energy per hour, in lbs/hour 1 in lb/hour = .11 Nm/hour			Model number
			Self-contained	A/O tank	A/O Re-circulating	
0.91	1,350	20-80 68-272 230-920 780-3,120	670,000	1,100,000	1,500,000	**MC 3325-1** **MC 3325-2** **MC 3325-3** **MC 3325-4**
1.91	2,700	40-160 136-544 460-1,840 1,560-6,240	760,000	1,200,000	1,600,000	**MC 3350-1** **MC 3350-2** **MC 3350-3** **MC 3350-4**
0.91	1,350	20-80 68-272 230-920 780-3,120	670,000	1,100,000	1,500,000	**MC 3625-1** **MC 3625-2** **MC 3625-3** **MC 3625-4**
1.91	2,700	40-160 136-544 460-1,840 1,560-6,240	760,000	1,200,000	1,600,000	**MC 3650-1** **MC 3650-2** **MC 3650-3** **MC 3650-4**
0.91	3,000	50-200 170-680 575-2,300 1,950-7,800	950,000	1,400,000	1,700,000	**MC 4525-1** **MC 4525-2** **MC 4525-3** **MC 4525-4**
1.91	6,000	100-400 340-1,360 1,150-4,600 3,900-15,600	1,000,000	1,700,000	2,200,000	**MC 4550-1** **MC 4550-2** **MC 4550-3** **MC 4550-4**
2.91 1.91	9,000	150-600 510-2,040 1,730-6,920 5,850-23,400	1,300,000	2,000,000	2,500,000	**MC 4575-1** **MC 4575-2** **MC 4575-3** **MC 4575-4**
	15,000	300-1,200 1,020-4,080 3,460-13,840 11,700-46,800	1,300,000	2,600,000	3,400,000	**MC 6450-1** **MC 6450-2** **MC 6450-3** **MC 6450-4**
3.91	30,000	600-2,400 2,040-8,160 6,920-27,680 23,400-93,600	1,700,000	3,400,000	4,400,000	**MC 64100-1** **MC 64100-2** **MC 64100-3** **MC 64100-4**
5.91	45,000	900-3,600 3,060-12,240 10,380-41,520 35,100-140,400	2,200,000	4,400,000	5,700,000	**MC 64150-1** **MC 64150-2** **MC 64150-3** **MC 64150-4**

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Magnum Series MA & ML 33 to 64 - *Adjustable*

Magnum Series adjustable shock absorbers feature the latest seal technology, a hardened piston ring, pressure chamber and outer body for increased operating life. Additionally, these rugged units offer the unique feature of front or rear adjustment along with a fully threaded outer body for ease of installation.

Along with the self-compensating models, the adjustable range offers unprecedented increases in energy and effective weight capacity.

Operating information

Impact velocity range:
MA Models 0.5 to 16.5 ft/sec (0.15 to 5 m/sec)
ML Models 0.06 to 1.5 ft/sec (0.02 to 0.46 m/sec)
Operating temperature: 10°F to 150°F (-12°C to 66°C)

Ordering information – MA & ML (low velocity) series, adjustable

MA **3325** **[ ]** **C**

Return method and accumulator style	
MA	Self-contained spring return, internal accumulator
MAA	Air return, external accumulator
MAS	Spring return, external accumulator
MAN	Self return (clevis), internal accumulator
ML	Self-contained spring return, internal accumulator*
MLA	Air return, external accumulator*
MLS	Spring return, external accumulator*
MLN	Self return (clevis), internal accumulator*

* Low velocity

Model number		
3325	4525	6450
3350	4550	64100
3625	4575	64150
3650		

Mounting thread	
–	Standard (UNF)
M	Metric

Mounting options	
	Standard mount
	Flanged stop collar
	Rectangular flange*
	Square flange*
-C	Clevis mount**
-S	Side-foot mount**
-P	Side port
-Z	Within air cylinder

* Welded versions available upon request.
** Not available on ML 3625 and 3650 models.

Stroke inches 1 inch = 25.4 mm	E3 max energy per cycle, inch lbs 1 in lb = .11 Nm	We effective weight lbs, 1 lb = .45 kg	E4 max energy per hour, in lbs/hour 1 in lb/hour = .11 Nm/hour			Model number
			Self-contained	A/O tank	A/O Re-circulating	
0.91	1,500	20-3,800	670,000	1,100,000	1,500,000	**MA 3325**
1.91	3,000	28-5,400	760,000	1,200,000	1,600,000	**MA 3350**
0.91	1,500	20-3,800	670,000	1,100,000	1,500,000	**MA 3625**
1.91	3,000	28-5,400	760,000	1,200,000	1,600,000	**MA 3650**
0.91	3,450	95-22,000	950,000	1,400,000	1,700,000	**MA 4525**
1.91	6,900	150-32,000	1,000,000	1,700,000	2,200,000	**MA 4550**
2.91	10,350	155-33,000	1,300,000	2,000,000	2,500,000	**MA 4575**
1.91	18,000	480-110,000	1,300,000	2,600,000	3,400,000	**MA 6450**
3.91	36,000	600-115,000	1,700,000	3,400,000	4,400,000	**MA 64100**
5.91	54,000	730-175,000	2,200,000	4,400,000	5,700,000	**MA 64150**
0.91	1,500	.05-1.5	670,000	1,100,000	1,500,000	**ML 3325**
1.91	3,000	.05-1.5	760,000	1,200,000	1,600,000	**ML 3350**
0.91	1,500	.05-1.5	670,000	1,100,000	1,500,000	**ML 3625**
1.91	3,000	.05-1.5	760,000	1,200,000	1,600,000	**ML 3650**
0.91	3,450	.05-1.5	950,000	1,400,000	1,700,000	**ML 4525**
1.91	6,900	.05-1.5	1,000,000	1,700,000	2,200,000	**ML 4550**
0.91	9,000	.05-1.5	1,100,000	2,200,000	2,900,000	**ML 6425**
1.91	18,000	.05-1.5	1,300,000	2,600,000	3,400,000	**ML 6450**

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1-1/2" Bore Series - *Adjustable*

1-1/2" bore series shock absorbers are designed for the toughest environments. These durable adjustable models provide outstanding deceleration over a wide range of effective weight conditions. Large energy capacities stop heavy loads set into motion by high propelling forces, without damage.

Operating information

Impact velocity range:	0.5 to 15 ft/sec (0.15 to 4.5 m/sec)
Operating temperature:	10°F to 150°F (-12°C to 66°C)

Ordering information – 1-1/2" bore series, adjustable

A

Return method and accumulator style	
A	Spring return, internal accumulator
AA	Air return, external accumulator
SA	Spring return, external accumulator
NA	Self return (clevis), internal accumulator

1-1/2

Bore size
1-1/2

6-1/2

Stroke length
2
3-1/2
5
6-1/2

F

Mounting style	
-F	Front flange
-R	Rear flange
-RF	Front rectangular flange
-RR	Rear rectangular flange
-S	Side foot mount
-C	Clevis mount

Stroke inches 1 inch = 25.4 mm	E3 max energy per cycle, inch lbs 1 in lb = .11 Nm	We effective weight lbs, 1 lb = .45 kg	E4 max energy per hour, in lbs/hour 1 in lb/hour = .11 Nm/hour			Model number
			Self-contained	A/O tank	A/O Re-circulating	
2.00	16,000	430-70,000	3,200,000	4,000,000	5,200,000	**1-1/2x2**
3.50	28,000	480-80,000	5,600,000	7,000,000	9,100,000	**1-1/2x3-1/2**
5.00	40,000	500-90,000	8,000,000	10,000,000	13,000,000	**1-1/2x5**
6.50	52,000	680-100,000	10,400,000	13,000,000	17,000,000	**1-1/2x6-1/2**

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Heavy Industrial Shock Absorbers CA 2 to CA 3 - *Self-Compensating*

CA 2" & CA 3" Bore Series of self-compensating shock absorbers are designed for extremely heavy duty applications and provide smooth deceleration under changing conditions. High energy capacities combined with wide effective weight ranges qualify these units to perform in the most demanding environments.

Operating information

Impact velocity range:	1 to 16.5 ft/sec (0.30 to 5 m/sec)
Operating temperature:	10°F to 150°F (-12°C to 66°C)

Ordering information – CA 2 & CA 3 series, self-compensating

CA **2** x **8** **R** – **3**

Return method and accumulator style	
CA	Spring return, internal accumulator
CAA	Air return, external accumulator
CSA	Spring return, external accumulator
CNA	Self return (clevis), internal accumulator

Bore size
2
3

Stroke length
2
4
5
6
8
10
12

Mounting style	
-F	Front flange
-R	Rear flange
-RF	Front rectangular flange
-RR	Rear rectangular flange
-S	Side foot mount
-C	Clevis mount

Effective weight	
-1	Light
-2	Medium light
-3	Medium heavy
-4	Heavy

Stroke inches 1 inch = 25.4 mm	E3 max energy per cycle, inch lbs 1 in lb = .11 Nm	We effective weight lbs, 1 lb = .45 kg	E4 max energy per hour, in lbs/hour 1 in lb/hour = .11 Nm/hour			Model number
			Self-contained	A/O tank	A/O Re-circulating	
2.00	32,000	1,600-4,800 4,000-12,000 10,000-30,000 25,000-75,000	9,600,000	12,000,000	15,600,000	**CA 2x2-1** **CA 2x2-2** **CA 2x2-3** **CA 2x2-4**
4.00	64,000	3.200-9.600 8,000-24,000 20,000-60,000 50,000-150,000	12,000,000	15,000,000	19,500,000	**CA 2x4-1** **CA 2x4-2** **CA 2x4-3** **CA 2x4-4**
6.00	96,000	4.800-14,400 12,000-36,000 30,000-90,000 75,000-225,000	14,400,000	18,000,000	23,500,000	**CA 2x6-1** **CA 2x6-2** **CA 2x6-3** **CA 2x6-4**
8.00	128,000	6,400-19,200 16,000-48,000 40,000-120,000 100,000-300,000	16,800,000	21,000,000	27,000,000	**CA 2x8-1** **CA 2x8-2** **CA 2x8-3** **CA 2x8-4**
10.00	160,000	8,000-24,000 20,000-60,000 50,000-150,000 125,000-375,000	19,200,000	24,000,000	31,000,000	**CA 2x10-1** **CA 2x10-2** **CA 2x10-3** **CA 2x10-4**
5.00	125,000	6,400-19,200 16,000-48,000 40,000-120,000 100,000-300,000	20,000,000	25,000,000	32,500,000	**CA 3x5-1** **CA 3x5-2** **CA 3x5-3** **CA 3x5-4**
8.00	200,000	10,240-30,720 25,600-76,800 64,000-192,000 160,000-480,000	32,000,000	40,000,000	52,000,000	**CA 3x8-1** **CA 3x8-2** **CA 3x8-3** **CA 3x8-4**
12.00	300,000	15,360-46,080 38,400-115,200 96,000-288,000 240,000-720,000	48,000,000	60,000,000	78,000,000	**CA 3x12-1** **CA 3x12-2** **CA 3x12-3** **CA 3x12-4**

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Heavy Industrial Shock Absorbers CA 4 - *Self-Compensating*

CA 4" Bore Series of self-compensating shock absorbers are designed for extremely heavy duty applications and provide smooth deceleration under changing conditions. High energy capacities combined with wide effective weight ranges qualify these units to perform in the most demanding environments.

Operating information

Impact velocity range:	1 to 16.5 ft/sec (0.30 to 5 m/sec)
Operating temperature:	10°F to 150°F (-12°C to 66°C)

Ordering information – CA 4 series, self-compensating

CA **4** x **8** **R** – **5**

Return method and accumulator style	
CA	Spring return, internal accumulator
CAA	Air return, external accumulator
CSA	Spring return, external accumulator
CNA	Self return (clevis), internal accumulator

Bore size
4

Stroke length
6
8
16

Mounting style	
-F	Front flange
-R	Rear flange
-RP	Rear standard
-FP	Front standard
-FRP	Front and rear standard
-S	Side foot mount
-C	Clevis mount

Effective eeight	
-3	Light
-5	Medium
-7	Heavy

Stroke inches 1 inch = 25.4 mm	E3 max energy per cycle, inch lbs 1 in lb = .11 Nm	We effective weight lbs, 1 lb = .45 kg	E4 max energy per hour, in lbs/hour 1 in lb/hour = .11 Nm/hour			Model number
			Self-contained	A/O tank	A/O Re-circulating	
6.00	420,000	8,000-19,000	27,000,000	45,000,000	58,000,000	**CA 4x6-3**
6.00	420,000	19,000-41,000	27,000,000	45,000,000	58,000,000	**CA 4x6-5**
6.00	420,000	41,000-94,000	27,000,000	45,000,000	58,000,000	**CA 4x6-7**
8.00	560,000	11,000-25,000	30,000,000	50,000,000	65,000,000	**CA 4x8-3**
8.00	560,000	25,000-55,000	30,000,000	50,000,000	65,000,000	**CA 4x8-5**
8.00	560,000	55,000-125,000	30,000,000	50,000,000	65,000,000	**CA 4x8-7**
16.00	1,120,000	22,000-50,000	50,000,000	85,000,000	110,000,000	**CA 4x16-3**
16.00	1,120,000	50,000-110,000	50,000,000	85,000,000	110,000,000	**CA 4x16-5**
16.00	1,120,000	110,000-250,000	50,000,000	85,000,000	110,000,000	**CA 4x16-7**

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Heavy Industrial Shock Absorbers A 2 and A 3 - *Adjustable*

A 2 and A 3 Series adjustable shock absorbers are capable of decelerating heavy duty loads. These reliable units replace the former 2" and 3" large bore adjustable shock absorbers.

Features include a considerably reduced outer diameter, internal accumulator and threaded mounting brackets, easily adaptable to the front or rear of the outer body.

Operating information

Impact velocity range:	0.33 to 16.5 ft/sec (0.1 to 5 m/sec)
Operating temperature:	10°F to 150°F (-12°C to 66°C)

Ordering information – A 2 & A 3 series, adjustable

A **2** x **8** – **R**

Return method and accumulator style	
A	Spring return, internal accumulator
AA	Air return, external accumulator
SA	Spring return, external accumulator
NA	Self return (clevis), internal accumulator

Bore size
2
3

Stroke length
2
4
5
6

Mounting style	
-F	Front flange
-R	Rear flange
-RF	Front rectangular flange
-RR	Rear rectangular flange
-S	Side foot mount
-C	Clevis mount

Note: A no button option is available on the 3" Bore only as a special.

Stroke inches 1 inch = 25.4 mm	E3 max energy per cycle, inch lbs 1 in lb = .11 Nm	We effective weight lbs, 1 lb = .45 kg	E4 max energy per hour, in lbs/hour 1 in lb/hour = .11 Nm/hour			Model number
			Self-contained	A/O tank	A/O Re-circulating	
2.00	32,000	560-170,000	9,600,000	12,000,000	15,600,000	**A 2x2**
4.00	80,000	510-160,000	12,000,000	15,000,000	19,500,000	**A 2x4**
6.00	120,000	570-190,000	14,400,000	18,000,000	23,500,000	**A 2x6**
8.00	170,000	580-200,000	16,800,000	21,000,000	27,000,000	**A 2x8**
10.00	210,000	720-250,000	19,200,000	24,000,000	31,000,000	**A 2x10**
5.00	140,000	1,050-340,000	20,000,000	25,000,000	32,500,000	**A 3x5**
8.00	250,000	1,200-400,000	32,000,000	40,000,000	52,000,000	**A 3x8**
12.00	390,000	1,350-450,000	48,000,000	60,000,000	78,000,000	**A 3x12**

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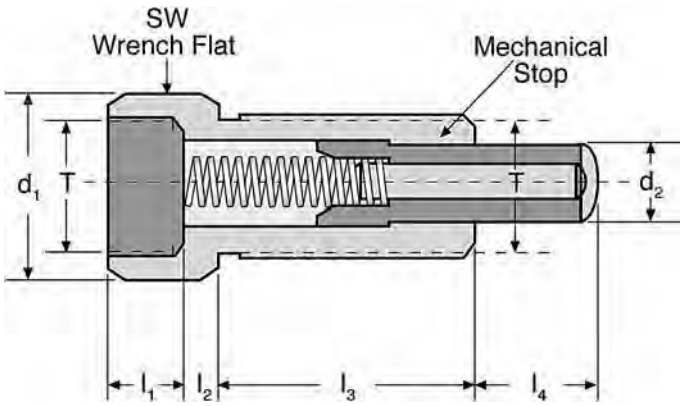
Miniature Shock Absorber Side Load Adapters



Dimensions Inches (Millimeters)

MC, MVC Series model	SC Series model	MA Series model	Side load adapter	T	d1	d2	l1	l2	l3	l4	SW	Maximum side load (α)
MC 150M	**N/A**	**MA 150M**	**250-0558**	M14 x 1.5	0.70 (18)	0.35 (9)	0.31 (8)	0.15 (4)	0.78 (20)	0.49 (12.5)	0.62 (16)	25°
MC 225M	**N/A**	**N/A**	**250-0559**	M20 x 1.5	0.94 (24)	0.47 (12)	0.39 (10)	0.15 (4)	0.78 (20)	0.49 (12.5)	0.86 (22)	25°
MC 600M	**N/A**	**N/A**	**250-0560**	M25 x 1.5	1.18 (30)	0.62 (16)	0.39 (10)	0.23 (6)	1.50 (38)	0.98 (25)	1.06 (27)	25°
N/A	**SC190M-880***	**N/A**	**250-0080**	M14 x 1.5	0.70 (18)	0.35 (9)	0.39 (10)	0.15 (4)	1.02 (26)	0.62 (16)	0.62 (16)	25°
MVC 225M-880*	**SC 300M-880***	**MA 225M-880***	**250-0081**	M20 x 1.5	0.94 (24)	0.47 (12)	0.39 (10)	0.15 (4)	1.25 (32)	0.75 (19)	0.86 (22)	25°
MVC 600M-880*	**SC 650M-880***	**MA 600M-880***	**250-0082**	M25 x 1.5	1.18 (30)	0.62 (16)	0.39 (10)	0.23 (6)	1.50 (38)	0.98 (25)	1.06 (27)	25°

Note: Side load not to exceed 5". Maximum side load depends on application, shock absorber model, and stroke length.
Note: The side load adapter can only be installed on select metric shock absorbers without rod end button.

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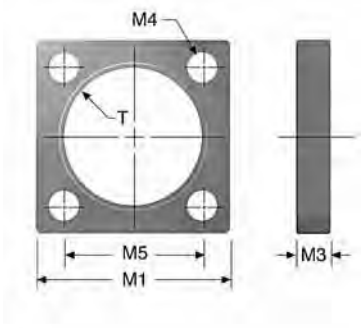
Magnum Series Group Accessories

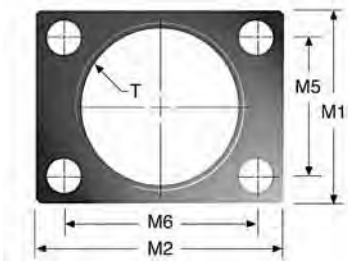
Square and Rectangular Flanges Inches (Millimeters)

Used with	Square flange	Rect flange	T	M1	M2	M3	M4	M5	M6
MA 33 ML 33 MC 33		**250-0016**	1-1/4-12 UNF	1.50 (38.1)	2.00 (50.8)	0.38 (9.5)	.219 (5.6)	1.12 (28.4)	1.62 (41.2)
MA 33M ML 33M MC 33M	N/A	**250-0293**	M33x1.5	1.62 (41.1)	2.12 (53.8)	0.38 (9.5)	.278 (7.1)	1.10 (28.0)	1.65 (42.0)
MA 36 ML 36 MC 36		**250-0633**	1-3/8-12 UNF	1.75 (44.4)	2.00 (50.8)	0.38 (9.5)	.219 (5.6)	1.12 (28.4)	1.62 (41.2)
MA 36M ML 36M MC 36M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MA 45 ML 45 MC 45	**250-0023**	**250-0024**	1-3/4-12 UN	2.25 (57.2)	3.00 (76.2)	0.50 (12.7)	0.34 (8.7)	1.62 (41.2)	2.38 (60.5)
MA 45M ML 45M MC 45M	**250-0298**	**250-0299**	M45x1.5	2.25 (57.2)	3.00 (76.2)	0.50 (12.7)	0.35 (8.8)	1.62 (41.2)	2.38 (60.5)
MA 64 ML 64 MC 64	**250-0028**	N/A	2-1/2-12 UN	3.50 (88.9)	N/A	0.62 (15.9)	0.41 (10.4)	2.75 (69.6)	N/A
MA 64M ML 64M MC 64M	**250-0302**	N/A	M64x2	3.50 (88.9)	N/A	0.62 (15.9)	0.41 (10.4)	2.75 (69.6)	N/A

Square Flange

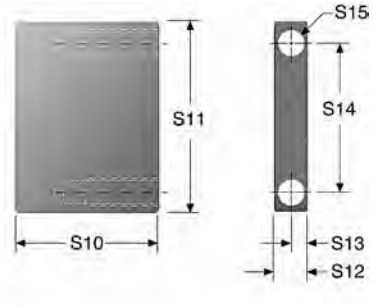


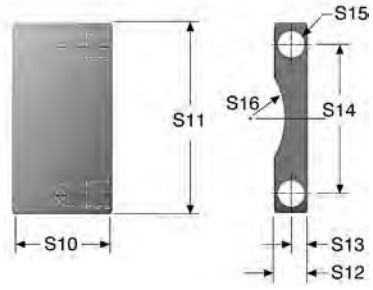
Rectangular Flange



Stop Bars Inches (Millimeters)

Used with	Part #	S10	S11	S12	S13	S14	S15	S16
MA 33 ML 33 MC 33	**250-0426**	1.28 (32.5)	1.50 (38.1)	0.38 (9.7)	0.19 (4.8)	1.12 (28.4)	10-32 UNF	N/A
MA 33M ML 33M MC 33M	**250-0427**	1.28 (32.5)	1.50 (38.1)	0.38 (9.7)	0.19 (4.8)	1.12 (28.4)	M5x0.8	N/A
MA 36 ML 36 MC 36	**250-0426**	1.28 (32.5)	1.50 (38.1)	0.38 (9.7)	0.19 (4.8)	1.12 (28.4)	10-32 UNF	N/A
MA 36M ML 36M MC 36M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MA 45 ML 45 MC 45	**250-0428**	1.03 (26.2)	2.25 (57.2)	0.63 (16.0)	0.31 (7.9)	1.62 (41.3)	5/16-24 UNF	N/A
MA 45M ML 45M MC 45M	**250-0639**	1.03 (26.2)	2.25 (57.2)	0.63 (16.0)	0.31 (7.9)	1.62 (41.3)	M8x1.25	N/A
MA 6450 MA 64100 ML 6425 ML 6450 MC 6450 MC 64100	**250-0430**	1.44 (36.5)	3.50 (88.9)	0.50 (12.7)	0.25 (6.4)	2.75 (69.8)	3/8-24 UNF	1.37 (34.8)
MA 6450M MA 64100M ML 6425M ML 6450M MC 6450M MC 64100M	**250-0640**	1.44 (36.5)	3.50 (88.9)	0.50 (12.7)	0.25 (6.4)	2.75 (69.8)	M10x1.5	1.37 (34.8)
MA 64150 MC 64150	**250-0432**	2.31 (57.7)	3.50 (88.9)	0.50 (12.7)	0.25 (6.4)	2.75 (69.8)	3/8-24 UNF	1.37 (34.8)
MA 64150M MC 64150M	**250-0641**	2.31 (57.7)	3.50 (88.9)	0.50 (12.7)	0.25 (6.4)	2.75 (69.8)	M10x1.5	1.37 (34.8)
MAA 64150 MCA 64150	**250-0435**	2.18 (55.4)	3.50 (88.9)	0.50 (12.7)	0.25 (6.4)	2.75 (69.8)	3/8-24 UNF	1.37 (34.8)
MAA 64150M MCA 64150M	**250-0649**	2.18 (55.4)	3.50 (88.9)	0.50 (12.7)	0.25 (6.4)	2.75 (69.8)	M10x1.5	1.37 (34.8)





Hard metric stop bars available upon request.

Stop bars come in pairs, two bars per package.

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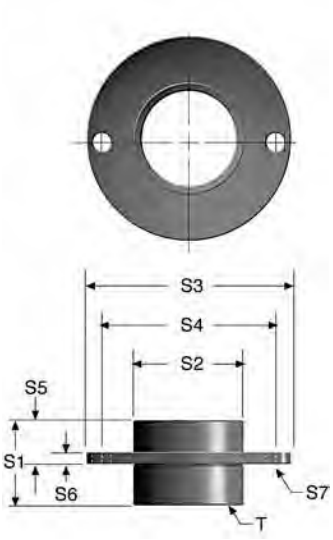
Magnum Series Group Accessories

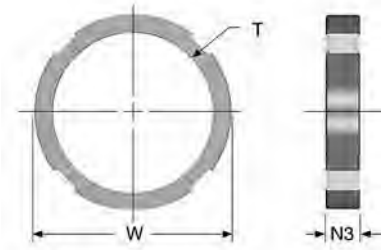
Flanged Stop Collars In Inches (Millimeters)

Used With	Part #	T	S1	S2	S3	S4	S5	S6	S7
MA 33 ML 33 MC 33	**250-0070**	1-1/4-12 UNF	2.00 (50.8)	1.50 (38.1)	2.50 (63.5)	2.00 (50.8)	0.88 (22.4)	0.25 (6.4)	0.282 (7.16)
MA 33M ML 33M MC 33M	**250-0071**	M33x1.5	2.00 (50.8)	1.50 (38.1)	2.50 (63.5)	2.00 (50.8)	0.88 (22.4)	0.25 (6.4)	0.282 (7.16)
MA 36 ML 36 MC 36 MA 36M ML 36M MC 36M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MA 45 ML 45 MC 45	**250-0072**	1-3/4-12 UN	1.85 (47.0)	2.25 (57.2)	3.25 (82.6)	2.75 (69.6)	0.88 (22.4)	0.25 (6.4)	0.282 (7.16)
MA 45M ML 45M MC 45M	**250-0073**	M45x1.5	1.85 (47.0)	2.25 (57.2)	3.25 (82.6)	2.75 (69.9)	0.88 (22.4)	0.25 (6.4)	0.282 (7.16)
MA 6450 MA 64100 ML 6425 ML 6450 MC 6450 MC 64100	**250-0074**	2-1/2-12 UN	2.25 (57.2)	3.00 (76.2)	4.25 (108.0)	3.50 (88.9)	1.00 (25.4)	0.38 (9.7)	0.282 (7.16)
MA 6450M MA 64100M ML 6425M ML 6450M MC 6450M MC 64100M	**250-0075**	M64x2	2.25 (57.2)	3.00 (76.2)	4.25 (108.0)	3.50 (88.9)	1.00 (25.4)	0.38 (9.7)	0.282 (7.16)
MA 64150 MC 64150	**250-0076**	2-1/2-12 UN	3.13 (79.4)	3.00 (76.2)	4.25 (108.0)	3.50 (88.9)	1.00 (25.4)	0.38 (9.7)	0.282 (7.16)
MA 64150M MC 64150M	**250-0077**	M64x2	3.13 (79.4)	3.00 (76.2)	4.25 (108.0)	3.50 (88.9)	1.00 (25.4)	0.38 (9.7)	0.282 (7.16)

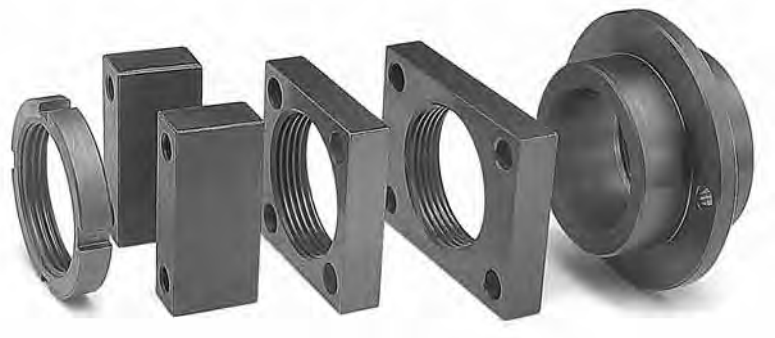


Lock Nuts Inches (Millimeters)

Used With	Part #	T	W	N3
MA 33 ML 33 MC 33	**250-0038**	1-1/4-12 UN	1.50 (38.1)	0.25 (6.4)
MA 33M ML 33M MC 33M	**250-0292**	M33x1.5	1.56 (39.6)	0.25 (6.4)
MA 36 ML 36 MC 36	**250-0631**	1-3/8-12 UNF	1.75 (44.5)	0.25 (6.4)
MA 36M ML 36M MC 36M	**250-0537**	M36x1.5	1.75 (44.5)	0.25 (6.4)
MA 45 ML 45 MC 45	**250-0041**	1-3/4-12 UN	2.25 (57.2)	0.37 (9.4)
MA 45M ML 45M MC 45M	**250-0297**	M45x1.5	2.25 (57.2)	0.37 (9.4)
MA 64 ML 64 MC 64	**250-0042**	2-1/2-12 UN	3.00 (76.2)	0.37 (9.4)
MA 64M ML 64M MC 64M	**250-0302**	M64x2	3.00 (76.2)	0.37 (9.4)



One lock nut included with each shock absorber where appropriate.



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Side-Foot Mount Assembly

Side-Foot Mount Assembly

Used With	Part #	Used With	Part #
MA 33 **ML 33** **MC 33**	**250-0015**	**MA 6450** **MA 64100** **ML 6425** **ML 6450** **MC 6450** **MC 64100**	**250-0300**
MA 33M **ML 33M** **MC 33M**	**250-0294**		
MA 36 **ML 36** **MC 36**	N/A	**MA 6450M** **MA 64100M** **ML 6425M** **ML 6450M** **MC 6450M** **MC 64100M**	**250-0306**
MA 36M **ML 36M** **MC 36M**	N/A		
MA 45 **ML 45** **MC 45**	**250-0025**	**MA 64150** **MC 64150**	**250-0030**
MA 45M **ML 45M** **MC 45M**	**250-0300**	**MA 64150M** **MC 64150M**	**250-0306**

Clevis Mount Assembly

Clevis Mount Assembly

Used With	Part #	Used With	Part #
MA 33 **ML 33** **MC 33** **MAS** **MLS** **MCS**	**250-0225**	**ML 6425**	**250-0625**
		ML 6425M	**250-0626**
		MA 6450 **ML 6450** **MC 6450**	**250-0625**
MA 33M **ML 33M** **MC 33M** **MAS 33M** **MLS 33M** **MCS 33M**	**250-0323**	**MA 6450M** **ML 6450M** **MC 6450M**	**250-0626**
		MA 64100 **MC 64100**	**250-0625**
		MA 64100M **MC 64100M**	**250-0626**
MAN 33 **MLN 33** **MCN 33** **MAA 33** **MLA 33** **MCA 33**	**250-0018**	**MAN 64150** **MCN 64150** **MAA 64150** **MCA 64150**	**250-0625**
		MAN 64150M **MCN 64150M** **MAA 64150M** **MCA 64150M**	**250-0626**
MAN 33M **MLN 33M** **MCN 33M** **MAA 33M** **MLA 33M** **MCA 33M**	**250-0322**	**MA 64150** **MCA 64150** **MAS 64150** **MCS 64150**	**250-0627**
MA 45 **ML 45** **MC 45**	**250-0324**	**MA 64150M** **MCA 64150M** **MAS 64150M** **MCS 64150M**	**250-0628**
MA 45M **ML 45M** **MC 45M**	**250-0325**		

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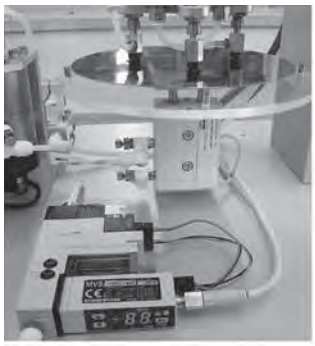

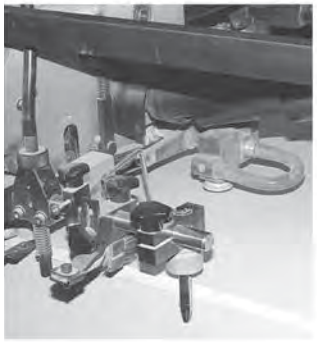

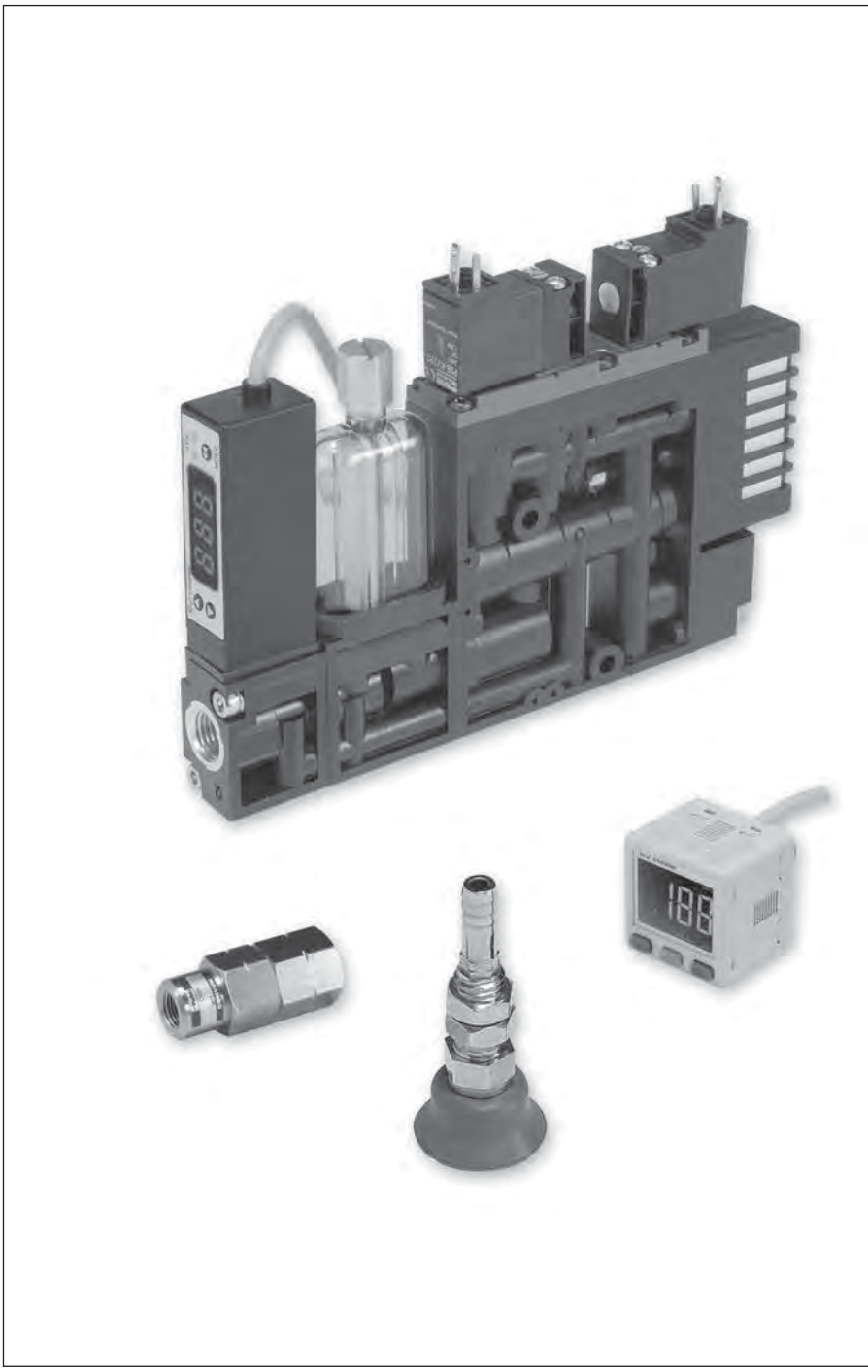

Vacuum Products

Parker Hannifin Corporation
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Vacuum Cups

PFG Flat Cups

- Precision molded single lip flat cup for smooth or slightly curved surfaces.
- Low profile design makes flat pads ideal for fast response.
- Cup Sizes: 1.5mm to 200mm

C4

PBG Bellows Cups

- Versatile bellows cup design provides a flexible sealing lip for products with irregular, smooth, curved surfaces, and flexible products
- Cup sizes: 10mm to 150mm

C17

P5V-CFS Flat Cups

- Precision molded double lip flat cup for slightly curved surfaces
- Double lip for additional security. If outside lip bends and looses its seal, the inner lip remains sealed.
- Outer ribs prevent the cup lip from being cut
- Cup Sizes: 50mm to 150mm

C29

PJG Short Bellows Cups

- Versatile bellows cup design provides a flexible sealing lip for products with irregular, smooth, curved surfaces, and slightly flexible products
- Shorter stroke provides fast response
- Cup sizes: 6mm to 80mm

C30

PCG Multiple Bellows Cups

- Versatile bellows cup design provides a flexible sealing lip for products with irregular, smooth, or curved surfaces
- 2-1/2 bellows design minimizes contact pressure applied to products
- Cup sizes: 5mm to 90mm

C42

PUGB Flat Swivel Cups

- 30° swivel single lip flat cup for smooth surfaces, slightly curved surfaces, and flexible products
- Rigid stem or level compensator provides good stability for horizontal lift
- Cup Sizes: 60mm to 100mm

C50

Vacuum Generators

MCA, CV, CV-CK Inline Generators

- MCA: Light weight vacuum generator
- CV: Basic aluminum body vacuum generator
- CV-CK: Basic aluminum body vacuum generator with mechical switch for part present confirmation

C54

CHF Inline Generators

- CHF- High Flow Series is a multistage vacuum generator
- Intended for high flow vacuum applications
- Ideal for porous applications
- Standard with flow thru exhaust mufflers to reduce clogging in dirty environments

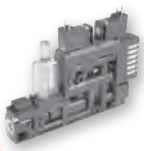
C56

MC22 Integrated Generators

- Compact vacuum generator includes vacuum and blow-off solenoids and vacuum filters
- Optional check valve and MPS-23 pressure sensor
- Air-economizing function with MVS-201 pressure sensor
- Inline version can be mounted on manifolds up to 8 stations

C58

MC72 Integrated Generators



- Light weight vacuum generator includes vacuum and blow-off solenoids.
- Includes check valve,vacuum filter and optional MPS-23 pressure sensor
- Air-economizing function with MVS-201 pressure sensor
- Inline version can be mounted on manifolds up to 5 stations

C61

CEK Integrated Generators

- Air-economizing functions with emergency stop logic that maintains degree of vacuum with loss of output power
- Includes vacuum and blow-off solenoids, check valve, vacuum filter and optional MPS-23 pressure sensor
- Inline versions can be mounted in manifolds up to 5 stations

C64

CVXCEK Integrated Generators

- Basic 2 station CEK generator manifold with additional electrical capabilities
- Integrates MPS-23 sensor for on board air-economizing programming
- M12 electrical wiring package with optional 18-pin single connection

C67

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Vacuum Generator Sensors

MPS-23 Integrated Generator Sensors

- 0 to -30 inHg, -14.7 to 72.5 PSIG
- Output type: (2) NPN / PNP
- Media: air, non-corrosive gas
- IP65
- Hysteresis output mode: variable, 100% F.S.
- Output setting: push button
- LED display (Red)

C69

MVS-201 Integrated Generator Sensors

- 0 to -30 inHg, -14.7 to 72.5 PSIG
- Output type: (2) NPN / PNP
- Media: air, non-corrosive gas
- IP65
- Hysteresis output mode: variable, 100% F.S.
- Output setting: push button
- LED display (Red)

C71

Pressure Sensors / Cables

MPS-33 Pressure Sensors

- 0 to -30 inHg, 0 to 145 PSIG
- Output type: (2) PNP or (1) NPN with analog
- Media: air, non-corrosive gas
- IP50
- Hysteresis output mode: variable, 100% F.S.
- Output setting: push button
- LED display (Red)

C73

MPS-34 Pressure Sensors

- 0 to -30 inHg, 0 to 145 PSIG
- Output type: (2) PNP or (1) NPN with analog
- Media: air, non-corrosive gas
- IP50
- Hysteresis output mode: variable, 100% F.S.
- Output setting: push button
- LED display (Red)

C75

SCP01 Pressure Sensor

- Stainless steel body
- Compact construction
- Shock and vibration proof
- Resistant to pressure spikes
- Accuracy +/- 0.5% FS

C77

SCPSD Pressure Sensors

- CV-CK is a Venturi Generator with adjustable open contact mechanical switch for vacuum confirmation.
- Great for low cost vacuum confirmation.

C78

Cables – continued

Cables

- M8, M12 male / female connector
- Length: 2m or 5m
- Cover: PVC or PUR
- Connection type: swivel straight or angled
- IP67 swivel connector

C80

Vacuum Generator Accessories

FSV Metered Flow Sensing Valve

- Pick and place rendomly placed products
- Minimize vacuum loss when cup seal is lost
- Direct mounting to cups
- 1/8 to G3/8 connection
- Integrated bronze filter

C81

CH01 One Way Check Valve

- Poppet design
- Low leakage
- Low cracking pressure

C82

VF & VFL Vacuum Filters

- Filters the vacuum system to protect the components from damaging particles absorbed from the environment
- Elements easily replaced

C83

VFP Vacuum Filters

- Provides easy monitoring, economy and safety
- 10 micron porous plastic element prolongs element life
- Shatterproof and airtight
- Replaceable filter element

C84

Vacuum Silencers

- Pressure up to 128 PSIG
- Temperature 41°F to 132°F (5°C to 55.5°C)
- Silencing effect 20 dB

C85

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PFG Flat Vacuum Cup Series

Exceptional for any smooth flat or surface that will benefit from stability and fast response of the cup design.
This is a multi-versatile and multi-industry cup. Typical applications could be chip mounting, electrical components, semiconductor chips, glass, injection mold, sheet metal, press transfer, fixtures, woodworking.

Features

- Precision molded single lip flat cup for smooth or slightly curved surfaces.
- Universal flat design for most smooth surface applications
- Stable vertical / horizontal lift
- Strong low profile design for fast response needed for short cycles
- 5mm to 200mm diameters
- Bottom cleats on 60 to 200mm diameters

Styles

- PFTM series male thread connector
- PFTF series female thread connector
- PFTK series barbed bulkhead
- PFYK series 90° barbed adapter
- PFTYS series bulkhead level compensator

Operating information

Cup material	Nitrile	Nitrile ESD*	Silicon	Silicon ESD*	Urethane
Material code	**NBR**	**NBRE**	**SI**	**SIE**	**U**
Operating temperature	-20°C to 120°C (-4°F to 248°F)	0°C to 60°C (32°F to 40°F)	-60° to 250°C (-76°F to 482°F)	-10° to 130°C (-14°F to 266°F)	-20° to 75°C (-4°F to 167°F)
Color	Black	Black / Blue Dot	White	Black / Red Dot	Blue
Hardness, shore A (°Sh)	55 ±5	70 ±5	55 ±5	55 ±5	55 ±5
Electrical resistance (Ωm)	—	800 to 1000	—	5 to 15	—

* ESD: Electric Static Dissipative Material

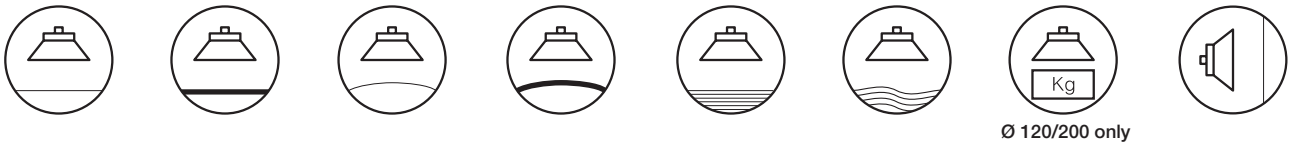
How to order

Cups assemblies and replacement cups are specified by cup diameter and material. Standard nitrile and silicon are listed on the following pages. To specify an alternative material, replace the cup material with alternative cup material code.

Example: To specify a cup assembly with urethane (U), replace (NBR) with (U) in the part number. PFTM-20B-NBR-G1 becomes PFTM-20B-U-G1. Inquire with factory for availability.

Application guide

Flat - Smooth surface



Flat surface, thin section	Flat surface, any section	Slightly bowed surface, thin section	Slightly bowed surface, any section	Metal sheet handling	Corrugated sheet handling	High lifting force	Vertical lift
						Ø 120/200 only	

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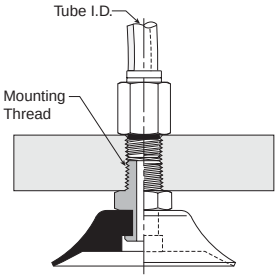
PFTM Series Male Thread Connector

Simple male connection for low profile positions secured to a plate or bracket. NPT, G, metric threads.
Fitting material: aluminum.



Installation

Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.

Cup diameter (mm)	Vacuum port	Complete assembly Nitrile (NBR)	Replacement cup Nitrile (NBR)	Complete assembly Silicon (SI)	Replacement cup Silicon (SI)	Replacement cup fitting
5	M5	**PFTM-5A-NBR-M5**	**PFG-5A-NBR**	**PFTM-5A-SI-M5**	**PFG-5A-SI**	**FTM-5A-M5H**
5	1/8 BSPP	**PFTM-5A-NBR-G1**	**PFG-5A-NBR**	**PFTM-5A-SI-G1**	**PFG-5A-SI**	**FTM-5A-G1**
6	M5	**PFTM-6A-NBR-M5**	**PFG-6A-NBR**	**PFTM-6A-SI-M5**	**PFG-6A-SI**	**FTM-5A-M5H**
6	1/8 BSPP	**PFTM-6A-NBR-G1**	**PFG-6A-NBR**	**PFTM-6A-SI-G1**	**PFG-6A-SI**	**FTM-5A-G1**
8	M5	**PFTM-8A-NBR-M5**	**PFG-8A-NBR**	**PFTM-8A-SI-M5**	**PFG-8A-SI**	**FTM-5A-M5H**
8	1/8 BSPP	**PFTM-8A-NBR-G1**	**PFG-8A-NBR**	**PFTM-8A-SI-G1**	**PFG-8A-SI**	**FTM-5A-G1**
10	M5	**PFTM-10A-NBR-M5**	**PFG-10A-NBR**	**PFTM-10A-SI-M5**	**PFG-10A-SI**	**FTM-5A-M5H**
10	1/8 BSPP	**PFTM-10A-NBR-G1**	**PFG-10A-NBR**	**PFTM-10A-SI-G1**	**PFG-10A-SI**	**FTM-5A-G1**
15	M5	**PFTM-15A-NBR-M5**	**PFG-15A-NBR**	**PFTM-15A-SI-M5**	**PFG-15A-SI**	**FTM-5A-M5H**
15	1/8 BSPP	**PFTM-15A-NBR-G1**	**PFG-15A-NBR**	**PFTM-15A-SI-G1**	**PFG-15A-SI**	**FTM-5A-G1**
20	1/8 BSPP	**PFTM-20B-NBR-G1**	**PFG-20B-NBR**	**PFTM-20B-SI-G1**	**PFG-20B-SI**	**FTM-20B-G1H**
20	1/4 BSPP	**PFTM-20B-NBR-G2**	**PFG-20B-NBR**	**PFTM-20B-SI-G2**	**PFG-20B-SI**	**FTM-20B-G2**
20	M10	**PFTM-20B-NBR-M10**	**PFG-20B-NBR**	**PFTM-20B-SI-M10**	**PFG-20B-SI**	**FTM-20B-M10**
20	1/8 NPT	**PFTM-20B-NBR-N1**	**PFG-20B-NBR**	**PFTM-20B-SI-N1**	**PFG-20B-SI**	**FTM-20B-N1**
30	1/8 BSPP	**PFTM-30-NBR-G1**	**PFG-30-NBR**	**PFTM-30-SI-G1**	**PFG-30-SI**	**FTM-20B-G1H**
30	1/4 BSPP	**PFTM-30-NBR-G2**	**PFG-30-NBR**	**PFTM-30-SI-G2**	**PFG-30-SI**	**FTM-20B-G2**
30	M10	**PFTM-30-NBR-M10**	**PFG-30-NBR**	**PFTM-30-SI-M10**	**PFG-30-SI**	**FTM-20B-M10**
30	1/8 NPT	**PFTM-30-NBR-N1**	**PFG-30-NBR**	**PFTM-30-SI-N1**	**PFG-30-SI**	**FTM-20B-N1**
40	1/8 BSPP	**PFTM-40-NBR-G1**	**PFG-40-NBR**	**PFTM-40-SI-G1**	**PFG-40-SI**	**FTM-20B-G1H**
40	1/4 BSPP	**PFTM-40-NBR-G2**	**PFG-40-NBR**	**PFTM-40-SI-G2**	**PFG-40-SI**	**FTM-20B-G2**
40	M10	**PFTM-40-NBR-M10**	**PFG-40-NBR**	**PFTM-40-SI-M10**	**PFG-40-SI**	**FTM-20B-M10**
40	1/8 NPT	**PFTM-40-NBR-N1**	**PFG-40-NBR**	**PFTM-40-SI-N1**	**PFG-40-SI**	**FTM-20B-N1**
50	1/8 BSPP	**PFTM-50-NBR-G1**	**PFG-50-NBR**	**PFTM-50-SI-G1**	**PFG-50-SI**	**FTM-50-G1H**
50	1/4 BSPP	**PFTM-50-NBR-G2**	**PFG-50-NBR**	**PFTM-50-SI-G2**	**PFG-50-SI**	**FTM-50-G2**
50	1/8 NPT	**PFTM-50-NBR-N1**	**PFG-50-NBR**	**PFTM-50-SI-N1**	**PFG-50-SI**	**FTM-50-N1**
60	1/4 BSPP	**PFTM-60-NBR-G2**	**PFG-60-NBR**	**PFTM-60-SI-G2**	**PFG-60-SI**	**FTM-60-G2**
60	M10	**PFTM-60-NBR-M10**	**PFG-60-NBR**	**PFTM-60-SI-M10**	**PFG-60-SI**	**FTM-60-M10**
60	1/4 NPT	**PFTM-60-NBR-N2**	**PFG-60-NBR**	**PFTM-60-SI-N2**	**PFG-60-SI**	**FTM-60-N2**
80	1/4 BSPP	**PFTM-80-NBR-G2**	**PFG-80-NBR**	**PFTM-80-SI-G2**	**PFG-80-SI**	**FTM-60-G2**
80	M10	**PFTM-80-NBR-M10**	**PFG-80-NBR**	**PFTM-80-SI-M10**	**PFG-80-SI**	**FTM-60-M10**
80	1/4 NPT	**PFTM-80-NBR-N2**	**PFG-80-NBR**	**PFTM-80-SI-N2**	**PFG-80-SI**	**FTM-60-N2**
95	1/4 BSPP	**PFTM-95-NBR-G2**	**PFG-95-NBR**	**PFTM-95-SI-G2**	**PFG-95-SI**	**FTM-60-G2**
95	M10	**PFTM-95-NBR-M10**	**PFG-95-NBR**	**PFTM-95-SI-M10**	**PFG-95-SI**	**FTM-60-M10**
95	1/4 NPT	**PFTM-95-NBR-N2**	**PFG-95-NBR**	**PFTM-95-SI-N2**	**PFG-95-SI**	**FTM-60-N2**

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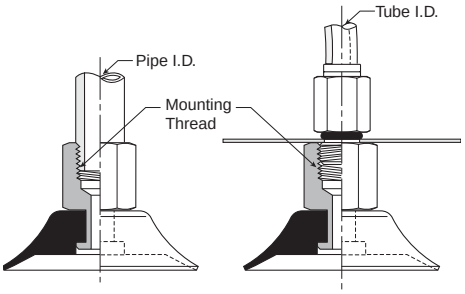
Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

PFTF Series Female Thread Connector

Simple female connection for low profile positions secured to a plate or bracket. NPSF, G threads. Fitting material: aluminum.

Installation

Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.



Cup diameter (mm)	Vacuum port	Complete assembly Nitrile (NBR)	Replacement cup Nitrile (NBR)	Complete assembly Silicon (SI)	Replacement cup Silicon (SI)	Replacement cup fitting
5	M5	**PFTF-5A-NBR-M5**	**PFG-5A-NBR**	**PFTF-5A-SI-M5**	**PFG-5A-SI**	**FTF-5A-M5**
5	1/8 BSPP	**PFTF-5A-NBR-G1**	**PFG-5A-NBR**	**PFTF-5A-SI-G1**	**PFG-5A-SI**	**FTF-5A-G1**
6	M5	**PFTF-6A-NBR-M5**	**PFG-6A-NBR**	**PFTF-6A-SI-M5**	**PFG-6A-SI**	**FTF-5A-M5**
6	1/8 BSPP	**PFTF-6A-NBR-G1**	**PFG-6A-NBR**	**PFTF-6A-SI-G1**	**PFG-6A-SI**	**FTF-5A-G1**
8	M5	**PFTF-8A-NBR-M5**	**PFG-8A-NBR**	**PFTF-8A-SI-M5**	**PFG-8A-SI**	**FTF-5A-M5**
8	1/8 BSPP	**PFTF-8A-NBR-G1**	**PFG-8A-NBR**	**PFTF-8A-SI-G1**	**PFG-8A-SI**	**FTF-5A-G1**
10	1/8 BSPP	**PFTF-10A-NBR-G1**	**PFG-10A-NBR**	**PFTF-10A-SI-G1**	**PFG-10A-SI**	**FTF-5A-G1**
10	M5	**PFTF-10A-NBR-M5**	**PFG-10A-NBR**	**PFTF-10A-SI-M5**	**PFG-10A-SI**	**FTF-5A-M5**
15	1/8 BSPP	**PFTF-15A-NBR-G1**	**PFG-15A-NBR**	**PFTF-15A-SI-G1**	**PFG-15A-SI**	**FTF-5A-G1**
15	M5	**PFTF-15A-NBR-M5**	**PFG-15A-NBR**	**PFTF-15A-SI-M5**	**PFG-15A-SI**	**FTF-5A-M5**
20	1/8 BSPP	**PFTF-20B-NBR-G1**	**PFG-20B-NBR**	**PFTF-20B-SI-G1**	**PFG-20B-SI**	**FTF-20B-G1**
30	1/8 BSPP	**PFTF-30-NBR-G1**	**PFG-30-NBR**	**PFTF-30-SI-G1**	**PFG-30-SI**	**FTF-20B-G1**
30	1/4 BSPP	**PFTF-30-NBR-G2**	**PFG-30-NBR**	**PFTF-30-SI-G2**	**PFG-30-SI**	**FTF-20B-G2**
40	1/8 BSPP	**PFTF-40-NBR-G1**	**PFG-40-NBR**	**PFTF-40-SI-G1**	**PFG-40-SI**	**FTF-20B-G1**
40	1/4 BSPP	**PFTF-40-NBR-G2**	**PFG-40-NBR**	**PFTF-40-SI-G2**	**PFG-40-SI**	**FTF-20B-G2**
50	1/8 BSPP	**PFTF-50-NBR-G1**	**PFG-50-NBR**	**PFTF-50-SI-G1**	**PFG-50-SI**	**FTF-50-G1**
50	1/4 BSPP	**PFTF-50-NBR-G2**	**PFG-50-NBR**	**PFTF-50-SI-G2**	**PFG-50-SI**	**FTF-50-G2**
60	1/4 BSPP	**PFTF-60-NBR-G2**	**PFG-60-NBR**	**PFTF-60-SI-G2**	**PFG-60-SI**	**FTF-60-G2**
60	1/4 NPT	**PFTF-60-NBR-N2**	**PFG-60-NBR**	**PFTF-60-SI-N2**	**PFG-60-SI**	**FTF-60-N2**
80	1/4 BSPP	**PFTF-80-NBR-G2**	**PFG-80-NBR**	**PFTF-80-SI-G2**	**PFG-80-SI**	**FTF-60-G2**
80	1/4 NPT	**PFTF-80-NBR-N2**	**PFG-80-NBR**	**PFTF-80-SI-N2**	**PFG-80-SI**	**FTF-60-N2**
95	1/4 NPT	**PFTF-95-NBR-N2**	**PFG-95-NBR**	**PFTF-95-SI-N2**	**PFG-95-SI**	**FTF-60-N2**
95	1/4 BSPP	**PFTF-95-NBR-G2**	**PFG-95-NBR**	**PFTF-95-SI-G2**	**PFG-95-SI**	**FTF-60-G2**
120	1/2 BSPP	**PFTF-120-NBR-G4**	**PFG-120-NBR**	**PFTF-120-SI-G4**	**PFG-120-SI**	**FTF-120-G4**
120	1/2 NPT	**PFTF-120-NBR-N4**	**PFG-120-NBR**	**PFTF-120-SI-N4**	**PFG-120-SI**	**FTF-120-N4**
150	1/2 NPT	**PFTF-150-NBR-G4**	**PFG-150-NBR**	**PFTF-150-SI-G4**	**PFG-150-SI**	**FTF-120-G4**
150	1/2 NPT	**PFTF-150-NBR-N4**	**PFG-150-NBR**	**PFTF-150-SI-N4**	**PFG-150-SI**	**FTF-120-N4**
200	1/2 BSPP	**PFTF-200-NBR-G4**	**PFG-200-NBR**	**PFTF-200-SI-G4**	**PFG-200-SI**	**FTF-120-G4**
200	1/2 NPT	**PFTF-200-NBR-N4**	**PFG-200-NBR**	**PFTF-200-SI-N4**	**PFG-200-SI**	**FTF-120-N4**

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Pneumatic Division
Richland, Michigan
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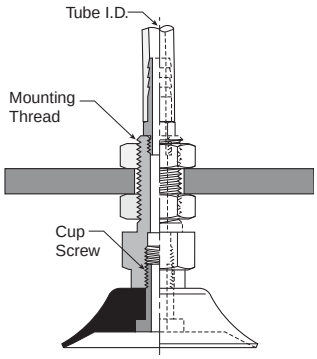
PFTK Series Barbed Bulkhead

Top stem connectors secured with jam nuts and allow tubing connections at the top side. Fitting material: nickel plated brass.

Installation

Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.



Cup diameter (mm)	Vacuum port	Complete assembly Nitrile (NBR)	Replacement cup Nitrile (NBR)	Complete assembly Silicon (SI)	Replacement cup Silicon (SI)	Replacement cup fitting
5	Barb	**PFTK-5A-NBR**	**PFG-5A-NBR**	**PFTK-5A-SI**	**PFG-5A-SI**	**FTK-5A**
6	Barb	**PFTK-6A-NBR**	**PFG-6A-NBR**	**PFTK-6A-SI**	**PFG-6A-SI**	**FTK-5A**
8	Barb	**PFTK-8A-NBR**	**PFG-8A-NBR**	**PFTK-8A-SI**	**PFG-8A-SI**	**FTK-5A**
10	Barb	**PFTK-10A-NBR**	**PFG-10A-NBR**	**PFTK-10A-SI**	**PFG-10A-SI**	**FTK-5A**
15	Barb	**PFTK-15-NBR**	**PFG-15-NBR**	**PFTK-15-SI**	**PFG-15-SI**	**FTK-15**
20	Barb	**PFTK-20-NBR**	**PFG-20-NBR**	**PFTK-20-SI**	**PFG-20-SI**	**FTK-20**
30	Barb	**PFTK-30-NBR**	**PFG-30-NBR**	**PFTK-30-SI**	**PFG-30-SI**	**FTK-25**
40	Barb	**PFTK-40-NBR**	**PFG-40-NBR**	**PFTK-40-SI**	**PFG-40-SI**	**FTK-25**
50	Barb	**PFTK-50-NBR**	**PFG-50-NBR**	**PFTK-50-SI**	**PFG-50-SI**	**FTK-50**
60	1/8 BSPP	**PFTK-60-NBR-G1**	**PFG-60-NBR**	**PFTK-60-SI-G1**	**PFG-60-SI**	**FTK-60-G1**
60	1/8 NPT	**PFTK-60-NBR-N1**	**PFG-60-NBR**	**PFTK-60-SI-N1**	**PFG-60-SI**	**FTK-60-N1**
80	1/8 BSPP	**PFTK-80-NBR-G1**	**PFG-80-NBR**	**PFTK-80-SI-G1**	**PFG-80-SI**	**FTK-60-G1**
80	1/8 NPT	**PFTK-80-NBR-N1**	**PFG-80-NBR**	**PFTK-80-SI-N1**	**PFG-80-SI**	**FTK-60-N1**
95	1/8 BSPP	**PFTK-95-NBR-G1**	**PFG-95-NBR**	**PFTK-95-SI-G1**	**PFG-95-SI**	**FTK-60-G1**
95	1/8 NPT	**PFTK-95-NBR-N1**	**PFG-95-NBR**	**PFTK-95-SI-N1**	**PFG-95-SI**	**FTK-60-N1**

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Richland, Michigan
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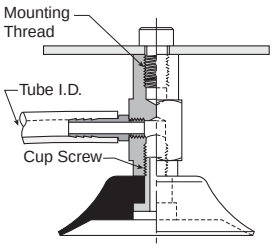
PFYK Series 90° Barbed Adapter

Side stem connectors allow you to secure the stem with a bolt thru a plate or "L" bracket to allow the tube connection from the side port. Fitting material: plated brass.

Installation

Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.



Cup diameter (mm)	Vacuum port	Complete assembly Nitrile (NBR)	Replacement cup Nitrile (NBR)	Complete assembly Silicon (SI)	Replacement cup Silicon (SI)	Replacement cup fitting
5	Barb	**PFYK-5A-NBR**	**PFG-5A-NBR**	**PFYK-5A-SI**	**PFG-5A-SI**	**FYK-5A**
6	Barb	**PFYK-6A-NBR**	**PFG-6A-NBR**	**PFYK-6A-SI**	**PFG-6A-SI**	**FYK-5A**
8	Barb	**PFYK-8A-NBR**	**PFG-8A-NBR**	**PFYK-8A-SI-M5**	**PFG-8A-SI**	**FYK-5A**
10	Barb	**PFYK-10A-NBR**	**PFG-10A-NBR**	**PFYK-10A-SI**	**PFG-10A-SI**	**FYK-5A**
15	Barb	**PFYK-15-NBR**	**PFG-15-NBR**	**PFYK-15-SI**	**PFG-15-SI**	**FYK-15**
20	Barb	**PFYK-20-NBR**	**PFG-20-NBR**	**PFYK-20-SI**	**PFG-20-SI**	**FYK-20**
30	Barb	**PFYK-30-NBR**	**PFG-30-NBR**	**PFYK-30-SI**	**PFG-30-SI**	**FYK-25**
40	Barb	**PFYK-40-NBR**	**PFG-40-NBR**	**PFYK-40-SI**	**PFG-40-SI**	**FYK-25**
50	Barb	**PFYK-50-NBR**	**PFG-50-NBR**	**PFYK-50-SI**	**PFG-50-SI**	**FYK-50**
60	1/8 BSPP	**PFYK-60-NBR-G1**	**PFG-60-NBR**	**PFYK-60-SI-G1**	**PFG-60-SI**	**FYK-60-G1**
60	1/8 NPT	**PFYK-60-NBR-N1**	**PFG-60-NBR**	**PFYK-60-SI-N1**	**PFG-60-SI**	**FYK-60-N1**
80	1/8 BSPP	**PFYK-80-NBR-G1**	**PFG-80-NBR**	**PFYK-80-SI-G1**	**PFG-80-SI**	**FYK-60-G1**
80	1/8 NPT	**PFYK-80-NBR-N1**	**PFG-80-NBR**	**PFYK-80-SI-N1**	**PFG-80-SI**	**FYK-60-N1**
95	1/8 BSPP	**PFYK-95-NBR-G1**	**PFG-95-NBR**	**PFYK-95-SI-G1**	**PFG-95-SI**	**FYK-60-G1**
95	1/8 NPT	**PFYK-95-NBR-N1**	**PFG-95-NBR**	**PFYK-95-SI-N1**	**PFG-95-SI**	**FYK-60-N1**
120	1/8 BSPP	**PFYK-120-NBR-G1**	**PFG-120-NBR**	**PFYK-120-SI-G1**	**PFG-120-SI**	**FYK-120-G1**
120	1/8 NPT	**PFYK-120-NBR-N1**	**PFG-120-NBR**	**PFYK-120-SI-N1**	**PFG-120-SI**	**FYK-120-N1**
150	1/8 BSPP	**PFYK-150-NBR-G1**	**PFG-150-NBR**	**PFYK-150-SI-G1**	**PFG-150-SI**	**FYK-120-G1**
150	1/8 NPT	**PFYK-150-NBR-N1**	**PFG-150-NBR**	**PFYK-150-SI-N1**	**PFG-150-SI**	**FYK-120-N1**
200	1/8 BSPP	**PFYK-200-NBR-G1**	**PFG-200-NBR**	**PFYK-200-SI-G1**	**PFG-200-SI**	**FYK-120-G1**
200	1/8 NPT	**PFYK-200-NBR-N1**	**PFG-200-NBR**	**PFYK-200-SI-N1**	**PFG-200-SI**	**FYK-120-N1**

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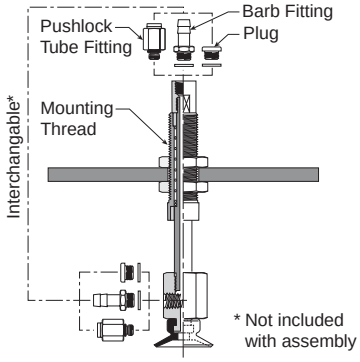
PFTYS Series Bulkhead Level Compensator

303 stainless steel construction secured with jam nuts. Spring biased compensators can absorb impacts of down-strokes and adjust for different levels of pick up points. 303 stainless corrosion resistant materials with drymet bushings increases the strength and life.



Installation

Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.

Cup dia. (mm)	Vacuum port	Stroke (mm)	Spring compression Force lbf (N) 0%	100%	Cup material Nitrile assemlby (NBR)	Replacement cup Nitrile (NBR)	Cup material Silicon assembly (SI)	Replacement cup Silicon (SI)	Level Compensator P/N
5	M5	10	.14 (.61)	.26 (1.17)	PFTYS5A10NBRM5	PFG-5A-NBR	PFTYS5A10SIM5	PFG-5A-SI	TYS-5A-10
5	M5	15	.15 (.64)	.26 (1.17)	PFTYS5A15NBRM5	PFG-5A-NBR	PFTYS5A15SIM5	PFG-5A-SI	TYS-5A-15
6	M5	10	.14 (.61)	.26 (1.17)	PFTYS6A10NBRM5	PFG-6A-NBR	PFTYS6A10SIM5	PFG-6A-SI	TYS-5A-10
6	M5	15	.15 (.64)	.26 (1.17)	PFTYS6A15NBRM5	PFG-6A-NBR	PFTYS6A15SIM5	PFG-6A-SI	TYS-5A-15
8	M5	10	.14 (.61)	.26 (1.17)	PFTYS8A10NBRM5	PFG-8A-NBR	PFTYS8A10SIM5	PFG-8A-SI	TYS-5A-10
8	M5	15	.15 (.64)	.26 (1.17)	PFTYS8A15NBRM5	PFG-8A-NBR	PFTYS8A15SIM5	PFG-8A-SI	TYS-5A-15
10	M5	10	.11 (.49)	.13 (.59)	PFTYS10A10NBRM5	PFG-10A-NBR	PFTYS10A10SIM5	PFG-10A-SI	TYS-5A-10
10	M5	15	.11 (.49)	.13 (.59)	PFTYS10A15NBRM5	PFG-10A-NBR	PFTYS10A15SIM5	PFG-10A-SI	TYS-5A-15
15	M5	10	.11 (.49)	.13 (.59)	PFTYS15A10NBRM5	PFG-15A-NBR	PFTYS15A10SIM5	PFG-15A-SI	TYS-5A-10
15	M5	15	.11 (.49)	.13 (.59)	PFTYS15A15NBRM5	PFG-15A-NBR	PFTYS15A15SIM5	PFG-15A-SI	TYS-5A-15
20	M5	15	.56 (2.5)	.79 (3.4)	PFTYS20B15NBRM5	PFG-20B-NBR	PFTYS20B15SIM5	PFG-20B-SI	TYS-20B-15
20	M5	30	.56 (2.5)	1.2 (4.9)	PFTYS20B30NBRM5	PFG-20B-NBR	PFTYS20B30SIM5	PFG-20B-SI	TYS-20B-30
30	M5	15	.56 (2.5)	.79 (3.4)	PFTYS3015NBRM5	PFG-30-NBR	PFTYS3015SIM5	PFG-30-SI	TYS-20B-15
30	M5	30	.56 (2.5)	1.2 (4.9)	PFTYS3030NBRM5	PFG-30-NBR	PFTYS3030SIM5	PFG-30-SI	TYS-20B-30
40	M5	15	.56 (2.5)	.79 (3.4)	PFTYS4015NBRM5	PFG-40-NBR	PFTYS4015SIM5	PFG-40-SI	TYS-20B-15
40	M5	30	.56 (2.5)	1.2 (4.9)	PFTYS4030NBRM5	PFG-40-NBR	PFTYS4030SIM5	PFG-40-SI	TYS-20B-30
50	M5	15	.56 (2.5)	1.2 (4.9)	PFTYS5015NBRM5	PFG-50-NBR	PFTYS5015SIM5	PFG-50-SI	TYS-50-15
50	M5	30	.67 (2.9)	1.4 (5.9)	PFTYS5030NBRM5	PFG-50-NBR	PFTYS5030SIM5	PFG-50-SI	TYS-50-30
60	1/8 NPT	30	1.6 (6.8)	3.6 (15.6)	PFTYS6030NBRN1	PFG-60-NBR	PFTYS6030SIN1	PFG-60-SI	TYS-60-30
60	1/8 NPT	50	1.9 (8.3)	4.5 (19.6)	PFTYS6050NBRN1	PFG-60-NBR	PFTYS6050SIN1	PFG-60-SI	TYS-60-50
80	1/8 NPT	30	1.6 (6.8)	3.6 (15.6)	PFTYS8030NBRN1	PFG-80-NBR	PFTYS8030SIN1	PFG-80-SI	TYS-60-30
80	1/8 NPT	50	1.9 (8.3)	4.5 (19.6)	PFTYS8050NBRN1	PFG-80-NBR	PFTYS8050SIN1	PFG-80-SI	TYS-60-50
95	1/8 NPT	30	1.6 (6.8)	3.6 (15.6)	PFTYS9530NBRN1	PFG-95-NBR	PFTYS9530SIN1	PFG-95-SI	TYS-60-30
95	1/8 NPT	50	1.9 (8.3)	4.5 (19.6)	PFTYS9550NBRN1	PFG-95-NBR	PFTYS9550SIN1	PFG-95-SI	TYS-60-50
120	1/4 NPT	20	3.6 (15.6)	6.8 (29)	PFTYS12020NBRN2	PFG-120-NBR	PFTYS12020SIN2	PFG-120-SI	TYS-120-20
120	1/4 NPT	70	3.4 (14.7)	6.8 (29)	PFTYS12070NBRN2	PFG-120-NBR	PFTYS12070SIN2	PFG-120-SI	TYS-120-70
150	1/4 NPT	20	3.6 (15.6)	6.8 (29)	PFTYS15020NBRN2	PFG-150-NBR	PFTYS15020SIN2	PFG-150-SI	TYS-120-20
150	1/4 NPT	70	3.4 (14.7)	6.8 (29)	PFTYS15070NBRN2	PFG-150-NBR	PFTYS15070SIN2	PFG-150-SI	TYS-120-70
200	1/4 NPT	20	3.6 (15.6)	6.8 (29)	PFTYS20020NBRN2	PFG-200-NBR	PFTYS20020SIN2	PFG-200-SI	TYS-120-20
200	1/4 NPT	70	3.4 (14.7)	6.8 (29)	PFTYS20070NBRN2	PFG-200-NBR	PFTYS20070SIN2	PFG-200-SI	TYS-120-70

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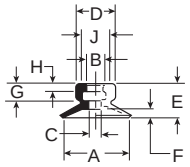
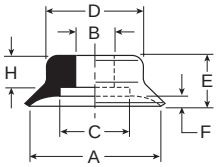
PFG Series Replacement Cup Dimensions

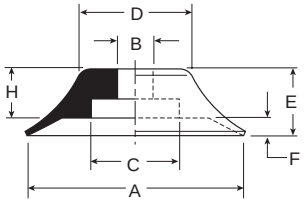
PFG-5A
PFG-15A



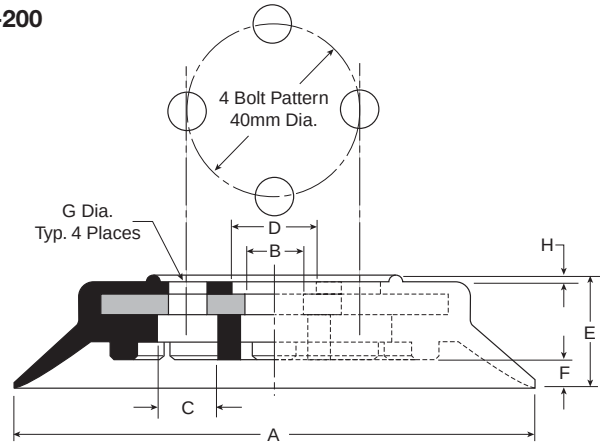
PFG-15 thru
PFG-40



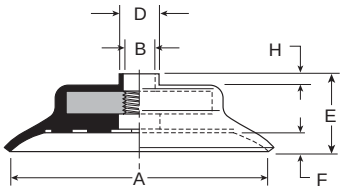
PFG-50



PFG-120 thru
PFG-200



PFG-60 thru
PFG-95



Model number	ØA	ØB	ØC	ØD	E	F	G	H	ØJ
PFG-5A-*	.20 (5)	.16 (4)	.06 (1.4)	.30 (7.5)	.26 (6.5)	.03 (.8)	.16 (4)	.08 (2)	.24 (6)
PFG-6A-*	.24 (6)	.16 (4)	.08 (2)	.30 (7.5)	.26 (6.5)	.03 (.8)	.16 (4)	.08 (2)	.24 (6)
PFG-8A-*	.31 (8)	.16 (4)	.08 (2)	.31 (8)	.28 (7)	.05 (1.2)	.16 (4)	.08 (2)	.24 (6)
PFG-10A-*	.39 (10)	.16 (4)	.08 (2)	.33 (8.5)	.30 (7.5)	.06 (1.5)	.16 (4)	.08 (2)	.24 (6)
PFG-15-*	.59 (15)	—	.31 (7.8)	.47 (12)	.31 (8)	.07 (1.9)	—	—	—
PFG-15A-*	.59 (15)	.16 (4)	.08 (2)	.35 (9)	.31 (8)	.08 (2)	.16 (4)	.08 (2)	.24 (6)
PFG-20-*	.79 (20)	.18 (4.6)	.43 (11)	.59 (15)	.39 (10)	.09 (2.3)	—	.18 (4.5)	—
PFG-20B-*	.79 (20)	.24 (6)	.43 (11)	.59 (15)	.49 (12.5)	.09 (2.3)	—	.28 (7)	—
PFG-30-*	1.18 (30)	.24 (6)	.43 (11)	.55 (14)	.47 (12)	.08 (2)	—	.28 (7)	—
PFG-40-*	1.57 (40)	.24 (6)	.43 (11)	.94 (24)	.55 (14)	.16 (4)	—	.28 (7)	—
PFG-50-*	1.97(50)	.31 (8)	.79 (20)	1.06 (27)	.59 (15)	.14 (3.5)	—	.28 (7)	—
PFG-60-*	2.36 (60)	M10x1.25	—	.79 (12.5)	.73 (18.5)	.20 (5)	—	.10 (2.5)	—
PFG-80-*	3.15 (80)	M10x1.25	—	.79 (12.5)	.81 (20.5)	.24 (6)	—	.10 (2.5)	—
PFG-95-*	3.74 (95)	M10x1.25	—	.79 (12.5)	.83 (21)	.24 (6)	—	.10 (2.5)	—
PFG-120-*	4.72 (120)	.55 (14)	.55 (14)	.79 (20)	1.00 (25.5)	.24 (6)	4xØ8.7xØ40	.059 (1.5)	—
PFG-150-*	5.91 (150)	.51(13)	.55 (14)	.79 (20)	1.28 (32.5)	.35 (9)	4xØ8.7xØ40	.059 (1.5)	—
PFG-200-*	7.87 (200)	.51 (13)	.47 (12)	.79 (20)	1.48 (37.5)	.51 (13)	4xØ8.7xØ40	.059 (1.5)	—

Inches (mm)
* Cup material

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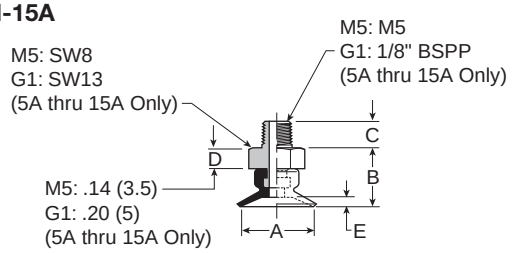
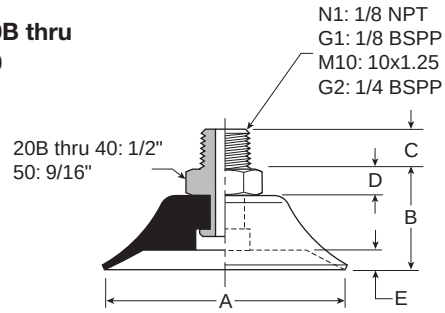
Dimensions

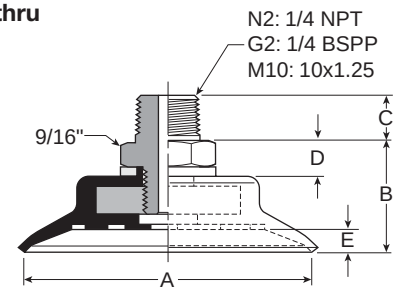
PFTM-5A thru PFTM-15A



PFTM-20B thru PFTM-50



PFTM-60 thru PFTM-95



Model number	ØA	B	C (M3)	C (M5)	C (N1 / G1)	C (M10 / G2)	C (N2)	D	E
PFTM-5A-*-†	.20 (5)	.39 (10)	—	.18 (4.5)	.31 (8)	—	—	See Dwg.	.31 (8)
PFTM-6A-*-†	.24 (6)	.39 (10)	—	.18 (4.5)	.31 (8)	—	—	See Dwg.	.31 (8)
PFTM-8A-*-†	.31 (8)	.41 (10.5)	—	.18 (4.5)	.31 (8)	—	—	See Dwg.	.05 (1.2)
PFTM-10A-*-†	.39 (10)	.43 (11)	—	.18 (4.5)	.31 (8)	—	—	See Dwg.	.06 (1.5)
PFTM-15A-*-†	.59 (15)	.45 (11.5)	—	.18 (4.5)	.31 (8)	—	—	See Dwg.	.08 (2)
PFTM-20B-*-†	.79 (20)	.69 (17.5)	—	—	.31 (8)	.39 (10)	—	.20 (5)	.10 (2.5)
PFTM-30-*-†	1.18 (30)	.67 (17)	—	—	.31 (8)	.39 (10)	—	.20 (5)	.08 (2)
PFTM-40-*-†	1.57 (40)	.75 (19)	—	—	.31 (8)	.39 (10)	—	.20 (5)	.14 (3.5)
PFTM-50-*-†	1.97 (50)	.79 (20)	—	—	.31 (8)	.39 (10)	—	.20 (5)	.16 (4)
PFTM-60-*-†	2.36 (60)	.90 (23)	—	—	—	.39 (10)	.59 (15)	.28 (7)	.20 (5)
PFTM-80-*-†	3.15 (80)	.98 (25)	—	—	—	.39 (10)	.59 (15)	.28 (7)	.24 (6)
PFTM-95-*-†	3.74 (95)	1.00 (25.5)	—	—	—	.39 (10)	.59 (15)	.28 (7)	.24 (6)

Inches (mm)
* Cup material
† Thread size

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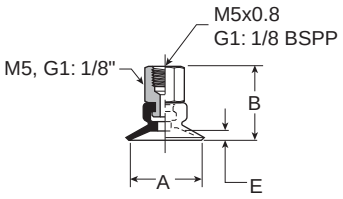
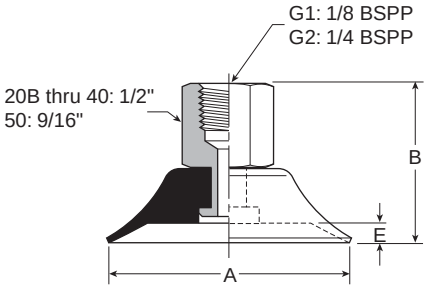
Dimensions

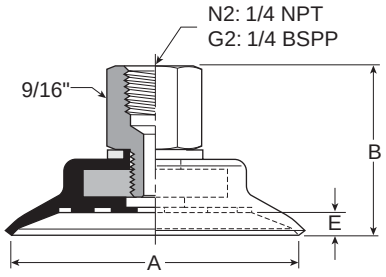
PFTF-5A thru PFTF-15A



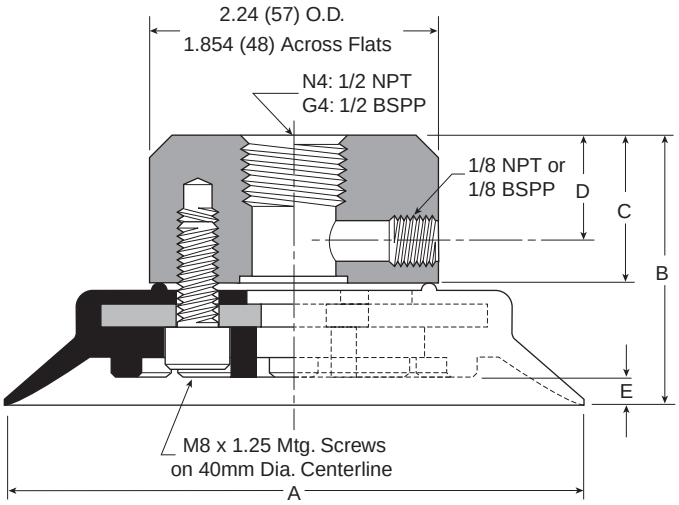
PFTF-20B thru PFTF-50



PFTF-60 thru PFTF-95



PFTF-120 thru PFTF-200



Model number	ØA	B	B (M5)	C	D	E
PFTF-5A-*-†	.20 (5)	.57 (14.5)	.81 (20.5)	—	—	.03 (.8)
PFTF-6A-*-†	.24 (6)	.57 (14.5)	.81 (20.5)	—	—	.03 (.8)
PFTF-8A-*-†	.31 (8)	.59 (15)	.83 (21)	—	—	.05 (1.2)
PFTF-10A-*-†	.39 (10)	.57 (14.5)	.81 (20.5)	—	—	.06 (1.5)
PFTF-15A-*-†	.59 (15)	.63 (16)	.87 (22)	—	—	.08 (2)
PFTF-20B-*-†	.79 (20)	1.04 (26.5)	—	—	—	.10 (2.5)
PFTF-30-*-†	1.18 (30)	1.02 (26)	—	—	—	.08 (2)
PFTF-40-*-†	1.57 (40)	1.10 (28)	—	—	—	.16 (4)
PFTF-50-*-†	1.97 (50)	1.14 (29)	—	—	—	.16 (4)
PFTF-60-*-†	2.36 (60)	1.40 (35.5)	—	—	—	.20 (5)
PFTF-80-*-†	3.15 (80)	1.48 (37.5)	—	—	—	.24 (6)
PFTF-95-*-†	3.74 (95)	1.50 (38)	—	—	—	.24 (6)
PFTF-120-*-†	4.72 (120)	1.83 (46.5)	—	.94 (24)	.51 (13)	.24 (6)
PFTF-150-*-†	5.91 (150)	2.11 (53.5)	—	.94 (24)	.51 (13)	.35 (9)
PFTF-200-*-†	7.87 (200)	2.30 (58.5)	—	.94 (24)	.51 (13)	.51 (13)

Inches (mm)
* Cup material
† Thread size

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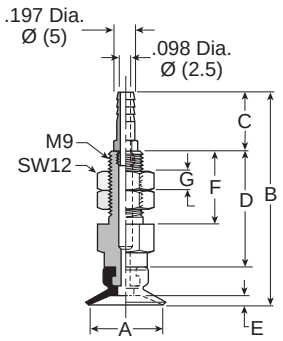
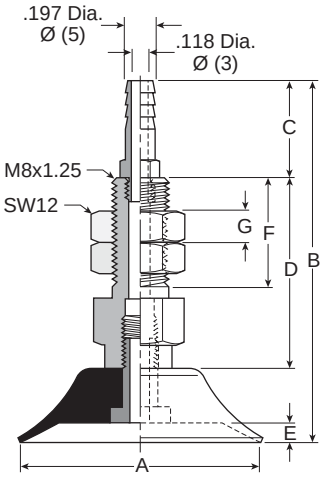
Dimensions

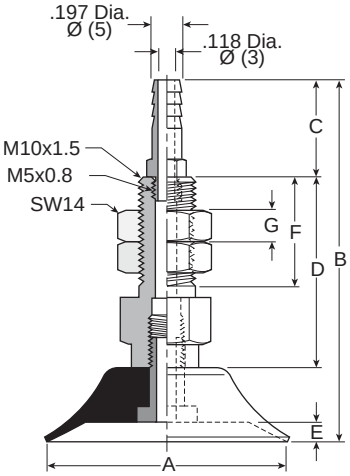
PFTK-5A thru PFTK-10A



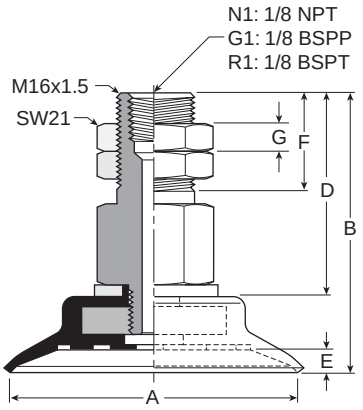
PFTK-15 thru PFTK-20



PFTK-30 thru PFTK-50



PFTK-60 thru PFTK-95



Model number	ØA	B	C	D	E	F	G	Wt oz. (g)
PFTK-5A-*	.20 (5)	1.20 (30.5)	.39 (10)	.55 (14)	.03 (.8)	.61 (15.5)	.12 (3)	.39 (11)
PFTK-6A-*	.24 (6)	1.20 (30.5)	.39 (10)	.55 (14)	.03 (.8)	.61 (15.5)	.12 (3)	.39 (11)
PFTK-8A-*	.31 (8)	1.22 (31)	.39 (10)	.55 (14)	.05 (1.2)	.61 (15.5)	.12 (3)	.39 (11)
PFTK-10A-*	.39 (10)	1.81 (46)	.63 (16)	.88 (22.5)	.06 (1.5)	.61 (15.5)	.12 (3)	.53 (15)
PFTK-15-*	.59 (15)	1.81 (46)	.63 (16)	.86 (22)	.07(1.9)	.59 (15)	.12 (3)	.71 (20)
PFTK-20-*	.79 (20)	1.89 (48)	.63 (16)	.86 (22)	.09 (2.3)	.59 (15)	.20 (5)	.71 (20)
PFTK-30-*	1.18 (30)	2.36 (60)	.63 (16)	1.26 (32)	.08 (2)	.71 (20)	.20 (5)	1.41 (40)
PFTK-40-*	1.57 (40)	2.44 (62)	.63 (16)	1.26 (32)	.14 (3.5)	.71 (20)	.20 (5)	1.41 (40)
PFTK-50-*	1.97 (50)	2.48 (63)	.63 (16)	1.26 (32)	.16 (4)	.71 (20)	.20 (5)	1.77 (50)
PFTK-60-*-†	2.36 (60)	2.30 (58.5)	—	1.67 (42.5)	.20 (5)	.79 (20)	.24 (6)	4.59 (130)
PFTK-80-*-†	3.15 (80)	2.38 (60.5)	—	1.67 (42.5)	.24 (6)	.79 (20)	.24 (6)	6.00 (170)
PFTK-95-*-†	3.74 (95)	2.40 (61)	—	1.67 (42.5)	.24 (6)	.79 (20)	.24 (6)	7.77 (220)

Inches (mm)
* Cup material
† Vacuum port

Parker Hannifin Corporation
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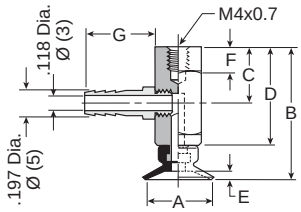
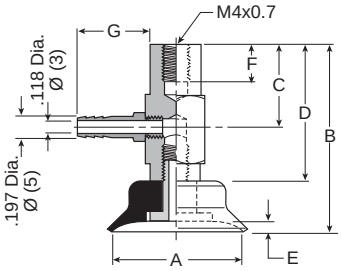
Dimensions

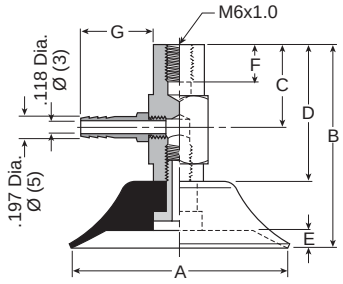
PFYK-5A thru PFYK-10A



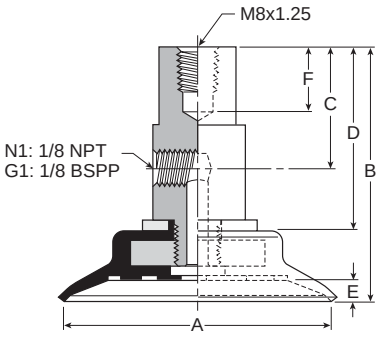
PFYK-15 thru PFYK-20



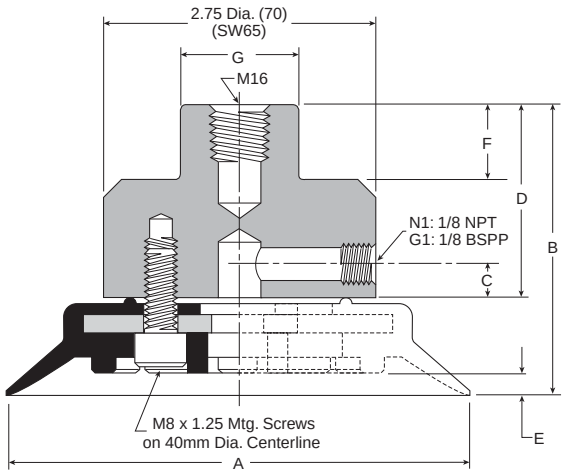
PFYK-30 thru PFYK-50



PFYK-60 thru PFYK-95



PFYK-120 thru PFYK-200



Model number	ØA	B	C	D	E	F	G	Wt oz (g)
PFYK-5A-*	.20 (5)	1.14 (29)	.51 (13)	.89 (22.5)	.03 (.8)	.24 (6)	.63 (16)	.56 (16)
PFYK-6A-*	.24 (6)	1.14 (29)	.51 (13)	.89 (22.5)	.03 (.8)	.24 (6)	.63 (16)	.56 (16)
PFYK-8A-*	.31 (8)	1.16 (29.5)	.51 (13)	.89 (22.5)	.05 (1.2)	.24 (6)	.63 (16)	.56 (16)
PFYK-10A-*	.39 (10)	1.18 (30)	.51 (13)	.89 (22.5)	.06 (1.5)	.24 (6)	.63 (16)	.56 (16)
PFYK-15-*	.59 (15)	1.18 (30)	.55 (14)	.87 (22)	.07 (1.9)	.24 (6)	.63 (16)	.71 (20)
PFYK-20-*	.79 (20)	1.26 (32)	.55 (14)	.87 (22)	.09 (2.3)	.24 (6)	.63 (16)	.71 (20)
PFYK-30-*	1.18 (30)	1.73 (44)	.79 (20)	1.26 (32)	.08 (2)	.31 (8)	.63 (16)	1.41 (40)
PFYK-40-*	1.57 (40)	1.81 (46)	.79 (20)	1.26 (32)	.14 (3.5)	.31 (8)	.63 (16)	1.77 (50)
PFYK-50-*	1.97 (50)	1.85 (47)	.79 (20)	1.26 (32)	.16 (4)	.31 (8)	.63 (16)	1.94 (55)
PFYK-60-*-†	2.36 (60)	2.30 (58.5)	1.10 (28)	1.57 (40)	.20 (5)	.43 (11)	—	4.24 (120)
PFYK-80-*-†	3.15 (80)	2.38 (60.5)	1.10 (28)	1.57 (40)	.24 (6)	.43 (11)	—	5.65 (160)
PFYK-95-*-†	3.74 (95)	2.40 (61)	1.10 (28)	1.57 (40)	.24 (6)	.43 (11)	—	7.42 (210)
PFYK-120-*-†	4.72 (120)	2.94 (75.5)	.47 (12)	1.97 (50)	.24 (6)	.79 (20)	1.18 Dia. (30)	22.6 (640)
PFYK-150-*-†	5.91 (150)	3.25 (82.5)	.47 (12)	1.97 (50)	.35 (9)	.79 (20)	1.18 Dia. (30)	32.1 (910)
PFYK-200-*-†	7.87 (200)	3.44 (87.5)	.47 (12)	1.97 (50)	.51 (13)	.79 (20)	1.18 Dia. (30)	42.4 (1200)

Inches (mm)
* Cup material
† Vacuum port

Parker Hannifin Corporation
Pneumatic Division
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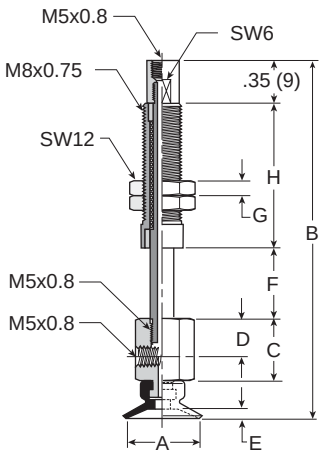
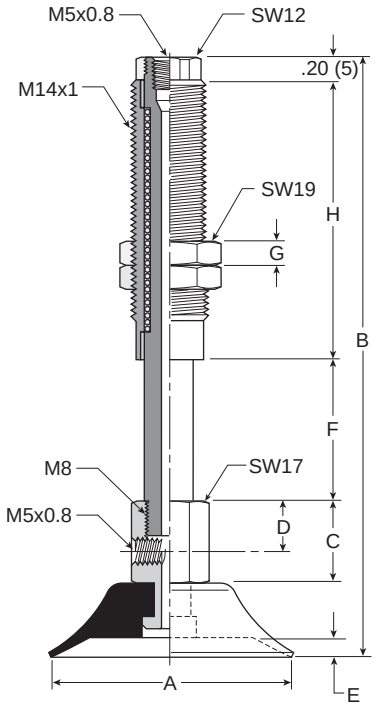
Dimensions

PFTYS5A thru PFTYS15A



PFTYS20B thru PFTYS50



Model number	ØA	B	C	D	E	F	G	H	Wt oz (g)
PFTYS5A10*†	.20 (5)	2.42 (61.5)	.51 (13)	.31 (8)	.03 (.8)	.39 (10)	.12 (3)	.91 (23)	.65 (18.5)
PFTYS5A15*†	.20 (5)	2.91 (74)	.51 (13)	.31 (8)	.03 (.8)	.59 (15)	.12 (3)	1.20 (30.5)	.74 (21)
PFTYS6A10*†	.24 (6)	2.42 (61.5)	.51 (13)	.31 (8)	.03 (.8)	.39 (10)	.12 (3)	.91 (23)	.65 (18.5)
PFTYS6A15*†	.24 (6)	2.91 (74)	.51 (13)	.31 (8)	.03 (.8)	.59 (15)	.12 (3)	1.20 (30.5)	.74 (21)
PFTYS8A10*†	.31 (8)	2.44 (62)	.51 (13)	.31 (8)	.05 (1.2)	.39 (10)	.12 (3)	.91 (23)	.65 (18.5)
PFTYS8A15*†	.31 (8)	2.93 (74.5)	.51 (13)	.31 (8)	.05 (1.2)	.59 (15)	.12 (3)	1.20 (30.5)	.74 (21)
PFTYS10A10*†	.39 (10)	2.48 (63)	.51 (13)	.31 (8)	.06 (1.5)	.39 (10)	.12 (3)	.91 (23)	.65 (18.5)
PFTYS10A15*†	.39 (10)	2.95 (75)	.51 (13)	.31 (8)	.06 (1.5)	.59 (15)	.12 (3)	1.20 (30.5)	.74 (21)
PFTYS15A10*†	.59 (15)	2.50 (63.5)	.51 (13)	.31 (8)	.08 (2)	.39 (10)	.12 (3)	.91 (23)	.65 (18.5)
PFTYS15A15*†	.59 (15)	2.97 (75.5)	.51 (13)	.31 (8)	.08 (2)	.59 (15)	.12 (3)	1.20 (30.5)	.74 (21)
PFTYS20B15*†	.79 (20)	3.37 (85.5)	.67 (17)	.39 (10)	.09 (2.3)	.59 (15)	.20 (5)	1.42 (36)	2.5 (71)
PFTYS20B30*†	.79 (20)	4.82 (122.5)	.67 (17)	.39 (10)	.09 (2.3)	1.18 (30)	.20 (5)	2.28 (58)	3.4 (96)
PFTYS3015*†	1.18 (30)	3.35 (85)	.67 (17)	.39 (10)	.08 (2)	.59 (15)	.20 (5)	1.42 (36)	2.5 (72)
PFTYS3030*†	1.18 (30)	4.80 (122)	.67 (17)	.39 (10)	.08 (2)	1.18 (30)	.20 (5)	2.28 (58	3.5 (97)
PFTYS4015*†	1.57 (40)	3.43 (87)	.67 (17)	.39 (10)	.14 (3.5)	.59 (15)	.20 (5)	1.42 (36)	2.7 (76)
PFTYS4030*†	1.57 (40)	4.88 (124)	.67 (17)	.39 (10)	.14 (3.5)	1.18 (30)	.20 (5)	2.28 (58	3.6 (101)
PFTYS5015*†	1.97 (50)	3.46 (88)	.67 (17)	.39 (10)	.16 (4)	.59 (15)	.20 (5)	1.42 (36)	3.0 (85)
PFTYS5030*†	1.97 (50)	4.92 (125)	.67 (17)	.39 (10)	.16 (4)	1.18 (30)	.20 (5)	2.28 (58)	3.9 (110)

Inches (mm)
* Cup material
† Vacuum port

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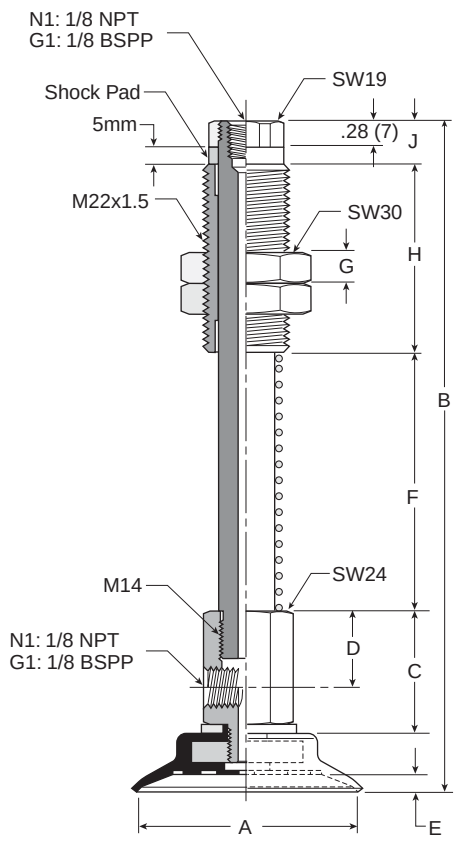
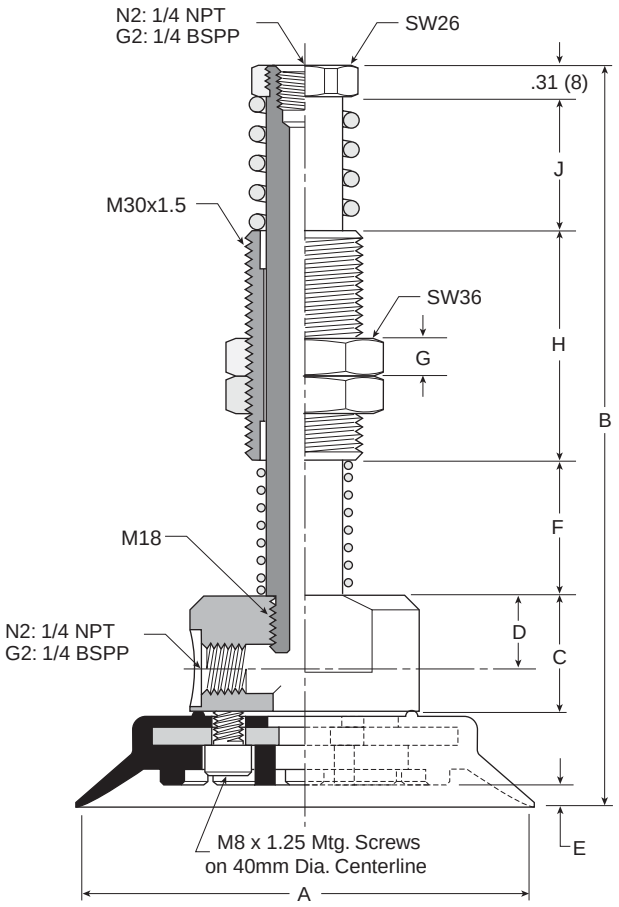
Dimensions

PFTYS60 thru PFTYS95



PFTYS120 thru PFTYS200



Model number	ØA	B	C	D	E	F	G	H	J	Wt oz (g)
PFTYS6030*†	2.36 (60)	6.02 (153)	1.28 (32.5)	.78 (20)	.20 (5)	1.77 (45)	.39 (10)	1.97 (50)	.47 (12)	9.7 (282)
PFTYS6050*†	2.36 (60)	7.01 (178)	1.28 (32.5)	.78 (20)	.20 (5)	2.76 (70)	.39 (10)	1.97 (50)	.47 (12)	11.2 (316)
PFTYS8030*†	3.15 (80)	6.10 (155)	1.28 (32.5)	.78 (20)	.24 (6)	1.77 (45)	.39 (10)	1.97 (50)	.47 (12)	11 (310)
PFTYS8050*†	3.15 (80)	7.09 (180)	1.28 (32.5)	.78 (20)	.24 (6)	2.76 (70)	.39 (10)	1.97 (50)	.47 (12)	12.2 (344)
PFTYS9530*†	3.74 (95)	6.12 (156)	1.28 (32.5)	.78 (20)	.24 (6)	1.77 (45)	.39 (10)	1.97 (50)	.47 (12)	12.4 (350)
PFTYS9550*†	3.74 (95)	7.11 (181)	1.28 (32.5)	.78 (20)	.24 (6)	2.76 (70)	.39 (10)	1.97 (50)	.47 (12)	13.6 (384)
PFTYS12020*†	4.72 (120)	7.56 (192)	1.28 (32.5)	.71 (18)	.24 (6)	1.38 (35)	.39 (10)	2.36 (60)	1.38 (35)	41.2 (1165)
PFTYS12070*†	4.72 (120)	10.12 (257)	1.28 (32.5)	.71 (18)	.24 (6)	3.94 (100)	.39 (10)	2.36 (60)	1.38 (35)	44 (1246)
PFTYS15020*†	5.91 (150)	7.83 (199)	1.28 (32.5)	.71 (18)	.35 (9)	1.38 (35)	.39 (10)	2.36 (60)	1.38 (35)	49 (1389)
PFTYS15070*†	5.91 (150)	10.39 (264)	1.28 (32.5)	.71 (18)	.35 (9)	3.94 (100)	.39 (10)	2.36 (60)	1.38 (35)	52 (1471)
PFTYS20020*†	7.87 (200)	8.03 (204)	1.28 (32.5)	.71 (18)	.51 (13)	1.38 (35)	.39 (10)	2.36 (60)	1.38 (35)	62 (1755)
PFTYS20070*†	7.87 (200)	10.59 (269)	1.28 (32.5)	.71 (18)	.51 (13)	3.94 (100)	.39 (10)	2.36 (60)	1.38 (35)	64.9 (1836)

Inches (mm)
* Cup material
† Vacuum port

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Richland, Michigan
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PBG Bellows Vacuum Cup Series

These cups are for curved, corrugated, lightly textured surfaces and flexible product. Under vacuum, the bellow cup will collapse on contact and lift the product for a short distance. This inherent performance facilitates lifting and destack operations by breaking the vacuum between stacked product. The bellow style adds level compensation for applications that have inconsistent stack heights or uneven surfaces. The inclusive 30-degree rotation of the bellow helps maintain the vacuum seal when lifting sheet products that flex. Because of it's shape however the bellows suction cup is not very well suitable for applications involving lifting vertical surfaces.

Features

- Bellows design for level compensation within restricted clearances
- Sheet separation for flexible and stacked products
- Soft seal lip for flexible products
- 10mm to 150mm diameters

Styles

- PBTM series male thread connector
- PBTF series female thread connector
- PBTK series barbed bulkhead
- PBYK series 90° barbed adapter
- PBTYS series bulkhead level compensator

Operating information

Cup material	Nitrile	Silicon	Urethane
Material code	**NBR**	**SI**	**U**
Operating temperature	-20°C to 120°C (-4°F to 248°F)	-60° to 250°C (-76°F to 482°F)	-20° to 75°C (-4°F to 167°F)
Color	Black	White	Blue
Hardness, shore A (°Sh)	55 ±5	55 ±5	55 ±5

* ESD: Electric Static Dissipative Material

How to order

Cups assemblies and replacement cups are specified by cup diameter and material. Standard nitrile and silicon are listed on the following pages. To specify an alternative material, replace the cup material with alternative cup material code.

Example: To specify a cup assembly with urethane (U), replace (NBR) with (U) in the part number. PBTM-20B-NBR-G1 becomes PBTM-20B-U-G1. Inquire with factory for availability.

Application guide

Bellows

Flat surface, thin section	Flat surface, any section	Slightly bowed surface, thin section	Slightly bowed surface, any section	Bowed surface, thin section	Bowed surface, any section	Soft porous material, any section	Differences in heights and levels	Corrugated sheet handling	Not for vertical lift	Metal sheet handling

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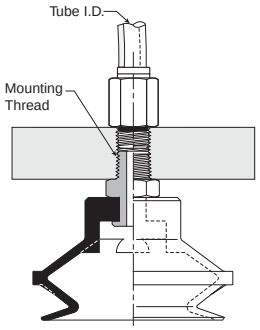
PBTM Series Male Thread Connector

Simple male connection for low profile positions secured to a plate or bracket. NPT, G, metric threads.
Fitting material: aluminum.

Installation

Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.



Cup diameter (mm)	Vacuum port	Complete assembly Nitrile (NBR)	Replacement cup Nitrile (NBR)	Complete assembly Silicon (SI)	Replacement cup Silicon (SI)	Replacement cup fitting
10	M5	**PBTM-10A-NBR-M5**	**PBG-10A-NBR**	**PBTM-10A-SI-M5**	**PBG-10A-SI**	**FTM-5A-M5H**
10	1/8 BSPP	**PBTM-10A-NBR-G1**	**PBG-10A-NBR**	**PBTM-10A-SI-G1**	**PBG-10A-SI**	**FTM-5A-G1**
15	M5	**PBTM-15A-NBR-M5**	**PBG-15A-NBR**	**PBTM-15A-SI-M5**	**PBG-15A-SI**	**FTM-5A-M5H**
15	1/8 BSPP	**PBTM-15A-NBR-G1**	**PBG-15A-NBR**	**PBTM-15A-SI-G1**	**PBG-15A-SI**	**FTM-5A-G1**
20	1/8 BSPP	**PBTM-20B-NBR-G1**	**PBG-20B-NBR**	**PBTM-20B-SI-G1**	**PBG-20B-SI**	**FTM-20B-G1H**
20	1/4 BSPP	**PBTM-20B-NBR-G2**	**PBG-20B-NBR**	**PBTM-20B-SI-G2**	**PBG-20B-SI**	**FTM-20B-G2**
20	M10	**PBTM-20B-NBR-M10**	**PBG-20B-NBR**	**PBTM-20B-SI-M10**	**PBG-20B-SI**	**FTM-20B-M10**
20	1/8 NPT	**PBTM-20B-NBR-N1**	**PBG-20B-NBR**	**PBTM-20B-SI-N1**	**PBG-20B-SI**	**FTM-20B-N1**
30	1/8 BSPP	**PBTM-30-NBR-G1**	**PBG-30-NBR**	**PBTM-30-SI-G1**	**PBG-30-SI**	**FTM-20B-G1H**
30	1/4 BSPP	**PBTM-30-NBR-G2**	**PBG-30-NBR**	**PBTM-30-SI-G2**	**PBG-30-SI**	**FTM-20B-G2**
30	M10	**PBTM-30-NBR-M10**	**PBG-30-NBR**	**PBTM-30-SI-M10**	**PBG-30-SI**	**FTM-20B-M10**
30	1/8 NPT	**PBTM-30-NBR-N1**	**PBG-30-NBR**	**PBTM-30-SI-N1**	**PBG-30-SI**	**FTM-20B-N1**
40	1/8 BSPP	**PBTM-40-NBR-G1**	**PBG-40-NBR**	**PBTM-40-SI-G1**	**PBG-40-SI**	**FTM-20B-G1H**
40	1/4 BSPP	**PBTM-40-NBR-G2**	**PBG-40-NBR**	**PBTM-40-SI-G2**	**PBG-40-SI**	**FTM-20B-G2**
40	M10	**PBTM-40-NBR-M10**	**PBG-40-NBR**	**PBTM-40-SI-M10**	**PBG-40-SI**	**FTM-20B-M10**
40	1/8 NPT	**PBTM-40-NBR-N1**	**PBG-40-NBR**	**PBTM-40-SI-N1**	**PBG-40-SI**	**FTM-20B-N1**
50	1/8 BSPP	**PBTM-50-NBR-G1**	**PBG-50-NBR**	**PBTM-50-SI-G1**	**PBG-50-SI**	**FTM-50-G1H**
50	1/4 BSPP	**PBTM-50-NBR-G2**	**PBG-50-NBR**	**PBTM-50-SI-G2**	**PBG-50-SI**	**FTM-50-G2**
50	1/8 NPT	**PBTM-50-NBR-N1**	**PBG-50-NBR**	**PBTM-50-SI-N1**	**PBG-50-SI**	**FTM-50-N1**
75	1/4 BSPP	**PBTM-75-NBR-G2**	**PBG-75-NBR**	**PBTM-75-SI-G2**	**PBG-75-SI**	**FTM-60-G2**
75	M10	**PBTM-75-NBR-M10**	**PBG-75-NBR**	**PBTM-75-SI-M10**	**PBG-75-SI**	**FTM-60-M10**
75	1/4 NPT	**PBTM-75-NBR-N2**	**PBG-75-NBR**	**PBTM-75-SI-N2**	**PBG-75-SI**	**FTM-60-N2**

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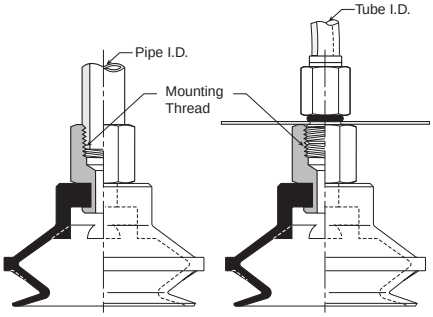
PBTF Series Female Thread Connector

Simple female connection for low profile positions secured to a plate or bracket. NPSF, G threads.
Fitting material: aluminum.

Installation

Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.



Cup diameter (mm)	Vacuum port	Complete assembly Nitrile (NBR)	Replacement cup Nitrile (NBR)	Complete assembly Silicon (SI)	Replacement cup Silicon (SI)	Replacement cup fitting
10	1/8 BSPP	PBTF-10A-NBR-G1	PBG-10A-NBR	PBTF-10A-SI-G1	PBG-10A-SI	FTF-5A-G1
10	M5	PBTF-10A-NBR-M5	PBG-10A-NBR	PBTF-10A-SI-M5	PBG-10A-SI	FTF-5A-M5
15	1/8 BSPP	PBTF-15A-NBR-G1	PBG-15A-NBR	PBTF-15A-SI-G1	PBG-15A-SI	FTF-5A-G1
15	M5	PBTF-15A-NBR-M5	PBG-15A-NBR	PBTF-15A-SI-M5	PBG-15A-SI	FTF-5A-M5
20	1/8 BSPP	PBTF-20B-NBR-G1	PBG-20B-NBR	PBTF-20B-SI-G1	PBG-20B-SI	FTF-20B-G1
30	1/8 BSPP	PBTF-30-NBR-G1	PBG-30-NBR	PBTF-30-SI-G1	PBG-30-SI	FTF-20B-G1
30	1/4 BSPP	PBTF-30-NBR-G2	PBG-30-NBR	PBTF-30-SI-G2	PBG-30-SI	FTF-20B-G2
40	1/8 BSPP	PBTF-40-NBR-G1	PBG-40-NBR	PBTF-40-SI-G1	PBG-40-SI	FTF-20B-G1
40	1/4 BSPP	PBTF-40-NBR-G2	PBG-40-NBR	PBTF-40-SI-G2	PBG-40-SI	FTF-20B-G2
50	1/8 BSPP	PBTF-50-NBR-G1	PBG-50-NBR	PBTF-50-SI-G1	PBG-50-SI	FTF-50-G1
50	1/4 BSPP	PBTF-50-NBR-G2	PBG-50-NBR	PBTF-50-SI-G2	PBG-50-SI	FTF-50-G2
75	1/4 BSPP	PBTF-75-NBR-G2	PBG-75-NBR	PBTF-75-SI-G2	PBG-75-SI	FTF-60-G2
75	1/4 NPT	PBTF-75-NBR-N2	PBG-75-NBR	PBTF-75-SI-N2	PBG-75-SI	FTF-60-N2
110	1/2 BSPP	PBTF-110-NBR-G4	PBG-110-NBR	PBTF-110-SI-G4	PBG-110-SI	FTF-120-G4
110	1/2 NPT	PBTF-110-NBR-N4	PBG-110-NBR	PBTF-110-SI-N4	PBG-110-SI	FTF-120-N4
150	1/2 BSPP	PBTF-150-NBR-G4	PBG-150-NBR	PBTF-150-SI-G4	PBG-150-SI	FTF-120-G4
150	1/2 NPT	PBTF-150-NBR-N4	PBG-150-NBR	PBTF-150-SI-N4	PBG-150-SI	FTF-120-N4

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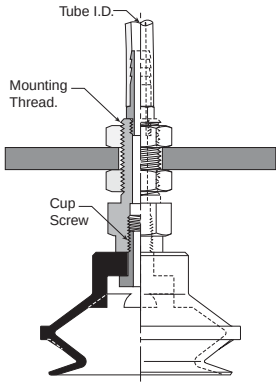
PBTK Series Barbed Bulkhead

Top stem connectors secured with jam nuts and allow tubing connections at the top side. Fitting material: nickel plated brass.

Installation

Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.



Cup diameter (mm)	Vacuum port	Complete assembly Nitrile (NBR)	Replacement cup Nitrile (NBR)	Complete assembly Silicon (SI)	Replacement cup Silicon (SI)	Replacement cup fitting
10	Barb	**PBTK-10A-NBR**	**PBG-10A-NBR**	**PBTK-10A-SI**	**PBG-10A-SI**	**FTK-5A**
15	Barb	**PBTK-15A-NBR**	**PBG-15A-NBR**	**PBTK-15A-SI**	**PBG-15-SI**	**FTK-5A**
20	Barb	**PBTK-20-NBR**	**PBG-20-NBR**	**PBTK-20-SI**	**PBG-20-SI**	**FTK-20**
30	Barb	**PBTK-30-NBR**	**PBG-30-NBR**	**PBTK-30-SI**	**PBG-30-SI**	**FTK-25**
40	Barb	**PBTK-40-NBR**	**PBG-40-NBR**	**PBTK-40-SI**	**PBG-40-SI**	**FTK-25**
50	Barb	**PBTK-50-NBR**	**PBG-50-NBR**	**PBTK-50-SI**	**PBG-50-SI**	**FTK-50**
75	1/8 BSPP	**PBTK-75-NBR-G1**	**PBG-75-NBR**	**PBTK-75-SI-G1**	**PBG-75-SI**	**FTK-60-G1**
75	1/8 NPT	**PBTK-75-NBR-N1**	**PBG-75-NBR**	**PBTK-75-SI-N1**	**PBG-75-SI**	**FTK-60-N1**

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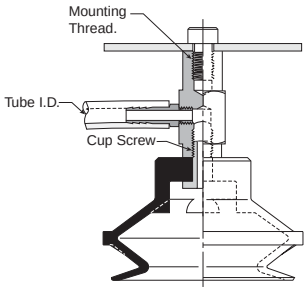
PBYK Series 90° Barbed Adapter

Side stem connectors allow you to secure the stem with a bolt through a plate or "L" bracket to allow the tube connection from the side port. Fitting material: nickel plated brass.

Installation

Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.



Cup diameter (mm)	Vacuum port	Complete assembly Nitrile (NBR)	Replacement cup Nitrile (NBR)	Complete assembly Silicon (SI)	Replacement cup Silicon (SI)	Replacement cup fitting
10	Barb	**PBYK-10A-NBR**	**PBG-10A-NBR**	**PBYK-10A-SI**	**PBG-10A-SI**	**FYK-5A**
15	Barb	**PBYK-15A-NBR**	**PBG-15A-NBR**	**PBYK-15A-SI**	**PBG-15A-SI**	**FYK-15**
20	Barb	**PBYK-20-NBR**	**PBG-20-NBR**	**PBYK-20-SI**	**PBG-20-SI**	**FYK-20**
30	Barb	**PBYK-30-NBR**	**PBG-30-NBR**	**PBYK-30-SI**	**PBG-30-SI**	**FYK-25**
40	Barb	**PBYK-40-NBR**	**PBG-40-NBR**	**PBYK-40-SI**	**PBG-40-SI**	**FYK-25**
50	Barb	**PBYK-50-NBR**	**PBG-50-NBR**	**PBYK-50-SI**	**PBG-50-SI**	**FYK-50**
75	1/8 BSPP	**PBYK-75-NBR-G1**	**PBG-75-NBR**	**PBYK-75-SI-G1**	**PBG-75-SI**	**FYK-60-G1**
75	1/8 NPT	**PBYK-75-NBR-N1**	**PBG-75-NBR**	**PBYK-75-SI-N1**	**PBG-75-SI**	**FYK-60-N1**
110	1/8 BSPP	**PBYK-110-NBR-G1**	**PBG-110-NBR**	**PBYK-110-SI-G1**	**PBG-110-SI**	**FYK-120-G1**
110	1/8 NPT	**PBYK-110-NBR-N1**	**PBG-110-NBR**	**PBYK-110-SI-N1**	**PBG-110-SI**	**FYK-120-N1**
150	1/8 BSPP	**PBYK-150-NBR-G1**	**PBG-150-NBR**	**PBYK-150-SI-G1**	**PBG-150-SI**	**FYK-120-G1**
150	1/8 NPT	**PBYK-150-NBR-N1**	**PBG-150-NBR**	**PBYK-150-SI-N1**	**PBG-150-SI**	**FYK-120-N1**

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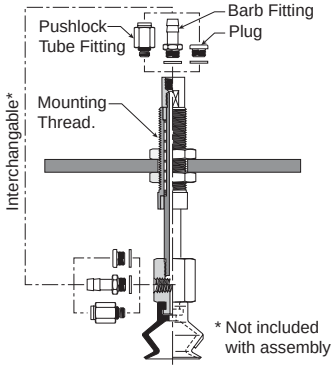
www.parker.com/pneumatics

PBTYS Series Bulkhead Level Compensator

303 stainless steel construction secured with jam nuts. Spring biased compensators can absorb impacts of down-strokes and adjust for different levels of pick up points. 303 stainless corrosion resistant materials with drymet bushings increases the strength and life.

Installation

Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.
Shown are interchangable connectors & plugs for port connections.



Cup dia. (mm)	Vacuum port	Stroke (mm)	Spring compression Force lbf (N) 0%	100%	Cup material Nitrile assembly (NBR)	Replacement cup Nitrile (NBR)	Cup material Silicon assembly (SI)	Replacement cup Silicon (SI)	Level Compensator P/N
10	M5	10	.11 (.49)	.13 (.59)	**PBTYS10A10NBRM5**	**PBG-10A-NBR**	**PBTYS10A10SIM5**	**PBG-10A-SI**	**TYS-5A-10**
10	M5	15	.11 (.49)	.13 (.59)	**PBTYS10A15NBRM5**	**PBG-10A-NBR**	**PBTYS10A15SIM5**	**PBG-10A-SI**	**TYS-5A-15**
15	M5	10	.11 (.49)	.13 (.59)	**PBTYS15A10NBRM5**	**PBG-15A-NBR**	**PBTYS15A10SIM5**	**PBG-15A-SI**	**TYS-5A-10**
15	M5	15	.11 (.49)	.13 (.59)	**PBTYS15A15NBRM5**	**PBG-15A-NBR**	**PBTYS15A15SIM5**	**PBG-15A-SI**	**TYS-5A-15**
20	M5	15	.56 (2.5)	.79 (3.4)	**PBTYS20B15NBRM5**	**PBG-20B-NBR**	**PBTYS20B15SIM5**	**PBG-20B-SI**	**TYS-20B-15**
20	M5	30	.56 (2.5)	1.2 (4.9)	**PBTYS20B30NBRM5**	**PBG-20B-NBR**	**PBTYS20B30SIM5**	**PBG-20B-SI**	**TYS-20B-30**
30	M5	15	.56 (2.5)	.79 (3.4)	**PBTYS3015NBRM5**	**PBG-30-NBR**	**PBTYS3015SIM5**	**PBG-30-SI**	**TYS-20B-15**
30	M5	30	.56 (2.5)	1.2 (4.9)	**PBTYS3030NBRM5**	**PBG-30-NBR**	**PBTYS3030SIM5**	**PBG-30-SI**	**TYS-20B-30**
40	M5	15	.56 (2.5)	.79 (3.4)	**PBTYS4015NBRM5**	**PBG-40-NBR**	**PBTYS4015SIM5**	**PBG-40-SI**	**TYS-20B-15**
40	M5	30	.56 (2.5)	1.2 (4.9)	**PBTYS4030NBRM5**	**PBG-40-NBR**	**PBTYS4030SIM5**	**PBG-40-SI**	**TYS-20B-30**
50	M5	15	.56 (2.5)	1.2 (4.9)	**PBTYS5015NBRM5**	**PBG-50-NBR**	**PBTYS5015SIM5**	**PBG-50-SI**	**TYS-50-15**
50	M5	30	.67 (2.9)	1.4 (5.9)	**PBTYS5030NBRM5**	**PBG-50-NBR**	**PBTYS5030SIM5**	**PBG-50-SI**	**TYS-50-30**
75	1/8 NPT	30	1.6 (6.8)	3.6 (15.6)	**PBTYS7530NBRN1**	**PBG-75-NBR**	**PBTYS7530SIN1**	**PBG-75-SI**	**TYS-60-30**
75	1/8 NPT	50	1.9 (8.3)	4.5 (19.6)	**PBTYS7550NBRN1**	**PBG-75-NBR**	**PBTYS7550SIN1**	**PBG-75-SI**	**TYS-60-50**
110	1/4 NPT	20	3.6 (15.6)	6.8 (29)	**PBTYS12020NBRN2**	**PBG-110-NBR**	**PBTYS11020SIN2**	**PBG-110-SI**	**TYS-120-20**
110	1/4 NPT	70	3.4 (14.7)	6.8 (29)	**PBTYS12070NBRN2**	**PBG-110-NBR**	**PBTYS11070SIN2**	**PBG-110-SI**	**TYS-120-70**
150	1/4 NPT	20	3.6 (15.6)	6.8 (29)	**PBTYS15020NBRN2**	**PBG-150-NBR**	**PBTYS15020SIN2**	**PBG-150-SI**	**TYS-120-20**
150	1/4 NPT	70	3.4 (14.7)	6.8 (29)	**PBTYS15070NBRN2**	**PBG-150-NBR**	**PBTYS15070SIN2**	**PBG-150-SI**	**TYS-120-70**

☐ Most popular.

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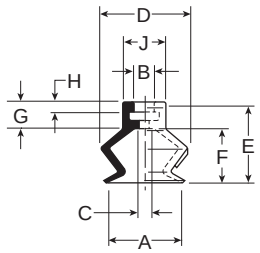
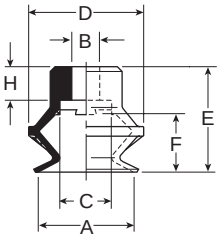
PBG Series Replacement Cup Dimensions

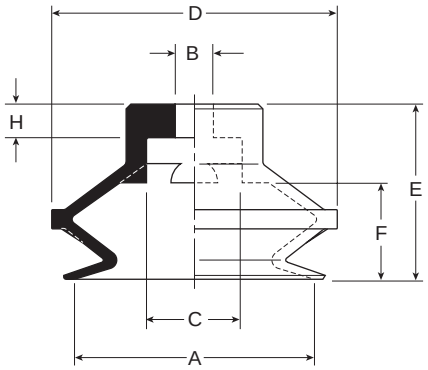
PBG-10A and PBG-20B



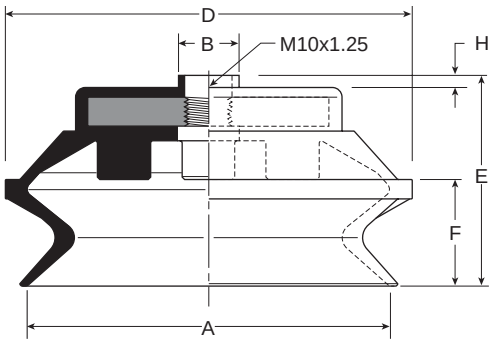
PBG-20 thru PBG-40



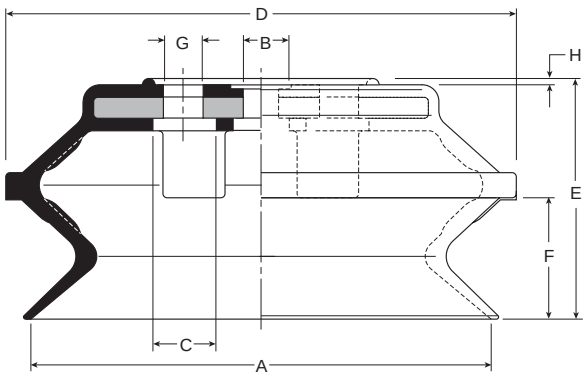
PBG-50



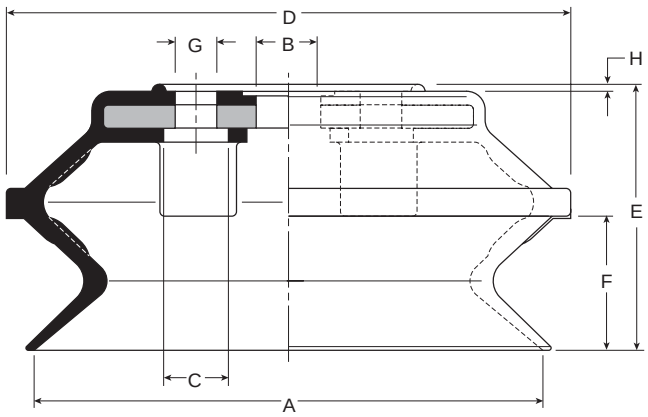
PBG-75



PBG-110



PBG-150



Model number	ØA	ØB	ØC	ØD	E	F	G	H	ØJ
PBG-10A-*	.42 (10.6)	.16 (4)	.08 (2)	.49 (12.4)	.53 (13.5)	.30 (7.5)	.24 (6)	.08 (2)	.24 (6)
PBG-15A-*	.59 (15)	.16 (4)	.16 (4)	.67 (17)	.63 (16)	.39 (10)	.24 (6)	.08 (2)	.24 (6)
PBG-20B-*	.79 (20)	.24 (6)	.43 (10.8)	.94 (24)	.87 (22)	.47 (12)	—	.28 (7)	—
PBG-20-*	.79 (20)	.18 (4.6)	.43 (10.8)	.94 (24)	.77 (19.5)	.47 (12)	—	.18 (4.5)	—
PBG-30-*	1.18 (30)	.23 (5.8)	.43 (10.8)	1.42 (36)	1.20 (30.5)	.67 (17)	—	.28 (7)	—
PBG-40-*	1.57 (40)	.23 (5.8)	.43 (10.8)	1.81 (46)	1.20 (30.5)	.61 (15.5)	—	.28 (7)	—
PBG-50-*	1.97(50)	.31 (7.8)	.78 (19.8)	2.34 (59.5)	1.44 (36.5)	.79 (20)	—	.28 (7)	—
PBG-75-*	2.95 (75)	.49 (12.5)	—	3.31 (84)	1.71 (43.5)	.87 (22)	—	.10 (2.5)	—
PBG-110-*	4.33 (110)	.55 (14)	.55 (14)	4.80 (122)	2.26 (57.5)	1.14 (29)	—	.059 (1.5)	—
PBG-150-*	5.91 (150)	.79 (20)	.55 (14)	6.57 (167)	3.01 (76.5)	1.50 (38)	4xØ9xØ40	.059 (1.5)	—

Inches (mm)

* Cup material

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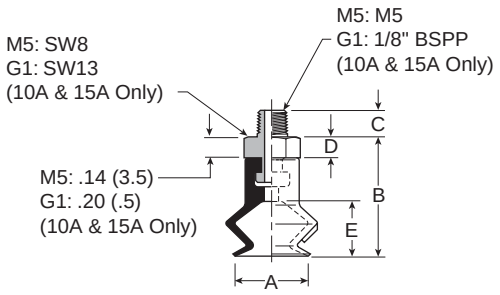
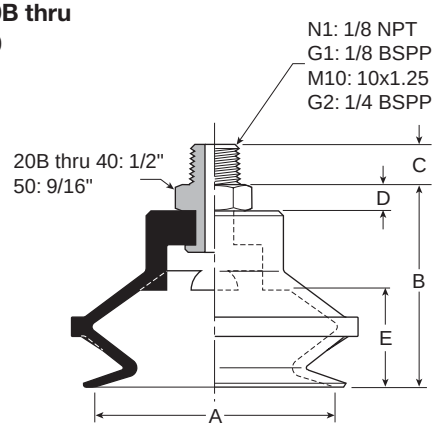
Dimensions

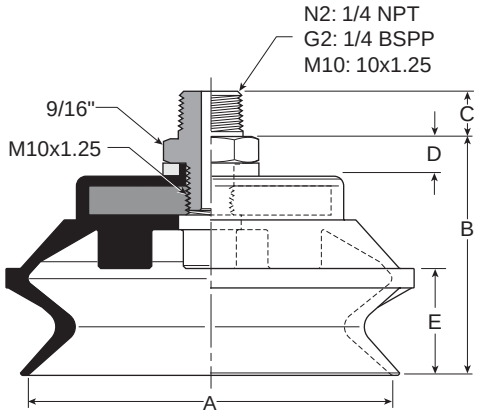
PBTM-10A thru PBTM-15



PBTM-20B thru PBTM-50



PBTM-75



Model number	ØA	B	C (M5)	C (N1 / G1)	C (M10 / G2)	C (N2)	D	E
PBTM-10A-*-†	.39 (10)	.67 (17)	.18 (4.5)	.31 (8)	—	—	See Dwg.	.30 (7.5)
PBTM-15A-*-†	.59 (15)	.77 (19.5)	.18 (4.5)	.31 (8)	—	—	See Dwg.	.39 (10)
PBTM-20B-*-†	.79 (20)	1.06 (27)	—	.31 (8)	.39 (10)	—	.20 (5)	.47 (12)
PBTM-30-*-†	1.18 (30)	1.40 (35.5)	—	.31 (8)	.39 (10)	—	.20 (5)	.67 (17)
PBTM-40-*-†	1.57 (40)	1.40 (35.5)	—	.31 (8)	.39 (10)	—	.20 (5)	.61 (15.5)
PBTM-50-*-†	1.97 (50)	1.63 (41.5)	—	.31 (8)	.39 (10)	—	.20 (5)	.79 (20)
PBTM-75-*-†	3.74 (95)	1.99 (50.5)	—	—	.39 (10)	.59 (15)	.28 (7)	.87 (22)

Inches (mm)
* Cup material
† Thread size

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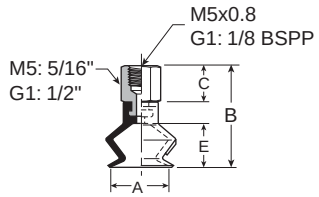
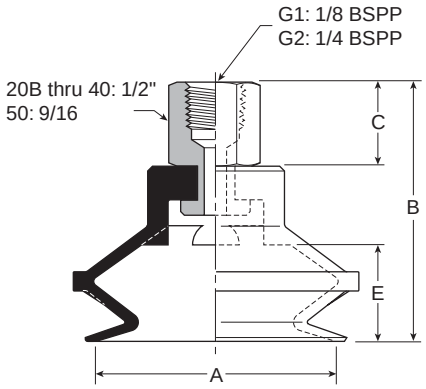
Dimensions

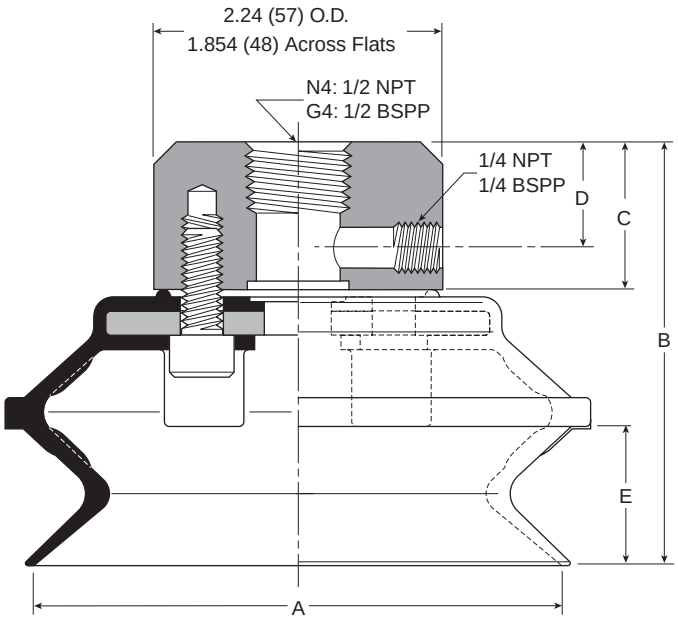
PBTF-10A thru PBTF-15A



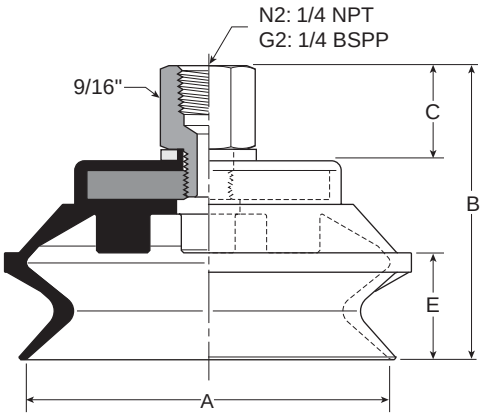
PBTF-20B thru PBTF 50



PBTF-110 thru PBTF-150



PBTF-75



Model number	ØA	B	B (M5)	C	C (M5)	D	E
PBTF-10A-*-†	.39 (10)	.85 (21.5)	1.08 (27.5)	.31 (8)	.55 (14)	—	.30 (7.5)
PBTF-15A-*-†	.59 (15)	.94 (24)	1.18 (30)	.31 (8)	.55 (14)	—	.39 (10)
PBTF-20B-*-†	.79 (20)	1.42 (36)	—	.55 (14)	—	—	.47 (12)
PBTF-30-*-†	1.18 (30)	1.75 (44.5)	—	.55 (14)	—	—	.70 (17)
PBTF-40-*-†	1.57 (40)	1.75 (44.5)	—	.55 (14)	—	—	.61 (15.5)
PBTF-50-*-†	1.97 (50)	1.99 (50.5)	—	.55 (14)	—	—	.79 (20)
PBTF-75-*-†	3.74 (95)	2.38 (60.5)	—	.77 (19.5)	—	—	.87 (22)
PBTF-110-*-†	4.72 (120)	3.07 (78)	—	.94 (24)	—	.51 (13)	1.14 (29)
PBTF-150-*-†	5.91 (150)	3.82 (97)	—	.94 (24)	—	.51 (13)	1.50 (38)

Inches (mm)
* Cup material
† Thread size

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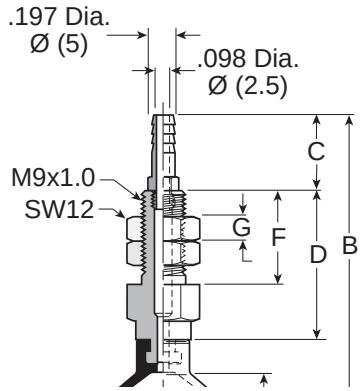
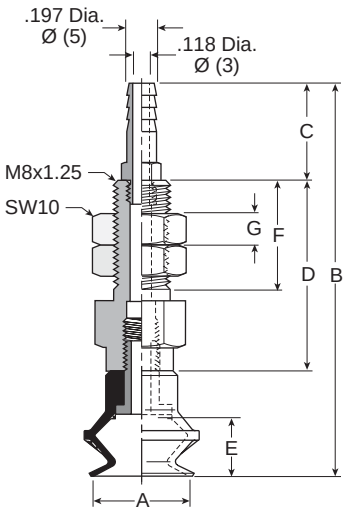
Dimensions

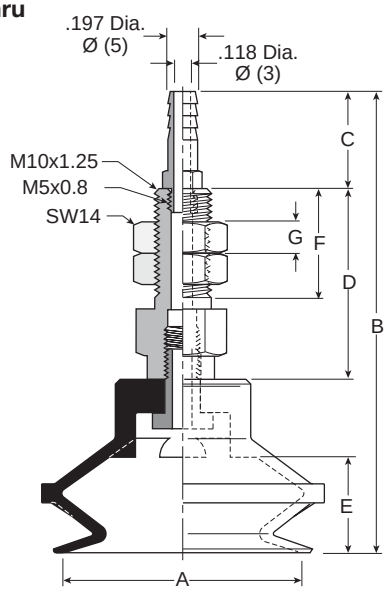
PBTK-10A thru PBTK-15A



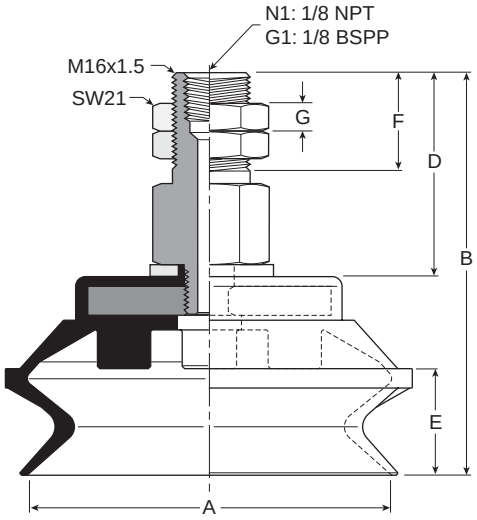
PBTK-20



PBTK-30 thru PBTK-50



PBTK-75



Model number	ØA	B	C	D	E	F	G	Wt oz (g)
PBTK-10A-*	.39 (10)	2.05 (52)	.39 (10)	.89 (22.5)	.30 (7.5)	.24 (6)	.61 (15.5)	.5 (15)
PBTK-15A-*	.59 (15)	2.15 (54.5)	.39 (10)	.89 (22.5)	.39 (10)	.24 (6)	.61 (15.5)	.5 (15)
PBTK-20-*	.79 (20)	2.26 (57.5)	.63 (16)	.87 (22)	.47 (12)	.24 (6)	.59 (15)	.7 (21)
PBTK-30-*	1.18 (30)	3.09 (78.5)	.63 (16)	1.26 (32)	.67 (17)	.24 (6)	.79 (20)	1.6 (45)
PBTK-40-*	1.57 (40)	3.09 (78.5)	.63 (16)	1.26 (32)	.61 (15.5)	.24 (6)	.79 (20)	1.7 (48)
PBTK-50-*	1.97 (50)	3.33 (84.5)	.63 (16)	1.26 (32)	.79 (20)	.24 (6)	.79 (20)	2.2 (62)
PBTK-75-*-†	3.74 (95)	3.29 (83.5)	—	1.67 (42.5)	.87 (22)	.43 (11)	—	6.5 (186)

Inches (mm)
* Cup material
† Vacuum port

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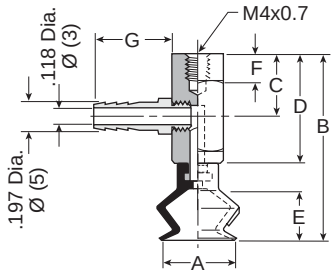
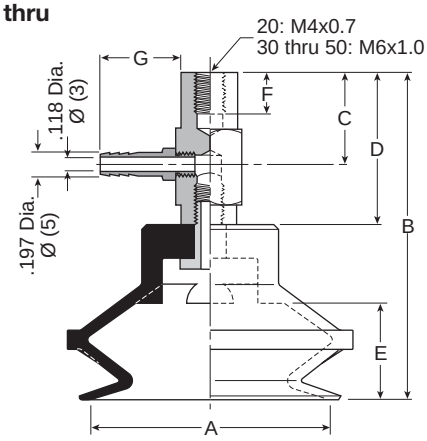
Dimensions

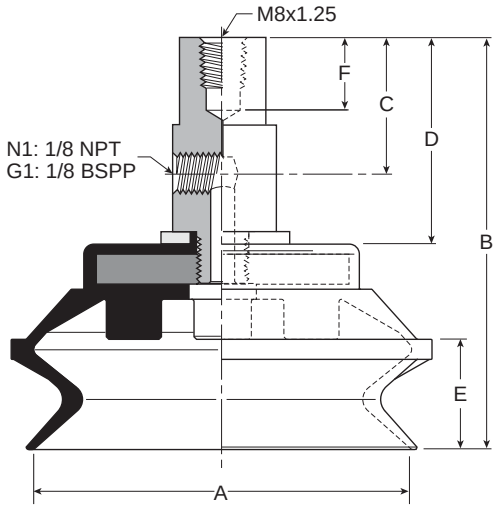
PBYK-10A thru PBYK-15A



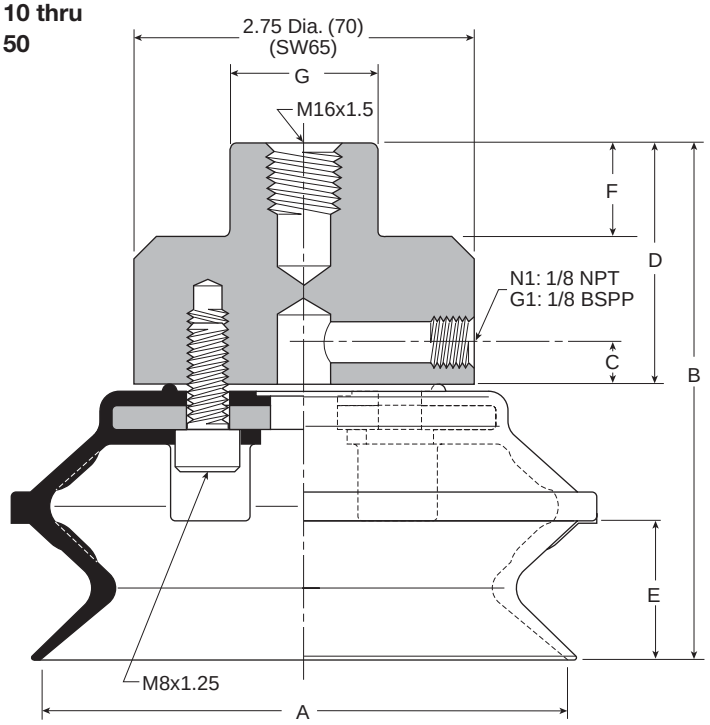
PBYK-20 thru PBYK-50



PBYK-75



PBYK-110 thru PBYK-150



Model number	ØA	B	C	D	E	F	G	Wt oz (g)
PBYK-10A-*	.39 (10)	1.42 (36)	.51 (13)	.89 (22.5)	.29 (7.5)	.24 (6)	.63 (16)	.6 (16)
PBYK-15A-*	.59 (15)	1.52 (38.5)	.51 (13)	.89 (22.5)	.39 (10)	.24 (6)	.63 (16)	.6 (16)
PBYK-20-*	.79 (20)	1.63 (41.5)	.55 (14)	.87 (22)	.47 (12)	.24 (6)	.63 (16)	.7 (21)
PBYK-30-*	1.18 (30)	2.46 (62.5)	.79 (20)	1.26 (32)	.67 (17)	.24 (6)	.63 (16)	1.6 (45)
PBYK-40-*	1.57 (40)	2.46 (62.5)	.79 (20)	1.26 (32)	.61 (15.5)	.24 (6)	.63 (16)	2.0 (58)
PBYK-50-*	1.97 (50)	2.70 (68.5)	.79 (20)	1.26 (32)	.78 (20)	.24 (6)	.63 (16)	2.4 (67)
PBYK-75-*-†	3.74 (95)	3.29 (83.5)	1.10 (28)	1.67 (42.5)	.86 (22)	.43 (11)	—	6.9 (176)
PBYK-110-*-†	4.72 (120)	4.17 (106)	.47 (12)	1.97 (50)	1.14 (29)	.79 (20)	1.18 Dia. (30)	26.4 (670)
PBYK-150-*-†	5.91 (150)	4.92 (125)	.47 (12)	1.97 (50)	1.50 (38)	.79 (20)	1.18 Dia. (30)	46.5 (1180)

Inches (mm)
* Cup material
† Vacuum port

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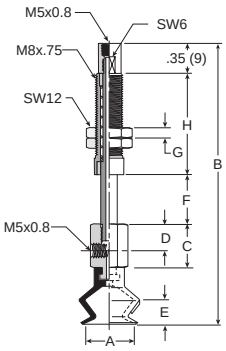
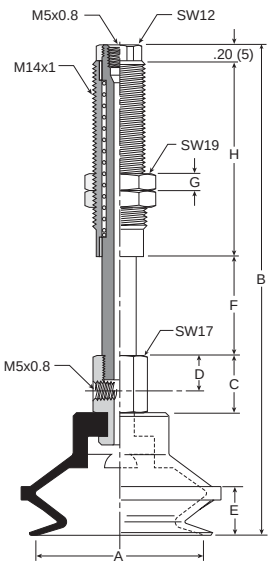
Dimensions

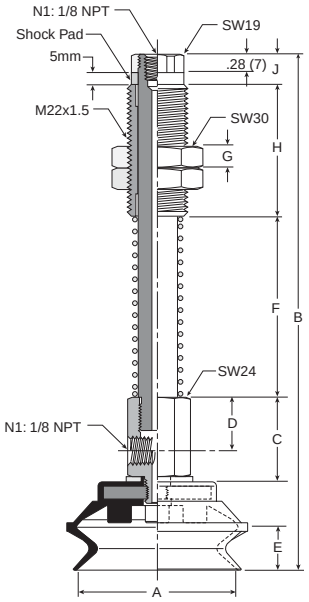
PBTYS10A thru PBTYS15A1



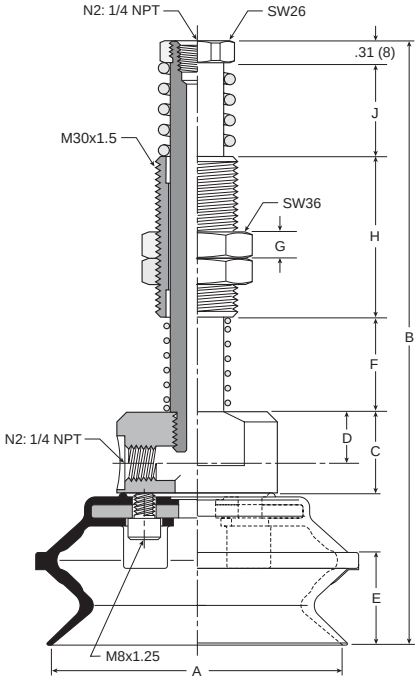
PBTYS20B thru PBTYS50



PBTYS75



PBTYS110 thru PBTYS150



Model number	ØA	B	C	D	E	F	G	H	J	Wt oz (g)
PBTYS10A10*	.39 (10)	2.70 (68.5)	.51 (13)	.31 (8)	.30 (7.5)	.39 (10)	.12 (3)	.91 (23)	—	.65 (18.5)
PBTYS10A15*	.39 (10)	3.19 (81)	.51 (13)	.31 (8)	.30 (7.5)	.59 (15)	.12 (3)	1.20 (30.5)	—	.7 (21)
PBTYS15A10*	.59 (15)	2.80 (71)	.51 (13)	.31 (8)	.39 (10)	.39 (10)	.12 (3)	.91 (23)	—	.65 (18.5)
PBTYS15A15*	.59 (15)	3.29 (83.5)	.51 (13)	.31 (8)	.39 (10)	.59 (15)	.12 (3)	1.20 (30.5)	—	.7 (21)
PBTYS20B15*	.79 (20)	3.90 (99)	.67 (17)	.39 (10)	.47 (12	.59 (15)	.20 (5)	1.42 (36)	—	2.5 (72)
PBTYS20B30*	.79 (20)	5.36 (136)	.67 (17)	.39 (10)	.47 (12	1.18 (30)	.20 (5)	2.28 (58)	—	3.4 (97)
PBTYS3015*†	1.18 (30)	4.07 (103.5)	.67 (17)	.39 (10)	.67 (17)	.59 (15)	.20 (5)	1.42 (36)	—	3.4 (97)
PBTYS3030*†	1.18 (30)	5.53 (140.5)	.67 (17)	.39 (10)	.67 (17)	1.18 (30)	.20 (5)	2.28 (58)	—	3.6 (102)
PBTYS4015*†	1.57 (40)	4.07 (103.5)	.67 (17)	.39 (10)	.61 (15.5)	.59 (15)	.20 (5)	1.42 (36)	—	2.9 (83)
PBTYS4030*†	1.57 (40)	5.53 (140.5)	.67 (17)	.39 (10)	.61 (15.5)	1.18 (30)	.20 (5)	2.28 (58)	—	3.8 (108)
PBTYS5015*†	1.97 (50)	4.31 (109.5)	.67 (17)	.39 (10)	.78 (20)	.59 (15)	.20 (5)	1.42 (36)	—	3.4 (97)
PBTYS5030*†	1.97 (50)	5.77 (146.5)	.67 (17)	.39 (10)	.78 (20)	1.18 (30)	.20 (5)	2.28 (58)	—	4.3 (122)
PBTYS7530*†	2.95 (75)	7.01 (178)	1.28 (32.5)	.78 (20)	.87 (22)	1.77 (45)	.39 (10)	1.97 (50)	.47 (12)	12 (339)
PBTYS7550*†	2.95 (75)	7.99 (203)	1.28 (32.5)	.78 (20)	.87 (22)	2.76 (70)	.39 (10)	1.97 (50)	.47 (12)	13 (373)
PBTYS11020*†	4.33 (110)	8.82 (224)	1.18 (30)	.71 (18)	1.14 (29)	1.38 (35)	.39 (10)	2.36 (60)	1.38 (35)	42 (1194)
PBTYS11070*†	4.33 (110)	11.38 (289)	1.18 (30)	.71 (18)	1.14 (29)	3.94 (100)	.39 (10)	2.36 (60)	1.38 (35)	45 (1276)
PBTYS15020*†	5.91 (150)	9.57 (243)	1.18 (30)	.71 (18)	1.50 (38)	1.38 (35)	.39 (10)	2.36 (60)	1.38 (35)	60 (1704)
PBTYS15070*†	5.91 (150)	12.13 (308)	1.18 (30)	.71 (18)	1.50 (38)	3.94 (100)	.39 (10)	2.36 (60)	1.38 (35)	63 (1786)

Inches (mm)
* Cup material
† Vacuum port

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
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P5V-CFS Vacuum Cup Series

Features

- Double sealing lips for flexible sheet handling
- Vacuum cup grooves on underside increase holding area
- Resists acceleration and deceleration shear forces
- Strong low profile for fast response
- Metal insert fitting for stable vertical and horizontal lifts

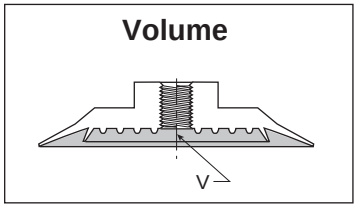
Applications

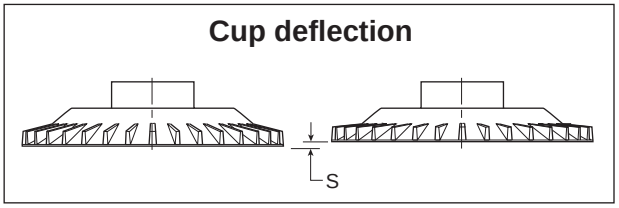
These suction cups are ideal for applications where the product may flex when being lifted. All cups have a double sealing lip and cleats to increase holding capacity.
The top of the cup has a ribbed outer lip to prevent it from rolling over the surface to be lifted.

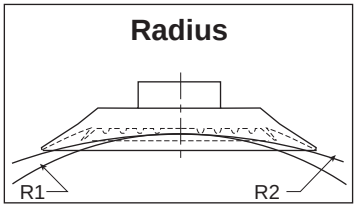
Dual sealing lips provide 2 seals for vacuum. As the product flexes, the outer lip seal may break, but the inner lip seal will hold the degree of vacuum for continued lifting capacity. In these types of applications, sizing should be done on the inner diameter cup dimension.

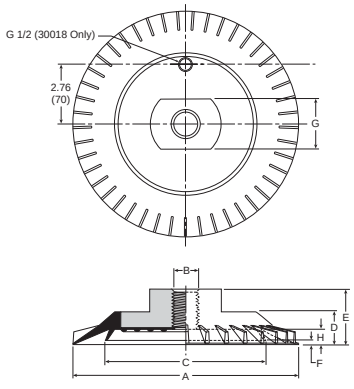
Cup diameter (mm)	Vacuum port	Complete assembly Nitrile (NBR)	Area*** cm^2	Cup volume (V) liters	Deflection (S) (mm)	Radius R (mm)	
						R1*	R2**
50	1/8 BSPP	**P5V-CFS05011N**	19.6	.001	.16 (4)	3.86 (98)	3.15 (80)
100	3/8 BSPP	**P5V-CFS10013N**	78.5	.0667	.30 (8)	10.00 (254)	6.34 (161)
150	1/2 BSPP	**P5V-CFS15014N**	176.7	.2083	.43 (11)	12.17 (309)	9.92 (252)

* Minimum permissible radius for lifting using inner lip.
** Minimum permissible radius for lifting using outer lip.
*** Area based on Outer Cup Diameter









Dimensions

Model number	ØA	B	ØC	D	E	F	G	H
P5V-CFS50*	1.97 (50)	G1/8	1.38 (35)	0.43 (11)	0.71 (18)	0.087 (2.2)	0.51 (13)	0.146 (3.7)
P5V-CFS100*	3.94 (100)	G3/8	2.83 (72)	0.71 (18)	1.10 (28)	0.197 (5)	0.87 (22)	0.295 (7.5)
P5V-CFS150*	5.91 (150)	G1/2	4.17 (106)	1.02 (26)	1.65 (42)	0.276 (7)	1.06 (27)	0.43 (11)

Inches (mm)
* Cup material

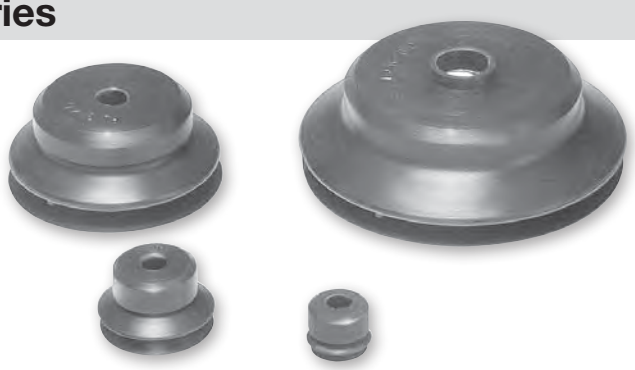
☐ **Most popular.**

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

PJG Short Bellows Vacuum Cup Series

Versatile bellow cup design provides increased sealing lip and level compensation for products with irregular, smooth, curved surfaces, or flexible sheets.

The short stroke bellow suction cup has an extra thin sealing edge and shorter stroke versus the traditional bellows for faster response. The cups are good for corrugated and smooth surfaces.



Features

- Short bellows for fast response
- More lip seal contact for corrugated, textured surfaces
- Soft sealing lip
- 6mm to 80mm

Styles

- PJTM series male thread connector
- PJTF series female thread connector
- PJTK series barbed bulkhead
- PJYK series 90° barbed adapter
- PJTYS series bulkhead level compensator

Operating information

Cup material	Nitrile	Nitrile ESD*	Silicon	Silicon ESD*
Material code	**NBR**	**NBRE**	**SI**	**SIE**
Operating temperature	-20°C to 120°C (-4°F to 248°F)	0°C to 60°C (32°F to 40°F)	-60° to 250°C (-76°F to 482°F)	-10° to 130°C (-14°F to 266°F)
Color	Black	Black / Blue Dot	White	Black / Red Dot
Hardness, shore A (°Sh)	55 ±5	70 ±5	55 ±5	55 ±5
Electrical resistance (Ωm)	—	800 to 1000	—	5 to 15

* ESD: Electric Static Dissipative Material

How to order

Cups assemblies and replacement cups are specified by cup diameter and material. Standard nitrile and silicon are listed on the following pages. To specify an alternative material, replace the cup material with alternative cup material code.

Example: To specify a cup assembly with silicon ESD (SIE), replace (NBR) with (SIE) in the part number. PJTM-20B-NBR-G1 becomes PJTM-20B-SIE-G1. Inquire with factory for availability.

Application guide

Short Bellows

Flat surface, thin section	Flat surface, any section	Slightly bowed surface, thin section	Slightly bowed surface, any section	Bowed surface, thin section	Soft porous material, thin section	Soft porous material, any section	Metal sheet handling	Corrugated sheet handling	Not for vertical lift

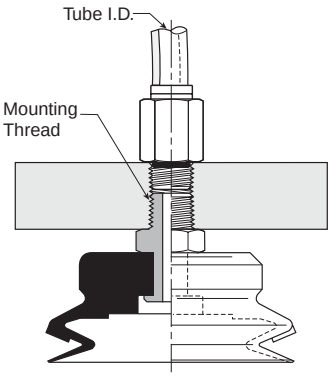
Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

PJTM Series Male Thread Connector

Simple male connection for low profile positions secured to a plate or bracket. NPT, G, metric threads.
Fitting material: aluminum.

Installation

Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.



Cup diameter (mm)	Vacuum port	Complete assembly Nitrile (NBR)	Replacement cup Nitrile (NBR)	Complete assembly Silicon (SI)	Replacement cup Silicon (SI)	Replacement cup fitting
6	M5	**PJTM-6-NBR-M5**	**PJG-6-NBR**	**PJTM-6-SI-M5**	**PJG-6-SI**	**FTM-5A-M5H**
6	1/8 BSPP	**PJTM-6-NBR-G1**	**PJG-6-NBR**	**PJTM-6-SI-G1**	**PJG-6-SI**	**FTM-5A-G1**
8	M5	**PJTM-8-NBR-M5**	**PJG-8-NBR**	**PJTM-8-SI-M5**	**PJG-8-SI**	**FTM-5A-M5H**
8	1/8 BSPP	**PJTM-8-NBR-G1**	**PJG-8-NBR**	**PJTM-8-SI-G1**	**PJG-8-SI**	**FTM-5A-G1**
10	M5	**PJTM-10-NBR-M5**	**PJG-10-NBR**	**PJTM-10-SI-M5**	**PJG-10-SI**	**TN-PF-15-M5**
15	M5	**PJTM-15-NBR-M5**	**PJG-15-NBR**	**PJTM-15-SI-M5**	**PJG-15-SI**	**TN-PF-15-M5**
20	M5	**PJTM-20-NBR-M5**	**PJG-20-NBR**	**PJTM-20-SI-M5**	**PJG-20-SI**	**TN-PF-20-M5**
30	1/8 BSPP	**PJTM-30-NBR-G1**	**PJG-30-NBR**	**PJTM-30-SI-G1**	**PJG-30-SI**	**FTM-20B-G1H**
30	1/4 BSPP	**PJTM-30-NBR-G2**	**PJG-30-NBR**	**PJTM-30-SI-G2**	**PJG-30-SI**	**FTM-20B-G2**
30	M10	**PJTM-30-NBR-M10**	**PJG-30-NBR**	**PJTM-30-SI-M10**	**PJG-30-SI**	**FTM-20B-M10**
30	1/8 NPT	**PJTM-30-NBR-N1**	**PJG-30-NBR**	**PJTM-30-SI-N1**	**PJG-30-SI**	**FTM-20B-N1**
40	1/8 BSPP	**PJTM-40-NBR-G1**	**PJG-40-NBR**	**PJTM-40-SI-G1**	**PJG-40-SI**	**FTM-20B-G1H**
40	1/4 BSPP	**PJTM-40-NBR-G2**	**PJG-40-NBR**	**PJTM-40-SI-G2**	**PJG-40-SI**	**FTM-20B-G2**
40	M10	**PJTM-40-NBR-M10**	**PJG-40-NBR**	**PJTM-40-SI-M10**	**PJG-40-SI**	**FTM-20B-M10**
40	1/8 NPT	**PJTM-40-NBR-N1**	**PJG-40-NBR**	**PJTM-40-SI-N1**	**PJG-40-SI**	**FTM-20B-N1**
50	1/8 BSPP	**PJTM-50-NBR-G1**	**PJG-50-NBR**	**PJTM-50-SI-G1**	**PJG-50-SI**	**FTM-50-G1H**
50	1/4 BSPP	**PJTM-50-NBR-G2**	**PJG-50-NBR**	**PJTM-50-SI-G2**	**PJG-50-SI**	**FTM-50-G2**
50	1/8 NPT	**PJTM-50-NBR-N1**	**PJG-50-NBR**	**PJTM-50-SI-N1**	**PJG-50-SI**	**FTM-50-N1**
60	1/4 BSPP	**PJTM-60-NBR-G2**	**PJG-60-NBR**	**PJTM-60-SI-G2**	**PJG-60-SI**	**FTM-60-G2**
60	M10	**PJTM-60-NBR-M10**	**PJG-60-NBR**	**PJTM-60-SI-M10**	**PJG-60-SI**	**FTM-60-M10**
60	1/4 NPT	**PJTM-60-NBR-N2**	**PJG-60-NBR**	**PJTM-60-SI-N2**	**PJG-60-SI**	**FTM-60-N2**
80	1/4 BSPP	**PJTM-80-NBR-G2**	**PJG-80-NBR**	**PJTM-80-SI-G2**	**PJG-80-SI**	**FTM-60-G2**
80	M10	**PJTM-80-NBR-M10**	**PJG-80-NBR**	**PJTM-80-SI-M10**	**PJG-80-SI**	**FTM-60-M10**
80	1/4 NPT	**PJTM-80-NBR-N2**	**PJG-80-NBR**	**PJTM-80-SI-N2**	**PJG-80-SI**	**FTM-60-N2**

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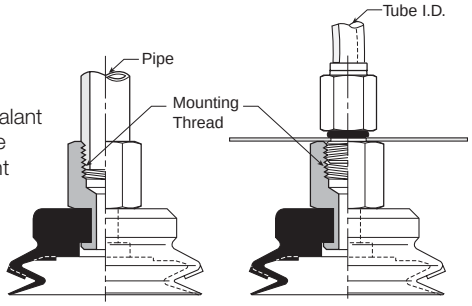
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

PJTF Series Female Thread Connector

Simple female connection for low profile positions secured to a plate or bracket. NPSF, G threads.
Fitting material: aluminum.

Installation

Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.



Cup diameter (mm)	Vacuum port	Complete assembly Nitrile (NBR)	Replacement cup Nitrile (NBR)	Complete assembly Silicon (SI)	Replacement cup Silicon (SI)	Replacement cup fitting
6	M5	**PJTF-6-NBR-M5**	**PJG-6-NBR**	**PJTF-6-SI-M5**	**PJG-6-SI**	**FTF-5A-M5**
6	1/8 BSPP	**PJTF-6-NBR-G1**	**PJG-6-NBR**	**PJTF-6-SI-G1**	**PJG-6-SI**	**FTF-5A-G1**
8	M5	**PJTF-8-NBR-M5**	**PJG-8-NBR**	**PJTF-8-SI-M5**	**PJG-8-SI**	**FTF-5A-M5**
8	1/8 BSPP	**PJTF-8-NBR-G1**	**PJG-8-NBR**	**PJTF-8-SI-G1**	**PJG-8-SI**	**FTF-5A-G1**
10	M5	**PJTF-10-NBR-M5**	**PJG-10-NBR**	**PJTF-10-SI-M5**	**PJG-10-SI**	**FTF-5A-M5**
10	1/8 BSPP	**PJTF-10-NBR-G1**	**PJG-10-NBR**	**PJTF-10-SI-G1**	**PJG-10-SI**	**FTF-5A-G1**
15	M5	**PJTF-15-NBR-M5**	**PJG-15-NBR**	**PJTF-15-SI-M5**	**PJG-15-SI**	**FTF-5A-M5**
15	1/8 BSPP	**PJTF-15-NBR-G1**	**PJG-15-NBR**	**PJTF-15-SI-G1**	**PJG-15-SI**	**FTF-5A-G1**
30	1/8 BSPP	**PJTF-30-NBR-G1**	**PJG-30-NBR**	**PJTF-30-SI-G1**	**PJG-30-SI**	**FTF-20B-G1**
30	1/4 BSPP	**PJTF-30-NBR-G2**	**PJG-30-NBR**	**PJTF-30-SI-G2**	**PJG-30-SI**	**FTF-20B-G2**
40	1/8 BSPP	**PJTF-40-NBR-G1**	**PJG-40-NBR**	**PJTF-40-SI-G1**	**PJG-40-SI**	**FTF-20B-G1**
40	1/4 BSPP	**PJTF-40-NBR-G2**	**PJG-40-NBR**	**PJTF-40-SI-G2**	**PJG-40-SI**	**FTF-20B-G2**
50	1/8 BSPP	**PJTF-50-NBR-G1**	**PJG-50-NBR**	**PJTF-50-SI-G1**	**PJG-50-SI**	**FTF-50-G1**
50	1/4 BSPP	**PJTF-50-NBR-G2**	**PJG-50-NBR**	**PJTF-50-SI-G2**	**PJG-50-SI**	**FTF-50-G2**
60	1/4 BSPP	**PJTF-60-NBR-G2**	**PJG-60-NBR**	**PJTF-60-SI-G2**	**PJG-60-SI**	**FTF-60-G2**
60	1/4 NPT	**PJTF-60-NBR-N2**	**PJG-60-NBR**	**PJTF-60-SI-N2**	**PJG-60-SI**	**FTF-60-N2**
80	1/4 BSPP	**PJTF-80-NBR-G2**	**PJG-80-NBR**	**PJTF-80-SI-G2**	**PJG-80-SI**	**FTF-60-G2**
80	1/4 NPT	**PJTF-80-NBR-N2**	**PJG-80-NBR**	**PJTF-80-SI-N2**	**PJG-80-SI**	**FTF-60-N2**

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Pneumatic Division
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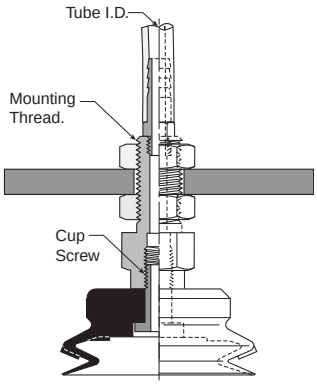
PJTK Series Barbed Bulkhead

Top stem connectors secured with jam nuts and allow tubing connections at the top side. Fitting materials: nickel plated brass.

Installation

Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.



Cup diameter (mm)	Vacuum port	Complete assembly Nitrile (NBR)	Replacement cup Nitrile (NBR)	Complete assembly Silicon (SI)	Replacement cup Silicon (SI)	Replacement cup fitting
6	Barb	**PJTK-6-NBR**	**PJG-6-NBR**	**PJTK-6-SI**	**PJG-6-SI**	**FTK-5A**
8	Barb	**PJTK-8-NBR**	**PJG-8-NBR**	**PJTK-8-SI**	**PJG-8-SI**	**FTK-5A**
10	Barb	**PJTK-10-NBR**	**PJG-10-NBR**	**PJTK-10-SI**	**PJG-10-SI**	**FTK-15**
15	Barb	**PJTK-15-NBR**	**PJG-15-NBR**	**PJTK-15-SI**	**PJG-15-SI**	**FTK-15**
20	Barb	**PJTK-20-NBR**	**PJG-20-NBR**	**PJTK-20-SI**	**PJG-20-SI**	**FTK-20**
30	Barb	**PJTK-30-NBR**	**PJG-30-NBR**	**PJTK-30-SI**	**PJG-30-SI**	**FTK-25**
40	Barb	**PJTK-40-NBR**	**PJG-40-NBR**	**PJTK-40-SI**	**PJG-40-SI**	**FTK-25**
50	Barb	**PJTK-50-NBR**	**PJG-50-NBR**	**PJTK-50-SI**	**PJG-50-SI**	**FTK-50**
60	1/8 BSPP	**PJTK-60-NBR-G1**	**PJG-60-NBR**	**PJTK-60-SI-G1**	**PJG-60-SI**	**FTK-60-G1**
60	1/8 NPT	**PJTK-60-NBR-N1**	**PJG-60-NBR**	**PJTK-60-SI-N1**	**PJG-60-SI**	**FTK-60-N1**
80	1/8 BSPP	**PJTK-80-NBR-G1**	**PJG-80-NBR**	**PJTK-80-SI-G1**	**PJG-80-SI**	**FTK-60-G1**
80	1/8 NPT	**PJTK-80-NBR-N1**	**PJG-80-NBR**	**PJTK-80-SI-N1**	**PJG-80-SI**	**FTK-60-N1**

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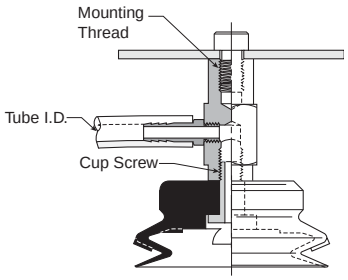
PJYK Series 90° Barbed Adapter

Side stem connectors allow you to secure the stem with a bolt through a plate or "L" bracket to allow the tube connection from the side port. Fitting materials: nickel plated brass.

Installation

Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.



Cup diameter (mm)	Vacuum port	Complete assembly Nitrile (NBR)	Replacement cup Nitrile (NBR)	Complete assembly Silicon (SI)	Replacement cup Silicon (SI)	Replacement cup fitting
6	Barb	**PJYK-6-NBR**	**PJG-6-NBR**	**PJYK-6-SI**	**PJG-6-SI**	**FYK-5A**
8	Barb	**PJYK-8-NBR**	**PJG-8-NBR**	**PJYK-8-SI**	**PJG-8-SI**	**FYK-5A**
10	Barb	**PJYK-10-NBR**	**PJG-10-NBR**	**PJYK-10-SI**	**PJG-10-SI**	**FYK-15**
15	Barb	**PJYK-15-NBR**	**PJG-15-NBR**	**PJYK-15-SI**	**PJG-15-SI**	**FYK-15**
20	Barb	**PJYK-20-NBR**	**PJG-20-NBR**	**PJYK-20-SI**	**PJG-20-SI**	**FYK-20**
30	Barb	**PJYK-30-NBR**	**PJG-30-NBR**	**PJYK-30-SI**	**PJG-30-SI**	**FYK-25**
40	Barb	**PJYK-40-NBR**	**PJG-40-NBR**	**PJYK-40-SI**	**PJG-40-SI**	**FYK-25**
50	Barb	**PJYK-50-NBR**	**PJG-50-NBR**	**PJYK-50-SI**	**PJG-50-SI**	**FYK-50**
60	1/8 BSPP	**PJYK-60-NBR-G1**	**PJG-60-NBR**	**PJYK-60-SI-G1**	**PJG-60-SI**	**FYK-60-G1**
60	1/8 NPT	**PJYK-60-NBR-N1**	**PJG-60-NBR**	**PJYK-60-SI-N1**	**PJG-60-SI**	**FYK-60-N1**
80	1/8 BSPP	**PJYK-80-NBR-G1**	**PJG-80-NBR**	**PJYK-80-SI-G1**	**PJG-80-SI**	**FYK-60-G1**
80	1/8 NPT	**PJYK-80-NBR-N1**	**PJG-80-NBR**	**PJYK-80-SI-N1**	**PJG-80-SI**	**FYK-60-N1**

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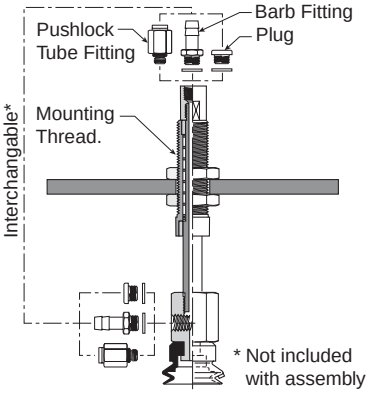
PJTYS Series Bulkhead Level Compensator

303 stainless steel construction secured with jam nuts. Spring biased compensators can absorb impacts of down-strokes and adjust for different levels of pick up points. 303 stainless corrosion resistant materials with drymet bushings increases the strength and life.

Installation

Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.
Shown are interchangable connectors & plugs for port connections.



Cup dia. (mm)	Vacuum port	Stroke (mm)	Spring compression Force lbf (N) 0%	100%	Cup material Nitrile assemlby (NBR)	Replacement cup Nitrile (NBR)	Cup material Silicon assembly (SI)	Replacement cup Silicon (SI)	Level Compensator P/N
10	M5	10	.56 (2.5)	1.2 (4.9)	**PJTYS1010NBRM5**	**PJG-10-NBR**	**PJTYS1010SIM5**	**PJG-10-SI**	**JTYS-10-10**
10	M5	15	.67 (2.5)	1.4 (5.9)	**PJTYS1015NBRM5**	**PJG-10-NBR**	**PJTYS1015SIM5**	**PJG-10-SI**	**JTYS-10-15**
15	M5	10	.56 (2.5)	1.2 (4.9)	**PJTYS15A10NBRM5**	**PJG-15A-NBR**	**PJTYS15A10SIM5**	**PJG-15A-SI**	**JTYS-10-10**
15	M5	15	.67 (2.5)	1.4 (5.9)	**PJTYS15A15NBRM5**	**PJG-15A-NBR**	**PJTYS15A15SIM5**	**PJG-15A-SI**	**JTYS-10-15**
30	M5	15	.56 (2.5)	.79 (3.4)	**PJTYS3015NBRM5**	**PJG-30-NBR**	**PJTYS3015SIM5**	**PJG-30-SI**	**TYS-20B-15**
30	M5	30	.67 (2.9)	1.4 (5.9)	**PJTYS3030NBRM5**	**PJG-30-NBR**	**PJTYS3030SIM5**	**PJG-30-SI**	**TYS-20B-30**
40	M5	15	.56 (2.5)	.79 (3.4)	**PJTYS4015NBRM5**	**PJG-40-NBR**	**PJTYS4015SIM5**	**PJG-40-SI**	**TYS-20B-15**
40	M5	30	.67 (2.9)	1.4 (5.9)	**PJTYS4030NBRM5**	**PJG-40-NBR**	**PJTYS4030SIM5**	**PJG-40-SI**	**TYS-20B-30**
50	M5	15	.56 (.25)	1.2 (4.9)	**PJTYS5015NBRM5**	**PJG-50-NBR**	**PJTYS5015SIM5**	**PJG-50-SI**	**TYS-50-15**
50	M5	30	.67 (2.9)	1.4 (5.9)	**PJTYS5030NBRM5**	**PJG-50-NBR**	**PJTYS5030SIM5**	**PJG-50-SI**	**TYS-50-30**
60	1/8 NPT	30	1.6 (6.8)	3.6 (15.6)	**PJTYS6030NBRN1**	**PJG-60-NBR**	**PJTYS6030SIN1**	**PJG-60-SI**	**TYS-60-30**
60	1/8 NPT	50	1.9 (8.3)	4.5 (19.6)	**PJTYS6050NBRN1**	**PJG-60-NBR**	**PJTYS6050SIN1**	**PJG-60-SI**	**TYS-60-50**
80	1/8 NPT	30	1.6 (6.8)	3.6 (15.6)	**PJTYS8030NBRN1**	**PJG-80-NBR**	**PJTYS8030SIN1**	**PJG-80-SI**	**TYS-60-30**
80	1/8 NPT	50	1.9 (8.3)	4.5 (19.6)	**PJTYS8050NBRN1**	**PJG-80-NBR**	**PJTYS8050SIN1**	**PJG-80-SI**	**TYS-60-50**

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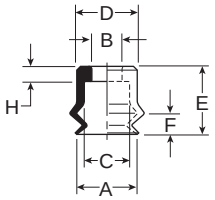
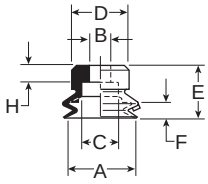
PJG Series Replacement Cup Dimensions

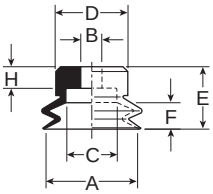
PJG-6 and PJG-8



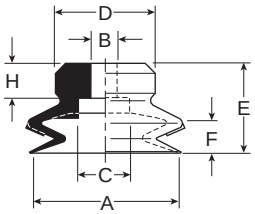
PJG-10 and PJG-15



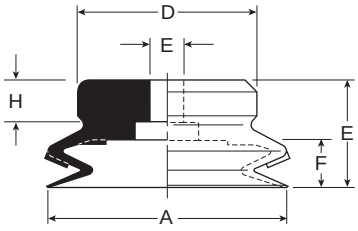
PJG-20



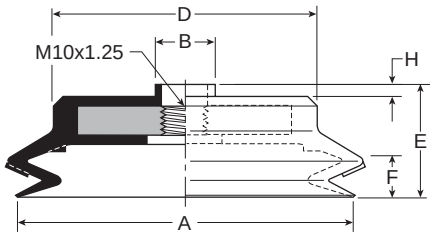
PJG-30 thru PJG-40



PJG-50



PJG-60 thru PJG-80



Model number	ØA	ØB	ØC	ØD	E	F	H
PJG-6-*	.24 (6)	.16 (4)	.24 (6)	.30 (7.5)	.35 (9)	.17 (4.2)	.08 (2)
PJG-8-*	.31 (8)	.16 (4)	.24 (6)	.31 (8)	.35 (9)	.16 (4)	.08 (2)
PJG-10-*	.39 (10)	.18 (4.6)	.31 (7.8)	.43 (11)	.37 (9.5)	.12 (3)	.14 (3.5)
PJG-15-*	.59 (15)	.18 (4.6)	.31 (7.8)	.47 (12)	.43 (11)	.13 (3.3)	.14 (3.5)
PJG-20-*	.79 (20)	.18 (4.6)	.43 (10.8)	.59 (15)	.51 (13)	.22 (5.5)	.18 (4.5)
PJG-30-*	1.18 (30)	.23 (5.8)	.43 (10.8)	.78 (20)	.71 (18)	.28 (7)	.28 (7)
PJG-35-*	1.38 (35)	.23 (5.8)	.43 (10.8)	.98 (25)	.71 (18)	.28 (7)	.28 (7)
PJG-40-*	1.57 (40)	.23 (5.8)	.43 (10.8)	1.18 (30)	.71 (18)	.28 (7.2)	.28 (7)
PJG-50-*	1.97 (50)	.31 (7.8)	.78 (19.8)	1.57 (40)	.79 (20)	.35 (9)	.28 (7)
PJG-60-*	2.36 (60)	.49 (12.5)	—	1.77 (45)	.89 (22.5)	.31 (8)	.10 (2.5)
PJG-70-*	2.75 (70)	.49 (12.5)	—	2.17 (55)	.93 (23.5)	.37 (9.5)	.10 (2.5)
PJG-80-*	3.15 (80)	.49 (12.5)	—	2.68 (68)	.93 (23.5)	.37 (9.5)	.10 (2.5)

Inches (mm)
* Cup material

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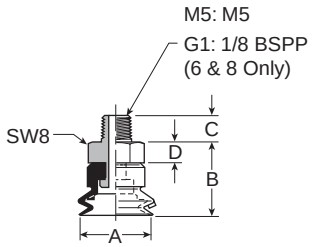
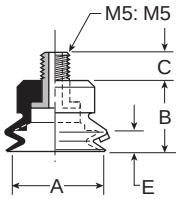
Dimensions

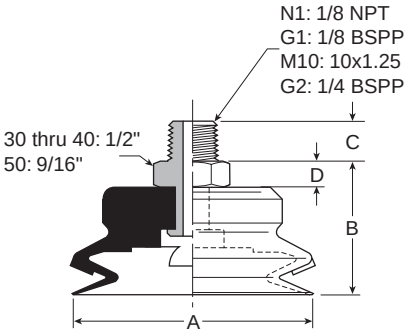
PJTM-6 and PJTM-8



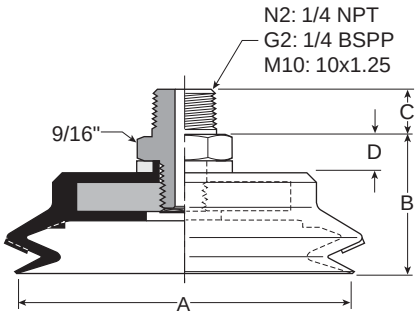
PJTM-10 thru PJTM-20



PJTM-30 thru PJTM-50



PJTM-60 thru PJTM-80



Model number	ØA	B	C (M5)	C (N1 / G1)	C (M10 / G2)	C (N2)	D
PJTM-6-*-†	.24 (6)	.49 (12.5)	.18 (4.5)	.31 (8)	—	—	.14 (3.5)
PJTM-8-*-†	.31 (8)	.49 (12.5)	.18 (4.5)	.31 (8)	—	—	.14 (3.5)
PJTM-10-*-†	.39 (10)	.37 (9.5)	.20 (5)	—	—	—	—
PJTM-15-*-†	.59 (15)	.43 (11)	.20 (5)	—	—	—	—
PJTM-20-*-†	.79 (20)	.51 (13)	.20 (5)	—	—	—	—
PJTM-30-*-†	1.18 (30)	.91 (23)	—	.31 (8)	.39 (10)	—	.20 (5)
PJTM-40-*-†	1.57 (40)	.91 (23)	—	.31 (8)	.39 (10)	—	.20 (5)
PJTM-50-*-†	1.97 (50)	.98 (25)	—	.31 (8)	.39 (10)	—	.20 (5)
PJTM-60-*-†	2.36 (60)	1.06 (27)	—	—	.39 (10)	.59 (15)	.28 (7)
PJTM-80-*-†	3.15 (80)	1.10 (28)	—	—	.39 (10)	.59 (15)	.28 (7)

Inches (mm)
* Cup material
† Thread size

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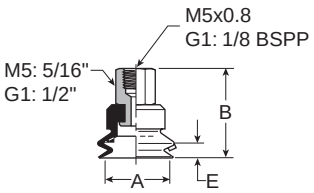
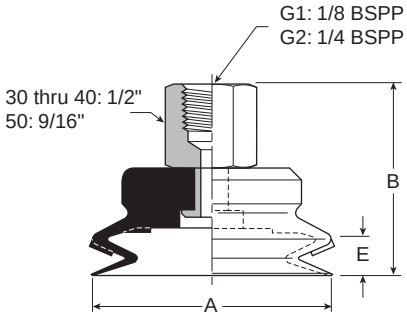
Dimensions

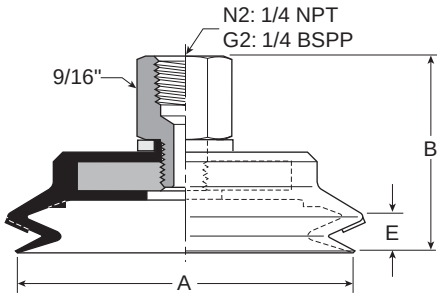
PJTF-6 and PJTF-8



PJTF-30 thru PJTF-50



PJTF-60 thru PJTF-80



Model number	ØA	B	B (M5)	E
PJTF-6-*-†	.24 (6)	.79 (20)	.55 (14)	.16 (4)
PJTF-8-*-†	.31 (8)	.79 (20)	.55 (14)	.16 (4)
PJTF-10-*-†	.39 (10)	.79 (20)	.55 (14)	.12 (3)
PJTF-15-*-†	.59 (15)	.79 (20)	.55 (14)	.13 (3.3)
PJTF-30-*-†	1.18 (30)	1.25 (32)	—	.28 (7)
PJTF-40-*-†	1.57 (40)	1.25(32)	—	.28 (7.2)
PJTF-50-*-†	1.97 (50)	1.34 (34)	—	.35 (9)
PJTF-60-*-†	2.36 (60)	1.56 (39.5)	—	.31 (8)
PJTF-80-*-†	3.15 (80)	1.59 (40.5)	—	.37 (9.5)

Inches (mm)
* Cup material
† Thread size

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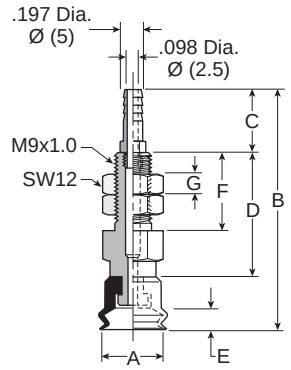
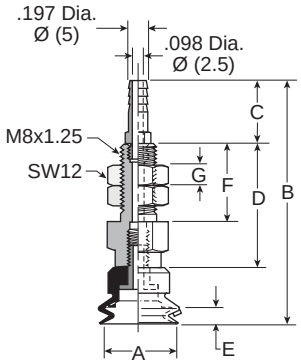
Dimensions

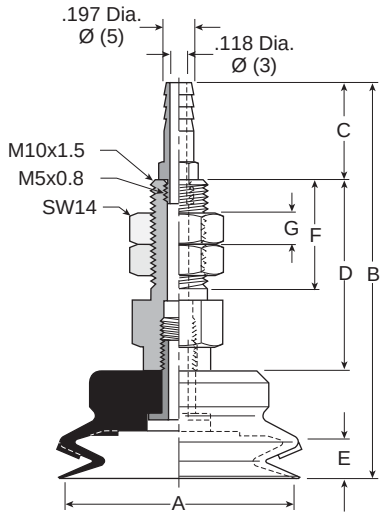
PJTK-6 and PJTK-8



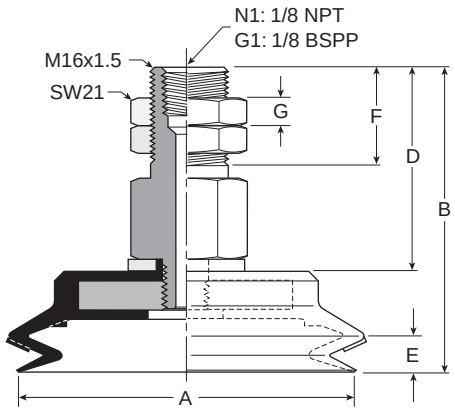
PJTK-10 thru PJTK-20



PJTK-30 thru PJTK-50



PJTK-60 thru PJTK-80



Model number	ØA	B	C	D	E	F	G	Wt oz (g)
PJTK-6-*	.24 (6)	1.30 (33)	.39 (10)	.55 (14)	.17 (4.2)	.47 (12)	.12 (3)	.4 (11)
PJTK-8-*	.31 (8)	1.30 (33)	.39 (10)	.55 (14)	.16 (4)	.47 (12)	.12 (3)	.4 (11)
PJTK-10-*	.39 (10)	1.87 (47.5)	.63 (16)	.87 (22)	.12 (3)	.59 (15)	.12 (3)	.5 (14)
PJTK-15-*	.59 (15)	1.93 (49)	.63 (16)	.87 (22)	.13 (3.3)	.59 (15)	.12 (3)	.5 (15)
PJTK-20-*	.79 (20)	2.01 (51)	.63 (16)	.87 (22)	.22 (5.5)	.59 (15)	.20 (5)	.6 (17)
PJTK-30-*	1.18 (30)	2.60 (66)	.63 (16)	1.26 (32)	.28 (7)	.79 (20)	.20 (5)	1.5 (42)
PJTK-40-*	1.57 (40)	2.60 (66)	.63 (16)	1.26 (32)	.28 (7.2)	.79 (20)	.20 (5)	1.6 (44)
PJTK-50-*	1.97 (50)	2.68 (68)	.63 (16)	1.26 (32)	.35 (9)	.79 (20)	.20 (5)	25.0 (58)
PJTK-60-*-†	2.36 (60)	2.46 (62.5)	—	1.67 (42.5)	.31 (8)	.79 (20)	.24 (6)	5.1 (144)
PJTK-80-*-†	3.15 (80)	2.50 (63.5)	—	1.67 (42.5)	.37 (9.5)	.79 (20)	.24 (6)	6.7 (190)

Inches (mm)
* Cup material
† Vacuum port

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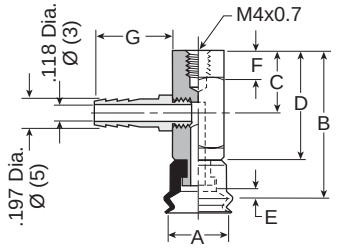
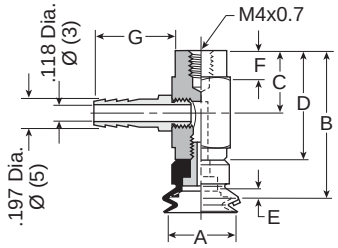
Dimensions

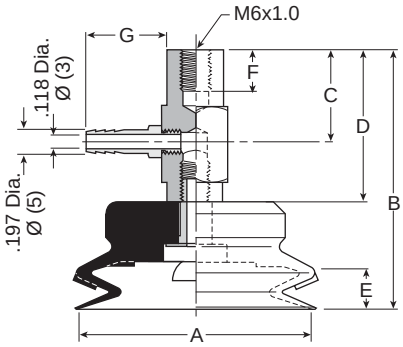
PJYK-6 and PJYK-8



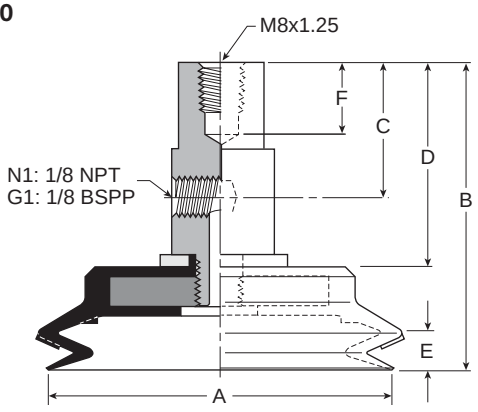
PJYK-10 thru PJYK-20



PJYK-25 thru PJYK-50



PJYK-60 thru PJYK-80



Model number	ØA	B	C	D	E	F	G	Wt oz (g)
PJYK-6-*	.24 (6)	1.24 (31.5)	.51 (13)	.89 (22.5)	.17 (4.2)	.24 (6)	.63 (16)	.56 (16)
PJYK-8-*	.31 (8)	1.24 (31.5)	.51 (13)	.89 (22.5)	.17 (4.2)	.24 (6)	.63 (16)	.56 (16)
PJYK-10-*	.39 (10)	1.24 (31.5)	.55 (14)	.87 (22)	.12 (3)	.24 (6)	.63 (16)	.59 (17)
PJYK-15-*	.59 (15)	1.30 (33)	.55 (14)	.87 (22)	.13 (3.3)	.24 (6)	.63 (16)	.63 (18)
PJYK-20-*	.79 (20)	1.38 (35)	.55 (14)	.87 (22)	.22 (5.5)	.24 (6)	.63 (16)	.7 (20)
PJYK-30-*	1.18 (30)	1.97 (50)	.79 (20)	1.26 (32)	.28 (7)	.31 (8)	.63 (16)	1.6 (46)
PJYK-40-*	1.57 (40)	1.97 (50)	.79 (20)	1.26 (32)	.28 (7.2)	.31 (8)	.63 (16)	1.7 (48)
PJYK-50-*	1.97 (50)	2.05 (52)	.79 (20)	1.26 (32)	.35 (9)	.31 (8)	.63 (16)	2.2 (62)
PJYK-60-*-†	2.36 (60)	2.46 (62.5)	1.10 (28)	1.67 (42.5)	.31 (8)	.43 (11)	—	4.9 (139)
PJYK-80-*-†	3.15 (80)	2.50 (63.5)	1.10 (28)	1.67 (42.5)	.37 (9.5)	.43 (11)	—	6.5 (185)

Inches (mm)
* Cup material
† Vacuum port

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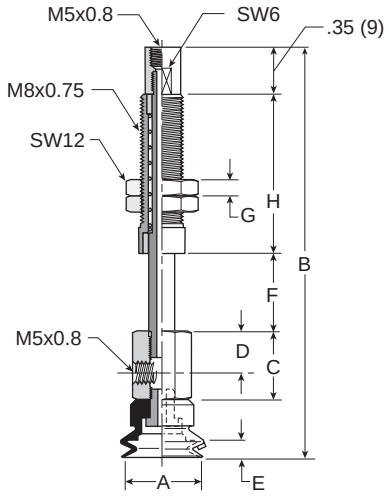
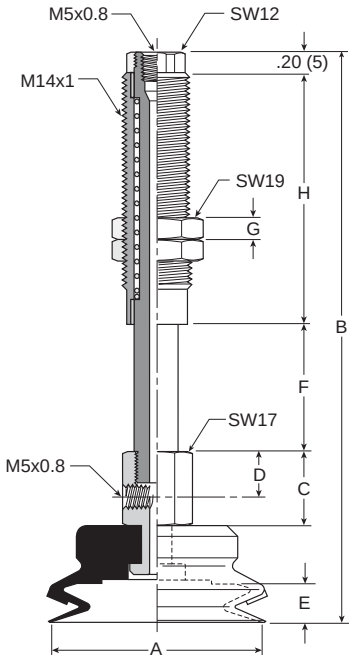
Dimensions

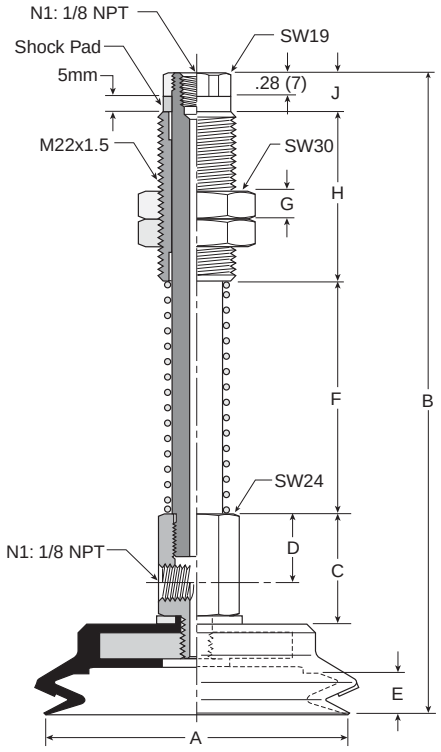
PJTYS10 thru PJTYS20



PJTYS30 thru PJTYS50



PJTYS60 thru PJTYS80



Model number	ØA	B	C	D	E	F	G	H	J	Wt oz (g)
PJTYS1010*†	.39 (10)	2.52 (64)	.51 (13)	.31 (8)	.12 (3)	.39 (10)	.20 (5)	.91 (23)	—	1.1 (31)
PJTYS1015*†	.39 (10)	3.01 (76.5)	.51 (13)	.31 (8)	.12 (3)	.59 (15)	.20 (5)	1.20 (30.5)	—	1.2 (33.5)
PJTYS1510*†	.59 (15)	2.60 (66)	.51 (13)	.31 (8)	.13 (3.3)	.39 (10)	.20 (5)	.91 (23)	—	1.1 (32)
PJTYS1515*†	.59 (15)	3.07 (78)	.51 (13)	.31 (8)	.13 (3.3)	.59 (15)	.20 (5)	1.20 (30.5)	—	1.3 (34.5)
PJTYS2010*†	.79 (20)	2.83 (72)	.51 (13)	.31 (8)	.22 (5.5)	.39 (10)	.20 (5)	.91 (23)	—	1.1 (32)
PJTYS2015*†	.79 (20)	4.29 (109)	.51 (13)	.31 (8)	.22 (5.5)	.59 (15)	.20 (5)	1.20 (30.5)	—	1.3 (34.5)
PJTYS3015*†	1.18 (30)	3.58 (91)	.67 (17)	.39 (10)	.28 (7)	.59 (15)	.20 (5)	1.42 (36)	—	2.6 (74)
PJTYS3030*†	1.18 (30)	5.04 (128)	.67 (17)	.39 (10)	.28 (7)	1.18 (30)	.20 (5)	2.28 (58)	—	3.5 (99)
PJTYS3515*†	1.38 (35)	3.58 (91)	.67 (17)	.39 (10)	.28 (7)	.59 (15)	.20 (5)	1.42 (36)	—	2.7 (76.5)
PJTYS3530*†	1.38 (35)	5.04 (128)	.67 (17)	.39 (10)	.28 (7)	1.18 (30)	.20 (5)	2.28 (58)	—	3.6 (101.5)
PJTYS4015*†	1.57 (40)	3.58 (91)	.67 (17)	.39 (10)	.28 (7.2)	.59 (15)	.20 (5)	1.42 (36)	—	2.8 (78.5)
PJTYS4030*†	1.57 (40)	5.04 (128)	.67 (17)	.39 (10)	.28 (7.2)	1.18 (30)	.20 (5)	2.28 (58)	—	3.7 (103.5)
PJTYS5015*†	1.97 (50)	3.66 (93)	.67 (17)	.39 (10)	.35 (9)	.59 (15)	.20 (5)	1.42 (36)	—	3.3 (94)
PJTYS5030*†	1.97 (50)	5.12 (130)	.67 (17)	.39 (10)	.35 (9)	1.18 (30)	.20 (5)	2.28 (58)	—	4.2 (119)
PJTYS6030*†	2.36 (60)	6.18 (157)	1.18 (30)	.79 (20)	.31 (8)	1.18 (45)	.39 (10)	1.97 (50)	.47 (12)	10.4 (294)
PJTYS6050*†	2.36 (60)	7.17 (182)	1.18 (30)	.79 (20)	.31 (8)	2.76 (70)	.39 (10)	1.97 (50)	.47 (12)	11.6 (328)
PJTYS8030*†	3.15 (80)	6.22 (158)	1.18 (30)	.79 (20)	.37 (9.5)	1.18 (45)	.39 (10)	1.97 (50)	.47 (12)	11.9 (338)
PJTYS8050*†	3.15 (80)	7.20 (183)	1.18 (30)	.79 (20)	.37 (9.5)	2.76 (70)	.39 (10)	1.97 (50)	.47 (12)	13.1 (372)

Inches (mm)
** Cup material
† Vacuum port

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
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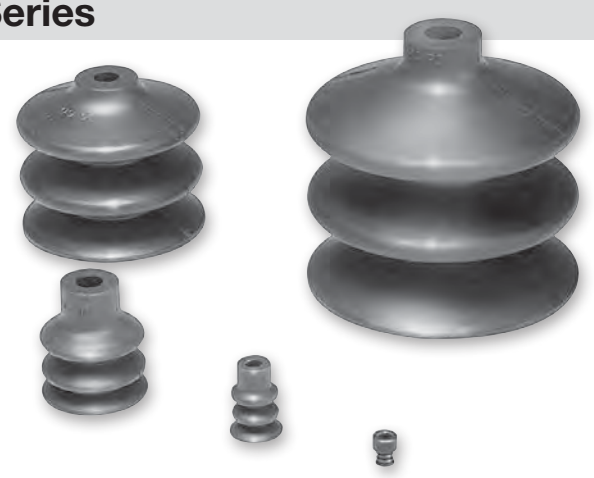
PCG Multiple Bellows Vacuum Cup Series

2-1/2 bellows design minimizes contact pressure applied to the product. The soft seal lip and touch allows the cup to conform to the product's surface to make a vacuum seal.

These multiple bellow cups are designed for applications that require additional level compensation, more flexibility, or minimum back pressure for a "soft touch". The multiple bellow has a soft sealing edge good for a variety of sensitive applications; such as food packaging, CD / DVD, medical packaging, and highly irregular curved surfaces. Cups can also be used to assist with sheet separation in destack operations.



Features

- Soft touch
- Extra level compensation
- Flexible sealing lip for irregular curved surfaces
- 5mm to 90mm in diameter

Styles

- PCTM series male thread connector
- PCTF series female thread Connector
- PCTK series barbed bulkhead

Operating information

Cup material	Nitrile	Nitrile ESD*	Silicon	Silicon ESD*	Urethane
Material code	**NBR**	**NBRE**	**SI**	**SIE**	**U**
Operating temperature	-20°C to 120°C (-4°F to 248°F)	0°C to 60°C (32°F to 40°F)	-60° to 250°C (-76°F to 482°F)	-10° to 130°C (-14°F to 266°F)	-20° to 75°C (-4°F to 167°F)
Color	Black	Black / Blue Dot	White	Black / Red Dot	Blue
Hardness, shore A (°Sh)	55 ±5	70 ±5	55 ±5	55 ±5	55 ±5
Electrical resistance (Ωm)	—	800 to 1000	—	5 to 15	—

* ESD: Electric Static Dissipative Material

How to order

Cups assemblies and replacement cups are specified by cup diameter and material. Standard nitrile and silicon are listed on the following pages. To specify an alternative material, replace the cup material with alternative cup material code.

Example: To specify a cup assembly with urethane (U), replace (NBR) with (U) in the part number. PCTM-20B-NBR-G1 becomes PCTM-20B-U-G1. Inquire with factory for availability.

Application guide

2-1/2 Bellows

Flat surface, any section	Bowed surface, thin section	Slightly bowed surface, any section	Bowed surface, any section	Soft material	Metal sheet handling	Corrugated sheet handling	Differences in heights and levels	Not for vertical lift

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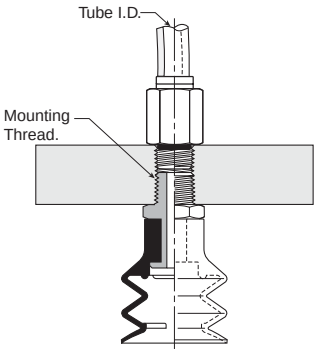
PCTM Series Male Thread Connector

Simple male connection for low profile positions secured to a plate or bracket. NPT, G, metric threads.
Fitting material: aluminum.

Installation

Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.



Cup diameter (mm)	Vacuum port	Complete assembly Nitrile (NBR)	Replacement cup Nitrile (NBR)	Complete assembly Silicon (SI)	Replacement cup Silicon (SI)	Replacement cup fitting
5	M5	**PCTM-5-NBR-M5**	**PCG-5-NBR**	**PCTM-5-SI-M5**	**PCG-5-SI**	**FTM-5A-M5H**
7	M5	**PCTM-7-NBR-M5**	**PCG-7-NBR**	**PCTM-7-SI-M5**	**PCG-7-SI**	**FTM-5A-M5H**
10	M5	**PCTM-10-NBR-M5**	**PCG-10-NBR**	**PCTM-10-SI-M5**	**PCG-10-SI**	**CTM-10-M5H**
10	G1	**PCTM-10-NBR-G1**	**PCG-10-NBR**	**PCTM-10-SI-G1**	**PCG-10-SI**	**CTM-10-G1H**
15	M5	**PCTM-15-NBR-M5**	**PCG-15-NBR**	**PCTM-15-SI-M5**	**PCG-15-SI**	**CTM-10-M5H**
15	G1	**PCTM-15-NBR-G1**	**PCG-15-NBR**	**PCTM-15-SI-G1**	**PCG-15-SI**	**CTM-10-G1H**
20	M5	**PCTM-20-NBR-M5**	**PCG-20-NBR**	**PCTM-20-SI-M5**	**PCG-20-SI**	**CTM-10-M5H**
20	G1	**PCTM-20-NBR-G1**	**PCG-20-NBR**	**PCTM-20-SI-G1**	**PCG-20-SI**	**CTM-10-G1H**
30	G1	**PCTM-30-NBR-G1**	**PCG-30-NBR**	**PCTM-30-SI-G1**	**PCG-30-SI**	**CTM-30-G1H**
30	G2	**PCTM-30-NBR-G2**	**PCG-30-NBR**	**PCTM-30-SI-G2**	**PCG-30-SI**	**CTM-30-G2**
30	N1	**PCTM-30-NBR-N1**	**PCG-30-NBR**	**PCTM-30-SI-N1**	**PCG-30-SI**	**CTM-30-N1**
40	G1	**PCTM-40-NBR-G1**	**PCG-40-NBR**	**PCTM-40-SI-G1**	**PCG-40-SI**	**CTM-30-G1H**
40	G2	**PCTM-40-NBR-G2**	**PCG-40-NBR**	**PCTM-40-SI-G2**	**PCG-40-SI**	**CTM-30-G2**
40	N1	**PCTM-40-NBR-N1**	**PCG-40-NBR**	**PCTM-40-SI-N1**	**PCG-40-SI**	**CTM-30-N1**
60	G1	**PCTM-60-NBR-G1**	**PCG-60-NBR**	**PCTM-60-SI-G1**	**PCG-60-SI**	**CTM-30-G1H**
60	N1	**PCTM-60-NBR-N1**	**PCG-60-NBR**	**PCTM-60-SI-N1**	**PCG-60-SI**	**CTM-30-N1**
90	G2	**PCTM-90-NBR-G2**	**PCG-90-NBR**	**PCTM-90-SI-G2**	**PCG-90-SI**	**CTM-90-G2**
90	N2	**PCTM-90-NBR-N2**	**PCG-90-NBR**	**PCTM-90-SI-N2**	**PCG-90-SI**	**CTM-90-N2**

☐ **Most popular.**

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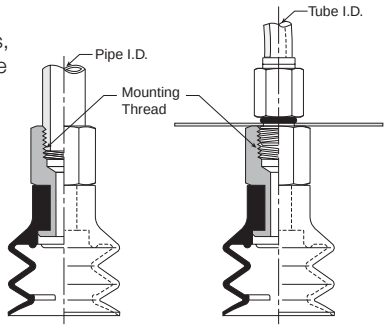
PCTF Series Female Thread Connector

Simple female connection for low profile positions secured to a plate or bracket. NPSF, G threads.
Fitting material: aluminum.

Installation

Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.



Cup diameter (mm)	Vacuum port	Complete assembly Nitrile (NBR)	Replacement cup Nitrile (NBR)	Complete assembly Silicon (SI)	Replacement cup Silicon (SI)	Replacement cup fitting
5	M5	**PCTF-5-NBR-M5**	**PCG-5-NBR**	**PCTF-5-SI-M5**	**PCG-5-SI**	**FTF-5A-M5**
7	M5	**PCTF-7-NBR-M5**	**PCG-7-NBR**	**PCTF-7-SI-M5**	**PCG-7-SI**	**FTF-5A-M5**
10	1/8 BSPP	**PCTF-10-NBR-G1**	**PCG-10-NBR**	**PCTF-10-SI-G1**	**PCG-10-SI**	**CTF-10-G1**
15	1/8 BSPP	**PCTF-15-NBR-G1**	**PCG-15-NBR**	**PCTF-15-SI-G1**	**PCG-15-SI**	**CTF-10-G1**
20	1/8 BSPP	**PCTF-20-NBR-G1**	**PCG-20-NBR**	**PCTF-20-SI-G1**	**PCG-20-SI**	**CTF-10-G1**
30	1/8 BSPP	**PCTF-30-NBR-G1**	**PCG-30-NBR**	**PCTF-30-SI-G1**	**PCG-30-SI**	**CTF-30-G1**
30	1/8 NPT	**PCTF-30-NBR-N1**	**PCG-30-NBR**	**PCTF-30-SI-N1**	**PCG-30-SI**	**CTF-30-N1**
40	1/8 BSPP	**PCTF-40-NBR-G1**	**PCG-40-NBR**	**PCTF-40-SI-G1**	**PCG-40-SI**	**CTF-30-G1**
40	1/8 NPT	**PCTF-40-NBR-N1**	**PCG-40-NBR**	**PCTF-40-SI-N1**	**PCG-40-SI**	**CTF-30-N1**
60	1/8 NPT	**PCTF-60-NBR-N1**	**PCG-60-NBR**	**PCTF-60-SI-N1**	**PCG-60-SI**	**CTF-30-G1**
60	1/4 NPT	**PCTF-60-NBR-N1**	**PCG-60-NBR**	**PCTF-60-SI-N1**	**PCG-60-SI**	**CTF-30-N1**
90	1/4 BSPP	**PCTF-90-NBR-G2**	**PCG-90-NBR**	**PCTF-90-SI-G2**	**PCG-90-SI**	**CTF-90-G2**
90	1/4 NPT	**PCTF-90-NBR-N2**	**PCG-90-NBR**	**PCTF-90-SI-N2**	**PCG-90-SI**	**CTF-90-N2**

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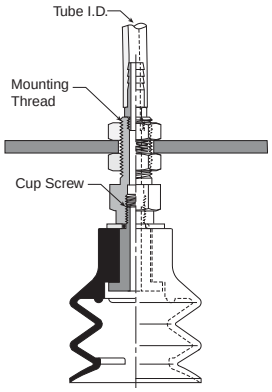
PCTK Series Barbed Bulkhead

Top stem connectors secured with jam nuts and allow tubing connections at the top side. Fitting material: Nickel plated brass.

Installation

Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.



Cup diameter (mm)	Vacuum port	Complete assembly Nitrile (NBR)	Replacement cup Nitrile (NBR)	Complete assembly Silicon (SI)	Replacement cup Silicon (SI)	Replacement cup fitting
5	Barb	**PCTK-5-NBR**	**PCG-5-NBR**	**PCTK-5-SI**	**PCG-5-SI**	**FTK-5A**
7	Barb	**PCTK-7-NBR**	**PCG-7-NBR**	**PCTK-7-SI**	**PCG-7-SI**	**FTK-5A**
10	Barb	**PCTK-10-NBR**	**PCG-10-NBR**	**PCTK-10-SI**	**PCG-10-SI**	**CTK-10**
15	Barb	**PCTK-15-NBR**	**PCG-15-NBR**	**PCTK-15-SI**	**PCG-15-SI**	**CTK-10**
20	Barb	**PCTK-20-NBR**	**PCG-20-NBR**	**PCTK-20-SI**	**PCG-20-SI**	**CTK-10**
30	Barb	**PCTK-30-NBR**	**PCG-30-NBR**	**PCTK-30-SI**	**PCG-30-SI**	**CTK-30**
40	Barb	**PCTK-40-NBR**	**PCG-40-NBR**	**PCTK-40-SI**	**PCG-40-SI**	**CTK-30**
60	Barb	**PCTK-60-NBR**	**PCG-60-NBR**	**PCTK-60-SI**	**PCG-60-SI**	**CTK-30**
90	NPT	**PCTK-90-NBR-N1**	**PCG-90-NBR**	**PCTK-90-SI-N1**	**PCG-90-SI**	**CTK-90-N1**
90	BSPP	**PCTK-90-NBR-G1**	**PCG-90-NBR**	**PCTK-90-SI-G1**	**PCG-90-SI**	**CTK-90-G1**

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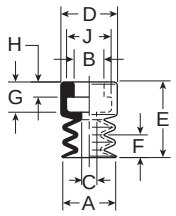
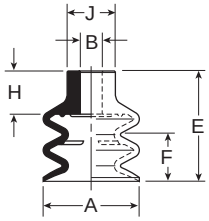
PCG Series Replacement Cup Dimensions

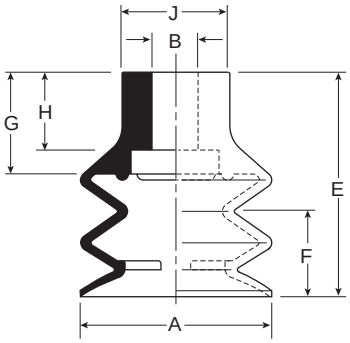
PCG-5 and PCG-7



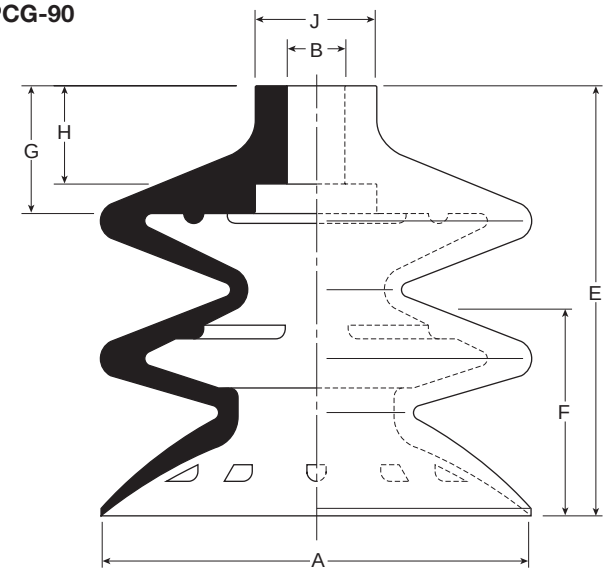
PCG-10 thru PCG-20



PCG-30 thru PCG-60



PCG-90



Model number	ØA	ØB	ØC	ØD	E	F	G	H	J
PCG-5-*	.20 (5)	.16 (4)	.08 (2)	.30 (7.5)	.37 (9.5)	.12 (3)	.16 (4)	.08 (2)	.24 (6)
PCG-7-*	.28 (7)	.16 (4)	.08 (2)	.30 (7.5)	.39 (10)	.12 (3)	.16 (4)	.08 (2)	.24 (6)
PCG-10-*	.35 (9)	.20 (5)	—	—	.59 (15)	.12 (3)	.28 (7)	—	.35 (9)
PCG-15-*	.60 (15.2)	.20 (5)	—	—	.90 (22)	.39 (10)	.35 (9)	—	.39 (10)
PCG-20-*	.79 (20)	.20 (5)	—	—	.91 (23)	.39 (10)	.35 (9)	—	.39 (10)
PCG-30-*	1.26 (32)	.31 (8)	—	—	1.48 (37.5)	.57 (14.5)	.67 (17)	.51 (13)	.71 (18)
PCG-40-*	1.65 (42)	.31 (8)	—	—	1.81 (46)	.87 (22)	.67 (17)	.51 (13)	.79 (20)
PCG-60-*	2.44 (62)	.31 (8)	—	—	2.17 (55)	1.06 (27)	.71 (18)	.51 (13)	.85 (21.5)
PCG-90-*	3.46 (88)	.47 (12)	—	—	3.44 (87.5)	1.65 (42)	1.02 (26)	.79 (20)	.98 (25)

Inches (mm)
* Cup material

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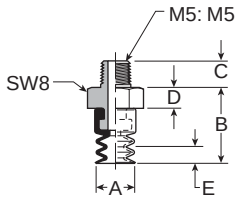
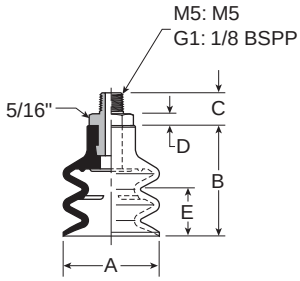
Dimensions

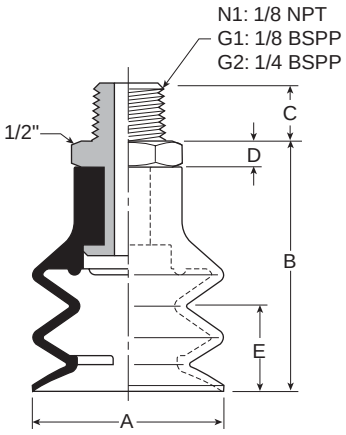
PCTM-5 and PCTM-7



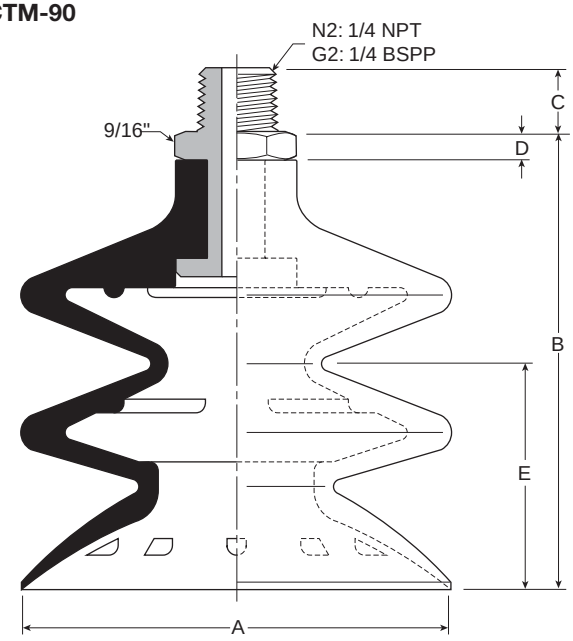
PCTM-10 thru PCTM-20



PCTM-30 thru PCTM-60



PCTM-90



Model number	ØA	B	C (M5)	C (N1 / G1)	C (M10 / G2)	C (N2)	D	E
PCTM-5-*-†	.20 (5)	.51 (13)	.18 (4.5)	—	—	—	.14 (3.5)	.12 (3)
PCTM-7-*-†	.28 (7)	.53 (13.5)	.18 (4.5)	—	—	—	.14 (3.5)	.12 (3)
PCTM-10-*-†	.35 (9)	.69 (17.5)	.18 (4.5)	.31 (8)	—	—	.10 (2.5)	.12 (3)
PCTM-15-*-†	.60 (15.2)	1.04 (25.5)	.18 (4.5)	.31 (8)	—	—	.10 (2.5)	.39 (10)
PCTM-20-*-†	.79 (20)	1.04 (25.5)	.18 (4.5)	.31 (8)	—	—	.10 (2.5)	.39 (10)
PCTM-30-*-†	1.26 (32)	1.67 (42.5)	—	.31 (8)	.39 (10)	—	.20 (5)	.57 (14.5)
PCTM-40-*-†	1.65 (42)	2.01 (51)	—	.31 (8)	.39 (10)	—	.20 (5)	.87 (22)
PCTM-60-*-†	2.44 (62)	2.36 (60)	—	.31 (8)	.39 (10)	—	.20 (5)	1.06 (27)
PCTM-90-*-†	3.46 (88)	3.64 (92.5)	—	—	.39 (10)	.59 (15)	.20 (5)	1.65 (42)

Inches (mm)
* Cup material
† Thread size

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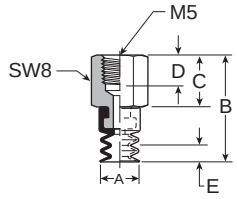
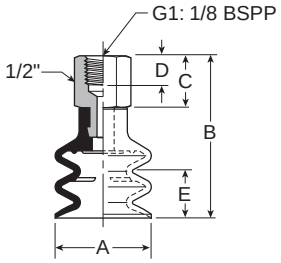
Dimensions

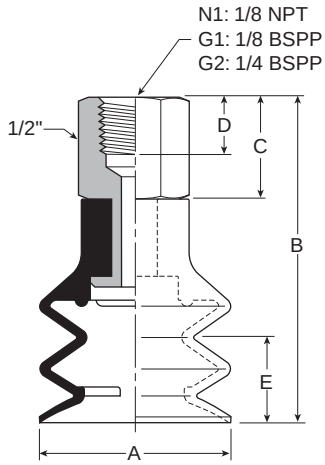
PCTF-5 and PCTF-7



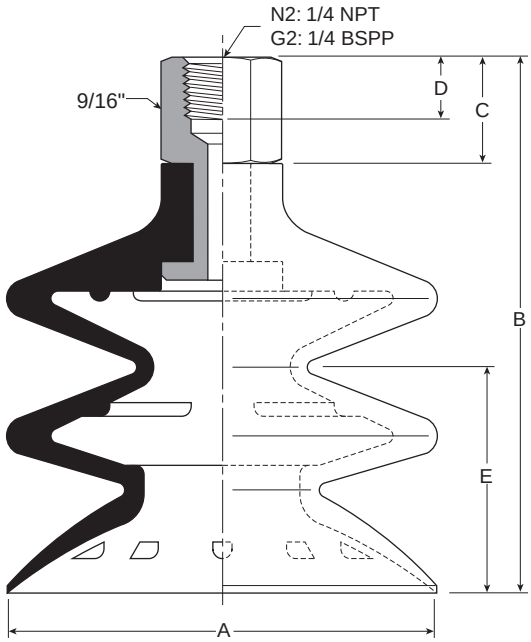
PCTF-10 thru PCTF-20



PCTF-30 thru PCTF-60



PCTF-90



Model number	ØA	B	C	D	E
PCTF-5*†	.20 (5)	.85 (21.5)	.47 (12)	.31 (8)	.12 (3)
PCTF-7*†	.28 (7)	.87 (22)	.47 (12)	.31 (8)	.12 (3)
PCTF-10*†	.35 (9)	1.06 (27)	.47 (12)	.31 (8)	.12 (3)
PCTF-15*†	.60 (15.2)	1.38 (35)	.47 (12)	.31 (8)	.39 (10)
PCTF-20*†	.79 (20)	1.38 (35)	.47 (12)	.31 (8)	.39 (10)
PCTF-30*†	1.26 (32)	2.03 (51.5)	.55 (14)	.31 (8)	.57 (14.5)
PCTF-40*†	1.65 (42)	2.36 (60)	.55 (14)	.31 (8)	.87 (22)
PCTF-60*†	2.44 (62)	2.72 (69)	.55 (14)	.31 (8)	1.06 (27)
PCTF-90*†	3.46 (88)	4.13 (105)	.69 (17.5)	.39 (10)	1.65 (42)

Inches (mm)
* Cup material
† Thread size

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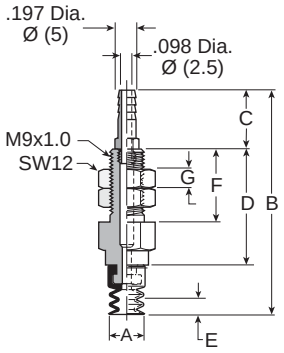
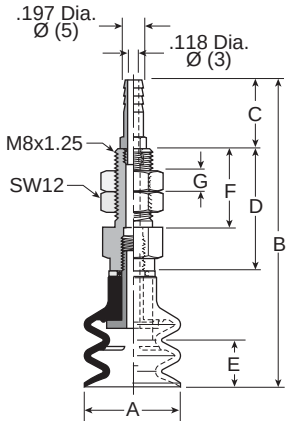
Dimensions

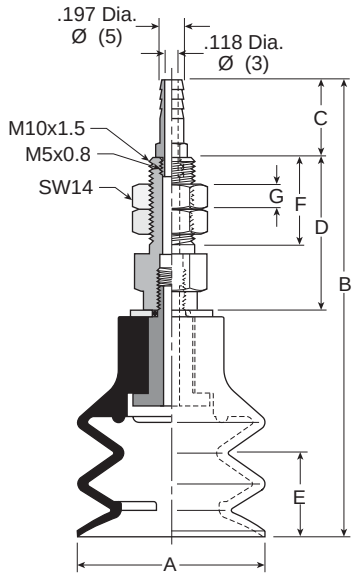
PCTK-5 and PCTK-7



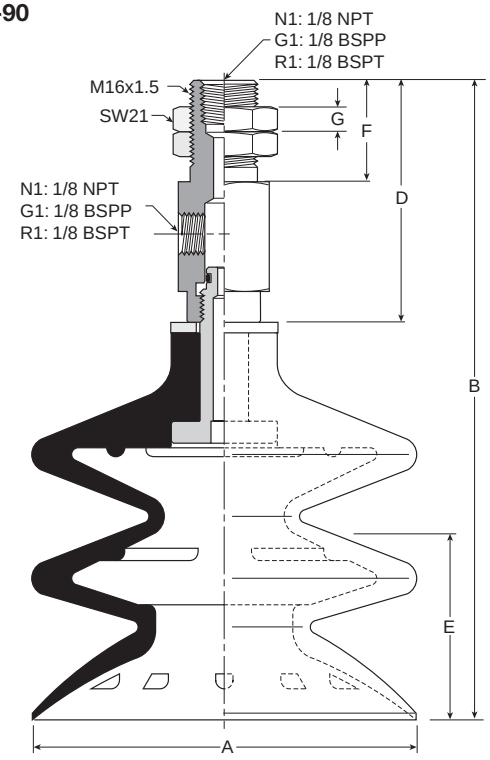
PCTK-10 thru PCTK-20



PCTK-30 thru PCTK-60



PCTK-90



Model number	ØA	B	C	D	E	F	G	Wt oz. (g)
PCTK-5-*	.20 (5)	1.32 (33.5)	.39 (10)	.55 (14)	.12 (3)	.47 (12)	.12 (3)	.56 (11)
PCTK-7-*	.28 (7)	1.34 (34)	.39 (10)	.55 (14)	.12 (3)	.47 (12)	.12 (3)	.56 (11)
PCTK-10-*	.35 (9)	2.21 (56.2)	.63 (16)	.88 (22.5)	.12 (3)	.59 (15)	.16 (4)	.78 (22)
PCTK-15-*	.60 (15.2)	2.53 (64.2)	.63 (16)	.86 (22)	.39 (10)	.59 (15)	.16 (4)	.78 (22)
PCTK-20-*	.79 (20)	2.53 (64.2)	.63 (16)	.86 (22)	.39 (10)	.59 (15)	.16 (4)	.78 (22)
PCTK-30-*	1.26 (32)	3.42 (86.8)	.63 (16)	1.26 (32)	.57 (14.5)	.79 (20)	.20 (5)	1.62 (46)
PCTK-40-*	1.65 (42)	3.75 (95.3)	.63 (16)	1.26 (32)	.86 (22)	.79 (20)	.20 (5)	1.94 (55)
PCTK-60-*	2.44 (62)	4.11 (104.3)	.63 (16)	1.26 (32)	1.06 (27)	.79 (20)	.20 (5)	3.00 (85)
PCYK-90-*	3.46 (88)	5.70 (144.8)	.91 (23)	2.17 (55)	1.65 (42)	.43 (11)	—	10.58 (300)

Inches (mm)
* Cup material
† Vacuum port

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PUGB Flat Swivel Vacuum Cup Series

30° inclusive swivel, single lip cup for smooth, slightly curved surfaces and flexible products. Rigid construction provides good stability against acceleration and deceleration forces during product transfer.

The single edge swivel cup is for smooth surfaces with slightly curved surfaces or flexible sheets with substantial weights. Typically, lift capacities and break away forces are higher for flat cups which may be necessary for good stability during lift and transfer. The position of the internal swivel joint minimizes moments during lift and transfer. The swivel joint compensates for load and angular misalignment instead of the cup material, prolonging cup life. Maintenance costs are minimized by replacing only the cup portion of the assembly.

Features

- Internal swivel joint design
- 30° Inclusive angle for flexible products
- Increased stability for horizontal lifts
- Lower maintenance costs
- 60mm to 100mm diameters

Styles

- PUTK series barbed bulkhead
- PUTYS series bulkhead level compensator

Operating information

Cup material	Nitrile	Silicon
Material code	**NBR**	**SI**
Operating temperature	-20°C to 120°C (-4°F to 248°F)	-60° to 250°C (-76°F to 482°F)
Color	Black	White
Hardness, shore A (°Sh)	55 ±5	55 ±5

* ESD: Electric Static Dissipative Material

Application guide

Swivel Bellows

Flat surface, thin section	Flat surface, any section	Slightly bowed surface, thin section	Slightly bowed surface, any section	Metal sheet handling	Not for vertical lift

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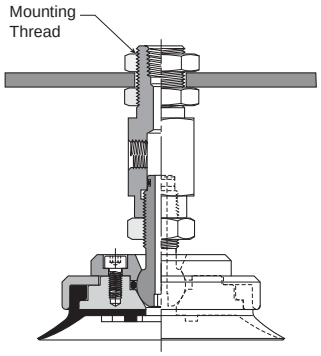
PUTK Series Barbed Bulkhead

Top stem connectors secured with jam nuts and allow tubing connections at the top side. Fitting material: nickel plated brass.

Installation

Note:

When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.



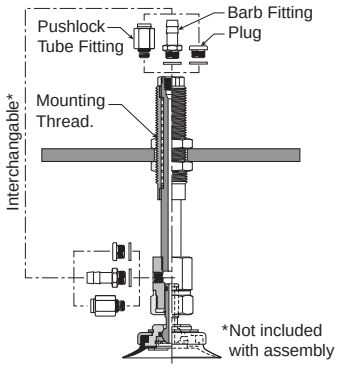
Cup size	Vacum port	Cup material Nitrile assembly (NBR)	Replacement PUGB swivel with cup only	Replacement cup only (NBR)	Cup fitting
60	1/8 NPT	**PUTK-60-NBR-N1**	**PUGB-60-NBR**	**PUG-60-NBR**	**UTK-60-N1**
80	1/8 NPT	**PUTK-80-NBR-N1**	**PUGB-80-NBR**	**PUG-80-NBR**	**UTK-60-N1**
100	1/8 NPT	**PUTK-100-NBR-N1**	**PUGB-100-NBR**	**PUG-100-NBR**	**UTK-60-N1**

PUTYS Series Bulkhead Level Compensator

303 stainless steel construction secured with jam nuts. Spring biased compensators can absorb impacts of down-strokes and adjust for different levels of pick up points. 303 stainless corrosion resistant materials with drymet bushings increases the strength and life.

Installation

Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.
Shown are interchangable connectors & plugs for port connections.



Cup diameter (mm)	Vacum port	Stroke (mm)	Spring compression Force lbf (N) 0%	100%	PUTYS assemlby (NBR)	Replacement PUGB swivel with cup only	Replacement cup only NBR	Level compensator P/N
60	1/8 NPT	30	1.6 (6.8)	3.6 (15.6)	**PUTYS6030NBRN1**	**PUGB-60-NBR**	**PUG-60-NBR**	**UTYS-60-30**
60	1/8 NPT	50	1.9 (8.3)	4.5 (19.6)	**PUTYS6050NBRN1**	**PUGB-60-NBR**	**PUG-60-NBR**	**UTYS-60-50**
80	1/8 NPT	30	1.6 (6.8)	3.6 (15.6)	**PUTYS8030NBRN1**	**PUGB-80-NBR**	**PUG-80-NBR**	**UTYS-60-30**
80	1/8 NPT	50	1.9 (8.3)	4.5 (19.6)	**PUTYS8050NBRN1**	**PUGB-80-NBR**	**PUG-80-NBR**	**UTYS-60-50**
100	1/8 NPT	30	1.6 (6.8)	3.6 (15.6)	**PUTYS10030NBRN1**	**PUGB-100-NBR**	**PUG-100-NBR**	**UTYS-60-30**
100	1/8 NPT	50	1.9 (8.3)	4.5 (19.6)	**PUTYS10050NBRN1**	**PUGB-100-NBR**	**PUG-100-NBR**	**UTYS-60-50**

☐ **Most popular.**

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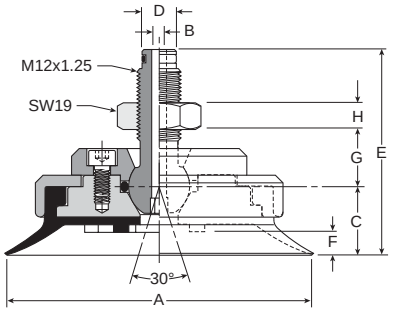
PUGB Series Barbed Bulkhead Dimensions

PUGB-60 thru
PUGB-100

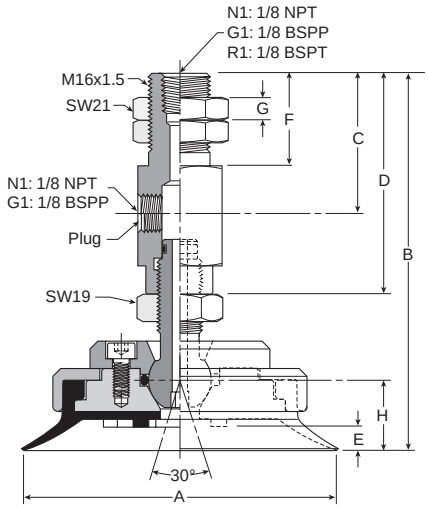


Model number	ØA	ØB	C	ØD	E	F	G	H
PUGB-60-*	2.36 (60)	.15 (3.9)	.63 (16)	.35 (9)	2.05 (52)	.20 (5)	.59 (15)	.28 (7)
PUGB-80-*	3.15 (80)	.15 (3.9)	.71 (18)	.35 (9)	2.13 (54)	.24 (6)	.59 (15)	.28 (7)
PUGB-100-*	3.94 (100)	.15 (3.9)	.71 (18)	.35 (9)	2.13 (54)	.24 (6)	.59 (15)	.28 (7)

Inches (mm)
* Cup material

PUTK Series Barbed Bulkhead Dimensions

PUTK-60 thru
PUTK-100



Model number	ØA	B	C	D	E	F	G	H	Wt oz (g)
PUTK-60-*	2.36 (60)	3.66 (93)	.63 (16)	1.89 (48)	.20 (5)	.91 (23)	.24 (6)	.63 (16)	12.4 (352)
PUTK-80-*	3.15 (80)	3.74 (95)	1.38 (35)	2.16 (55)	.24 (6)	.91 (23)	.24 (6)	.71 (18)	15.7 (444)
PUTK-100-*	3.94 (100)	3.74 (95)	1.38 (35)	2.16 (55)	.24 (6)	.91 (23)	.24 (6)	.71 (18)	20.0 (568)

Inches (mm)
* Cup material

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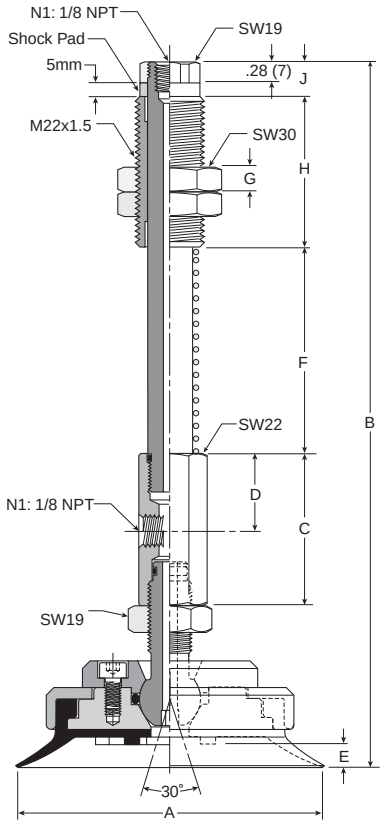
Dimensions

PUTYS60 thru PUTYS100



Model number	ØA	B	C	D	E	F	G	H	J	Wt oz (g)
PUTYS6030*	2.36 (60)	7.28 (185)	1.57 (40)	.79 (20)	.20 (5)	1.77 (45)	.39 (10)	1.97 (50)	.47 (12)	17.2 (487)
PUTYS6050*	2.36 (60)	8.27 (210)	1.57 (40)	.79 (20)	.20 (5)	2.76 (70)	.39 (10)	1.97 (50)	.47 (12)	18.4 (521)
PUTYS8030*	3.15 (80)	7.36 (187)	1.57 (40)	.79 (20)	.24 (6)	1.77 (45)	.39 (10)	1.97 (50)	.47 (12)	19.7 (559)
PUTYS8050*	3.15 (80)	8.35 (212)	1.57 (40)	.79 (20)	.24 (6)	2.76 (70)	.39 (10)	1.97 (50)	.47 (12)	20.1 (595)
PUTYS10030*	1.18 (30)	7.36 (187)	1.57 (40)	.79 (20)	.24 (6)	1.77 (45)	.39 (10)	1.97 (50)	.47 (12)	25.7 (729)
PUTYS10050*	1.18 (30)	8.35 (212)	1.57 (40)	.79 (20)	.24 (6)	2.76 (70)	.39 (10)	1.97 (50)	.47 (12)	26.7 (756)

Inches (mm)
* Cup material

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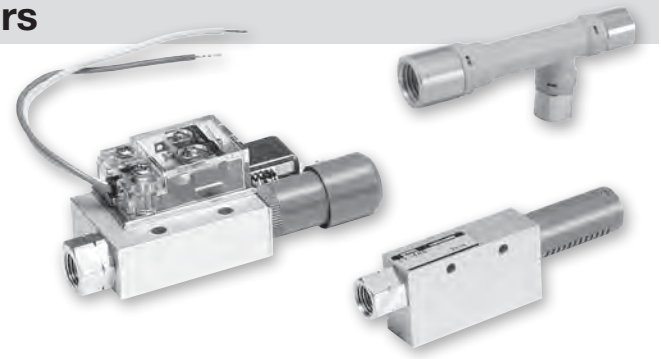
MCA, CV, CV-CK Vacuum Generators

Parker Inline Single Stage Vacuum Generators is a compact design offering multiple vacuum flow ranges in 3 styles. These Generators are meant to be mounted near the vacuum application for improved vacuum response time. A Normally Open or Normally Closed 3 way valve can be used to control the supply pressure to obtain up to a 27 Inhg degree of vacuum.



Features

- **MCA:**
  - light weight vacuum generator
  - vacuum flow rates to 1.26 SCFM
- **CV:**
  - basic aluminum body generator with exhaust muffler
  - vacuum flow rates to 12.36 SCFM
  - degree of vacuum to 27 inHg
- **CV-CK**
  - basic aluminum body generator with mechanical vacuum switch
  - vacuum flow rates to 5.85 SCFM
  - degree of vacuum to 27 inHg

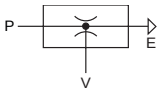
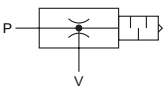
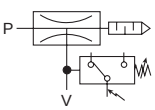
Operating information

Media:	Non-lubricated air, non-corrosive gases
Operating pressure:	14 to 114 PSI
Operating temperature:	32° to 120°F (0°C to 49°C) (MCA, CV); 32 to 140°F (0°C to 60°C) (CV-CK)
CV-CK Switch:	
Hysteresis:	1.1 to 3.9 inHg
Switch output:	N.O., AC125V; 5A, AC250V: 3A, DC250V: 0.2A

Material specifications

MCA	Polycarbonate, Aluminum fittings
Body	Aluminum (CV, CV-CK)
Nozzle	Nickel plated brass (CV, CV-CK)

MCA, CV, CV-CK Vacuum Generators

Symbol	Port size Pressure	Vacuum	Exhaust	Max. vacuum flow SCFM	Air consumption SCFM	Max. degree of vacuum inHg	Part number NPT	BSPP
MCA Series 	1/8	1/8	1/4	1.68	1.68	24	**MCA10HSN1N1N2**	**MCA10HSG1G1N2**
	1/8	1/8	1/4	2.81	2.81	24	**MCA13HSN1N1N2**	**MCA13HSG1G1G2**
CV Series	1/8	1/8	Muffler	0.21	0.46	27	**CV05HSN**	**CV05HSG**
	1/8	1/8	Muffler	0.32	0.46	17	**CV05LSN**	**CV05LSG**
	1/8	1/8	Muffler	0.95	1.55	27	**CV10HSN**	**CV10HSG**
	1/8	1/8	Muffler	1.27	1.55	17	**CV10LSN**	**CV10LSG**
	1/4	3/8	Muffler	2.22	3.53	27	**CV15HSN**	**CV15HSG**
	1/4	3/8	Muffler	3.35	3.53	17	**CV15LSN**	**CV15LSG**
	1/4	3/8	Muffler	3.88	6.36	27	**CV20HSN**	**CV20HSG**
	1/4	1/2	Muffler	5.85	6.36	17	**CV20LSN**	**CV20LSG**
	3/8	1/2	Muffler	5.65	9.36	27	**CV25HSN**	**CV25HSG**
	3/8	1/2	Muffler	8.83	9.36	17	**CV25LSN**	**CV25LSG**
	1/2	3/4	Muffler	7.94	13.60	27	**CV30AHSN**	**CV30AHSG**
	1/2	3/4	Muffler	12.36	13.60	17	**CV30ALSN**	**CV30ALSG**
CV-CK Series 	1/8	1/8	—	0.95	1.55	27	**CV10HSCKN**	**CV10HSCKG**
	1/4	1/4	—	2.22	3.53	27	**CV15HSCKN**	**CV15HSCKG**
	1/4	3/8	—	3.88	6.36	27	**CV20HSCKN**	**CV20HSCKG**

☐ Most popular.

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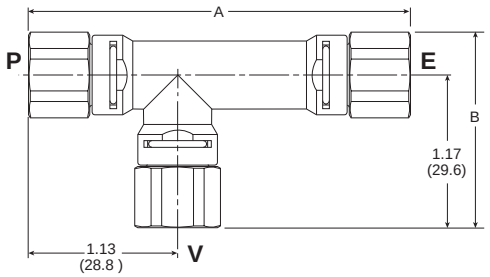
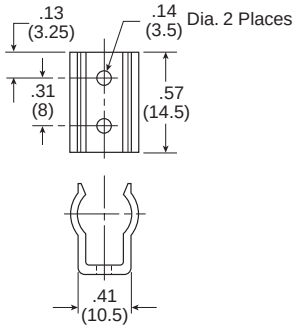
Dimensions

MCA



MCA Mounting bracket: MCA-B

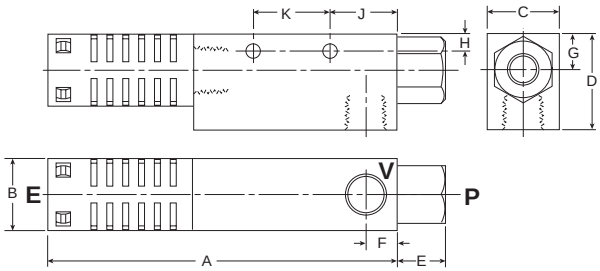


MCA****N1N1N2

Part number	A	B
MCA10HS******	2.76 (70)	1.16 (29.5)
MCA13HS******	2.76 (70)	1.16 (29.5)

Inches (mm)

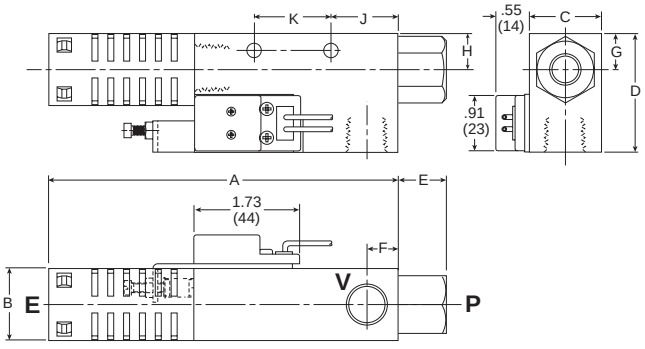
CV



Part number	A	B	C	D	E	F	G	H	J	K
CV05HS/LS	3.19 (81)	.73 (18.5)	.63 (16)	1.30 (33)	.39 (10)	.31 (8)	.39 (10)	.18 (4.5)	.55 (14)	.79 (20)
CV10HS/LS	3.19 (81)	.73 (18.5)	.63 (16)	1.30 (33)	.39 (10)	.31 (8)	.39 (10)	.18 (4.5)	.55 (14)	.79 (20)
CV15HS/LS	4.27 (108.5)	.79 (20)	.79 (20)	1.38 (35)	.59 (15)	.39 (10)	.43 (11)	.20 (5)	.79 (20)	.98 (25)
CV20HS/LS	5.73 (145.5)	1.18 (30)	1.18 (30)	1.57 (40)	.79 (20)	.51 (13)	.59 (15)	.28 (7)	1.10 (28)	1.26 (32)
CV25HS/LS	7.72 (196)	1.57 (40)	1.57 (40)	2.36 (60)	.67 (17)	.63 (16)	.79 (20)	.22 (5.5)	.79 (20)	1.97 (50)
CV30AHS/ALS	8.43 (214)	1.57 (40)	1.57 (40)	2.36 (60)	.79 (20)	.79 (20)	.79 (20)	.22 (5.5)	1.30 (33)	1.97 (50)

Inches (mm)

CV-CK



Part number	A	B	C	D	E	F	G	H	J	K
CV10HS/LSCK	3.19 (81)	.73 (18.5)	.63 (16)	1.30 (33)	.39 (10)	.31 (8)	.39 (10)	.18 (4.5)	17 (4.2)	.79 (20)
CV15HS/LSCK	4.27 (108.5)	.79 (20)	.79 (20)	1.38 (35)	.59 (15)	.39 (10)	.43 (11)	.20 (5)	.18 (4.5)	.98 (25)
CV20HS/LSCK	5.73 (145.5)	1.18 (30)	1.18 (30)	1.57 (40)	.79 (20)	.51 (13)	.59 (15)	.28 (7)	.24 (6)	1.26 (32)

Inches (mm)

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CHF High Flow Vacuum Generators

CHF- High Flow Series is a multistage vacuum generator. CHF unit is ideal for porous applications.

4 bolt mounting pattern with gauge opposite of vacuum and pressure inlet ports enables this generator to be panel mounted.

CHF Series comes standard with flow thru exhaust mufflers to reduce clogging in dirty environments. Additional Pneumatic Control Valve is required to create vacuum flow.

Features

- Classic multi-stage venturi
- Anodized aluminum body
- Aluminum body includes exhaust muffler
- Maximum vacuum level, 27.3 inHg
- Vacuum flow rates from 12.5 to 31.8 SCFM
- Mounting brackets included

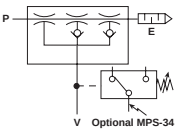
Operating information

Media:	Non-lubricated air, non-corrosive gases
Operating pressure:	80 PSI
Operating temperature:	32°F to 120°F (0°C to 49°C)

Material specifications

Body	Aluminum
Seals	BUNA N
Nozzle & Diffuser	Polymer

CHF High Flow Vacuum Generators

	Port size			Max. vacuum flow SCFM	Air consumption SCFM	Max. degree of vacuum inHg	Part number NPT
	Pressure	Vacuum	Exhaust				
Symbol 	1/4	3/8	Muffler	20.9	6.5	27	**CHF-20ZNE**
	1/4	3/8	Muffler	26.3	9.6	27	**CHF-30ZNE**
	1/4	3/8	Muffler	31.8	14.0	27	**CHF-40ZNE**

Accessories

Port size	Description	Part number
3/8	Filter with 10 micron element	**VFP2CFC01**
1/2		**VFP3CFC01**
3/8	Filter with 10 micron element and 2 replacement elements	**VFP2CFC03**
1/2		**VFP3CFC03**

See Accessories Section for more options

VFP Series filter

Replacement components

Description	Part number
CHF- Repair kit	**SFCHF90NN**
0 to 30 inHg gauge	**266298A**
Bracket kit (Includes 4 brackets & 4 M5 x 15 screws	**SFBW15**
Silencer (flow thru)	**SIS-001**

☐ **Most popular.**

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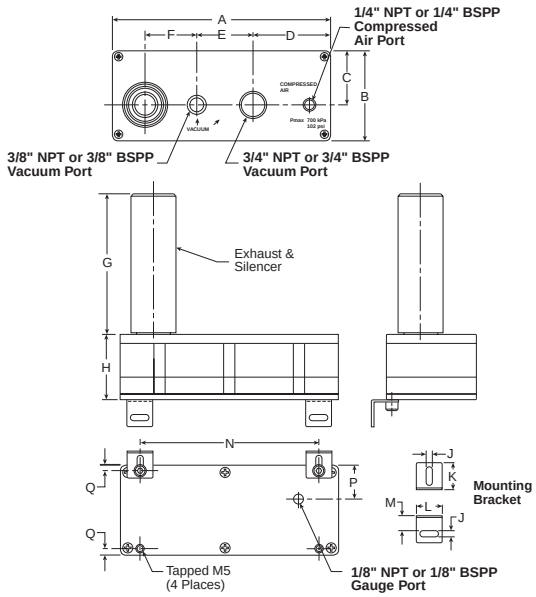
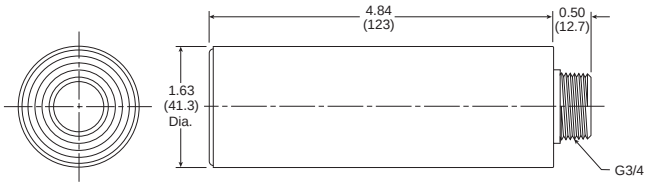
Dimensions



Part number	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	Weight (grams)
CHF-20	7.64 (194)	3.15 (80)	1.89 (48)	2.72 (69)	1.97 (50)	1.81 (46)	4.84 (123)	1.69 (43)	.22 (5.5)	.94 (24)	.91 (23)	.51 (13)	6.26 (159)	1.26 (32)	.20 (5)	875
CHF-30	7.64 (194)	3.15 (80)	1.89 (48)	2.72 (69)	1.97 (50)	1.81 (46)	4.84 (123)	1.69 (43)	.22 (5.5)	.94 (24)	.91 (23)	.51 (13)	6.26 (159)	1.26 (32)	.20 (5)	885
CHF-40	7.64 (194)	3.15 (80)	1.89 (48)	2.72 (69)	1.97 (50)	1.81 (46)	4.84 (123)	2.28 (58)	.22 (5.5)	.94 (24)	.91 (23)	.51 (13)	6.26 (159)	1.26 (32)	.20 (5)	965

Inches (mm)

SIS-001 silencer dimensions



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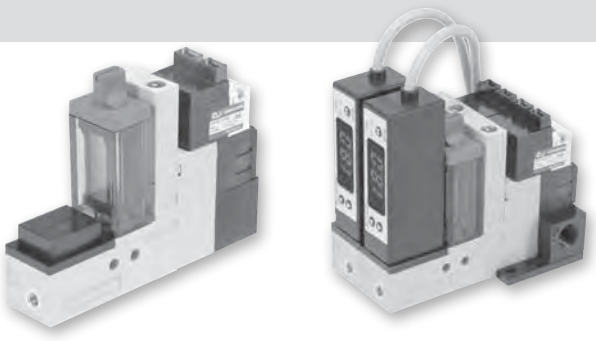
MC22 Vacuum Generators

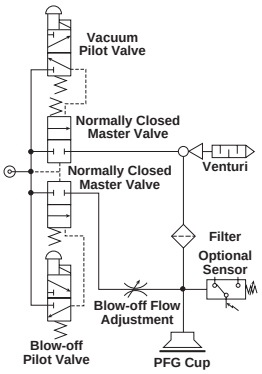
The MC22 is a complete package for factory automation. The MC22 has integrated vacuum generating and blow-off release pilot valves to minimize the response time to achieve vacuum. The small foot print and lightweight body allows the unit to be located close to the suction cup for maximum performance. The MC22 has additional features; regulating blow-off needle, 37 micron mesh filter, and a sensor platform for vacuum confirmation. The MC22 can be assembled into a maximum 8 station manifold. The unit can be ordered normally open or normally closed, with or without MPS-23 or MVS-201 pressure sensors.



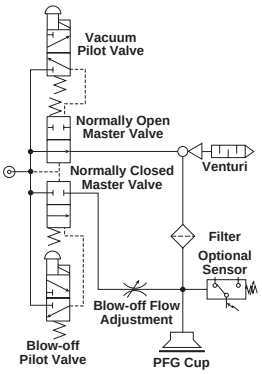
Add-A-Fold Manifold

Features

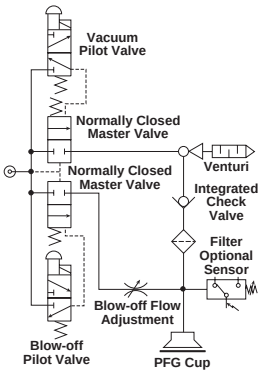
- Vacuum generating pilot valve
- Vacuum blow-off pilot valve
- Vacuum sensor - filter - silencer available
- Regulating blow-off adjustment
- Manifold system
- Short cycle times for high speed pick and place
- Vacuum flow rates to 1.55 SCFM



MC2, Normally Closed Vacuum Valve



MC2, Normally Open Vacuum Valve



MC2, Normally Closed Vacuum Valve with Integrated Check Valve

Operating information

Media	Non-lubricated compressed air, non-corrosive gases
Operating pressure	21 to 84 PSI (1.5 to 6 kgf/cm^2)
Optimum operating pressure	70 PSI (5 kgf/cm^2)
Humidity	35 to 85%
Pressure port	N: 1/8 NPT female, G: 1/8 BSPP female
Vacuum port	M5 female
Operating temperature	41 to 132°F (5 to 50°C)
Material	Aluminum, Polyamide, NBR
Vacuum generating and blow-off release pilot	
Type of control valve	Pilot valve, includes 300mm clip wire connector
Manual operation	Non-locking manual override
Electrical connection	Clip type connector with LED and surge protection
Power supply	24VDC ± 10%
Power consumption	1W
Pressure range	21 to 84 PSI (1.5 to 6 kgf/cm^2)
Pilot valve air supply	Normally closed
Generator weight	4.1 oz. (117G) without sensor
Manifold weight	2-Station: 1.4 oz. (40g), 3-Station: 2 oz. (54g), 4-Station: 2.4 oz. (68g), 5-Station: 2.8 oz. (82g) 6-Station: 3.4 oz. (96g), 7-Station: 3.8 oz. (110g), 8-Station: 4.4 oz. (124g)

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MC2 Unit Without Integrated Check Valve, Normally Closed Vacuum Valve

Port size			Max. vacuum flow	Max. degree of vacuum		Part number	
Pressure	Vacuum	Exhaust	SCFM	inHg	Sensor option	NPT	BSPP
1/8	M5	Muffler	1.55	24	None	**MC22S10HSZL4BLN**	**MC22S10HSZL4BLG**
1/8	M5	Muffler	1.55	24	MPS-V23C-PC. PNP	**MC22S10HS42L4BLN**	**MC22S10HS42L4BLG**
1/8	M5	Muffler	1.55	24	MVS-201-PCP, PNP	**MC22S10HS06L4BLN**	**MC22S10HS06L4BLG**
1/8	M5	Muffler	1.55	24	MPS-V23C-NC, NPN	**MC22S10HS41L4BLN**	**MC22S10HS41L4BLG**
1/8	M5	Muffler	1.55	24	MVS-201-NC, NPN	**MC22S10HS01L4BLN**	**MC22S10HS01L4BLG**

MC2 Unit Without Integrated Check Valve, Normally Open Vacuum Valve

Port size			Max. vacuum flow	Max. degree of vacuum		Part number	
Pressure	Vacuum	Exhaust	SCFM	inHg	Sensor option	NPT	BSPP
1/8	M5	Muffler	1.55	24	None	**MC22S10HSZL4ALN**	**MC22S10HSZL4ALG**
1/8	M5	Muffler	1.55	24	MPS-V23C-PC. PNP	**MC22S10HS42L4ALN**	**MC22S10HS42L4ALG**
1/8	M5	Muffler	1.55	24	MPS-V23C-NC, NPN	**MC22S10HS41L4ALN**	**MC22S10HS41L4ALG**

MC2 Unit With Integrated Check Valve, Normally Closed Vacuum Valve

Port size			Max. vacuum flow	Max. degree of vacuum		Part number	
Pressure	Vacuum	Exhaust	SCFM	inHg	Sensor option	NPT	BSPP
1/8	M5	Muffler	1.55	24	None	**MC22S10HSZLC4BLN**	**MC22S10HSZLC4BLG**
1/8	M5	Muffler	1.55	24	MPS-V23C-PC. PNP	**MC22S10HS42LC4BLN**	**MC22S10HS42LC4BLG**
1/8	M5	Muffler	1.55	24	MVS-201-PCP, PNP	**MC22S10HS06LC4BLN**	**MC22S10HS06LC4BLG**
1/8	M5	Muffler	1.55	24	MPS-V23C-NC, NPN	**MC22S10HS41LC4BLN**	**MC22S10HS41LC4BLG**
1/8	M5	Muffler	1.55	24	MVS-201-NC, NPN	**MC22S10HS01LC4BLN**	**MC22S10HS01LC4BLG**

Add-A-Fold assembly ordering information

Station 1 Station 2

Example 1: Application requires a 2-Station MC22 manifold with NPT supply ports.

Qty.	Part number	Comment
1	AAMC2-M02N	Add-A-Fold
1	MC22S10HS42L4BLN	Station #1
1	MC22S10HS42L4BLN	Station #2
	Alternative Method	
1	AAMC2-M02N	Add-A-Fold
2	MC22S10HS42L4BLN	Station #1-2

☐ **Most popular.**

How to order Add-A-Fold assemblies

1. Manifold assemblies are multiple line item listings.
2. First line item must be the Add-A-Fold assembly part number.
3. Subsequent line items listed identify each station in the manifold starting with station number 1.
4. Station number 1 is the left most generator when looking at the manifold generator ports.
5. List either a part number of the MC22 Generator or a blank plate for each station of the manifold.
6. See model number index code for MC22 Generator number and MC22 accessories for blank plate part numbers.

AAMC2-M08N

Manifold port type
N NPT
G BSPP

Number of stations
M02 2
M03 3
M04 4
M05 5
M06 6
M07 7
M08 8*
* Maximum number of stations

Add-A-Fold assembly
AAMC2

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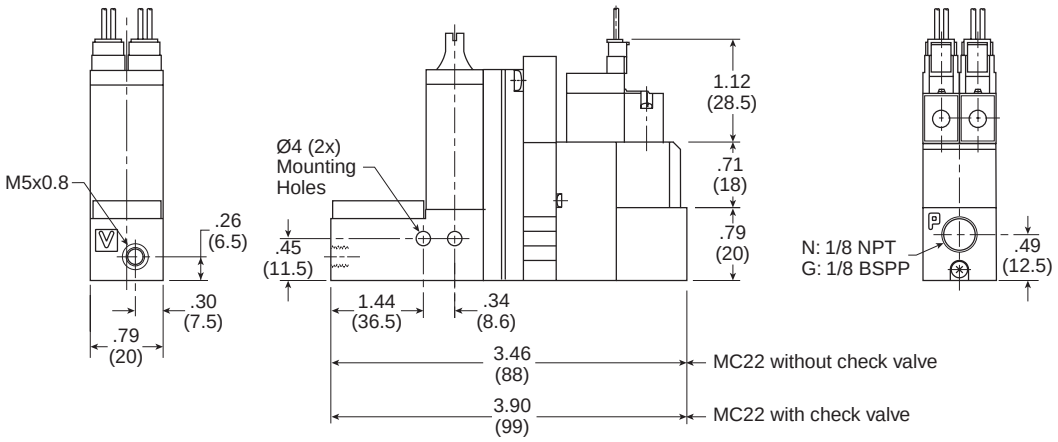
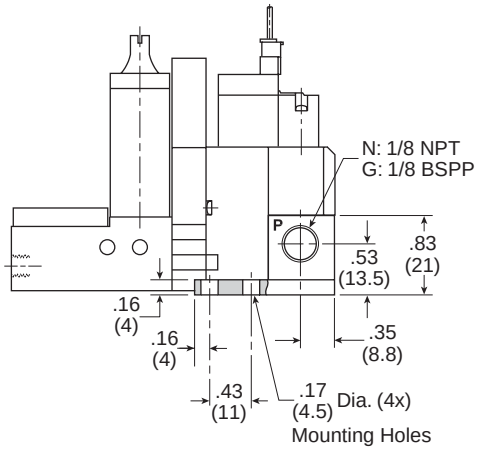
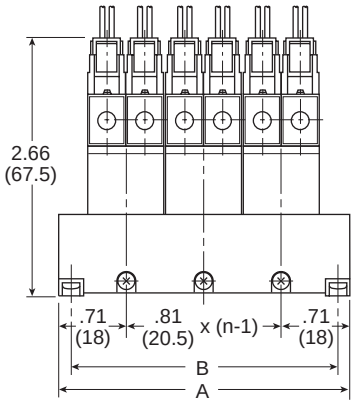
Dimensions



Manifold

3-Station manifold without check valve shown





n	2	3	4	5	6	7	8
A	2.22 (56.5)	3.03 (77)	3.84 (97.5)	4.65 (118)	5.45 (138.5)	6.26 (159)	7.07 (179.5)
B	1.91 (48.5)	2.72 (69.0)	3.52 (89.5)	4.33 (110)	5.14 (130.5)	5.95 (151)	6.75 (171.5)

Inches (mm)
n = Number of stations

Manifold part number

MC2 - M 08 N

Manifold	Stations	Port Size
	02	**N 1/8 NPT**
	03	G 1/8 BSPP
	04	R 1/8 BSPT
	05	
	06	
	07	
	08	

Bold Items are Most Popular.

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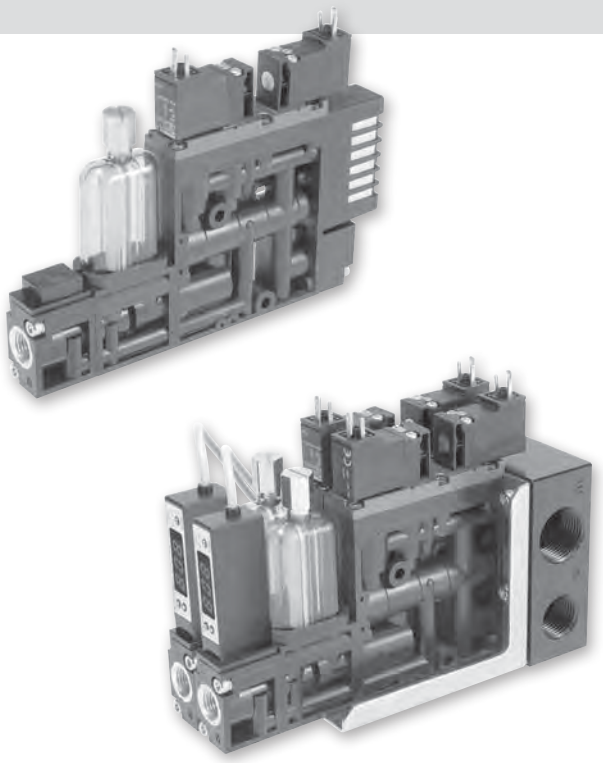
MC72 Vacuum Generators

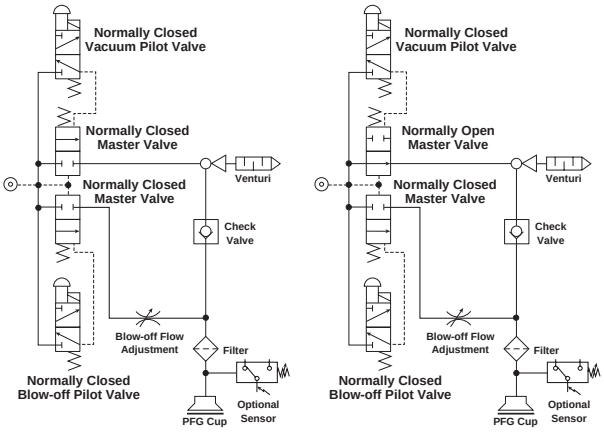
The MC72 Series vacuum generator provides a complete solution for factory automation. The MC72 is perfect for non-porous applications such as material handling, critical applications involving glass, or general transfer applications. The MC72 has integrated vacuum pilot and blow-off release pilot valves to minimize response times. The MC72 has additional features; regulating blow-off needle, 130 micron filter, optional check valve, and a sensor platform for vacuum confirmation. The MC72 can be assembled into a maximum 5 station manifold. The unit can be ordered normally open or normally closed.



Add-A-Fold assembly (Silencer included)

Features

- Vacuum generating pilot valve
- Vacuum release pilot valve option
- Vacuum sensor - filter - silencer available
- Regulating blow-off
- Check valve option
- Air-economizing controls
- Manifold system
- Vacuum flow rates from 2.1 to 5.5 SCFM
- 3-Pin, EN175301-803, 15mm, 8mm 3-Pin



Operating information

Media	Non-lubricated compressed air, non-corrosive gases
Optimum operating pressure	70 PSI (5 kgf/cm^2)
Humidity	35 to 85%
Pressure port	N: 1/4 NPT female, G: 1/4 BSPP female
Vacuum port	N: 1/4 NPT female, G: 1/4 BSPP female
Operating temperature	41 to 132°F (5 to 50°C)
Material	Body (PA and PBT) with other internal components (Brass, Al.NBR, SUS, FKM), filter elements (PVF)
Manual operation	Non-locking manual override
Electrical connection	DIN connector with LED and surge protection, connectors included
Power supply	24VDC ± 10%
Power consumption	1.8W
Operating pressure	70 PSI (5 kgf/cm^2)
Pilot valve air supply	Normally closed
Generator weight	12.0 oz. (340g)
Manifold weight	2-Station: 24 oz. (680g), 3-Station: 31 oz. (880g), 4-Station: 38 oz. (1080g), 5-Station: 45 oz. (1280g)

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Richland, Michigan
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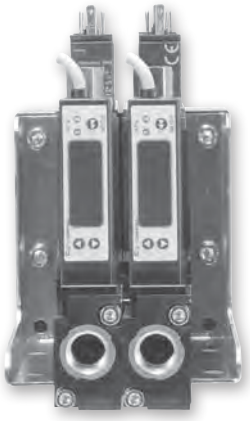
MC72 Unit With Integrated Check Valve, Normally Closed Vacuum Valve

Port size			Max. vacuum flow	Max. degree of vacuum		Part number	
Pressure	Vacuum	Exhaust	SCFM	inHg	Sensor option	NPT	BSPP
1/4	1/4	Muffler	2.20	24	No sensor	**MC72S15HSZSC4BPN**	**MC72S15HSZSC4BPG**
1/4	1/4	Muffler	2.20	24	MPS-V23C-PC, PNP	**MC72S15HS42C4BPN**	**MC72S15HS42C4BPG**
1/4	1/4	Muffler	2.20	24	MVS-201-PCP, PNP	**MC72S15HS06C4BPN**	**MC72S15HS06C4BPG**
1/4	1/4	Muffler	2.20	24	MPS-V23C-NC, NPN	**MC72S15HS41C4BPN**	**MC72S15HS41C4BPG**
1/4	1/4	Muffler	2.20	24	MVS-201-NC, NPN	**MC72S15HS01C4BPN**	**MC72S15HS01C4BPG**
1/4	1/4	Muffler	3.67	24	No sensor	**MC72S20HSZSC4BPN**	**MC72S20HSZSC4BPG**
1/4	1/4	Muffler	3.67	24	MPS-V23C-PC, PNP	**MC72S20HS42C4BPN**	**MC72S20HS42C4BPG**
1/4	1/4	Muffler	3.67	24	MVS-201-PCP, PNP	**MC72S20HS06C4BPN**	**MC72S20HS06C4BPG**
1/4	1/4	Muffler	3.67	24	MPS-V23C-NC, NPN	**MC72S20HS41C4BPN**	**MC72S20HS41C4BPG**
1/4	1/4	Muffler	3.67	24	MVS-201-NC, NPN	**MC72S20HS01C4BPN**	**MC72S20HS01C4BPG**
1/4	1/4	Muffler	5.20	24	No sensor	**MC72S25HSZSC4BPN**	**MC72S25HSZSC4BPG**
1/4	1/4	Muffler	5.20	24	MPS-V23C-PC, PNP	**MC72S25HS42C4BPN**	**MC72S25HS42C4BPG**
1/4	1/4	Muffler	5.20	24	MVS-201-PCP, PNP	**MC72S25HS06C4BPN**	**MC72S25HS06C4BPG**
1/4	1/4	Muffler	5.20	24	MPS-V23C-NC, NPN	**MC72S25HS41C4BPN**	**MC72S25HS41C4BPG**
1/4	1/4	Muffler	5.20	24	MVS-201-NC, NPN	**MC72S25HS01C4BPN**	**MC72S25HS01C4BPG**

MC72 Unit With Integrated Check Valve, Normally Open Vacuum Valve

Port size			Max. vacuum flow	Max. degree of vacuum		Part number	
Pressure	Vacuum	Exhaust	SCFM	inHg	Sensor option	NPT	BSPP
1/4	1/4	Muffler	2.20	24	No sensor	**MC72S15HSZSC4APN**	**MC72S15HSZSC4APG**
1/4	1/4	Muffler	2.20	24	MPS-V23C-PC, PNP	**MC72S15HS42C4APN**	**MC72S15HS42C4APG**
1/4	1/4	Muffler	2.20	24	MPS-V23C-NC, NPN	**MC72S15HS41C4APN**	**MC72S15HS41C4APG**
1/4	1/4	Muffler	3.67	24	No sensor	**MC72S20HSZSC4APN**	**MC72S20HSZSC4APG**
1/4	1/4	Muffler	3.67	24	MPS-V23C-PC, PNP	**MC72S20HS42C4APN**	**MC72S20HS42C4APG**
1/4	1/4	Muffler	3.67	24	MPS-V23C-NC, NPN	**MC72S20HS41C4APN**	**MC72S20HS41C4APG**
1/4	1/4	Muffler	5.20	24	No sensor	**MC72S25HSZSC4APN**	**MC72S25HSZSC4APG**
1/4	1/4	Muffler	5.20	24	MPS-V23C-PC, PNP	**MC72S25HS42C4APN**	**MC72S25HS42C4APG**
1/4	1/4	Muffler	5.20	24	MPS-V23C-NC, NPN	**MC72S25HS41C4APN**	**MC72S25HS41C4APG**

Add-A-Fold assembly ordering information



How to order Add-A-Fold assemblies

1. Manifold assemblies are multiple line item listings.
2. First line item must be the Add-A-Fold assembly part number.
3. Subsequent line items listed identify each station in the manifold starting with station number 1.
4. Station number 1 is the left most generator when looking at the manifold generator ports.
5. List either a part number of the manifold type generator or a blank plate for each station of the manifold.
6. See model number index code for MC72 Generator number and accessories for blank plate part numbers.

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Example 1: Shown above is a 2-Station MC72 manifold with sensors and NPT Ports.

Qty.	Part number	Comment
1	AAMC72-M02N	Add-A-Fold
1	MC72SHS42C4BPN	Station #1
1	MC72SHS42C4BPN	Station #1
	Alternative Method	
1	AAMC72-M02N	Add-A-Fold
2	MC72SHS42C4BPN	Station #1-2

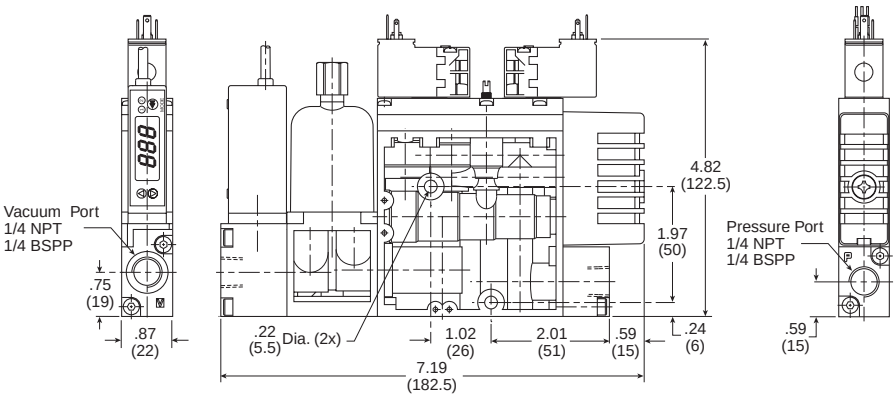
AAMC72-M02N

Port type
N NPT
G BSPP

Number of stations
M02 2
M03 3
M04 4
M05 5*
* Maximum number of stations

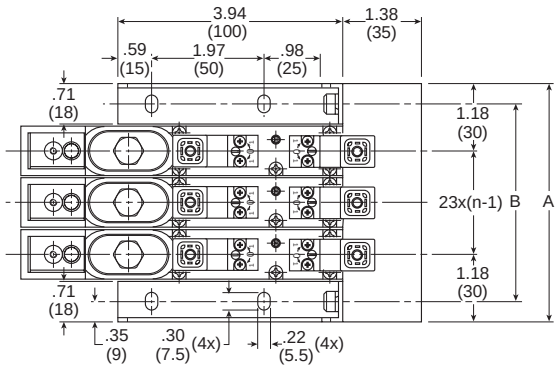
Add-A-Fold assembly
AAMC72

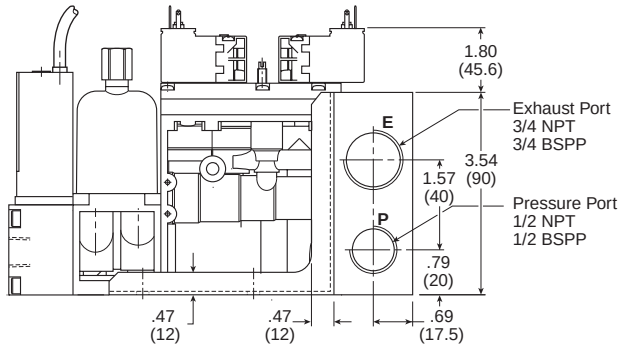
Dimensions



Manifold

3-Station manifold shown





Manifold part number

MC72 - M 05 N

Manifold	Stations	Port Size
	02	**N 1/8 NPT**
	03	G 1/8 BSPP
	04	
	05	

Bold Items are Most Popular.

n	2	3	4	5
A	3.27 (83)	4.17 (106)	5.08 (129)	5.98 (152)
B	2.56 (65)	3.46 (88)	4.37 (111)	5.28 (134)

Inches (mm)
n = Number of Stations

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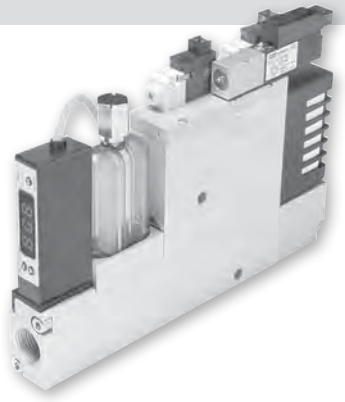
CEK Emergency Stop Vacuum Generators

The CEK is a Normally Closed Vacuum On / Off valve that maintains the last state of air during an emergency stop or power loss. In addition to this, an air-economizing valve has been added to interrupt the air supply by connecting the output signal from the sensor to minimize air consumption.

This unit is ideal for non-porous applications that require fast response of large vacuum and blow-off release flow.

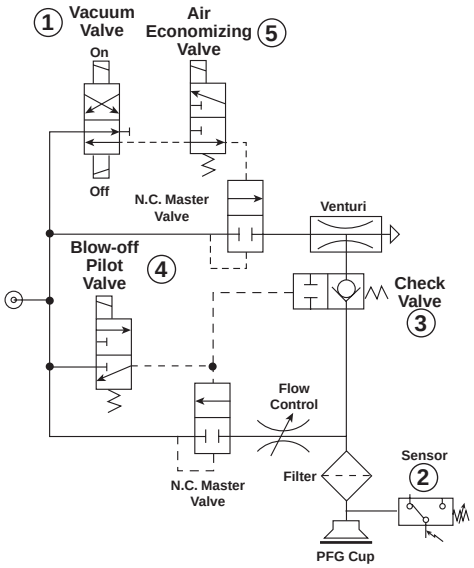
Typically, with a normally closed air circuit, the user controls vacuum with a command signal. During an Emergency Stop Event or power failure event, the vacuum command signal is lost, but, the Vacuum valve (1) remains in the current operating position due to the construction of the valve. The air-economizing valve (5), in a Normally Open configuration, passes the air supply from the Vacuum On / Off valve (1). The Sensor (2) output activates the air-economizing valve (5) closing the air supply to the Normally Closed master valve. The Check Valve (3) maintains the achieved vacuum level until the hysteresis value of the Sensor (2) is reached or when the Vacuum valve (1) has been returned to the closed position to stop the vacuum operation.



Features

- Integrated double solenoid for last state
- Integrated vacuum pilot
- Integrated blow-off pilot
- Integrated filter, silencer
- Air economizing capabilities
- Manifolds for up to 5 units

Valve controlled emergency stop circuit



Model numbers

Nozzle size	Maximum degree of vacuum	Sensor option	Valve option	Part number
1.5mm	27 inHg	No Sensor	24 VDC, PNP	CEK15HSZC24PBLN
		MPS-V23 (NPN)	24 VDC, NPN	CEK15HS41C24NBLN
		MPS-V23 (PNP)	24 VDC, PNP	CEK15HS42C24PBLN
2.0mm	27 inHg	No Sensor	24 VDC, PNP	CEK20HSZC24PBLN
		MPS-V23 (NPN)	24 VDC, NPN	CEK20HS41C24NBLN
		MPS-V23 (PNP)	24 VDC, PNP	CEK20HS42C24PBLN
2.7mm	27 inHg	No Sensor	24 VDC, PNP	CEK27HSZC24PBLN
		MPS-V23 (NPN)	24 VDC, NPN	CEK27HS41C24NBLN
		MPS-V23 (PNP)	24 VDC, PNP	CEK27HS42C24PBLN

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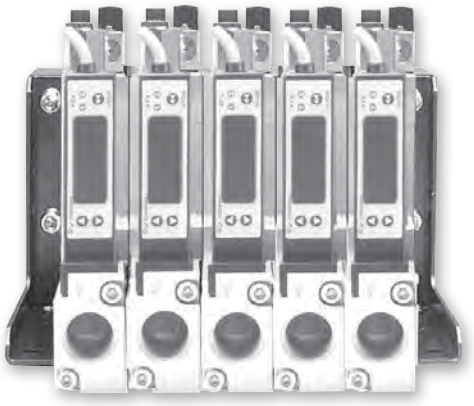
Operating information

Media	Non-lubricated compressed air, non-corrosive gases	
Operating pressure	70 PSI (5 kgf/cm²)	
Humidity	35 to 85%	
Pressure port	N: 1/4 NPT female, G: 1/4 BSPP female	
Vacuum port	N: 3/8 NPT female, G: 3/8 BSPP female	
Operating temperature	41 to 132°F (5 to 50°C)	
Material	Aluminum, Brass, NBR	
Air-economizing valve and blow-off release pilot		**Emergency stop valve**
Type of control valve	Pilot valve	Double solenoid
Manual operation	Manual override	Manual overrides
Electrical connection	Clip connector with LED and surge	Clip connector with LED and surge
Power supply	24VDC ± 10%	24VDC ± 10%
Power consumption	0.9W	0.9W
Operating pressure	70 PSI (5 kgf/cm²)	70 PSI (5 kgf/cm²)
Air supply	Normally closed	Normally closed
Generator weight	26.3 oz. (750g)	
Manifold weight	2-Station: 24 oz. (680g), 3-Station: 31 oz. (880g), 4-Station: 38 oz. (1080g), 5-Station: 45 oz. (1280g)	

Add-A-Fold assembly ordering information



Example 1: Shown above is a 5-Station CVK manifold with sensors and NPT Ports.

Qty.	Part number	Comment
1	AACEK-M04N	Add-A-Fold
1	CEK15HS21C24NBLN	Station #1
1	CEK15HS21C24NBLN	Station #2
1	CEK20HS21C24NBLN	Station #3
1	CEK20HS21C24NBLN	Station #4
1	CEK27HS21C24NBLN	Station #5
	Alternative Method	
1	AACEK-M04N	Add-A-Fold
2	CEK15HS21C24NBLN	Station #1-2
2	CEK20HS21C24NBLN	Station #3-4
1	CEK27HS21C24NBLN	Station #5

How to order Add-A-Fold assemblies

1. Manifold assemblies are multiple line item listings.
2. First line item must be the Add-A-Fold assembly part number.
3. Subsequent line items listed identify each station in the manifold starting with station number 1.
4. Station number 1 is the left most generator when looking at the manifold generator ports.
5. List either a part number of the manifold type generator or a blank plate for each station of the manifold.
6. See model number index code for CEK Generator number and accessories for blank plate part numbers.

AACEK-M05N

Port Type
N NPT
R BSP
G BSPP

Number of Stations
M02 2
M03 3
M04 4
M05 5*
* Maximum Number of Stations

Add-A-Fold Assembly
AACEK

Manifold part number

MC72 - M 05 N

Manifold	Stations	Port Size
	02	**N 1/8 NPT**
	03	G 1/8 BSPP
	04	
	05	

Bold Items are Most Popular.

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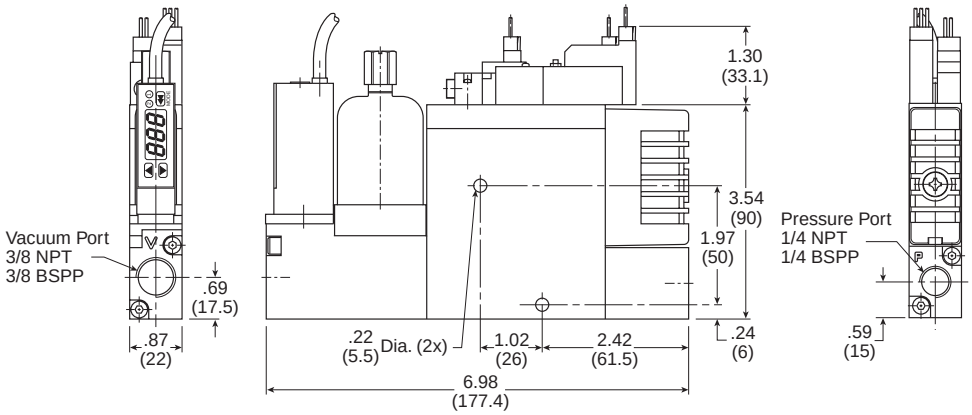
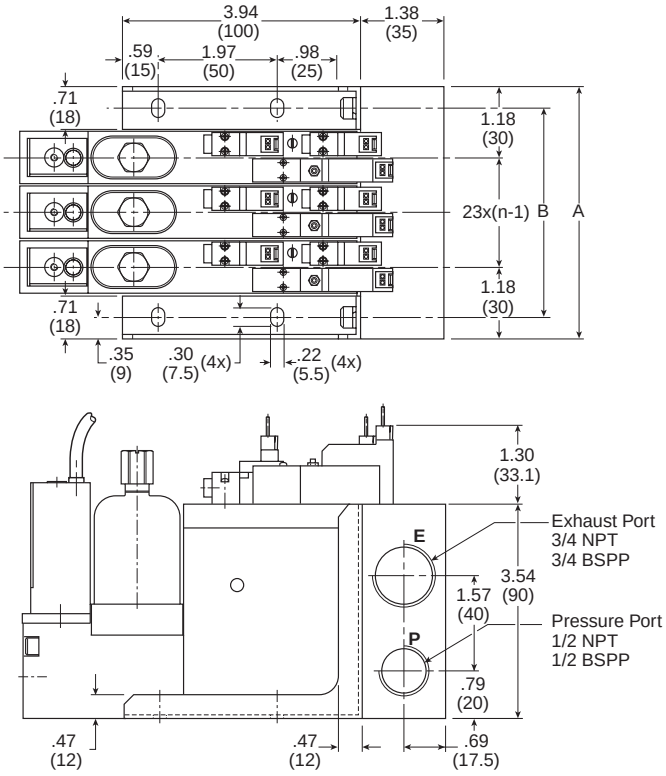
Dimensions



Manifold

3-Station manifold shown



n	2	3	4	5
A	3.27	4.17	5.08	5.98
	(83)	(106)	(129)	(152)
B	2.56	3.46	4.37	5.28
	(65)	(88)	(111)	(134)

Inches (mm)
n = Number of stations

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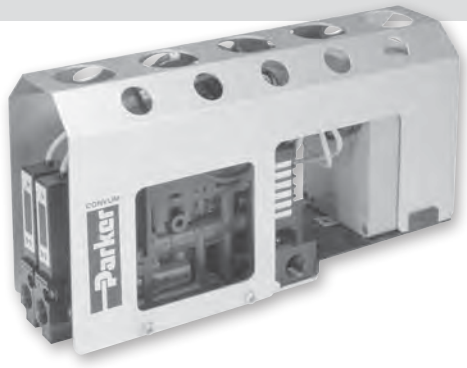
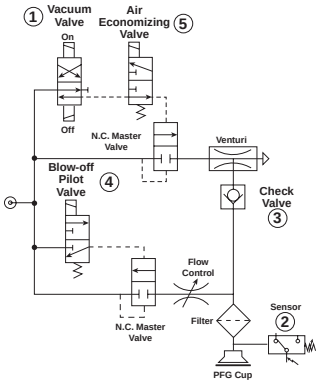
CVXCEK Vacuum Generators

The CVXCEK vacuum generator creates vacuum and blow-off pressure in a vacuum system and has additional Air-economizing and emergency operating system functions.

Each CVXCEK unit consists of 2 independent vacuum generators labeled channel 1 and channel 2. Each vacuum generator has a vacuum ON / OFF solenoid pilot valve, blow-off solenoid pilot valve, Air-Economizing valve, blow-off needle control valve, pressure sensor, vacuum check valve, vacuum filter, and exhaust filter. Each Vacuum Generator is mounted to a 2-Station bar manifold with an optional electrical mounting kit. The pressure provided to inlet port of the bar manifold is common to both vacuum generators.





Features

- Integrated double solenoid for hold last state conditions
- Integrated vacuum pilot
- Integrated blow-off pilot
- Integrated filter, silencer
- Air economizing capabilities

General operation of CVXCEK vacuum units

A vacuum generator is a single stage Venturi that creates vacuum pressure using compressed air. In principle, compressed air is throttled as the air exits the nozzle and is discharged into the diffuser. This increased velocity of air lowers the pressure in the diffusion chamber. The volume of air within the closed vacuum system flows into the low-pressure area of the diffusion chamber and is exhausted thru the diffuser. This effect increases the vacuum level and evacuates most of the air within the closed vacuum. The vacuum generator will produce the specified degrees of vacuum as cataloged if the vacuum system is closed, inlet pressure is to design pressure, and there are no major restrictions in the exhaust flow.

Vacuum is created when the unit receives a momentary or maintained command vacuum “ON” signal, (high signal is sent to Vacuum Pilot Valve (1). Once a preset vacuum degree (P-1) of the pressure sensor (2) is achieved, the Air-Economizing Valve is enabled to conserve compressed air. The vacuum level will be maintained by the Check Valve (3) until (P_2). At this point vacuum is turned back “ON” until the switch point (P-1) is achieved again. This cycle, which is called Air-economizing, will repeat until a blow-off signal is sent to the unit. When the Blow-off Pilot Valve (4) is activated to decay the vacuum pressure, the unit will release the part. Command vacuum “ON” should be turned “OFF” when command blow-off is turned “ON”. The Emergency Stop operating system provides Air-Economizing or maximum degree of vacuum at the time of disruption of Input and Output Power.

Model Number Index

CVXCEK | **27** | **D3** | **2** | **49** | **N** | **B**

Nozzle Diameter	
27	**27HS 2.5mm**

Electrical Enclosure	
D1	M12, 110VAC
D3	**M12, 24VDC, PNP**
D4	M12, 110VAC, w/ Mtg. Plate
D6	M12, 24VDC, PNP w/ Mtg. Plate
N1	M18, 110VAC
N3	**M18, 24VDC, PNP**
N4	M18, 110VAC, w/ Mtg. Plate
N6	M18, 24VDC, PNP w/ Mtg. Plate

Number of Channels	
1	Generator w/ Blanking Plate
2	**Generators**

Voltage	
49	**24VDC**
53	110VAC

Port Threads	
N	**NPT**
G	BSPP

Engineering Level	
B	**Current**

Bold Items are Most popular.

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Operating information

Media	Non-lubricated compressed air, non-corrosive gases
Operating pressure	70 PSI
Humidity	35 to 85%
Pressure port	N: 1/4 NPT female, G: 1/4 BSPP female
Vacuum port	N: 3/8 NPT female, G: 3/8 BSPP female
Operating temperature	41 to 132°F (5 to 50°C)
Material	Body (PA and PBT) with other internal components (Brass, Al.NBR, SUS, FKM), filter elements (PVF)

Air-economizing valve and blow-off release pilot		**Vacuum pilot valve**	**Sensors**
Type of control	Single solenoid	Double solenoid	MPS-23 Pressure Sensor
Manual operation	Manual override	Manual overrides	N/A
Electrical connection	Clip connector	Clip connector	M8, 4-pin
Power supply*	24VDC ± 10%	24VDC ± 10%	10.8 to 30VDC
Solenoid power consumption	0.6W with LED and surge	2.0W with LED and surge	55mA
Operating pressure	70 PSI	70 PSI	-14.7 PSI to 72.5 PSI
Air supply	Normally closed	Normally closed	N/A
Manifold weight	1-Station: 49 oz. (1404g), 2-Station: 63 oz. (1787g)		

* 110VAC units use 24VDC solenoids and sensors.

Performance

Series / nozzle diameter	Nozzle diameter (mm)	Vacuum degree at 70 PSI (inHg)	Vacuum flow per channel (SCFM)	Air consumption per channel (SCFM)
CVXCEK27	2.5	24	5.20	10.41

Evacuation time

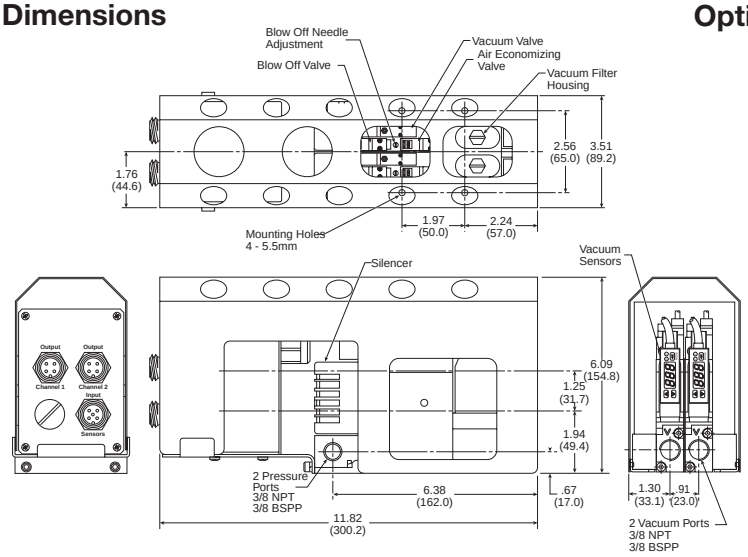
Series / nozzle diameter	Air supply pressure PSI	Air consumption per channel SCFM	Evacuation time per channel in sec / ft³ * to reach different vacuum levels (inHg)								
			3	6	9	12	15	18	21	24	27
CVXCEK27	70	10.42	0.66	2.19	3.29	6.14	9.3	14.55	23.21	46.13	—

* 1 ft³ = 28.31 liters

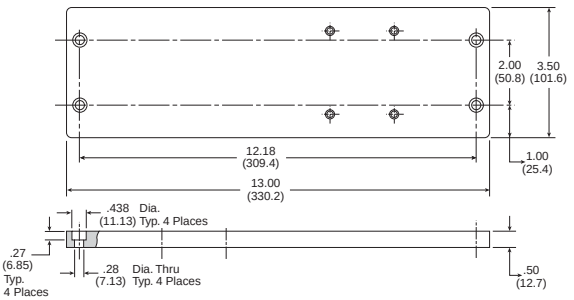
Vacuum flow (SCFM)

Nozzle diameter	inHg										
	0	3	6	9	12	15	18	21	24	27	30
25HS	5.20	4.61	4.01	3.41	2.82	2.22	1.63	1.04	0.46	—	—

Dimensions



Optional mounting plate



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MPS-23 1-Color Generator Mount

Features

- Pressure range:
  Vacuum pressure: 0 to -30 inHg
- Sensor output:
  2 NPN or PNP open collector
  Transistor output, 30VDC, 125mA
- Switch Point and Window Comparator Mode
- Selectable units of measure
- Output response time less than 2.0 milliseconds
- RoHS
- Air and non-corrosive gases
- Error message

MPS-23 Sensor Only Ordering Numbers

Pressure range	Port thread	Electrical output	Electrical connection	Part number
0-30 inHg	Ejector mount	(2) PNP	M8 on 1M cable, 4-pin	**MPS-V23C-PC**
0-30 inHg	Ejector mount	(2) NPN	M8 on 1M cable, 4-pin	**MPS-V23C-NC**

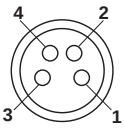
MPS-23 Accessories

M8, 4-pin, 2 meter cable	**CB-M8-4P-2M-PUR**
M8, 4-pin, 5 meter cable	**CB-M8-4P-5M-PUR**

Sensor pin out

Pin #

1 Brown: 24VDC
2 White: PNP/NPN Open Collector Output 2
3 Blue: 0VDC
4 Black: PNP/NPN Open Collector Output 1

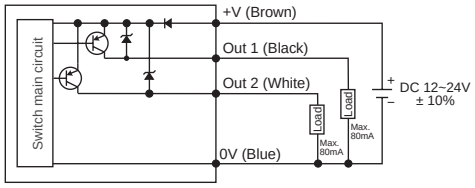


Programming options

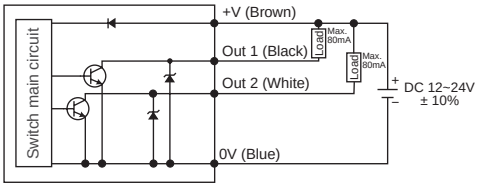
Outputs change N.O. / N.C.	✔
Units of measure change	✔
Hysteresis mode	✔
Window comparator mode	✔
Auto teach mode	✔
Output response time	✔
Lockout option	✔
Password lockout	–
Max. value display	✔
Min. value display	✔
Zero reset	✔
Error output mode	✔

Internal circuit for open collector and analog output wiring

PNP Output



NPN Output



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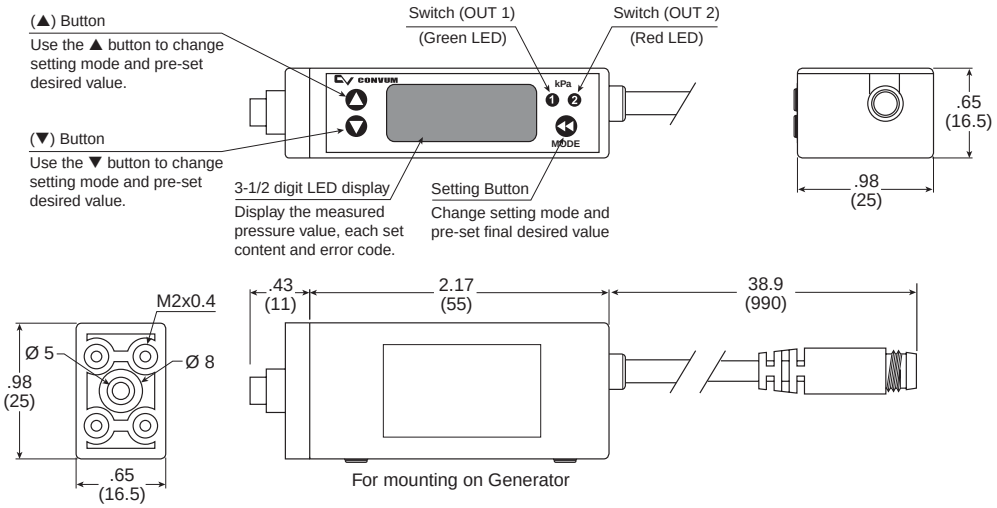
Operating information

Pressure range	-101.3 - 0 kPa (-14.5 to 0 PSI)
Proof pressure	0.3 Mpa (44 PSI)
Display resolution, Units of measure	0.1, kPa 0.001, kgf/cm^2 0.001, bar 0.01, PSI 0.1, inHg 1, mmHg 0.1, mmH_2O
Media	Air & non-corrosive gases, incombustible gases
Pressure port	Generator mount only
Operating temperature	32 to 122°F (0 to 50°C)
Storage temperature	-4 to 140°F (-20 to 60°C)
Humidity	40 - 85% RH (no condensation)
Electrical connection	**(C)** 4-pin, M8 connector on 1M lead wire
Power supply	12 to 24VDC ±10% or less, Ripple (Vp-p) 10% or less
Display	3 + 1/2 digit, 1 color, 7-segment RED LED
Display refresh	.1 to 3.0 Seconds, Variable (factory set at 0.1)
Control output	NPN (Sinking), PNP (Sourcing), Open collector, max 80mA, 2 output
Switch output	Output signal, NPN or PNP, Normally open or closed, LED indicator
Output indicator	Green LED (OUT1), Red LED (OUT2)
Output modes	Hysteresis or Window Comparator
Response time	≤ 2.5ms (chattering-proof function: 24ms, 192ms, 786m selections)
Repeatability	± 0.2% of F.S. ± 1 digit or less
Thermal error	≤ ± 2% of F.S. or less at range of 32 to 122°F (0 to 50°C)
General protection	IP40, CE marked, EMC-EN61000-6-2: 2001
Current consumption	<55mA
Vibration resistance	10 to 150Hz, Double amplitude 1.5mm, XYZ, 2 hrs.
Shock resistance	980 m/s^2 (about 10G), 3 times/each directions X, Y, Z
Noise resistance	Vp-p400V, 10 ms, 0.5µs noise simulator
Material	Housing: ABS (black) , Pressure port: Zinc die-cast, Diaphragm: Silicon
Mass	2 oz. (65g) (including 1m cable)

Dimensions

Generator mount



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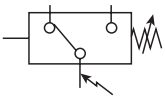
MVS-201 Integrated Generator Sensor

The MVS-201 is a winning combination with the MC2, CVR-2, and CVK vacuum generators. The MVS-201 automatically provides an output signal for the blow-off function without the need of an additional output from the PLC. Begin the vacuum cycle with an output signal from the PLC to the "201" sensor. The "201" sensor has one NPN or PNP output for vacuum confirmation and a control output that interfaces directly with the blow-off release pilot valve. With programmable time control features and a special chip driver, the sensor automatically activates the blow-off release when the NPN or PNP vacuum signal from the PLC is discontinued. This eliminates, THE PREVIOUSLY REQUIRED, PLC output to activate the blow-off release This technology eliminates PLC output requirements by 50% and reduces installation to a simple 4 wire system by wiring the sensor only. There are 3 modes of operation for various applications. The output response time of the sensor is less than 2.5 msec. Peak limit prevention maintenance feature is automatically recorded internally.

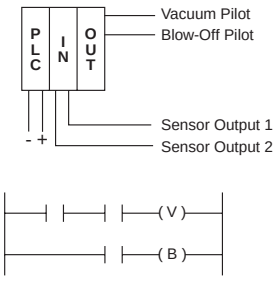


For use with MC22 / MC72 generators

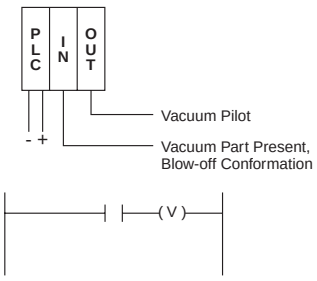
Features

- Time controlled sensor
- Intelligent simple 4-wire system
- Eliminate I/O for release valve
- 2 functions with one rung of code
- Automatic timer (0-9.9 Sec.) function by sensor control driver for vacuum generating and release valves
- Peak value preventative maintenance confirmation
- Response time less than 2 milliseconds

Basic PLC System



PLC System with 201 Sensor



Programming options

Outputs change N.O. / N.C.	✔
Units of measure change	✔
Hysteresis mode	✔
Lockout option	✔
Zero reset	✔
Energy savings mode	✔
Air conservation / blow-off timer	✔
Vacuum timer option	✔
Signal controlled vacuum	✔
Blow-off activation timer	✔
Blow-off timer	✔
Vacuum confirmation signal	✔
Blow-off confirmation signal	✔
Peak vacuum error message	✔
Vacuum response error message	✔
Blow-off time error message	✔

MVS-201 Ordering Numbers

Pressure range	Output circuit	Input circuit	Electrical connector *	Part number
-14.7 to 72.5 PSI	PNP sourcing	PNP sourcing	4 Pin, M8	**MVS-201-PCP**
	NPN sinking	NPN sinking		**MVS-201-NC**

* Requires sensor to valve electrical connector

Note:
Output Circuit provides vacuum and blow-off confirmation signal (Input Signal to PLC).
Input Circuit controls vacuum solenoid valve (Output Signal from PLC).

Sensor to valve electrical connector

Generator series	Sensor connection	Valve connection	Part number
MC22	5 Pin Clip Type	2 with clip type	**MC22-C201G**
MC72		2 wire leads	**CVK-D201G**

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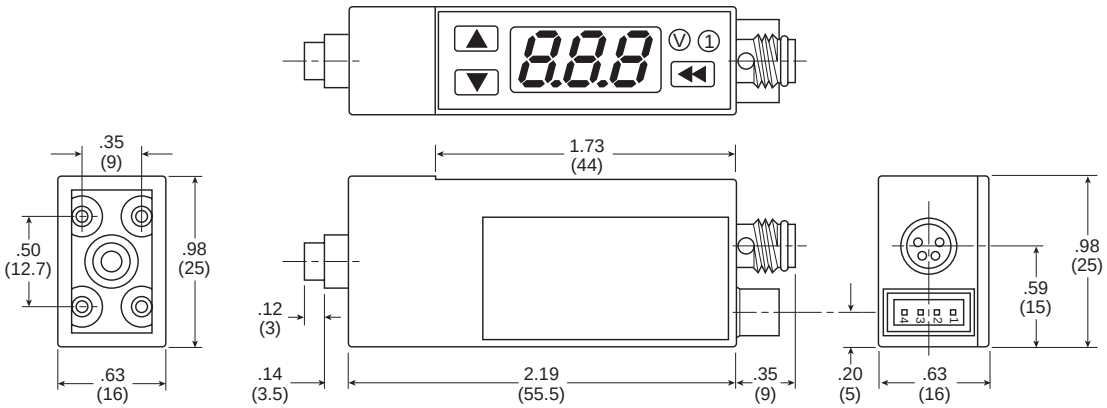
Operating information

Pressure range	Compound pressure: -14.7 to 72.5 PSI
Display resolution, Units of measure	bar: 0.01 kPa: 1 kgf/cm²: 0.01 PSI: 0.1
Media	Non-lubricated air and non-corrosive gases
Proof pressure	116.0 PSI
Operating temperature	32 to 122°F (0 to 50°C)
Storage temperature	14 to 140°F (-10 to 60°C)
Humidity	35 to 85% RH
Electrical connection	4-pin, M8 connector
Power supply	10.8 to 30VDC, Ripple Vp-p 10% Max., Reverse voltage protection
Display	3-Digit, 7-Segment LED
Display frequency	5Hz
Circuit	NPN (Sinking), PNP (Sourcing) open collector transistor
Digital output	Individually selectable N.O. or N.C., max 125mA, 30V, with overcurrent protection
Mode	OP1, OP2, OP3 hysteresis: 0 to 100% of switch point
Response time	< 2ms
Repeatability	± 0.3% F.S.
Thermal error	±0.2% F.S. in temperature range: 32 to 122°F (0 to 50°C)
General protection	IP40, CE marked, EMC-EN55011 Class B, EN50082-1
Current consumption	< 45mA, < 25mA when utilizing screen saver option
Spike protection	350 Vp, 1, µs
Dielectric strength	1000 VAC 1 min.
Insulation resistance	> 100M ohms at 500VDC
Vibration resistance	10 to 55Hz, 1.5mm, XYZ, 2 hrs.
Shock resistance	10 G, XYZ
Material	Body: Polycarbonate
Mass	1.7 oz. (45g)

Dimensions

M8, 4-pin



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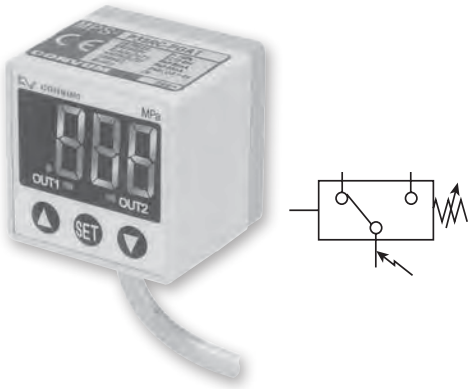
MPS-33, 1-Color Panel Mount Pressure Sensor

Features

- Sensor output:
  2 NPN or PNP open collector
  Transistor output, 30VDC, 125mA with
  Analog output, 1 to 5VDC
- Output response time less than 2.0 milliseconds
- RoHS
- Air and non-corrosive gases



Programming options

Outputs change N.O. / N.C.	✔
Units of measure change	✔
Hysteresis mode	✔
Window comparator mode	✔
Auto teach mode	✔
Output response time	✔
Lockout option	✔
Password lockout	—
Max. value display	✔
Min. value display	✔
Zero reset	✔
Red LED display	✔
Error output mode	✔

MPS-33 Sensor Only Ordering Numbers

			Part number	
Pressure range	**Electrical output**	**Electrical connection**	**1/8 NPSF Female**	**1/8 BSPP Female**
0-30 inHg	(2) PNP with (1) 1-5VDC	2M 5 wire lead wire	**MPS-V33N-PGAT**	**MPS-V33G-PGAT**
0-30 inHg	(2) NPN with (1) 1-5VDC	2M 5 wire lead wire	**MPS-V33N-NGAT**	**MPS-V33G-NGAT**
-14.5 to 72 PSI	(2) PNP with (1) 1-5VDC	2M 5 wire lead wire	**MPS-R33N-PGAT**	**MPS-R33G-PGAT**
-14.5 to 72 PSI	(2) NPN with (1) 1-5VDC	2M 5 wire lead wire	**MPS-R33N-NGAT**	**MPS-R33G-NGAT**
0-145 PSI	(2) PNP with (1) 1-5VDC	2M 5 wire lead wire	**MPS-P33N-PGAT**	**MPS-P33G-PGAT**
0-145 PSI	(2) NPN with (1) 1-5VDC	2M 5 wire lead wire	**MPS-P33N-NGAT**	**MPS-P33G-NGAT**

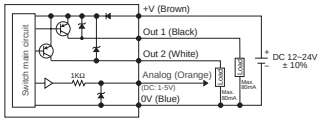
MPS-33 Accessories

Description	**Part Number**
Panel mounting bracket Note : Add “H” in suffix of Sensor Only Part Number to include with sensor	**MPS-ACCH8**
Surface mounting bracket Note : Add “K” in suffix of Sensor Only Part Number to include with sensor	**MPS-ACCK8**

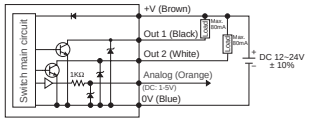
Example: MPS-P33N-PGAT**K**, *includes sensor MPS-P33N-PGA with bracket MPS-ACCK8*

Internal circuit for open collector and analog output wiring

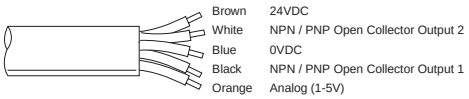
PNP Output (Analog (1-5V)



NPN Output (Analog: 1-5V)



Lead wiring



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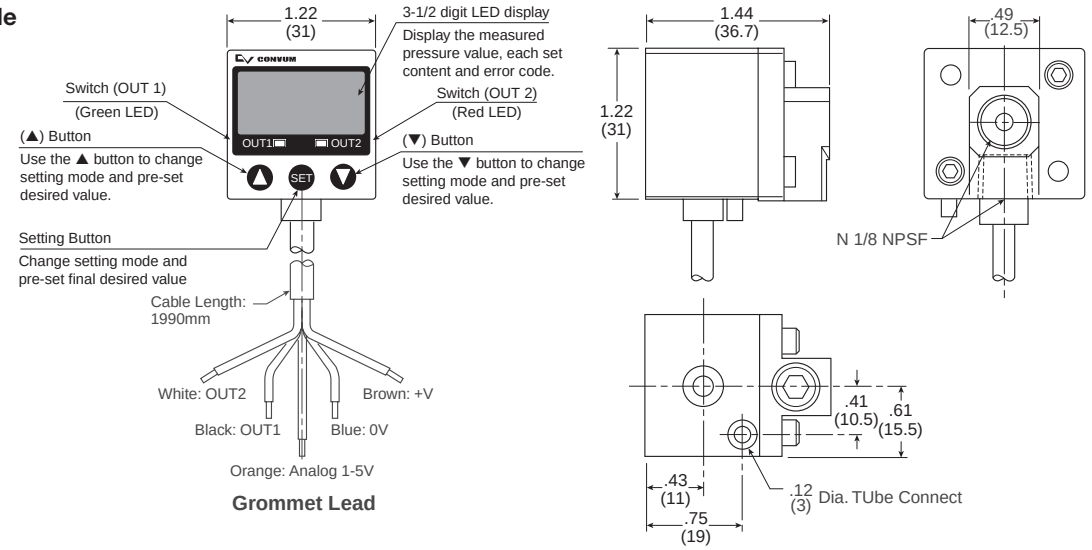
Operating information

	Vacuum (V)	Compound (R)	Positive (P)
Pressure range	-101.3 - 0 kPa (-14.5 to 0 PSI)	0 - 500 kPa (0 to 72 PSI)	-0.1 - 1 Mpa (0 to 145 PSI)
Proof pressure	0.3 Mpa (44 PSI)	0.8 Mpa (116 PSI)	1.5 Mpa (218 PSI)
Display resolution, Units of measure	0.1, kPa 0.001, kgf/cm^2 0.001, bar 0.01, PSI 0.1, inHg 1, mmHg 0.1, mmH$_2$O	1, kPa 0.01, kgf/cm^2 0.01, bar 0.1, PSI — — —	0.001, Mpa 0.01, kgf/cm^2 0.01, bar 0.1, PSI — — —
Media	Air & non-corrosive gases, incombustible gases		
Pressure port	**(N)** 1/8" NPSF, **(G)** 1/8" BSPP female		
Operating temperature	32 to 122°F (0 to 50°C)		
Storage temperature	-4 to 140°F (-20 to 60°C)		
Humidity	40 - 85% RH (no condensation)		
Electrical connection	**(G)** Grommet open lead, 5 wire (0.15mm^2)		
Power supply	12 to 24VDC ±10% or less, Ripple (Vp-p) 10% or less		
Display	3 + 1/2 digit, 1 color, 7-segment RED LED		
Display refresh	.1 to 3.0 Seconds, Variable (factory set at 0.1)		
Control output	NPN (Sinking), PNP (Sourcing), Open collector, max 80mA, 2 output		
Analog output	1 to 5VDC ≤ ±2.5% F.S. Linearity ≤1% of F.S.;		
Switch output	Output signal, NPN or PNP, Normally open or closed, LED indicator		
Output indicator	Green LED (OUT1), Red LED (OUT2)		
Output modes	Hysteresis or Window Comparator		
Response time	≤ 2.5ms (chattering-proof function: 24ms, 192ms, 786m selections)		
Repeatability	± 0.2% of F.S. ± 1 digit or less		
Thermal error	≤ ± 2% of F.S. or less at range of 32 to 122°F (0 to 50°C)		
General protection	IP65, CE marked, EMC-EN61000-6-2: 2001, with dust tube connection		
Current consumption	<55mA		
Vibration resistance	10 to 150Hz, Double amplitude 1.5mm, XYZ, 2 hrs.		
Shock resistance	980 m/s^2 (about 10G), 3 times/each directions X, Y, Z		
Noise resistance	Vp-p400V, 10 ms, 0.5µs noise simulator		
Material	Housing: ABS (gray) , Pressure port: Zinc die-cast, Diaphragm: Silicon		
Mass	3.3 oz. (105g) (including cable)		

Dimensions

1/8" Female



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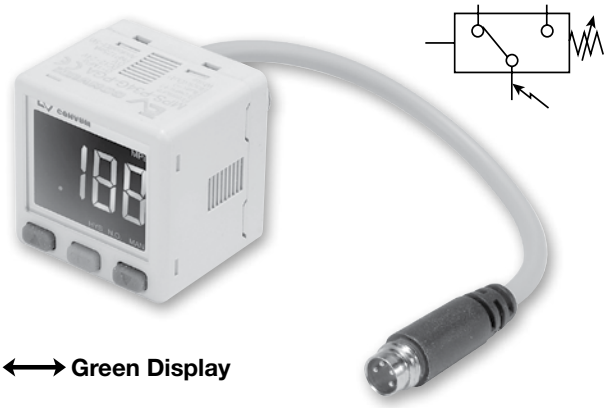
MPS-34, 1-Color Panel Mount Pressure Sensor

Features

- Sensor output:
  PNP Open collector
  Transistor output, 30VDC, 125mA with
  Analog output, 4 to 20mA
- Output response time less than 2.0 milliseconds
- RoHS
- Air and non-corrosive gases
- Sensor face includes icons to show sensor programming status



Red ⟷ Green Display

Programming options

Outputs change N.O. / N.C.	✔
Units of measure change	✔
Hysteresis mode	✔
Window comparator mode	✔
Auto teach mode	✔
Output response time	✔
Lockout option	✔
Password lockout	—
Max. value display	✔
Min. value display	✔
Zero reset	✔
Red / Green LED display options	✔
Error output mode	✔

MPS-34 Sensor Only Ordering Numbers

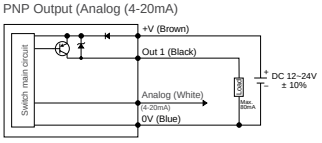
			Part number	
Pressure range	**Electrical output**	**Electrical connection**	**1/8 NPSF male**	**1/8 BSPP male**
0-30 inHg	(1) PNP with (1) 4-20ma	M8, 4 Pin	**MPS-V34N-PCI**	**MPS-V34G-PCI**
0-145 PSI	(1) PNP with (1) 4-20ma	M8, 4 Pin	**MPS-P34N-PCI**	**MPS-P34G-PCI**

MPS-34 Accessories

Description	**Part number**
Panel mounting bracket Note : Add "H" in suffix of Sensor Only Part Number to include with sensor	**MPS-ACCH9**
Surface mounting bracket Note : Add "K" in suffix of Sensor Only Part Number to include with sensor	**MPS-ACCK10**
Example: MPS-P34N-PCI**K**, *includes sensor MPS-P34N-PCI with bracket MPS-ACCK10*	

M8, 4-pin, 2 meter cable	**CB-M8-4P-2M-PUR**
M8, 4-pin, 5 meter cable	**CB-M8-4P-5M-PUR**

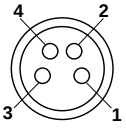
Internal circuit for open collector and analog output wiring



Sensor pin out with analog output

Pin #

1 Brown: 24VDC
2 White: 4 to 20mA
3 Blue: 0VDC
4 Black: PNP Open Collector Output 1



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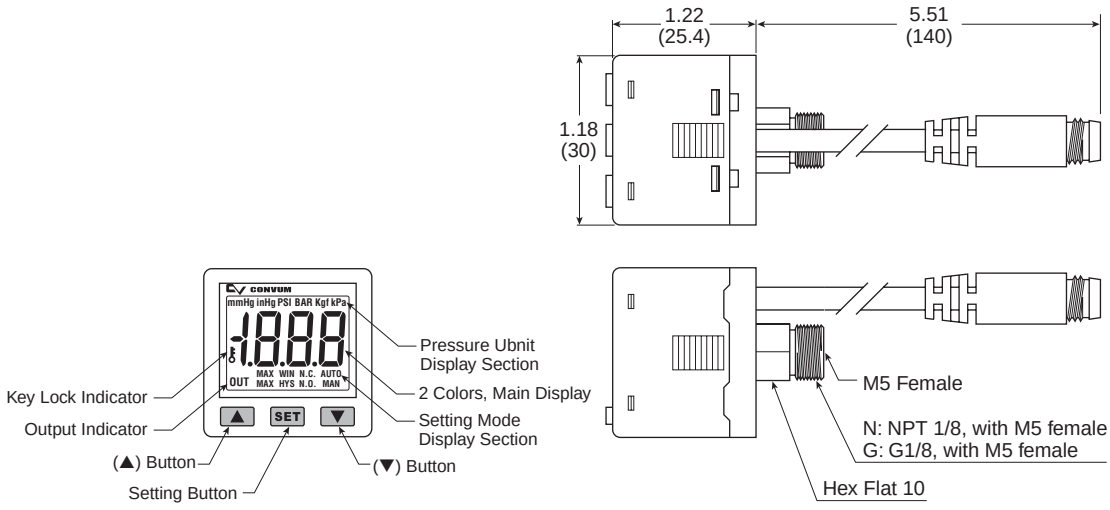
Operating information

	Vacuum (V)	Positive (P)
Pressure range	-101.3 to 0 kPa (-14.5 to 0 PSI)	-0.1 to 1 Mpa (0 to 145 PSI)
Proof pressure	0.3 Mpa (44PSI)	1.5 Mpa (218 PSI)
Display resolution, Units of measure	0.1, kPa 0.001, kgf/cm^2 0.001, bar 0.01, PSI 0.01, inHg 1, mmHg	1, kPa 0.01, kgf/cm^2 0.01, bar 0.1, PSI - -
Media	Air & non-corrosive gases	
Pressure port	**(N)** 1/8" NPT male, **(G)** 1/8 BSPP male both with M5 female port	
Operating temperature	32 to 122°F (0 to 50°C)	
Storage temperature	-4 to 140°F (-20 to 60°C)	
Humidity	35 to 85% RH (no condensation)	
Electrical connection	**(C)** 4-pin, M8 connector on 150mm lead wire	
Power supply	12 to 24VDC ±10%, Ripple (P-P) 10% or less	
Display	3 + 1/2 digit, 2 color, 7-segment RED / GREEN LED	
Display refresh	Timing update : 0.1 ~ 3 sec. (Factory Set Unit: 0.1 sec.)	

Switch output	Output signal, PNP, Normally open or closed, LED indicator, 125 mA max. output load
Output modes	Hysteresis or Window Comparator
Response time	≤ 2.5ms (chattering-proof function: 24ms, 250ms, 500ms, 1000ms and 1500ms selections)
Repeatability	± 0.2% of F.S. ± 1 digit
Output current	Output current 4 to 20mA; Linearity ±1.0% of F.S.; Maximum load impedance 300Ω at power supply of 12V; 600Ω at power supply of 12V; Minimum load impedance 50Ω
Thermal error	32 to 122°F (0 to 50°C) 25°C (77°C) + 2% of F.S. or less at range of 32 to 122°F (0 to 50°C)
General protection	IP40, CE marked, EMC-EN61000-6-2: 2001
Current consumption	45mA (with no load)
Vibration resistance	10 to 150Hz, Double amplitude 1.5mm, XYZ, 2 hrs.
Shock resistance	980 m/s^2 (about 10G), 3 times/each directions X, Y, Z
Noise Resistance	Vp-p400V, 10 ms, 0.5µs noise simulator
Material	Housing: ABS (gray) , Pressure port: Zinc die-cast, Diaphragm: Silicon
Mass	1.45 oz. (45g) with M8 connector

Dimensions

1/8" Male



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SCP01 High Pressure 316 Stainless Steel Pressure Sensor

SCP01 Pressure Sensors are industrial pressure sensors offering long-term stability, resistance to interference and rugged construction. They are available in a wide range of standard and configured to order versions to meet your application needs.

These sensors are manufactured with the highest quality standards for reliable and repeatable measurements.

Features:

- Stainless steel body
- Compact construction
- Shock and vibration proof
- Resistant to pressure spikes
- Accuracy +/- 0.5% FS

Applications include:

- Test and measurement
- Hydraulic power units
- Power generation
- Mobile hydraulics

SCP01 Ordering Numbers

Pressure range (psi)	Electrical output	Electrical connection	Part number 1/4 NPT male	Part number 7/16-20UNF-2A, male SAE-4 with o-ring
-14.5 to 250	4 - 20 mA, 3 wire	M12 X 1, 4 pin	**SCP01-0250P-25-07**	**SCP01-0250P-27-07**
0 to 1000	4 - 20 mA, 3 wire	M12 X 1, 4 pin	**SCP01-1000P-25-07**	**SCP01-1000P-27-07**
0 to 3000	4 - 20 mA, 3 wire	M12 X 1, 4 pin	**SCP01-3000P-25-07**	**SCP01-3000P-27-07**
0 to 5000	4 - 20 mA, 3 wire	M12 X 1, 4 pin	**SCP01-5000P-25-07**	**SCP01-5000P-27-07**
0 to 9000	4 - 20 mA, 3 wire	M12 X 1, 4 pin	**SCP01-9000P-25-07**	**N/A**

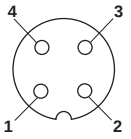
Operating information

Overload pressure	200% FS
Burst pressure	250% FS
Accuracy	+/- 0.5% FS
Protection class	IP67
Response time	< 1ms
Long term stability	< 0.1% FS/a
Load reversals	> 20 M
Electrical protection	Short circuit, reverse polarity, overload production
Supply voltage	9-30VDC
Temperature range:	
Environmental	-40°F to 185°F
Media, storage	-40°F to 257°F
Compensated	-4°F to 185°F
Temperature coefficient	< +/- 0.3% FS/10K
Vibration resistance	Meets IEC 60068-2-29
Shock resistance	Meets IEC 60068 2-32
EMI compatibility	DIN EN 61000-6-3, DIN EN 61000-6-2
Material - housing	304 SS
Material - fitting	630 SS
Material - seal	Fluorocarbon
Sensing element	Thin film (poly Si on SiO_2)
Pressure bore	0.024 in.
Long term stability	< 0.1% FS/a
Load reversals	> 20 M

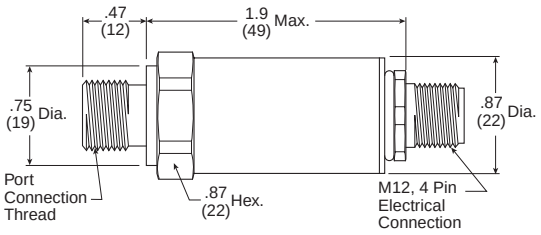
Sensor pin out with analog output

Pin #

1 Supply
2 Signal output
3 Ground
4 —



Dimensions



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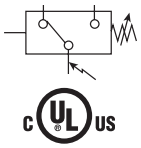
SCPSD High Pressure 316 Stainless Steel Pressure Sensor

Features

- Stainless steel or ceramic diaphragms
- UL listed and CE marked
- Sensor outputs
  2 PNP Open collector transistor
  Output, 30 VDC, 100mA
- Optional additional current, 4 to 20mA
- Output response time less than 5.0ms
- Polarity protected
- Short circuit protected
- 4 digit LED display
- Display head swivels 290°

SCPSD-1000P-1727

SCPSD-600-14-15



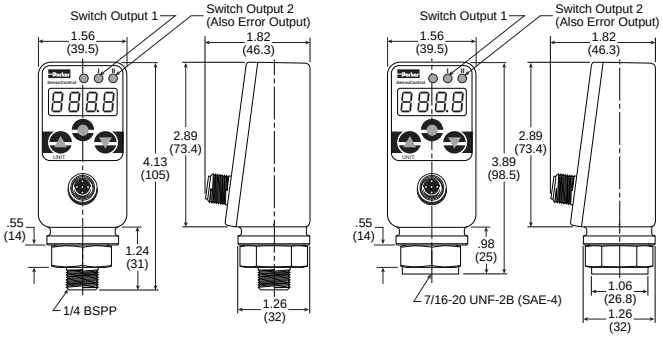
SCPSD Ordering Numbers

Pressure range	Port size	Electrical output	Electrical connection	Part number
-14.7 to 250 PSI	7/16-20 UNF-2b (SAE-4)	(2) PNP	M12, 4 Pin	**SCPSD-0250P-0727**
-14.7 to 250 PSI	7/16-20 UNF-2b (SAE-4)	(1) PNP with 4-20MA	M12, 4 Pin	**SCPSD-0250P-1727**
0 to 1000 PSI	7/16-20 UNF-2b (SAE-4)	(2) PNP with 4-20MA	M12, 5 Pin	**SCPSD-1000P-1725**
0 to 1000 PSI	7/16-20 UNF-2b (SAE-4)	(1) PNP with 4-20MA	M12, 4 Pin	**SCPSD-1000P-1727**
0 to 3000 PSI	7/16-20 UNF-2b (SAE-4)	(2) PNP	M12, 4 Pin	**SCPSD-3000P-0727**
0 to 3000 PSI	7/16-20 UNF-2b (SAE-4)	(1) PNP with 4-20MA	M12, 4 Pin	**SCPSD-3000P-1727**
0 to 3000 PSI	7/16-20 UNF-2b (SAE-4)	(2) PNP with 4-20MA	M12, 5 Pin	**SCPSD-3000P-1725**
0 to 5000 PSI	7/16-20 UNF-2b (SAE-4)	(1) PNP with 4-20MA	M12, 4 Pin	**SCPSD-5000P-1727**
0 to 5000 PSI	7/16-20 UNF-2b (SAE-4)	(2) PNP with 4-20MA	M12, 5 Pin	**SCPSD-5000P-1725**
0 to 9000 PSI	7/16-20 UNF-2b (SAE-4)	(2) PNP	M12, 4 Pin	**SCPSD-9000P-0727**
0 to 9000 PSI	7/16-20 UNF-2b (SAE-4)	(2) PNP with 4-20MA	M12, 4 Pin	**SCPSD-9000P-1725**
-1 to 16 Bar	1/4 BSPP Male	(2) PNP	M12, 4 Pin	**SCPSD-016-04-17**
-1 to 16 Bar	1/4 BSPP Male	(2) PNP with 4-20ma	M12, 5 Pin	**SCPSD-016-14-15**
0 to 250 Bar	1/4 BSPP Male	(2) PNP	M12, 4 Pin	**SCPSD-250-04-17**
0 to 250 Bar	1/4 BSPP Male	(2) PNP with 4-20ma	M12, 5 Pin	**SCPSD-250-14-15**
0 to 600 Bar	1/4 BSPP Male	(2) PNP	M12, 4 Pin	**SCPSD-600-04-17**
0 to 600 Bar	1/4 BSPP Male	(2) PNP with 4-20ma	M12, 5 Pin	**SCPSD-600-14-15**

Programming options

Outputs change N.O. / N.C.	✔
Units of measure change	✔
Hysteresis mode	✔
Window comparator mode	✔
Auto teach mode	—
Output response time	✔
Lockout option	—
Password lockout	✔
Max. value display	—
Min. value display	—
Zero reset	✔
Red / Green LED display options	—
Error output mode	✔
Setting of decimal point	✔

Dimensions



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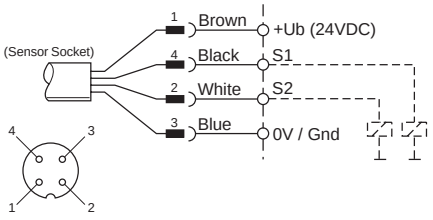
Operating information

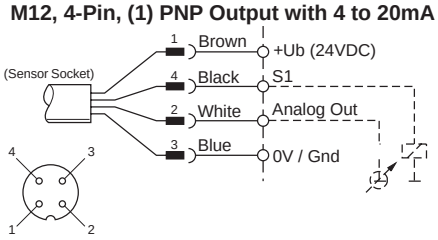
Pressure code	0250	016	1000	3000	5000	9000	250	600
Measure range PSI, (bar)	-14.7 to 250	(-1 to 16)	0 to 1000	0 to 3000	0 to 5000	0 to 9000	(0 to 250)	(0 to 600)
Overload pressure PSI, (bar)	725	(40)	2900	7250	11600	21750	(500)	(1200)
Burst pressure PSI, (bar)	725	(50)	11600	17400	24650	31900	(1200)	(2200)
Sensing element	Ceramic			Stainless steel				
Parts in contact with media	Stainless steel 1.4404 Ceramic AL203, NBR*			Stainless steel 1.4404, 1.4542, NBR*				
	*FPDM, EPDM special request							
Units of measure	PSI, bar, MPA							
Switch cycles	>100 million							
Output response time	< 10ms							
Power supply	15 to 30VDC, Class 2 power supply							
Short circuit protection	Yes, 2.4 amp / open collector output							
Reverse polarity protection	Yes							
Overload protection	Yes							
Current consumption	< 100mA							
Output circuit	2 PNP (Sourcing) open collector transistor							
Analog output	0/4…20mA, Programmable, freely scaleable							
Output functions	Hysteresis, Window comparator							
Switching voltage	-1.5VDC							
Maximum current output	1A with 2 open collector outputs, .5A per output							
Accuracy	± 0.5% F.S. Typ., ± 1% Max.							
Repeatability	± 0.25% F.S.							
Display accuracy	± 0.5% F.S. Typ., ± 1 Digit							
Thermal error max.	±0.03% F.S. at -4 to 185°F (-20 to 85°C)							
Material	Pressure Die-cast zinc Z 410: Surface-finishing							
Display material	Polyester							
General protection	IP 67, EN60529, UL, CE Marked, EMC-EN50082-2 Class B, EN 50081-2							
Temperature range of media	-4 to 185°F (-20 to 85°C)							
Ambient temperature range	-4 to 185°F (-20 to 85°C)							
Storage temperature	-40 to 212°F (-40 to 100°C)							
Display	4-Digit, 7-Segment LED, Red, 9mm height							
Tightening torque	35Nm							
Vibration resistance	20G, 10 to 500Hz, IEC60068-2-6							
Shock resistance	50 G, XYZ, 11ms, IEC60068-2-29							
Mass	10.6 oz. (300g)							

Internal circuit

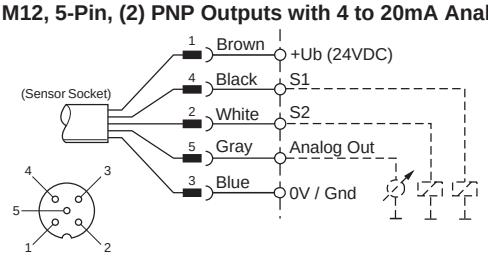
M12, 4-Pin, (2) PNP Outputs



M12, 4-Pin, (1) PNP Output with 4 to 20mA Analog



M12, 5-Pin, (2) PNP Outputs with 4 to 20mA Analog



Note: M12, 5-pin Female Cable Connector will fit on both M12, 4-pin and 5-pin Male Sensor Connector.

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Cables

Features

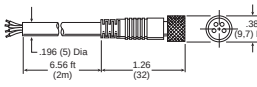
- M8, M12 male / female connector
- Length: 2m or 5m
- Cover: PVC or PUR
- Connection type: Swivel straight or angled
- IP67 swivel connector

Common Part Numbers

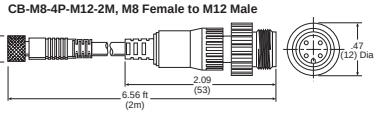
Connector	Contacts	Length	Cover	Part number
M8 female	4	2m	PUR	**CB-M8-4P-2M-PUR**
M8 female	4	5m	PUR	**CB-M8-4P-5M-PUR**
M8 angled female	4	5m	PUR	**CB-M8-4P-5M-90-PUR**
M8 female to M12 male	4	2m	PVC	**CB-M8-4P-M12-2M**
M12 female	4	2m	PVC	**CB-M12-4P-2M**
M12 female	5	2m	PVC	**CB-M12-5P-2M**
M12 female to M12 male	4	2m	PVC	**CB-M12-4P-M12-2M**
M12 female to M12 male	5	2m	PVC	**CB-M12-5P-M12-2M**

Dimensions

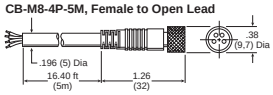
CB-M8-4P-2M, Female to Open Lead



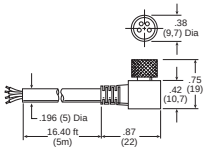
CB-M8-4P-M12-2M, M8 Female to M12 Male

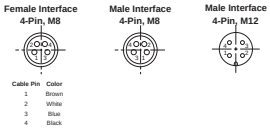


CB-M8-4P-5M, Female to Open Lead

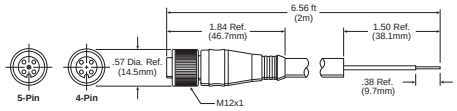


CB-M8-4P-5M-90, Female to Open Lead

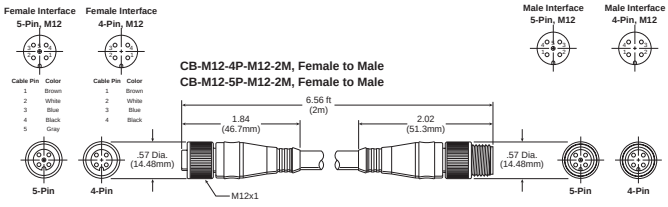




CB-M12-4P-2M, Female to Open Lead
CB-M12-5P-2M, Female to Open Lead



CB-M12-4P-M12-2M, Female to Male
CB-M12-5P-M12-2M, Female to Male



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FSV Series – M5, G1, G2 & G3 Flow Sensing Valve

Maintaining an acceptable level of vacuum is critical to the performance of vacuum systems that have a single source vacuum generator with multiple cups. The Parker Flow Sensing Valve assists in maintaining an acceptable vacuum level if the vacuum cup does not make a proper seal. The valve will automatically close if the cup loses the seal with the product during a pick and place motion.

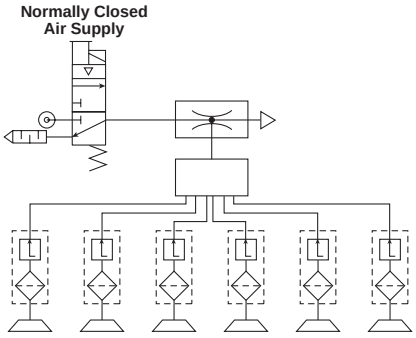
The Parker Flow Sensing Valve is a normally open valve that switches to a closed metered state when the vacuum flow rate from the cup side to the generator side is greater than the switching flow rate of the flow sensing valve. The Flow Sensing Valve "Checks" the vacuum flow. The vacuum flow rate of the generator must be more than the switching flow rate of the Flow Sensing Valve or it will not switch to a "Checked" position.

When using multiple Flow Sensing Valves per generator, the flow rate of the generator must be more than the combined switching flow rates of the flow valves and any other leak path. For example, a CV20-HSN has a maximum flow rate of 3.88 SCFM and a 1/8 Flow Sensing Valve has a switching flow rate of 0.28 SCFM. Therefore 13 Flow Sensing Valves can be connected in parallel to a CV20-HSN.

Once a Flow Sensing Valve is "Checked", a small amount of by-pass flow occurs. This leakage allows a generator to be turned on prior to the cup being in place on a product and is the flow path used to evacuate the cup volume. The by-pass flow will decrease the maximum degree of vacuum in a system, and is considered a leak path when the cup is not sealed on a product. Blow off functions will still operate by forcing the Flow Sensing Valve to a full open position, allowing the part to be blown off.

Features

- Pick and place randomly placed products
- Minimize vacuum loss when cup seal is lost
- Direct mounting to cups
- 1/8 to G3/8 connection
- Integrated bronze filter



FSV Series Ordering Information

Description	Part number
1/8" BSPP	**FSV-G1**
1/4" BSPP	**FSV-G2**
3/8" BSPP	**FSV-G3**

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Operation

When the flow of air from the cup side to the generator side is greater than the switching flow rate of the valve, the float is drawn back against the spring and seals on the housing. In this state, flow passes through an orifice on the float. Vacuum flow is "Checked". (See Figure 1).

When the cup comes in contact and seals on a product, flow is reduced and the spring forces the float towards the cup side inlet. This breaks the seal at the float and the full open state is restored. (See Figure 2).

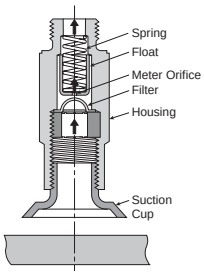


Figure 1
(Closed, Metered Flow)

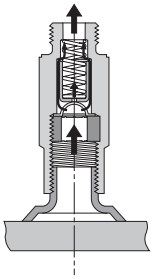
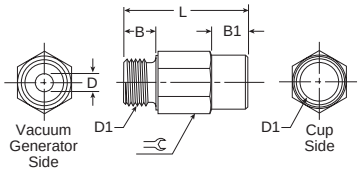


Figure 2
(Open, Full Flow)

Operating information

Description	FSV-G1	FSV-G2	FSV-G3
Switching flow rate:	0.28 SCFM		0.875 SCFM
Nominal size:	4mm		
Housing material:	Anodized aluminum		
Filter material:	Al-Niro mesh		
Temperature range:	14°F to 140°F (-10°C to 60°C)		
Maximum pressure:	145 PSI		115 PSI
Media:	Atmospheric air		
Weight (grams):	0.009	0.016	0.029



Dimensions

	B	B1	D	D1	L	⌭
FSV-G1	0.26 (6.5)	0.43 (11)	0.16 (4)	G	1.42 (36)	0.51 (13)
FSV-G2	0.33 (8.5)	0.43 (11)	0.16 (4)	G1/4	1.50 (38)	0.67 (17)
FSV-G3	0.47 (12)	0.51 (13)	0.16 (4)	G3/8	1.65 (42)	0.87 (22)

inches (mm)

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CH01 Series Check Valve

The CH check valve is used to hold a degree of vacuum downstream from the check valve when the vacuum generator upstream from the check valve is turned off. A separate blow-off connection downstream from the CH check valve is required to destroy the vacuum pressure and blow off the part.

This check valve is an open or passing flow path when there is a differential pressure from the pad side to the generator side.

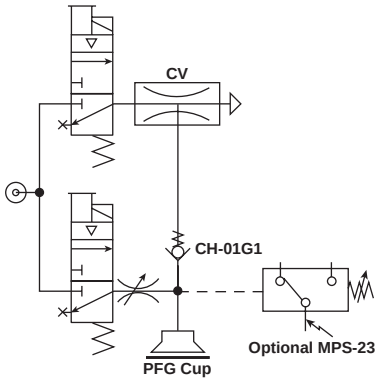
Features

- Poppet design
- Low leakage
- Low cracking pressure

Operating information

Temperature range:	32°F to 140°F (0° to 60°C)
Operating vacuum:	-4.25 to -13.89 PSIG (-8.7 to -28.3 inHg)
Port size:	Pad side = 1/4", Generator side = 1/8"
Leakage rate:	0.2 PSI / minute (0.4 inHg / minute)
Cracking pressure:	2.9 PSIG (5.9 inHg)

Normally Closed Air Supply with Blow-off & Optional Sensor



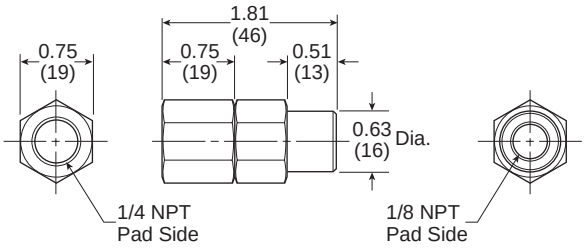
Material specifications

Valve body / Fittings	Brass / Aluminum
Seals	BUNA
Spring	SUS

CH01 Series Ordering Information

Description	Part number
BSPP Ports	**CH-01G1**
NPT Ports	**CH-01N1**

Dimensions



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VF & VFL Series Filters

Always filtrate the vacuum system to protect the components from damaging particles absorbed from the environment. Elements should be replaced periodically to prevent slower response and overall performance of the system.

Material specifications

Part number	Material housing	Material element	Weight (oz.)
VF-2G	Aluminum	Acrylic, Stainless steel	1.54
VF-3G	Aluminum	PC, Polyvinyl	3.10
VF-5G	Aluminum	PC, Polyvinyl	5.15
VF-6G	Aluminum	PC, Polyvinyl	8.25
VFL-44	Poly-carbonate	PC, Polyvinyl	0.67
VFL-66	Poly-carbonate	PC, Polyvinyl	0.74
VFL-88	Poly-carbonate	PC, Polyvinyl	0.81

Operating information

Media:	Non-corrosive air
Operating vacuum:	0 to 28 inHg
Maximum pressure:	60 PSI
Operating temperature:	32°F to 140°F (0°C to 60°C)

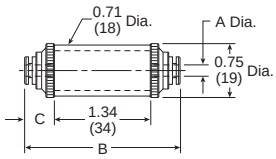
Filtration: 120 µm (VF-2), 130 µm (VF-3, VF-5, VF-6, VFL-44, 66, 88)

VF & VL Series Ordering Information

Application	Male connection	Replacement elements	Replacement cover, o-ring	Part number
CV-05, CV-10	G1/8"	**VF-2E**	**—**	**VF-2G**
CV-05, CV-10	G1/8"	**VF-3E**	**VF-3K**	**VF-3G**
CV-15, MCA-10/13	G1/4"	**VF-5E**	**VF-3K**	**VF-5G**
CV-20/25/30	G3/8"	**VF-6E**	**VF-3K**	**VF-6G**
General use	4mm - Tube	**VFL-E**	**VFL-44K**	**VFL-44**
General use	6mm - Tube	**VFL-E**	**VFL-66K**	**VFL-66**
General use	8mm - Tube	**VFL-88E**	**VFL-88K**	**VFL-88**

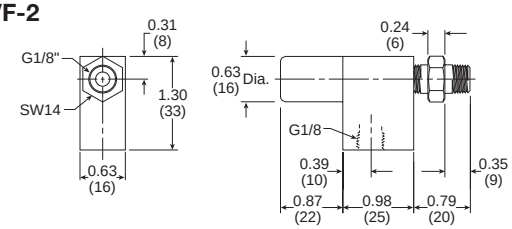
Dimensions

VFL Series

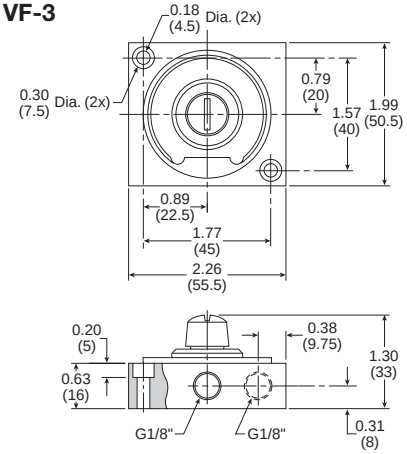


Part number	A	B	C
VFL-44	0.16 (4)	2.17 (55)	0.41 (10.5)
VFL-66	0.24 (6)	2.28 (58)	0.47 (12)
VFL-88	0.31 (8)	2.44 (62)	0.55 (14)

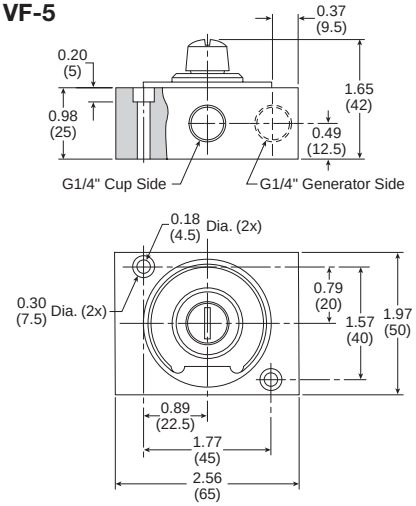
VF-2



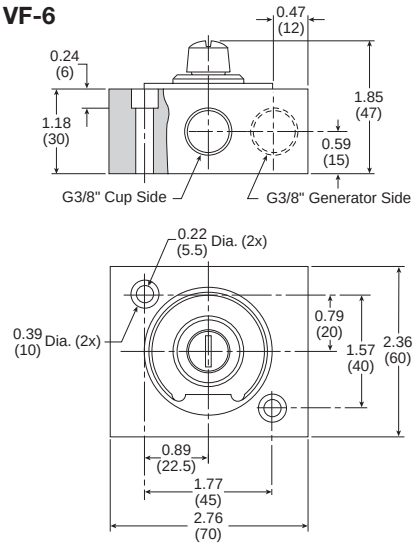
VF-3



VF-5



VF-6



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VFP Series Filters

Parker plastic in-line filters provide easy monitoring, economy and safety. These shatterproof filters are airtight and can withstand high pressures.

A 10 micron porous plastic element prolongs element life under the most adverse environmental conditions.

Features

- To filter dust and other small particles from the vacuum flow
- Reduces the risk of operation breakdown or stoppage in the vacuum pump
- Replaceable filter element
- Made in the U.S.A.

Operating information

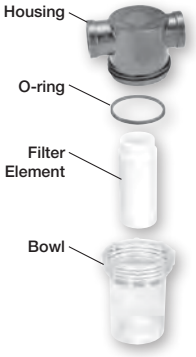
Media:	Non-corrosive air
Temperature range:	-4°F to 176°F (-20°C to 80°C)
Operating vacuum:	-14.5 to 0 PSI (0 to 28 inHg)
Maximum pressure:	150 PSI
Removal efficiency:	10 µm

Material specifications

Housing	Polypropylene (PP)
Bowl	Polyamide nylon (PA)
Filter element	Polyethylene (PE)

Replacement components

Description	Size	Part number
Clear Bowl Kit (Includes O-ring)	1/8, 1/4, 3/8	**PS577601**
	1/2, 3/4	**PS577602**
	1, 1-1/2	**PS577603**
BUNA O-ring	1/8, 1/4, 3/8	**PS577701**
	1/2, 3/4	**PS577702**
	1, 1-1/2	**PS577703**
Filter Element Kit*	1/8, 1/4	**PS577801**
	3/8	**PS577801**
	1/2, 3/4	**PS577802**
	1	**PS577803**
	1-1/2	**PS577804**



*** All Filter Elements are sold as a 3-pack.**

VFP Series Ordering information

Port size	Flow SCFM*	Weight (oz)	Internal Volume in^3	Filter area in^2	Basic filter with element		Basic filter with 2 spare elements	
					NPT	BSPP	NPT	BSPP
1/8	25	1.7	2.10	4.9	**VFP0CFC01**	**VFP0CFC11**	**VFP0CFC03**	**VFP0CFC13**
1/4	35	1.98	2.4	4.9	**VFP1CFC01**	**VFP1CFC11**	**VFP1CFC03**	**VFP1CFC13**
3/8	45	2.47	2.7	4.9	**VFP2CFC01**	**VFP2CFC11**	**VFP2CFC03**	**VFP2CFC13**
1/2	130	6.61	11.9	16.0	**VFP3CFC01**	**VFP3CFC11**	**VFP3CFC03**	**VFP3CFC13**
3/4	175	6.42	12.5	16.0	**VFP4CFC01**	**VFP4CFC11**	**VFP4CFC03**	**VFP4CFC13**
1	290	15	30.2	29.5	**VFP5CFC01**	**VFP5CFC11**	**VFP5CFC03**	**VFP5CFC13**
1-1/2	430	18.80	41.2	35.0	**VFP6CFC01**	**VFP6CFC11**	**VFP6CFC03**	**VFP6CFC13**

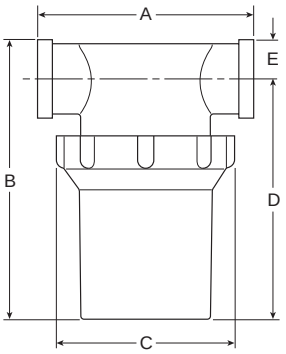
* 90 PSIG inlet and 5 PSIG pressure drop

Dimensions

Part number	A	B	C	D	E
VFP0CFC*1, VFP1CFC*1, VFP2CFC*1	3.1 (78.7)	2.4 (61)	1.9 (48.3)	2.0 (50.8)	0.4 (10.2)
VFP3CFC*1	3.6 (91.4)	5.1 (129.5)	2.9 (73.6)	4.4 (111.6)	0.7 (17.8)
VFP4CFC*1	3.6 (91.4)	5.1 (129.5)	2.9 (73.6)	4.6 (116.9)	0.5 (12.7)
VFP5CFC*1	4.9 (124.5)	6.4 (162.6)	4.0 (101.6)	5.6 (142.2)	0.8 (20.3)
VFP6CFC*1	5.2 (132.1)	8.1 (209.9)	4.0 (101.6)	6.9 (175.3)	1.2 (30.5)

inches (mm)

* 0 (NPT), 1 (BSPP)



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Silencers

Protect the environment against harmful noise levels with quality silencers.

Silencer Ordering Information

For generator series	Male connection	Part number
CV-05, CV-10	G1/8"	**MSS-01**
CV-05, CV-10	G1/8"	**MSS-02**
CV-15, MCA-10/13	G1/4"	**MSM-01**
CV-20	G1/2"	**MSL-02**
CV-25, CV-30	G3/4"	**MS6-01**

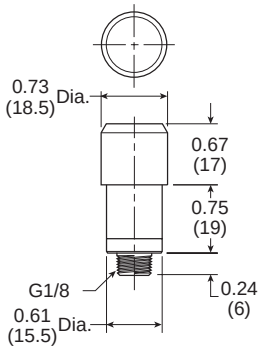
Operating information

Media:	Non-corrosive air
Maximum pressure:	128 PSI
Operating temperature:	41°F to 132°F (5°C to 55.5°C)
Silencing effect:	20 dB

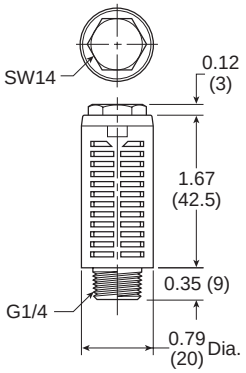
Material specifications

Part number	Material housing	Material element	Media	Weight (oz.)
MSS-01	Polyacetal	Felt, Urethane	Air	0.17
MSS-02	Polyacetal	Stainless steel	Oil	0.17
MSM-01	Polyurethane	Felt	Air	0.24
MSL-02	Nylon	Vinyl	Air	0.88
MS6-01	Nylon	Polyvinyl Forma	Air	2.01

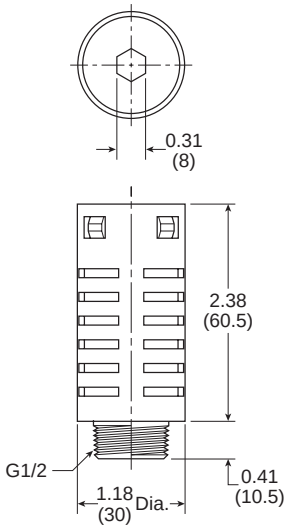
Dimensions



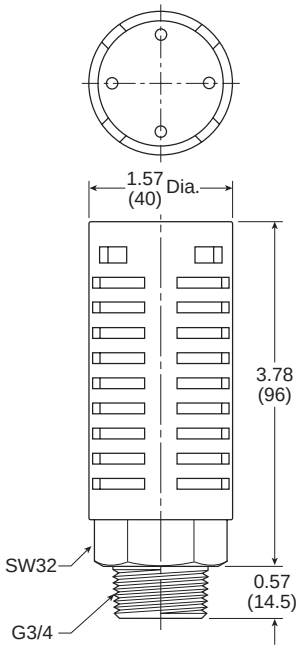
MSS-01



MSM-01



MSL-02



MS6-01

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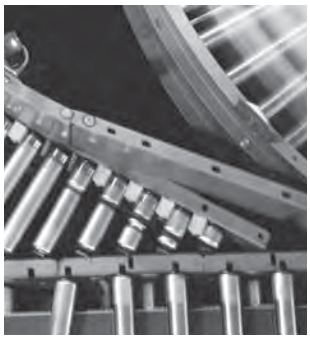

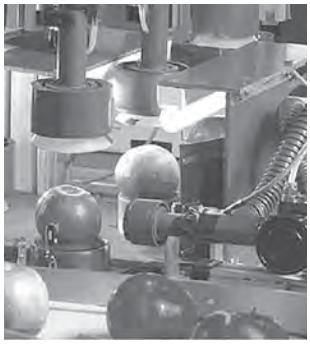

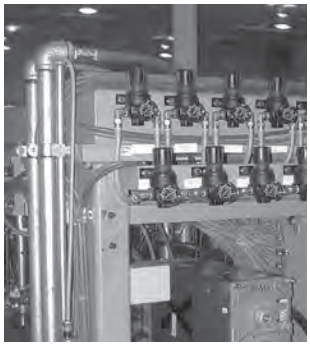

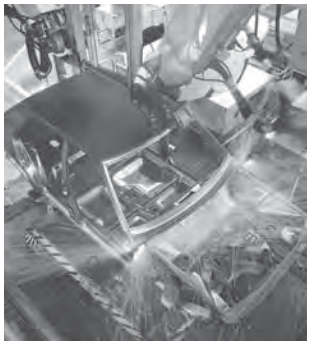

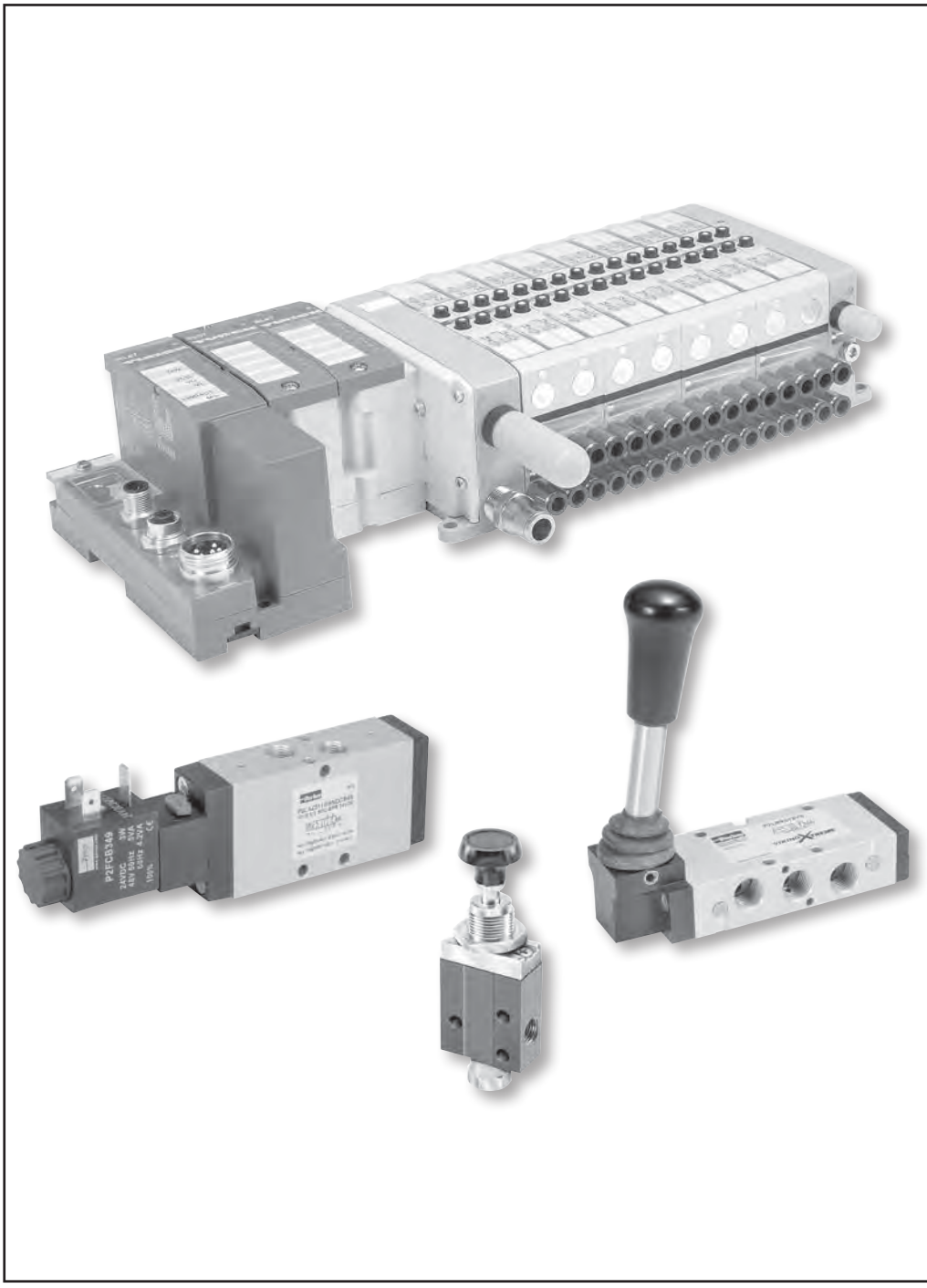

Valve Products

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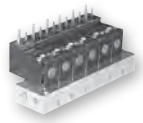
Direct Acting Valves

XM Series - Direct Acting

- Inline or stacking
- 1/8 inch ports
- Pressures 0 to 125 PSIG
- Temperatures 32°F to 125°F
- Flow - .15 Cv

D4

15mm Series - Direct Acting



- Subbase or manifold
- 1/8 inch ports
- Pressures VAC to 145 PSIG
- Temperatures 5°F to 140°F
- Flow - .033 to .05 Cv

D8

Inline Valves

Viking Lite Series - Inline

- Inline or bar manifold
- 1/8 through 3/8 inch ports
- Pressures 22 to 145 PSIG
- Temperatures 14°F to 122°F
- Flow - .6 to 2.5 Cv

D11

Viking Xtreme Series - Inline

- Inline or bar manifold
- 1/8 through 1/2 inch ports
- Pressures VAC to 232 PSIG
- Temperatures -40°F to 140°F
- Flow - .7 to 2.7 Cv

D19

B Series - Inline

- Inline, subbase or bar manifold
- 1/8 through 3/4 inch ports
- Pressures VAC to 145 PSIG
- Temperatures 5°F to 120°F
- Flow - .75 to 7.0 Cv

D43

ADEX Series - Inline

- Inline, subbase or bar manifold
- M3, M5, 1/8 inch ports
- Pressures VAC to 100 PSIG
- Temperatures 32°F to 122°F
- Flow - .1 to .47 Cv

D68

Inline – continued

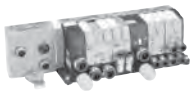
N Series - Inline Poppet

- Inline mounted
- 3/8 through 1-1/2 inch ports
- Pressures 30 to 250 PSIG
- Temperatures 0°F to 200°F
- Flow - 3.6 to 29.9 Cv

D78

Subbase & Manifold Valves

Moduflex Series Valves



- Inline or stacking
- 4mm tube, 1/4, 3/8 inch ports
- Pressures VAC to 120 PSIG
- Temperatures 5°F to 140°F
- Flow - .18 to .80 Cv

D89

Isys Micro Series

- Subbase or manifold
- 4mm through 1/4 tube
- Pressures VAC to 145 PSIG
- Temperatures 5°F to 120°F
- Flow - .35 Cv

D113

Isys ISO Series

- Subbase or manifold
- 1/8 through 3/4 inch ports
- Pressures VAC to 145 PSIG
- Temperatures 5°F to 120°F
- Flow - .55 to 6.0 Cv

D124

Fieldbus Series

- Fieldbus interface for Isys and Moduflex valves
- Up to 256 inputs
- Up to 256 outputs
- Digital or analog

D166

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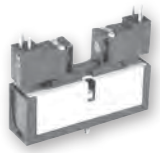
Subbase & Manifold – continued

DX ISOMAX Series



- Subbase or manifold
- 1/8 through 3/4 inch ports
- Pressures VAC to 145 PSIG
- Temperatures 14°F to 140°F
- Flow - .55 to 4.15 Cv

D185

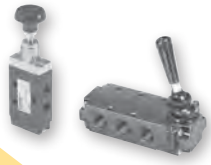
Valvair II Series

- Subbase or manifold
- 3/8 through 1-1/2 inch ports
- Pressures VAC to 225 PSIG
- Temperatures 0°F to 200°F
- Flow - 1.9 to 12.0 Cv

D198

Manual / Mechanical Valves

Directair 2 & 4



- Manual / mechanical
- 1/8 and 1/4 inch ports
- Pressures VAC to 150 PSIG
- Temperatures 32°F to 175°F
- Flow - .20 to .84 Cv

D208

Viking Xtreme

- Manual / mechanical
- 1/8, 1/4 and 3/8 inch ports
- Pressures:
  Type A & B - VAC to 232 PSIG
  Type C & D - VAC to 174 Psig
- Temperatures -40°F to 140°F
- Flow - .5 to 2.7 Cv

D218

42 Series

- Manual / mechanical
- 1/4 and 3/8 inch ports
- Pressures VAC to 150 PSIG
- Temperatures 0°F to 140°F
- Flow - 1.3 to 2.9 Cv

D225

Manual / Mechanical – continued

M0 Series

- Air Pilot, Manual / mechanical
- 1/4 and 1 inch ports
- Pressures VAC to 225 PSIG
- Temperatures -15°F to 200°F
- Flow - .5 to 1.25 Cv

D227

LV / EZ Lockout Valves

- Port sizes 3/8 through 1-1/4 inch
- Max.supply pressure 300 PSIG
- Max. operating temperature 175°F
- Cv from 3.7 to 14

D231

Brass Poppet, Sliding Seal

- 4-way, 3-position rotary disc, direct air operated valves
- Pressures 0 to 150 PSIG
- Temperatures 18°F to 200°F
- Flow - 2.5 to 6.2 Cv

D233

Valve Accessories

Control Panel Products

- A wide variety of push buttons and selector switches
- Visual indicators
- Foot pedal switches
- Modular pneumatic / electric push buttons

D236

Sensing / Limit Switches

- Limit switches in a variety of sizes and configurations
- Pressure switches with many adjustable ranges
- Components designed specifically for pneumatic technology using pressure variation, air bleen or blocking for detection

D240

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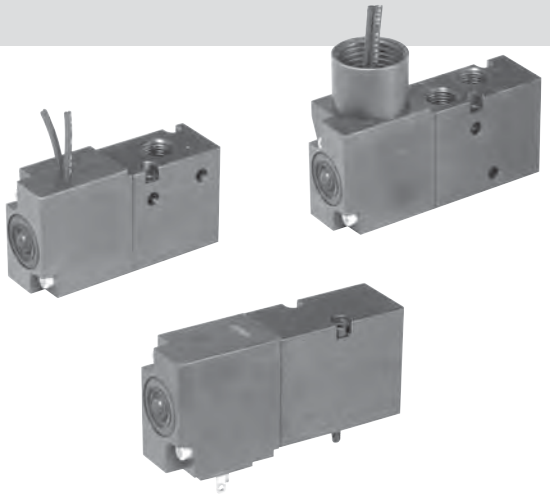
XM Valve Series

XM series is a 1/8 inch ported, 3-way and 4-way, 2-position, spring return, normally open or normally closed, general purpose air valve.



Ports
- 1/8" NPT

Mounting
- Inline
- IEM bar manifold
- Subbase valve manifold

Solenoids
- Continuous duty rated
- 24" grommet
- 15mm 3-pin (9.4mm pin spacing)
- 1/2" conduit
- 12VDC to 240VAC

Balanced poppet
- 3-way N.O. & N.C.
- Diverter
- Selector
- Vacuum option

ROHS compliant

Operating information

3-way, N operating pressure:	0 to 125 PSIG
3-way, V* operating pressure:	0.28" Hg to 125 PSIG
4-way, N operating pressure:	0.28" Hg to 125 PSIG
Temperature range:	32°F to 125°F (0°C to 50°C)

* For vacuum service

Material specifications

Body	Aluminum
Center post and armature	Stainless steel
Stem	Brass
Spring	Stainless steel
Seals	Buna N
Center post sleeve	Acetal
Coil	General purpose Class B, encapsulated

Performance information

Electrical						Flow	
	Voltage			Power consumption	Holding current	Cv chart	
Code	AC		DC				
	60Hz	50Hz		(W / VA)	(Amps)	3-way	4-way
42	24	22	—	4.8VA	.200	.15	.15
45*	—	—	12	4.5W	.375	.15	.15
49*	—	—	24	4.5W	.188	.15	.15
53	120	110	—	4.32VA	.036	.15	.15
57	240	220	—	4.32VA	.018	.15	.15

* Mobile voltage, +25/-30%
Note: Voltage tolerance: +10 / -15%
Cv tested per ANSI / (NFPA) T3.21.3

Response time

		0 Cu. in. test chamber		12 Cu. in. test chamber	
Code	Voltage	Fill	Exhaust	Fill	Exhaust
49	24VDC	.011	.007	.240	.384
53	120VAC	.011	.020	.240	.384

Average Fill Time (Seconds): With 100 PSIG supply, time required to fill from 0-90 PSIG and exhaust from 100 PSIG to 10 PSIG is measured from instant of energizing, or de-energizing solenoid. Times shown are average.
Tested per ANSI / (NFPA) T3.21.8.

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3-way Inline Valves

	Symbol	Port size	Cv	Voltage	Valve type	Weight	Part number
		1/8"	.15	24" Grommet, 24VDC	Inline	4 oz (.11 Kg)	**XM30NBG49A**
		1/8"	.15	24" Grommet, 120VAC	Inline		**XM30NBG53A**
		1/8"	.15	3-Pin, 15mm, DIN 9.4mm, 24VDC	Inline	4 oz (.11 Kg)	**XM30NB549A**
		1/8"	.15	3-Pin, 15mm, DIN 9.4mm, 120VAC	Inline		**XM30NB553A**
		1/8"	.15	1/2" Conduit / 24" leads, 24VDC	Inline	5 oz (.14 Kg)	**XM30NBH49A**
		1/8"	.15	1/2" Conduit / 24" leads, 120VAC	Inline		**XM30NBH53A**

Note: All units with non-locking flush override. Can be used as N.O / N.C. / Diverter / Selector function.

4-way Inline Valves

	Symbol	Port size	Cv	Voltage	Valve type	Weight	Part number
		1/8"	.15	24" Grommet, 24VDC	Inline	4.3 oz (.12 Kg)	**XM40NBG49A**
		1/8"	.15	24" Grommet, 120VAC	Inline		**XM40NBG53A**
		1/8"	.15	3-Pin, 15mm, DIN 9.4mm, 24VDC	Inline	4.3 oz (.12 Kg)	**XM40NB549A**
		1/8"	.15	3-Pin, 15mm, DIN 9.4mm, 120VAC	Inline		**XM40NB553A**
		1/8"	.15	1/2" Conduit / 24" leads, 24VDC	Inline	5.3 oz (.15 Kg)	**XM40NBH49A**
		1/8"	.15	1/2" Conduit / 24" leads, 120VAC	Inline		**XM40NBH53A**

Note: All units with non-locking flush override.

3-way Subbase Mount Valves

	Symbol	Port size	Cv	Voltage	Valve type	Weight	Part number
		1/8"	.15	24" Grommet, 24VDC	Subbase mount	4 oz (.11 Kg)	**XM3VNBG49A**
		1/8"	.15	24" Grommet, 120VAC	Subbase mount		**XM3VNBG53A**
		1/8"	.15	3-Pin, 15mm, DIN 9.4mm, 24VDC	Subbase mount	4 oz (.11 Kg)	**XM3VNB549A**
		1/8"	.15	3-Pin, 15mm, DIN 9.4mm, 120VAC	Subbase mount		**XM3VNB553A**

Note: All units with non-locking flush override. Can be used as N.O / N.C. / Diverter / Selector function.

4-way Subbase Mount Valves

	Symbol	Port size	Cv	Voltage	Valve type	Weight	Part number
		1/8"	.15	24" Grommet, 24VDC	Subbase mount	4.3 oz (.12 Kg)	**XM4VNBG49A**
		1/8"	.15	24" Grommet, 120VAC	Subbase mount		**XM4VNBG53A**
		1/8"	.15	3-Pin, 15mm, DIN 9.4mm, 24VDC	Subbase mount	4.3 oz (.12 Kg)	**XM4VNB549A**
		1/8"	.15	3-Pin, 15mm, DIN 9.4mm, 120VAC	Subbase mount		**XM4VNB553A**

Note: All units with non-locking flush override.

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Manifold

Description	Part number
IEM bar manifold (NPT)	**PSMXN##NP**

– stations 02 to 12 (04 Shown)

Subbase

Description	Part number
Manifold subbase kit (NPT)	**PSXM530CP**

Plug-in Electrical Connectors - 9.4mm

	Description	Indication	Voltage	Part number
	Unwired Plug	None	N/A	**PESC10**
		LED & Suppression	12/24V	**PESC2020B**
			120VAC	**PESC2001F**
	Plug with 6" lead	None	N/A	**PESC12**
		LED & Suppression	12/24V	**PESC2220B**
			120VAC	**PESC2201F**

Accessories

	Description	Part number
	End plate kit (NPT)	**PSXM1010P**
	Blanking plate kit Subbase Kit includes: (1) Plate, (3) Screws, (4) Gaskets Fits subbase or IEM type manifold.	**PSXM8310P**
	Mounting Bracket - Inline valve	**PSXM8288P**
	Isolator plugs - Subbase manifold	**PSXM40900P**
	IEM valve / manifold o-ring kit	**PSXM2186P**
	Subbase valve / manifold bolt kit	**PSXM8100P**

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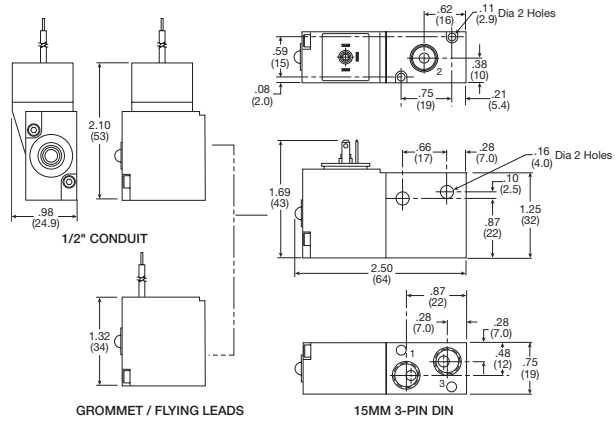
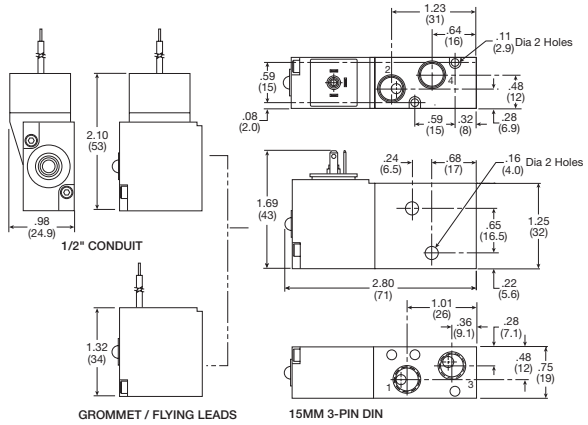
XM 3-way Inline



Inches (mm)

Note: 22 AWG black cross linked polyethylene insulated lead wire.

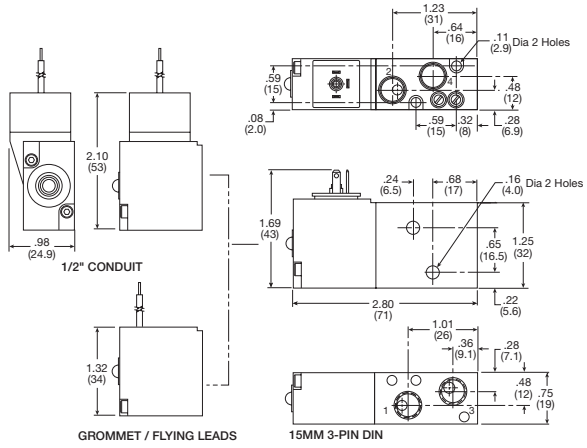
XM 4-way Inline



Inches (mm)

Note: 22 AWG black cross linked polyethylene insulated lead wire.

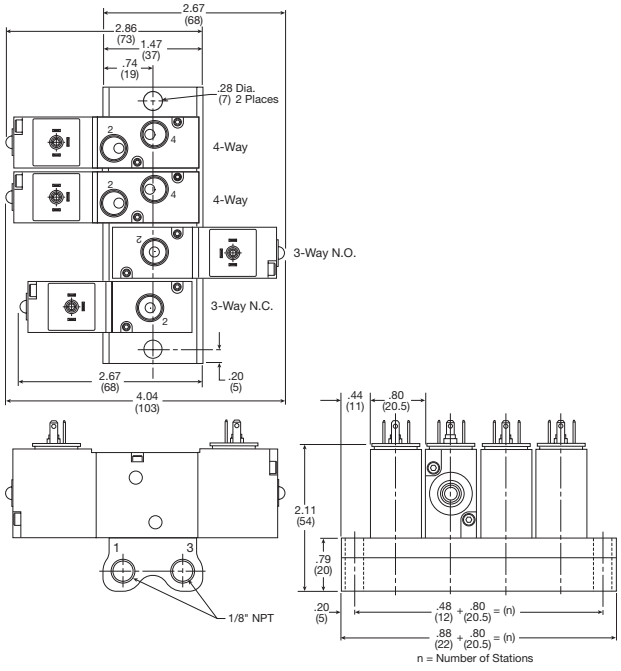
XM 4-way Inline with Flow Controls



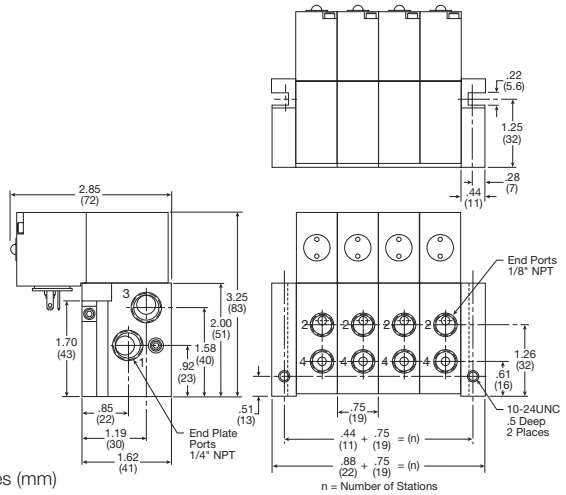
Inches (mm)

Note: 22 AWG black cross linked polyethylene insulated lead wire.

XM IEM Manifold



XM IEM Subbase



Inches (mm)

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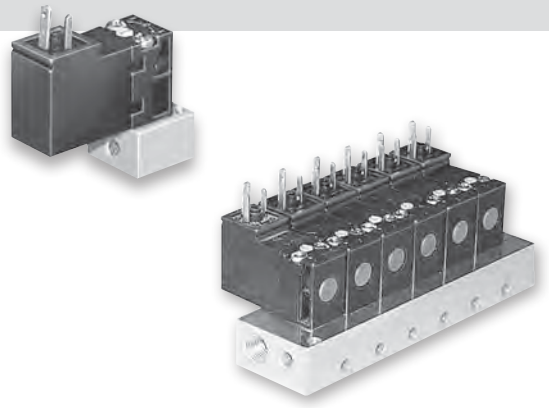
15mm Solenoid Valve



A compact 15mm, 3-way subbase or manifold mounted valve. Ideally suited for use in stationary or mobile equipment applications, where flow rates and low temperatures are a key consideration.

Features

- Compact and simple design
- Utilizes 15mm solenoid operators
- Manifold allows mounting of normally open and normally closed operators simultaneously
- Up to 20 stations available

Solenoids

- 15mm low watt solenoids are UL certified and approved to be CE marked
- Wide range of voltages available

Applications

- Piloting for process control valves
  - pharmaceutical equipment
  - waste water treatment systems
  - food processing
  - chemical batching
- Industrial laundry equipment
- Paint spray & dyeing equipment
- Textile winding applications
- Vacuum and conveyor applications

Operating information

Operating pressure:	Vacuum to 145 PSIG (Vacuum to 10 bar)
Operating temperature:	
Standard Flow:	5°F to 140°F (-15°C to 60°C)
High Flow:	5°F to 122°F (-15°C to 50°C)
Mobile Applications (47 & 48 Voltage Options):	-40°F to 158°F (-40°C to 70°C)
Storage temperature:	
All applications:	-40°F to 158°F (-40°C to 70°C)

Material specifications

Body	Glass filled polyamide
Internal metal parts	Steel
Screws	Steel
Bottom plug	Thermoplastic
Poppet seals	Nitrile for standard, fluorocarbon for mobile

Technical data

Electrical interface per:	Din 43650 Form C (EN175301-803C)
Pneumatic interface per:	AFNOR E 0652 110 N
Protection:	IP65 (Washdown)
Air flow:	Standard flow 0.033 Cv (33 Lpm) (1.2W) (1.6VA)
Voltage tolerance:	All voltages except 47 & 48: Rated voltage +10% / -15% options 47 & 48: Rated voltage +25% / -30%

☐ Most popular.

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NC (NNP) Solenoids / Kits

	## Voltage (S = Standard, O = Optional, — = N/A)					
* Override	42 (24VAC)	45 (12VDC)	49 (24VDC)	53 (120VAC)	57 (230VAC)	Kit No.
B (Non-lock, Flush)	O	O	S	S	O	**PS2982*##P Pins: UP NC / NNP 1.2W / 1.6VA**
C (Lock, Flush)	O	O	S	S	O	
D (Non-lock, Ext)	—	—	O	O	—	
B (Non-lock, Flush)	O	O	S	S	—	**PS3541*##P Pins: DOWN NC / NNP 1.8W / 2.4VA**
C (Lock, Flush)	O	O	S	S	—	
D (Non-lock, Ext)	—	—	O	O	—	
E (Lock, Ext)	—	—	O	O	—	
B (Non-lock, Flush)	O	O	O	O	O	**PS3441*##P Pins: DOWN NC / NNP 1.2W / 1.6VA**
C (Lock, Flush)	O	O	O	O	O	
B (Non-lock, Flush)	O	O	S	S	—	**PS3202*##P Pins: UP NO / NP 1.2W / 1.6VA**

* Override
Voltage

Model Number Index

PSF T N 0 N 02 N P

Basic series

Subbase 3/2 bottom port	PSE
Subbase 3/2 end port	**PSF**

Manifold type

15mm solenoid valve manifold (machined to accept NC/ NO on same bar)	S
15mm solenoid valve manifold (machined to accept all NC or all NO)	**T**
15mm solenoid valve subbase	R

* Pins up only.
** End ported only.

Pilot source

Direct	**N**

Cylinder port size

M5	**0**

Port type

0*	M5
N**	**NPT**

* Use for valve manifold R only - single subbase
** Use for valve manifold S & T only - manifold

Number of stations

02	**2 Stations**
03	**3 Stations**
20	**20 Stations**
XX	**Single***

* Use for "R" manifold type only

Options

N**	**Standard - cylinder port on non-electrical side (port 1 side)**
E*	Cylinder port on electrical side (port 3 side)

* N/A with valve series "S"
* N/A with manifold "PSE"
** Use for bottom ported manifold type

Brand label

P	**Parker**

Examples:
PSFTN0N16EP - End port manifold - Cyl ports and electrical on same side
PSESN0N10NP - Bottom port manifold - N/C and N/O can be interchanged
PSFTN0N10NP - End port manifold - Cyl ports and electrical are opposite

BOLD OPTIONS ARE MOST POPULAR.

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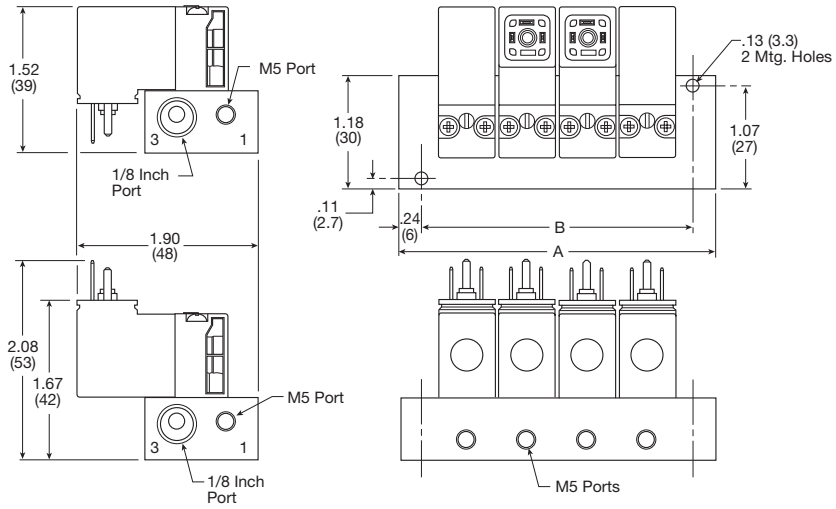
Manifold Dimensions

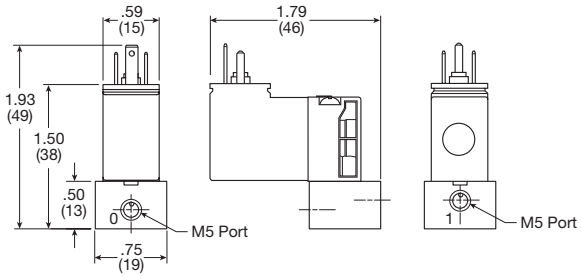
Special mounting considerations must be made for connector assembly clearance when mounting solenoid valves with pins down.



Number of stations	Dim. A	Dim. B
2	2.04 (52)	1.57 (40)
3	2.68 (68)	2.20 (56)
4	3.31 (84)	2.83 (72)
5	3.94 (100)	3.46 (88)
6	4.57 (116)	4.09 (104)
7	5.20 (132)	4.72 (120)
8	5.83 (148)	5.35 (136)
9	6.46 (164)	5.98 (152)
10	7.09 (180)	6.61 (168)
11	7.72 (196)	7.24 (184)
12	8.35 (212)	7.87 (200)
13	8.98 (228)	8.50 (216)
14	9.61 (244)	9.13 (232)
15	10.23 (260)	9.76 (248)
16	10.87 (276)	10.39 (264)
17	11.50 (292)	11.02 (280)
18	12.13 (308)	11.65 (296)
19	12.76 (324)	12.28 (312)
20	13.39 (340)	12.91 (328)

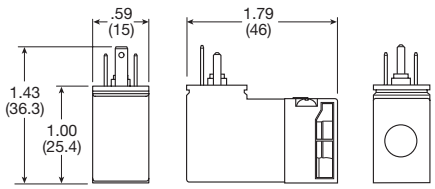
Subbase Dimensions

Pins up only.



15mm Solenoid Dimensions

Pins up only.



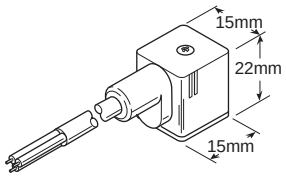
Female Electrical Connectors

15mm 3-Pin DIN 43650C (Use with enclosure "5")

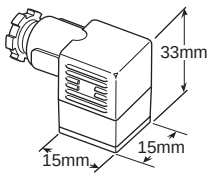
Description		Connector	Connector with cord
Unlighted	18 Inches	**PS2932BP**	**PS2932HBP**
Unlighted	6 Feet	**PS2932BP**	**PS2932JBP**
Light – 12VAC or DC	6 Feet	**PS294675BP**	**PS2946J75BP***
Light – 24VAC or DC	6 Feet	**PS294679BP**	**PS2946J79BP***
Light – 110/120VAC	6 Feet	**PS294683BP**	**PS2946J83BP***
Light – 240/230VAC		**PS294687BP**	**N/A**

* LED with surge suppression.

Note: Max ø6.5mm cable size required for connector w/o 6' (2m) cord.
IP65 rated when properly installed.



Connector with cord



Connector only

Engineering Data:
Conductors: 2 poles plus ground
Cable range (Connector only): 4 to 6mm (0.16 to 0.24 Inch)
Contact spacing: 8mm

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Viking Lite Series

The Viking Lite valve range is robust, versatile and combines a large flow capacity with short change-over times, designer may choose 1/8, 1/4 or 3/8 port sizes along with 24VDC and 120VAC voltage options. Viking Lite valves are fitted with dynamic bi-directional spool seals suitable for pressures up to 10 bar and ambient temperatures between -10°C to + 50°C. When in service, radial expansion of the spool seal occurs to maintain sealing contact with the valve bore. This sealing method reduces friction and produces a lower required pilot pressure. Valves do not require lubrication in operation but they can also be installed in systems that are lubricated.

Ports
- P2LAZ: 1/8 inch NPT & BSPP, Cv = 0.6
- P2LBZ: 1/4 inch NPT & BSPP, Cv = 1.5
- P2LCZ: 3/8 inch NPT & BSPP, Cv = 2.5

Mounting
- Inline
- IEM aluminum bar

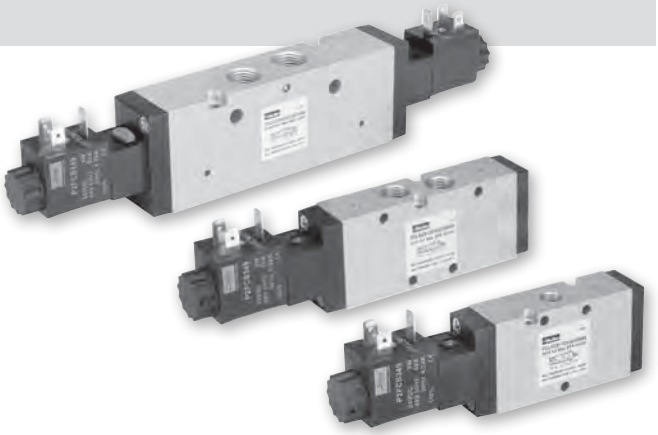
Solenoids
2.5 watts
- 22mm, 3-pin (DIN 43650)

24VDC and 120VAC

- **Certification / approval**
  - IP65 Rated, RoHS, CE

Materials

Valve body	Anodized aluminium
End covers	Anodized aluminium
Spool	Aluminium
Piston	Acetal plastic / Anodized aluminium
End cover sealings	Nitrile rubber
End cover screws	Zinc plated steel
Springs	Stainless steel
Mounting screws for solenoid	Stainless steel
Spool seals	Nitrile



Operating information

Operating pressure:	145 PSIG (10 bar)
Minimum:	See chart
Operating temperature:	14°F to 122°F (-10°C to 50°C)

Minimum operating pressure, PSIG (bar)

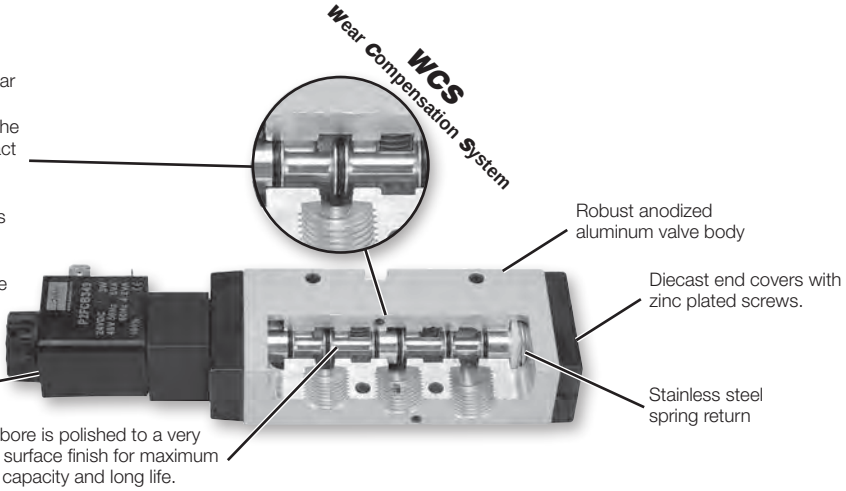
Valve type - Internal pilot	P2LAZ	P2LBZ	P2LCZ
Single solenoid - spring return	43.5 (3.0)	43.5 (3.0)	43.5 (3.0)
Double solenoid - 2-position	22 (1.5)	22 (1.5)	22 (1.5)
Double solenoid - 3-position (APB, PC, CE)	43.5 (3.0)	43.5 (3.0)	43.5 (3.0)

Recommended air quality for valves

For best possible service life and trouble free operation, ISO 8573-1 quality class 3.4.3 should be used. This means 5µm filter (standard filter) dew point +3°C for indoor operation (a lower dew point should be selected for outdoor operation) and oil concentration 1.0 mg oil/m³, which is what a standard compressor with a standard filter gives.

Features

WCS
- Maximum Performance
  - Low friction - fast response - less wear
- Long Cycle Life
  - Under pressure, radial expansion of the seal occurs to maintain sealing contact with the valve bore
- Non-Lube Service
  - No lubrication required for continuous valve shifting
- Bi-Directional Spool Seals
  - Common spool used for any pressure



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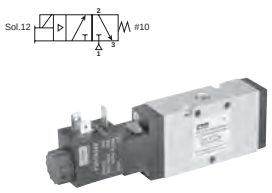
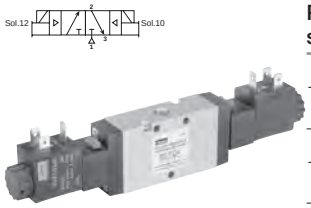
3/2 - 2 Position Single Solenoid



P2LAZ Shown

Port size	Cv	Response time (msec)	Weight lb (kg)	Voltage	Part number (NPT)	Part number (BSPP)
1/8	0.6	15 / 35	0.35 (0.16)	24VDC	**P2LAZ391ESNDBB49**	**P2LAZ311ESNDBB49**
				120VAC	**P2LAZ391ESNDBB53**	**P2LAZ311ESNDBB53**
1/4	1.5	18 / 45	0.35 (0.16)	24VDC	**P2LBZ392ESNDBB49**	**P2LBZ312ESNDBB49**
				120VAC	**P2LBZ392ESNDBB53**	**P2LBZ312ESNDBB53**
3/8	2.5	27 / 45	0.77 (0.35)	24VDC	**P2LCZ393ESNDBB49**	**P2LCZ313ESNDBB49**
				120VAC	**P2LCZ393ESNDBB53**	**P2LCZ313ESNDBB53**

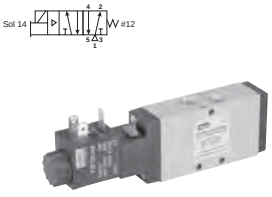
3/2 - 2 Position Double Solenoid



P2LAZ Shown

Port size	Cv	Response time (msec)	Weight lb (kg)	Voltage	Part number (NPT)	Part number (BSPP)
1/8	0.6	10 / 10	0.40 (0.18)	24VDC	**P2LAZ391EENDBB49**	**P2LAZ311EENDBB49**
				120VAC	**P2LAZ391EENDBB53**	**P2LAZ311EENDBB53**
1/4	1.5	12 / 12	0.40 (0.18)	24VDC	**P2LBZ392EENDBB49**	**P2LBZ312EENDBB49**
				120VAC	**P2LBZ392EENDBB53**	**P2LBZ312EENDBB53**
3/8	2.5	17 / 17	0.80 (0.36)	24VDC	**P2LCZ393EENDBB49**	**P2LCZ313EENDBB49**
				120VAC	**P2LCZ393EENDBB53**	**P2LCZ313EENDBB53**

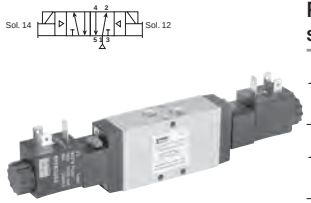
5/2 - 2 Position Single Solenoid



P2LAZ Shown

Port size	Cv	Response time (msec)	Weight lb (kg)	Voltage	Part number (NPT)	Part number (BSPP)
1/8	0.6	15 / 35	.037 (0.17)	24VDC	**P2LAZ591ESNDBB49**	**P2LAZ511ESNDBB49**
				120VAC	**P2LAZ591ESNDBB53**	**P2LAZ511ESNDBB53**
1/4	1.5	18 / 45	0.44 (0.20)	24VDC	**P2LBZ592ESNDBB49**	**P2LBZ512ESNDBB49**
				120VAC	**P2LBZ592ESNDBB53**	**P2LBZ512ESNDBB53**
3/8	2.5	27 / 45	0.95 (0.43)	24VDC	**P2LCZ593ESNDBB49**	**P2LCZ513ESNDBB49**
				120VAC	**P2LCZ593ESNDBB53**	**P2LCZ513ESNDBB53**

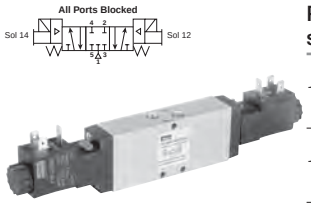
5/2 - 2 Position Double Solenoid



P2LAZ Shown

Port size	Cv	Response time (msec)	Weight lb (kg)	Voltage	Part number (NPT)	Part number (BSPP)
1/8	0.6	10 / 10	.042 (0.19)	24VDC	**P2LAZ591EENDBB49**	**P2LAZ511EENDBB49**
				120VAC	**P2LAZ591EENDBB53**	**P2LAZ511EENDBB53**
1/4	1.5	12 / 12	0.46 (0.21)	24VDC	**P2LBZ592EENDBB49**	**P2LBZ512EENDBB49**
				120VAC	**P2LBZ592EENDBB53**	**P2LBZ512EENDBB53**
3/8	2.5	17 / 17	0.97 (0.44)	24VDC	**P2LCZ593EENDBB49**	**P2LCZ513EENDBB49**
				120VAC	**P2LCZ593EENDBB53**	**P2LCZ513EENDBB53**

5/3 - 3 Position, All Ports Blocked



P2LAZ Shown

Port size	Cv	Response time (msec)	Weight lb (kg)	Voltage	Part number (NPT)	Part number (BSPP)
1/8	0.6	18 / 40	0.57 (0.26)	24VDC	**P2LAZ691EENDBB49**	**P2LAZ611EENDBB49**
				120VAC	**P2LAZ691EENDBB53**	**P2LAZ611EENDBB53**
1/4	1.5	22 / 55	0.62 (0.28)	24VDC	**P2LBZ692EENDBB49**	**P2LBZ612EENDBB49**
				120VAC	**P2LBZ692EENDBB53**	**P2LBZ612EENDBB53**
3/8	2.5	30 / 90	1.32 (0.60)	24VDC	**P2LCZ693EENDBB49**	**P2LCZ613EENDBB49**
				120VAC	**P2LCZ693EENDBB53**	**P2LCZ613EENDBB53**

Most popular. **Notes:** Response time: Actuate to 90% pressure / return to exhaust to 10% of supply pressure. 93 PSIG (6.3 bar) / temperature 68°F (20°C)

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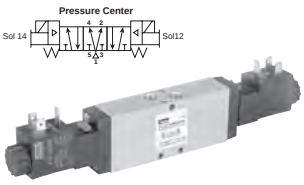
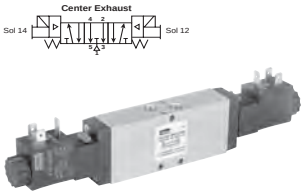
5/3 - 3 Position, Pressure Center



P2LAZ Shown

Port size	Cv	Response time (msec)	Weight lb (kg)	Voltage	Part number (NPT)	Part number (BSPP)
1/8	0.6	18 / 40	0.57 (0.26)	24VDC	**P2LAZ791EENDBB49**	**P2LAZ711EENDBB49**
				120VAC	**P2LAZ791EENDBB53**	**P2LAZ711EENDBB53**
1/4	1.5	22 / 55	0.62 (0.28)	24VDC	**P2LBZ792EENDBB49**	**P2LBZ712EENDBB49**
				120VAC	**P2LBZ792EENDBB53**	**P2LBZ712EENDBB53**
3/8	2.5	30 / 90	1.32 (0.60)	24VDC	**P2LCZ793EENDBB49**	**P2LCZ713EENDBB49**
				120VAC	**P2LCZ793EENDCB53**	**P2LCZ713EENDBB53**

5/3 - 3 Position, Center Exhaust



P2LAZ Shown

Port size	Cv	Response time (msec)	Weight lb (kg)	Voltage	Part number (NPT)	Part number (BSPP)
1/8	0.6	18 / 40	0.57 (0.26)	24VDC	**P2LAZ891EENDBB49**	**P2LAZ811EENDBB49**
				120VAC	**P2LAZ891EENDBB53**	**P2LAZ811EENDBB53**
1/4	1.5	22 / 55	0.62 (0.28)	24VDC	**P2LBZ892EENDBB49**	**P2LBZ812EENDBB49**
				120VAC	**P2LBZ892EENDBB53**	**P2LBZ812EENDBB53**
3/8	2.5	30 / 90	1.32 (0.60)	24VDC	**P2LCZ893EENDBB49**	**P2LCZ813EENDBB49**
				120VAC	**P2LCZ893EENDBB53**	**P2LCZ813EENDBB53**

Notes: Response time: Actuate to 90% pressure / return to exhaust to 10% of supply pressure. 93 PSIG (6.3 bar) / temperature 68°F (20°C)

Single & Double Solenoid Operated Valves

P2L	A	Z	5	91	E	S	N	D	C	B	49

Valve size

1/8"	A
1/4"	B
3/8"	C

Series

Viking Lite	Z

Valve type / function

Internal pilot supply to solenoid	
3/2 NC - 2-position	3
5/2 2-position	5
5/3 3-position, APB	6
5/3 3-position, PC	7
5/3 3-position, CE	8

Main port thread

G1/8 (P2LA)	11
G1/4 (P2LB)	12
G3/8 (P2LC)	13
1/8" NPT (P2LA)	91
1/4" NPT (P2LB)	92
3/8" NPT (P2LC)	93

12 End operator

E	Double solenoid operated valve
S*	Single solenoid spring return

* Not available with 3-position valves.

Valve type

N	14°F to 122°F (-10°C to 50°C)

Solenoid pilot type

D	Pilot exhaust vented

Overrides

C	Extended - locking
B	Flush - non-locking

Enclosures / lead length

B	22mm rectangular 3-pin – type B industrial (male only)
N	Valve less coil

Voltage / frequency

49	24VDC
53	120VAC
Blank	Valve less coil

☐ Most popular.

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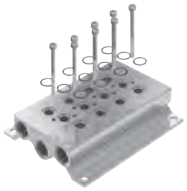
IEM Bar Manifold, Inline Valve Only*

Valve series	Valve function	# of Stations	Weight lb (kg)	Manifold only (NPT)	Manifold only (BSPP)
P2LAZ / P2LBZ	3-way	2	0.84 (0.38)	**91213202SXZN**	**91213202SXZ**
P2LAZ / P2LBZ	3-way	4	1.41 (0.64)	**91213204SXZN**	**91213204SXZ**
P2LAZ / P2LBZ	3-way	6	1.96 (0.89)	**91213206SXZN**	**91213206SXZ**
P2LAZ / P2LBZ	3-way	8	2.54 (1.15)	**91213208SXZN**	**91213208SXZ**
P2LAZ / P2LBZ	3-way	10	3.09 (1.40)	**91213210SXZN**	**91213210SXZ**

Kits include: Manifold, valve hold down bolts, gaskets.



Valve series	Valve function	# of Stations	Weight lb (kg)	Manifold only (NPT)	Manifold only (BSPP)
P2LAZ	4-way	2	0.68 (0.31)	**9121658068N**	**9121658068**
P2LAZ	4-way	4	1.06 (0.48)	**9121658075N**	**9121658075**
P2LAZ	4-way	6	1.39 (0.63)	**9121658076N**	**9121658076**
P2LAZ	4-way	8	1.76 (0.80)	**9121658077N**	**9121658077**
P2LAZ	4-way	10	2.16 (0.98)	**9121658078N**	**9121658078**

Kits include: Manifold, valve hold down bolts, gaskets.

Valve series	Valve function	# of Stations	Weight lb (kg)	Manifold only (NPT)	Manifold only (BSPP)
P2LBZ	4-way	2	1.53 (0.69)	**9121594805XN**	**9121594805X**
P2LBZ	4-way	4	2.49 (1.13)	**9121594806XN**	**9121594806X**
P2LBZ	4-way	6	3.44 (1.56)	**9121594807XN**	**9121594807X**
P2LBZ	4-way	8	4.41 (2.00)	**9121594808XN**	**9121594808X**
P2LBZ	4-way	10	5.40 (2.45)	**9121594812XN**	**9121594812X**

Kits include: Manifold, valve hold down bolts, gaskets.
* For odd number of stations, consider Viking Xtreme bar manifold.

IEM Bar Manifold, Inline Valve Only

Valve series	Valve function	# of Stations	Manifold only (NPT)	Manifold only (BSPP)
P2LCZ	4-way	Use Viking Xtreme IEM bar manifold		

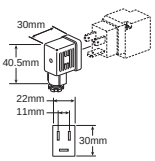
Note: P2LCZ 3-way has no IEM manifold

Manifold Accessories / Parts

Valve series	Description	Weight lb (kg)	Kit number
P2LAZ / P2LBZ *	3-way: Blanking kit with mounting screws (2)	0.22 (0.10)	**912132BPSXZ**
P2LAZ *	4-way: Blanking kit with mounting screws (2)	0.11 (0.05)	**9121658063**
P2LBZ *	4-way: Blanking kit with mounting screws (2)	0.04 (0.02)	**9121594809X**

***Note:** O-ring for blanking kit included with manifold. For replacement o-rings or fastener bolts, use Viking Xtreme Kits.

22mm Rectangular 3-Pin – Type B Industrial
(Use with Enclosure "B")



Description	Connector with 6' (2m) cord	Connector
Unlighted	**PS2429JBP**	**PS2429BP**
Light – 24VDC	**PS2430J79BP***	**PS243079BP**
Light – 120V/60Hz	**PS2430J83BP***	**PS243083BP**

* LED with surge suppression.

Note: Max ø6.5mm cable size required for connector w/o 6' (2m) cord. IP65 rated when properly installed.

Engineering data:
conductors: 2 poles plus ground; cable range (connector only): 6 to 8mm (0.24 To 0.31 Inch); contact spacing: 11mm

Most popular.

Valve Less Coil

Remove the last 3 digits of the part number of the full valve and add "N" at the end for valve less coil.

Part number example :
P2LBZ592ESNDBBB49 valve with 24VDC solenoid
P2LBZ592ESNDBN valve less coil

Replacement Solenoid Coil

Description	Part number
24VDC coil kit	**P2FCB449**
110VAC coil kit	**P2FCB453**

Replacement Solenoid Nut

Description	Part number
Solenoid diffuser nut	**PS1556**

Description	Part number
Solenoid vented nut	**PS2892P**

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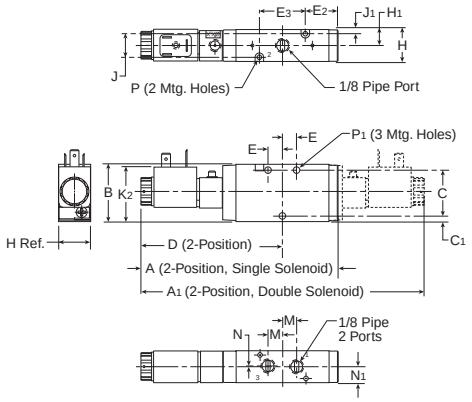
P2LAZ 3/2 Single & Double Operators – Solenoid

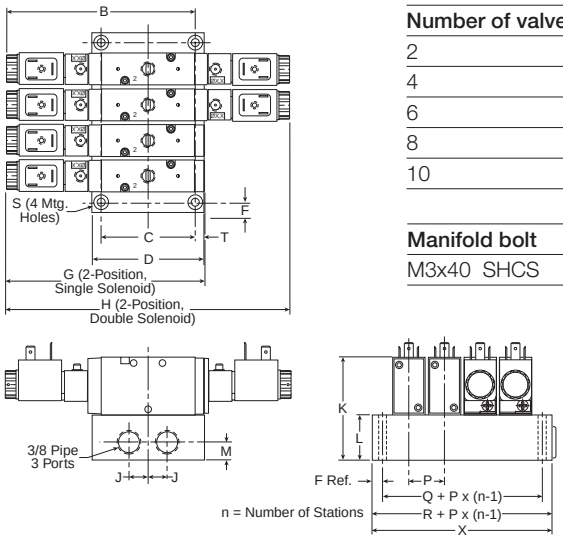


P2LAZ 3/2 (solenoid)

A	A1	B	C	C1
5.35 (136)	7.68 (195)	1.57 (40)	1.26 (32)	.16 (4)
D	**E**	**E2**	**E3**	**H**
3.84 (97.5)	.39 (10)	.91 (23)	1.26 (32)	.87 (22)
H1	**J**	**J1**	**K2**	**M**
.43 (11)	.65 (16.5)	.11 (2.75)	1.50 (38)	.39 (10)
N	**N1**	**P**	**P1**	
.02 (.5)	.43 (11)	Ø .12 Ø (3.1)	Ø .17 Ø (4.3)	

Inches (mm)

P2LAZ 3/2 Single & Double Operators – IEM Aluminum Bar Manifold



Number of valves	X
2	2.91 (74)
4	4.80 (122)
6	6.69 (170)
8	8.58 (218)
10	10.47 (266)

Inches (mm)

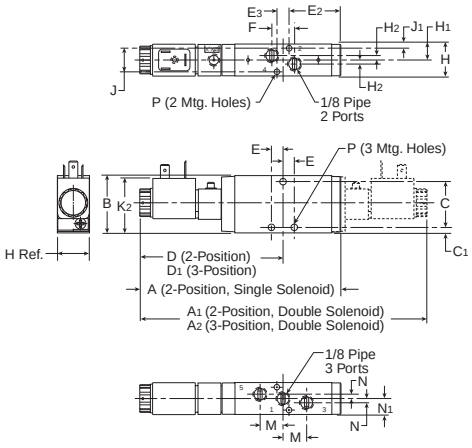
Manifold bolt	Torque value
M3x40 SHCS	4 in.lb (0.45 Nm)

P2LAZ 3/2
IEM Aluminum bar manifold

B	C	D	F	G
5.06 (128.5)	2.44 (62)	2.99 (76)	.28 (7)	5.35 (136)
H	**J**	**K**	**L**	**M**
7.68 (195)	.51 (13)	2.78 (70.5)	1.20 (30.5)	.47 (12)
P	**Q**	**R**	**S**	**T**
.94 (24)	1.42 (36)	1.97 (50)	Ø .22 Ø (5.5)	.88 (7)

Inches (mm)

P2LAZ 5/2 & 5/3 Single & Double Operators – Solenoid



P2LAZ 5/2 & 5/3 (solenoid)

A	A1	A2	B	C
5.47 (139)	7.76 (197)	8.70 (221)	1.57 (40)	1.30 (33)
C1	**D**	**D1**	**E**	**E2**
.14 (3.5)	3.88 (98.5)	4.35 (110.5)	.31 (8)	1.86 (47.3)
E3	**F**	**H**	**H1**	**H2**
.33 (8.5)	.63 (16)	.87 (22)	.43 (11)	.12 (3)
J	**J1**	**K2**	**M**	**N**
.63 (16)	.12 (3)	1.50 (38)	.63 (16)	.12 (3)
N1	**P**			
.43 (11)	Ø .16 Ø (4.1)			

Inches (mm)

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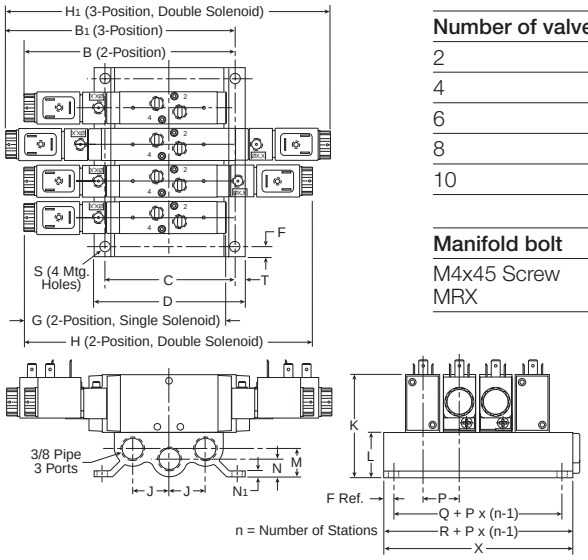
P2LAZ 5/2 & 5/3 Single & Double Operators – IEM Aluminum Bar Manifold



Number of valves	X
2	3.07 (78)
4	4.96 (126)
6	6.85 (174)
8	8.74 (222)
10	10.63 (270)

Inches (mm)

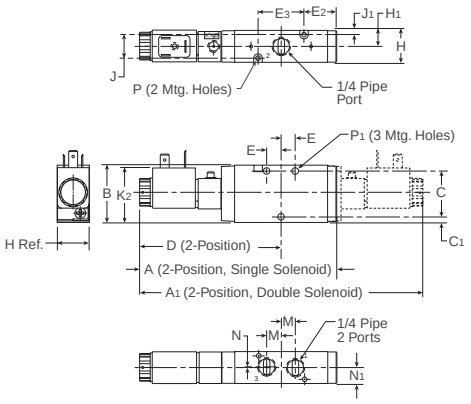
Manifold bolt	Torque value
M4x45 Screw MRX	9 in.lb (0.75 Nm)

P2LAZ 5/2 & 5/3
IEM Aluminum bar manifold

B	B1	C	D	F
5.10 (149.5)	6.36 (161.5)	3.46 (88)	4.02 (102)	.28 (7)
G	**H**	**H1**	**J**	**K**
5.47 (139)	7.76 (197)	8.70 (221)	.96 (24.5)	2.76 (70)
L	**M**	**N**	**N1**	**P**
1.18 (30)	.75 (19)	.47 (12)	.16 (4)	.94 (24)
Q	**R**	**S**	**T**	
1.57 (40)	2.13 (54)	Ø .28 Ø (7)	.28 (7)	

Inches (mm)

P2LBZ 3/2 Single & Double Operators – Solenoid

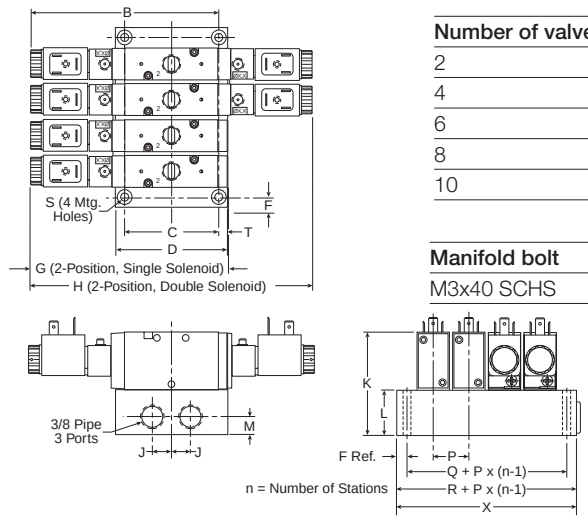


P2LBZ 3/2 (solenoid)

A	A1	B	C	C1
5.35 (136)	7.68 (195)	1.57 (40)	1.26 (32)	.16 (4)
D	**E**	**E2**	**E3**	**H**
3.84 (97.5)	.39 (10)	.91 (23)	1.26 (32)	.87 (22)
H1	**J**	**J1**	**K2**	**M**
.43 (11)	.65 (16.5)	.11 (2.75)	1.50 (38)	.39 (10)
N	**N1**	**P**	**P1**	
.02 (.5)	.43 (11)	Ø .12 Ø (3.1)	Ø .17 Ø (4.3)	

Inches (mm)

P2LBZ 3/2 Single & Double Operators – IEM Aluminum Bar Manifold



Number of valves	X
2	2.91 (74)
4	4.80 (122)
6	6.69 (170)
8	8.58 (218)
10	10.47 (266)

Inches (mm)

Manifold bolt	Torque value
M3x40 SCHS	4 in.lb (0.45 Nm)

P2LBZ 3/2
IEM Aluminum bar manifold

B	C	D	F	G
5.06 (128.5)	2.44 (62)	2.99 (76)	.28 (7)	5.35 (136)
H	**J**	**K**	**L**	**M**
7.68 (195)	.51 (13)	2.78 (70.5)	1.20 (30.5)	.47 (12)
P	**Q**	**R**	**S**	**T**
.94 (24)	1.42 (36)	1.97 (50)	Ø .22 Ø (5.5)	.88 (7)

Inches (mm)

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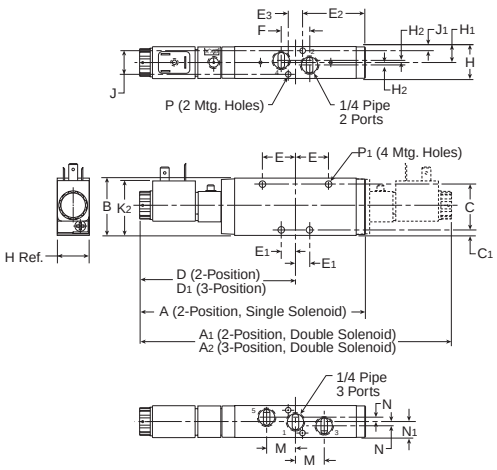
P2LBZ 5/2 & 5/3 Single & Double Operators – Solenoid

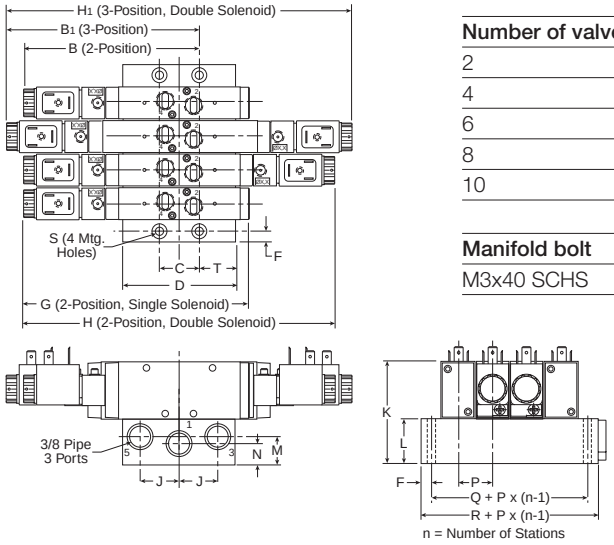


P2LBZ 5/2 & 5/3 (solenoid)

A	A1	A2	B	C
6.14 (156)	8.46 (215)	9.29 (236)	1.57 (40)	1.26 (32)
C1	**D**	**D1**	**E**	**E1**
.16 (4)	4.23 (107.5)	4.65 (118)	.91 (23)	.39 (10)
E2	**E3**	**F**	**H**	**H1**
1.14 (29)	.39 (10)	.79 (20)	.87 (22)	.43 (11)
H2	**J**	**J1**	**K2**	**M**
.06 (1.5)	.65 (16.5)	.11 (2.8)	1.50 (38)	.79 (20)
N	**N1**	**P**	**P1**	
.08 (2)	.43 (11)	Ø .12 Ø (3.1)	Ø .17 Ø (4.3)	

Inches (mm)

P2LBZ 5/2 & 5/3 Single & Double Operators – IEM Aluminum Bar Manifold



Number of valves	X
2	2.91 (74)
4	4.80 (122)
6	6.69 (170)
8	8.58 (218)
10	10.47 (266)

Inches (mm)

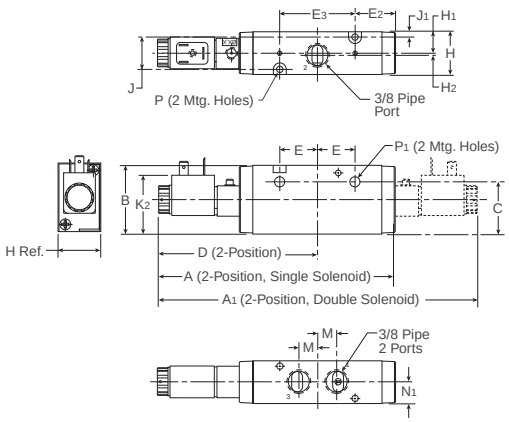
Manifold bolt	Torque value
M3x40 SCHS	9 in.lb (0.75 Nm)

P2LBZ 5/2 & 5/3 IEM Aluminum bar manifold

B	B1	C	D	F
4.43 (112.5)	4.84 (123)	1.04 (26.5)	2.99 (76)	.28 (7)
G	**H**	**H1**	**J**	**K**
6.14 (156)	8.46 (215)	9.29 (236)	1.02 (26)	2.781 (70.5)
L	**M**	**N**	**P**	**Q**
1.20 (30.5)	.75 (19)	.57 (14.5)	.94 (24)	1.57 (40)
R	**S**	**T**		
1.97 (50)	Ø .22 Ø (5.5)	.97 (25)		

Inches (mm)

P2LCZ 3/2 Single & Double Operators – Solenoid



P2LCZ 3/2 (solenoid)

A	A1	B	C	D
6.50 (165)	8.66 (220)	1.89 (48)	1.46 (37)	4.33 (110)
E	**E2**	**E3**	**H**	**H1**
1.04 (26.5)	1.10 (28)	2.09 (53)	1.18 (30)	.59 (15)
H2	**J**	**J1**	**K2**	**M**
.06 (1.55)	.91 (23)	.14 (3.5)	1.50 (38)	.53 (13.5)
N1	**P**	**P1**		
.59 (15)	Ø .17 Ø (4.4)	Ø .27 Ø (6.9)		

Inches (mm)

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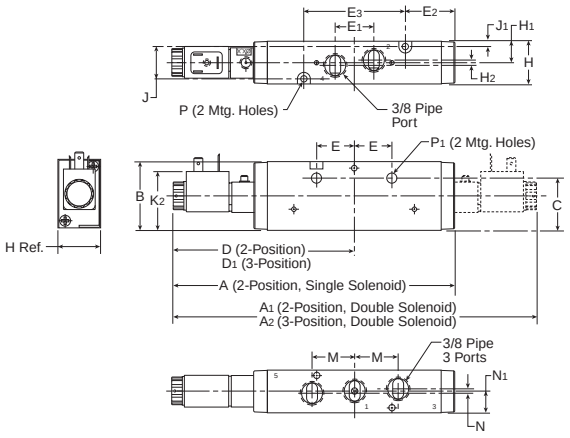
P2LCZ 5/2 & 5/3 Single & Double Operators – Solenoid

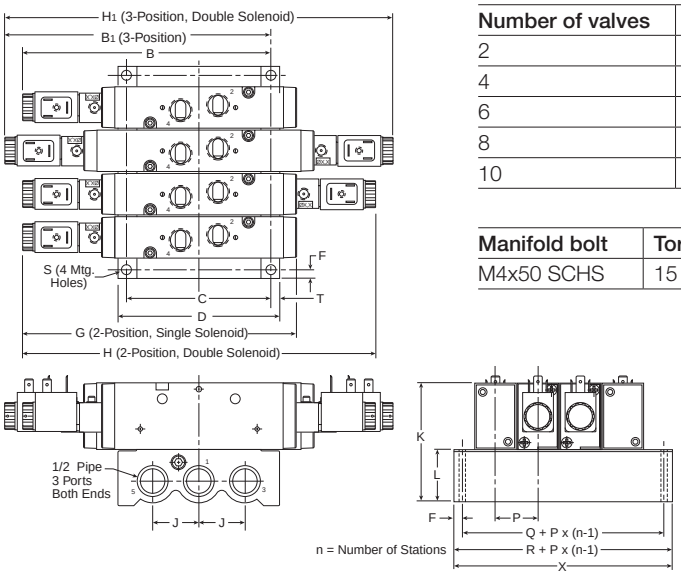


P2LBZ 5/2 & 5/3 (solenoid)

A	A1	A2	B	C
7.68 (195)	9.88 (251)	10.70 (272)	1.89 (48)	1.46 (37)
D	**D1**	**E**	**E1**	**E2**
4.94 (125.5)	5.35 (136)	1.04 (26.5)	1.06 (27)	1.71 (43.5)
E3	**H**	**H1**	**H2**	**J**
2.80 (71)	1.18 (30)	.59 (15)	.12 (.3)	.91 (23)
J1	**K2**	**M**	**N**	**N1**
.14 (3.5)	1.50 (38)	1.18 (30)	.08 (2)	.59 (15)
P	**P1**			
Ø .17 (Ø 4.4)	Ø .27 (Ø 6.9)			

Inches (mm)

P2LCZ 5/2 & 5/3 Single & Double Operators – IEM Aluminum Bar Manifold



Number of valves	X
2	3.29 (84)
4	5.96 (152)
6	8.44 (215)
8	10.93 (278)
10	13.41 (341)

Inches (mm)

Manifold bolt	Torque value
M4x50 SCHS	15 in.lb (2.0 Nm)

P2LCZ 5/2 & 5/3
IEM Aluminum bar manifold

C	D	F	G	H
3.97 (101)	4.41 (112)	.24 (6)	7.68 (195)	9.88 (251)
H1	**J**	**K**	**L**	**P**
10.70 (272)	1.26 (32)	3.43 (87)	1.54 (39)	1.24 (31.5)
Q	**R**	**S**	**T**	
1.77 (45)	2.24 (57)	Ø .26 (Ø 6.5)	.24 (6)	

Inches (mm)

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Viking Xtreme Series

The Viking Xtreme valve range is robust, versatile and combines high performance with compact installation dimensions. Large flow capacity, short change-over times and low change-over pressure are important characteristics of this valve range.

Ports
- P2LAX: 1/8 inch NPT & BSPP
- P2LBX: 1/4 inch NPT & BSPP
- P2LCX: 3/8 inch NPT & BSPP
- P2LDX: 1/2 inch NPT & BSPP

Mounting
- Inline
- IEM aluminum bar

Solenoids

2.5 watts to 7.3 watts
- Conduit
- Grommet
- 22mm & 30mm 3-pin (DIN 43650)

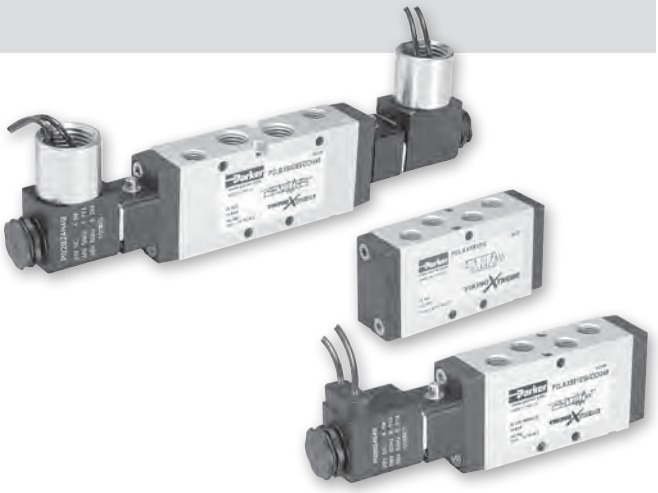
- 12VDC to 240VAC

Certification / approval
- IP65 Rated, RoHS, CE
- ATEX option available

Mobile applications
- Viking Xtreme tested to +5g shock and vibration
- Solenoids operate with wide voltage tolerance bands
- Corrosion resistant design
- Passed 500 hour salt spray test

Material specifications

Body	Anodized aluminum
End caps	Anodized aluminum
Coils	Thermoplastic
Fasteners	Stainless steel
Spool	Aluminum and nitrile rubber
Springs	Stainless steel



Operating information

Operating pressure:
- Normal: Vacuum to 145 PSIG (Vacuum to 10 bar)
- Xtreme: (P2LAX & P2LBX) Vacuum to 232 PSIG (Vacuum to 16 bar)
- (P2LCX & P2LDX) Vacuum to 174 PSIG (Vacuum to 12 bar)
- Minimum: See chart

Operating temperature:
- Normal: 14°F to 122°F (-10°C to 50°C)
- Xtreme: -40°F to 140°F (-40°C to 60°C)

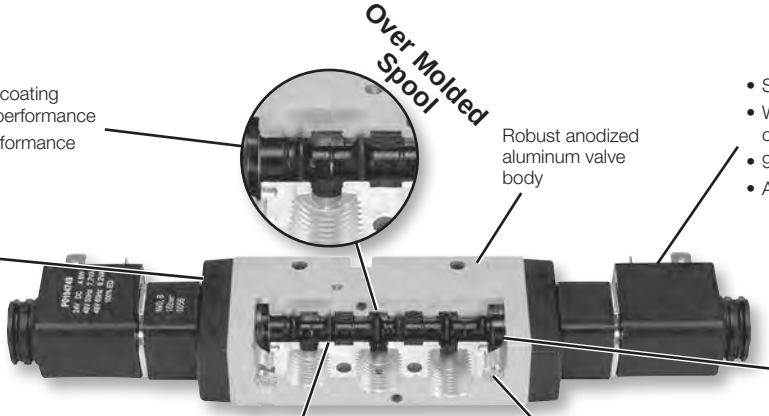
Minimum operating pressure, PSIG (bar)

Valve type - Internal pilot	P2LAX	P2LBX	P2LCX	P2LDX
Single solenoid - spring return	46 (3.2)	51 (3.5)	51 (3.5)	51 (3.5)
Single remote pilot - spring return	46 (3.2)	51 (3.5)	51 (3.5)	51 (3.5)
Double solenoid - 2-position	22 (1.5)	22 (1.5)	22 (1.5)	22 (1.5)
Double remote pilot - 2-position	22 (1.5)	22 (1.5)	22 (1.5)	22 (1.5)
Double solenoid - 3-position (APB, PC, CE)	51 (3.5)	51 (3.5)	51 (3.5)	51 (3.5)
Double remote pilot - 3-position (APB, PC, CE)	51 (3.5)	51 (3.5)	51 (3.5)	51 (3.5)

Features

Over Molded Spool
- Aluminum spool with nitrile rubber coating ground to exact size for optimum performance
- Precision ground for maximum performance
- Wide operating temperature range
  - Low temperature to -40°

Diecast end covers with stainless steel screws to resist agressive environments.



- Solenoid operated, IP65, RoHS, CE
- Wide variety of electrical connections
- 90° rotation
- Air pilot available

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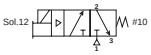
Single Solenoid, 3-way, 2-position, Normal Operating Pressure / Temperature



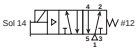
P2LAX 22mm DIN Shown

P2LAX 18" Grommet Shown

Solenoid	Port size (NPT)	Cv	Valve type	Response time (msec)	Weight lb (kg)	Voltage	Part number
22mm DIN	1/8"	0.7	P2LAX	18 / 40	0.84 (0.38)	24VDC	**P2LAX391ESNDDB49**
						120VAC	**P2LAX391ESNDDB53**
	1/4"	1.3	P2LBX	18 / 45	0.84 (0.38)	24VDC	**P2LBX392ESNDDB49**
						120VAC	**P2LBX392ESNDDB53**
	3/8"	2.5	P2LCX	25 / 75	1.72 (0.78)	24VDC	**P2LCX393ESNDDB49**
						120VAC	**P2LCX393ESNDDB53**
	1/2"	2.7	P2LDX	25 / 75	1.72 (0.78)	24VDC	**P2LDX394ESNDDB49**
						120VAC	**P2LDX394ESNDDB53**
18" Grommet	1/8"	0.7	P2LAX	18 / 40	0.84 (0.38)	24VDC	**P2LAX391ESNDDG49**
						120VAC	**P2LAX391ESNDDG53**
	1/4"	1.3	P2LBX	18 / 45	0.84 (0.38)	24VDC	**P2LBX392ESNDDG49**
						120VAC	**P2LBX392ESNDDG53**
	3/8"	2.5	P2LCX	25 / 75	1.72 (0.78)	24VDC	**P2LCX393ESNDDG49**
						120VAC	**P2LCX393ESNDDG53**
	1/2"	2.7	P2LDX	25 / 75	1.72 (0.78)	24VDC	**P2LDX394ESNDDG49**
						120VAC	**P2LDX394ESNDDG53**

Notes: Above valves are rated for an operating temperature from 14°F to 122°F (-10°C to 50°C). See model code matrix for additional options.
Response time: Actuate to 90% pressure / return to exhaust to 10% of supply pressure. 93 PSIG (6.3 bar) / temperature 68°F (20°C).

Single Solenoid, 4-way, 2-position, Normal Operating Pressure / Temperature



P2LBX 22mm DIN Shown

P2LAX 18" Grommet Shown

Solenoid	Port size (NPT)	Cv	Valve type	Response time (msec)	Weight lb (kg)	Voltage	Part number
22mm DIN	1/8"	0.7	P2LAX	15 / 35	0.49 (0.22)	24VDC	**P2LAX591ESNDDB49**
						120VAC	**P2LAX591ESNDDB53**
	1/4"	1.3	P2LBX	18 / 45	0.84 (0.38)	24VDC	**P2LBX592ESNDDB49**
						120VAC	**P2LBX592ESNDDB53**
	3/8"	2.5	P2LCX	27 / 75	1.68 (0.76)	24VDC	**P2LCX593ESNDDB49**
						120VAC	**P2LCX593ESNDDB53**
	1/2"	2.7	P2LDX	25 / 75	1.68 (0.76)	24VDC	**P2LDX594ESNDDB49**
						120VAC	**P2LDX594ESNDDB53**
18" Grommet	1/8"	0.7	P2LAX	15 / 35	0.49 (0.22)	24VDC	**P2LAX591ESNDDG49**
						120VAC	**P2LAX591ESNDDG53**
	1/4"	1.3	P2LBX	18 / 45	0.84 (0.38)	24VDC	**P2LBX592ESNDDG49**
						120VAC	**P2LBX592ESNDDG53**
	3/8"	2.5	P2LCX	27 / 75	1.68 (0.76)	24VDC	**P2LCX593ESNDDG49**
						120VAC	**P2LCX593ESNDDG53**
	1/2"	2.7	P2LDX	25 / 75	1.68 (0.76)	24VDC	**P2LDX594ESNDDG49**
						120VAC	**P2LDX594ESNDDG53**

Notes: Above valves are rated for an operating temperature from 14°F to 122°F (-10°C to 50°C). See model code matrix for additional options.
Response time: Actuate to 90% pressure / return to exhaust to 10% of supply pressure. 93 PSIG (6.3 bar) / temperature 68°F (20°C).

Most popular.

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Pneumatic Division
Richland, Michigan
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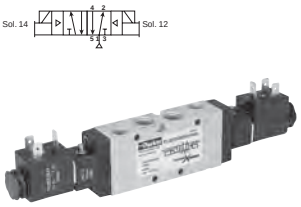
Double Solenoid, 4-way, 2-position, Normal Operating Pressure / Temperature



22mm DIN

P2LBX 22mm DIN Shown

18" Grommet

P2LAX 18" Grommet Shown

Solenoid	Port size (NPT)	Cv	Valve type	Response time (msec)	Weight lb (kg)	Voltage	Part number
22mm DIN	1/8"	0.7	P2LAX	10 / 10	0.60 (0.27)	24VDC	**P2LAX591EENDDB49**
						120VAC	**P2LAX591EENDDB53**
	1/4"	1.3	P2LBX	12 / 12	0.93 (0.42)	24VDC	**P2LBX592EENDDB49**
						120VAC	**P2LBX592EENDDB53**
	3/8"	2.5	P2LCX	17 / 17	1.78 (0.81)	24VDC	**P2LCX593EENDDB49**
						120VAC	**P2LCX593EENDDB53**
	1/2"	2.7	P2LDX	17 / 17	1.78 (0.81)	24VDC	**P2LDX594EENDDB49**
						120VAC	**P2LDX594EENDDB53**
18" Grommet	1/8"	0.7	P2LAX	10 / 10	0.60 (0.27)	24VDC	**P2LAX591EENDDG49**
						120VAC	**P2LAX591EENDDG53**
	1/4"	1.3	P2LBX	12 / 12	0.93 (0.42)	24VDC	**P2LBX592EENDDG49**
						120VAC	**P2LBX592EENDDG53**
	3/8"	2.5	P2LCX	17 / 17	1.78 (0.81)	24VDC	**P2LCX593EENDDG49**
						120VAC	**P2LCX593EENDDG53**
	1/2"	2.7	P2LDX	17 / 17	1.78 (0.81)	24VDC	**P2LDX594EENDDG49**
						120VAC	**P2LDX594EENDDG53**

Notes: Above valves are rated for an operating temperature from 14°F to 122°F (-10°C to 50°C). See model code matrix for additional options.
Response time: Actuate to 90% pressure / return to exhaust to 10% of supply pressure. 93 PSIG (6.3 bar) / temperature 68°F (20°C).

Double Solenoid, 4-way, 3-position All Ports Blocked, 3-position Center Exhaust, Normal Operating Pressure / Temperature

22mm DIN

P2LBX 22mm DIN Shown

18" Grommet

P2LBX 18" Grommet Shown

Solenoid	Port size (NPT)	Cv	Valve type	Response time (msec)	Weight lb (kg)	Voltage	Part number: All Ports Blocked	Part number: Center Exhaust
22mm DIN	1/8"	0.5	P2LAX	18 / 40	0.62 (0.28)	24VDC	**P2LAX691EENDDB49**	**P2LAX891EENDDB49**
						120VAC	**P2LAX691EENDDB53**	**P2LAX891EENDDB53**
	1/4"	0.9	P2LBX	22 / 55	0.97 (0.44)	24VDC	**P2LBX692EENDDB49**	**P2LBX892EENDDB49**
						120VAC	**P2LBX692EENDDB53**	**P2LBX892EENDDB53**
	3/8"	1.8	P2LCX	30 / 90	2.45 (1.11)	24VDC	**P2LCX693EENDDB49**	**P2LCX893EENDDB49**
						120VAC	**P2LCX693EENDDB53**	**P2LCX893EENDDB53**
	1/2"	1.9	P2LDX	30 / 90	2.45 (1.11)	24VDC	**P2LDX694EENDDB49**	**P2LDX894EENDDB49**
						120VAC	**P2LDX694EENDDB53**	**P2LDX894EENDDB53**
18" Grommet	1/8"	0.5	P2LAX	18 / 40	0.62 (0.28)	24VDC	**P2LAX691EENDDG49**	**P2LAX891EENDDG49**
						120VAC	**P2LAX691EENDDG53**	**P2LAX891EENDDG53**
	1/4"	0.9	P2LBX	22 / 55	0.97 (0.44)	24VDC	**P2LBX692EENDDG49**	**P2LBX892EENDDG49**
						120VAC	**P2LBX692EENDDG53**	**P2LBX892EENDDG53**
	3/8"	1.8	P2LCX	30 / 90	2.45 (1.11)	24VDC	**P2LCX693EENDDG49**	**P2LCX893EENDDG49**
						120VAC	**P2LCX693EENDDG53**	**P2LCX893EENDDG53**
	1/2"	1.9	P2LDX	30 / 90	2.45 (1.11)	24VDC	**P2LDX694EENDDG49**	**P2LDX894EENDDG49**
						120VAC	**P2LDX694EENDDG53**	**P2LDX894EENDDG53**

Notes: Above valves are rated for an operating temperature from 14°F to 122°F (-10°C to 50°C). See model code matrix for additional options.
Response time: Actuate to 90% pressure / return to exhaust to 10% of supply pressure. 93 PSIG (6.3 bar) / temperature 68°F (20°C).

Most popular.

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Pneumatic Division
Richland, Michigan
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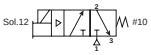
Single Solenoid, 3-way, 2-position, Xtreme Operating Pressure / Temperature



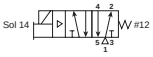
P2LBX 22mm DIN Shown

P2LBX 18" Grommet Shown

Solenoid	Port size (NPT)	Cv	Valve type	Response time (msec)	Weight lb (kg)	Voltage	Part number
22mm DIN	1/8"	0.7	P2LAX	15 / 45	0.84 (0.38)	12VDC	**P2LAX391ESHDDB47**
						24VDC	**P2LAX391ESHDDB48**
	1/4"	1.3	P2LBX	25 / 65	0.84 (0.38)	12VDC	**P2LBX392ESHDDB47**
						24VDC	**P2LBX392ESHDDB48**
	3/8"	2.5	P2LCX	25 / 85	1.01 (0.46)	12VDC	**P2LCX393ESHDDB47**
						24VDC	**P2LCX393ESHDDB48**
	1/2"	2.7	P2LDX	25 / 85	1.01 (0.46)	12VDC	**P2LDX394ESHDDB47**
						24VDC	**P2LDX394ESHDDB48**
18" Grommet	1/8"	0.7	P2LAX	15 / 45	0.84 (0.38)	12VDC	**P2LAX391ESHDDG47**
						24VDC	**P2LAX391ESHDDG48**
	1/4"	1.3	P2LBX	25 / 65	0.84 (0.38)	12VDC	**P2LBX392ESHDDG47**
						24VDC	**P2LBX392ESHDDG48**
	3/8"	2.5	P2LCX	25 / 85	1.01 (0.46)	12VDC	**P2LCX393ESHDDG47**
						24VDC	**P2LCX393ESHDDG48**
	1/2"	2.7	P2LDX	25 / 85	1.01 (0.46)	12VDC	**P2LDX394ESHDDG47**
						24VDC	**P2LDX394ESHDDG48**

Notes: Above valves have Mobile Rate Coils and are rated for an operating temperature from -40°F to 140°F (-40°C to 60°C). See model code matrix for additional options.
Response time: Actuate to 90% pressure / return to exhaust to 10% of supply pressure. 93 PSIG (6.3 bar) / temperature 68°F (20°C).

Single Solenoid, 4-way, 2-position, Xtreme Operating Pressure / Temperature



P2LBX 22mm DIN Shown

P2LAX 18" Grommet Shown

Solenoid	Port size (NPT)	Cv	Valve type	Response time (msec)	Weight lb (kg)	Voltage	Part number
22mm DIN	1/8"	0.7	P2LAX	15 / 45	0.84 (0.38)	12VDC	**P2LAX591ESHDDB47**
						24VDC	**P2LAX591ESHDDB48**
	1/4"	1.3	P2LBX	20 / 55	0.84 (0.38)	12VDC	**P2LBX592ESHDDB47**
						24VDC	**P2LBX592ESHDDB48**
	3/8"	2.5	P2LCX	25 / 85	1.01 (0.46)	12VDC	**P2LCX593ESHDDB47**
						24VDC	**P2LCX593ESHDDB48**
	1/2"	2.7	P2LDX	25 / 85	1.01 (0.46)	12VDC	**P2LDX594ESHDDB47**
						24VDC	**P2LDX594ESHDDB48**
18" Grommet	1/8"	0.7	P2LAX	15 / 45	0.84 (0.38)	12VDC	**P2LAX591ESHDDG47**
						24VDC	**P2LAX591ESHDDG48**
	1/4"	1.3	P2LBX	25 / 65	0.84 (0.38)	12VDC	**P2LBX592ESHDDG47**
						24VDC	**P2LBX592ESHDDG48**
	3/8"	2.5	P2LCX	28 / 85	1.01 (0.46)	12VDC	**P2LCX593ESHDDG47**
						24VDC	**P2LCX593ESHDDG48**
	1/2"	2.7	P2LDX	25 / 85	1.01 (0.46)	12VDC	**P2LDX594ESHDDG47**
						24VDC	**P2LDX594ESHDDG48**

Notes: Above valves have Mobile Rate Coils and are rated for an operating temperature from -40°F to 140°F (-40°C to 60°C). See model code matrix for additional options.
Response time: Actuate to 90% pressure / return to exhaust to 10% of supply pressure. 93 PSIG (6.3 bar) / temperature 68°F (20°C).

Most popular.

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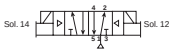
Double Solenoid, 4-way, 2-position, Xtreme Operating Pressure / Temperature

Solenoid	Port size (NPT)	Cv	Valve type	Response time (msec)	Weight lb (kg)	Voltage	Part number
	1/8"	0.7	P2LAX	11 / 11	0.60 (0.27)	12VDC	**P2LAX591EEHDDB47**
						24VDC	**P2LAX591EEHDDB48**
22mm DIN	1/4"	1.3	P2LBX	13 / 13	0.93 (0.42)	12VDC	**P2LBX592EEHDDB47**
						24VDC	**P2LBX592EEHDDB48**
	3/8"	2.5	P2LCX	18 / 18	1.06 (0.48)	12VDC	**P2LCX593EEHDDB47**
						24VDC	**P2LCX593EEHDDB48**
	1/2"	2.7	P2LDX	18 / 18	1.06 (0.48)	12VDC	**P2LDX594EEHDDB47**
P2LBX 22mm DIN Shown						24VDC	**P2LDX594EEHDDB48**
	1/8"	0.7	P2LAX	11 / 11	0.60 (0.27)	12VDC	**P2LAX591EEHDDG47**
						24VDC	**P2LAX591EEHDDG48**
18" Grommet	1/4"	1.3	P2LBX	13 / 13	0.93 (0.42)	12VDC	**P2LBX592EEHDDG47**
						24VDC	**P2LBX592EEHDDG48**
	3/8"	2.5	P2LCX	18 / 18	1.06 (0.48)	12VDC	**P2LCX593EEHDDG47**
						24VDC	**P2LCX593EEHDDG48**
	1/2"	2.7	P2LDX	18 / 18	1.06 (0.48)	12VDC	**P2LDX594EEHDDG47**
P2LAX 18" Grommet Shown						24VDC	**P2LDX594EEHDDG48**

Notes: Above valves have Mobile Rate Coils and are rated for an operating temperature from -40°F to 140°F (-40°C to 60°C). See model code matrix for additional options.
Response time: Actuate to 90% pressure / return to exhaust to 10% of supply pressure. 93 PSIG (6.3 bar) / temperature 68°F (20°C).

Double Solenoid, 4-way, 3-position All Ports Blocked, 3-position Center Exhaust, Xtreme Operating Pressure / Temperature

Solenoid	Port size	Cv	Valve type (NPT)	Response time (msec)	Weight lb (kg)	Voltage	Part number: All ports blocked	Part number: Center exhaust
	1/8"	0.5	P2LAX	18 / 40	0.62 (0.28)	12VDC 24VDC	**P2LAX691EEHDDB47 P2LAX691EEHDDB48**	**P2LAX891EEHDDB47 P2LAX891EEHDDB48**
22mm DIN	1/4"	0.9	P2LBX	22 / 55	0.97 (0.44)	12VDC 24VDC	**P2LBX692EEHDDB47 P2LBX692EEHDDB48**	**P2LBX892EEHDDB47 P2LBX892EEHDDB48**
	3/8"	1.8	P2LCX	30 / 90	2.45 (1.11)	12VDC 24VDC	**P2LCX693EEHDDB47 P2LCX693EEHDDB48**	**P2LCX893EEHDDB47 P2LCX893EEHDDB48**
	1/2"	1.9	P2LDX	30 / 90	2.45 (1.11)	12VDC 24VDC	**P2LDX694EEHDDB47 P2LDX694EEHDDB48**	**P2LDX894EEHDDB47 P2LDX894EEHDDB48**
P2LBX 22mm DIN Shown								
	1/8"	0.5	P2LAX	18 / 40	0.62 (0.28)	12VDC 24VDC	**P2LAX691EEHDDG47 P2LAX691EEHDDG48**	**P2LAX891EEHDDG47 P2LAX891EEHDDG48**
18" Grommet	1/4"	0.9	P2LBX	22 / 55	0.97 (0.44)	12VDC 24VDC	**P2LBX692EEHDDG47 P2LBX692EEHDDG48**	**P2LBX892EEHDDG47 P2LBX892EEHDDG48**
	3/8"	1.8	P2LCX	30 / 90	2.45 (1.11)	12VDC 24VDC	**P2LCX693EEHDDG47 P2LCX693EEHDDG48**	**P2LCX893EEHDDG47 P2LCX893EEHDDG48**
	1/2"	1.9	P2LDX	30 / 90	2.45 (1.11)	12VDC 24VDC	**P2LDX694EEHDDG47 P2LDX694EEHDDG48**	**P2LDX894EEHDDG47 P2LDX894EEHDDG48**
P2LBX 18" Grommet Shown								

Notes: Above valves have Mobile Rate Coils and are rated for an operating temperature from -40°F to 140°F (-40°C to 60°C). See model code matrix for additional options.
Response time: Actuate to 90% pressure / return to exhaust to 10% of supply pressure. 93 PSIG (6.3 bar) / temperature 68°F (20°C).

Most popular.

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Pneumatic Division
Richland, Michigan
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Single & Double Solenoid Operated Valves

P2L	A	X	5	91	E	S	H	D	D	G	49

Valve size

1/8"	A
1/4"	B
3/8"	C
1/2"	D

Series

Viking Xtreme	X

Valve type / function

Internal pilot supply to solenoid*	
3/2 NC - 2-position	**3**
5/2 2-position	**5**
5/3 3-position, APB	**6**
5/3 3-position, PC	**7**
5/3 3-position, CE	**8**
External pilot supply to the solenoids through ports #12 & #14	
3/2 NC - 2-position	L
5/2 2-position	N
5/3 3-position, APB	P
5/3 3-position, PC	Q
5/3 3-position, CE	R

* Size A & B solenoid valves can be field converted from internal to external pilot. See page D31 for details.

Main port thread

G1/8 (P2LA)	11
G1/4 (P2LB)	12
G1/4 (P2LB) NAMUR Mount	1N*
G3/8 (P2LC)	13
G1/2 (P2LD)	14
1/8" NPT (P2LA)	**91**
1/4" NPT (P2LB)	**92**
1/4" NPT (P2LB) NAMUR Mount	**9N***
3/8" NPT (P2LC)	**93**
1/2" NPT (P2LD)	**94**

* NAMUR mount available for 5/2, 2-position only.

12 End operator

Double solenoid operated valve	**E**
Single solenoid spring return	**S***

* Not available with 3-position valves.

Valve type

N	**Normal vacuum to 145 PSIG (16 bar) 14°F to 122°F (-10°C to 50°C)**
H*	**Xtreme vacuum to 232 PSIG (10 bar) 14°F to 122° F (-10°C to 50°C)**

* P2LC and P2LD solenoid operated valves have a maximum pressure rating of 175 PSIG (12 bar)

Solenoid pilot type

D	**Pilot exhaust vented**
N	Tapped pilot exhaust (M5)

Overrides

A	No override
C*	Flush - locking
D	**Extended non-locking**

* Overide for valve type N only.

Enclosures / lead length

A	30mm square 3-pin – ISO 4400 Form A (male only)
B	**22mm rectangular 3-pin – type B industrial (male only)**
E*	Intrinsically safe, FM / CSA
F‡	Hazardous duty, FM / CSA
G	**Grommet - 18" leads**
H	1/2" NPT conduit - 18" leads
N	Solenoid pilot operator less coil

* Only available with voltage code "49" & override option "A", valve type "N" Only.

‡ Valve Type "N" Only.

Voltage / frequency

42	24VAC
45	12VDC
47*	**12 VDC mobile**
48*	**24 VDC mobile**
49	**24VDC**
53	**120VAC**
57	240VAC
Blank	Valve less coil

* Only available with enclosures "A", "B" & "G". Additional voltages are available upon request. Contact customer support for more information.

☐ Most popular.

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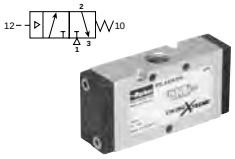
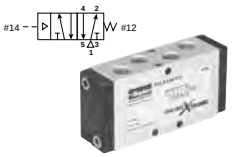
Single Remote Pilot, 3-way, 2-position, Xtreme Operating Pressure / Temperature



P2LAX Shown

Port size (NPT)	Cv	Response time (msec)	Weight lb (kg)	Valve type	Part number
1/8"	0.7	15 / 45	0.68 (0.31)	P2LAX	**P2LAX391PS**
1/4"	1.3	25 / 65	0.68 (0.31)	P2LBX	**P2LBX392PS**
3/8"	2.5	25 / 65	0.88 (0.40)	P2LCX	**P2LCX393PS**
1/2"	2.7	25 / 65	0.88 (0.40)	P2LDX	**P2LDX394PS**

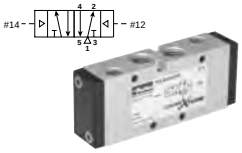
Single Remote Pilot, 4-way, 2-position, Xtreme Operating Pressure / Temperature



P2LAX Shown

Port size (NPT)	Cv	Response time (msec)	Weight lb (kg)	Valve type	Part number
1/8"	0.7	15 / 45	0.33 (0.15)	P2LAX	**P2LAX591PS**
1/4"	1.3	20 / 55	0.68 (0.31)	P2LBX	**P2LBX592PS**
3/8"	2.5	25 / 85	0.90 (0.41)	P2LCX	**P2LCX593PS**
1/2"	2.7	25 / 85	0.90 (0.41)	P2LDX	**P2LDX594PS**

Double Remote Pilot, 4-way, 2-position, Xtreme Operating Pressure / Temperature



P2LBX Shown

Port size (NPT)	Cv	Response time (msec)	Weight lb (kg)	Valve type	Part number
1/8"	0.7	11 / 11	0.33 (0.15)	P2LAX	**P2LAX591PP**
1/4"	1.3	13 / 13	0.68 (0.31)	P2LBX	**P2LBX592PP**
3/8"	2.5	18 / 18	0.90 (0.41)	P2LCX	**P2LCX593PP**
1/2"	2.7	18 / 18	0.90 (0.41)	P2LDX	**P2LDX594PP**

Double Remote Pilot, 4-way, 3-position All Ports Blocked, 3-position Center Exhaust, Xtreme Operating Pressure / Temperature

P2LBX Shown

Port size (NPT)	Cv	Response time (msec)	Weight lb (kg)	Valve type	Part number: All ports blocked	Part number: Center exhaust
1/8"	0.5	18 / 50	0.31 (0.14)	P2LAX	**P2LAX691PP**	**P2LAX891PP**
1/4"	0.9	25 / 65	0.73 (0.33)	P2LBX	**P2LBX692PP**	**P2LBX892PP**
3/8"	1.8	30 / 90	0.93 (0.42)	P2LCX	**P2LCX693PP**	**P2LCX893PP**
1/2"	1.9	30 / 90	0.93 (0.42)	P2LDX	**P2LDX694PP**	**P2LDX894PP**

Notes: Above valves are rated for an operating temperature from -40°F to 140°F (-40°C to 60°C). See model code matrix for additional options.
Response time: Actuate to 90% pressure / return to exhaust to 10% of supply pressure. 93 PSIG (6.3 bar) / temperature 68°F (20°C).

Remote Air Pilot Operated Valves

P2L A X 5 91 PS

Valve size	
1/8"	A
1/4"	B
3/8"	C*
1/2"	D*

* P2LCX and P2LDX manual & remote air pilot valves have a maximum pressure rating of 175 PSIG (12 bar).

Valve type / function	
Internal pilot supply to solenoid	
3/2 NC - 2-position	3
5/2 2-position	5
5/3 3-position, APB	6
5/3 3-position, PC	7
5/3 3-position, CE	8

Main port thread	
11	G1/8 (P2LA)
12	G1/4 (P2LB)
13	G3/8 (P2LC)
14	G1/2 (P2LD)
91	**1/8" NPT (P2LA)**
92	**1/4" NPT (P2LB)**
93	**3/8" NPT (P2LC)**
94	**1/2" NPT (P2LD)**

Note: NAMUR Mount for P2LBX is available upon request.

Operators / return	
PP	Double remote pilot
PS*	Single remote pilot, spring return

* Not available with 3-position valves.

☐ Most popular.

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Richland, Michigan
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ATEX Certified Single & Double Solenoid Operated Valves

Vacuum to 145 PSIG (vacuum to 10 bar)
14°F to 122°F 22mm coils (enclosure option M)
-4°F to 122°F 30mm coils (enclosure option S)

P2L	A	X	5	91	E	S	A	D	D	M	49

Valve size

1/8"	A
1/4"	B
3/8"	C
1/2"	D

Valve type / function

Internal Pilot Supply to Solenoid	
2-position valve	5
3-position valve APB	6
3-position valve PC	7
3-position valve CE	8
External Pilot Supply to Solenoids through Ports #12 & #14	
2-position valve	N
3-positionvalve APB	P
3-position valve PC	Q
3-position valve CE	R

Main port thread

G1/8 (P2LA)	11
G1/4 (P2LB)	12
G3/8 (P2LC)	13
G1/2 (P2LD)	14
1/8" NPT (P2LA)	91
1/4" NPT (P2LB)	92
3/8" NPT (P2LC)	93
1/2" NPT (P2LD)	94

12 end operator

E	Double solenoid operated valve
S	Single solenoid spring return

Solenoid pilot type

D	Vented pilot exhaust
N	Tapped pilot exhaust (M5)

Overrides

D	Extended non-locking

Enclosures

M	ATEX 8-22T EExm T4 135°C
S	ATEX 8-30T EExm T6 85°C

Voltage

49	24VDC

NOTE: For ATEX certified remote air pilot valves, build the valve part number from the model number index for remote pilot and add "-EX" following the number.
Example: P2LAX591PS-EX

Note: all valves include a 3 meter sealed cable with assembly.

ATEX Certified Solenoid Pilot Assemblies

P2F	S	1	3	A	3	D	M	49

Voltage

49	24VDC

Enclosures

M	ATEX 8-22T EExm T4 135°C
S	ATEX 8-30T EExm T6 85°C

Note: all valves include a 3 meter sealed cable with assembly.

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IEM Bar Manifold, Viking Xtreme Solenoid / Remote Pilot Valves

Valve series	Valve function	## -Stations	Manifold only (NPT)	Manifold only (BSPP)
P2LAX*	3-way	02 - 12	**P2LAXGAXG##NP**	**P2LAXGAXG##GP**
P2LAX*	4-way	02 - 12	**P2LAXMAXN##NP**	**P2LAXMAXN##GP**
P2LBX*	3-way	02 - 12	**P2LBXGAXG##NP**	**P2LBXGAXG##GP**
P2LBX*	4-way	02 - 12	**P2LBXMAXN##NP**	**P2LBXMAXN##GP**
P2LCX	3-way / 4-way	02 - 12	**P2LCXMAXN##NP**	**P2LCXMAXN##GP**

Kits include: (1) manifold, valve hold down bolts and o-rings. Replace ## with number of valve stations.
* 30mm solenoid coil option "A" not available on IEM bar manifold P2LAX or P2LBX.

IEM Bar Manifold Add-A-Fold Assembly (Viking Xtreme Solenoid / Remote Pilot Valves Only)

Valve series	Valve function	## -Stations	Manifold only (NPT)	Manifold only (BSPP)
P2LAX*	3-way	02 - 12	**AAP2LAXGAXG##NP**	**AAP2LAXGAXG##GP**
P2LAX*	4-way	02 - 12	**AAP2LAXMAXN##NP**	**AAP2LAXMAXN##GP**
P2LBX*	3-way	02 - 12	**AAP2LBXGAXG##NP**	**AAP2LBXGAXG##GP**
P2LBX*	4-way	02 - 12	**AAP2LBXMAXN##NP**	**AAP2LBXMAXN##GP**
P2LCX	3-way / 4-way	02 - 12	**AAP2LCXMAXN##NP**	**AAP2LCXMAXN##GP**

Kits include: (1) manifold, valve hold down bolts, o-rings and assembly. Replace ## with number of valve stations.
* 30mm solenoid coil option "A" not available on IEM bar manifold P2LAX or P2LBX.

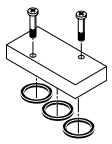
How to Order: 1. List Add-A-Fold assembly part number as line item 1

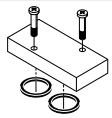
2. List the desired valves series part number in subsequent line items after the Add-A-Fold Assembly part number to complete the ordering code. Include all valves and blanking kits required. The left most station is station # 1 looking at the #12 end of the manifold.

Example: B3, 4-way manifold with station #1 blanked off with valves assembled

Line	Qty	Part number	Comment
1	1	AAP2LBXMAXN02NP	Add-A-Fold Assembly, 2-station IEM bar manifold
2	2	P2LBX591ESNNDDB49	4-way, Station 1, 2

Blanking Plate





Type		Kit number
P2LAX	4-way	**9121658063**
P2LBX	4-way	**9121594809X**
P2LCX	3 & 4 way	**P2LCXK20P**
P2LAX	3-way	**912132BPSXZ**
P2LBX	3-way	**912132BPSXZ**

Kit includes: plate, screws, o-rings

Manifold Bolts

Type	Qty.	Kit number
P2LAX	12	**P2LAXK87P**
P2LBX	12	**P2LBXK87P**
P2LCX	12	**P2LCXK87P**

Manifold O-rings

Type	Qty.	Kit number
P2LAX	30	**P2LAXK84P**
P2LBX	18	**P2LBXK84P**
P2LCX	12	**P2LCXK84P**

Most popular.

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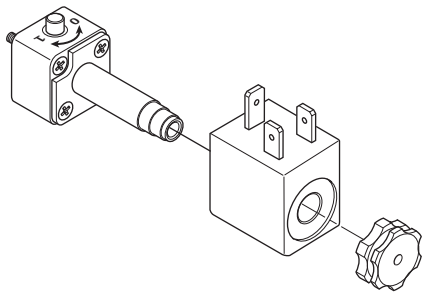
22mm Solenoid Pilot Operators & Coils



22mm solenoid pilot options

The P2FP13*4* (NC) 3/2 solenoid pilot operators are designed for piloting pneumatic control valves with compressed air or other inert gases.

The P2FP operator is available for Normal operating pressures up to 10 bar or the Xtreme maximum operating pressure of 16 bar and wide band voltage tolerances required for mobile applications.

Corrosion resistant design

The pilot valve body is manufactured in thermoplastic PA6 material and the core tube brass / stainless steel. The plunger / core is made from stainless steel and the valve seats from FKM.

Solenoid pilot exhaust

These operators all exhaust out of the top of the core tube which is tapped M5. The standard solenoid nut (Solenoid pilot type “D”) fitted to the core tube is a diffuser nut which allows the exhaust to escape to atmosphere. This nut also minimizes ingress of dirt into the valve through this port. The alternative plastic knurled nut (Solenoid pilot type “N”) can be specified (refer to part number system) if the exhaust air needs captured and piped away using the M5 tapped port.

Mobile applications

Viking Xtreme valves are tested to +5g shock and vibration. Solenoid operated valves are designed to operate with wide voltage tolerance bands within the ambient temperature ranges stated in the technical section.

Coils

Coils are wound with enameled copper wire, having a temperature index of 180°C with class F insulation (155°C) and are encapsulated in Thermoplastic resin. When fitted with suitable connector and correct gasket, they give protection to IP65.

Manual override options

The pilot operators can be supplied with locking or non-locking manual override. The standard manual override is the monostable (spring return) extended brass override. Alternatively the bistable (locking) override can be specified as an alternative for the Normal duty 10 bar option.

Spares

Solenoid operators are available as spares complete with mounting screws and seals. Coils and connectors should be ordered separately unless ATEX certified and intrinsically safe is needed. ATEX certified operators and coils must be ordered together.

Transients

Interrupting the current through the solenoid coil produces momentary voltage peaks which, under unfavorable conditions, can amount to several hundred times the rated operating voltage. Normally, these transients do not cause problems, but to achieve the maximum life of relays in the circuit (and particularly of transistors, thyristors and integrated circuits) it is desirable to provide protection by means of voltage-dependent resistors (varistors). All connectors / cable plugs with LEDs include this type of circuit protection.

Materials

Pilot Valve

Body ..... Polyamide

Armature tube:
- Normal pilot operator ..... Brass
- Xtreme pilot operator ..... Stainless steel

Plunger & core ..... Corrosion resistant CR-NI steel

Seals ..... FKM (viton™)

Screws ..... Stainless steel

Coil

Encapsulation material ..... Thermoplastic

ATEX

ATEX is a European Directive (94/9/EC) valid for products to be used within an explosive atmosphere.

Both ATEX certified solenoid, remote pilot and manual operated valves, as well as complete solenoid pilot assemblies are available. For specific information regarding ATEX certification please visit www.parker/pneumatics.

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Pilot Operator Kits

P2F P 1 3 N 4 C

Type	
Pilot operator kit	P

Pressure / temperature	
145 PSIG (10 bar) 14°F to 122°F (-10°C to 50°C)	N
232 PSIG (16 bar) -40°F to 158°F (-40°C to 70°C)	H

	Overrides
A	No override
C*	Locking (bistable) flush - plastic
D	Non-locking (monostable) extended - brass

* Only available with "N" Pressure / temperature option.

Solenoid Kits

P2F C A 4 49

Type	
Solenoid Kit	C

Enclosures / lead length	
30mm square 3-pin – ISO 4400 Form A (male only)	A
22mm rectangular 3-pin – Type B Industrial (male only)	B
Hazardous duty, FM / CSA	F*
Grommet - 18" leads	G
1/2" NPT conduit - 18" leads	H
Grommet 72" leads	Q
1/2" conduit 72" leads	R

* Only available with voltage codes "45", "49", "53" & "57". Not for use with the Xtreme version (-40°C to 70°C).

	Voltage / frequency
42	24VAC
45	12VDC
47*	12 VDC mobile
48*	24 VDC mobile
49	24VDC
53	120VAC
57	240VAC

* Only available with enclosures "A", "B" & "G". Additional voltages are available upon request. Contact customer support for more information.

Solenoid Enclosures

Option A
30mm Square, 3-Pin ISO 4400, DIN 43650A

Option B
22mm Rectangular, 3-Pin DIN, Type B Industrial

Option G & Q
Grommet, 18" or 72" Leads

Option H & R
1/2" Conduit, 18" or 72" Leads

Solenoid Information (Solenoids are rated for continuous duty.)

Voltage				Enclosure "A"		Enclosure "B" to "R"	
Code	AC 60Hz	AC 50Hz	DC	Power consumption	Holding (amps)	Power consumption	Holding (amps)
42	24	22		3.9VA	.14	7.3VA	.31
45	—	—	12	2.6W	.21	4.6W	.37
47*	—	—	12	6.2W	.52	5.5W	.46
48*	—	—	24	6.8W	.29	6.0W	.25
49	—	—	24	2.7W	.11	4.8W	.20
53	120	110	—	4.1VA	.04	6.3VA	.05
57	240	230	—	3.7VA	.02	6.4VA	.03

* Mobile voltages. Solenoid voltage characteristics for all coils located on page D31.

Replacement Solenoid Nut

Description	Part number
Solenoid diffuser nut	**PS1556**

Description	Part number
Solenoid vented nut	**PS2892P**

Most popular.

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Intrinsically safe solenoid valves ("E" option)

Hazardous location class:

Class I; Groups A, B, C & D

Class II; Groups E, F, & G

Class III; Div. I

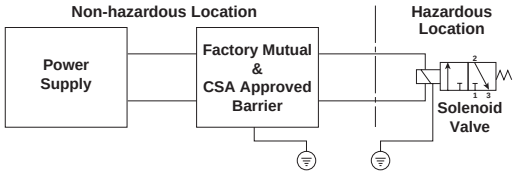
For use in low voltage (24VDC) Intrinsically Safe applications. NO OTHER VOLTAGE IS APPROVED.

Comes standard with non-lighted solenoid connector.

36mm Coil width.

Must be connected to an FM approved Barrier.

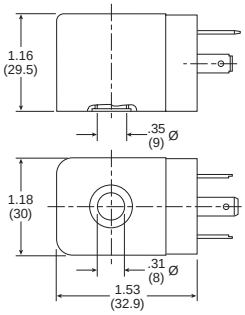
For dimensions, reference standard solenoid models. Maximum internally piloted valve pressure is 115 PSIG. Pressures to 145 PSIG can be used when external pilot is utilized and pilot pressure is limited to 115 PSIG.



Intrinsically safe solenoid pilot assembly kits

Description	Part number
24VDC	**P2FS13N1AE49**

Kit includes: coil, connector, o-ring & screws



Hazardous duty solenoid valves ("F" option)

Hazardous location class:

Class I; Zone I EX, M, II & T4

Class I; Div. I, Groups A, B, C, & D

Class II & III; Div. I, Groups E, F, & G

Comes standard with 1/2" conduit connection.

Voltage range = ±10%

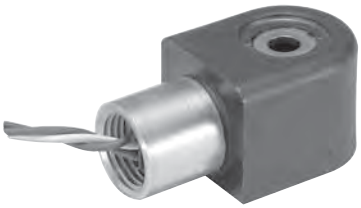
Ambient temperature range = -20°C (-4°F) to 60°C (140°F)

Duty factor = 100%

IP65 Rated (with connected conduit connector)

Notes:

1. Maximum non-hazardous location voltage not to exceed 250V RMS.
2. Connect per Barrier Manufacturers instructions.
3. Factory Mutual requires connections per ISA RP 12.6 instructions.
4. CSA requires "Installation to be in accordance with the Canadian Electrical Code. Part I."
5. The hazardous duty coils are wider in size than size A, B, C & D valves.
   If mounted on a manifold, the valves need to be staggered to fit.

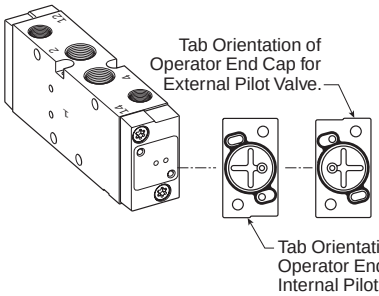


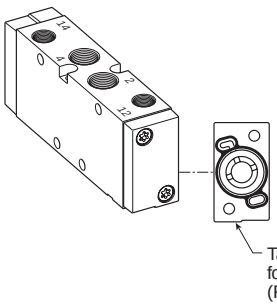
Option F
Hazardous Duty FM / CSA

Internal to external pilot conversion (size A & B only)

To convert from Internal to External Pilot Valve, simply remove the (2) fasteners that attach the end cap to the valve body. Rotate the end cap 180° and attach back to the valve body. For single solenoid valves, only the 14-End needs to be rotated. For double solenoid valves, both ends must be converted for proper function.

The 12 & 14-Ports are always tapped no matter what Valve Type / Function is selected. For Internal Pilot Function, ports do NOT need to be plugged.





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Operating temperature

- **Normal**.....14°F to 122°F (-10°C to 50°C)
- **Xtreme**..... -40°F to 158°F (-40°C to 70°C)

Flow Rating

Valve size	Port size	2-position	3-position
P2LAX	1/8"	0.7	0.5
P2LBX	1/4"	1.3	0.9
P2LCX	3/8"	2.5	1.8
P2LDX	1/2"	2.7	1.9

Operating pressure*

Maximum: Normal Valve Type.....145 PSIG (10 bar)
Xtreme Valve Type.....232 PSIG (16 bar)
Minimum:

Valve type - internal pilot	Minimum PSIG (bar)			
	P2LAX	P2LBX	P2LCX	P2LDX
Single solenoid - spring return	46 (3.2)	51 (3.5)	51 (3.5)	51 (3.5)
Single remote pilot - spring return	46 (3.2)	51 (3.5)	51 (3.5)	51 (3.5)
Double solenoid - 2-position	22 (1.5)	22 (1.5)	22 (1.5)	22 (1.5)
Double remote pilot - 2-position	22 (1.5)	22 (1.5)	22 (1.5)	22 (1.5)
Double solenoid - 3-position (APB, PC, CE)	51 (3.5)	51 (3.5)	51 (3.5)	51 (3.5)
Double remote pilot - 3-position (APB, PC, CE)	51 (3.5)	51 (3.5)	51 (3.5)	51 (3.5)

Valve type - External pilot	P2LAX	P2LBX	P2LCX	P2LDX
All Viking series	Vacuum			

* P2LC and P2LD solenoid operated valves have a maximum pressure rating of 175 PSIG (12 bar)

Solenoid voltage characteristics

Non-mobile coils

+10% / -10% for all coils with Normal and Xtreme Operators

Mobile coils - normal pilot operator

22mm 12 & 24VDC - Mobile (47 & 48 voltage code)

Minimum inlet pressure (bar)	Operating temperature		
	-10°C	+10°C	+50°C
3	+30 / -25% VDC	+30 / -20% VDC	+25 / -15% VDC
6	+30 / -30% VDC	+30 / -25% VDC	+25 / -20% VDC
8	+30 / -30% VDC	+30 / -30% VDC	+25 / -25% VDC
10	+30 / -30% VDC	+30 / -30% VDC	+25 / -30% VDC

30mm 12 & 24VDC - Mobile (47 & 48 voltage code)

Minimum inlet pressure (bar)	Operating temperature		
	-10°C	+10°C	+50°C
3	+30 / -30% VDC	+30 / -30% VDC	+25 / -30% VDC
6	+30 / -30% VDC	+30 / -30% VDC	+25 / -30% VDC
8	+30 / -30% VDC	+30 / -30% VDC	+25 / -30% VDC
10	+30 / -30% VDC	+30 / -30% VDC	+25 / -30% VDC

Mobile coils - Xtreme pilot operator

22mm 12 & 24VDC - Mobile (47 & 48 voltage code)

Minimum inlet pressure (bar)	Operating temperature			
	-40°C	+10°C	+50°C	+70°C
4	+30 / -25% VDC	+30 / -25% VDC	+30 / -10% VDC	+20 / -10% VDC
8	+30 / -30% VDC	+30 / -25% VDC	+30 / -15% VDC	+20 / -15% VDC
12	+30 / -30% VDC	+30 / -30% VDC	+30 / -15% VDC	+20 / -15% VDC
16	+30 / -30% VDC	+30 / -30% VDC	+30 / -20% VDC	+20 / -20% VDC

30mm 12 & 24VDC - Mobile (47 & 48 voltage code)

Minimum inlet pressure (bar)	Operating temperature			
	-40°C	+10°C	+50°C	+70°C
4	+30 / -30% VDC	+30 / -30% VDC	+25 / -30% VDC	+15 / -30% VDC
8	+30 / -30% VDC	+30 / -30% VDC	+25 / -30% VDC	+15 / -30% VDC
12	+30 / -30% VDC	+30 / -30% VDC	+25 / -30% VDC	+15 / -30% VDC
16	+30 / -30% VDC	+30 / -30% VDC	+25 / -30% VDC	+15 / -30% VDC

Note: All table ratings are based on 100% continuous duty and 5G shock vibration. At 50% continuous duty all ratings are +30% / -30% for all Temperatures and Pressures.

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Female Electrical Connectors / Accessories

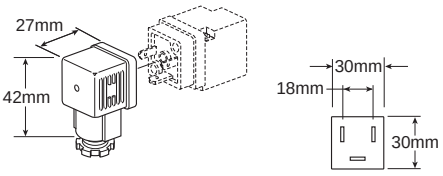
30mm Square 3-Pin – ISO 4400, DIN 43650A (Use with Enclosure "A")

Description	Connector with 6' (2m) cord	Connector
Unlighted	PS2028JCP	**PS2028BP**
Light – 6-48V, 50/60Hz, 6-48VDC	PS2032J79CP*	**PS203279BP**
Light – 120V/60Hz	PS2032J83CP*	**PS203283BP**
Light – 240V/60Hz	N/A	**PS203283BP**

* LED with surge suppression.

Note: Max ø6.5mm cable size required for connector w/o 6' (2m) cord. IP65 rated when properly installed.

Engineering data:
Conductors: 2 poles plus ground; cable range (connector only): 8 to 10mm (0.31 To 0.39 Inch); contact spacing: 18mm.



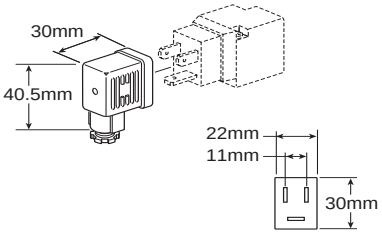
22mm Rectangular 3-Pin – Type B Industrial (Use with Enclosure "B")

Description	Connector with 6' (2m) cord	Connector
Unlighted	PS2429JBP	**PS2429BP**
Light – 24V60Hz, 24VDC	PS2430J79BP*	**PS243079BP**
Light – 120V/60Hz	PS2430J83BP*	**PS243083BP**
Light – 240V/60Hz	N/A	PS243087BP

* LED with surge suppression.

Note: Max ø6.5mm cable size required for connector w/o 6' (2m) cord. IP65 rated when properly installed.

Engineering data:
Conductors: 2 poles plus ground; cable range (connector only): 6 to 8mm (0.24 To 0.31 Inch); contact spacing: 11mm.



Exhaust Mufflers

Pipe thread	Part number
M5	**P6M-PAC5**
1/8" NPT	**EM12**
1/4" NPT	**EM25**
3/8" NPT	**EM37**
1/2" NPT	**EM50**

P6M - Plastic; EM - Sintered bronze

Plastic Silencers

Thread size	A (mm)	B (mm)	Part number NPT	Part number BSPT
M5	.43 (11)	.32 (8)	**AS-5**	
1/8"	1.57 (40)	.63 (16)	**ASN-6**	**AS-6**
1/4"	2.56 (65)	.83 (21)	**ASN-8**	**AS-8**
3/8"	3.35 (85)	.98 (25)	**ASN-10**	**AS-10**
1/2"	3.74 (95)	1.18 (30)	**ASN-15**	**AS-15**

Inches (mm)

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Exhaust Protector

Features

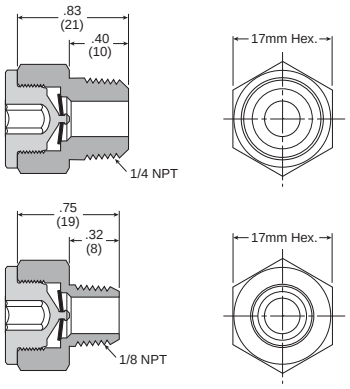
- 1/8 and 1/4 NPT male sizes
- Fitted with a brass pipe adapter and a fluorocarbon membrane
- Resistant to rust, clog, wash down and contamination

• Applications

These protectors are intended for mobile applications, quick venting applications and alternative exhaust port breathers that require protection against clogging.

Ideal for valves exposed to harsh environmental conditions (which can cause a “caking up” in the exhaust pipe ports where the bronze mufflers or breather vents are installed).

Particularly suitable for time-sensitive applications such as axle-lift suspensions or pushers or tag axles.



Operating information

Operating pressure:	0 to 150 PSIG (0 to 10 bar)
Operating temperature:	-40°F to 140°F (-40°C to 60°C)

Flow data (SCFM)

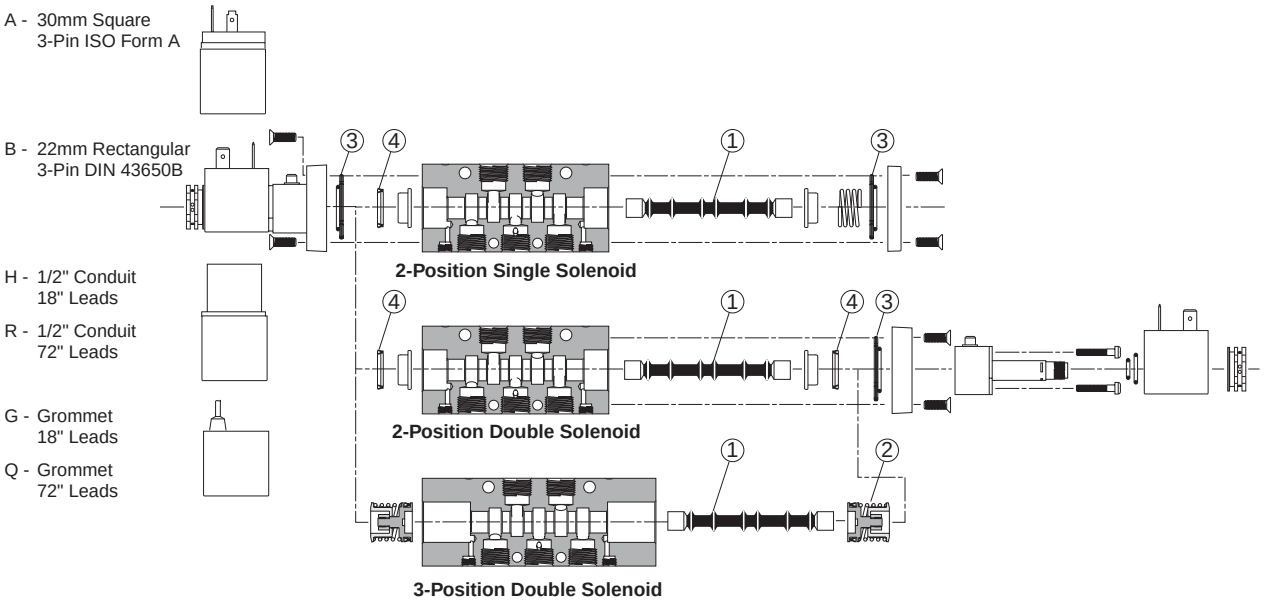
Size	60 PSIG Inlet	90 PSIG Inlet	125 PSIG Inlet	Part number
1/8"	40.1	56.5	75.5	**E90016**
1/4"	44.6	62.7	83.5	**E90017**

Material specifications

Body & pipe adapter	Brass
Membrane	Fluorocarbon

Spool Service Kits

Description	Includes items (qty.)	Part number
Size A, 4-way, 2-position, solenoid & air pilot valves	1 (1), 3 (2), 4 (2)	**P2LAXSK1**
Size A, 4-way, 3-position, solenoid & air pilot valves	1 (1), 2 (2), 3 (2), 4 (2)	**P2LAXSK2**
Size A, 4-way, 2-position, manual valves	Spool only (not shown)	**P2LAXSK3**
Size A, 4-way, 3-position, manual valves	Spool only (not shown)	**P2LAXSK4**
Size B, 4-way, 2 & 3-position valves	1 (1), 3 (2), 4 (2)	**P2LBXSK1**
Size C & Size D, 4-way, 2 & 3-position valves	1 (1), 3 (2), 4 (2)	**P2LCXDXSK1**



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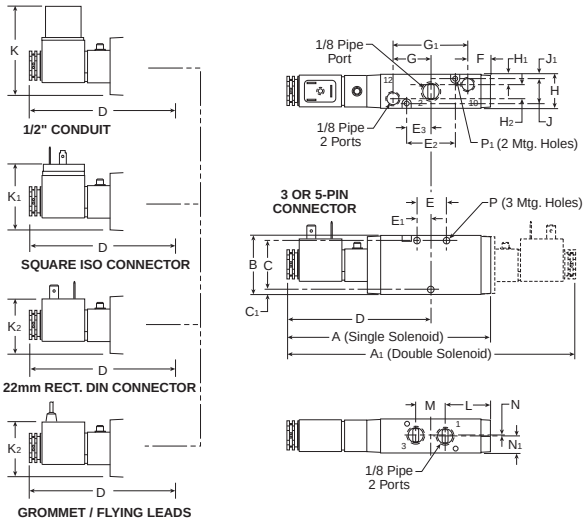
P2LAX 3/2 Single & Double Operators – Solenoid

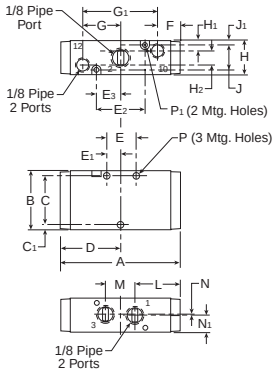


P2LAX 3/2 (solenoid)

A	A1	B	C	C1
5.35 (136)	7.60 (193)	1.57 (40)	1.26 (32)	.16 (4)
D	**E**	**E1**	**E2**	**E3**
3.80 (97)	.79 (20)	.39 (10)	1.26 (32)	.63 (16)
F	**G**	**G1**	**H**	**H1**
.55 (14)	.98 (25)	1.97 (50)	.87 (22)	.26 (6.6)
H2	**J**	**J1**	**K**	**K1**
.35 (9)	.65 (16.5)	.11 (2.9)	2.36 (60)	1.61 (41)
K2	**L**	**M**	**N**	**N1**
1.50 (38)	1.14 (29)	.79 (20)	.02 (0.5)	.42 (11)
P	**P1**			
Ø .17 Ø (4.3)	Ø .12 Ø (3.1)			

Inches (mm)

P2LAX 3/2 Single & Double Operators – Remote Pilot

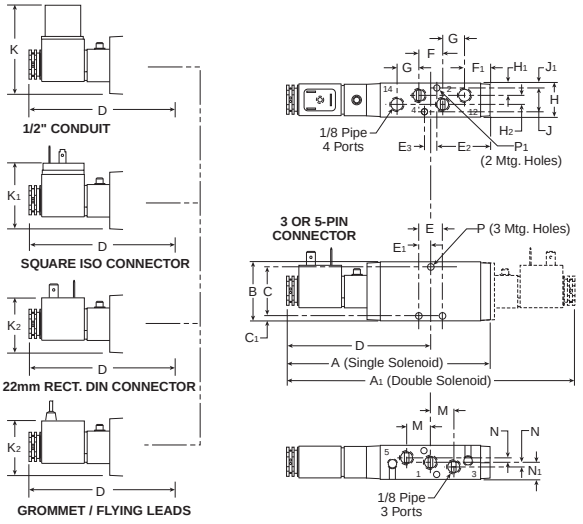


P2LAX 3/2 (remote)

A	B	C	C1	D
3.07 (78)	1.57 (40)	1.26 (32)	.16 (4)	1.54 (39)
E	**E1**	**E2**	**E3**	**F**
.79 (20)	.39 (10)	1.26 (32)	.63 (16)	.55 (14)
G	**G1**	**H**	**H1**	**H2**
.98 (25)	1.97 (50)	.87 (22)	.26 (6.6)	.35 (9)
J	**J1**	**L**	**M**	**N**
.65 (16.5)	.11 (2.9)	1.14 (29)	.79 (20)	.02 (0.5)
N1	**P**	**P1**		
.42 (11)	Ø .17 Ø (4.3)	Ø .12 Ø (3.1)		

Inches (mm)

P2LAX 5/2 & 5/3 Single & Double Operators, 4-way



P2LAX 5/2 & 5/3 (solenoid)

A	A1	B	C	C1
5.47 (139)	7.72 (196)	1.57 (40)	1.30 (33)	.14 (3.5)
D	**E**	**E1**	**E2**	**E3**
3.86 (98)	.63 (16)	.31 (8)	1.42 (36)	.33 (8.5)
F	**F1**	**G**	**H**	**H1**
.63 (16)	.67 (17)	.59 (15)	.87 (22)	.31 (8)
H2	**J**	**J1**	**K**	**K1**
.24 (6)	.63 (16)	.12 (39)	2.36 (60)	1.61 (41)
K2	**M**	**N**	**N1**	**P**
1.50 (38)	.63 (16)	.12 (3)	.43 (11)	Ø .17 Ø (4.3)
P1				
Ø .12 Ø (3.1)				

Inches (mm)

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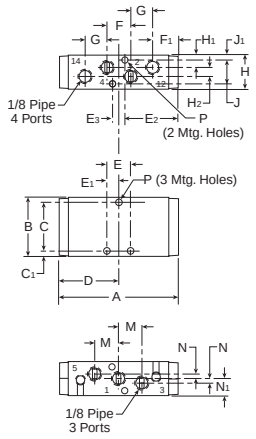
P2LAX 5/2 & 5/3 Single & Double Operators – Remote Pilot



P2LAX 5/2 & 5/3 (remote)

A	B	C	C1	D
3.19 (81)	1.57 (40)	1.30 (33)	.14 (3.5)	1.59 (40.5)

E	E1	E2	E3	F
1.47 (16)	.31 (8)	1.42 (36)	.33 (8.5)	.63 (16)

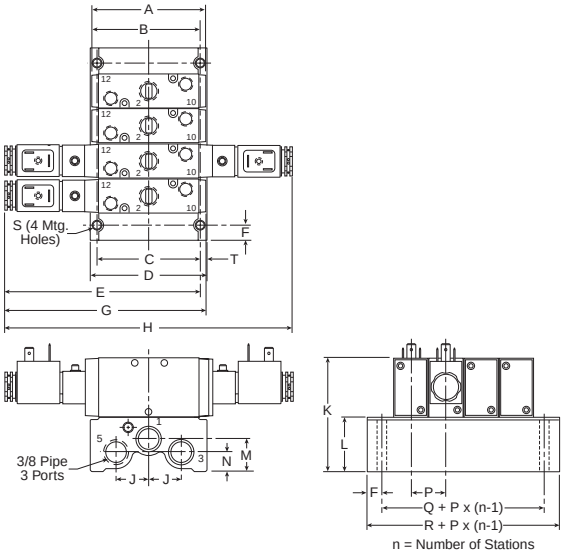
F1	G	H	H1	H2
.67 (17)	.59 (15)	.87 (22)	.31 (8)	.24 (6)

J	J1	M	N	N1
.63 (16)	.12 (3)	.63 (16)	.12 (3)	.43 (11)

P	P1
Ø .17 Ø (4.3)	Ø .12 Ø (3.1)

Inches (mm)

P2LAX 3/2 Single & Double Operators – IEM Aluminum Bar Manifold



P2LAX 3/2
IEM Aluminum bar manifold

A	B	C	D	E
3.07 (78)	2.83 (72)	2.76 (70)	3.12 (79)	5.18 (132)

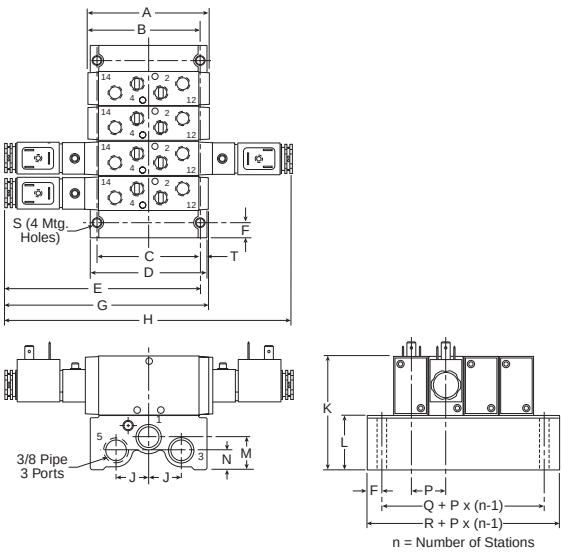
F	G	H	J	K
41 (10.5)	5.35 (136)	7.72 (193)	.87 (22)	3.11 (79)

L	M	N	P	Q
1.54 (39)	.87 (22)	.52 (13.2)	.93 (23.5)	1.56 (39.5)

R	S	T
2.36 (60)	Ø .22 Ø (5.5)	.18 (4.5)

Inches (mm)

P2LAX 5/2 & 5/3 Single & Double Operators – IEM Aluminum Bar Manifold



P2LAX 5/2 & 5/3
IEM Aluminum bar manifold

A	B	C	D	E
3.19 (81)	2.97 (76)	2.76 (70)	3.12 (79)	5.26 (134)

F	G	H	J	K
41 (10.5)	5.47 (139)	7.72 (196)	.87 (22)	3.11 (79)

L	M	N	P	Q
1.54 (39)	**.87 (22)**	.52 (13.2)	.93 (23.5)	1.56 (39.5)

R	S	T
2.36 (60)	Ø .22 Ø (5.5)	.18 (4.5)

Inches (mm)

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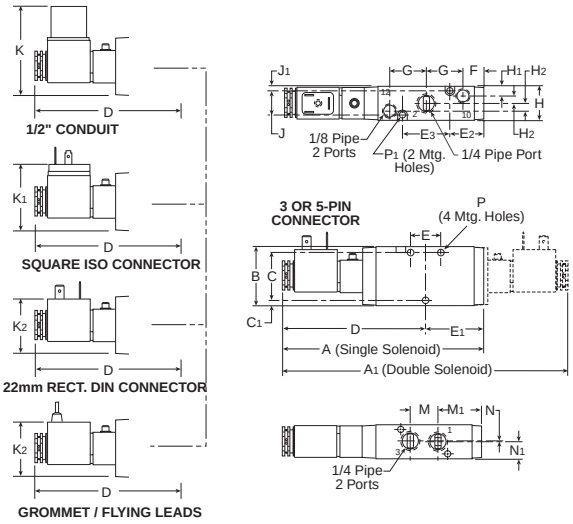
P2LBX 3/2 Single & Double Operators – Solenoid

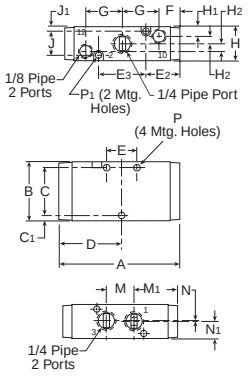


P2LBX 3/2 (solenoid)

A	A1	B	C	C1
5.35 (136)	7.60 (193)	1.57 (40)	1.26 (32)	.16 (4)
D	**E**	**E1**	**E2**	**E3**
3.80 (96.5)	.79 (20)	1.54 (39)	.51 (13)	1.26 (32)
F	**G**	**H**	**H1**	**H2**
.55 (14)	.98 (25)	.87 (22)	.26 (6.6)	.18 (4.5)
J	**J1**	**K**	**K1**	**K2**
.65 (16.5)	.11 (2.9)	2.36 (60)	1.61 (41)	1.50 (38)
M	**M1**	**N**	**N1**	**P**
.79 (20)	1.14 (29)	.02 (0.5)	.42 (11)	Ø .17 Ø (4.3)
P1				
Ø .12 Ø (3.1)				

Inches (mm)

P2LBX 3/2 Single & Double Operators – Remote Pilot

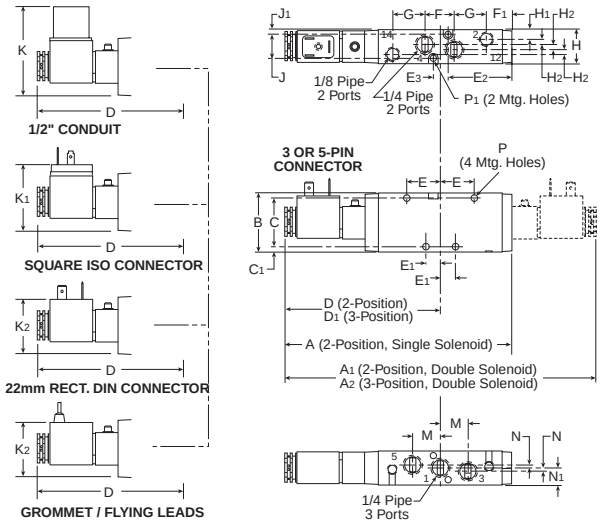


P2LBX 3/2 (remote)

A	B	C	C1	D
3.08 (78)	1.57 (40)	1.26 (32)	.16 (4)	1.54 (39)
E	**E2**	**E3**	**F**	**G**
.79 (20)	.51 (13)	1.26 (32)	.55 (14)	.98 (25)
H	**H1**	**H2**	**J**	**J1**
.87 (22)	.26 (6.6)	.18 (4.5)	.65 (16.5)	.11 (2.9)
M	**M1**	**N**	**N1**	**P**
.79 (20)	1.14 (29)	.02 (0.5)	.42 (11)	Ø .17 Ø (4.3)
P1				
Ø .12 Ø (3.1)				

Inches (mm)

P2LBX 5/2 & 5/3 Single & Double Operators – Solenoid



P2LBX 5/2 & 5/3 (solenoid)

A	A1	A2	B	C
6.14 (156)	8.39 (213)	9.23 (235)	1.57 (40)	1.26 (32)
C1	**D**	**D1**	**E**	**E1**
.16 (4)	4.21 (107)	4.64 (118)	.91 (23)	.39 (10)
E2	**E3**	**F**	**F1**	**G**
1.73 (44)	.39 (10)	.79 (20)	.67 (17)	.87 (22)
H	**H1**	**H2**	**J**	**J1**
.87 (22)	.26 (6.6)	.12 (3)	.65 (16.5)	.12 (3)
K	**K1**	**K2**	**M**	**N**
2.36 (60)	1.61 (41)	1.50 (38)	.79 (20)	.08 (2)
N1	**P**	**P1**		
.43 (11)	Ø .17 Ø (4.3)	Ø .12 Ø (3.1)		

Inches (mm)

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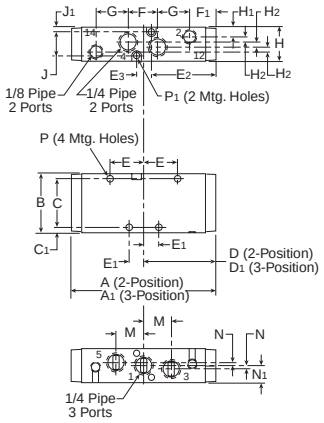
P2LBX 5/2 & 5/3 Single & Double Operators – Remote Pilot

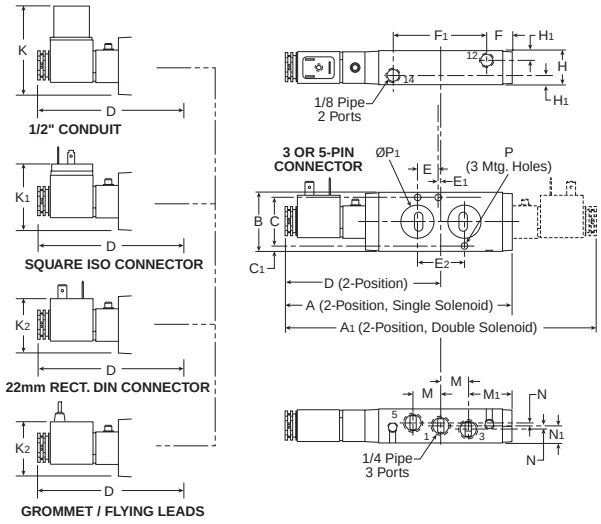


P2LBX 5/2 & 5/3 (remote)

A	A1	B	C	C1
3.95 (100)	4.61 (117)	1.57 (40)	1.26 (32)	.16 (4)
D	**D1**	**E**	**E1**	**E2**
1.93 (49)	2.28 (58)	91 (23)	.39 (10)	1.73 (44)
E3	**F**	**F1**	**G**	**H**
.39 (10)	.79 (20)	.67 (17)	.87 (22)	.8 (22)
H1	**H2**	**J**	**J1**	**K**
.26 (6.6)	.12 (3)	.65 (16.5)	.11 (2.8)	2.90 (74)
M	**N**	**N1**	**P**	**P1**
.79 (20)	.08 (2)	.43 (11)	Ø .17 Ø (4.3)	Ø .12 Ø (3.1)

Inches (mm)

P2LBX 5/2 Single & Double Operators – Solenoid _ NAMUR



P2LBX 5/2 (NAMUR)

A	A1	B	C	C1
6.15 (156)	8.39 (213)	1.57 (40)	1.26 (32)	.16 (4)
D	**E**	**E1**	**E2**	**F**
4.21 (107)	.47 (12)	.08 (2)	.94 (24)	.67 (17)
F1	**H**	**H1**	**M**	**M1**
2.52 (64)	.87 (22)	.26 (6.6)	.79 (20)	1.14 (29)
N	**N1**	**P**	**P1**	
.08 (2)	.43 (11)	Ø .22 Ø (5.5)	Ø .76 Ø (19.4)	

Inches (mm)

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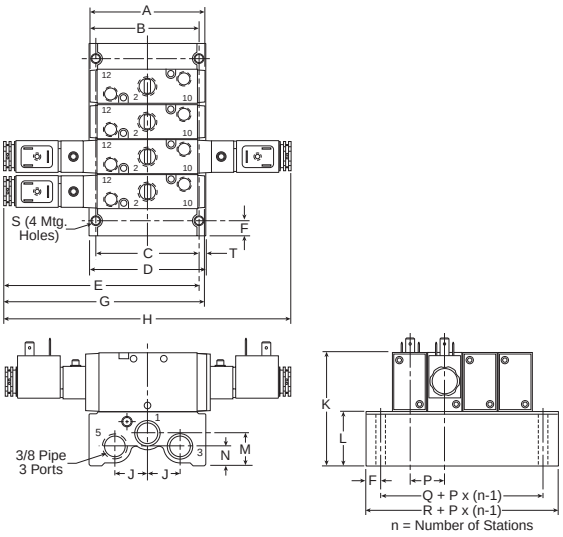
P2LBX 3/2 Single & Double Operators – IEM Aluminum Bar Manifold

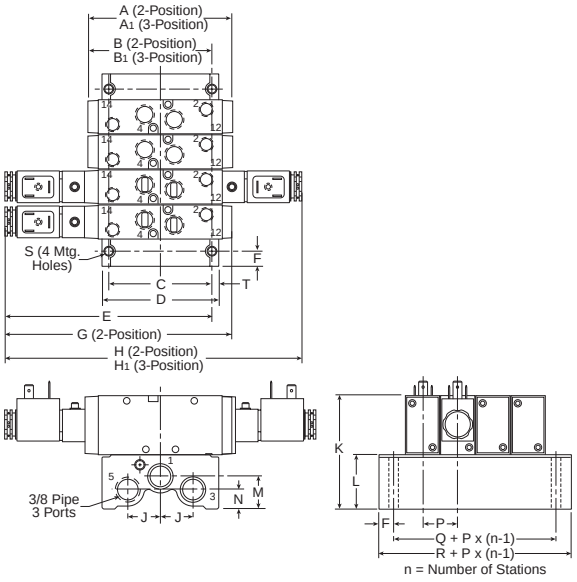


P2LBX 3/2
IEM Aluminum bar banifold

A	B	C	D	E
3.86 (78)	2.91 (74)	2.76 (70)	3.12 (79)	5.17 (131)
F	**G**	**H**	**J**	***K***
.40 (10.2)	5.33 (136)	7.6 (193)	.87 (22)	3.11 (79)
L	**M**	**N**	**P**	**Q**
1.47 (37)	.87 (22)	.52 (13.2)	.93 (23.5)	1.56 (39.6)
R	**S**	**T**		
2.36 (60)	Ø .22 (Ø 5.5)	.18 (4.6)		

Inches (mm)

P2LBX 5/2 & 5/3 Single & Double Operators – IEM Aluminum Bar Manifold



P2LBX 5/2 & 5/3
IEM Aluminum bar manifold

A	A_1	B	B_1	C
3.86 (98)	4.70 (120)	3.42 (84)	3.73 (95)	2.76 (70)
D	**E**	**F**	**G**	**H**
3.12 (79)	5.59 (142)	.40 (10.2)	6.14 (156)	8.39 (213)
H_1	**J**	**K**	**L**	**M**
9.23 (235)	.87 (22)	3.11 (79)	1.47 (37)	.87 (22)
N	**P**	**Q**	**R**	**S**
.52 (13.2)	.93 (23.5)	1.56 (39.6)	2.36 (60)	Ø .22 (Ø 5.5)
T				
.18 (4.6)				

Inches (mm)

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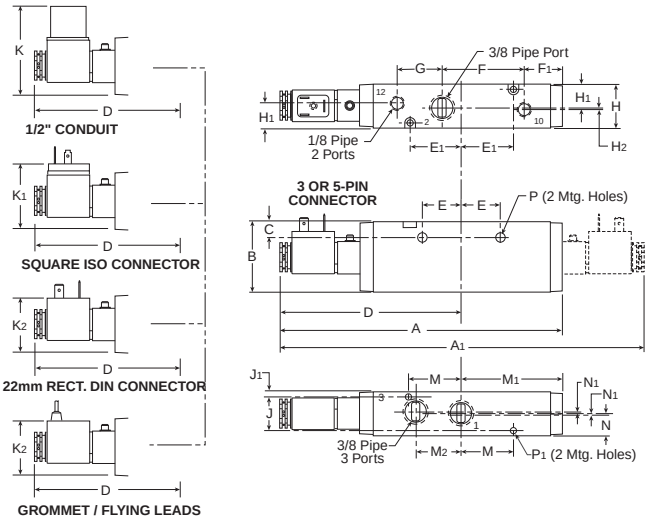
P2LCX 3/2 Single & Double Operators – Solenoid

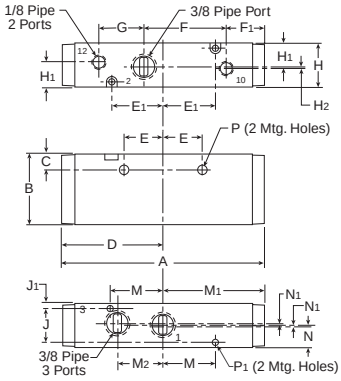


P2LCX 3/2 (solenoid)

A	A1	B	C	D
7.66 (194.5)	9.80 (249)	1.89 (48)	.43 (11)	4.90 (124.5)
E	**E1**	**F**	**F1**	**G**
1.04 (26.5)	1.40 (35.5)	2.24 (57)	1.02 (26)	1.22 (31)
H	**H1**	**H2**	**J**	**J1**
1.18 (30)	.67 (17)	.02 (0.5)	.91 (23)	.14 (3.5)
K	**K1**	**K2**	**M**	**M1**
2.52 (64)	1.77 (45)	1.65 (42)	1.40 (35.5)	2.76 (70)
M2	**N**	**N1**	**P**	**P1**
1.18 (30)	.55 (14)	.04 (1)	Ø .27 Ø (6.9)	Ø .17 Ø (4.4)

Inches (mm)

P2LCX 3/2 Single & Double Operators – Remote Pilot

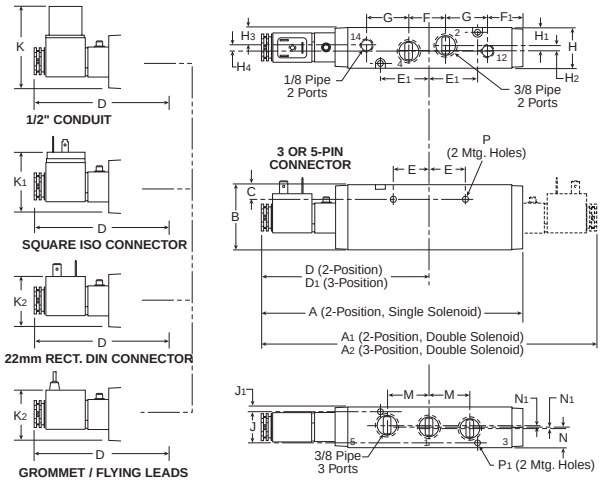


P2LCX 3/2 (remote)

A	B	C	D	E
5.51 (140)	1.89 (48)	.43 (11)	2.76 (70)	1.04 (26.5)
E1	**F**	**F1**	**G**	**H**
1.40 (35.5)	2.24 (57)	1.02 (26)	1.22 (31)	1.18 (30)
H1	**H2**	**J**	**J1**	**M**
.67 (17)	.02 (0.5)	.91 (23)	.14 (3.5)	1.40 (35.5)
M1	**M2**	**N**	**N1**	**P**
2.76 (70)	1.18 (30)	.55 (14)	.04 (1)	Ø .27 Ø (6.9)
P1				
Ø .17 Ø (4.4)				

Inches (mm)

P2LCX 5/2 & 5/3 Single & Double Operators – Solenoid



P2LCX 5/2 & 5/3 (solenoid)

A	A1	A2	B	C
7.68 (195)	9.84 (250)	10.71 (272)	1.89 (48)	.43 (11)
D	**D1**	**E**	**E1**	**F**
4.92 (125)	5.35 (136)	1.04 (26.5)	1.40 (35.5)	1.06 (27)
F1	**G**	**H**	**H1**	**H2**
1.02 (26)	1.22 (31)	1.18 (30)	.53 (13.5)	.12 (3)
H3	**H4**	**J**	**J1**	**K**
.51 (13)	.16 (4)	.91 (23)	.14 (3.5)	2.52 (64)
K1	**K2**	**M**	**N**	**N1**
1.77 (45)	1.65 (42)	1.18 (30)	.55 (14)	.04 (1)
P	**P1**			
Ø .27 Ø (6.9)	Ø .17 Ø (4.4)			

Inches (mm)

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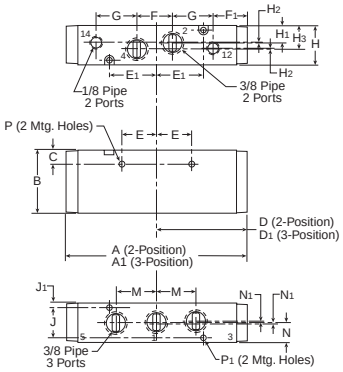
P2LCX 5/2 & 5/3 Single & Double Operators – Remote Pilot

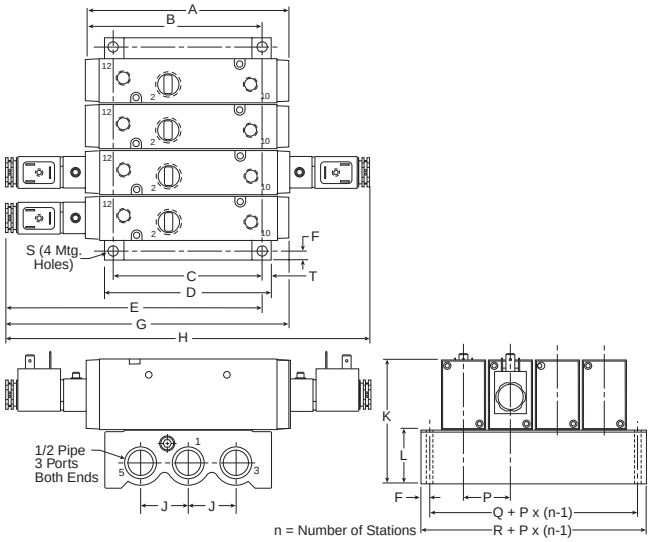


P2LCX 5/2 & 5/3 (remote)

A	A1	B	C	D
5.51 (140)	6.38 (162)	1.89 (48)	.43 (11)	2.76 (70)
D1	**E**	**E1**	**F**	**F1**
3.18 (81)	1.04 (26.5)	1.40 (35.5)	1.06 (27)	1.02 (26)
G	**H**	**H1**	**H2**	**H3**
1.22 (31)	1.18 (30)	.51 (13)	.02 (0.5)	.12 (3)
J	**J1**	**M**	**N**	**N1**
.91 (23)	.14 (3.5)	1.18 (30)	.55 (14)	.04 (1)
P	**P1**			
Ø .27 Ø (6.9)	Ø .17 Ø (4.4)			

Inches (mm)

P2LCX 3/2 Single & Double Operators – IEM Aluminum Bar Manifold

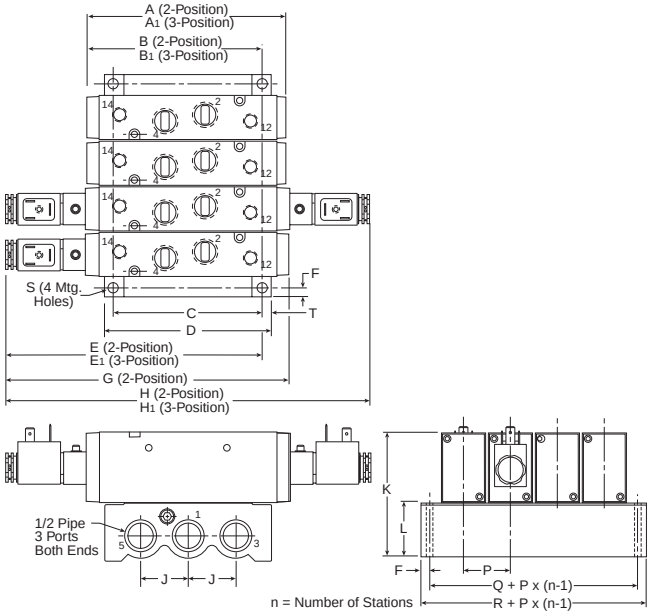


P2LCX 3/2
IEM Aluminum bar manifold

A	B	C	D	E
5.51 (140)	4.96 (126)	3.94 (100)	4.41 (112)	7.11 (180.5)
F	**G**	**H**	**J**	**K**
.24 (6)	7.66 (194.5)	9.80 (249)	1.26 (32)	3.43 (87)
L	**P**	**Q**	**R**	**S**
1.54 (39)	1.24 (31.5)	1.77 (45)	2.24 (57)	Ø .26 Ø (6.5)
T				
.24 (6)				

Inches (mm)

P2LCX 5/2 & 5/3 Single & Double Operators – IEM Aluminum Bar Manifold



P2PCX 5/2 & 5/3
IEM Aluminum bar manifold

A	A1	B	B1	C
5.51 (140)	6.38 (162)	4.72 (120)	5.16 (131)	3.94 (100)
D	**E**	**E1**	**F**	**G**
4.41 (112)	6.89 (170)	7.13 (181)	.24 (6)	7.68 (195)
H	**H1**	**J**	**K**	**L**
9.84 (250)	10.71 (272)	1.26 (32)	3.43 (87)	1.54 (39)
P	**Q**	**R**	**S**	**T**
1.24 (31.5)	1.77 (45)	2.24 (57)	Ø .26 (6.5)	.24 (6)

Inches (mm)

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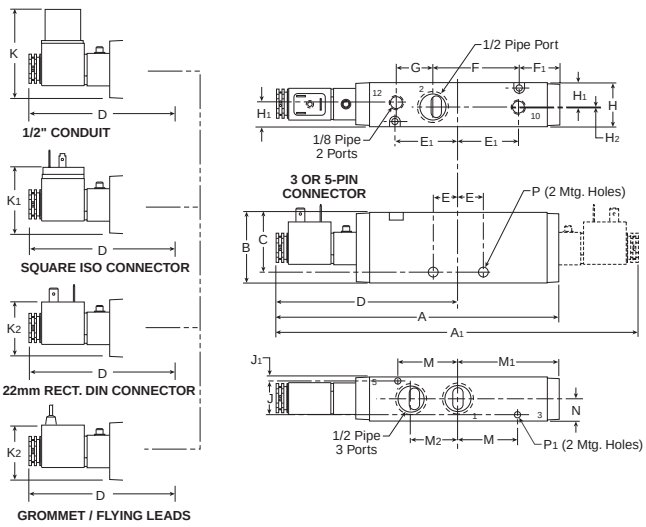
P2LDX 3/2 Single & Double Operators – Solenoid

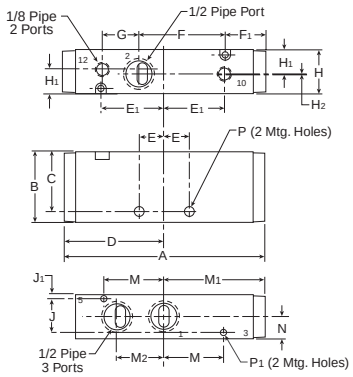


P2LDX 3/2 (solenoid)

A	A1	B	C	D
7.66 (194.5)	9.80 (249)	1.89 (48)	1.59 (40.5)	4.90 (124.5)
E	**E1**	**F**	**F1**	**G**
.67 (17)	1.65 (42)	2.36 (60)	1.08 (27.5)	.98 (25)
H	**H1**	**H2**	**J**	**J1**
1.18 (30)	.67 (17)	.02 (0.5)	.91 (23)	.14 (3.5)
K	**K1**	**K2**	**M**	**M1**
2.52 (64)	1.77 (45)	1.65 (42)	1.65 (42)	2.76 (70)
M2	**N**	**P**	**P1**	
1.30 (33)	.59 (15)	Ø .26 Ø (6.6)	Ø .17 Ø (4.4)	

Inches (mm)

P2LDX 3/2 Single & Double Operators – Remote Pilot

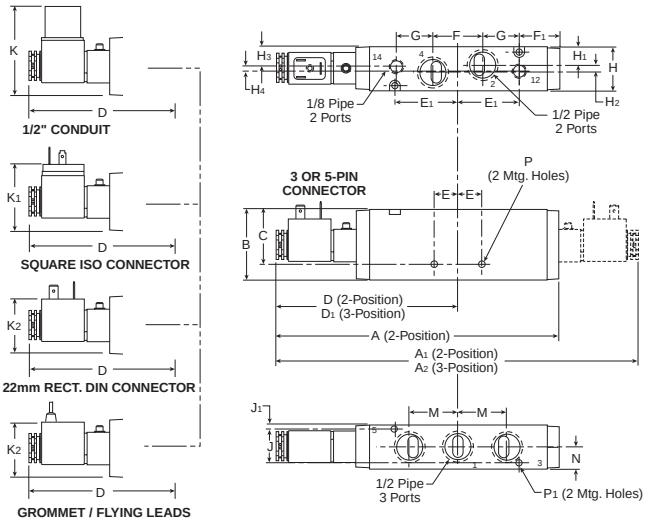


P2LDX 3/2 (remote)

A	B	C	D	E
5.51 (140)	1.89 (48)	1.59 (40.5)	2.76 (70)	.67 (17)
E1	**F**	**F1**	**G**	**H**
1.65 (42)	2.36 (60)	1.08 (27.5)	.98 (25)	1.18 (30)
H1	**H2**	**J**	**J1**	**M**
.67 (17)	.02 (0.5)	.91 (23)	.14 (3.5)	1.65 (42)
M1	**M2**	**N**	**P**	**P1**
2.76 (70)	1.30 (33)	.59 (15)	Ø .26 Ø (6.6)	Ø .17 Ø (4.4)

Inches (mm)

P2LDX 5/2 & 5/3 Single & Double Operators – Solenoid



P2LDX 5/2 & 5/3 (solenoid)

A	A1	A2	B	C
7.67 (195)	9.84 (250)	10.7 (272)	1.89 (48)	1.59 (40.5)
D	**D1**	**E**	**E1**	**F**
4.92 (125)	5.79 (147)	.67 (17)	1.65 (42)	1.34 (34)
F1	**G**	**H**	**H1**	**H2**
1.10 (28)	.98 (25)	1.18 (30)	.49 (12.5)	.20 (5)
H3	**H4**	**J**	**J1**	**K**
.51 (13)	.16 (4)	.91 (23)	.14 (3.5)	2.52 (64)
K1	**K2**	**M**	**N**	**P**
1.77 (45)	1.65 (42)	1.30 (33)	.59 (15)	Ø .26 Ø (6.6)
P1				
Ø .17 Ø (4.4)				

Inches (mm)

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Pneumatic Division
Richland, Michigan
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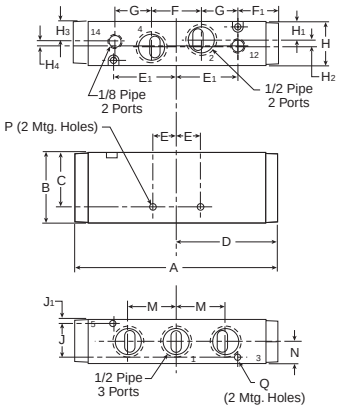
P2LDX 5/2 & 5/3 Single & Double Operators – Remote Pilot



P2LDX 5/2 & 05/3 (remote)

A	B	C	D	E
5.47 (139)	1.89 (48)	1.59 (40.5)	2.63 (67)	.67 (17)

E_1	F	F_1	G	H
1.65 (42)	1.34 (34)	1.08 (27.5)	.98 (25)	1.18 (30)

H_1	H_2	H_3	H_4	J
.49 (12.5)	.20 (5)	.51 (13)	.16 (4)	.91 (23)

J_1	P	M	N	Q
.14 (3.5)	Ø .26 Ø (6.6)	1.29 (32.7)	.59 (15)	Ø .17 Ø (4.4)

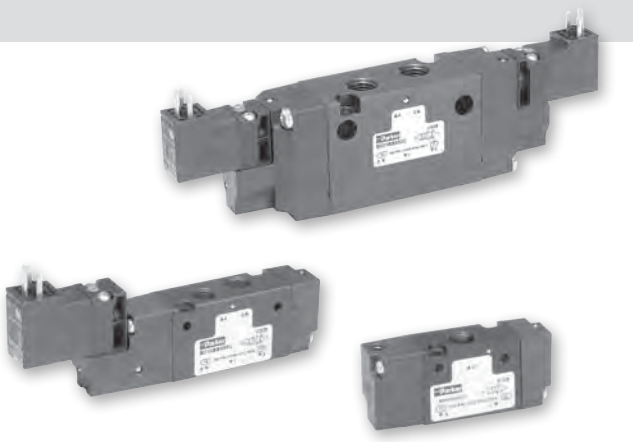
Inches (mm)

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

B Series

B Series, an exceptional performing industrial valve in a compact size with an enhanced flow range.

Available in solenoid pilot operated and remote air pilot models. The B series features Parker's proven WCS (Wear Compensating Seal) system ensuring long life and fast response, making it ideally suited for OEM applications.



Ports
- B3: 1/8, 1/4 inch
- B5: 1/4, 3/8 inch
- B6: 3/8 inch
- B7: 1/2 inch
- B8: 3/4 inch

Mounting
- Inline
- Subbase
- IEM stackable base
- IEM aluminum bar
- 5-port subbase aluminum bar

Solenoids
- 1.2 W – 15mm, 3-pin EN175301-803
- 2.5 to 7.3 watt - conduit, grommet, 22mm & 30mm, 3-pin DIN (433650)
- 12VDC to 240VAC
- Female DIN electrical connectors

Certification / Approval
- Approved to be CE marked
- IP65 rated
- CSA, C/US

Operating information

Operating pressure:	Vacuum to 145 PSIG (Vacuum to 10 bar)
Minimum:	See chart below
CSA-NRTL/C:	See chart below
Operating temperature:	5°F to 120°F (-15°C to 49°C)

Material specifications

Body	Anodized aluminum
End caps	Nylon polymer - 33% glass filled
Seals	Nitrile
Solenoid	Polyamide
Spool	Aluminum

Minimum operating pressure

Operator / function	Internal pilot	Minimum PSIG (kPa)				
		B3	B5	B6	B7	B8
1. G. H	Single solenoid - air return	20 (138)	20 (138)	20 (138)	35 (241)	35 (241)
2. A. J. S	Double solenoid					
3. K. L	Single remote pilot - air return					
4. M	Double remote pilot	Vacuum				
5. 6. 7	Double solenoid - APB, CE, PC	30 (207)	30 (207)	30 (207)	45 (310)	45 (310)
8. 9. 0	Double remote pilot - APB, CE, PC	Vacuum				
E. V. W	Single solenoid - air return / spring assist	35 (241)	35 (241)	35 (241)	35 (241)	35 (241)
F. X. Y	Single remote pilot - air return / spring assist					
	External pilot*†					
All	"B" series	Vacuum				

* External Pilot Pressure / Remote Pilot Signal 35-145 PSIG (241-1000 kPa).
† Not Available with B3 Dual 3/2.

CSA-NRTL/C operating pressure

Note: For CSA-NRTL/C approved solenoid valves – insert an 'L' at the end of the valve part number.

Valve	Maximum PSIG (kPa)
B3	120 (827)
B5 & B6	145 (1000)*§
B7 & B7	145 (1000)*†

* Enclosure Option E is CSA / FM approved at source. For certification of valve / solenoid assembly, consult factory.
† Not Available with Enclosure 5
§ Not available with Enclosures 0. 5 & X

Most popular.

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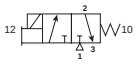
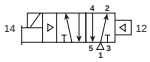
Single Solenoid, 3-way, 2-position, NC



B3 shown, 3-Pin DIN 43650C electrical connection. Non-locking flush override.

Symbol	Port size	Cv	Voltage	Valve type	Part number
	1/8"	0.75 Cv	120VAC 24VDC	B3 Inline	**B3G0BB553C B3G0BB549C**
	1/4"	1.4 Cv	120VAC 24VDC	B5 Inline	**B5G1BB553C B5G1BB549C**
	3/8"	1.4 Cv	120VAC 24VDC	B5 Inline	**B5G2BB553C B5G2BB549C**
	3/8"	2.7 Cv	120VAC 24VDC	B6 Inline	**B6V2BB553A B6V2BB549A**
	1/2"	5.9 Cv	120VAC 24VDC	B7 Inline	**B7V3BB553A B7V3BB549A**
	3/4"	7.0 Cv	120VAC 24VDC	B8 Inline	**B8V4BB553A B8V4BB549A**

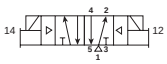
Single Solenoid, 4-way, 2-position



B3 shown, 3-Pin DIN 43650C electrical connection. Non-locking flush override.

Symbol	Port size	Cv	Voltage	Valve type	Part number
	1/8"	0.75 Cv	120VAC 24VDC	B3 Inline	**B310BB553C B310BB549C**
	1/4"	1.4 Cv	120VAC 24VDC	B5 Inline	**B511BB553C B511BB549C**
	3/8"	1.4 Cv	120VAC 24VDC	B5 Inline	**B512BB553C B512BB549C**
	3/8"	2.7 Cv	120VAC 24VDC	B6 Inline	**B612BB553A B612BB549A**
	1/2"	5.9 Cv	120VAC 24VDC	B7 Inline	**B713BB553A B713BB549A**
	3/4"	7.0 Cv	120VAC 24VDC	B8 Inline	**B814BB553A B814BB549A**
	Less base	0.65 Cv	120VAC 24VDC	B3 Subbase	**B31VBB553C B31VBB549C**

Double Solenoid, 4-way, 2-position



B5 shown, 3-Pin DIN 43650C electrical connection. Non-locking flush override.

Symbol	Port size	Cv	Voltage	Valve type	Part number
	1/8"	0.75 Cv	120VAC 24VDC	B3 Inline	**B320BB553C B320BB549C**
	1/4"	1.4 Cv	120VAC 24VDC	B5 Inline	**B521BB553C B521BB549C**
	3/8"	1.4 Cv	120VAC 24VDC	B5 Inline	**B522BB553C B522BB549C**
	3/8"	2.7 Cv	120VAC 24VDC	B6 Inline	**B622BB553A B622BB549A**
	1/2"	5.9 Cv	120VAC 24VDC	B7 Inline	**B723BB553A B723BB549A**
	3/4"	7.0 Cv	120VAC 24VDC	B8 Inline	**B824BB553A B824BB549A**
	Less base	0.65 Cv	120VAC 24VDC	B3 Subbase	**B32VBB553C B32VBB549C**

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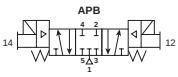
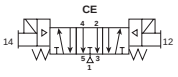
Double Solenoid, 4-way, 3-position, APB



B5 shown, 3-Pin DIN 43650C electrical connection. Non-locking flush override.

Symbol	Port size	Cv	Voltage	Valve type	Part number
	1/8"	0.60 Cv	120VAC 24VDC	B3 Inline	**B350BB553C B350BB549C**
	1/4"	1.1 Cv	120VAC 24VDC	B5 Inline	**B551BB553C B551BB549C**
	3/8"	1.1 Cv	120VAC 24VDC	B5 Inline	**B552BB553C B552BB549C**
	3/8"	2.1 Cv	120VAC 24VDC	B6 Inline	**B652BB553A B652BB549A**
	1/2"	5.7 Cv	120VAC 24VDC	B7 Inline	**B753BB553A B753BB549A**
	3/4"	6.6 Cv	120VAC 24VDC	B8 Inline	**B854BB553A B854BB549A**
	Less base	0.50 Cv	120VAC 24VDC	B3 Subbase	**B35VBB553C B35VBB549C**

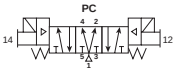
Double Solenoid, 4-way, 3-position, CE



B5 shown, 3-Pin DIN 43650C electrical connection. Non-locking flush override.

Symbol	Port size	Cv	Voltage	Valve type	Part number
	1/8"	0.60 Cv	120VAC 24VDC	B3 Inline	**B360BB553C B360BB549C**
	1/4"	1.1 Cv	120VAC 24VDC	B5 Inline	**B561BB553C B561BB549C**
	3/8"	1.1 Cv	120VAC 24VDC	B5 Inline	**B562BB553C B562BB549C**
	3/8"	2.1 Cv	120VAC 24VDC	B6 Inline	**B662BB553A B662BB549A**
	1/2"	5.7 Cv	120VAC 24VDC	B7 Inline	**B763BB553A B763BB549A**
	3/4"	6.6 Cv	120VAC 24VDC	B8 Inline	**B864BB553A B864BB549A**
	Less base	0.50 Cv	120VAC 24VDC	B3 Subbase	**B36VBB553C B36VBB549C**

Double Solenoid, 4-way, 3-position, PC



B5 shown, 3-Pin DIN 43650C electrical connection. Non-locking flush override.

Symbol	Port size	Cv	Voltage	Valve type	Part number
	1/8"	0.60 Cv	120VAC 24VDC	B3 Inline	**B370BB553C B370BB549C**
	1/4"	1.1 Cv	120VAC 24VDC	B5 Inline	**B571BB553C B571BB549C**
	3/8"	1.1 Cv	120VAC 24VDC	B5 Inline	**B572BB553C B572BB549C**
	3/8"	2.1 Cv	120VAC 24VDC	B6 Inline	**B672BB553A B672BB549A**
	1/2"	5.7 Cv	120VAC 24VDC	B7 Inline	**B773BB553A B773BB549A**
	3/4"	6.6 Cv	120VAC 24VDC	B8 Inline	**B874BB553A B874BB549A**
	Less base	0.50 Cv	120VAC 24VDC	B3 Subbase	**B37VBB553C B37VBB549C**

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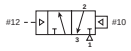
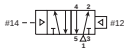
Single Remote Pilot, 3-way, 2-position, NC



B3 Shown, M5 remote pilot ports

Symbol	Port size	Cv	Valve type	Part number
	1/8"	0.75 Cv	B3 Inline, remote pilot	**B3K0000XXC**
	1/4"	1.4 Cv	B5 Inline, remote pilot	**B5K1000XXC**
	3/8"	1.4 Cv	B5 Inline, remote pilot	**B5K2000XXC**
	3/8"	2.7 Cv	B6 Inline, remote pilot	**B6X2000XXA**
	1/2"	5.9 Cv	B7 Inline, remote pilot	**B7X3000XXA**
	3/4"	7.0 Cv	B8 Inline, remote pilot	**B8X4000XXA**

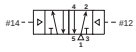
Single Remote Pilot, 4-way, 2-position



B5 Shown, M5 remote pilot ports

Symbol	Port size	Cv	Valve type	Part number
	1/8"	0.75 Cv	B3 Inline, remote pilot	**B330000XXC**
	1/4"	1.4 Cv	B5 Inline, remote pilot	**B531000XXC**
	3/8"	1.4 Cv	B5 Inline, remote pilot	**B532000XXC**
	3/8"	2.7 Cv	B6 Inline, remote pilot	**B632000XXA**
	1/2"	5.9 Cv	B7 Inline, remote pilot	**B733000XXA**
	3/4"	7.0 Cv	B8 Inline, remote pilot	**B834000XXA**
	Less base	0.65 Cv	B3 Subbase, remote pilot	**B33V000XXC**

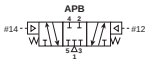
Double Remote Pilot, 4-way, 2-position



B5 Shown, M5 remote pilot ports

Symbol	Port size	Cv	Valve type	Part number
	1/8"	0.75 Cv	B3 Inline, remote pilot	**B340000XXC**
	1/4"	1.4 Cv	B5 Inline, remote pilot	**B541000XXC**
	3/8"	1.4 Cv	B5 Inline, remote pilot	**B542000XXC**
	3/8"	2.7 Cv	B6 Inline, remote pilot	**B642000XXA**
	1/2"	5.9 Cv	B7 Inline, remote pilot	**B743000XXA**
	3/4"	7.0 Cv	B8 Inline, remote pilot	**B844000XXA**
	Less base	0.65 Cv	B3 Subbase, remote pilot	**B34V000XXC**

Double Remote Pilot, 4-way, 3-position, APB



B5 Shown, M5 remote pilot ports

Symbol	Port size	Cv	Valve type	Part number
	1/8"	0.60 Cv	B3 Inline, remote pilot	**B380000XXC**
	1/4"	1.1 Cv	B5 Inline, remote pilot	**B581000XXC**
	3/8"	1.1 Cv	B5 Inline, remote pilot	**B582000XXC**
	3/8"	2.1 Cv	B6 Inline, remote pilot	**B682000XXA**
	1/2"	5.7 Cv	B7 Inline, remote pilot	**B783000XXA**
	3/4"	6.6 Cv	B8 Inline, remote pilot	**B884000XXA**
	Less Base	0.50 Cv	B3 Subbase, remote pilot	**B38V000XXC**

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B3 Subbase Side Ported Subbase Manifold, Subbase Valves Only

Valve series	Valve function	## – Stations	Manifold only (NPT)	Manifold only (BSPP)
B3	4-way	02 to 12	**PSJ3B1N##NP**	**PSJ3B1G##NP**

Kits include: (1) manifold, valve hold down bolts, gaskets. For external pilot valve option "X", external manifold galley must be pressurized. Replace ## with number of valve stations.

B3 Subbase Side Ported Subbase Manifold Add-A-Fold Assembly

Valve series	Valve function	## – Stations	Manifold assembly (NPT)	Manifold assembly (BSPP)
B3	4-way	02 to 12	**AAPSJ3B1N##NP**	**AAPSJ3B1G##GP**

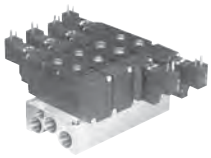
Kits include: (1) manifold, valve hold down bolts, gaskets and assembly. For external pilot valve option "X", external manifold galley must be pressurized.

IEM Bar Manifold, Inline Valves Only

Valve series	Valve function	## – Stations	Manifold only (NPT)	Manifold only (BSPP)
B3	3-way	02 to 12	**PSG3BXN##NP**	**PSG3BXG##NP**
B3	4-way	02 to 12	**PSM3BXN##NP**	**PSM3BXG##NP**
B5	3-way	02 to 12	**PSG5BXN##NP**	**PSG5BXG##NP**
B5	4-way	02 to 12	**PSM5BXN##NP**	**PSM5BXG##NP**
B6	3-way	02 to 12	**PSG6BXN##NP**	**PSG6BXG##NP**
B6	4-way	02 to 12	**PSM6BXN##NP**	**PSM6BXG##NP**
B7, B8	4-way	02 to 12	**PSM7BXN##NP**	**PSM7BXG##NP**

Kits include: (1) manifold, valve hold down bolts, gaskets. For external pilot valve option "X", external manifold galley must be pressurized.

IEM Bar Manifold Add-A-Fold Assembly



Valve series	Valve function	## – Stations	Manifold assembly (NPT)	Manifold assembly (BSPP)
B3	3-way	02 to 12	**AAPSG3BXN##NP**	**AAPSG3BXG##NP**
B3	4-way	02 to 12	**AAPSM3BXN##NP**	**AAPSM3BXG##NP**
B5	3-way	02 to 12	**AAPSG5BXN##NP**	**AAPSG5BXG##NP**
B5	4-way	02 to 12	**AAPSM5BXN##NP**	**AAPSM5BXG##NP**
B6	3-way	02 to 12	**AAPSG6BXN##NP**	**AAPSG6BXG##NP**
B6	4-way	02 to 12	**AAPSM6BXN##NP**	**AAPSM6BXG##NP**
B7, B8	4-way	02 to 12	**AAPSM7BXN##NP**	**AAPSM7BXG##NP**

Kits include: (1) manifold, valve hold down bolts, gaskets and assembly. For external pilot valve option "X", external manifold galley must be pressurized.

How to Order: 1. List Add-A-Fold Assembly Part Number as line item 1

2. List the desired valves series part number in subsequent line items after the Add-A-Fold Assembly part number to complete the ordering code. Include all valves and blanking kits required. The left most station is station # 1 looking at the #12 end of the manifold.

Example: B3, 4-way manifold with station #1 blanked off with valves assembled

Line	Qty	Part number	Comment
1	1	AAPSM3BXN03NP	Add-A-Fold Assembly
2	1	PS2920P	Blank Plate - station 1
3	2	B3100BB549C	4-way B3 - station 2, 3

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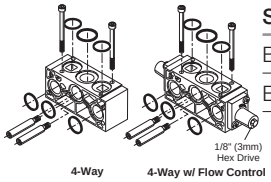
IEM Stackable Manifolds

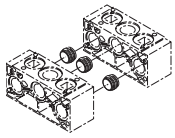
- Individual Manifold Bases stack together to form lightweight custom length manifold system.
- Easy-to-connect male / female tie rods for modular assembly.
- Utilizes B3 and B5 4-way Inline Valves.
- Low-cost built-in Flow Controls with heavy-duty brass adjusting needles to control meter-out exhaust flow.
- Accessories include Isolator Plugs for pressure isolation and Universal Blanking Plates for auxiliary inlet and exhaust supply and future valve additions.



Series	Type	Kit number	
		Standard	Flow control
B3	4-way	**PS2917P**	**PS2918P**
B5	4-way	**PS2817P**	**PS2818P**

Kit includes: (1) manifold base, (2) hold-down bolts, tie-rods, gaskets and o-rings.

Isolator Plugs

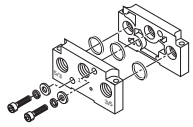


Series	Description	Kit number
B3	4-way, IEM stackable	**PS2919P**
B5	4-way, IEM stackable	**PS2819P**

Used to isolate the #1, #3 or #5 gallery between two manifold bases. (IEM stackable only)

Kit includes: (3) plugs and (6) o-rings

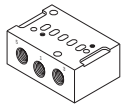
End Plate Kits



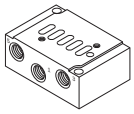
Series	Type	Kit number
B3	4-way, NPT	**PS2915P**
B5	4-way, NPT	**PS2815P**

Kit includes: right and left end plate, o-rings, socket head cap screws, flat washers and lockwashers.

Single Subbase, Subbase Valves Only



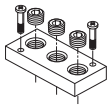
Series	Type	Kit number
B3	4-way, 1/4" NPT	**PS2934P**

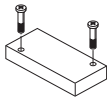


Series	Type	Kit number
B5	4-way, 3/8" NPT	**PS2834P**

Kit includes: (1) subbase.
(Hold down bolts & gasket are included with valve.).

Blanking Plate

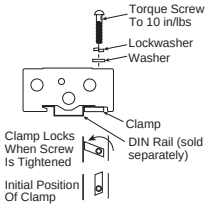




		IEM universal		IEM	Subbase
		NPT	BSPP "G"	Blank	Blank
B3	3-way	**PS2966P**	**PS2967P**	**PS2968P**	—
	4-way	**PS2920P**	**PS2921P**	**PS2969P**	**PS2994P**
B5	3-way	**PS2866P**	**PS2867P**	**PS2868P**	—
	4-way	**PS2820P**	—	**PS2869P**	—
B6	3-way 4-way	**PS2620P**	—	—	—
B7-B8	4-way	**PS2520P**	—	**PS2569P**	—

Kit includes: (1) plate, (2) screws, seal / gaskets

DIN Rail Hardware Kit



Valve type	IEM bar	Part number
B3	(2) Screws, (2) Nuts, (2) Clamps	**PS2991P**

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Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

B3 Series

B3 1 0 B B 5 49 – C

Basic series	
B3 series	B3

Engineering level	
C	Current

Operator Function	
3-way	
Single solenoid, 2-position NC - air return	**G**
Single solenoid, 2-position NO - air return	H
Double solenoid, 2-position	J
Single remote pilot, 2-position NC - air return	**K**
Single remote pilot, 2-position NO - air return	L
Double remote pilot, 2-position	M
Single solenoid, 2-position NC - air return / spring assist	V
Single solenoid, 2-position NO - air return / spring assist	W
Single remote pilot, 2-position NC - air return / spring assist	X
Single remote pilot, 2-position NO - air return / spring assist	Y
4-way	
Single solenoid, 2-position - air return	**1**
Double solenoid, 2-position	**2**
Single remote pilot, 2-position - air return	**3**
Double remote pilot, 2-position	**4**
Double solenoid, 3-position - APB	**5**
Double solenoid, 3-position - CE	6
Double solenoid, 3-position - PC	7
Double remote pilot, 3-position - APB	**8**
Double remote pilot, 3-position - CE	9
Double remote pilot, 3-position - PC	0
Single solenoid, 2-position - air return / spring assist	E
Single remote pilot, 2-position - air return / spring assist	F

Options	
Blank	**None**
02	Solenoid rotated 180° - pins down

Voltage§	AC		DC
	60Hz	50Hz	
42	24	22	
45			12
49			**24**
53	**120**	**110**	
57	240	230	
XX	**Remote pilot - M5 or valve less 15mm solenoid**		
YY	Remote pilot - 5/32" (4mm) tube		

Enclosure / lead length	
0	None, remote pilot valve
5	**15mm 3-pin DIN 43650C (male only)**
X	Valve less 15mm solenoid

Overrides§	
0	**None, remote pilot valve**
B	**Flush - non-locking**
C	**Flush - locking**
D	Extended - non-locking
E	Extended - locking
X	Valve less 15mm solenoid

Port size / thread type	
3-way	
1/8" NPT inline	0*
1/8" BSPP "G" inline	5*
4-way	
1/8" NPT inline	**0***
1/8" BSPP "G" inline	5*
1/4" NPT subbase	H‡
1/8" NPT face mount	T**
Subbase valve less base	**V‡**

* Available for use on IEM Manifolds.

** 4-way only.

‡ Subbase valves available for 4-way valves only.

Pilot source / pilot exhaust	
0	**None, remote pilot valve**
B†	**Internal - port #1 / vented**
E*	Dual pressure - port #3 / vented
K†	External - body / tapped M5
X‡	External - manifold / vented

* Not available for 3-way Valves.

† Not available for Remote Pilot Valves.

‡ See Pilot Source Note below.

§ Enclosure '5' – Override / Voltage Availability

S - Standard
O - Option

Voltage code	Override code Standard			
	B	C	D	E
42	O	O	–	–
45	O	O	–	–
49	S	S	O	O
53	S	S	O	O
57	O	O	–	–

Voltage code	"02" Option			
	B	C	D	E
42	O	O	–	–
45	O	O	–	–
49	S	S	O	O
53	S	S	O	O
57	O	O	–	–

Pilot Source 'X'
External-Manifold / Vented

INLINE & SUBBASE Valves –
Only used IF an IEM or 5-Ported Subbase Aluminum Bar Manifold requires a common external pilot signal through the manifold for low pressure / vacuum applications OR when used with Sandwich Regulators.

☐ Most popular.

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

B5 Series

B5 1 1 B B 5 49 – C

Basic series	
B5 series	B5

Engineering level	
C	Current

Operator function	
3-way	
Single solenoid, 2-position NC - air return	**G**
Single solenoid, 2-position NO - air return	H
Double solenoid, 2-position	J
Single remote pilot, 2-position NC - air return	**K***
Single remote pilot, 2-position NO - air return	L*
Double remote pilot, 2-position	M*
Single solenoid, 2-position NC - air return / spring assist	V
Single solenoid, 2-position NO - air return / spring assist	W
Single remote pilot, 2-position NC - air return / spring assist	X*
Single remote pilot, 2-position NO - air return / spring assist	Y*
4-way	
Single solenoid, 2-position - air return	**1**
Double solenoid, 2-position	**2**
Single remote pilot, 2-position - air return	**3***
Double remote pilot, 2-position	**4***
Double solenoid, 3-position - APB	**5**
Double solenoid, 3-position - CE	6
Double solenoid, 3-position - PC	7
Double remote pilot, 3-position - APB	**8***
Double remote pilot, 3-position - CE	9*
Double remote pilot, 3-position - PC	0*
Single solenoid, 2-position - air return / spring assist	E
Single remote pilot, 2-position - air return / spring assist	F*

* Pilot source/pilot exhaust, override, and enclosure must be "0".

Options	
Blank	**None**
02	Solenoid rotated 180° - pins down
MD††	Manual detent
V0*	Fluorocarbon seals

* Not available with enclosure "0", "5", "X", "E" or "F".

†† Only available with operator function 1 & 3 and Enclosure "N", "X" or mobile voltages upon request.

Voltage §			
	AC		DC
	60Hz	50Hz	
42	24	22	
45			12
49			**24**
53	**120**	**110**	
57	240	230	
XX	**Remote pilot - M5 or valve less solenoid**		
YY	Remote pilot - 5/32" (4mm) tube		

Enclosure / lead length	
0	None, remote pilot valve
5	**15mm 3-pin DIN 43650C (male only)**
A	30mm square 3-pin – ISO 4400 form A (male only)
B	22mm rectangular 3-pin – type B industrial (male only)
C	3-pin automotive - mini
D	5-pin automotive - mini
E*	Intrinsically safe - 30mm 3-pin
F**	Hazardous duty 1/2" NPT conduit - 18" leads
G	**Grommet - 18" leads**
H	**1/2" NPT conduit - 18" leads**
N	Valve less "A -R" coil
Q†	Grommet - 72" leads
R	1/2" NPT conduit - 72" leads
X	Valve less 15mm solenoid

* 24 VDC & override "A" only.

** 12 VDC, 24 VDC, 120 VAC or 240 VAC.

† 24 VDC only.

Port Size / Thread Type	
3-way	
1/4" NPT inline	1*
3/8" NPT inline	**2***
1/4" BSPP "G" inline	6*
3/8" BSPP "G" inline	7*
4-way	
1/4" NPT inline	**1***
3/8" NPT inline	**2***
1/4" BSPP "G" inline	6*
3/8" BSPP "G" inline	7*
3/8" NPT subbase	J†
1/4" NPT NAMUR mount	T‡†
Subbase valve less base - NPT	V‡
1/4" BSPP "G" NAMUR mount	W‡†

* Available for use on IEM manifolds.

† 4-way only.

‡ Available with pilot source "0", "A", and "B" only.

Pilot Source / Pilot Exhaust	
Enclosures "0, 5 & X"	
None, remote pilot valve	0
Internal - port #1 / tapped M5	A†
Internal - port #1 / vented	**B†**
Dual pressure - port #3 / vented	E*
External - body / tapped M5	K†
External - manifold / vented	X‡
Enclosures "A, B, C, D, E, F, G, H, N, Q & R"	
Internal - port #1 / tapped M5	**A†**
Internal - port #1 / vented	**B†**
Dual pressure - port #3 / tapped M5	D*†
External - body / tapped 1/8"	K†

* Not available for 3-way valves.

† Not available for remote pilot valves.

‡ See pilot source note below.

Overrides§	
None. Remote pilot valve	**0**
No override	A†
Flush - non-locking	**B***
Flush - locking	**C**
Extended - non-locking	D
Extended - locking	E*
Valve less 15mm solenoid	X

* Only available with encl. "5".

† Only available with encl. "E".

Pilot Source 'X'
External-Manifold / Vented or Tapped M5

INLINE & SUBBASE Valves –
Only used IF an IEM Aluminum Bar Manifold requires a common external pilot signal through the manifold for low pressure / vacuum applications.

Most popular.

Note: for mobile voltages, contact the application team.

§ Enclosure '5' – Override / Voltage Availability

S - Standard

O - Option

Voltage code	Override code Standard			
	B	C	D	E
42	O	O	–	–
45	O	O	–	–
49	S	S	O	O
53	S	S	O	O
57	O	O	–	–

Voltage code	Override code "02" Option			
	B	C	D	E
42	O	O	–	–
45	O	O	–	–
49	S	S	O	O
53	S	S	O	O
57	O	O	–	–

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Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

B6 Series

B6 1 2 B B 5 49 – A

Basic series	
B6 series	B6

Operator function	
3-way	
Single solenoid, 2-position NC - air return / spring assist	V
Single solenoid, 2-position NO - air return / spring assist	W
Single remote pilot, 2-position NC - air return / spring assist	X
Single remote pilot, 2-position NO - air return / spring assist	Y
4-way	
Single solenoid, 2-position - air return	**1**
Double solenoid, 2-position	**2**
Single remote pilot, 2-position - air return	**3**
Double remote pilot, 2-position	**4**
Double solenoid, 3-position - APB	**5**
Double solenoid, 3-position - CE	6
Double solenoid, 3-position - PC	7
Double remote pilot, 3-position - APB	**8**
Double remote pilot, 3-position - CE	9
Double remote pilot, 3-position - PC	0
Single solenoid, 2-position - air return / spring assist	E
Single remote pilot, 2-position - air return / spring assist	F

Port size / thread type	
3-way / 4-way	
3/8" NPT inline	**2***
3/8" BSPP "G" inline	7*
3/8" NPT NAMUR mount	T†

*Available for use on IEM manifolds.

†4-way only. Available with pilot source "0", "A", "B" and "L" only.

Pilot source / pilot exhaust	
Enclosures "0, 5 & X"	
None. Remote pilot valve	0
Internal - Port #1 / tapped M5	A†
Internal - Port #1 / vented	**B†**
Dual pressure - port #5 / vented	H
External - Body / tapped M5	K†
Enclosures "A, B, C, D, E, F, G, H, N, Q & R"	
Internal - Port #1 / tapped M5	**A†**
Internal - Port #1 / vented	**B†**
External - Body / tapped 1/8"	K†

* Not available for 3-way valves.

† Not available for remote pilot valves.

Overrides§	
None, remote pilot valve	**0**
No override	A†
Flush - non-locking	**B***
Flush - locking	**C**
Extended - non-locking	D
Extended - locking	E*
Valve less 15mm solenoid	X

* Only available with enclosure "5".

† Only available with enclosuer "E".

Enclosure / lead length	
0	None, remote pilot valve
5	**15mm 3-pin DIN 43650C (male only)**
A	30mm square 3-pin – ISO 4400 form A (male only)
B	22mm rectangular 3-pin – Type B industrial (male only)
E*	Intrinsically safe - 30mm 3-pin
F**	Hazardous duty 1/2" NPT conduit - 18" leads
G	**Grommet - 18" leads**
H	**1/2" NPT conduit - 18" leads**
N	Valve less "A - R" coil
Q	Grommet - 72" leads
R	1/2" NPT conduit - 72"leads
X	Valve less 15mm solenoid

* 24 VDC & override "A" only.

** 12 VDC, 24 VDC, 120 VAC or 240 VAC.

† 24 VDC only.

Voltage§	AC		DC
	60Hz	50Hz	
42	24	22	
45			12
49			**24**
53	**120**	**110**	
57	240	230	
XX	**Remote pilot - M5 or valve less 15mm solenoid**		
YY	Remote pilot - 5/32" (4mm) tube		

Options	
Blank	**None**
02	Solenoid rotated 180° - pins down
42*	Series cylinder mount replacement

* Only available with port size "T" and "0", "A". "B", and "L" pilot source.

Engineering level	
A	**Current**

INLINE Valves –
Only used IF an IEM Aluminum Bar Manifold requires a common external pilot signal through the manifold for low pressure / vacuum applications.

§ Enclosure '5' – Override / Voltage Availability

S - Standard
O - Option

Voltage code	Override code Standard			
	B	C	D	E
42	O	O	–	–
45	O	O	–	–
49	S	S	O	O
53	S	S	O	O
57	O	O	–	–

Voltage code	Override code "02" Option			
	B	C	D	E
42	O	O	–	–
45	O	O	–	–
49	S	S	O	O
53	S	S	O	O
57	O	O	–	–

Most popular.

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

B7 & B8 Series

B7 1 3 A B G 53 – A

Basic series	
B7 series	B7
B8 series	B8

Engineering level	
A	Current

Options	
Blank	None

Operator function	
3-way	
Single solenoid, 2-position NC - air return / spring assist	V
Single solenoid, 2-position NO - air return / spring assist	W
Single remote pilot, 2-position NC - air return / spring assist	X
Single remote pilot, 2-position NO - air return / spring assist	Y
4-way	
Single solenoid, 2-position - air return	**1**
Double solenoid, 2-position	**2**
Single remote pilot, 2-position - air return	**3**
Double remote pilot, 2-position	**4**
Double solenoid, 3-position - APB	**5**
Double solenoid, 3-position - CE	6
Double solenoid, 3-position - PC	7
Double remote pilot, 3-position - APB	**8**
Double remote pilot, 3-position - CE	9
Double remote pilot, 3-position - PC	0
Single solenoid, 2-position - air return / spring assist	E
Single remote pilot, 2-position - air return / spring assist	F

Voltage§			
	AC		DC
	60Hz	50Hz	
42	24	22	
45			12
49			**24**
53	**120**	**110**	
57	240	230	
XX	**Remote pilot - M5 or valve less solenoid**		
YY	Remote pilot - 5/32" (4mm) tube		

Enclosure / lead length	
0	None, remote pilot valve
5	**15mm 3-pin DIN 43650C (male only)**
A	30mm square 3-pin – ISO 4400 form A (male only)
B	22mm rectangular 3-pin – Type B industrial (male only)
E*	Intrinsically safe - 30mm 3-pin
F**	Hazardous duty 1/2" NPT conduit - 18" leads
G	**Grommet - 18" leads**
H	**1/2" NPT conduit - 18" leads**
N	Valve less "A - R" coil
R	1/2" NPT conduit - 72" leads
X	Valve less 15mm solenoid

* 24 VDC & Override "A" only.

** 12 VDC, 24 VDC, 120 VAC or 240 VAC.

Port size / thread type	
B7 series	
1/2" NPT inline	**3***
1/2" BSPP "G" inline	8*
B8 series	
3/4" NPT inline	**4***
3/4" BSPP "G" inline	9*

* Available for use on IEM manifolds.

Pilot source / pilot exhaust	
Enclosures "0, 5 & X"	
None. Remote pilot valve	0
Internal - Port #1 / tapped M5	A†
Internal - Port #1 / vented	**B†**
External - Body / tapped M5	K†
Enclosures "A, B, C, D, E, F, G, H, N, Q & R"	
Internal - Port #1 / tapped M5	**A†**
Internal - Port #1 / vented	**B†**
External - Body / tapped 1/8"	K†

† Not available for remote pilot valves.

Overrides§	
None, remote pilot valve	**0**
No override	A†
Flush - non-locking	**B***
Flush - locking	**C**
Extended - non-locking	D
Extended - locking	E*
Valve less 15mm solenoid	X

* Only available with encl. "5".

† Only available with encl. "E".

INLINE Valves –
Only used IF an IEM Aluminum Bar Manifold requires a common external pilot signal through the manifold for low pressure / vacuum applications.

§ Enclosure '5' – Override / Voltage Availability

S - Standard
O - Option

Voltage code	Override code			
	Standard			
	B	C	D	E
42	O	O	–	–
45	O	O	–	–
49	S	S	O	O
53	S	S	O	O
57	O	O	–	–

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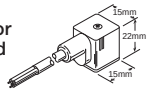
Voltage				Enclosure "5"		Voltage				B5, B6, B7, B8 Enclosure "A"		B5, B6, B7, B8 Enclosure "B" to "R"	
	AC			Power	Holding		AC			Power	Holding	Power	Holding
Code	60Hz	50Hz	DC	consumption	(Amps)	Code	60Hz	50Hz	DC	consumption	(Amps)	consumption	(Amps)
42	24	22		1.6VA	.065	42	24	22		3.9VA	.136	7.3VA	.309
45			12	1.2W	.098	45			12	2.6W	.208	4.6W	.365
47*			12	0.91W	.074	47*			12	—	—	4.9W	.298
48*			24	0.91W	.033	48*			24	—	—	4.8W	.142
49			24	1.2W	.049	49			24	2.7W	.112	4.8W	.200
53	120	110		1.6W	.013	53	120	110		4.1VA	.033	6.3VA	.047
57	240	230		1.6W	.007	57	240	230		3.7VA	.017	6.4VA	.026

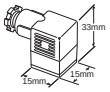
Note: For enclosure "5" with "02" Option, solenoid wattage is 1.8W (2.4VA). Response time is 10% faster.
Voltage rated +10 / -15%.

* 47 and 48 code are mobile voltages. voltage +25 / -30%.

15mm 3-Pin DIN 43650C

Connector with cord





Connector only

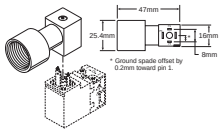
	Cord length	Connector	Connector with cord
Unlighted	18 Inches	**PS2932BP**	**PS2932HBP**
Unlighted	6 Feet	**PS2932BP**	**PS2932JBP**
Light – 12VAC or DC	6 Feet	**PS294675BP**	**PS2946J75BP***
Light – 24VAC or DC	6 Feet	**PS294679BP**	**PS2946J79BP***
Light – 110/120VAC	6 Feet	**PS294683BP**	**PS2946J83BP***
Light – 240/230VAC		**PS294687BP**	**N/A**

* LED with surge suppression.

Note: Max ø6.5mm cable size required for connector w/o 6' (2m) cord. IP65 rated when properly installed.

Engineering data:
Conductors: 2 poles plus ground
Cable range (connector only): 4 to 6mm (0.16 To 0.24 Inch)
Contact spacing: 8mm

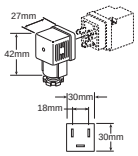
15mm 3-Pin DIN 43650C to 1/2" Conduit



Description	Connector
1/2" NPTF conduit – Unlighted with 3' (1m) leads 20 AWG wire	**PS2998P**

Note: Rated up to 250VAC or VDC; 6 amps
IP65 rated when properly installed.

30mm Square 3-Pin – ISO 4400, DIN 43650A
(Use with Enclosure "A")



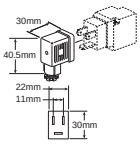
Description	Connector with 6' (2m) cord	Connector
Unlighted	**PS2028JCP**	**PS2028BP**
Light – 6-48V. 50/60Hz. 6-48VDC	**PS2032J79CP***	**PS203279BP**
Light – 120V/60Hz	**PS2032J83CP***	**PS203283BP**
Light – 240V/60Hz	**N/A**	**PS203283BP**

* LED with surge suppression.

Note: Max ø6.5mm cable size required for connector w/o 6' (2m) cord. IP65 rated when properly installed.

Engineering data:
Conductors: 2 poles plus ground; cable range (connector only): 8 to 10mm (0.31 To 0.39 Inch); contact spacing: 18mm

22mm Rectangular 3-Pin – Type B Industrial
(Use with Enclosure "B")



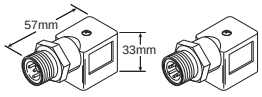
Description	Connector with 6' (2m) cord	Connector
Unlighted	**PS2429JBP**	**PS2429BP**
Light – 24V60Hz. 24VDC	**PS2430J79BP***	**PS243079BP**
Light – 120V/60Hz	**PS2430J83BP***	**PS243083BP**
Light – 240V/60Hz	**N/A**	**PS243087BP**

* LED with surge suppression.

Note: Max ø6.5mm cable size required for connector w/o 6' (2m) cord. IP65 rated when properly installed.

Engineering Data:
Conductors: 2 Poles Plus Ground; Cable Range (Connector Only): 6 to 8mm (0.24 to 0.31 Inch); Contact Spacing: 11mm

3-Pin / 5-Pin Male Automotive Connectors
(Use on 22mm Rectangular 3-Pin Solenoid)



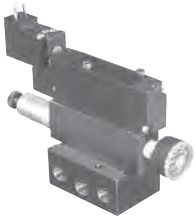
3-pin 5-pin

Description	3-pin	5-pin
Unlighted	**PS2893CP**	**PS2893DP**
Lighted - Voltage	**PS2893C##P**	**PS2893D##P**

= 79 = 6 to 48VAC/VDC
83 = 100 to 240VAC/48 to 120 VDC

Sandwich Regulators

- Use with B3 subbase valves on 5-ported subbase bar manifolds.
- Common port or dual port regulation control.
- Unregulated pressure supplied to valve pilot - use pilot source - 'X'.
- Easy adjust knob control.



Pressure range	Cv	Common port with gauge *	Dual port without gauge
5-125 PSI	.33	**PS2930166P**	**PS2930233P**

* Gauge is 160 PSI. Gauge shipped unassembled. For different gauge mounting configuration, use brass adapters listed at bottom of page.

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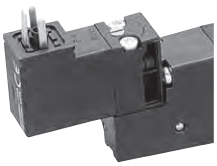
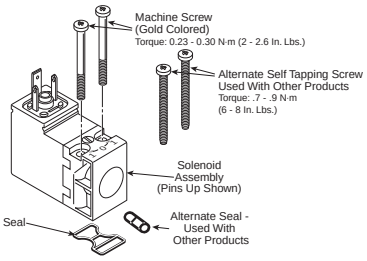
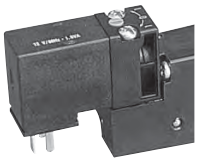
Solenoid Kits – B3 'C', B5 'C', B6 'A', B7 'A', B8 'A' 3-Pin, EN175301-803 (Former DIN 43650C), 15mm



Standard





"02" Option

PS2982*##P – Enclosure '5'

Override	## Voltage						
	42	45	47*	48*	49	53	57
B	O	O	–	–	S	S	O
C	O	O	–	–	S	S	O
D	–	–	O	O	O	O	–
E	–	–	O	O	O	O	–

S - Standard; O - Option

* Mobile voltage

Kit includes: Solenoid, (2) machine screws, (2) self threading screws, (1) gasket, (1) 3-cell gasket.

PS3541*##P – Enclosure '5 with "02" Option

Override	## Voltage				
	42	45	49	53	57
B	O	O	S	S	O
C	O	O	S	S	O
D	–	–	O	O	–
E	–	–	O	O	–

Solenoid Kits Alternate Enclosures

P2FC | A | 4 | 49

Enclosures / lead length	
30mm square 3-pin – ISO 4400 form A (male only)	**A**
22mm rectangular 3-pin – type B industrial (male only)	**B**
Hazardous duty, FM / CSA	**F***
Grommet - 18" leads	**G**
1/2" NPT conduit - 18" leads	**H**
Grommet 72" leads	Q
1/2" Conduit 72" leads	R

* Only available with voltage codes "45", "49", "53" & "57".

Voltage / frequency	
42	24VAC
45	12VDC
47*	**12 VDC mobile**
48*	**24 VDC mobile**
49	**24VDC**
53	**120VAC**
57	240VAC

* Only available with enclosures "A", "B" & "G".

Option A & E
30mm Square
3-pin ISO 4400, DIN 43650A

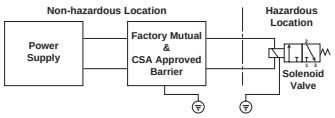
Option B
22mm Rectangular
3-pin DIN, Type B Industrial

Option G & Q
Grommet, 18" or 72" Leads

Option F, H & R
1/2" Conduit, 18" or 72" Leads

Intrinsically Safe Solenoid Valves ("E" Option)

Hazardous Location Class:
Class I; Groups A, B, C & D
Class II; Groups E, F, & G
Class III; Div. I



For use in low voltage (24VDC) Intrinsically Safe applications.
NO OTHER VOLTAGE IS APPROVED.
36mm coil width.
Comes standard with non-lighted solenoid connector.
Must be connected to an FM approved Barrier.
For dimensions. reference standard solenoid models.
Maximum internally piloted valve pressure is 115 PSIG.
Pressures to 145 PSIG can be used when external pilot is utilized and pilot pressure is limited to 115 PSIG.

Intrinsically Safe Solenoid Pilot Assembly Kits

Description	Part number
24VDC	**P2FS13N1AE49**

Hazardous Duty Solenoid Valves ("F" Option)

Hazardous Location Class:
Class I; Zone I EX, M, II & T4
Class I; Div. I. Groups A, B, C, & D
Class II & III; Div. I. Groups E, F, & G

Comes standard with 1/2" conduit connection.
Voltage range = ± 10%
Ambient temperature range = -20°C (-4°F) to 60°C (140°F)
Duty factor = 100%
IP65 rated (with connected conduit connector)

Notes:

1. Maximum non-hazardous location voltage not to exceed 250V RMS.
2. Connect per Barrier Manufacturers instructions.
3. Factory Mutual requires connections per ISA RP 12.6 instructions.
4. CSA requires "Installation to be in accordance with the Canadian Electrical Code. Part I."
5. The hazardous duty coils are wider in size than both the B5 and the B6 valve. If mounted on a manifold, the valves need to be staggered to fit.

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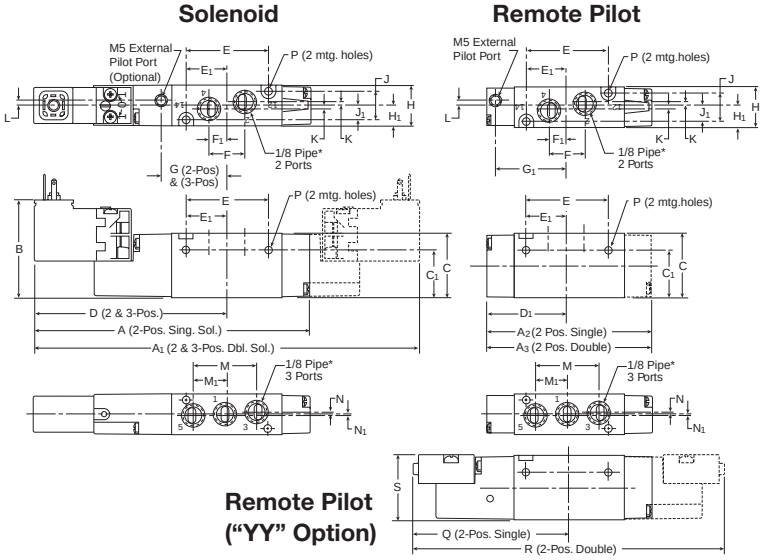
B3 Single & Double Operators – 4-way Inline

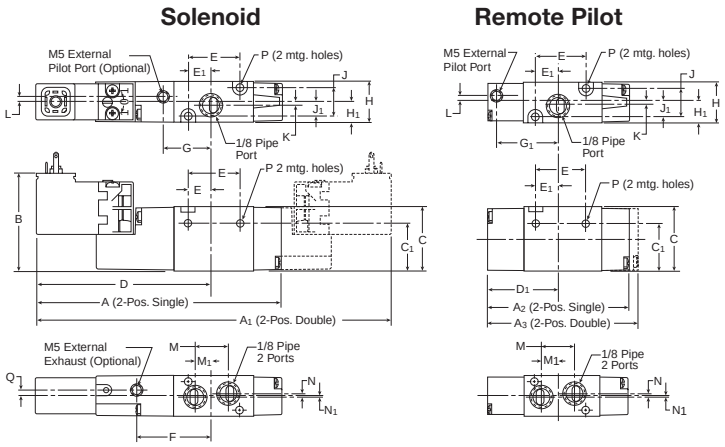


B3 4-way Inline

A	A1	A2	A3	B
4.67 (119)	6.44 (164)	3.12 (79)	3.33 (85)	1.66 (42)
C	**C1**	**D**	**D1**	**E**
1.13 (39)	.84 (21)	3.22 (82)	1.66 (42)	1.47 (37)
E1	**F**	**F1**	**G**	**G1**
.74 (19)	.63 (16)	.32 (8)	1.13 (29)	1.50 (38)
H	**H1**	**J**	**J1**	**K**
.71 (18)	.36 (9)	.51 (13)	.26 (7)	.06 (2)
L	**M**	**M1**	**N**	**N1**
.11 (3)	1.12 (28)	.56 (14)	.05 (1)	.05 (1)
P	**Q**	**R**	**S**	
Ø .13 Ø (3.3)	2.69 (68)	5.37 (136)	1.16 (29)	

Inches (mm)

B3 Single & Double Operators – 3-way Inline

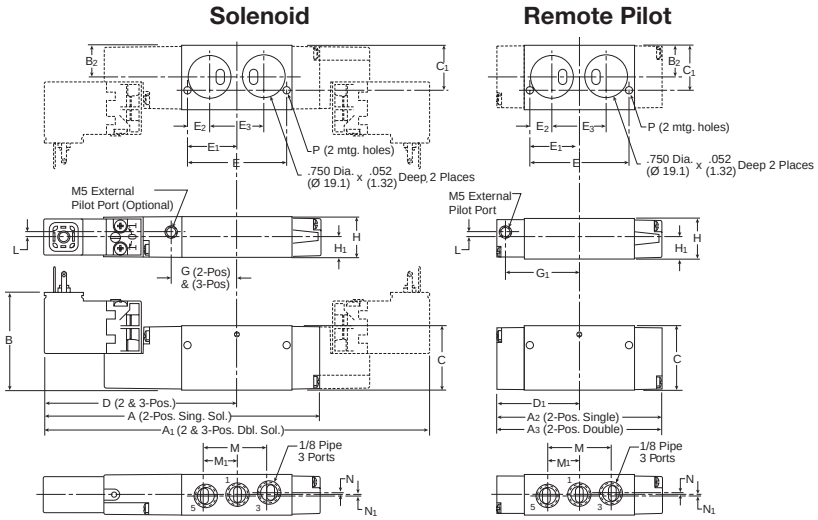


B3 3-way Inline

A	A1	A2	A3	B
4.20 (107)	5.96 (151)	2.65 (67)	2.86 (73)	1.66 (42)
C	**C1**	**D**	**D1**	**E**
1.13 (39)	.84 (21)	2.93 (74)	1.38 (35)	.98 (25)
E1	**F**	**G**	**G1**	**H**
.44 (11)	1.32 (34)	.85 (22)	1.22 (31)	.71 (18)
H1	**J**	**J1**	**K**	**L**
.36 (9)	.51 (13)	.26 (7)	.06 (2)	.11 (3)
M	**M1**	**N**	**N1**	**P**
.63 (16)	.27 (7)	.12 (3)	.06 (2)	Ø .13 Ø (3.3)
Q				
.08 (2)				

Inches (mm)

B3 Single & Double Operators – 4-way Face Mount



B3 4-way Face Mount

A	A1	A2	A3	B
4.67 (119)	6.44 (164)	3.12 (79)	3.33 (85)	1.66 (42)
B2	**C**	**C1**	**D**	**D1**
.58 (15)	1.13 (29)	.81 (21)	3.22 (82)	1.66 (42)
E	**E1**	**E2**	**E3**	**G**
1.74 (44)	.87 (22)	.39 (10)	.95 (24)	1.13 (29)
G1	**H**	**H1**	**L**	**M**
1.50 (38)	.71 (18)	.36 (9)	.11 (3)	1.12 (28)
M1	**N**	**N1**	**P**	
.56 (14)	.05 (1)	.05 (1)	Ø .13 Ø (3.3)	

Inches (mm)

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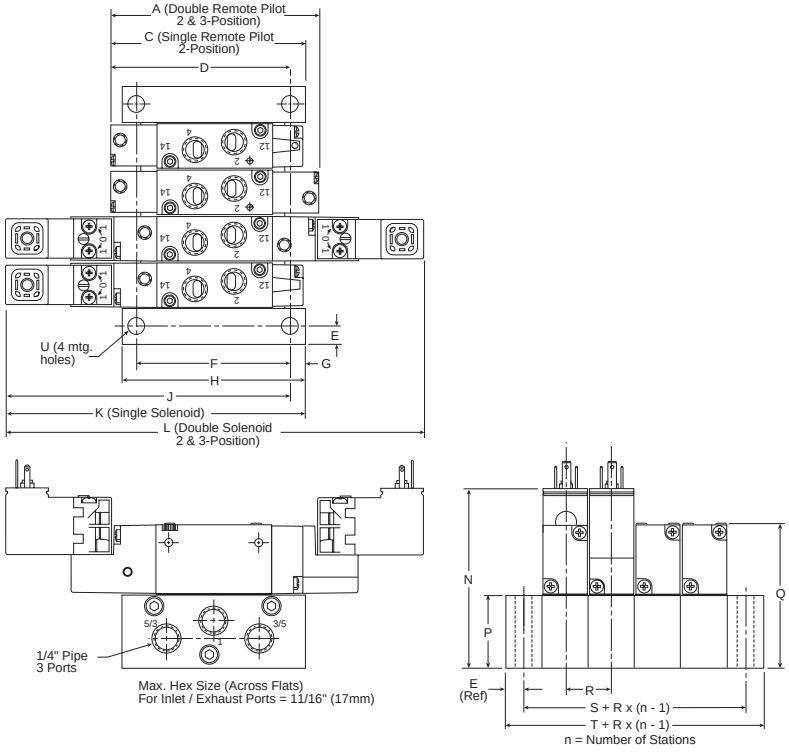
B3 Single & Double Operators – 4-way IEM Stackable

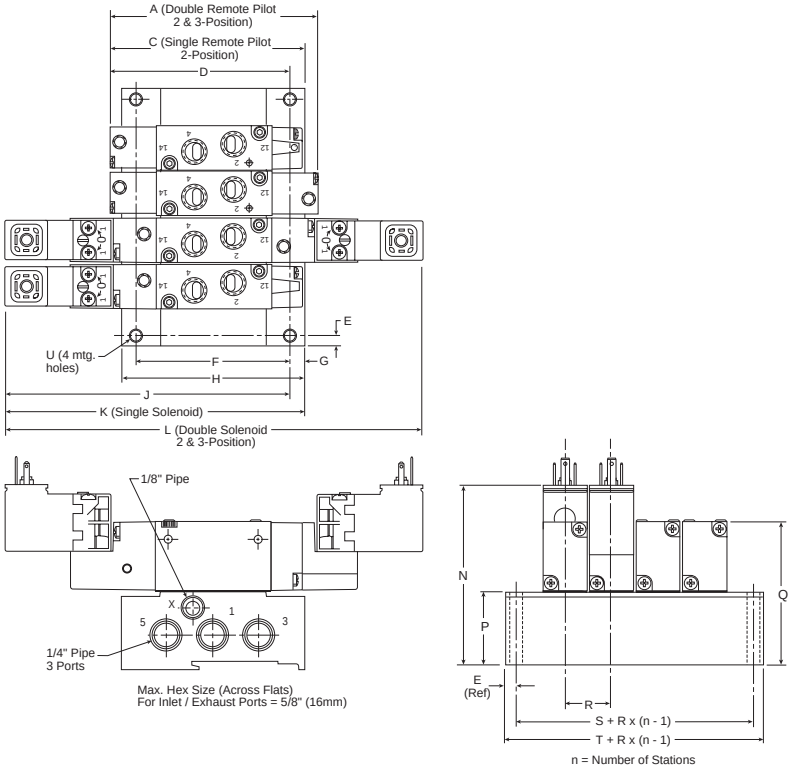


B3 4-way IEM Stackable

A	C	D	E	F
3.33 (84.6)	3.12 (79.2)	2.91 (73.9)	.30 (7.6)	2.49 (63.3)
G	**H**	**J**	**K**	**L**
.25 (6.4)	3.00 (76.2)	4.46 (113.3)	4.67 (118.6)	6.43 (163.3)
N	**P**	**Q**	**R**	
2.91 (73.9)	1.25 (31.8)	2.38 (60.5)	.74 ±.01 (18.8) ± .3	
S	**T**	**U**		
1.34 (34.0)	1.94 (49.3)	Ø .28 Ø (7.1)		

Inches (mm)

B3 Single & Double Operators – 4-way IEM Aluminum Bar



B3 4-way IEM Aluminum Bar Manifold

A	C	D	E	F
3.33 (84.6)	3.17 (80.5)	2.94 (74.7)	.25 (6.4)	2.54 (64.5)
G	**H**	**J**	**K**	**L**
.23 (5.9)	3.00 (76.2)	4.50 (114.2)	4.73 (120.1)	6.43 (163.3)
N	**P**	**Q**	**R**	**S**
2.94 (74.7)	1.28 (32.5)	2.41 (61.2)	.81 (20.5)	1.13 (28.8)
T	**U**			
1.64 (41.6)	Ø .23 Ø (5.8)			

Inches (mm)

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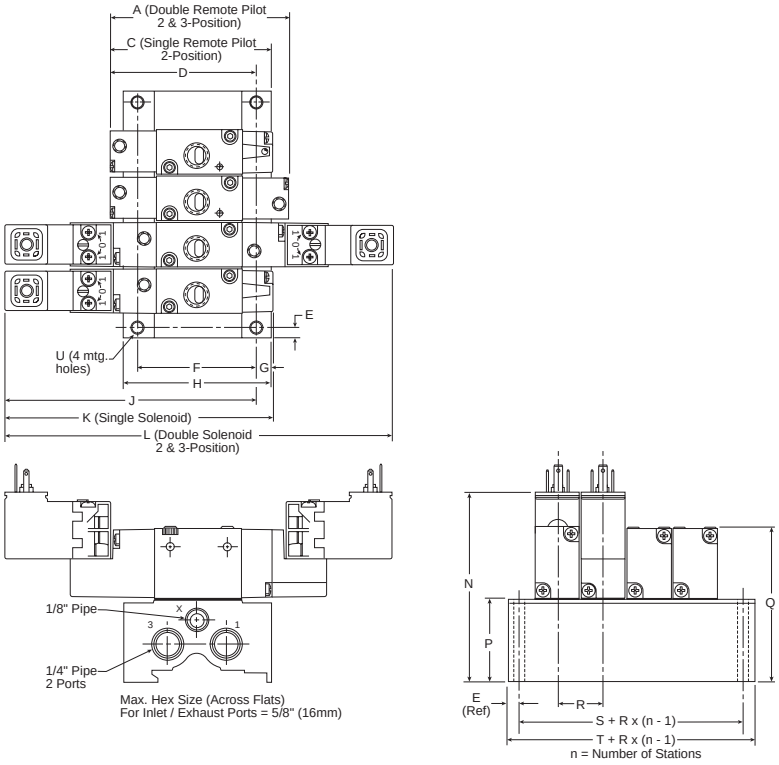
B3 Single & Double Operators – 3-way IEM Aluminum Bar



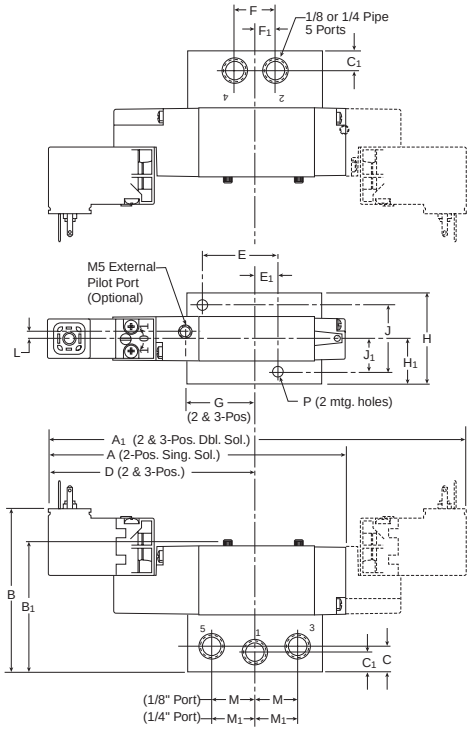
B3 4-way IEM Aluminum Bar Manifold

A	C	D	E	F
2.86 (72.6)	2.65 (67.3)	2.33 (59.2)	.25 (6.4)	1.80 (45.7)
G	**H**	**J**	**K**	**L**
.23 (5.9)	2.25 (57.2)	3.88 (98.6)	4.20 (106.7)	5.96 (151.4)
N	**P**	**Q**	**R**	**S**
2.93 (74.5)	1.27 (32.4)	2.40 (61.1)	.81 (20.5)	1.13 (28.8)
T	**U**			
1.64 (41.6)	Ø .23 Ø (5.8)			

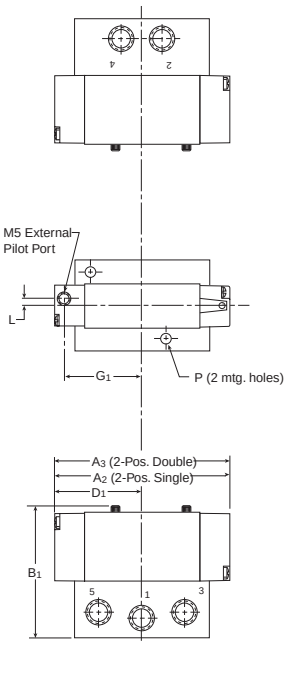
Inches (mm)

B3 Single & Double Operators – 4-way Single Subbase

Solenoid



Remote Pilot



B3 4-way Single Subbase

A	A1	A2	A3	B
4.67 (119)	6.44 (164)	3.12 (79)	3.33 (85)	2.63 (67)
B1	**C**	**C1**	**D**	**D1**
2.21 (56)	.47 (12)	.37 (9)	3.22 (82)	1.66 (42)
E	**E1**	**F**	**F1**	**G**
1.25 (32)	.38 (10)	.69 (18)	.34 (9)	1.13 (29)
G1	**H**	**H1**	**J**	**J1**
1.50 (38)	1.50 (38)	.75 (19)	1.12 (28)	.56 (14)
L	**M**	**M1**	**P**	
.11 (3)	.71 (18)	.76 (19)	Ø .18 Ø (4)	

Inches (mm)

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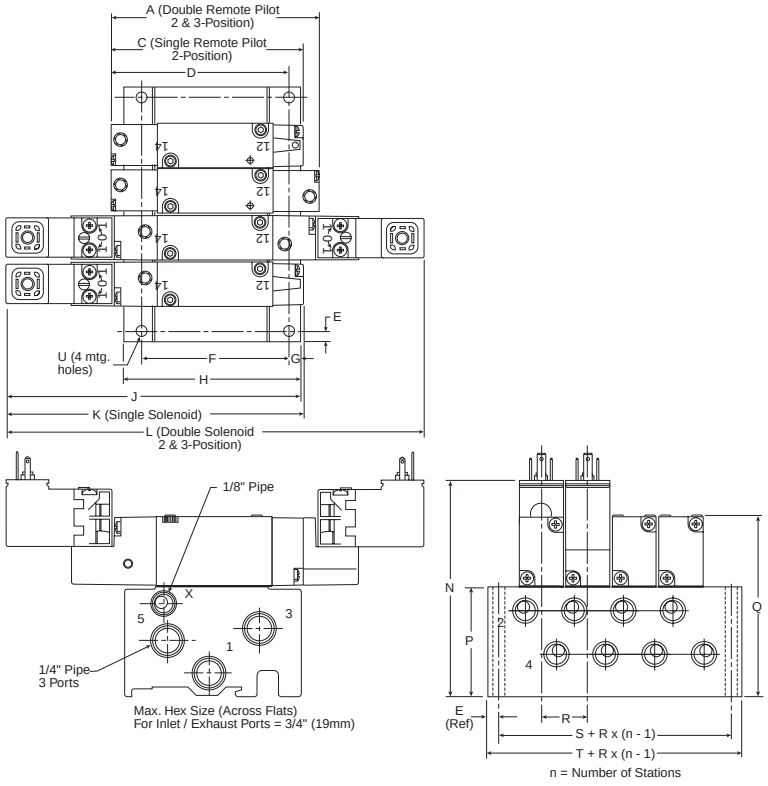
B3 Single & Double Operators – 5-port Subbase Bar Manifold

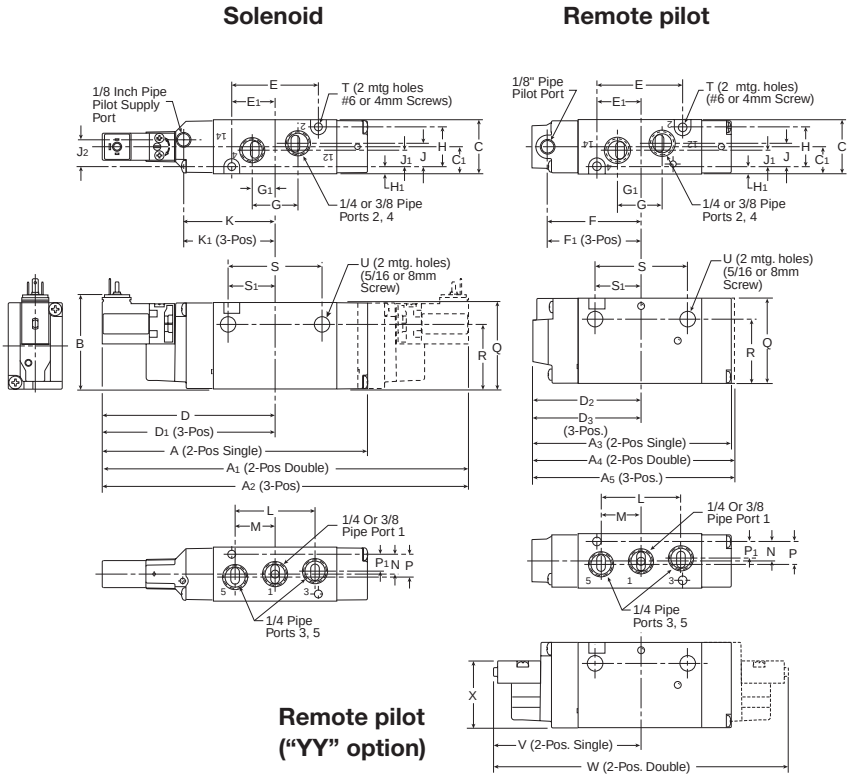


B3 5-port Subbase Bar Manifold

A	C	D	E	F
3.33 (84.6)	3.12 (79.2)	2.88 (73.2)	.25 (6.3)	2.43 (61.7)
G	**H**	**J**	**K**	**L**
.22 (5.5)	2.93 (74.5)	4.66 (118.3)	4.67 (118.6)	6.43 (166.3)
N	**P**	**Q**	**R**	**S**
3.47 (88.2)	1.81 (46.0)	2.94 (74.7)	.81 (20.5)	1.39 (35.4)
T	**U**			
1.89 (48.0)	Ø .22 Ø (5.6)			

Inches (mm)

B5 Single & Double Operators – 4-way Inline



B5 4-way Inline

A	A1	A2	A3	A4
5.78 (147)	7.51 (191)	8.45 (215)	4.37 (110)	4.70 (119)
A5	**B**	**C**	**C1**	**D**
5.64 (143)	2.06 (52)	1.18 (30)	.59 (15)	3.76 (96)
D1	**D2**	**D3**	**E**	**E1**
4.23 (107)	2.35 (60)	2.82 (72)	1.89 (48)	.95 (24)
F	**F1**	**G**	**G1**	**H**
2.01 (51)	2.47 (63)	1.00 (25)	.50 (13)	.87 (22)
H1	**J**	**J1**	**J**	**K**
.16 (4)	.51 (13)	.36 (9)	.58 (15)	2.00 (51)
K1	**L**	**M**	**N**	**P**
2.47 (63)	1.75 (44)	.88 (22)	.43 (48)	.50 (13)
P1	**Q**	**R**	**S**	**S1**
.37 (92)	1.89 (48)	1.41 (36)	2.05 (52)	1.03 (26)
T	**U**	**V**	**W**	**X**
Ø .177 Ø (4.5)	Ø .34 Ø (9)	3.24 (82)	6.48 (165)	1.50 (383)

Inches (mm)

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Pneumatic Division
Richland, Michigan
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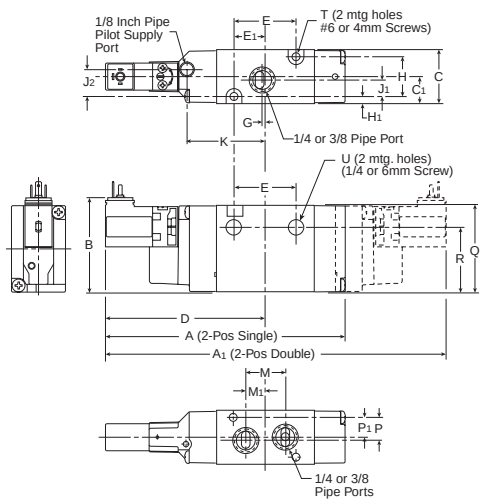
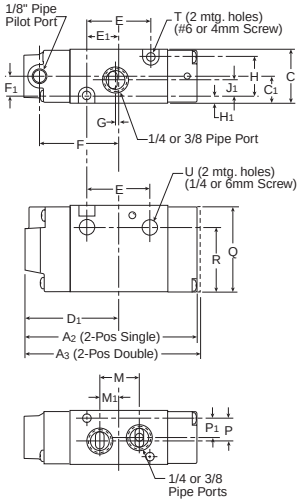
B5 Single & Double Operators – 3-way Inline

Solenoid



Remote pilot



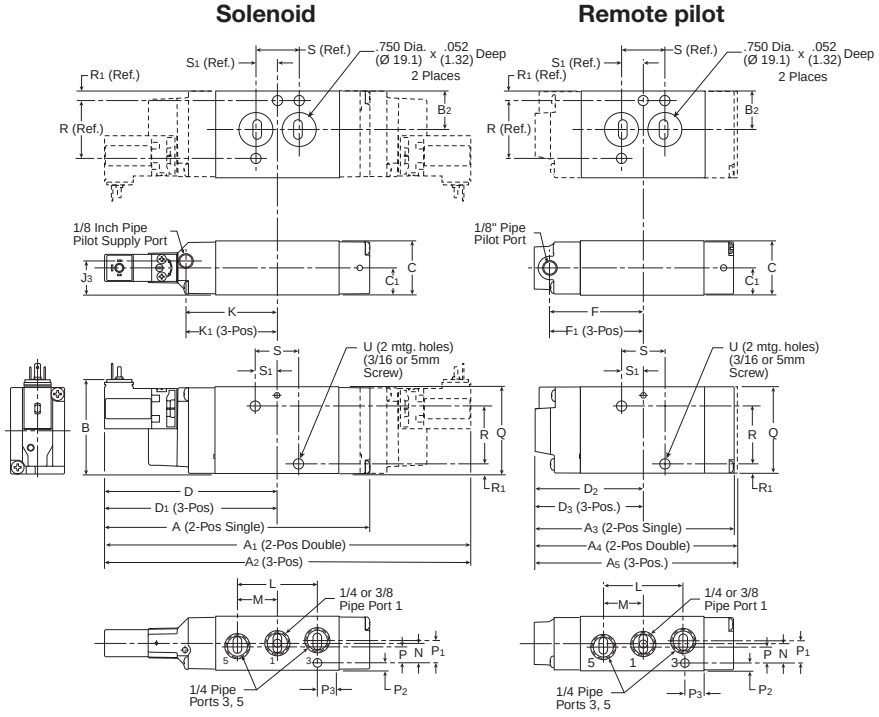
B5 3-way Inline

A	A1	A2	A3	B
5.29 (134)	7.03 (179)	3.88 (99)	4.21 (107)	2.06 (52)
C	**C1**	**D**	**D1**	**E**
1.18 (30)	.59 (15)	3.43 (87)	2.11 (54)	1.40 (36)
E1	**F**	**F1**	**G**	**H**
.70 (18)	1.77 (45)	.43 (11)	.06 (2)	.87 (22)
H1	**J1**	**J2**	**K**	**M**
.16 (4)	.36 (9)	.58 (15)	1.67 (42)	.88 (22)
M1	**P**	**P1**	**Q**	**R**
.44 (11)	.50 (13)	.37 (9)	1.89 (48)	1.41 (36)
T	**U**			
Ø .177 (Ø 4.5)	Ø .26 (Ø 6.6)			

Inches (mm)

B5 Single & Double Operators – 4-way NAMUR Mount

Solenoid



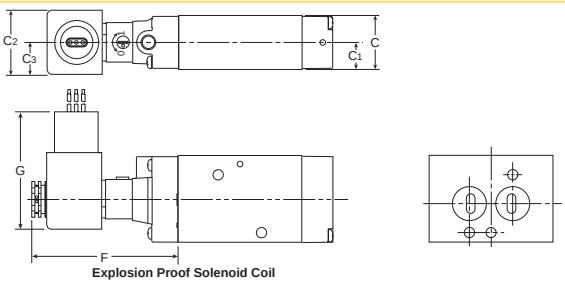
Remote pilot

B5 4-way NAMUR Mount

A	A1	A2	A3	A4
5.78 (147)	7.51 (191)	8.45 (215)	4.37 (110)	4.70 (119)
A5	**B**	**B2**	**C**	**C1**
5.64 (143)	2.06 (52)	.84 (21)	1.18 (30)	.59 (15)
D	**D1**	**D2**	**D3**	**F**
3.76 (96)	4.23 (107)	2.35 (60)	2.82 (72)	2.01 (51)
F1	**J3**	**K**	**K1**	**L**
2.47 (63)	.74 (19)	2.00 (51)	2.47 (63)	1.75 (44)
M	**N**	**P**	**P1**	**P2**
.88 (22)	.44 (11)	.37 (9.4)	.50 (13)	.16 (4)
P3	**Q**	**R**	**R1**	**S**
.40 (10)	1.89 (48)	1.26 (32)	.21 (5)	.94 (24)
S1	**U**			
.47 (12)	Ø .224 (Ø 5.7)			

Inches (mm)

B5 Alternative Electrical Enclosure Option F



Explosion Proof Solenoid Coil

B5 4-way NAMUR Mount with Option F Enclosure

C	C1	C2	C3	F
1.18 (30)	.59 (15)	1.42 (36)	.71 (18)	3.15 (80)
G				
2.60 (66)				

Inches (mm)

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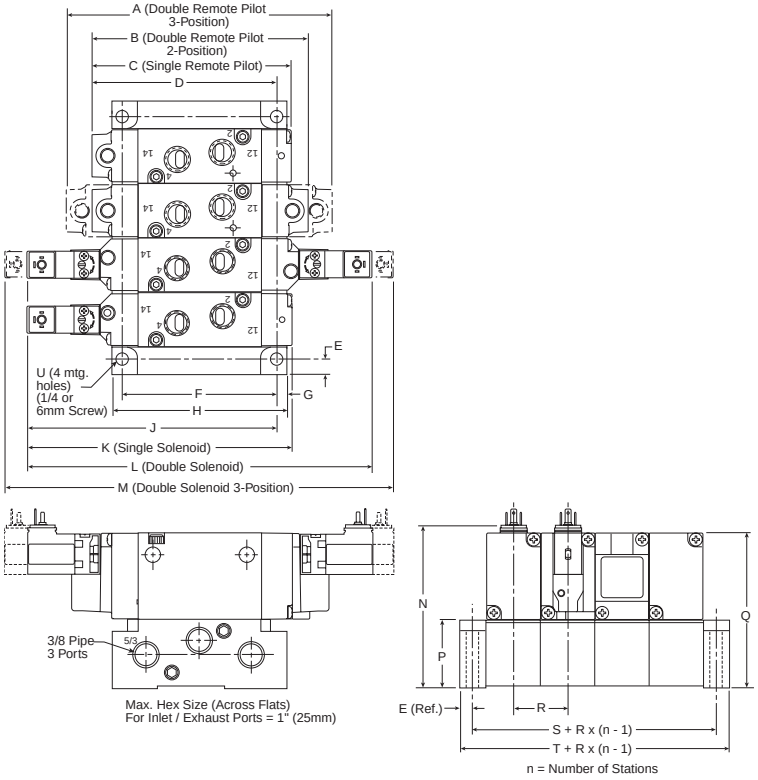
B5 Single & Double Operators – 4-way IEM Stackable

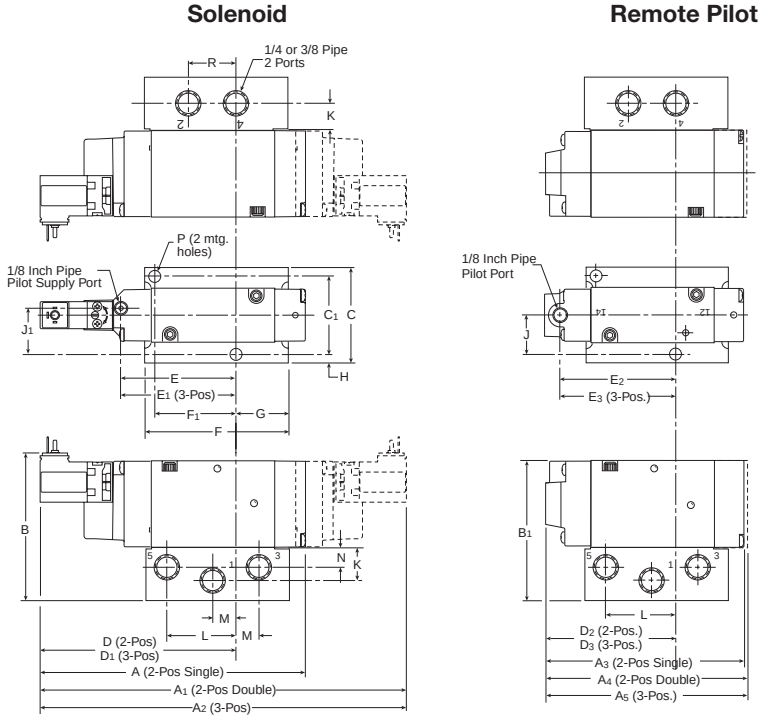


B5 4-way IEM Stackable

A	B	C	D	E
5.64 (143.3)	4.70 (119.4)	4.37 (110.0)	4.29 (109.0)	.29 (7.4)
F	**G**	**H**	**J**	**K**
3.44 (87.4)	.24 (6.1)	3.92 (99.6)	5.48 (139.2)	5.78 (146.8)
L	**M**	**N**	**P**	**Q**
7.52 (191.0)	8.46 (214.9)	3.56 (90.4)	1.50 (38.1)	3.42 (86.9)
R		**S**	**T**	**U**
1.21 ± .01 (30.7) ± (.3)		1.79 (45.5)	2.37 (60.2)	Ø .28 (Ø 7.1)

Inches (mm)

B5 Single & Double Operators – 4-way Single Subbase



B5 4-way Subbase

A	A_1	A_2	A_3	A_4
5.78 (147)	7.52 (191)	8.46 (215)	4.37 (110)	4.70 (119)
A_5	B	B_1	C	C_1
5.64 (143)	3.21 (82)	3.03 (77)	2.12 (54)	1.69 (43)
D	D_1	D_2	D_3	E
4.26 (108)	4.73 (120)	2.85 (72)	3.32 (40)	2.51 (65)
E_1	E_2	E_3	F	F_1
2.98 (76)	2.60 (66)	3.07 (80)	2.90 (74)	1.69 (43)
G	H	J	J_1	K
.95 (24)	.22 (5)	.84 (21)	.99 (25)	.71 (18)
L	M	N	P	R
1.50 (38)	.50 (13)	.46 (12)	Ø .27 (Ø 7)	1.00 (25)

Inches (mm)

Parker Hannifin Corporation
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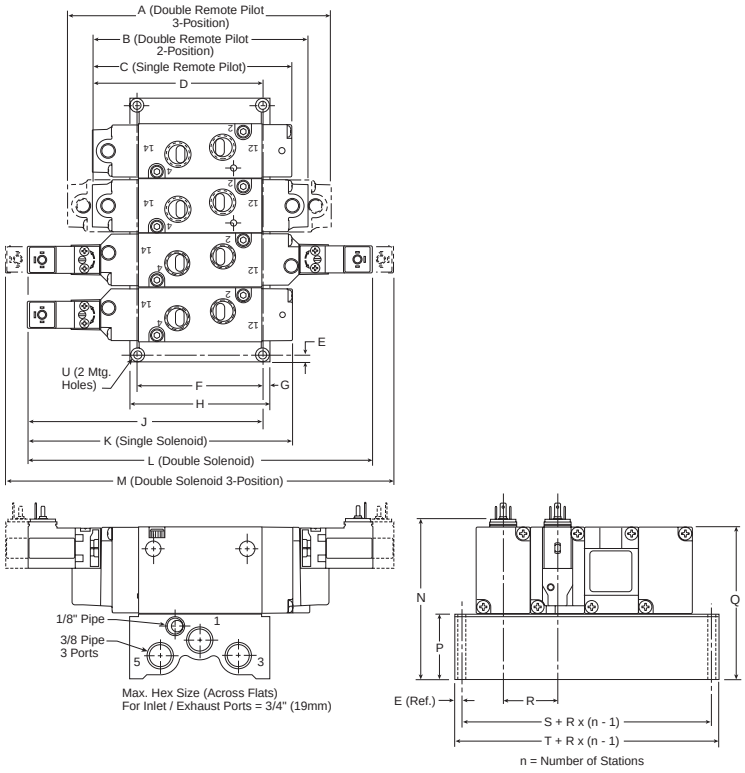
B5 Single & Double Operators – 4-way IEM Aluminum Bar

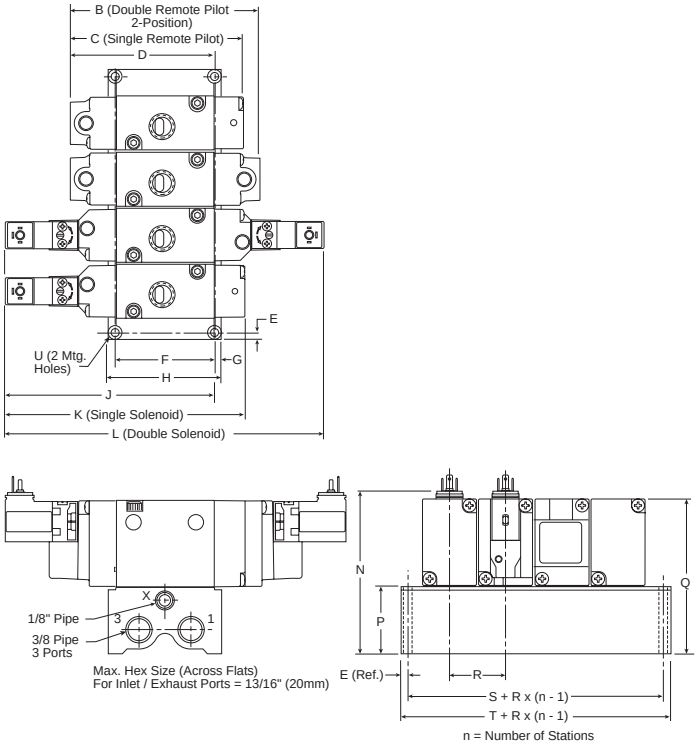


B5 4-way IEM Aluminum Bar Manifold

A	B	C	D	E
5.64 (143.3)	4.70 (119.4)	4.37 (110.0)	3.74 (95.0)	.18 (4.6)
F	**G**	**H**	**J**	**K**
2.78 (70.6)	.17 (4.3)	3.12 (79.2)	5.15 (130.8)	5.78 (146.8)
L	**M**	**N**	**P**	**Q**
7.52 (191.0)	8.46 (214.9)	3.50 (89.0)	1.44 (36.6)	3.36 (85.3)
R	**S**	**T**	**U**	
1.26 (32.0)	1.78 (45.2)	2.14 (54.4)	Ø .22 (Ø 5.5)	

Inches (mm)

B5 Single & Double Operators – 3-way IEM Aluminum Bar



B5 3-way IEM Aluminum Bar Manifold

B	C	D	E	F
4.21 (106.9)	3.88 (98.6)	3.41 (86.6)	.18 (4.6)	2.12 (53.8)
G	**H**	**J**	**K**	**L**
.17 (4.3)	2.46 (62.5)	4.82 (122.4)	5.29 (134.4)	7.03 (178.6)
N	**P**	**Q**	**R**	**S**
3.50 (89.0)	1.44 (36.6)	3.36 (85.3)	1.26 (32.0)	1.76 (44.7)
T	**U**			
2.12 (53.8)	Ø .18 (Ø 4.6)			

Inches (mm)

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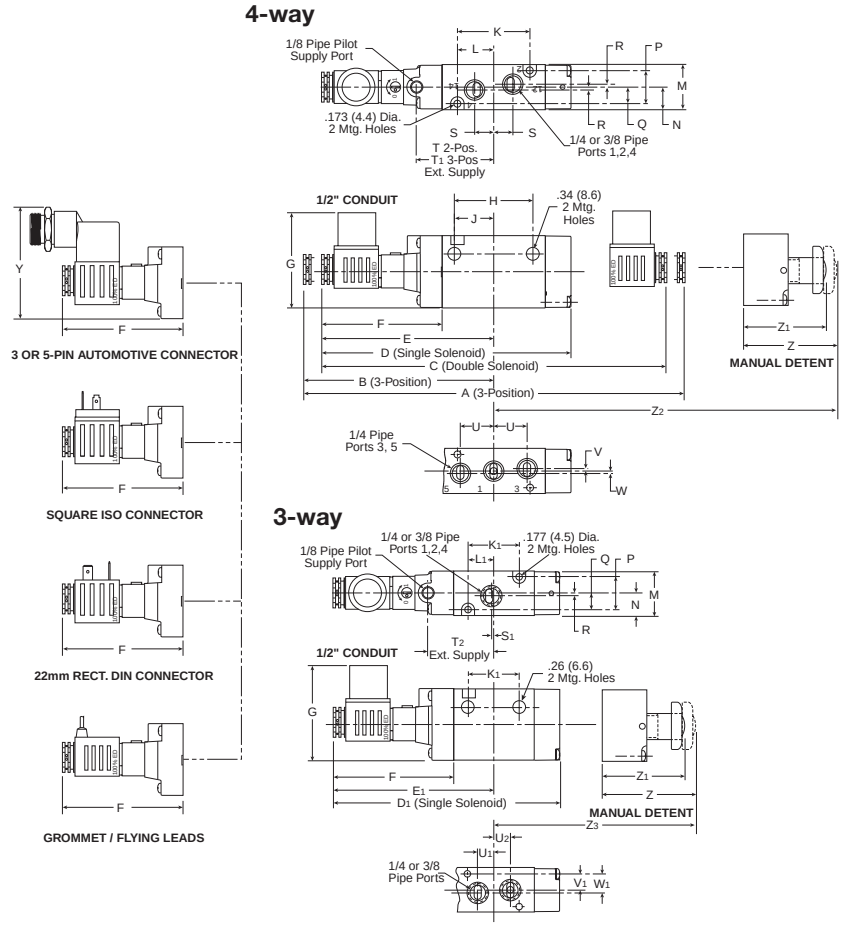
B5 3 & 4-way Alternative Electrical Enclosures

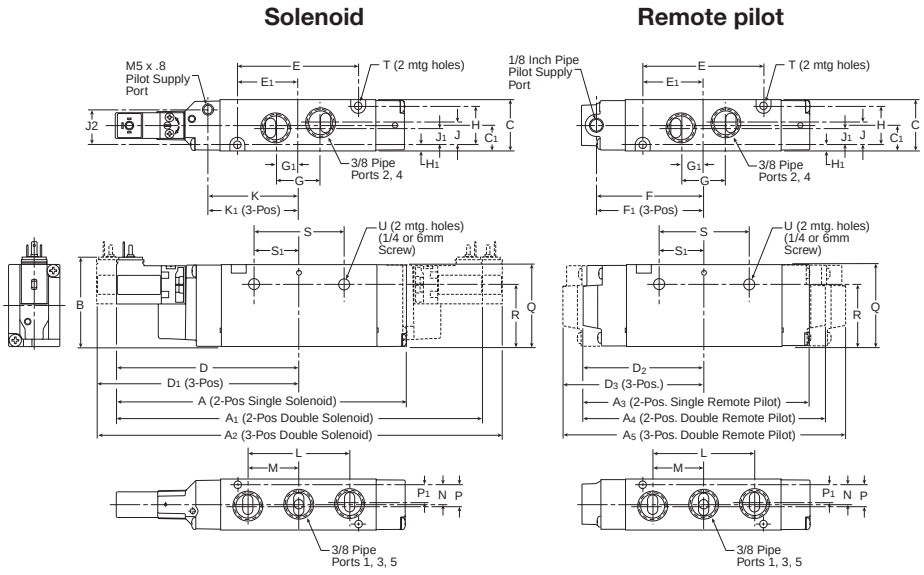


B5 Alternative – Electrical Enclosures

A	A1	B	C	D
9.94 (252.5)	.872 (221.4)	4.97 (126.2)	9.00 (228.6)	6.52 (165.6)
D1	**E**	**E1**	**F**	**G**
6.02 (152.9)	4.50 (114.3)	4.26 (108.1)	3.15 (80.0)	2.47 (62.8)
H	**J**	**K**	**K1**	**L**
2.05 (52.1)	1.03 (26.2)	1.89 (48.0)	1.40 (35.5)	.95 (24.1)
L1	**M**	**N**	**P**	**Q**
.70 (17.8)	1.18 (30.0)	.59 (15.0)	.87 (22.1)	.43 (10.9)
R	**S**	**S1**	**T**	**T1**
.08 (2.0)	.50 (12.7)	.06 (1.5)	2.01 (51.1)	2.47 (62.7)
T2	**U**	**U1**	**U2**	**V**
1.76 (44.8)	.87 (22.1)	.43 (10.9)	.45 (11.3)	.06 (1.5)
V1	**W**	**W1**	**Y**	**Z**
.37 (9.3)	.07 (1.8)	.50 (13)	2.90 (73.6)	2.40 (60.9)
Z1	**Z2**	**Z3**		
2.12 (53.8)	3.75 (95.2)	4.17 (105.8)		

Inches (mm)

B6 Single & Double Operators – 4-way Inline



B6 4-way Inline

A	A1	A2	A3	A4
6.67 (169.5)	8.41 (213.7)	9.35 (237.6)	5.26 (133.7)	5.59 (142.1)
A5	**B**	**C**	**C1**	**D**
6.54 (166)	2.06 (52)	1.18 (30.0)	.59 (15)	4.21 (106.8)
D1	**D2**	**D3**	**E**	**E1**
4.68 (118.8)	2.80 (71)	3.27 (83.0)	2.79 (70.8)	1.39 (35.4)
F	**F1**	**G**	**G1**	**H**
2.45 (62.3)	2.92 (74.3)	1.03 (26.1)	.51 (13.1)	.91 (23)
H1	**J**	**J1**	**J2**	**K**
.14 (3.5)	.51 (13.1)	.39 (10)	.81 (20.6)	2.09 (53)
K1	**L**	**M**	**N**	**P**
2.56 (64.9)	2.34 (59.4)	1.17 (29.7)	.45 (11.5)	.49 (12.5)
P1	**Q**	**R**	**S**	**S1**
.41 (10.5)	1.89 (48)	1.45 (36.8)	2.09 (53)	1.04 (26.5)
T	**U**			
Ø .17 Ø (4.4)	Ø .27 Ø (6.9)			

Inches (mm)

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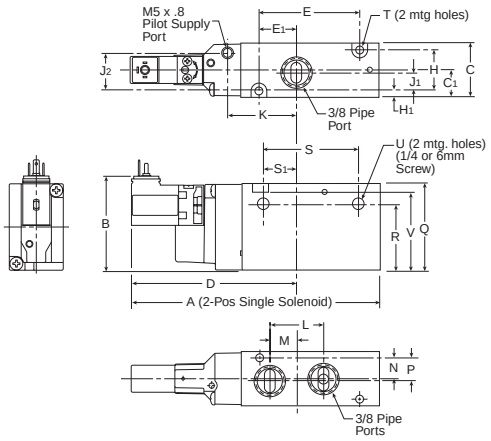
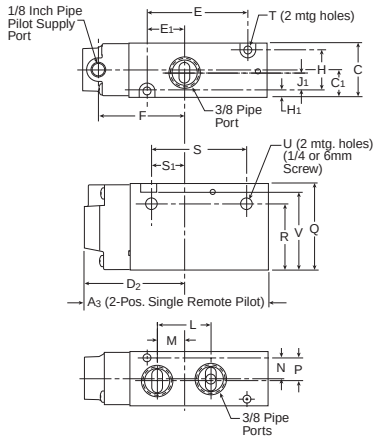
B6 Single Operators – 3-way Inline

Solenoid



Remote Pilot



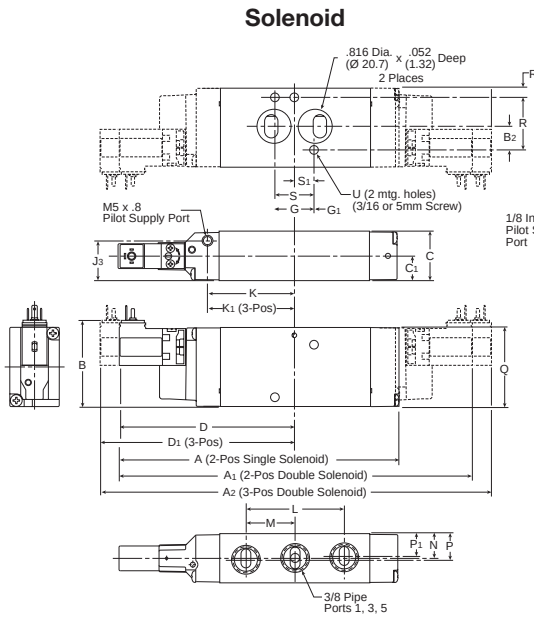
B6 3-way Inline

A	A3	B	C	C1
5.42 (137.7)	4.01 (101.9)	2.06 (52)	1.18 (30.0)	.59 (15.0)
D	**D2**	**E**	**E1**	**F**
3.63 (92.1)	2.22 (56.3)	2.19 (55.6)	0.82 (20.7)	1.87 (47.6)
H	**H1**	**J1**	**J2**	**K**
.91 (23.0)	.14 (3.5)	.39 (10.0)	.81 (20.6)	1.51 (38.3)
L	**M**	**N**	**P**	**Q**
1.17 (29.7)	.59 (15.0)	.45 (11.5)	.49 (12.5)	1.89 (48.0)
R	**S**	**S1**	**T**	**U**
1.45 (36.8)	2.09 (53.0)	0.76 (19.4)	Ø .17 Ø (4.4)	Ø .27 Ø (6.9)
V				
1.69 (43.0)				

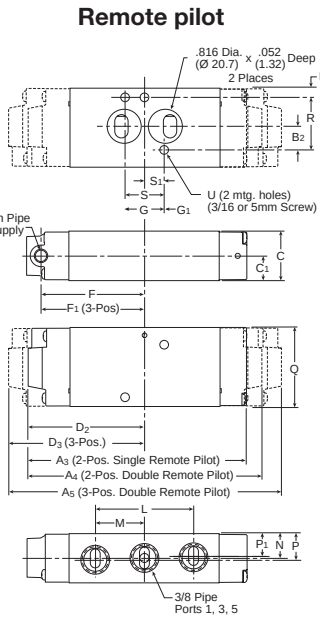
Inches (mm)

B6 Single & Double Operators – 4-way NAMUR Mount

Solenoid



Remote pilot

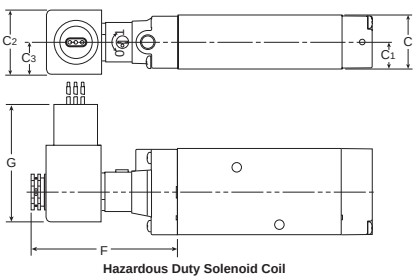


B6 4-way NAMUR Mount

A	A1	A2	A3	A4
6.67 (169.5)	8.41 (213.7)	9.35 (237.6)	5.26 (133.7)	5.59 (142.1)
A5	**B**	**B2**	**C**	**C1**
6.54 (166.0)	2.06 (52)	.57 (14.4)	1.18 (30.0)	.59 (15)
D	**D1**	**D2**	**D3**	**F**
4.21 (106.8)	4.68 (118.8)	2.80 (71.0)	3.27 (83.0)	2.45 (62.3)
F1	**G**	**G1**	**J3**	**K**
2.92 (74.3)	.95 (24.2)	.02 (0.53)	.95 24.1)	2.09 (53.0)
K1	**L**	**M**	**N**	**P**
2.56 (64.9)	2.34 (59.4)	1.17 (29.7)	.59 (15)	.63 (16)
P1	**Q**	**R**	**R1**	**S**
.55 (14)	1.89 (48.0)	1.26 (32)	.22 (5.5)	.94 (24)
S1	**T**	**U**		
.47 (12)	Ø .17 Ø (4.4)	Ø .27 Ø (6.9)		

Inches (mm)

B6 Alternative Electrical Enclosure Option F



Hazardous Duty Solenoid Coil

B6 4-way NAMUR Mount with Option F Enclosure

C	C1	C2	C3	F
1.18 (30)	.59 (15)	1.42 (36)	.71 (18)	3.15 (80)
G				
2.60 (66)				

Inches (mm)

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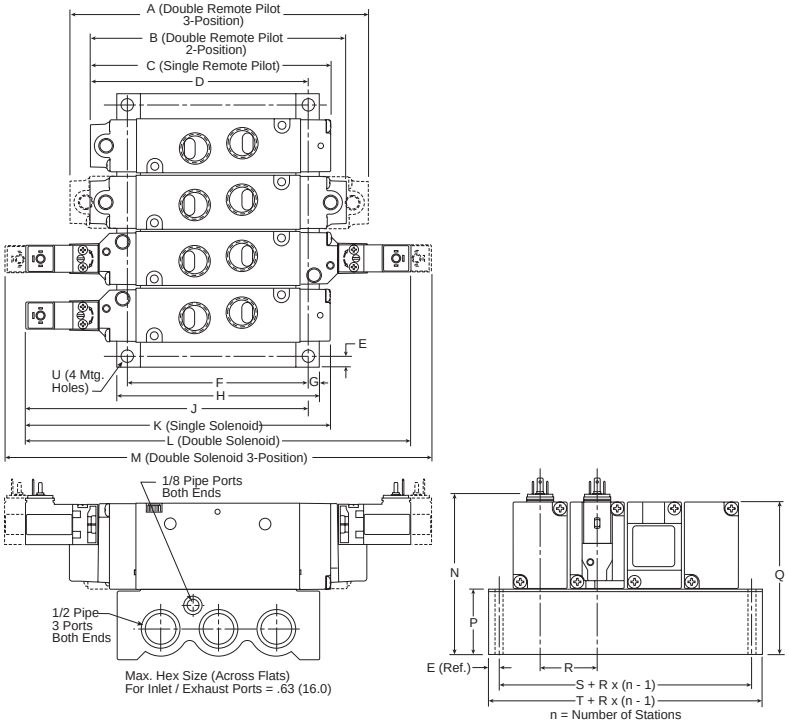
B6 Single & Double Operators – 4-way IEM Aluminum Bar

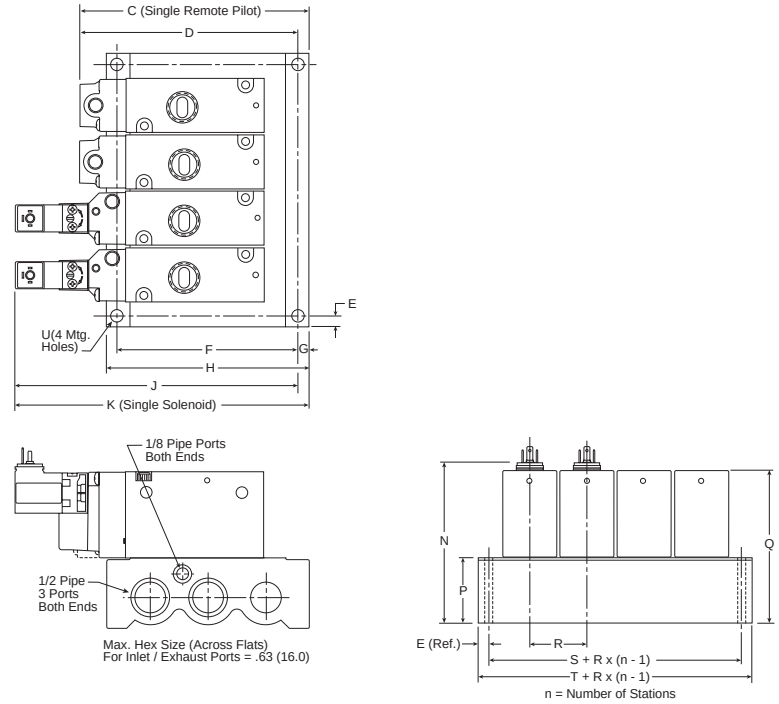


B6 4-way IEM Aluminum Bar Manifold

A	B	C	D	E
6.54 (166.0)	5.59 (142.1)	5.26 (133.7)	4.76 (121.0)	.24 (6.0)
F	**G**	**H**	**J**	**K**
3.94 (100.0)	.24 (6.0)	4.41 (112.0)	6.17 (156.8)	6.67 (169.5)
L	**M**	**N**	**P**	**Q**
8.41 (213.7)	9.35 (237.6)	3.60 (91.3)	1.54 (39.0)	3.43 (87.0)
R	**S**	**T**	**U**	
1.24 (31.5)	1.77 (45.0)	2.24 (57.0)	ø .26 ø (6.5)	

Inches (mm)

B6 Single Operators – 3-way IEM Aluminum Bar



B6 3-way IEM Aluminum Bar Manifold

C	D	E	F	G
5.00 (127.0)	4.76 (121.0)	.24 (6.0)	3.94 (100.0)	.24 (6.0)
H	**J**	**K**	**N**	**P**
4.41 (112.0)	6.17 (156.8)	6.41 (162.8)	3.60 (91.3)	1.54 (39.0)
Q	**R**	**S**	**T**	**U**
3.43 (87.0)	1.24 (31.5)	1.77 (45.0)	2.24 (57.0)	Ø .26 Ø (6.5)

Inches (mm)

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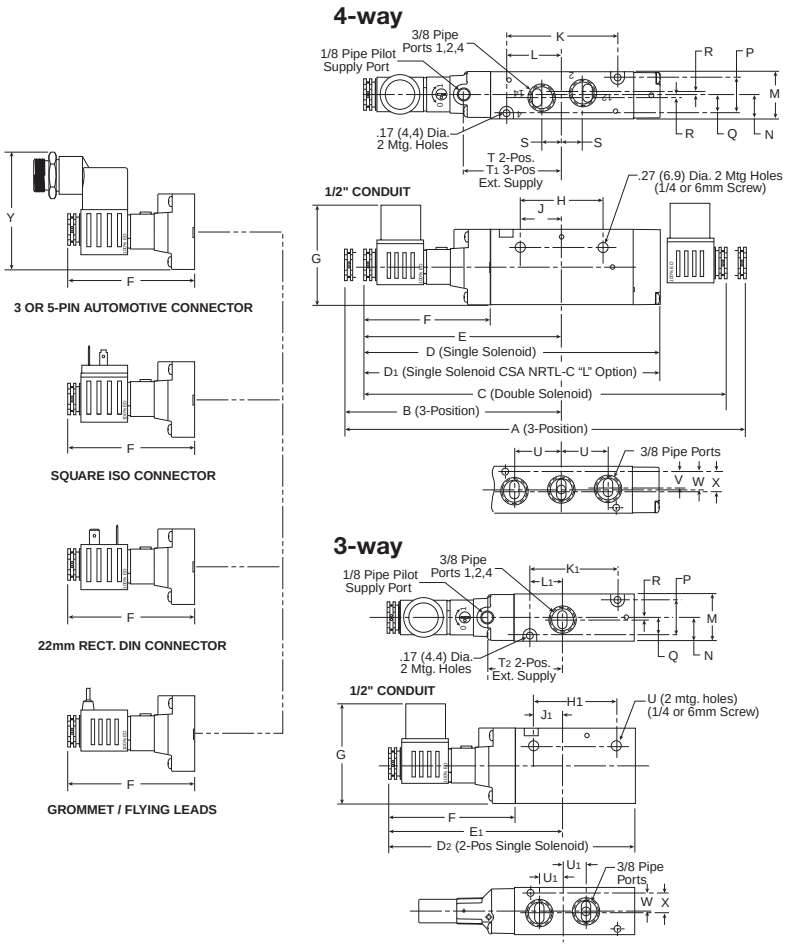
B6 3 & 4-way Alternative Electrical Enclosures

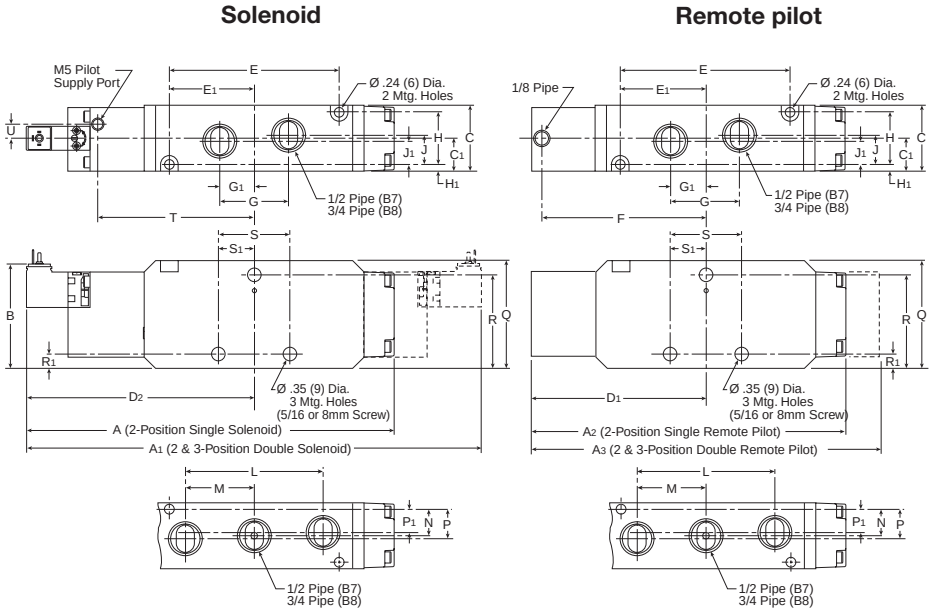


B6 Alternative – Electrical Enclosures

A	B	C	D	D1
10.84 (275.3)	5.41 (137.5)	9.89 (251.3)	7.41 (188.2)	7.74 (196.6)
D2	**E**	**E2**	**F**	**G**
6.17 (156.6)	4.94 (125.6)	4.37 (111.0)	3.15 (80.0)	2.47 (62.8)
H	**H1**	**J**	**J1**	**K**
2.09 (53.0)	2.09 (53.0)	1.04 (26.5)	0.76 (19.4)	2.79 (70.8)
K1	**L**	**L1**	**M**	**N**
2.19 (55.6)	1.39 (35.4)	.82 (20.7)	1.18 (30.0)	.59 (15.0)
P	**Q**	**R**	**S**	**T**
.91 (23.0)	.45 (11.5)	.06 (1.6)	.51 (13.1)	2.45 (62.3)
T1	**T2**	**U**	**U1**	**V**
2.93 (29.7)	1.89 (48.0)	.59 (15.0)	.59 (15.0)	.41 (10.5)
W	**X**	**Y**		
.45 (11.5)	.49 (12.5)	2.90 (73.6)		

Inches (mm)

B7& B8 Single & Double Operators – 4-way Inline



B7 & B8 4-way Inline

A	A1	A2	A3	B
9.13 (232)	11.29 (287)	7.79 (198)	8.62 (219)	2.59 (66)
C	**C1**	**D1**	**D2**	**E**
1.65 (42)	.83 (21)	4.29 (109)	5.63 (143)	4.21 (107)
E1	**F**	**G**	**G1**	**H**
2.13 (54)	4.06 (103)	1.73 (44)	.87 (22)	1.29 (33)
H1	**J**	**J1**	**L**	**M**
.16 (4)	.75 (19)	.59 (15)	3.39 (86)	1.69 (43)
N	**P**	**P1**	**Q**	**R**
.67 (17)	.75 (19)	.59 (15)	2.68 (68)	2.32 (59)
R1	**S**	**S1**	**T**	**U**
.35 (9)	1.81 (46)	.90 (23)	3.94 (100)	.35 (9)

Inches (mm)

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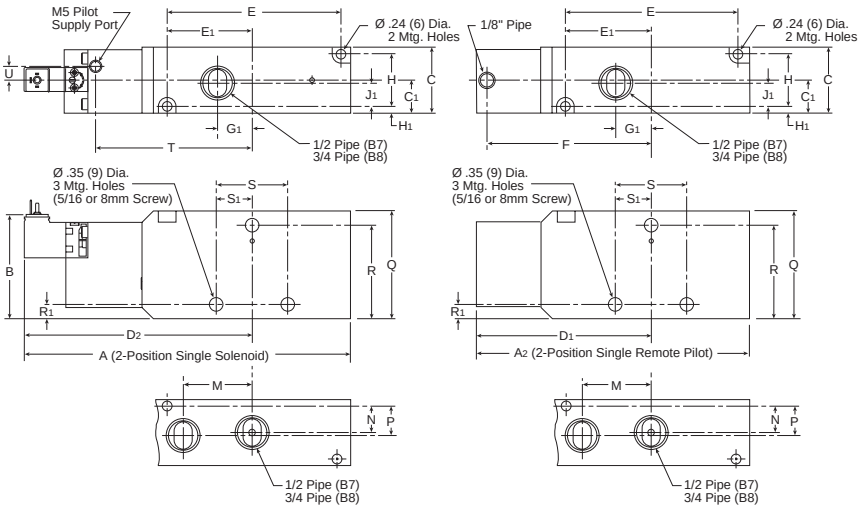
B7 & B8 Single Operators – 3-way Inline

Solenoid **Remote Pilot**

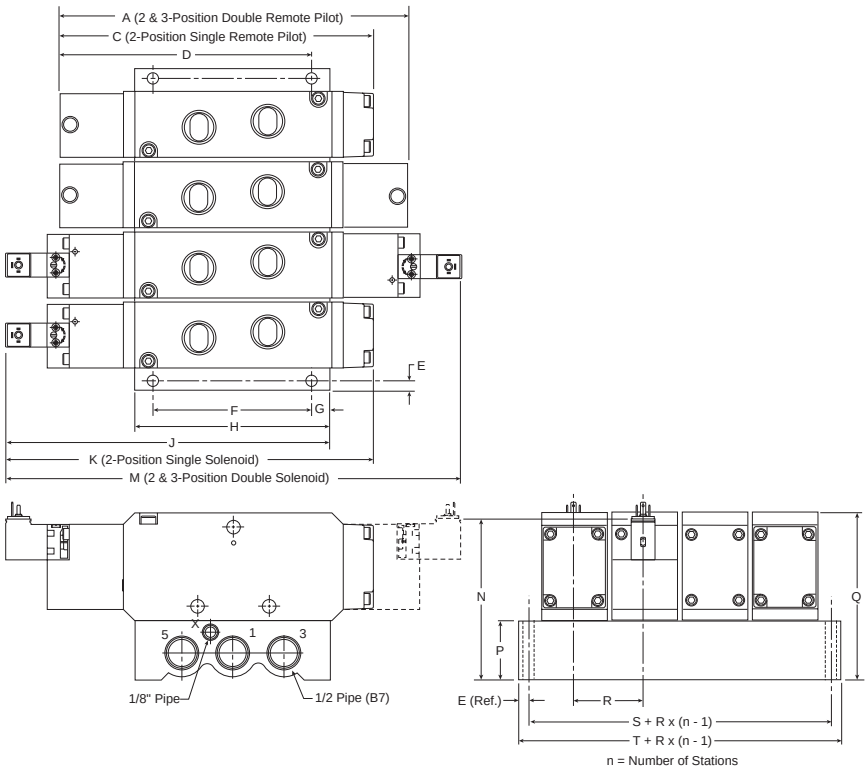


B7 & B8 3-way Inline

A	A2	B	C	C1
7.99 (203)	6.65 (169)	2.59 (66	1.65 (42)	.83 (21)
D1	**D2**	**E**	**E1**	**F**
4.29 (109)	5.63 (143)	4.21 (107)	2.13 (54)	4.06 (103)
G1	**H**	**H1**	**J1**	**M**
.86 (22)	1.29 (33)	.16 (4)	.59 (15)	1.69 (43)
N	**P**	**Q**	**R**	**R1**
.67 (17)	.75 (19)	2.68 (68)	2.32 (59)	.35 (9)
S	**S1**	**T**	**U**	
1.81 (46)	.90 (23)	3.94 (100)	.35 (9)	

Inches (mm)

B7 & B8 Single & Double Operators – 4-way IEM Aluminum Bar



B7 & B8 4-way IEM Aluminum Bar Manifold

A	C	D	E	F
7.79 (198)	8.62 (219)	6.26 (159)	.24 (6)	3.94 (100)
G	**H**	**J**	**K**	**M**
.45 (11.5)	4.84 (123)	8.07 (205)	9.13 (232)	11.29 (287)
N	**P**	**Q**	**R**	**S**
4.00 (101.5)	1.48 (37.5)	4.15 (105.5)	1.77 (45)	2.24 (57)
T				
2.72 (69)				

Inches (mm)

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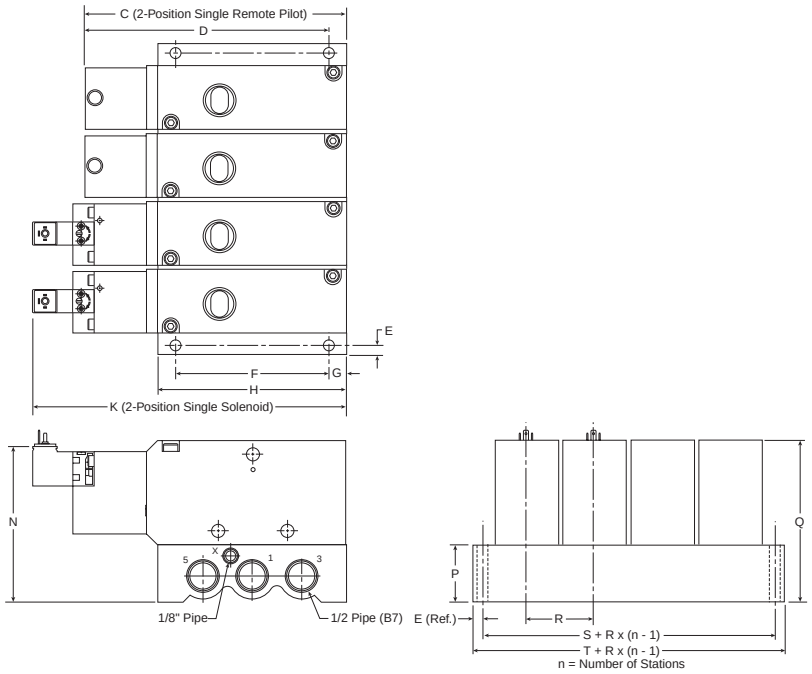
B7 & B8 Single Operators – 3-way IEM Aluminum Bar

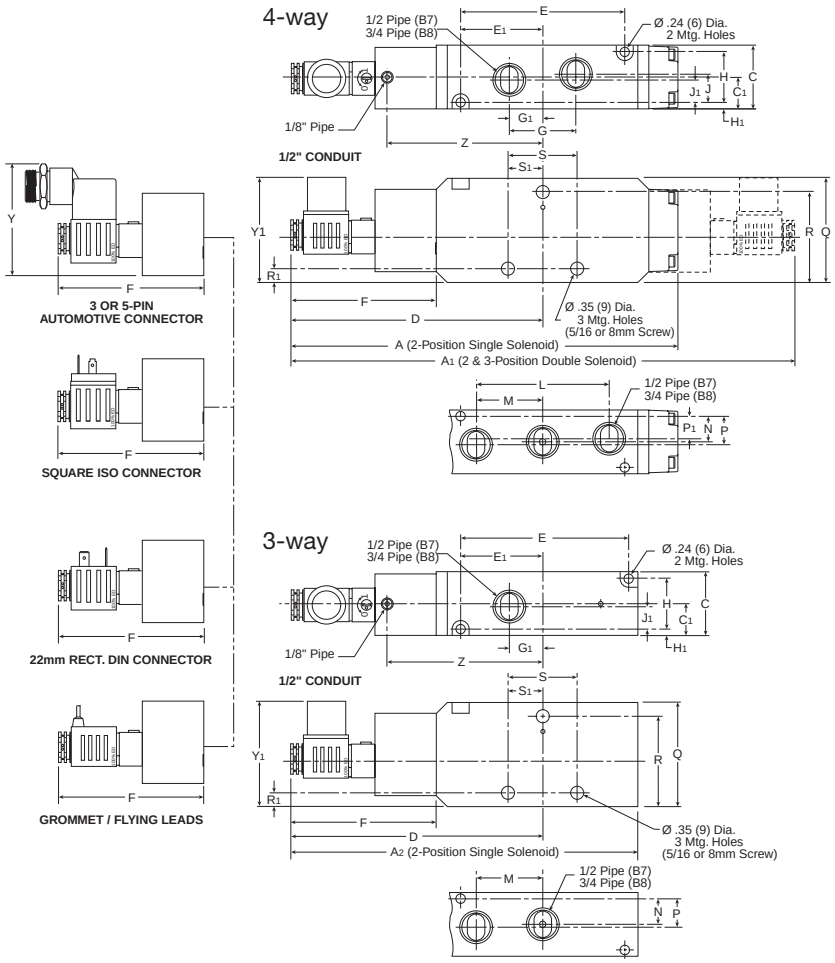


B7 & B8 3-way IEM Aluminum Bar Manifold

C	D	E	F	G
6.65 (169)	4.92 (124.9)	.24 (6)	3.94 (100)	.45 (11.5)
H	**K**	**N**	**P**	**Q**
4.84 (123)	7.99 (203)	4.00 (101.5)	1.48 (37.5)	4.15 (105.5)
R	**S**	**T**		
1.77 (45)	2.24 (57)	2.72 (69)		

Inches (mm)

B7 & B8 3 & 4-way Alternative Electrical Enclosures



B7 & B8 3 & 4-way Alternative Electrical Enclosures

A	A1	A2	C	C1
9.92 (252)	12.91 (328)	8.78 (223)	1.65 (42)	.83 (21)
D	**E**	**E1**	**F**	**G**
6.46 (164)	4.21 (107)	2.13 (54)	3.74 (95)	1.73 (44)
G1	**H**	**H1**	**J**	**J1**
.86 (22)	1.29 (33)	.16 (4)	.75 (19)	.59 (15)
L	**M**	**N**	**P**	**P1**
3.39 (86)	1.69 (43)	.67 (17)	.75 (19)	.59 (15)
Q	**R**	**R1**	**S**	**S1**
2.68 (68)	2.32 (59)	.35 (9)	1.81 (46)	.90 (23)
Y	**Y1**	**Z**		
2.87 (73)	2.71 (69)	3.98 (101)		

Inches (mm)

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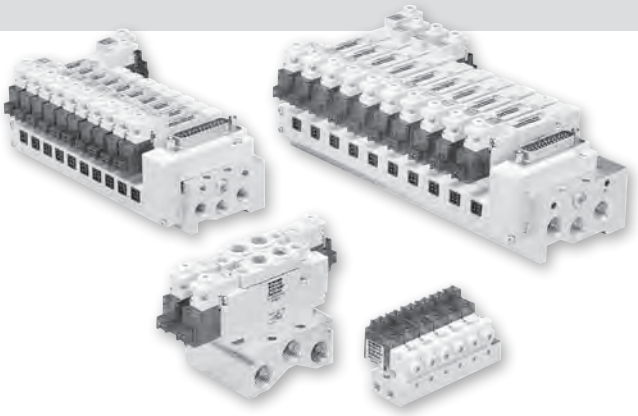
ADEX Series

ADEX Series are miniature low power consumption solenoid valves, ideal for powering small to mid-sized pneumatic actuators used in automation and process applications. ADEX's versatility is further enhanced through its three mounting styles and electronic connectivity options.



Features
- Compact body size
- Fast response < 10ms

Ports
- A00S: M3 – .02 Cv
- A05: M5 – .18 Cv
- A12: 1/8 inch – .47 Cv

Mounting
- Inline
- Subbase mount

Solenoids
- 0.6 W
- 5VDC, 12VDC, 24VDC and 110/220VAC
- LED and surge suppression

Operating information

Maximum operating pressure*:

A05 & A12	Vacuum to 100 PSIG (Vacuum to 6.8 bar)
A00S (NC)	Vacuum to 100 PSIG (Vacuum to 6.8 bar)
A00S (NO)	Vacuum to 70 PSIG (Vacuum to 4.8 bar)

Minimum operating pressure: See chart below

Operating temperature:

Intermittent Duty (AC & DC Voltage):	32°F to 122°F (0°C to 50°C) Voltage Rated +10 / –10%
Continuous Duty (DC Voltage Only):	32°F to 104°F (0°C to 40°C) Voltage Rated +0 / –10%

* When using vacuum and pressure simultaneously on ports 1 & 3, normally closed valve, the maximum pressure is 85 PSIG (586 kPa).
When using vacuum and pressure simultaneously on ports 1 & 3, normally open valve, the maximum pressure is 58 PSIG (400 kPa).

Material specifications

Body	Anodized aluminum
End caps	Anodized aluminum
Coils	Thermoplastic
Fasteners	Stainless steel
Spool	Aluminum and nitrile rubber

Minimum operating pressure

Description		Internal pilot		External pilot	
		PSIG	kPa	PSIG	kPa
4-way	Single Solenoid	22	152	Vacuum	
				36	248
	Double Solenoid – 2-position	15	104	Vacuum	
				36	248
	Double Solenoid – 3-position	30	207	Vacuum	
				36	248
3-way	A00 Series	Vacuum			

Most popular.

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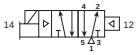
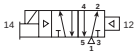
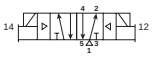
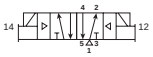
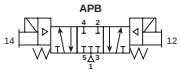
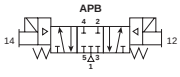
Single Solenoid, 4-way, 2-position

	Symbol	Port size	Cv	Voltage	Valve type	Part number
		M5	.17 Cv	24VDC	A05 inline	**A05RS251PM5MF**
		M5	.17 Cv	12VDC	A05 inline	**A05RS252PM5MF**
		1/8"	.47 Cv	24VDC	A12 inline	**A12RS251PN1MF**
		1/8"	.47 Cv	12VDC	A12 inline	**A12RS252PN1MF**
		Less base	.18 Cv	24VDC	A06 subbase	**A05PS251P**
		Less base	.18 Cv	12VDC	A06 subbase	**A05PS252P**
		Less base	.44 Cv	24VDC	A12 subbase	**A12PS251P**
		Less base	.44 Cv	12VDC	A12 subbase	**A12PS252P**

Double Solenoid, 4-way, 2-position

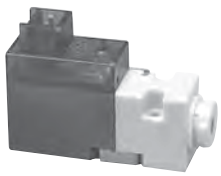
	Symbol	Port size	Cv	Voltage	Valve type	Part number
		M5	.17 Cv	24VDC	A05 inline	**A05RD251PM5MF**
		M5	.17 Cv	12VDC	A05 inline	**A05RD252PM5MF**
		1/8"	.47 Cv	24VDC	A12 inline	**A12RD251PN1MF**
		1/8"	.47 Cv	12VDC	A12 inline	**A12RD252PN1MF**
		Less base	.18 Cv	24VDC	A06 subbase	**A05PD251P**
		Less base	.18 Cv	12VDC	A06 subbase	**A05PD252P**
		Less base	.44 Cv	24VDC	A12 subbase	**A12PD251P**
		Less base	.44 Cv	12VDC	A12 subbase	**A12PD252P**

Double Solenoid, 4-way, 3-position, APB

	Symbol	Port size	Cv	Voltage	Valve type	Part number
		M5	.16 Cv	24VDC	A05 inline	**A05RD351PM5MF**
		M5	.16 Cv	12VDC	A05 inline	**A05RD352PM5MF**
		1/8"	.43 Cv	24VDC	A12 inline	**A12RD351PN1MF**
		1/8"	.43 Cv	12VDC	A12 inline	**A12RD352PN1MF**
		Less base	.16 Cv	24VDC	A06 subbase	**A05PD351P**
		Less base	.16 Cv	12VDC	A06 subbase	**A05PD352P**
		Less base	.40 Cv	24VDC	A12 subbase	**A12PD351P**
		Less base	.40 Cv	12VDC	A12 subbase	**A12PD352P**

Locking flush override. Mounting screws and gaskets included with valve.

A00 Valve Only – Single Solenoid, 3-way, 2-position*



A00SC231P Shown
* Screwdriver-Operated, Locking Manual Override (LMOR).

A00S | C23 | — | 1 | P

Function	
Single solenoid normally open	023
Single solenoid normally closed	**C23**

Flow	
Standard type	**Blank**
Large flow type	J

Voltage	
1	**24VDC**
2	12VDC
4*	5VDC
8*	110/50 VAC
9	120/60 VAC

* Special Order

Connector Position	
P	**With indicator light & surge suppression**

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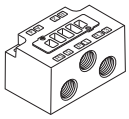
A00 Valve Subbase

Valve type	All Ports	Part number
A00	M3	**A00SBM3**

Mounting screws and gaskets included with valve.

A05 & A12 Subbases



A05PB

Valve type	Port size	Part number
A05	1/8" NPT	**A05PBN1**
	1/8" BSPP "G"	**A05PBG1**
A12	1/4" NPT	**A12PBN2**
	1/4" BSPP "G"	**A12PBG2**

Kit Includes: (1) Subbase (Holddown bolts and gasket are included with valve)

A00 Valve Manifold*

MMFS6A00M3 Shown

* Normally closed valves (A00SC23•P) and Normally open valves (A00S023•P) cannot be mounted on the same manifold simultaneously.

MMFS | **2** | **A00** | **M5**

Number of stations	
2 Stations	2
3 Stations	3
4 Stations	4
•	•
•	•
20 Stations	20

Port size
M3
M5

A05 Valve IEM Bar Manifold

MMFU10A05F Shown

4-way, NPTF (Individual wiring type)	**MMFU##A05F**
4-way, NPTF (Collective wiring type)	**MMCU‡‡A05F**

– stations 2 to 20
‡‡ – stations 2 to 12
(Even numbers only)

A12 Valve IEM Bar Manifold

MMFU10A12F Shown

4-way, NPTF (Individual wiring type)	**MMFU##A12F**
4-way, NPTF (Collective wiring type)	**MMCU‡‡A12F**

– stations 2 to 20
‡‡ – stations 2 to 12
(Even numbers only)

A05 Valve Subbase Bar Manifold (5-Ported)

4-way, M5 (Individual Wiring Type)	**MMFS##A05FM5**
4-way, M5 (Collective Wiring Type)	**MMCS‡‡A05FM5**

– stations 2 to 20
‡‡ – stations 2 to 12
(Even numbers only)

A12 Valve Subbase Bar Manifold (5-Ported)

4-way, 1/8" NPTF (Individual Wiring Type)	**MMFS##A12FF1**
4-way, 1/8" NPTF (Collective Wiring Type)	**MMCS‡‡A12FF1**

– stations 2 to 20
‡‡ – stations 2 to 12
(Even numbers only)

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Collective Wiring

MCS10A05PDL Shown

MCS | 2 | A05 | P | DL

Type	
Manifold collective wiring system	MCS

Number of stations*	
2 Stations	2
4 Stations	4
6 Stations	6
8 Stations	8
10 Stations	10
12 Stations	12

* Even Number of Stations Only.

Valve size	
A05	10mm
A12	15mm

Options	
DL	D-sub 25
ML	26-pin ribbon

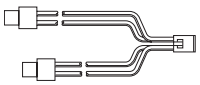
Individual Wired Connectors P / R Type

A05PDCCL##

Size	Voltage	Length	Part number
A00	DC	.5 meter	**A05PDCCL5**
A05		1 meter	**A05PDCCL10**
A12		3 meter	**A05PDCCL30**
	AC	.5 meter	**A05PACCL5**
		1 meter	**A05PACCL10**

DC Voltage: Positive "+" (Red Wire)
Negative "–" (Black Wire)
AC Voltage: Both Wires are Blue (Polarity Neutral)

Collective Wired Connectors P / R Type



A05PDCC

Size		Part number PNP	Part number NPN
A05	Single	**A05PSCCM**	**A05PSCC**
A12	Double	**A05PDCCM**	**A05PDCC**

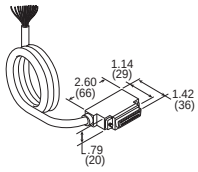
PNP = SOURCING = "Negative Common" = Yellow Wires
NPN = SINKING = "Positive Common" = Red Wires

Wired Connectors with Protective Cover - P / R Type

Size	Length	Part number
A00	1 meter	**A05PDCCB10**
A05		
A12		

The cover is made of chloroprene rubber for electrical use, assuring excellent weather and insulation resistance. However, be careful not to place it under splash of cutting oil.

Cable with Female D-Sub, 25-Pin Connector



Description	Part number
25-Pin, D-Sub cable, 1 meter (3.3 ft.)	**DSS25FB1K**

Note: For use with ADEX MCS system only.
Connection to control system is through 25 colored wires AWG 24. Includes (2) M2.5 mm screws.

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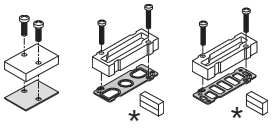
Blanking Plate

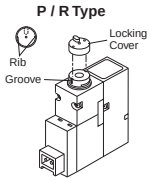


A00SBP A05RGBP A05PGBP

Size	Type	Part number
A00	Subbase	**A00SBP**
A05	Body ported	**A05RGBP**
	Subbase	**A05PGBP**
A12	Body ported	**A12RGBP**
	Subbase	**A12PGBP**

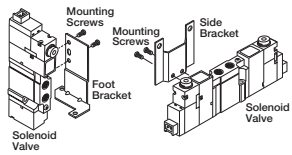
* Outlet pin cover used with collective wiring system only.

Extended Override Cover



Size	Orange: for 14 side solenoid	Green: for 12 side solenoid
A00	**A05PLA**	**A05PLB**
A05		
A12		

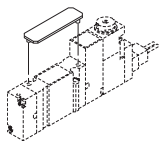
Mounting Bracket



Size	Type	Part number
A05	Side	**A05RBS**
	Foot	**A05RBF**
A12	Side	**A12RBS**
	Foot	**A12RBF**

Kit Includes: (1) Bracket, (2) Screws

Labeling Tag



Size	Description	Part number
A05	White Label Tag	**A05PN**
A12		

Exhaust Mufflers

Pipe thread	Part number
M5	**P6M-PAC5**
1/8" NPT	**EM12**
1/4" NPT	**EM25**

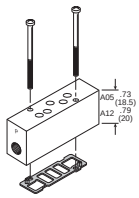
P6M - Plastic; EM - Sintered Bronze

Plastic Silencers

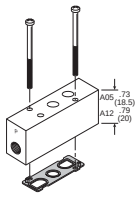
Thread size	Part number NPT	BSPT
M5	**AS-5**	**N/A**
1/8"	**ASN-6**	**AS-6**
1/4"	**ASN-8**	**AS-8**

Individual Air Supply Spacer

Mounts between valve and manifold. Supply from the manifold is blocked and only the valve mounted on the spacer receives the individual supply.



A05PAISM5



A05RAISM5

Size	Type	Port size	Internal pilot part number	External pilot* part number
A05	Inline	M5	**A05RAISM5**	**A05RAXISM5**
	Subbase	M5	**A05PAISM5**	**A05PAXISM5**
A12	Inline	1/8" NPT	**A12RAISN1**	**A12RAXISN1**
	Subbase	1/8" NPT	**A12PAISN1**	**A12PAXISN1**

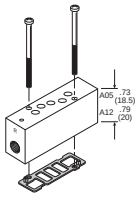
Can only be used on Collective wiring type manifolds.

*** Can only be used with External Piloted valve.** External pilot is located on the X Port of the manifold

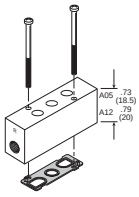
Kit Includes: (1) Spacer, (2) Screws, and (1) Gasket

Individual Air Exhaust Spacer

Mounts between valve and manifold. Exhaust from the manifold is blocked and only the valve mounted on the spacer has the individual exhaust.



A05PAIEM5



A05RAIEM5

Size	Type	Port size	Internal pilot part number	External pilot* part number
A05	Inline	M5	**A05RAIEM5**	**A05RAXIEM5**
	Subbase	M5	**A05PAIEM5**	**A05PAXIEM5**
A12	Inline	1/8" NPT	**A12RAIEN1**	**A12RAXIEN1**
	Subbase	1/8" NPT	**A12PAIEN1**	**A12PAXIEN1**

Can only be used on Collective wiring type manifolds.

*** Can only be used with External Piloted valve.** External pilot is located on the X Port of the manifold

Kit Includes: (1) Spacer, (2) Screws, and (1) Gasket

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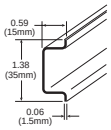
M3 & M5 Fittings

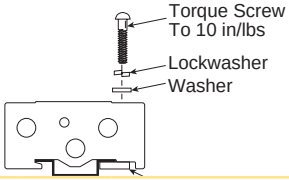
Description	Part number
M5 Plug Fitting	**N220-1900J**
M3 to 3mm Barb	**BC03M3**
M3 to 4mm Barb	**BC04M3**
M5 to 3mm Barb	**BC03M5**

DIN Rail



Length	Part number
6 Feet	**AM1DE200**

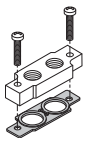
DIN Rail Hardware Kit



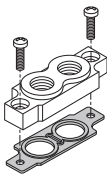
		Dimensions			
Size	Type	A	B	C	Part number
A05	IEM	2.24	1.00	.31	**MFUA05DB**
	Subbase	(57)	(25)	(8)	**MFSA05DB**
A12	IEM	2.91	1.00	.39	**MFUA12DB**
	Subbase	(74)	(25)	(10)	**MFSA12DB**

Kit includes: (2) Screws, (2) Clamps

Replacement Cylinder Port Plate Kits



A05RABM5



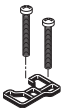
A12RABN1

Size	Fitting	Part number
A05	M5	**A05RABM5**
A12	1/8" NPT	**A12RABN1**
	1/8" BSPP "G"	**A12RABG1**

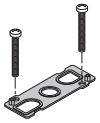
Replacement Base Gasket Kits

Screws

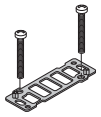
A00SS



A05RS



A05PS



Gaskets

A00SG A05RG A05PXG

Size	Type	Gasket only	Screw
A00	Subbase	**A00SG**	**A00SS**
A05	Body Ported	**A05RG**	**A05RS**
	Subbase Int.	**A05PG**	**A05PS**
	Subbase Ext.	**A05PXG**	**A05PS**
A12	Body Ported	**A12RG**	**A12RS**
	Subbase Int.	**A12PG**	**A12PS**
	Subbase Ext.	**A12PXG**	**A12PS**

These are spare parts, mounting screws and gaskets included with valves.

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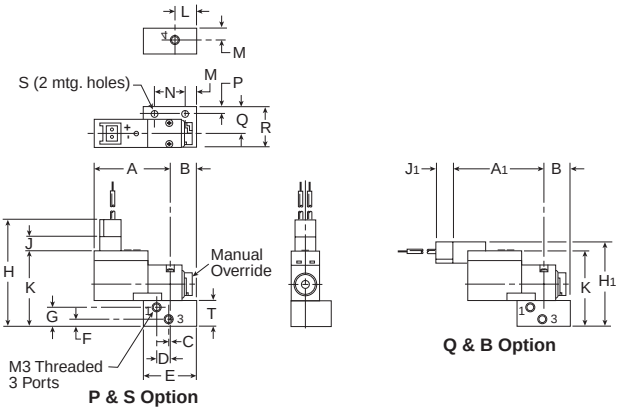
A00 Subbase

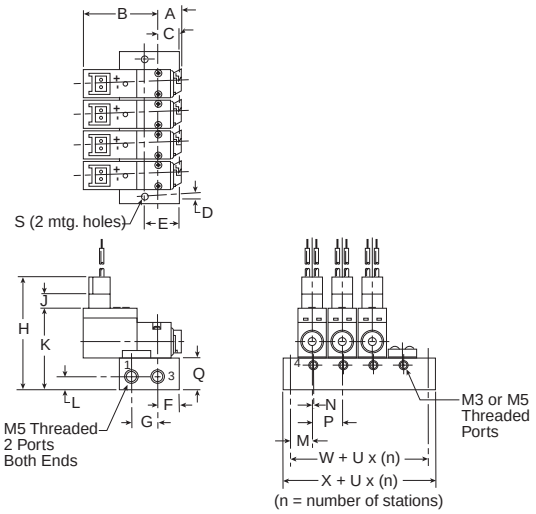


A00 - Subbase

A	A1	B	C	D
1.00 (25)	1.18 (30)	.41 (11)	.015 (.4)	.17 (4)
E	**F**	**G**	**H**	**H1**
.79 (20)	.12 (3)	.28 (7)	1.54 (39)	1.38 (34)
J	**J1**	**K**	**L**	**M**
.24 (6)	.20 (5)	1.11 (28)	.32 (8)	.18 (5)
N	**P**	**Q**	**R**	**S**
.47 (12)	.10 (3)	.39 (10)	.59 (15)	.106 (2.7)
T				
.38 (10)				

Inches (mm)

A00 Manifold

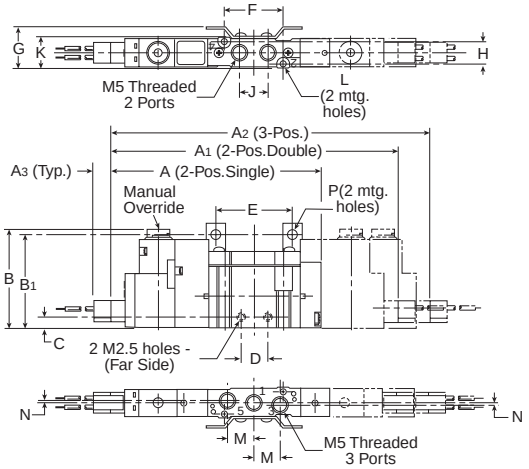


A00 - Manifold

A	B	C	D	E
.36 (9)	1.00 (25)	.31 (8)	.10 (3)	.51 (13)
F	**G**	**H**	**J**	**K**
.31 (8)	.39 (10)	1.63 (42)	.20 (5)	1.22 (31)
L	**M**	**N**	**P**	**Q**
.20 (5)	.33 (9)	.02 (.6)	.41 (10.5)	.47 (12)
S	**U**	**X**	**W**	
.125 (3.2)	.41 (10.5)	.45 (11.5)	.26 (6.5)	

Inches (mm)

A05R Single & Double Operators – Inline



A05R – Inline

A	A1	A2	A3	B
2.91 (74)	3.94 (100)	4.25 (108)	.24 (6)	1.38 (35)
B1	**C**	**D**	**E**	**F**
1.30 (33)	.16 (4)	.38 (10)	1.06 (27)	.83 (21)
G	**H**	**J**	**K**	**L**
.57 (15)	.33 (9)	.40 (10)	.45 (11.4)	Ø .08 Ø (2.1)
M	**N**	**P**		
.37 (10)	.04 (1)	Ø .14 Ø (3.5)		

Inches (mm)

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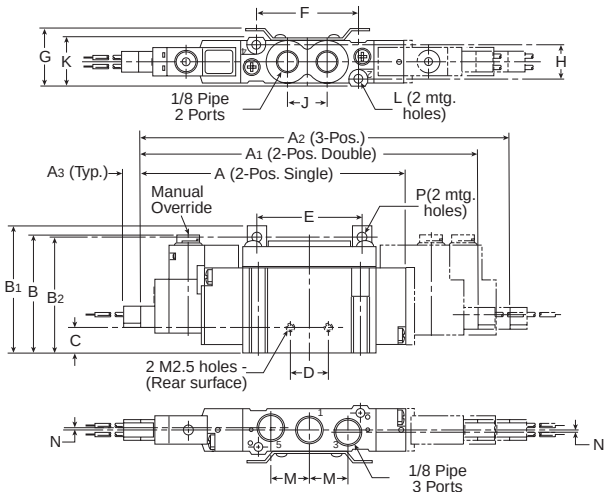
A12R Single & Double Operators – Inline

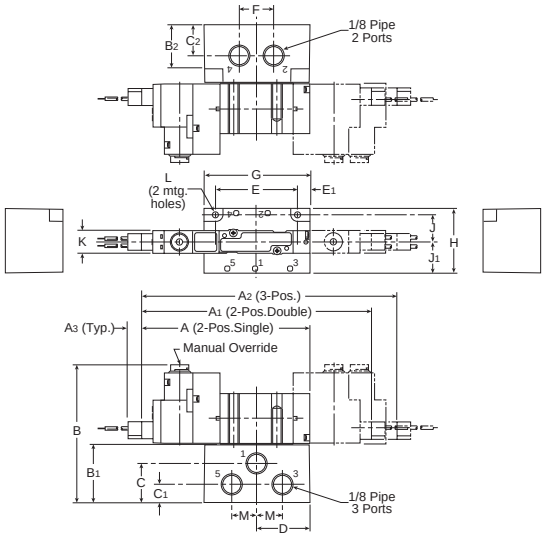


A12R – Inline

A	A1	A2	A3	B
3.68 (94)	4.69 (119)	5.12 (130)	.24 (6)	1.64 (42)
B1	**B2**	**C**	**D**	**E**
1.77 (45)	1.70 (43)	.35 (9)	.51 (13)	1.46 (37
F	**G**	**H**	**J**	**K**
1.42 (36)	.80 (20)	.47 (12)	.55 (14)	.68 (17)
L	**M**	**N**	**P**	
Ø .12 Ø (3.1)	.55 (14)	.03 (0.8)	Ø .14 Ø (3.5)	

Inches (mm)

A05P Single & Double Operators – Subbase

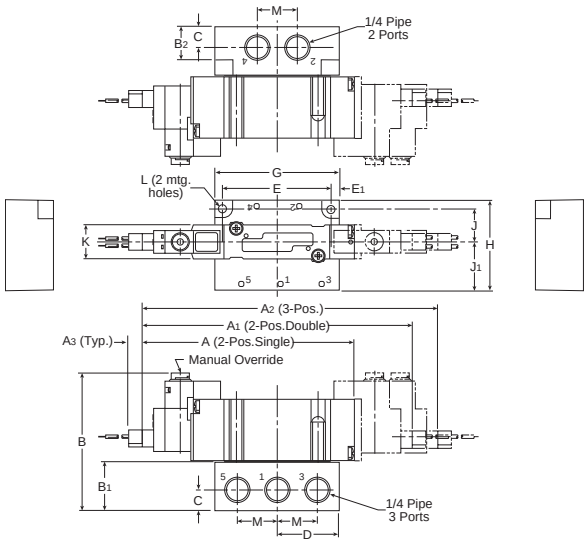


A05P – Subbase

A	A1	A2	A3	B
2.91 (74)	3.94 (100)	4.25 (108)	.24 (6)	2.35 (60)
B1	**B2**	**C**	**C1**	**C2**
.96 (25)	.75 (19)	.65 (17)	.30 (8)	.53 (14)
D	**E**	**E1**	**F**	**G**
.89 (23)	1.38 (35)	.20 (5)	.57 (15)	1.77 (45)
H	**J**	**J1**	**K**	**L**
.08 (28)	.45 (11.5)	.51 (13)	.39 (10)	Ø .13 Ø (3.2)
M				
.45 (12)				

Inches (mm)

A12P Single & Double Operators – Subbase



A12P – Subbase

A	A1	A2	A3	B
3.68 (94)	4.69 (119)	5.12 (130)	.24 (6)	2.41 (61)
B1	**B2**	**C**	**D**	**E**
.87 (22)	.75 (19)	.37 (10)	1.10 (28)	1.89 (48)
E1	**G**	**H**	**J**	**J1**
.16 (4)	2.20 (56)	1.59 (41)	.57 (14.5)	.87 (22)
K	**L**	**M**		
.59 (15)	Ø .17 Ø (4.3)	.71 (18)		

Inches (mm)

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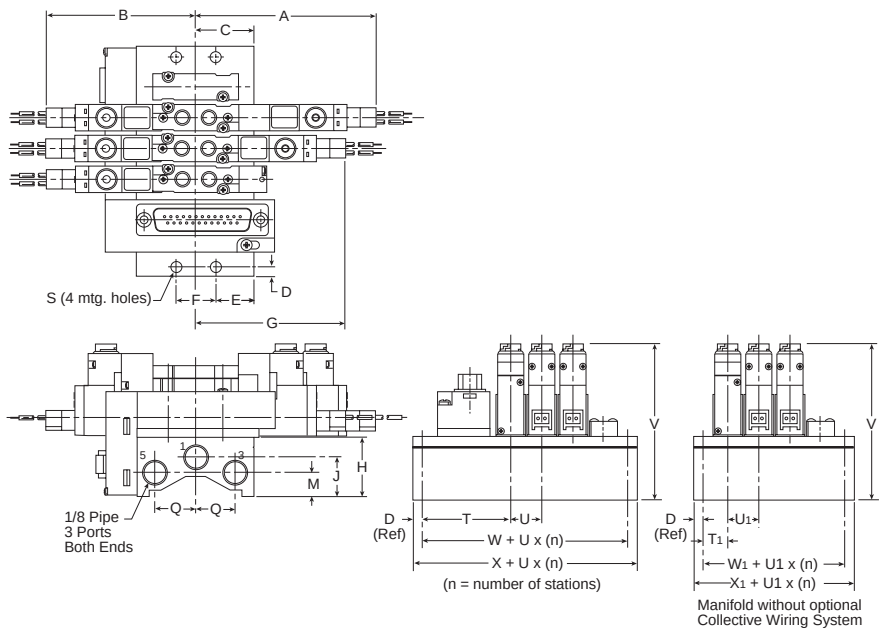
A05R Manifold – Valve Inline

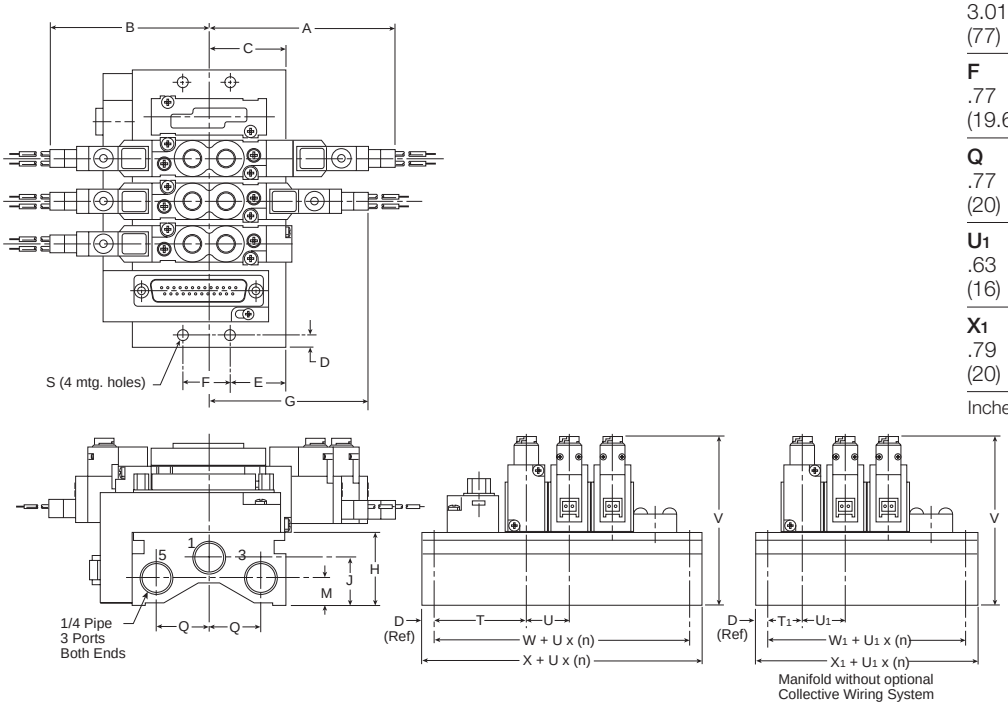


A05R - Manifold, Valve Inline

A	B	C	D	E
2.52 (64)	2.21 (56)	.94 (24)	.16 (4)	.61 (16)
F	**G**	**H**	**J**	**M**
.63 (16)	2.21 (56)	.94 (24)	.61 (16)	.37 (10)
Q	**S**	**T**	**T1**	**U**
.63 (16)	Ø .18 Ø (4.5)	1.34 (34)	.51 (13)	.49 (12.5)
U1	**V**	**W**	**W1**	**X**
.41 (10.5)	2.32 (59)	1.36 (35)	.37 (9.5)	167 (43)
X1				
.68 (17.5)				

Inches (mm)

A12R Manifold – Valve Inline



A12R - Manifold, Valve Inline

A	B	C	D	E
3.01 (77)	2.58 (66)	1.14 (29)	.20 (5)	.76 (19)
F	**G**	**H**	**J**	**M**
.77 (19.6)	2.58 (66)	1.08 (28)	.71 (18)	.41 (11)
Q	**S**	**T**	**T1**	**U**
.77 (20)	Ø .18 Ø (4.5)	1.48 (38)	.51 (13)	.69 (17.5)
U1	**V**	**W**	**W1**	**X**
.63 (16)	2.74 (70)	1.34 (34)	.39 (10)	1.73 (44)
X1				
.79 (20)				

Inches (mm)

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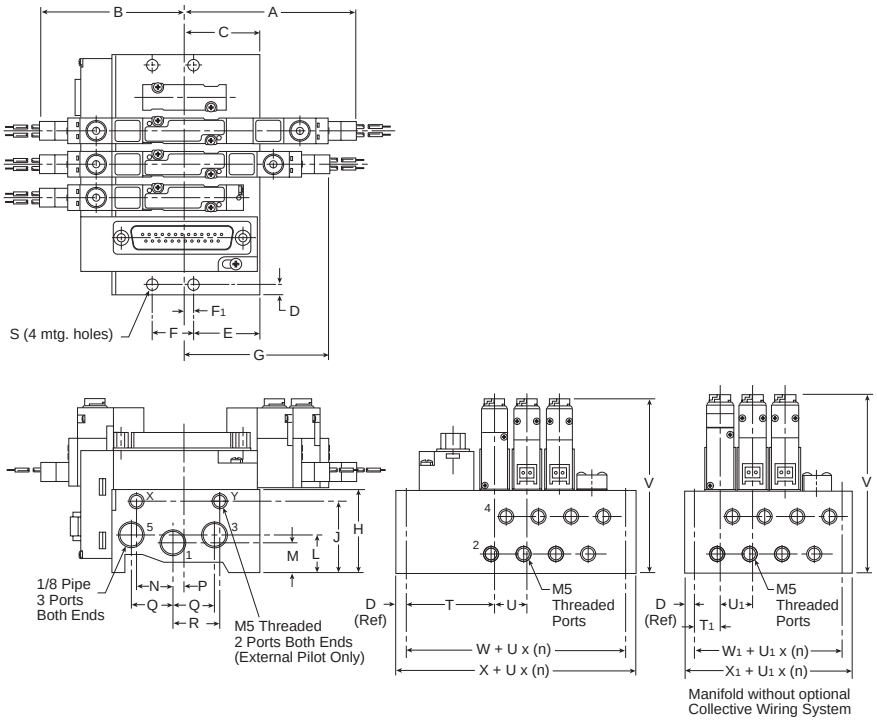
A05P Manifold – Side Ports



A05P – Manifold, Side Ports

A	B	C	D	E
2.52 (64)	2.21 (56)	1.12 (29)	.16 (4)	1.00 (26)

F	F1	G	H	J
.63 (16)	.19 (5)	2.21 (56)	1.26 (32)	1.08 (28)

L	M	N	P	Q
.59 (15)	.45 (11.5)	.55 (14)	.13 (3)	.63 (16)

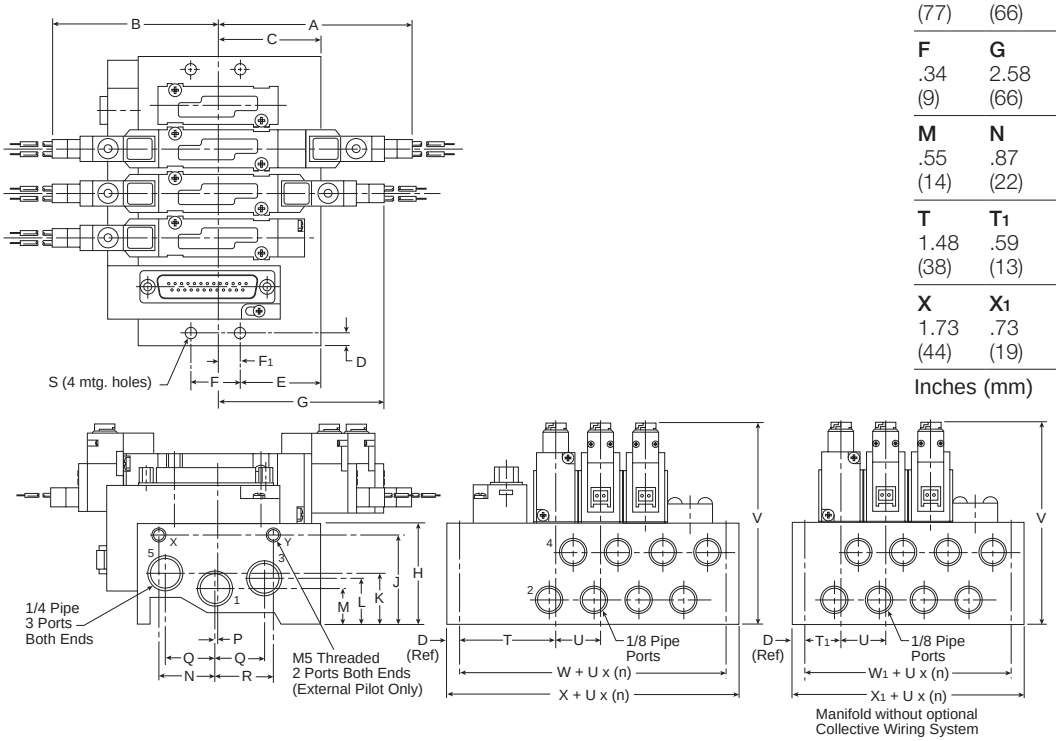
R	S	T	T1	U
.71 (18)	Ø .18 Ø (4.5)	1.34 (34)	.39 (10)	.49 (12.5)

U1	V	W	W1	X
.41 (10.5)	2.64 (67)	1.32 (34)	.37 (10)	1.65 (42)

X1
.67 (18)

Inches (mm)

A12P Manifold – Side Ports



A12P – Manifold, Side Ports

A	B	C	D	E	F
3.01 (77)	2.58 (66)	1.59 (40)	.20 (5)	1.25 (32)	.77 (20)

F	G	H	J	K	L
.34 (9)	2.58 (66)	1.57 (40)	1.38 (35)	.79 (20)	.71 (18)

M	N	P	Q	R	S
.55 (14)	.87 (22)	.04 (1)	.77 (20)	.91 (23)	Ø .18 Ø (4.5)

T	T1	U	V	W	W1
1.48 (38)	.59 (13)	.69 (17.5)	3.09 (79)	1.34 (34)	.33 (9)

X	X1
1.73 (44)	.73 (19)

Inches (mm)

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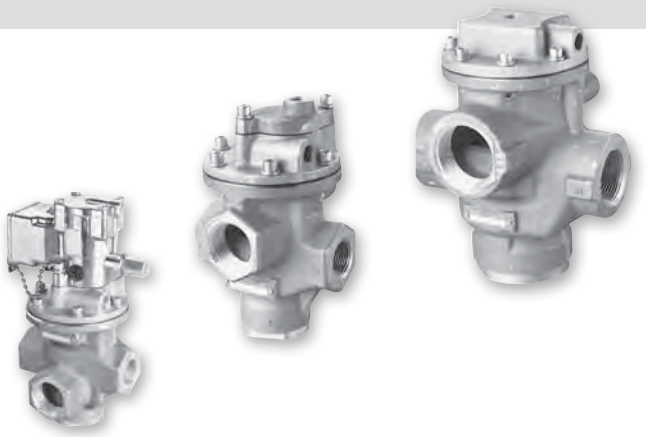
N Series

For decades Parker Pneumatics and Heavy Industrial have been synonymous with durability and long life. High flow-speed N Series poppet valves have been operating in foundries, steel mills, and automotive casting & stamping plants without fail.



Features
- Continuous duty rated option
- Non-lube service
- Hi-flow, short stroke poppet
- Indicator lights available

Specifications
- 2-way NC
- 3-way NO & NC
- Selector function

Ports
- 3/8" Body – 3/8", 1/2" NPT
- 3/4" Body – 1/2", 3/4", 1" NPT
- 1-1/4" Body – 1", 1-1/4", 1-1/2" NPT
- BSPP “G” threads available

Certification / approval
- Approved to be CE marked (Standard L-Pilot & P-Pilot)
- NEMA 4 Option
- Hazardous Duty Option IP 65 Rating / NEMA 4

Material specifications

Valve body	Cast aluminum
Poppet assembly	Aluminum and stainless steel
Pilot Valve	Zinc, stainless steel, brass, copper, zinc plated steel
Seals	Nitrile

Lubrication

The high speed poppet valves are pre-lubricated to permit use with non-lubricated air. However, air should be lubricated to assure maximum seal life.

F442 lubricating oil is recommended. This oil is specially formulated to provide peak performance and maximum service life from air-operated equipment.

Installation

***CAUTION:* DO NOT RESTRICT THE INLET TO POPPET VALVES**

Restriction of the inlet can starve the air supply to the pilot section of internally piloted poppet valves and result in slow shifting or failure of the valve to shift properly. Always connect the supply line directly to the inlet of the valve using the full pipe size of the valve inlet. Never use a quick coupling to connect a poppet valve to the air supply. On valves with a small inlet port, use of an upstream surge tank may be required at lower operating pressures to insure an adequate air supply and proper operation.

☐ Most popular.

Operating information

Operating pressure:

Solenoid valves - internal pilot

3/8" Basic	3/4" Basic
20 to 140 PSIG (standard	25 to 140 PSIG (200 PSIG option available)

Solenoid valves - external supply

Air pressure thru valve (PSI)	External pilot pressure required (PSI)*	
	3/8" Basic	3/4" Basic
25 PSI	35-200	35-200
50 PSI	45-200	40-200
75 PSI	55-200	50-200
100 PSI	65-200	65-200

Vacuum up to 1" HG, less than a perfect vacuum.
* With 200 PSI option. Do not exceed 140 PSI with standard pilots.

Internal pilot - remote pilot valve

Air pressure thru valve (PSI)	Remote pilot pressure (PSI)		
	3/8" Basic	3/4" Basic	1-1/4" Basic
25 PSI	30-250	30-250	30-250
50 PSI	50-250	50-250	50-250
75 PSI	70-250	75-250	70-250
100 PSI	95-250	95-250	90-250
150 PSI	140-250	145-250	130-250
200 PSI	175-250	185-250	175-250
250 PSI	215-250	230-250	205-250

Operating temperature:

Operator type	Duty cycle*	Minimum ambient temperature	Maximum ambient temperature
Standard service	Intermittent	0°F (-18°C)	125°F (52°C)
Solenoid	Continuous	0°F (-18°C)	100°F (38°C)
Special service	Intermittent	0°F (-18°C)	125°F (52°C)
Solenoid	Continuous	0°F (-18°C)	125°F (52°C)
Remote pilot	Not applicable	0°F (-18°C)	200°F (93°C)

* Applications with pilot valves energized for ten (10) minutes or longer with a duty cycle greater than 70% are considered to be continuously energized.

$$\text{Duty cycle} = \frac{\text{Time energized}}{\text{Time energized + time off}} \times 100\% = \%\ \text{Duty Cycle}$$

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Single Solenoid, Non-locking manual override, internal "P" pilot 140 PSI, standard service, junction box w/ light.

Normally Closed Normally Open

Body size	Cv	In / cyl ports	Exhaust port	Voltage	2-way, 2-position normally closed	3-way, 2-position normally closed	3-way, 2-position normally open
3/8"	3.0 to 4.4	3/8"	1/2"	120VAC	**N3153904553**	**N3553904553**	**N3753904553**
				24VDC	**N3153904549**	**N3553904549**	**N3753904549**
		1/2"	1/2"	120VAC	**N3154904553**	**N3554904553**	**N3754904553**
				24VDC	**N3154904549**	**N3554904549**	**N3754904549**
3/4"	9.0 to 11.0	1/2"	3/4"	120VAC	**N3155904553**	**N3555904553**	**N3755904553**
				24VDC	**N3155904549**	**N3555904549**	**N3755904549**
		3/4"	1"	120VAC	**N3156904553**	**N3556904553**	**N3756904553**
				24VDC	**N3156904549**	**N3556904549**	**N3756904549**
		1"	1"	120VAC	**N3157904553**	**N3557904553**	**N3757904553**
				24VDC	**N3157904549**	**N3557904549**	**N3757904549**

Single Solenoid, Non-locking manual override, internal "P" pilot 125 PSI, standard service, P-pilot junction box w/ light.

Normally Closed Normally Open

Body size	Cv	In / cyl ports	Exhaust port	Voltage	2-way, 2-position normally closed	3-way, 2-position normally closed	3-way, 2-position normally open
1-1/4"	20.0 to 30.0	1"	1-1/4"	120VAC	**N3257904753**	**N3657904753**	**N3857904753**
		1-1/4"	1-1/2"	120VAC	**N3258904753**	**N3658904753**	**N3858904753**
		1-1/2"	1-1/2"	120VAC	**N3259904753**	**N3659904753**	**N3859904753**

Single Remote Pilot, 1/4" NPT remote pilot port with internal pilot return.

Normally Closed Normally Open

Body size	Cv	In / cyl ports	Exhaust port	2-way, 2-position normally closed	3-way, 2-position normally closed	3-way, 2-position normally open
3/8"	3.0 to 4.4	3/8"	1/2"	**N31431091**	**N35431091**	**N37431091**
		1/2"	1/2"	**N31441091**	**N35441091**	**N37441091**
3/4"	9.0 to 11.0	1/2"	3/4"	**N31451091**	**N35451091**	**N37451091**
		3/4"	1"	**N31461091**	**N35461091**	**N37461091**
		1"	1"	**N31471091**	**N35471091**	**N37471091**

Single Remote Pilot, 1/4" NPT remote pilot port with internal pilot return.

Normally Closed Normally Open

Body size	Cv	In / cyl ports	Exhaust port	2-way, 2-position normally closed	3-way, 2-position normally closed	3-way, 2-position normally open
1-1/4"	20.0 to 30.0	1"	1-1/4"	**N32471091**	**N36471091**	**N38471091**
		1-1/4"	1-1/2"	**N32481091**	**N36481091**	**N38481091**
		1-1/2"	1-1/2"	**N32491091**	**N36491091**	**N38491091**

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"N" Series 3/8", 3/4" & 1-1/4" Body Sizes - Solenoid 'L' Pilot

N 315 3 9 0 45 53

Valve function - solenoid	
3/8" & 3/4" Body	
2-way, normally closed	315
3-way, normally closed	355
3-way, normally open	375
1-1/4" Body	
2-way, normally closed	325
3-way, normally closed	365
3-way, normally open	385

Port size / thread type	
3/8" Body size	
3/8" Inlet & cyl - 1/2" exhaust - NPT	3
1/2" inlet & cyl - 1/2" exhaust - NPT	4
1/2" inlet & cyl - 1/2" exhaust - BSPP	N
3/4" body size	
1/2" inlet & cyl - 3/4" exhaust - NPT	5
3/4" inlet & cyl - 1" exhaust - NPT	**6**
3/4" inlet & cyl - 1" exhaust - BSPP	Q
1" inlet & cyl - 1" exhaust - NPT	7
1-1/4"body size	
1" inlet & cyl - 1 1/4" exhaust - NPT	**7**
1-1/4" inlet & cyl – 1-1/2" exhaust - NPT	**8**
1-1/4" inlet & cyl – 1-1/2" exhaust - BSPP	S*
1-1/2" inlet & cyl – 1-1/2" exhaust - NPT	**9**
1-1/2" inlet & cyl – 1-1/2" exhaust - BSPP	T*

* Not available with valve function 325.

Note: BSPP is to the ISO 228 standard, and requires an R-BSPT male fitting.

Solenoid enclosure	
1	**Basic pilot**
2	Basic pilot NLMO
3	Basic pilot LMO
5	Junction box NLMO
6	Junction box LMO
8	**Junction box NLMO w/ light**
9	**Junction box LMO w/ light**
W	Basic pilot ext. LMO

Solenoid type	
0	**Standard**

"L" pilot configuration	
01*	External pilot, std service, 140 PSI
04*	External pilot, cont duty, 140 PSI
45	**Internal pilot, std service, 140 PSI**
48	**Internal pilot, cont duty, 140 PSI**

* Not available with valve function 325, 365, and 385 (1-1/4" body).

"L" pilot code						
	Voltage			Solenoid enclosure options		
Code	AC 60hz	AC 50hz	DC	Standard duty (01, 45)	Cont. duty (04, 48)	200 PSI (46)
49			**24**	**1, 2, 3, 5, 6, 8, 9, W**	**6, 8, 9**	**9**
53	**120**	**110**		**1, 2, 3, 5, 6, 8, 9, E, N, W**	**1, 6, 8, 9, N**	**8, 9, E**
57	240	220		1, 3, W		

"N" Series 1-1/4" Body Sizes - Solenoid Hi-Flow 'P' Pilot

N 365 8 9 0 47 53

Valve function - solenoid	
1-1/4" body	
2-Way, normally closed	**325**
3-Way, normally closed	**365**
3-Way, normally open	**385**

Port size / thread type	
1-1/4" body size	
1" inlet & cyl - 1 1/4" exhaust - NPT	**7**
1-1/4" inlet & cyl – 1-1/2" exhaust - NPT	**8**
1-1/4" inlet & cyl – 1-1/2" exhaust - BSPP	S
1-1/2" inlet & cyl – 1-1/2" exhaust - NPT	**9**
1-1/2" inlet & cyl – 1-1/2" exhaust - BSPP	T

Note: BSPP is to the ISO 228 standard, and requires an R-BSPT male fitting.

Solenoid enclosure	
5	Junction box NLMO
6	Junction box LMO
8	**Junction box NLMO w/ light**
9	**Junction box LMO w/ light**

Solenoid type	
0	**Standard**

"P" pilot configuration	
02	External pilot, std service, 125 PSI
47	**Internal pilot, std service, 125 PSI**

"P" pilot code				
	Voltage			Enclosure options
Code	AC 60hz	AC 50hz	DC	Standard duty
49			24	5, 6
53	**120**	**110**		**5, 6, 8, 9**

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Replacement Pilots

Description	Standard L-pilot		Continuous duty L-pilot	
Override type	**Locking**	**Non-locking**	**Locking**	**Non-locking**
Basic with override	**K0653035****	**K0652035****	**K0853025****	**K0852025****
JIC with junction box & override	**K0656035****	**K0655035****	**K0856025****	**K0855025****
JIC pilot with junction box & override & indicator lights (120VAC only)	**K0659035****	**K0658035****	**K0859025****	**K0858025****

** Voltage code - (reference model index for availability)

Replacement Pilots

Description	Hazardous duty L-pilot		NEMA 4 L-pilot	
Hazardous duty L-pilot - UL & CSA	**K0451025****	N/A		
Override type	**Locking**	**Non-Locking**	**Locking**	**Non-Locking**
Hazardous duty with override	**K0453025****	**K0452025****		
NEMA 4 with override			**K2553025****	**K255202549**

** Voltage code - 49 & 53

Replacement Pilots

Description	Heavy duty P-Pilot		
Override type	**No override**	**Non-locking**	**Locking**
Basic with override	**K1351045****	N/A	N/A
JIC with junction box & override	N/A	**K1355045****	**K1356045****
JIC Pilot with junction box & override & indicator lights (120VAC only)	N/A	**K135804553**	**K135904553**

** Voltage code - 49 & 53

Coils for L-Pilot Operated Valves

Voltage Code **	Voltage			Coil	
	60Hz	50Hz	DC	19" Leads	72" Leads
40	12	—	—	K593007	—
41,42	24	—	6	K593003	—
45*	—	—	**12**	**K593010**	—
49*	—	—	**24 (Standard)**	**K593014**	—
79	—	—	24 (Arc Suppressed)	K593271	—
51*	—	—	48	—	K593185
53*	120	110	—	**K593025**	—
57*	240	240	—	**K593035**	—
60	240	220	—	**K593035**	—
61	—	—	**120**	**K593041**	—

* Indicates voltages approved for solenoid operators designed for use in hazardous locations.

Coils for P-Pilot Operated Valves

Voltage Code **	Voltage			Coil	
	60Hz	50Hz	DC	19" Leads	72" Leads
42	24	—	—	K593099	—
43	—	24	—	K593098	—
45	—	—	**12**	**K593094**	—
49	—	—	**24**	**K593097**	—
51	—	—	48	—	K593254
53	**115**	—	—	**K593108**	—
58	—	**230**	—	**K593111**	—

N □□□ □□ □□□ ******
Voltage Code

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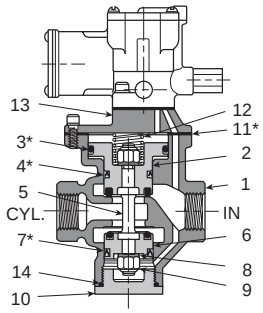
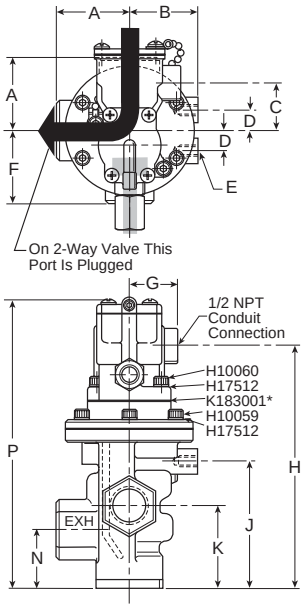
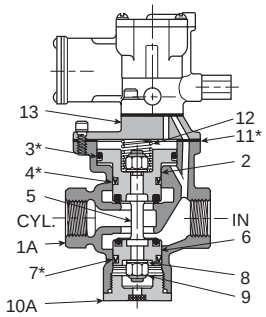
Internal Pilot - 3/8" & 3/4" Basic Body

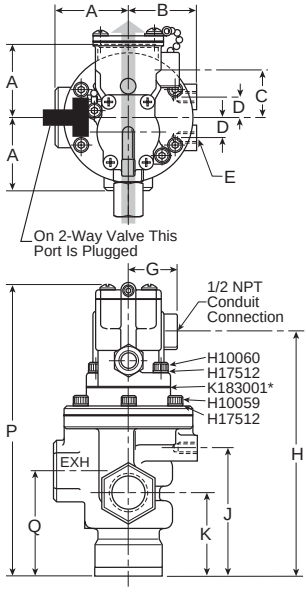
Normally Closed





Normally Open





Exhaust
Pressure

Top view indicates flow through 3-Way valve with coil de-energized.

NOTE: For normal valve operation, override must be in "out" position.

Internal Pilot - 3/8" & 3/4" Basic Body

	3/8" Body		3/4" Body	
Key	Inch	mm	Inch	mm
A	1.56	40	2.13	54
B	1.50	38	1.94	49
C	1.81	46	1.34	34
D	.56	14	.56	14
E	3/8-16UNC 7/16" deep		3/8-16UNC 9/16" deep	
F	1.75	44	2.25	57
G	1.50	38	1.50	38
H	5.92	150	7.14	181
J	3.19	81	3.75	95
K	1.88	47	2.44	62
N	1.44	37	1.78	45
P	7.36	196	8.58	218
Q	2.31	59	3.09	84

Service Kits

Include all parts normally required for in-service maintenance:

3/8" Basic valve with standard service L-Pilots..... **K352076**

3/8" Basic valve with continuous duty L-Pilots..... **K352276**

3/4" Basic valve with standard service L-Pilots..... **K352077**

3/4" Basic valve with continuous duty L-Pilots..... **K352277**

Key	3/8" Valve	3/4" Valve	Description
1	—	1/2" Tap K053075	Body (N.C.)
	3/8" Tap K053022	3/4" Tap K053076	
	1/2" Tap K053023	1" Tap K053220	
1A	—	3/4" Tap K053077	Body (N.O.)
	3/8" Tap K053025	3/4" Tap K053078	
	1/2" Tap K053026	1" Tap K053218	
2	K212001	K212002	Upper piston assy
3*	H13648	H13728	Seal

Key	3/8" Valve	3/4" Valve	Description
4*	H14510	H13676	U-cup (3/8), o-ring (3/4)
5	K493002	K493009	Stem
6	K202001	K202002	Lower piston assy.
7*	H14509	H13676	U-cup (3/8), o-ring (3/4)
8	H17811	H17813	Washer (2)
9	H06326	H06332	Stop nut (2)
10	K103035	K103053	Bottom cap (N.C.)
10A	K092020	K092034	Bottom cap assy. (N.O.)
11*	K183049	K183057	Gasket
12	K473014	K473015	Spring
13	K563015	K563017	Adapter
14*	K41RB72121	K41RB72221	O-ring

* Parts included in seal kit

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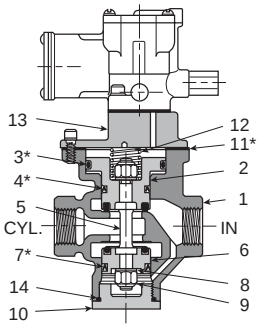
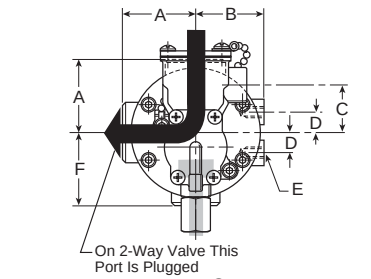
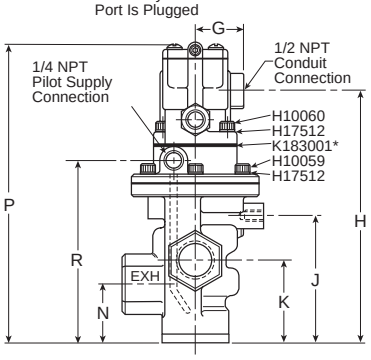
External Pilot - 3/8" & 3/4" Basic Body

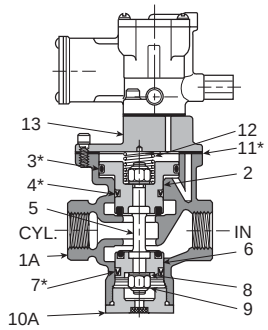
Normally Closed

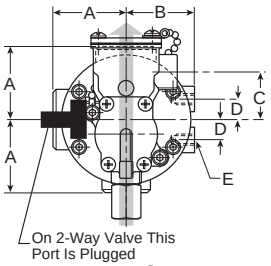


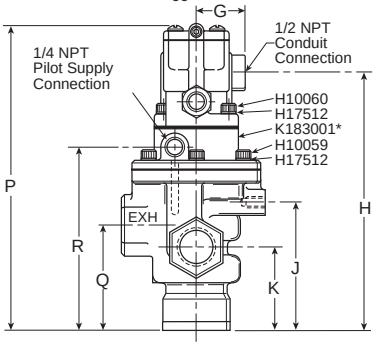




Normally Open







Exhaust
Pressure

Top view indicates flow through 3-Way valve with coil de-energized.

NOTE: For normal valve operation, override must be in "out" position.

External Pilot - 3/8" & 3/4" Basic Body

Key	3/8" Body		3/4" Body	
	Inch	mm	Inch	mm
A	1.56	40	2.13	54
B	1.50	38	1.94	49
C	1.81	46	1.34	34
D	.56	14	.56	14
E	3/8-16UNC 7/16" deep		3/8-16UNC 9/16" deep	
F	1.75	44	2.25	57
G	1.50	38	1.50	38
H	6.42	163	7.45	189
J	3.19	81	3.75	95
K	1.88	47	2.44	62
N	1.44	37	1.78	45
P	7.86	200	8.89	226
Q	2.31	59	3.09	84
R	4.34	110	5.38	137

Service Kits

Include all parts normally required for in-service maintenance:

3/8" Basic valve with standard service L-Pilots..... **K352076**

3/8" Basic valve with continuous duty L-Pilots..... **K352276**

3/4" Basic valve with standard service L-Pilots..... **K352077**

3/4" Basic valve with continuous duty L-Pilots..... **K352277**

Key	3/8" Valve	3/4" Valve	Description
1	—	1/2" Tap K053067	Body (N.C.)
	3/8" Tap K053019	3/4" Tap K053069	
	1/2" Tap K053157	1" Tap K053221	
1A	—	3/4" Tap K053065	Body (N.O.)
	3/8" Tap K053018	3/4" Tap K053070	
	1/2" Tap K053064	1" Tap K053219	
2	K212001	K212002	Upper piston assy
3*	H13648	H13728	Seal
4*	K41RB72211	H13676	O-ring
5	K493002	K493009	Stem
6	K202001	K202002	Lower piston assy.
7*	K41RB72210	H13676	O-ring
8	H17811	H17813	Washer (2)
9	H06326	H06332	Stop nut (2)
10	K103035	K103053	Bottom cap (N.C.)
10A	K092020	K092034	Bottom cap assy. (N.O.)
11	K473014	K473015	Spring
12*	K183049	K183057	Gasket
13	K563016	K563021	Adapter
14*	K41RB72121	K41RB72221	O-ring

* Parts included in seal kit

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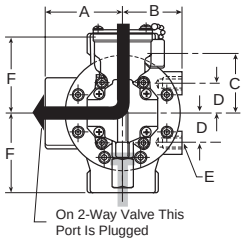
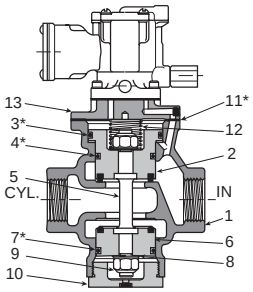
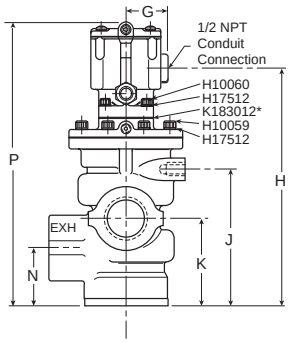
Internal Pilot - 1-1/4" Basic Body

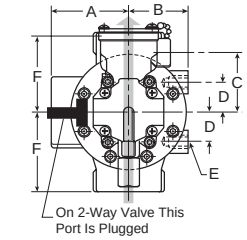
Normally Closed

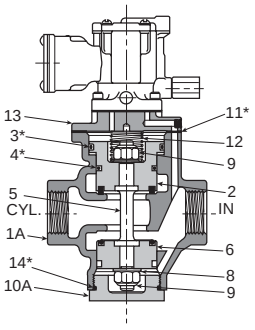


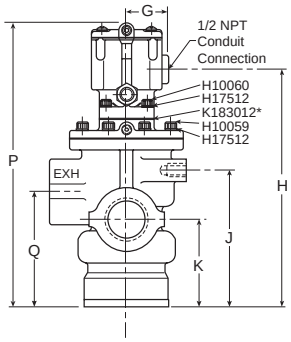




Normally Open







Exhaust
Pressure

Top view indicates flow through 3-Way valve with coil de-energized.

NOTE: For normal valve operation, override must be in "out" position.

Internal Pilot - 1-1/4" Basic Body

	1-14" Body	
Key	**Inch**	**mm**
A	3.00	76
B	2.25	57
C	1.34	34
D	1.19	30
E	1/2-13 UNC	3/4 Deep
F	3.13	80
G	1.50	38
H	9.30	236
J	5.34	136
K	3.44	87
N	2.31	59
P	11.14	283
Q	4.56	116

Service Kits

Include all parts normally required for in-service maintenance:

1-1/4" Basic valve with standard service P-Pilots..... **K352078**

Key	1-1/4" Valve	Description
1	1" Tap K053111	Body (N.C.)
	1-1/4" Tap K053112	
	1-1/2" Tap K053113	
1A	1" Tap K053114	Body (N.O.)
	1-1/4" Tap K053115	
	1-1/2" Tap K053116	
2	K313029	Upper piston assy
3*	H13752	O-ring

Key	1-1/4" Valve	Description
4*	H13728	Seal
5	K493016	Stem
6	K313028	Lower piston
7*	H13728	Seal
8	H17817	Washer
9	H06338	Stop nut
10	K092046	Bottom cap (N.C.)
10A	K103061	Bottom cap (N.O.)
11*	K183058	Gasket
12	K473016	Spring
13	K012003	Adapter
14*	K41RB72143	O-ring

* Parts included in seal kit

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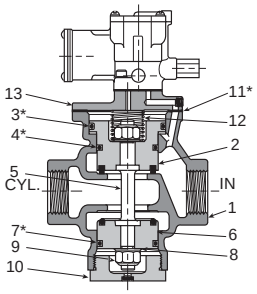
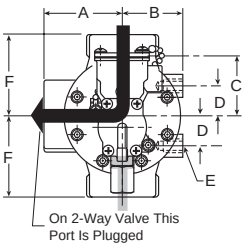
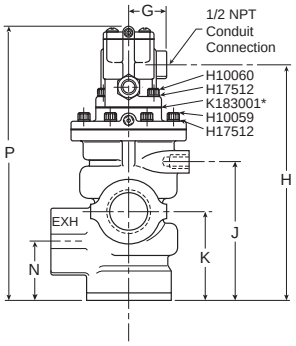
Continuous Duty Pilot - 1-1/4" Basic Body

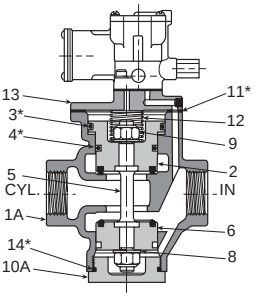
Normally Closed

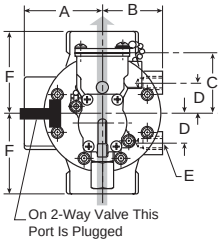


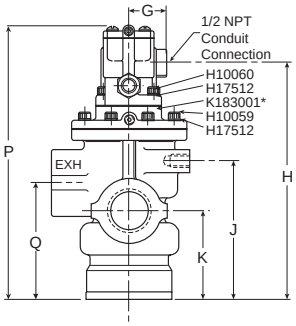




Normally Open







Exhaust
Pressure

Top view indicates flow through 3-Way valve with coil de-energized.

NOTE: For normal valve operation, override must be in "out" position.

Continuous Duty Pilot - 1-1/4" Basic Body

	1-1/4" Body	
Key	**Inch**	**mm**
A	3.00	76
B	2.25	57
C	1.34	34
D	1.19	30
E	1/2-13 UNC	3/4 Deep
F	3.13	80
G	1.50	38
H	9.02	229
J	5.34	136
K	3.44	87
N	2.31	59
P	10.45	265
Q	4.56	116

Service Kits

Include all parts normally required for in-service maintenance:

1-1/4" Basic valve with continuous duty L-Pilot **K352080**

Key	1-1/4" Valve	Description
1	1" Tap K053111	Body (N.C.)
	1-1/4" Tap K053112	
	1-1/2" Tap K053113	
1A	1" Tap K053114	Body (N.O.)
	1-1/4" Tap K053115	
	1-1/2" Tap K053116	
2	K313029	Upper piston assy
3*	H13752	O-Ring

Key	1-1/4" Valve	Description
4*	H13728	Seal
5	K493016	Stem
6	K313028	Lower piston
7*	H13728	Seal
8	H17817	Washer
9	H06338	Stop nut
10	K092046	Bottom cap (N.C.)
10A	K103061	Bottom cap (N.O.)
11*	K183058	Gasket
12	K473016	Spring
13	K012003	Adapter
14*	K41RB72143	O-ring

* Parts included in seal kit

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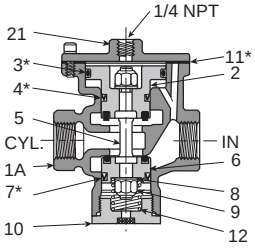
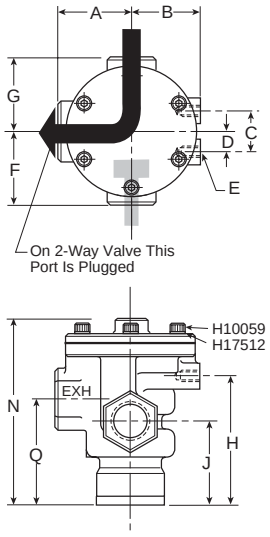
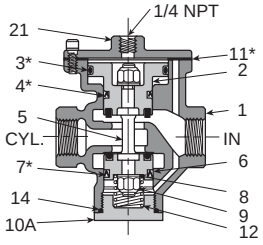
Internal Return - 3/8", 3/4", 1-1/4" Basic Body

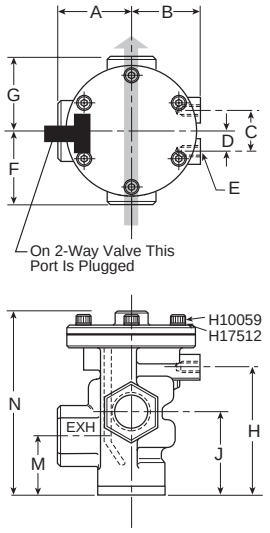
Normally Closed





Normally Open





Exhaust
Pressure

Top view indicates flow through 3-Way valve.

NOTE: For normal valve operation, override must be in "out" position.

Internal Return - 3/8", 3/4", 1-1/4" Basic Body

Key	3/8" Body		3/4" Body		1-1/4" Body	
	Inch	mm	Inch	mm	Inch	mm
H	3.19	81	3.75	95	5.34	136
J	1.88	48	2.44	62	3.44	87
M	1.44	37	1.78	45	2.66	67
N	4.22	107	5.31	135	7.19	183
Q	2.31	59	3.09	78	4.56	116

Service Kits

Include all parts normally required for in-service maintenance:

3/8" Basic valve..... **K352073**
3/4" Basic valve..... **K352074**
1-1/4" Basic valve **K352075**

Key	3/8" Valve	3/4" Valve	1-1/4" Valve	Description
1	—	1/2" Tap K053075	1" Tap K053111	Body (N.O.)
	3/8" Tap K053022	3/4" Tap K053076	1-1/4" Tap K053112	
	1/2" Tap K053023	1" Tap K053220	1-1/2" Tap K053113	
1A	—	1/2" Tap K053077	1" Tap K053114	Body (N.C.)
	3/8" Tap K053025	3/4" Tap K053078	1-1/4" Tap K053115	
	1/2" Tap K053026	1" Tap K053218	1-1/2" Tap K053116	
2	K212001	K212002	K313029	Upper piston assy
3*	H13648	H13728	H13752	Seal
4*	H14510	H13676	H13728	Seal

Key	3/8" Valve	3/4" Valve	1-1/4" Valve	Description
5	K493002	K493009	K493016	Stem
6	K202001	K202002	K313028	Lower piston assy.
7*	H13499	H13676	H13728	Seal
8	H17811	H17813	H17817	Washer (2)
9	H06326	H06332	H06338	Stop nut (2)
10	K092020	K092034	K092046	Bottom cap (N.C.)
10A	K103035	K103053	K103061	Bottom cap (N.O.)
11*	K183049	K183057	K183058	Gasket
12	K473014	K473015	K473016	Spring
14*	K41RB72121	K41RB72221	K41RB72143	O-ring
21	K123018	K123021	K123024	Cover

* Parts included in seal kit

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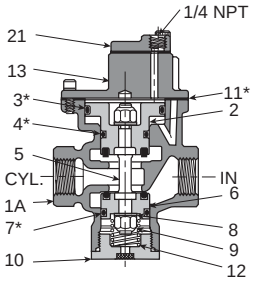
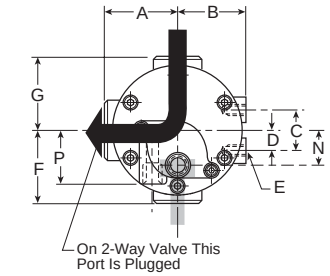
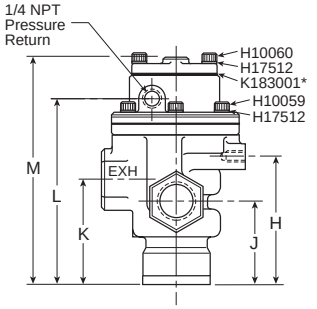
External Return - 3/8", 3/4", 1-1/4" Basic Body

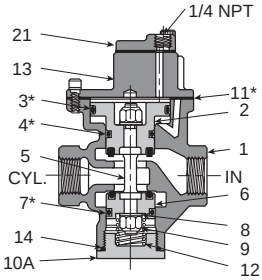
Normally Closed

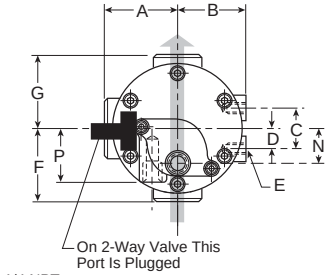


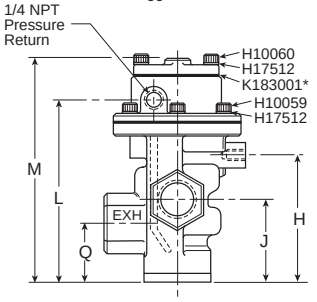




Normally Open







Exhaust
Pressure

Top view indicates flow through 3-Way valve.

NOTE: For normal valve operation, override must be in "out" position.

Internal Return - 3/8", 3/4", 1-1/4" Basic Body

Key	3/8" Body		3/4" Body		1-1/4" Body	
	Inch	mm	Inch	mm	Inch	mm
A	1.56	40	2.13	54	3.00	76
B	1.50	38	1.94	49	2.25	57
C	1.13	29	1.13	29	2.38	60
D	.56	14	.56	14	1.19	30
E	3/8–16UNC 7/16" deep		3/8– 16UNC 9/16" deep		1/2–13UNC 3/4" deep	
F	1.75	44	2.25	57	3.13	79
G	1.56	40	2.13	54	3.13	79
H	3.19	81	3.75	95	5.34	136
J	1.88	48	2.44	62	3.44	87
K	2.31	59	3.09	78	4.56	116
L	4.34	110	5.38	137	7.31	186
M	5.31	135	6.34	161	7.88	200
N	Left of center				On center	
	.53	13	1.00	25		
Q	1.44	37	1.78	45	2.31	59

Service Kits

Include all parts normally required for in-service maintenance:

3/8" Basic valve..... **K352031**
3/4" Basic valve..... **K352056**
1-1/4" Basic valve **K352083**

Key	3/8" Valve	3/4" Valve	1-1/4" Valve	Description
1	1/4" Tap K053011	1/2" Tap K053067	1" Tap K053143	Body (N.O.)
	—	3/4" Tap K053069	1-1/4" Tap K053110	
	1/2" Tap K053157	1" Tap K053221	1-1/2" Tap K053146	
1A	1/4" Tap K053010	1/2" Tap K053065	1" Tap K053159	Body (N.C.)
	—	3/4" Tap K053070	1-1/4" Tap K053144	
	1/2" Tap K053064	1" Tap K053219	1-1/2" Tap K053145	
2	K212001	K212002	K313029	Upper piston assy
3*	H13648	H13728	H13752	Seal
4*	H13529	H13676	H13728	Seal

Key	3/8" Valve	3/4" Valve	1-1/4" Valve	Description
5	K493002	K493009	K493016	Stem
6	K202001	K202002	K313028	Lower piston assy.
7*	H13499	H13676	H13728	Seal
8	H17811	H17813	H17817	Washer (2)
9	H06326	H06332	H06338	Stop nut (2)
10	K092020	K092034	K092046	Bottom cap assy. (N.C.)
10A	K103035	K103053	K103061	Bottom cap (N.O.)
11*	K183049	K183057	K183058	Gasket
12	K473014	K473015	K473016	Spring
13	K563016	K563021	K563027	Adapter
14*	K41RB72121	K41RB72221	K41RB72143	O-ring
21	K323027	K323027	Not used	Cover

* Parts included in seal kit

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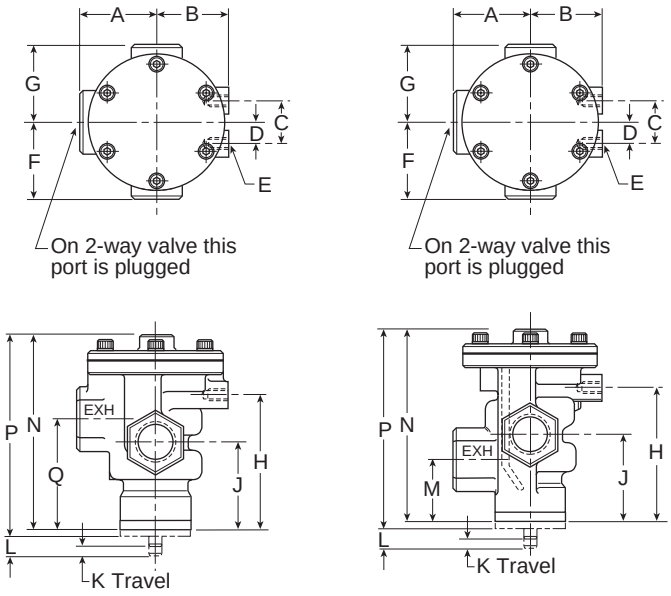
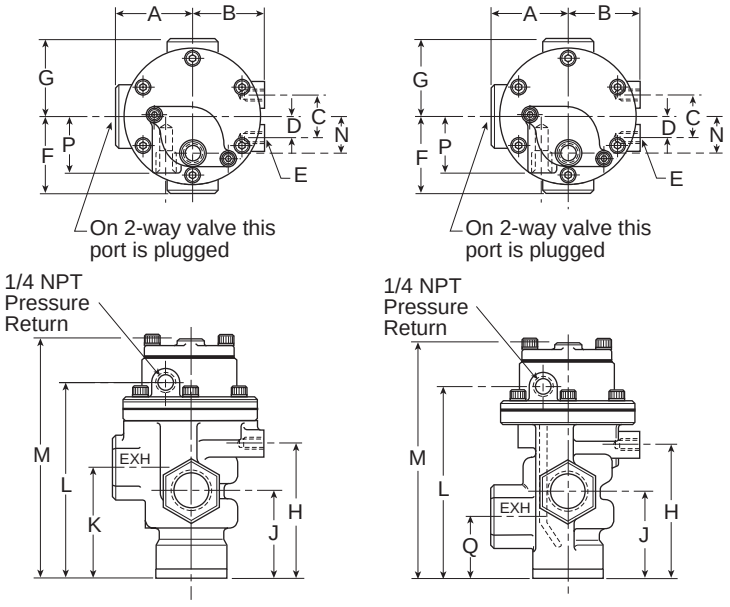
Internal Return - 3/8" & 3/4" Basic Body



Internal Return - 3/8" & 3/4" Basic Body

Key	3/8" Body		3/4" Body		1-1/4" Body	
	Inch	mm	Inch	mm	Inch	mm
A	1.56	40	2.13	54	3.00	76
B	1.50	38	1.94	49	2.25	57
C	1.13	29	1.13	29	2.38	60
D	.56	14	.56	14	1.19	30
E	3/8–16UNC 7/16" deep		3/8–16UNC 9/16" deep		1/2–13UNC 3/4" deep	
F	1.75	44	2.25	57	3.13	79
G	1.56	40	2.13	54	3.13	79
H	3.19	81	3.75	95	5.34	136
J	1.88	48	2.44	62	3.44	87
K	.50	13	.50	13	.50	13
L	.11	3	.16	4	.25	6
M	1.44	37	1.78	45	2.66	67
N	4.22	107	5.31	135	7.19	183
P	4.78	121	5.56	141	7.53	191
Q	2.31	59	3.09	78	4.56	116

External Return - 3/8" & 3/4" Basic Body



Internal Return - 3/8" & 3/4" Basic Body

Key	3/8" Body		3/4" Body		1-1/4" Body	
	Inch	mm	Inch	mm	Inch	mm
A	1.56	40	2.13	54	3.00	76
B	1.50	38	1.94	49	2.25	57
C	1.13	29	1.13	29	2.38	60
D	.56	14	.56	14	1.19	30
E	3/8–16UNC 7/16" deep		3/8–16UNC 9/16" deep		1/2–13UNC 3/4" deep	
F	1.75	44	2.25	57	3.13	79
G	1.56	40	2.13	54	3.13	79
H	3.19	81	3.75	95	5.34	136
J	1.88	48	2.44	62	3.44	87
K	2.31	59	3.09	78	4.56	116
L	4.34	110	5.38	137	7.31	186
M	5.31	135	6.34	161	7.88	200
N	Left of center .53	13	1.00	25	On center	
Q	1.44	37	1.78	45	2.31	59

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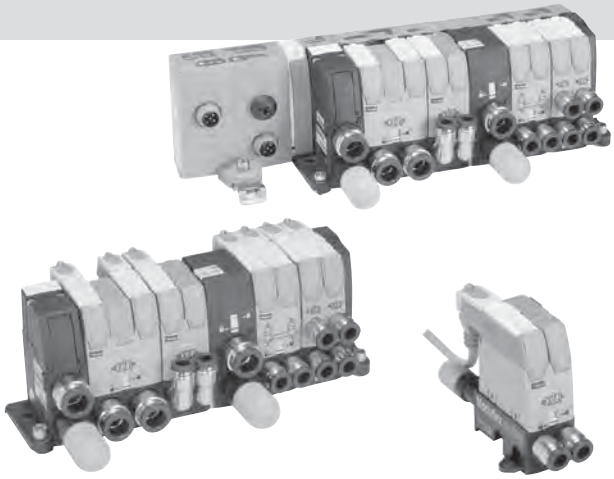
Moduflex Series



The Moduflex Valve System redefines flexibility for pneumatic users. Whether configured from basic components or ordered as a pre-assembled and tested valve manifold, Moduflex flexibility is unmatched in the market place.

Ports

- Size 1: Push-in connectors for 5/32, 1/4 inch, 4, 6mm OD tube
- Size 2: Push-in connectors for 1/4, 3/8, 1/2 inch, 6, 8, 10, 12 mm OD tube

Mounting

- S Series – Individual subbase
- T Series – Manifold mount with individual connectors
- V Series – Manifold mount with collective wiring or fieldbus

Fieldbus options

- DeviceNet, Profibus, CANopen, AS-i, Interbus-S

Solenoids

- 1.0 Watt
- 24 VDC
- Compatible with PNP or NPN outputs

Certification / approval

- IP65 rated
- CE, as marked

Operating information

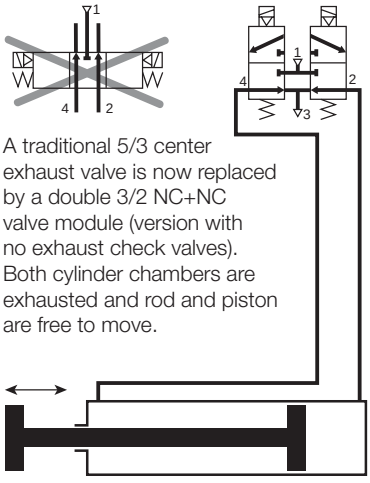
Operating pressure:	Vacuum to 123 PSIG (Vacuum to 8.3 bar)
Operating temperature:	5°F to 140°F (-15°C to 60°C)
Fieldbus operating temperature:	32°F to 130°F (0°C to 55°C)

Material specifications

End plates (T and V series)	Plastic
Fasteners	Nickel plated steel
Spool	Aluminum and nitrile rubber or ceramic plate
Subbase or manifold	Plastic
Valve body	Plastic

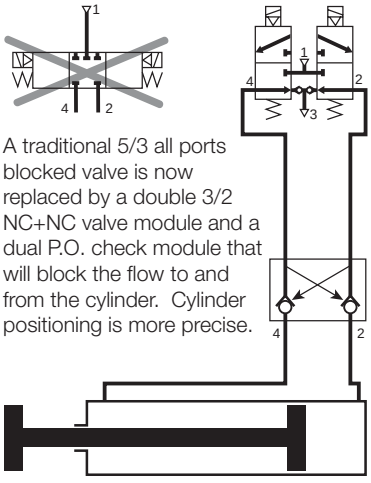
Dual 3/2 valves replace all 3-position valves for a better performance

3-position center exhaust



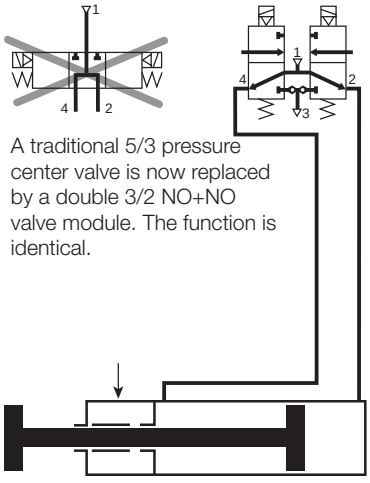
A traditional 5/3 center exhaust valve is now replaced by a double 3/2 NC+NC valve module (version with no exhaust check valves). Both cylinder chambers are exhausted and rod and piston are free to move.

3-position all ports blocked



A traditional 5/3 all ports blocked valve is now replaced by a double 3/2 NC+NC valve module and a dual P.O. check module that will block the flow to and from the cylinder. Cylinder positioning is more precise.

3-position pressure center



A traditional 5/3 pressure center valve is now replaced by a double 3/2 NO+NO valve module. The function is identical.

Most popular.

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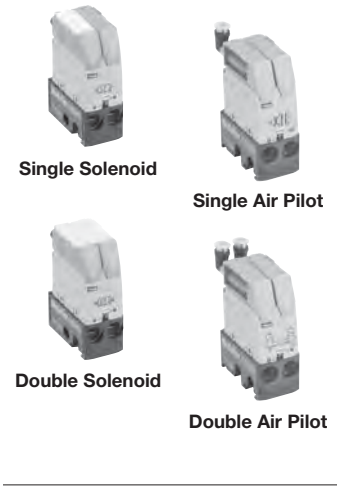
"S" Series Individual Subbase Valves Size 1 (Valve & Base without Pneumatic Connectors)



Symbol	Type	Cv	Operator	Part number
	4-way, 2-position	0.32	Single solenoid	**P2M1S4ES2C**
			Single air pilot	**P2M1S4PS**
	4-way, 2-position	0.32	Double solenoid	**P2M1S4EE2C**
			Double air pilot	**P2M1S4PP**
	3-way, 2-position, dual valve, NC/NC w/ exhaust check	0.22	Double solenoid	**P2M1SDEE2C**
			Double air pilot	**P2M1SDPP**
	3-way, 2-position, dual valve, NO/NO w/ exhaust check	0.22	Double solenoid	**P2M1SCEE2C**
			Double air pilot	**P2M1SCPP**
	3-way, 2-position, dual valve, NC/NO w/ exhaust check	0.22	Double solenoid	**P2M1SEEE2C**
	3-way, 2-position, NC w/ exhaust check	0.22	Single solenoid	**P2M1S3ES2C**
			Single air pilot	**P2M1S3PS**
	3-way, 2-position, dual valve, NC/NC	0.22	Double solenoid	**P2M1SGEE2C**

"S" Series Size 1 Accessories

	Description	Tube Size	Option	Part number
	Size 1 push to connect fitting	5/32"	Elbow	**CMD04-1**
			Straight	**FMD04-1**
	Size 1 push to connect fitting	1/4"	Elbow	**CMD07-1B**
			Straight	**FMD07-1B**
	Size 1 push to connect fitting	6mm	Elbow	**CMD06-1**
			Straight	**FMD06-1**
	Muffler for exhaust port			**MMDVA1**
	Plug			**PMDYY1**
	Double male union		Connecting peripheral modules	**HMDXX1**
	M8 female connector to flying lead - IP67 LED and surge protection		2m Cable	**P8LS08L226C**
			5m Cable	**P8LS08L526C**
			9m Cable	**P8LS08L926C**
	Field wireable connector		M8 Connector	**P8CS0803J**
			M12 Connector	**P8CS1204J**

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"S" Series Individual Subbase Valves Size 2 (Valve & Base without Pneumatic Connectors)

Single Solenoid

Single Air Pilot

Double Solenoid

Double Air Pilot

Symbol	Type	Cv	Operator	Part number
	4-way, 2-position	0.8	Single solenoid	**P2M2S4ES2C**
			Single air pilot	**P2M2S4PS**
	4-way, 2-position	0.8	Double solenoid	**P2M2S4EE2C**
			Double air pilot	**P2M2S4PP**
	3-way, 2-position, dual valve, NC/NC w/ exhaust check	0.44	Double solenoid	**P2M2SDEE2C**
			Double air pilot	**P2M2SDPP**
	3-way, 2-position, dual valve, NO/NO w/ exhaust check	0.44	Double solenoid	**P2M2SCEE2C**
			Double air pilot	**P2M2SCPP**
	3-way, 2-position, dual valve, NC/NO w/ exhaust check	0.44	Double solenoid	**P2M2SEEE2C**
	3-way, 2-position, NC w/ exhaust check	0.44	Single solenoid	**P2M2S3ES2C**
			Single air pilot	**P2M2S3PS**
	3-way, 2-position, dual valve, NC/NC	0.44	Double solenoid	**P2M2SGEE2C**

"S" Series Size 2 Accessories

	Description	Tube Size	Option	Part number
	Size 2 push to connect fitting	1/4" OD tube	Elbow	**CMD07-2B**
			Straight	**FMD07-2B**
	Size 2 push to connect fitting	3/8" OD tube	Elbow	**CMD09-2B**
			Straight	**FMD09-2B**
	Size 2 push to connect fitting	1/2" OD tube	Straight	**FMD13-2B**
	Size 2 push to connect fitting	6mm OD tube	Elbow	**CMD06-2**
			Straight	**FMD06-2**
	Size 2 push to connect fitting	8mm OD tube	Elbow	**CMD08-2**
			Straight	**FMD08-2**
	Size 2 push to connect fitting	10mm OD tube	Elbow	**CMD10-2**
			Straight	**FMD10-2**
	Size 2 push to connect fitting	12mm OD tube	Elbow	**CMD12-2**
			Straight	**FMD12-2**
	Muffler for exhaust port			**MMDVA2**
	Plug			**PMDYY2**
	Double male union		Connecting peripheral modules	**HMDXX2**
	M8 female connector to flying lead - IP67 LED and surge protection		2m Cable	**P8LS08L226C**
			5m Cable	**P8LS08L526C**
			9m Cable	**P8LS08L926C**
	Field wireable connector		M8 Connector	**P8CS0803J**
			M12 Connector	**P8CS1204J**

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"S" Series Individual Subbase Valve
(Complete with Pneumatic and Electrical Connectors)

P2M 1 S 4ES 2C 00 A F4

Basic series	
Moduflex	P2M

Size	
Size 1	1
Size 2	2

Valve series	
Individual subbase	S

Valve type / function	
3-way / 2-position	
Single solenoid, NC spring return	**3ES**
Single air pilot, NC spring return	3PS
4-way / 2-position	
Single solenoid, spring return	**4ES**
Single air pilot, spring return	4PS
Double solenoid	4EE
Double air pilot	4PP
Dual 3-way, 2-position, spring return	
Solenoid, NC / NC + PO check (4/3 APB)	BEE*
Air pilot, NC / NC + PO check (4/3 APB)	BPP*
Solenoid, NO / NO (4/3 Pressure Ctr.)	CEE
Air pilot NO / NO (4/3 Pressure Ctr.)	CPP
Solenoid, NC / NC with exhaust check	**DEE**
Air pilot, NC / NC with exhaust check	DPP
Solenoid, NO / NC with exhaust check	EEE
Solenoid, NC / NC without check (4/3 Exh. Ctr.)	GEE

* Valve includes peripheral P. O. Check Valve and union fittings.

Operator voltage	
24VDC	**2C**
Remote pilot - 5/32" (4mm) Tube	00

LED / Cable	
00	**No cable, no LED, no surge suppression**
V2	**2 Meter cable with LED and surge suppression**
V5	5 Meter cable with LED and surge suppression
V9	9 Meter cable with LED and surge suppression

Fitting configuration	
A*	**Straight fittings**
B*	**Elbow fittings**
C*†	**Straight fitting & muffler**
D*†	**Elbow fitting & muffler**

* Ports 1 & 3 fittings sizes are same as ports 2 & 4 (see example at left.)
† Fitting in port 1, muffler in port 3.

Ports (all ports)	
C0*	10mm Elbow fitting
C2*	12mm Elbow fitting
C4	**5/32" (4mm) Elbow fitting**
C6	6mm Elbow fitting
C7	**1/4" Elbow fitting**
C8*	8mm Elbow fitting
C9*	**3/8" Elbow fitting**
F0*	10mm Straight fitting
F2*	12mm Straight fitting
F3*	**1/2" Straight fitting**
F4	**5/32" (4mm) Straight fitting**
F6	6mm Straight fitting
F7	**1/4" Straight fitting**
F8*	8mm Straight fitting
F9*	**3/8" Straight fitting**

* Only available with size 2 valves.

Example for fitting configuration:

Size 1

CF7 Ports 1 & 3
1/4" straight fitting
& muffler
Ports 2 & 4
1/4" straight fittings

Size 2

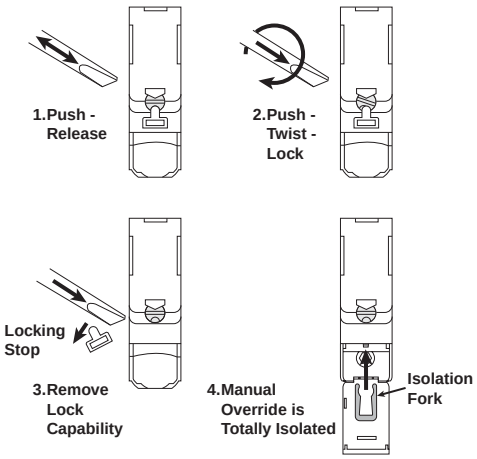
AC0 Ports 1 & 3
10mm elbow fittings
Ports 2 & 4
10mm elbow fittings

With only one universal solenoid pilot for all configurations

24VDC is now a global standard for all machines.

The Moduflex 24VDC unique solenoid pilot is supplied with the multi-function manual override that can be adapted to all requirements, as explained by the drawings.

Multi-function adaptable manual override



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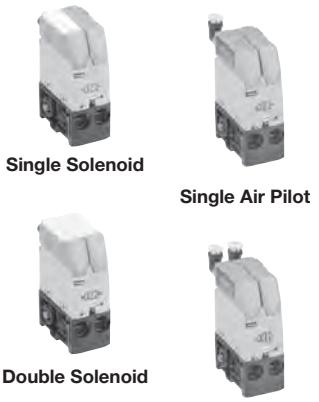
"T" Series Manifold Valves with Individual Connectors Size 1



Symbol	Type	Cv	Operator	Part number
	4-way, 2-position	0.32	Single solenoid	**P2M1T4ES2C**
			Single air pilot	**P2M1T4PS**
	4-way, 2-position	0.32	Double solenoid	**P2M1T4EE2C**
			Double air pilot	**P2M1T4PP**
	4-way, 2-position, dual valve w/ exhaust check	0.18	Double solenoid	**P2M1TJEE2C**
			Double air pilot	**P2M1TJPP**
	3-way, 2-position, dual valve, NC/NC w/ exhaust check	0.22	Double solenoid	**P2M1TDEE2C**
			Double air pilot	**P2M1TDPP**
	3-way, 2-position, dual valve, NO/NO w/ exhaust check	0.22	Double solenoid	**P2M1TCEE2C**
			Double air pilot	**P2M1TCPP**
	3-way, 2-position, dual valve, NC/NO w/ exhaust check	0.22	Double solenoid	**P2M1TEEE2C**
	3-way, 2-position, NC w/ exhaust check	0.22	Single solenoid	**P2M1T3ES2C**
			Single air pilot	**P2M1T3PS**
	3-way, 2-position, dual valve, NC/NC	0.22	Double solenoid	**P2M1TGEE2C**

"T" Series Size 1 Accessories

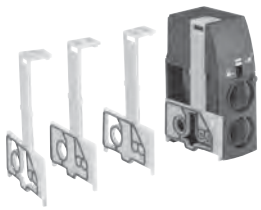
	Description	Tube size	Option	Part number
	Size 1 push to connect fitting	5/32" or 4mm	Elbow	**CMD04-1**
			Straight	**FMD04-1**
	Size 1 push to connect fitting	1/4"	Elbow	**CMD07-1B**
			Straight	**FMD07-1B**
	Size 1 push to connect fitting	6mm	Elbow	**CMD06-1**
			Straight	**FMD06-1**
	Muffler for exhaust port			**MMDVA1**
	Plug			**PMDYY1**
	Double male union		Connecting peripheral modules	**HMDXX1**
	M8 female connector to flying lead - IP67 LED and surge protection		2M cable	**P8LS08L226C**
			5M cable	**P8LS08L526C**
			9M cable	**P8LS08L926C**
	Field wireable connector		M8 connector	**P8CS0803J**
			M12 connector	**P8CS1204J**
	Torx screwdriver			**P2M1K0TASD**

Manifold Options

Module	Part number
Pneumatic end plate kit	**P2M2HXT01***
Pneumatic end plate kit with torx screwdriver	**P2M2HXT0T***
Intermediate supply module (Includes 4 configuration plates)	**P2M2BXT0A***

* Use Fittings for Size 2 Modules Only

P2M2HXT01


P2M2BXT0A

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"T" Series Manifold Valves with Individual Connectors Size 2

Single Solenoid

Single Air Pilot

Double Solenoid

Double Air Pilot

Symbol	Type	Cv	Operator	Part number
	4-way, 2-position	0.8	Single solenoid	**P2M2T4ES2C**
			Single air pilot	**P2M2T4PS**
	4-way, 2-position	0.8	Double solenoid	**P2M2T4EE2C**
			Double air pilot	**P2M2T4PP**
	3-way, 2-position, dual valve, NC/NC w/ exhaust check	0.44	Double solenoid	**P2M2TDEE2C**
			Double air pilot	**P2M2TDPP**
	3-way, 2-position, dual valve, NO/NO w/ exhaust check	0.44	Double solenoid	**P2M2TCEE2C**
			Double air pilot	**P2M2TCPP**
	3-way, 2-position, dual valve, NC/NO w/ exhaust check	0.44	Double solenoid	**P2M2TEEE2C**
	3-way, 2-position, NC w/ exhaust check	0.44	Single solenoid	**P2M2T3ES2C**
			Single air pilot	**P2M2T3PS**
	3-way, 2-position, dual valve, NC/NC	0.44	Double solenoid	**P2M2TGEE2C**

"T" Series Size 2 Accessories

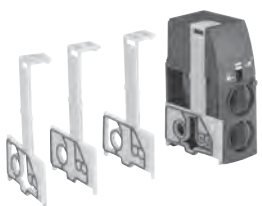
	Description	Tube size	Option	Part number
	Size 2 push to connect fitting	1/4"	Elbow	**CMD07-2B**
			Straight	**FMD07-2B**
	Size 2 push to connect fitting	3/8"	Elbow	**CMD09-2B**
			Straight	**FMD09-2B**
	Size 2 push to connect fitting	1/2"	Straight	**FMD13-2B**
	Size 2 push to connect fitting	6mm	Elbow	**CMD06-2**
			Straight	**FMD06-2**
	Size 2 push to connect fitting	8mm	Elbow	**CMD08-2**
			Straight	**FMD08-2**
	Size 2 push to connect fitting	10mm	Elbow	**CMD10-2**
			Straight	**FMD10-2**
	Size 2 Push to connect fitting	12mm	Elbow	**CMD12-2**
			Straight	**FMD12-2**
	Muffler for exhaust port			**MMDVA2**
	Plug			**PMDYY2**
	Double male union		Connecting peripheral modules	**HMDXX2**
	M8 female connector to flying lead - IP67 LED and surge protection		2M cable	**P8LS08L226C**
			5M cable	**P8LS08L526C**
			9M cable	**P8LS08L926C**
	Field wireable connector		M8 connector	**P8CS0803J**
			M12 connector	**P8CS1204J**
	Torx screwdriver			**P2M1K0TASD**

Manifold Options

Module	Part number
Pneumatic end plate kit	**P2M2HXT01***
Pneumatic end plate kit with torx screwdriver	**P2M2HXT0T***
Intermediate supply module (Includes 4 configuration plates)	**P2M2BXT0A***

* Use Fittings for Size 2 Modules Only

P2M2HXT01


P2M2BXT0A

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"T" Series Valve Manifold with Individual Connectors
(Complete with Pneumatic and Electrical Connectors)

P2M 1 T 4ES 2C 00 0 F4

Basic series	
Valvetronic modules	P2M

Size	
Size 1	1
Size 2	2

Valve series	
Individual wire	T

Valve type / function	
3-way / 2-position	
Single solenoid, NC spring return	**3ES**
Single air pilot, NC spring return	**3PS**
4-way / 2-position	
Single solenoid, spring return	**4ES**
Single air pilot, spring return	**4PS**
Double solenoid	**4EE**
Double air pilot	**4PP**
Dual 3-way, 2-position, spring return	
Solenoid, NC / NC + PO check (4/3 APB)	**BEE***
Air pilot, NC / NC + PO check (4/3 APB)	BPP*
Solenoid, NO / NO (4/3 Pressure Ctr.)	CEE
Air pilot NO / NO (4/3 Pressure Ctr.)	CPP
Solenoid, NC / NC with exhaust check	DEE
Air pilot, NC / NC with exhaust check	DPP
Solenoid, NO / NC with exhaust check	**EEE**
Solenoid, NC / NC without check (4/3 Exh. Ctr.)	**GEE**
Dual 4-way, 2-position, Spring Return	
Solenoid	**JEE****
Air pilot	**JPP****

* Valve includes peripheral P. O. check valve and union fittings.
** Size 1 only.

Operator Voltage	
2C	**24VDC**
00	Remote pilot - 5/32" (4mm) tube

Led / Cable	
00	**No cable, no led, no surge suppression**
V2	**2 Meter cable with led and surge suppression**
V5	5 Meter cable with led and surge suppression
V9	9 Meter cable with led and surge suppression

Ports 1 & 3	
0	**None**

Ports 2 & 4	
C0*	10mm Elbow fitting
C2*	12mm Elbow fitting
C4	**5/32" (4mm) Elbow fitting**
C6	6mm Elbow fitting
C7	**1/4" Elbow fitting**
C8*	8mm Elbow fitting
C9*	**3/8" Elbow fitting**
F0*	10mm Straight fitting
F2*	12mm Straight fitting
F3*	**1/2" Straight fitting**
F4	**5/32" (4mm) Straight fitting**
F6	6mm Straight fitting
F7	**1/4" Straight fitting**
F8*	8mm Straight fitting
F9*	**3/8" Straight fitting**

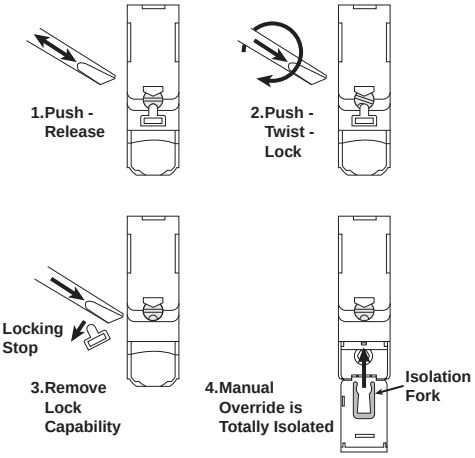
* Only available with size 2 valves.

With only one universal solenoid pilot for all configurations

24VDC is now a global standard for all machines.

The Moduflex 24VDC unique solenoid pilot is supplied with the multi-function manual override that can be adapted to all requirements, as explained by the drawings.

Multi-function adaptable manual override



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"V" Series Manifold Valves with Collective Wiring Size 1

Single Solenoid

Double Solenoid

Symbol	Type	Cv	Operator	Part number
	4-way, 2-position	0.32	Single solenoid	**P2M1V4ES2CV**
	4-way, 2-position	0.32	Double solenoid	**P2M1V4EE2CV**
	4-way, 2-position, dual valve, w/ exhaust check	0.18		**P2M1VJEE2CV**
	3-way, 2-position, dual valve, NC/NC w/ exhaust check	0.22	Double solenoid	**P2M1VDEE2CV**
	3-way, 2-position, dual valve, NO/NO w/ exhaust check	0.22	Double solenoid	**P2M1VCEE2CV**
	3-way, 2-position, dual valve, NC/NO w/ exhaust check	0.22	Double solenoid	**P2M1VEEE2CV**
	3-way, 2-position, NC w/ exhaust check	0.22	Single solenoid	**P2M1V3ES2CV**
	3-way, 2-position, dual valve, NC/NC	0.22	Double solenoid	**P2M1VGEE2CV**

"V" Series Size 1 Accessories

	Description	Tube size	Option	Part number
	Size 1 push to connect fitting	5/32"	Elbow	**CMD04-1**
			Straight	**FMD04-1**
	Size 1 push to connect fitting	1/4"	Elbow	**CMD07-1B**
			Straight	**FMD07-1B**
	Size 1 push to connect fitting	6mm	Elbow	**CMD06-1**
			Straight	**FMD06-1**
	Muffler for exhaust port			**MMDVA1**
	Plug			**PMDYY1**
	Double male union		Connecting peripheral modules	**HMDXX1**
	Electrical 20-pin multi-connector cable with flying leads	IP65 rated	2M cable	**P8LMH20M2A**
			5M cable	**P8LMH20M5A**
			9M cable	**P8LMH20M9A**
	Electrical 25-pin D-sub cable	IP20 rated	3M cable	**P8LMH25M3A**
			9M cable	**SCD259D**
		IP65 rated	3M cable	**SCD253W**
			9M cable	**SCD259WE**
	Field wireable connector for power supply	Female	M12 - A code	**P8CS1205AA**
	Line termination resistor	Profibus DP	M12 type B	**P8BPA00MB**
		Devicenet or Canopen	M12 type A	**P8BPA00MA**
	AS-i M12 cable with jack for addressing		1M cable	**P8LS12JACK**
	Torx screwdriver			**P2M1K0TASD**

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Electrical Connections

Description	Part number
20-pin, Multi-connector electrical head module	**P2M2HEV0A**
25-pin, D-sub, electrical head module	**P2M2HEV0D**

Fieldbus Connections

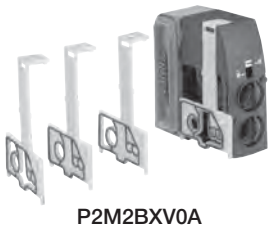
Description		Part number
Profibus DP		**P2M2HBVP21600**
DeviceNet		**P2M2HBVD21600**
CANopen		**P2M2HBVC21600**
Interbus S		**P2M2HBVS11600**
AS-i	0 inputs and 8 solenoid outputs	**P2M2HBVA10800**
AS-i	8 (PNP) inputs on eight (M8) connectors and 8 solenoid outputs	**P2M2HBVA10808A**
AS-i	8 (PNP) inputs on four (M12) connectors and 8 solenoid outputs	**P2M2HBVA10808B**
AS-i Version 2.1 ProtocolAS-i	0 inputs and 6 solenoid outputs	**P2M2HBVA20600**
AS-i Version 2.1 ProtocolAS-i	8 (PNP) inputs on eight (M8) connectors and 6 solenoid outputs	**P2M2HBVA20608A**
AS-i Version 2.1 ProtocolAS-i	8 (PNP) inputs on four (M12) connectors and 6 solenoid outputs	**P2M2HBVA20608B**

Manifold Options

Module	Part number
Pneumatic end plate kit	**P2M2HXT01***
Pneumatic end plate kit with torx screwdriver	**P2M2HXT0T***
Intermediate supply module (Includes 4 configuration plates)	**P2M2BXV0A***

* Use Fittings for Size 2 Modules Only

P2M2HXT01



P2M2BXV0A

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"V" Series Manifold Valves with Collective Wiring Size 2

Single Solenoid

Double Solenoid

Symbol	Type	Cv	Operator	Part number
	4-way, 2-position	0.8	Single solenoid	**P2M2V4ES2CV**
	4-way, 2-position	0.8	Double solenoid	**P2M2V4EE2CV**
	3-way, 2-position, dual valve, NC/NC w/ exhaust check	0.44	Double solenoid	**P2M2VDEE2CV**
	3-way, 2-position, dual valve, NO/NO w/ exhaust check	0.44	Double solenoid	**P2M2VCEE2CV**
	3-way, 2-position, dual valve, NC/NO w/ exhaust check	0.44	Double solenoid	**P2M2VEEE2CV**
	3-way, 2-position, NC w/ exhaust check	0.44	Single solenoid	**P2M2V3ES2CV**
	3-way, 2-position, dual valve, NC/NC	0.44	Double solenoid	**P2M2VGEE2CV**

"V" Series Size 2 Accessories

	Description	Tube size	Option	Part number
	Size 2 push to connect fitting	1/4" OD tube	Elbow	**CMD07-2B**
			Straight	**FMD07-2B**
	Size 2 push to connect fitting	3/8" OD tube	Elbow	**CMD09-2B**
			Straight	**FMD09-2B**
	Size 2 push to connect fitting	1/2" OD tube	Straight	**FMD13-2B**
	Size 2 push to connect fitting	6mm OD tube	Elbow	**CMD06-2**
			Straight	**FMD06-2**
	Size 2 push to connect fitting	8mm OD tube	Elbow	**CMD08-2**
			Straight	**FMD08-2**
	Size 2 push to connect fitting	10mm OD tube	Elbow	**CMD10-2**
			Straight	**FMD10-2**
	Size 2 push to connect fitting	12mm OD tube	Elbow	**CMD12-2**
			Straight	**FMD12-2**
	Muffler for exhaust port			**MMDVA2**
	Plug			**PMDYY2**
	Double Male Union		Connecting peripheral modules	**HMDXX2**
	Electrical 20-pin multi-connector cable with flying leads	IP65 rated	2M cable	**P8LMH20M2A**
			5M cable	**P8LMH20M5A**
			9M cable	**P8LMH20M9A**
	Electrical 25-pin D-sub cable	IP20 rated	3M cable	**P8LMH25M3A**
			9M cable	**SCD259D**
		IP65 rated	3M cable	**SCD253W**
			9M cable	**SCD259WE**
	Torx screwdriver			**P2M1K0TASD**

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Electrical Connections

Description	Part number
20-pin, Multi-connector electrical head module	**P2M2HEV0A**
25-pin, D-sub, electrical head module	**P2M2HEV0D**

Fieldbus Connections

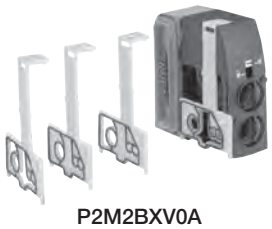
Description		Part number
Profibus DP		**P2M2HBVP21600**
DeviceNet		**P2M2HBVD21600**
CANopen		**P2M2HBVC21600**
Interbus S		**P2M2HBVS11600**
AS-i	0 inputs and 8 solenoid outputs	**P2M2HBVA10800**
AS-i	8 (PNP) inputs on eight (M8) connectors and 8 solenoid outputs	**P2M2HBVA10808A**
AS-i	8 (PNP) inputs on four (M12) connectors and 8 solenoid outputs	**P2M2HBVA10808B**
AS-i Version 2.1 Protocol AS-i	0 inputs and 6 solenoid outputs	**P2M2HBVA20600**
AS-i Version 2.1 Protocol AS-i	8 (PNP) inputs on eight (M8) connectors and 6 solenoid outputs	**P2M2HBVA20608A**
AS-i Version 2.1 Protocol AS-i	8 (PNP) inputs on four (M12) connectors and 6 solenoid outputs	**P2M2HBVA20608B**

Manifold Options

Module	Part number
Pneumatic end plate kit	**P2M2HXT01***
Pneumatic end plate kit with torx screwdriver	**P2M2HXT0T***
Intermediate supply module (Includes 4 configuration plates)	**P2M2BXV0A***

* Use Fittings for Size 2 Modules Only

P2M2HXT01



P2M2BXV0A

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"V" Series Valve Manifold with Collective Wiring
(Complete with Pneumatic Connectors)

P2M 1 V 4ES 2C V0 0 F4

Basic series	
Valvetronic modules	P2M

Size	
Size 1	1
Size 2	2

Valve series	
Collective wiring	V

Valve type / Function	
3-way / 2-position	
Single solenoid, NC spring return	3ES
4-way / 2-position	
Single solenoid, spring return	4ES
Double solenoid	4EE
Dual 3-way, 2-position, spring return	
Solenoid, NC / NC + PO check (4/3 APB)	BEE*
Solenoid, NO / NO (4/3 Pressure Ctr.)	CEE
Solenoid, NC / NC with exhaust check	DEE
Solenoid, NO / NC with exhaust check	EEE
Solenoid, NC / NC without check (4/3 Exh. Ctr.)	GEE
Dual 4-way, 2-position, spring return	
Solenoid	JEE**

* Valve includes peripheral P. O. Check valve and union fittings.
** Size 1 Only.

Ports 2 & 4	
C0*	10mm Elbow fitting
C2*	12mm Elbow fitting
C4	**5/32" (4mm) Elbow fitting**
C6	6mm Elbow fitting
C7	**1/4" Elbow fitting**
C8*	8mm Elbow fitting
C9*	**3/8" Elbow fitting**
F0*	10mm Straight fitting
F2*	12mm Straight fitting
F3*	**1/2" Straight fitting**
F4	**5/32" (4mm) Straight fitting**
F6	6mm Straight fitting
F7	**1/4" Straight fitting**
F8*	8mm Straight fitting
F9*	**3/8" Straight fitting**

* Only available with size 2 valves.

Ports 1 & 3	
0	None

LED / Cable	
V0	No cable with LED and surge suppression

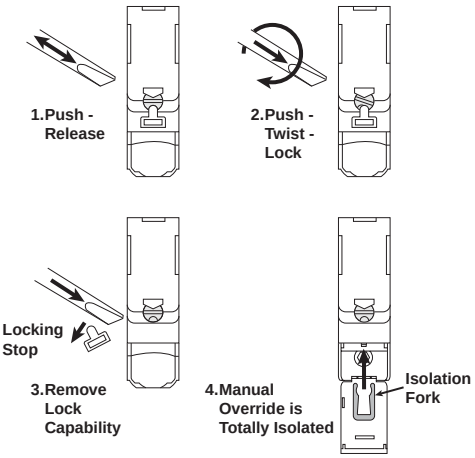
Operator voltage	
2C	24VDC

With only one universal solenoid pilot for all configurations

24VDC is now a global standard for all machines.

The Moduflex 24VDC unique solenoid pilot is supplied with the multi-function manual override that can be adapted to all requirements, as explained by the drawings.

Multi-function adaptable manual override



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Peripheral Modules Size 1

	Acessories	Description	Option	Part number
	Pressure regulator without gauge		0 to 30 PSI	**P2M1PXST**
			0 to 60 PSI	**P2M1PXSL**
			0 to 120 PSI	**P2M1PXSN**
	Pressure regulator with gauge		0 to 30 PSI	**P2M1PXSR**
			0 to 60 PSI	**P2M1PXSM**
			0 to 120 PSI	**P2M1PXSG**
	Gauge		0 to 30 PSI	**P2M1K0GT**
			0 to 60 PSI	**P2M1K0GL**
			0 to 120 PSI	**P2M1K0GN**
	Dual P.O. Check valve			**P2M1PXCA**
	Dual flow control			**P2M1PXFA**
	Vacuum generator		See ordering information below	**P2M1PXVA**
	Size 1 push to connect fitting	5/32" or 4mm OD tube	Elbow	**CMD04-1**
			Straight	**FMD04-1**
	Size 1 push to connect fitting	1/4" OD tube	Elbow	**CMD07-1B**
			Straight	**FMD07-1B**
	Size 1 push to connect fitting	6mm OD tube	Elbow	**CMD06-1**
			Straight	**FMD06-1**
	Double male union	Connecting peripheral modules		**HMDXX1**
	Muffler for vacuum exhaust port			**MMDVA1**
	Plug			**PMDYY1**

Vacuum Generator Model Number Index

P2M1PXVA **F7** **A** **F7** **C** **MA**

Basic configuration	
Basic unit	P2M1PXVA

#1 Pressure port	
5/32" (4mm) elbow	C4
6mm elbow	C6
1/4" Elbow	C7
Joint fitting	JJ
5/32" (4mm) straight	F4
6mm straight	F6
1/4" Straight	F7

Port #1 configuration	
Fitting in pressure port and blow-off port	A
Fitting in pressure port and blow-off port plugged*	B

* Can not be directly mounting to valve.

#2 Vacuum port	
C4	5/32" (4mm) Elbow
C6	6mm Elbow
C7	1/4" Elbow
F4	5/32" (4mm) Straight
F6	6mm Straight
F7	1/4" Straight

#2 Sensor port	
A	6mm Plug
B	Plug
K	1/4" Straight
L	1/4" Elbow
M	6mm Elbow

#3 Exhaust port	
C4	5/32" (4mm) Elbow
C6	6mm Elbow
C7	1/4" Elbow
F4	5/32" (4mm) Straight
F6	6mm Straight
F7	1/4" Straight
MA	Muffler

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Peripheral Modules Size 2

	Acessories	Description	Option	Part number
	Pressure regulator without gauge		0 to 30 PSI	**P2M2PXST**
			0 to 60 PSI	**P2M2PXSL**
			0 to 120 PSI	**P2M2PXSN**
	Pressure regulator with gauge		0 to 30 PSI	**P2M2PXSR**
			0 to 60 PSI	**P2M2PXSM**
			0 to 120 PSI	**P2M2PXSG**
	Gauge		0 to 30 PSI	**P2M1K0GT**
			0 to 60 PSI	**P2M1K0GL**
			0 to 120 PSI	**P2M1K0GN**
	Dual P.O. check valve			**P2M2PXCA**
	Dual flow control			**P2M2PXFA**
	Size 2 push to connect fitting	1/4" OD tube	Elbow	**CMD07-2B**
			Straight	**FMD07-2B**
	Size 2 push to connect fitting	3/8" OD tube	Elbow	**CMD09-2B**
			Straight	**FMD09-2B**
	Size 2 push to connect fitting	1/2" OD tube	Straight	**FMD13-2B**
	Size 2 push to connect fitting	6mm OD tube	Elbow	**CMD06-2**
			Straight	**FMD06-2**
	Size 2 push to connect fitting	8mm OD tube	Elbow	**CMD08-2**
			Straight	**FMD08-2**
	Size 2 push to connect fitting	10mm OD tube	Elbow	**CMD10-2**
			Straight	**FMD10-2**
	Size 2 push to connect fitting	12mm OD tube	Elbow	**CMD12-2**
			Straight	**FMD12-2**
	Muffler for exhaust port			**MMDVA2**
	Plug			**PMDYY2**
	Double Male Union		Connecting peripheral modules	**HMDXX2**

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"P" Series Peripheral Modules Model Number Index
(Complete with Pneumatic Connectors)

P2M 1 PX S L F4 F4

Basic series	
Electro-pneumatic valve modules	P2M

Size	
Size 1	1
Size 2	2

Style / Function	
Peripheral	PX

Accessory type	
Dual pilot operated check	C
Dual flow control	F
Single pressure regulator	S

Accessory option	
Flow control or pilot operated check	A*
0 - 120 PSI - Gauge	G
0 - 60 PSI - No gauge	L
0 - 60 PSI - Gauge	M
0 - 120 PSI - No gauge	N
0 - 30 PSI - Gauge	R
0 - 30 PSI - No gauge	T

* Must be used with accessory type "C" or "F".

Ports 1 & 3 (Supply / Exhaust)	
C0*	10mm Elbow fitting
C2*	12mm Elbow fitting
C4	**5/32" (4mm) Elbow fitting**
C6	6mm Elbow fitting
C7	**1/4" Elbow fitting**
C8*	8mm Elbow fitting
C9*	**3/8" Elbow fitting**
F0*	10mm Straight fitting
F2*	12mm Straight fitting
F3*	**1/2" Straight fitting**
F4	**5/32" (4mm) Straight fitting**
F6	6mm Straight fitting
F7	**1/4" Straight fitting**
F8*	8mm Straight fitting
F9*	**3/8" Straight fitting**
JJ	**Double male union**

* Only available with size 2 valves.

Ports 2 & 4 (S, T & V Series)	
C0*	10mm Elbow fitting
C2*	12mm Elbow fitting
C4	**5/32" (4mm) Elbow fitting**
C6	6mm Elbow fitting
C7	**1/4" Elbow fitting**
C8*	8mm Elbow fitting
C9*	**3/8" Elbow fitting**
F0*	10mm Straight fitting
F2*	12mm Straight fitting
F3*	**1/2" Straight fitting**
F4	**5/32" (4mm) Straight fitting**
F6	6mm Straight fitting
F7	**1/4" Straight fitting**
F8*	8mm Straight fitting
F9*	**3/8" Straight fitting**
JJ	**Double male union**
PP	**Clip-in plug**

* Only available with size 2 valves.

Intermediate Supply Module Model Number Index

P2M2BX V 0 4 F9 MM

Intermediate supply module	
Basic unit	P2M2BX

Valve type	
Individually wired	T
Collective wiring	V

Wiring style	
No cable	0

Plate configuration	
#1 & #3 Blocked	1
#1 Open & #3 Blocked	2
#1 Blocked & #3 Open	3
#1 & #3 Open	4

Inlet port type (#1 pressure)*	
C0	10mm Elbow fitting
C2	12mm Elbow fitting
C6	6mm Elbow fitting
C7	**1/4" Elbow fitting**
C8	8mm Elbow fitting
C9	**3/8" Elbow fitting**
F0	10mm Straight fitting
F2	12mm Straight fitting
F3	**1/2" Straight fitting**
F6	6mm Straight fitting
F7	**1/4" Straight fitting**
F8	8mm Straight fitting
F9	**3/8" Straight fitting**
MM	**Clip-in muffler**
PP	**Clip-in plug**

* Elbow fittings face up.

Exhaust port type (#3 exhaust)*	
C0	10mm Elbow fitting
C2	12mm Elbow fitting
C6	6mm Elbow fitting
C7	**1/4" Elbow fitting**
C8	8mm Elbow fitting
C9	**3/8" Elbow fitting**
F0	10mm Straight fitting
F2	12mm Straight fitting
F3	**1/2" Straight fitting**
F6	6mm Straight fitting
F7	**1/4" Straight fitting**
F8	8mm Straight fitting
F9	**3/8" Straight fitting**
MM	**Clip-in muffler**
PP	**Clip-in plug**

* Elbow fittings face up.

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Moduflex Add-A-Fold Assembly Model Number Index
(Complete with Pneumatic and Electrical Connectors)

How To Order Plug-in Add-A-Fold Assemblies

1. List Add-A-Fold Assembly call out. This automatically includes the end plate kit assembly.
2. List valves and manifolds. List left to right, LOOKING AT THE CYLINDER PORTS on the manifold.

P2MA V 0 1 C9 C9 ##

Moduflex island assembly	
Add-A-Fold	**P2MA***

*Includes pneumatic H & T end plate kit.

Style	
Individually wired	**T**
Collective wiring	**V***

* Includes 20-pin multi-connector or 25-pin, D-sub electrical head module.

Wiring / Bus protocol	
No cable (20-pin multi-connector T series)	**0**
2 Meter cable (20-pin)	**2**
5 Meter cable (20-pin)	5
9 Meter cable (20-pin)	9
Bus	**B***
No cable (25-pin, D-sub)	**D**
3 Meter cable (25-pin, D-sub)	**F**

* Order bus module as a separate line item.
† Default to option "0" for T series.

Pilot source	
Internal supply / Internal exhaust	**1**
Internal supply / External exhaust	2
External supply / Internal exhaust	3
External supply / External exhaust	4

Number of stations†	
01 - 19*	**V-Type**
01 - 30	**T-Type**

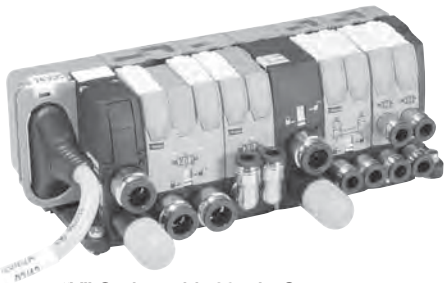
* Max. number of addresses for V type is 19. Single solenoid valves equal one address. Double solenoid valves equal two addresses. Maximum address may depend upon choice of bus protocol.
† Intermediate modules are considered stations, but do not count against maximum number of addresses for manifold.

Exhaust port type (#3 Exhaust)*	
C0	10mm Elbow fitting
C2	12mm Elbow fitting
C6	6mm Elbow fitting
C7	**1/4" Elbow fitting**
C8	8mm Elbow fitting
C9	**3/8" Elbow fitting**
F0	10mm Straight fitting
F2	12mm Straight fitting
F3	**1/2" Straight fitting**
F6	6mm Straight fitting
F7	**1/4" Straight fitting**
F8	8mm Straight fitting
F9	**3/8" Straight fitting**
MM	**Clip-in muffler**
PP	**Clip-in plug**

* Elbow fittings face up.

Inlet port type (#1 pressure)*	
C0	10mm Elbow fitting
C2	12mm Elbow fitting
C6	6mm Elbow fitting
C7	**1/4" Elbow fitting**
C8	8mm Elbow fitting
C9	**3/8" Elbow fitting**
F0	10mm Straight fitting
F2	12mm Straight fitting
F3	**1/2" Straight fitting**
F6	6mm Straight fitting
F7	**1/4" Straight fitting**
F8	8mm Straight fitting
F9	**3/8" Straight fitting**
MM	**Clip-in muffler**
PP	**Clip-in plug**

* Elbow fittings face up.



"V" Series with 20-pin Connector

"V" Series with Field Bus Connection

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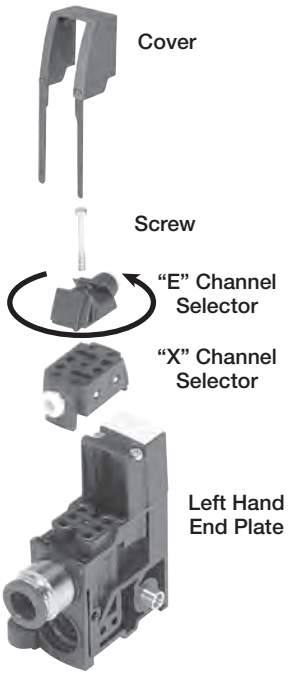
Internal and external pilot supply options

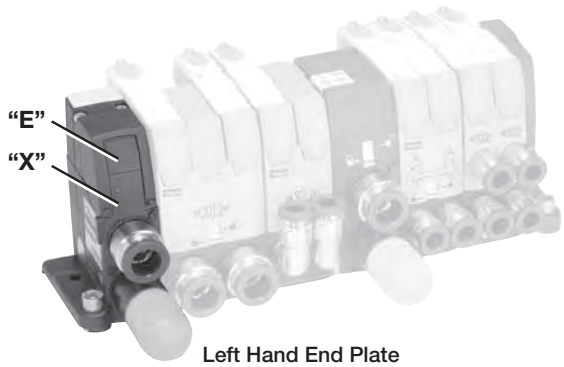
All T and V Series Valve bases incorporate an auxiliary channel **"X"** to supply pressure to the solenoid pilots. The **"X"** galley is pressurized from the left hand end plate. Depending on the configuration of the left hand end plate, this pressure is either supplied from the #1 port in the left hand end plate or supplied externally through a 4mm OD tube fitting in the left hand end plate This fitting is supplied in all left hand end plates and can be converted in the field.

Internal and external solenoid pilot exhaust options

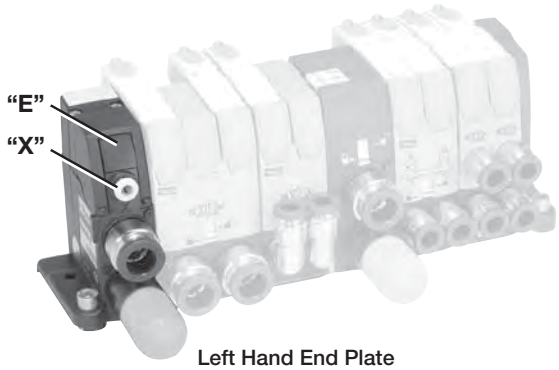
All T and V Series Valve bases incorporate an auxiliary channel **"E"** which is used to exhaust the solenoid pilot pressure from each solenoid valve. The **"E"** galley is connected to the left hand end plate. Depending on the configuration of the left hand end plate, this exhaust is either connected to the #3 exhaust port or is connected to a 4mm OD Tube fitting in the left hand end plate. This fitting is supplied in all left hand end plates and can be converted in the field.

To configure the left hand end plate, with pressure off, remove head cover to expose the selector section. Loosen selector section and rotate **"X"** or **"E"** channel selector to desired position. Tighten selector section and assemble cover.

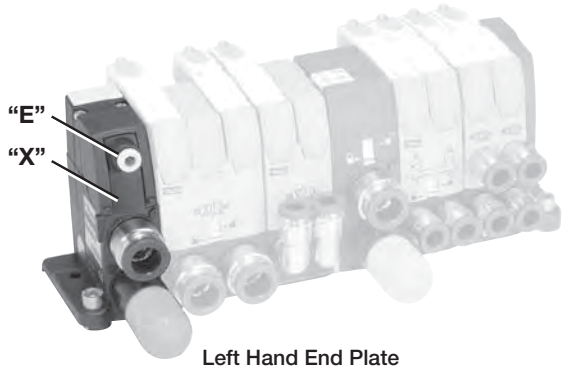




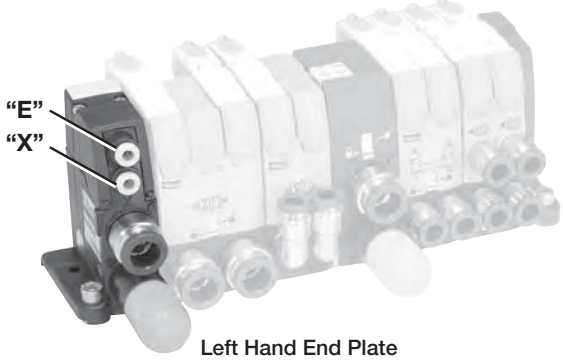
Left Hand End Plate
"E" Channel Internal Exhaust
"X" Channel Internal Pilot



Left Hand End Plate
"E" Channel Internal Exhaust
"X" Channel External Pilot



Left Hand End Plate
"E" Channel External Exhaust
"X" Channel Internal Pilot



Left Hand End Plate
"E" Channel External Exhaust
"X" Channel External Pilot

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Solenoid Pilot 24VDC

Description	Part number
Solenoid pilot (without plug-in electrical connector)	**P2D8V32C5**
Air pilot with 5/32" (4mm) tube fitting	**P2M2K0PA**

P2D8V32C5

P2M2K0PA

Size 1 Valve Without Solenoid Pilot and Without Subbase

P2M1X4EE

4-way / 2-position / Single Valve

	Solenoid	Part number
	Single solenoid (Monostable)	**P2M1X4ES**
	Double solenoid (Bistable)	**P2M1X4EE**

4-way / 2-position / Dual Valve

	Solenoid	Part number
	Solenoid spring with exhaust check	**P2M1XJEE**

3-way / 2-position / Dual Valve

	Solenoid	Part number
	Double solenoid NC + NC with exhaust check	**P2M1XDEE**
	Double solenoid NO + NO with exhaust check	**P2M1XCEE**
	Double solenoid NC + NO with exhaust check	**P2M1XEEE**
	Single solenoid NC with exhaust check	**P2M1X3ES**

Size 2 Valve Without Solenoid Pilot and Without Subbase

P2M2X4EE

4-way / 2-position / Dual Valve

	Solenoid	Part number
	Single solenoid (Monostable)	**P2M2X4ES**
	Double solenoid (Bistable)	**P2M2X4EE**

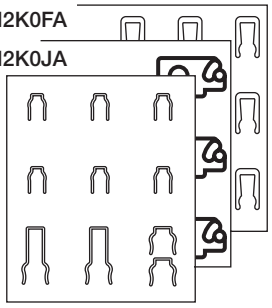
3-way / 2-position / Dual Valve

	Solenoid	Part number
	Double solenoid NC + NC with exhaust check	**P2M2XDEE**
	Double solenoid NO + NO with exhaust check	**P2M2XCEE**
	Double solenoid NC + NO with exhaust check	**P2M2XEEE**
	Single solenoid NC with exhaust check	**P2M2X3ES**

Set of Maintenance Parts

Description		Part number
Clips	Set of 10 clips: 6 for size 1 valves, 2 for size 2 valves, 2 for end plate and intermediate modules	**P2M2K0CA**
Seals	Set of 10 seals: 3 for manifold to manifold seals, 3 under solenoid pilot seals, 4 under valve seals (two size 1 seals, two size 2 seals)	**P2M2K0JA**
Forks	Set of 10 isolation forks for solenoid pilot manual override	**P2M2K0FA**

P2M2K0FA
P2M2K0JA



P2M2K0CA

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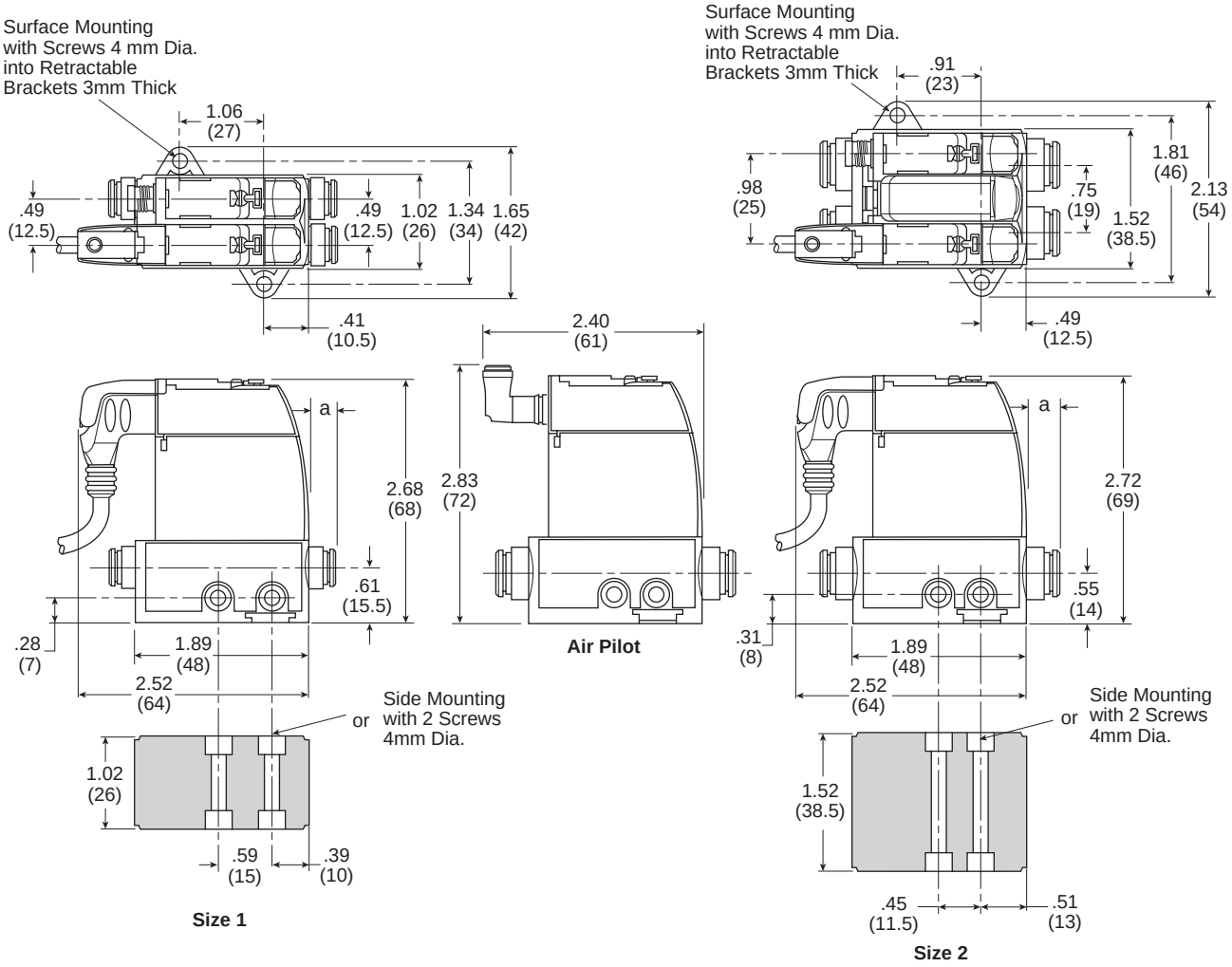
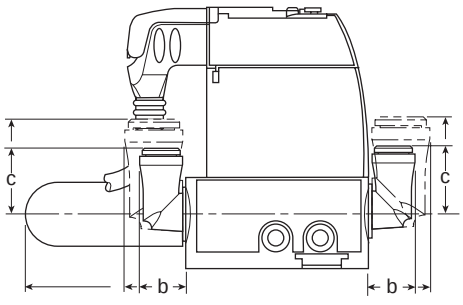
"S" Series Individual Subbase Valve Dimensions and Mounting

Subbase Valve Size 1

Subbase Valve Size 2



OD Tube Ext.		a	b	c
Size 1 Valves	5/32" (4 mm)	8	10	12
	6 mm	8	13	16
	1/4"	15	18	22
	Muffler		31	
Size 2 Valves	1/4"	12	18	22
	8 mm	9	16	19
	3/8"	16	23	26
	10 mm	13	18	22
	Muffler		40	



Special Case: 4/3 all ports blocked. Add the dual P.O. check valve that has been plugged in the basic valve.

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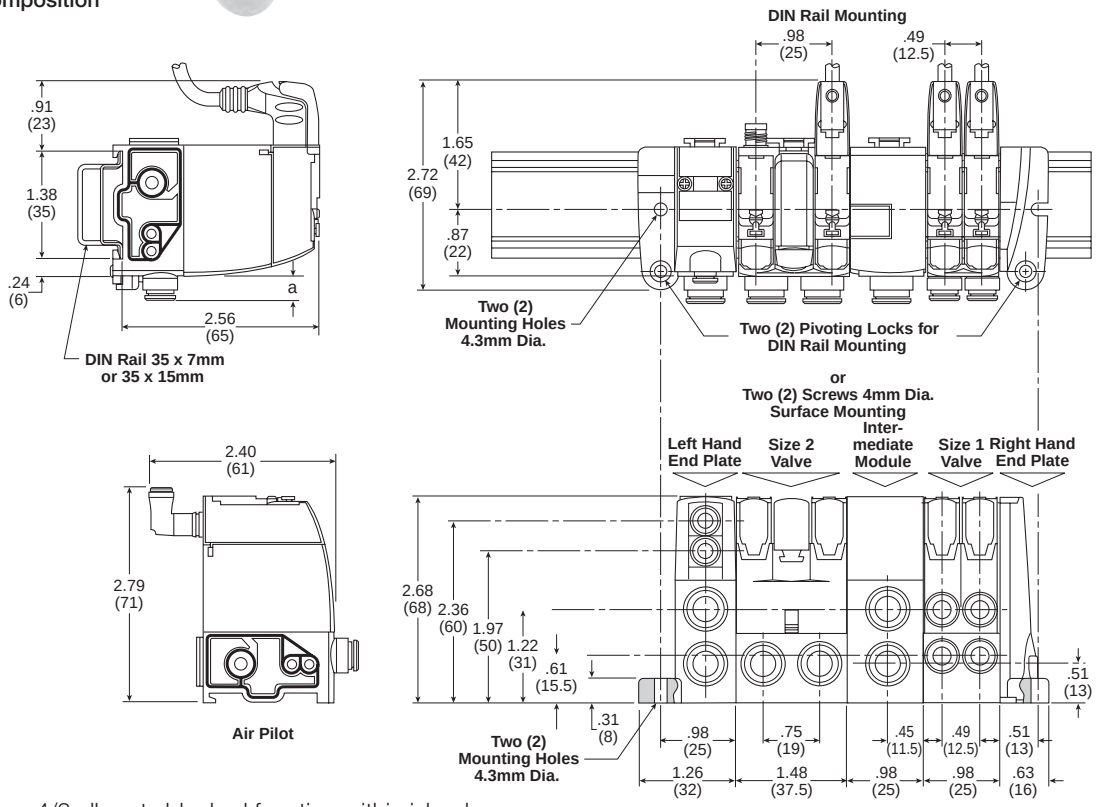
"T" Series Manifold Dimensions and Mounting

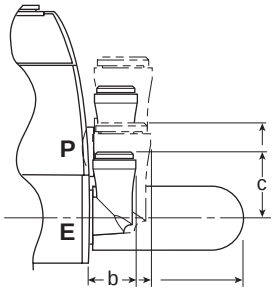
Total Width Depends on Valve Composition



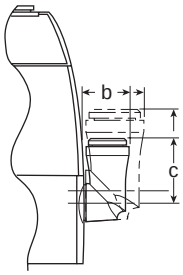
Special Case: 4/3 all ports blocked function within island version, add the dimensions of the dual P.O. check valve plugged into the island.

End Plate and Intermediate Modules

	a	b	c
6 mm Tube OD	8	13	16
1/4" Tube OD	12	18	22
8 mm Tube OD	9	16	19
3/8" Tube OD	16	23	26
10 mm Tube OD	13	18	25
12 mm Tube OD	13	19	25
1/2" Tube OD	13		
Muffler		40	



OD Tube	Ext.	a	b	c
Size 1 Valves	5/32" (4 mm)	8	10	12
	6 mm	8	13	16
	1/4"	15	18	22
Size 2 Valves	1/4"	12	18	22
	8 mm	9	16	19
	3/8"	16	23	26
	10 mm	13	18	22



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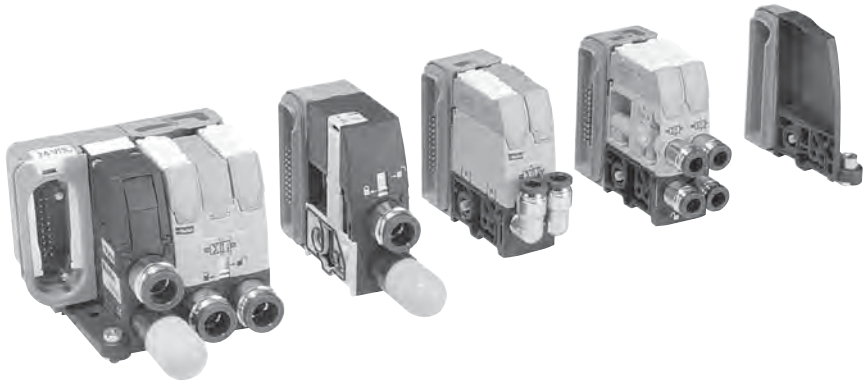
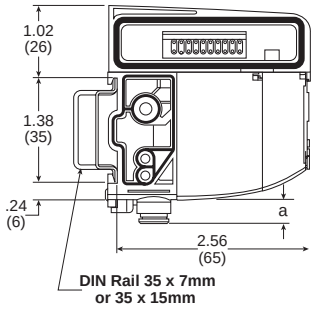
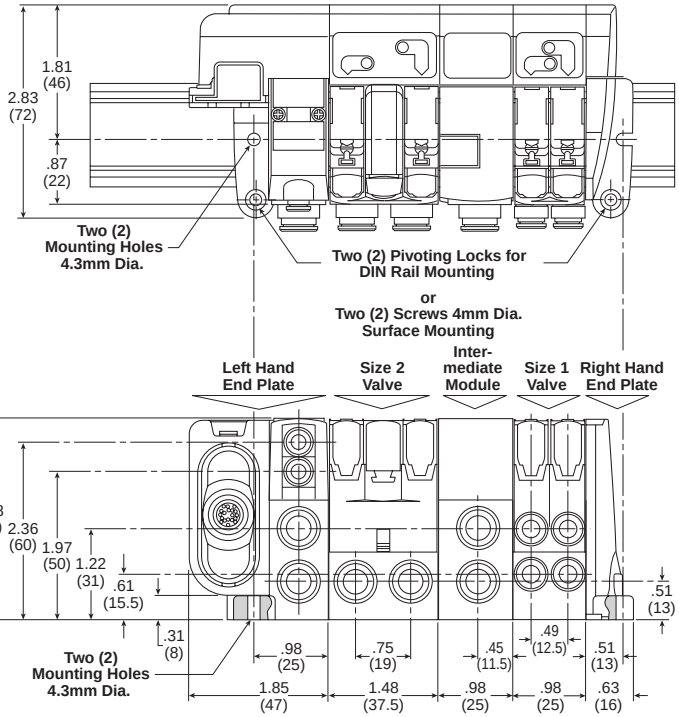
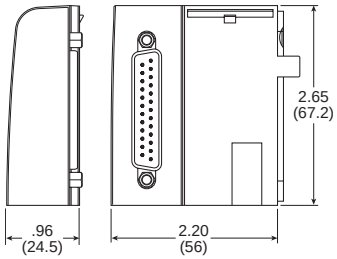
"V" Series Manifold Dimensions and Mounting
20-pin, Multi-Connector Valve Manifold



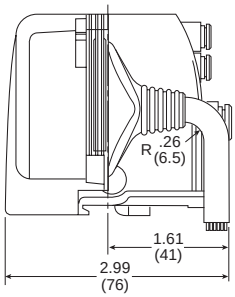
Total Width Depends on Valve Composition







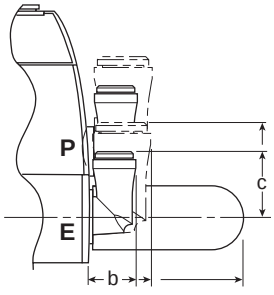
25-pin,
D-Sub



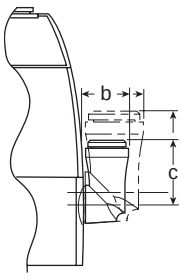
20-pin,
Multi-Connector

End Plate and Intermediate Modules

	a	b	c
6 mm Tube OD	8	13	16
1/4" Tube OD	12	18	22
8 mm Tube OD	9	16	19
3/8" Tube OD	16	23	26
10 mm Tube OD	13	18	25
12 mm Tube OD	13	19	25
1/2" Tube OD	13		
Muffler		40	



OD Tube	Ext.	a	b	c
Size 1 Modules	5/32" (4 mm)	8	10	12
	6 mm	8	13	16
	1/4"	15	18	22
Size 2 Modules	1/4"	12	18	22
	8 mm	9	16	19
	3/8"	16	23	26
	10 mm	13	18	22



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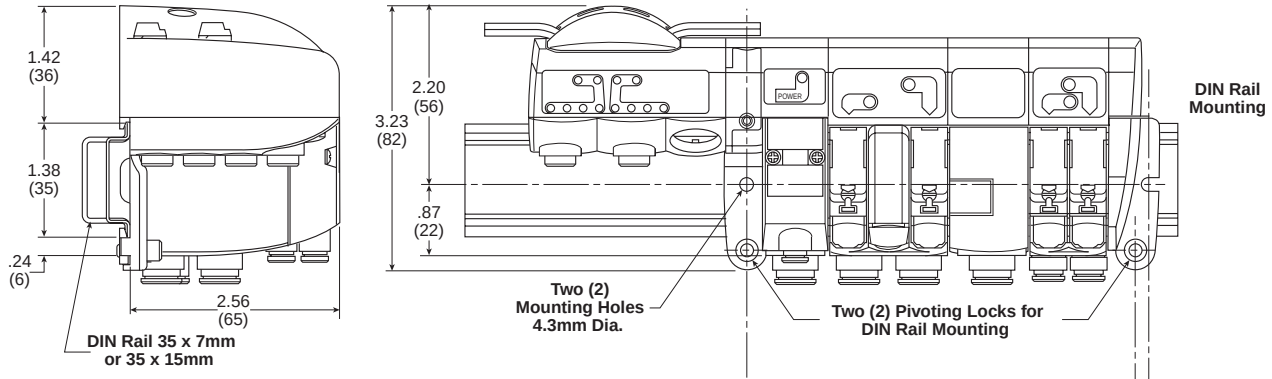
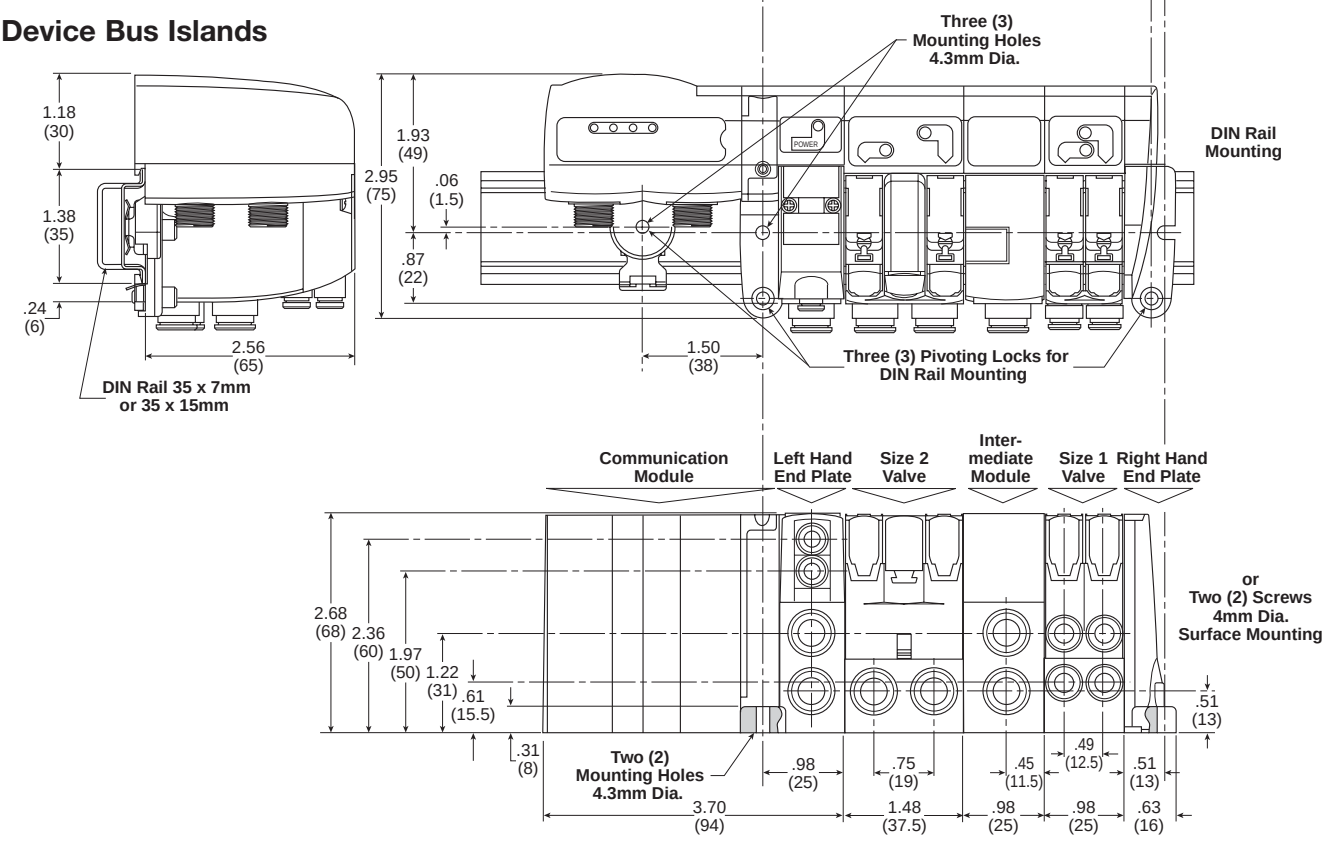
"V" Series Manifold Dimensions and Mounting
Fieldbus Connected Manifolds

Total Width Depends on Valve Composition

AS-i Bus Islands



Device Bus Islands



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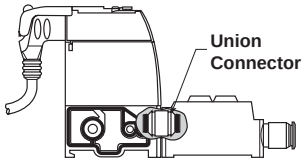
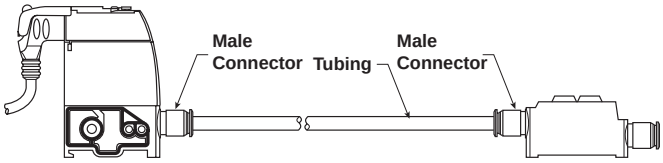
"P" Series Peripheral Modules Dimensions and Mounting

Reminder: Peripheral modules may either be plugged in the valve output ports or mounted in-line separate from the valve.

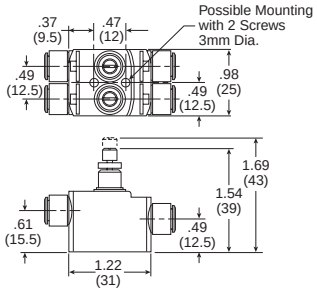
Peripheral Module Plugged in a Valve



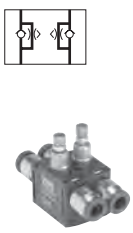
In-Line Peripheral Modules: Mounting is Required

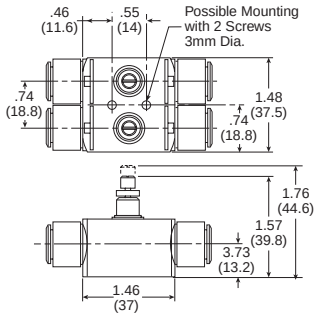


Dual Flow Control Size 1



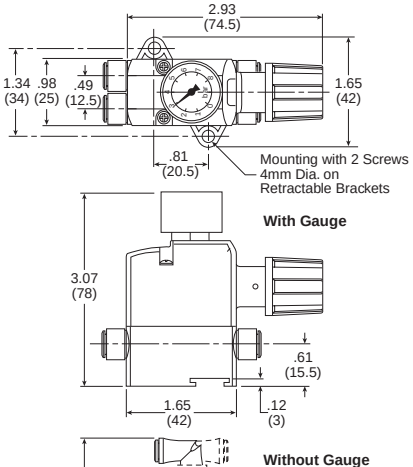
Dual Flow Control Size 2



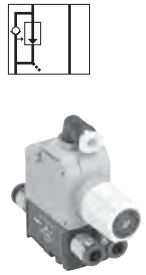


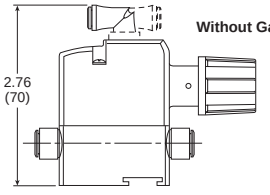
Pressure Regulator Size 1

With Gauge



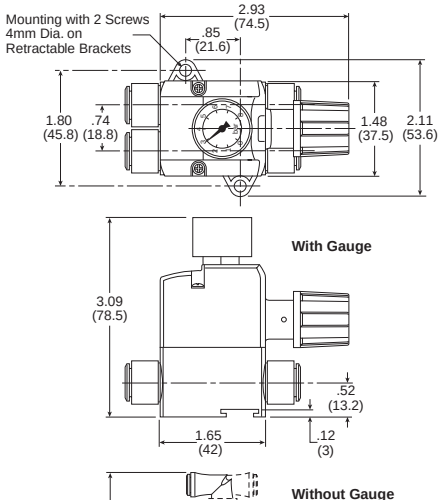
Without Gauge



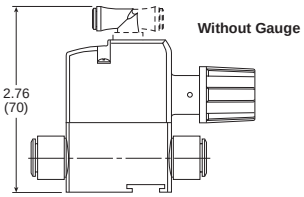


Pressure Regulator Size 2

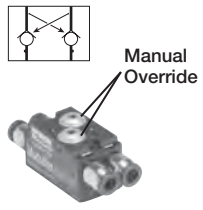
With Gauge

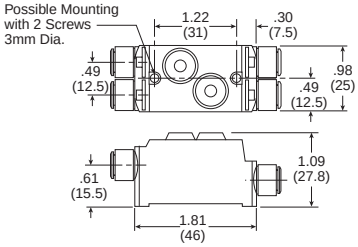


Without Gauge

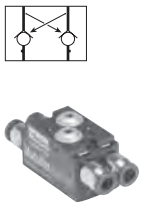


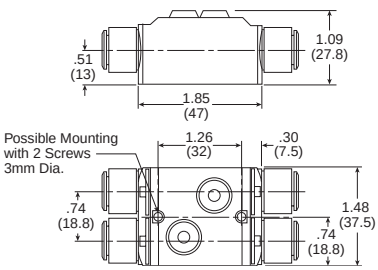
Dual P.O. Check Valve Size 1





Dual P.O. Check Valve Size 2





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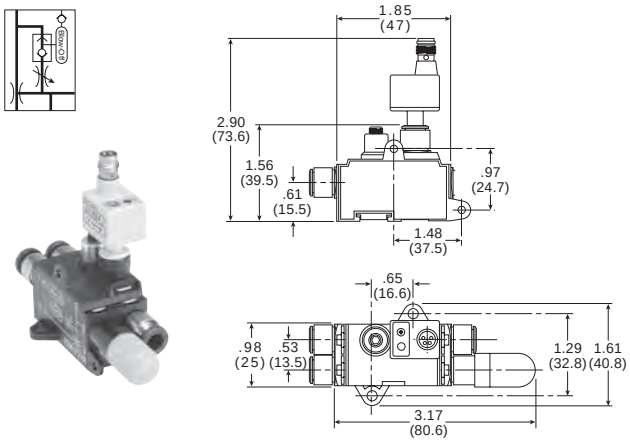
"P" Series Peripheral Modules Dimensions and Mounting

Reminder: Peripheral modules may either be plugged in the valve output ports or mounted in-line separate from the valve.

Vacuum Generator Size 1



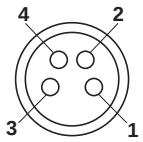
Sensor specifications

Media	Air and non-corrosives gases
Proof pressure	(V) 72.5 PSI
Operating temperature	32 to 122°F (0 to 50°C)
Storage temperature	14 to 140°F (-10 to 60°C)
Humidity	35 to 85% RH
Electrical connection	(C) 4-pin, M8 connector
Power supply	10.8 to 30 VDC, ripple Vp-p 10% max., reverse voltage protection
Switch output	1 output signal open and closed, NPN or PNP, 30VDC, 125mA
Linear output	Analog output 1 to 5 VDC
Switch point setting	2/3 turn trimmer
Hysteresis setting	< 2% of F.S.
Output response time	<1ms
Repeatability	<0.2% F.S.
Shock resistance	100 G, XYZ
Material	Housing: Polycarbonate, pressure port: Zinc die-cast
Mass	T Port: 0.25 oz. (7g)

Sensor pin out

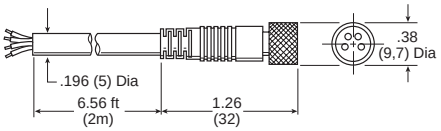
Pin #

1 Brown: 24VDC
2 White: NPN / PNP open collector output
3 Blue: 0VDC
4 Black: NPN / PNP open collector output

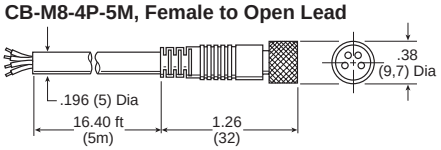


Cables

CB-M8-4P-2M, Female to Open Lead



CB-M8-4P-5M, Female to Open Lead



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Isys Micro Series

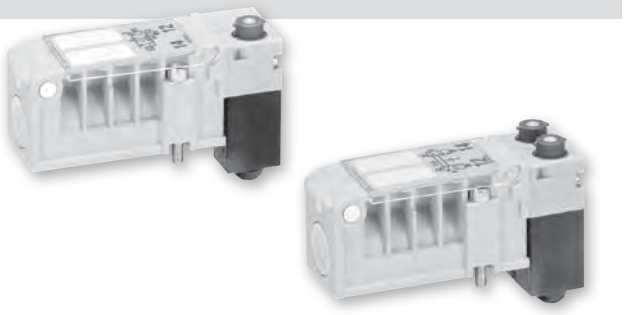
The Isys Micro Valve System incorporates a space saving back to back valve mounting design, and achieves flow rates of 0.35 Cv per valve with 4 valves having a combined width of 42mm. This plug-in valve solution simplifies wiring with the use of 25 pin connectors or fieldbus systems.

Ports
- M7 on manifolds
- 3/8 Inch on end plates

Mounting
- Manifold

Solenoids
- 24 VDC, 1.0 watt

Certification / approval
- IP65 rated
- EMC / CE Mark: According to EN 61 000-6-2



Operating information

Operating pressure: Vacuum to 145 PSIG (Vacuum to 10 bar)

Pilot pressure requirements:

Valve number	Minimum pilot pressure	Maximum pilot pressure
HMEVX2049A	40 PSI	120 PSI
HM2VX2049A	25 PSI	120 PSI
HM5VX2049A	45 PSI	120 PSI
HMNVX2049A	40 PSI	120 PSI
HMPVX2049A	40 PSI	120 PSI
HMQVX2049A	40 PSI	120 PSI

Temperature range: 5°F to 120°F (-15°C to 49°C)

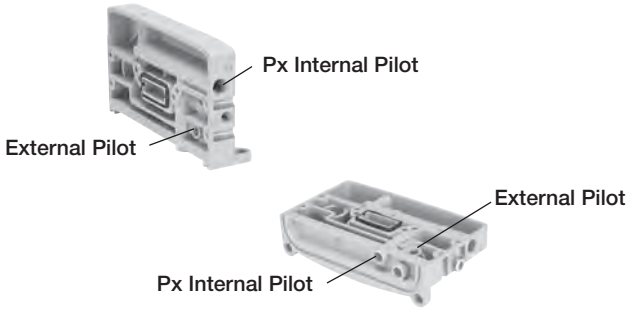
Material specifications

Body	Polyamide reinforced fiberglass
End plates	Aluminum
Fasteners	Zinc plated steel
Manifolds	Aluminum
Spool	Brass and nitrile rubber
Spool enclosure	Brass

Pilot configuration

Manifolds can be configured for either internal or external pilot in the field. Side ported manifolds are configured for internal pilot when the M7 plug is located in the Px port on the front of the right hand end plate. Moving this plug to the inside of the right hand end plate and replacing it with a fitting allows an external pilot to be used.

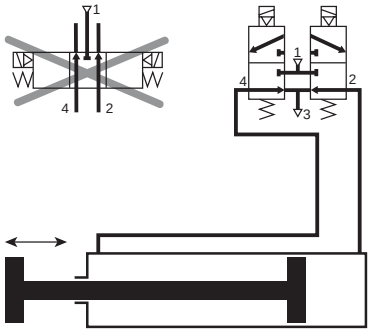
Bottom ported manifolds are configured for internal pilot when the M7 plug is located in the Px port on the bottom of the right hand end plate. Moving this plug to the inside of the right hand end plate and replacing it with a fitting allows an external pilot to be used.



Dual 3/2 valves replace 3-position valves for better performance

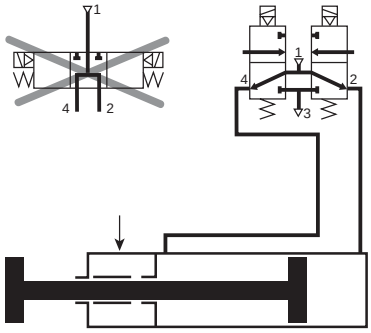
3-position center exhaust

A traditional 5/3 center exhaust valve is now replaced by a double 3/2 NC+NC valve module. Both cylinder chambers are exhausted and rod and piston are free to move.



3-position pressure center

A traditional 5/3 pressure center valve is now replaced by a double 3/2 NO+NO valve module. The function is identical.



☐ Most popular.

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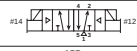
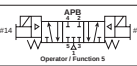
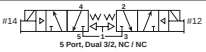
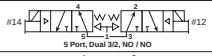
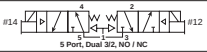
Isys Micro Valves

	Symbol	Type	Cv	Operator	Part number
		4-way, 2-position	0.35	Single solenoid	**HMEVX2049A**
		4-way, 2-position	0.35	Double solenoid	**HM2VX2049A**
		4-way, 3-position, all ports blocked	0.3	Double solenoid	**HM5VX2049A**
		3-way, 2-position, dual valve, NC/NC	0.35	Double solenoid	**HMNVX2049A**
		3-way, 2-position, dual valve, NO/NO	0.35	Double solenoid	**HMPVX2049A**
		3-way, 2-position, dual valve, NO/NC	0.35	Double solenoid	**HMQVX2049A**
		Blanking plate	N/A	N/A	**HMBVX00XXA**
		Intermediate air supply	N/A	N/A	**HMCVX00XXA**

Manifold Bases

		Part numbers		
Plug-in valve manifolds		**Side port**		**Bottom port**
Single solenoid outputs only		**PSM21JAP**		**PSM22JAP**
Double or single solenoid outputs		**PSM21MAP**		**PSM22MAP**

Internal Pilot End Plate Kits

	Electrical option	Porting	Side port	Bottom port
	25-pin, D-sub	NPT	**PSML25AP**	**PSML26AP**
		BSPP	**PSML21AP**	**PSML22AP**
	Turck fieldbus with valve driver module - 16 outputs	NPT	**PSMT15AP**	**PSMT16AP**
		BSPP	**PSMT11AP**	**PSMT12AP**
	Turck fieldbus with valve driver module - 32 outputs	NPT	**PSMT25AP**	**PSMT26AP**
		BSPP	**PSMT21AP**	**PSMT22AP**
	Moduflex 16 outputs	NPT	**PSMM45AP**	**PSMM46AP**
		BSPP	**PSMM41AP**	**PSMM42AP**
	Isysnet with valve driver module	NPT	**PSML65AP**	**PSML66AP**
		BSPP	**PSML61AP**	**PSML62AP**
	Isysnet with valve driver module and bus extension connector	NPT	**PSMM55AP**	**PSMM56AP**
		BSPP	**PSMM51AP**	**PSMM52AP**
	Isysnet with valve driver module and 24VDC connector	NPT	**PSMM65AP**	**PSMM66AP**
		BSPP	**PSMM61AP**	**PSMM62AP**
	Isysnet with valve driver module, bus extension connector and 24VDC connector	NPT	**PSMM75AP**	**PSMM76AP**
		BSPP	**PSMM71AP**	**PSMM72AP**

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Simple Manifold Assemblies

Includes a valve manifold with 4 valves and fittings installed.
End Plates must be ordered separately.

					A		B		C		D	
					9	10	11	12	13	14	15	16
PSM3	1	M	A	P	N	7	N	7	N	7	N	7

Base style	
4-Station manifold with valve and / or fitting	PSM3

Mounting style	
Side ported	1
Bottom ported	2

Enclosure / Lead length	
Single address circuit board	J
Double address circuit board	M

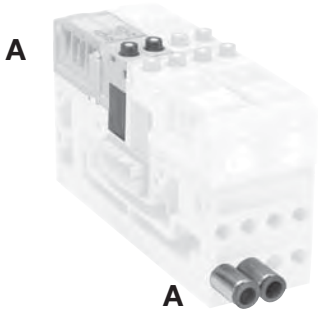
Engineering level	
Current	A

10, 12, 14, 16	Fitting
0	Without fitting
4	Straight fitting for 5/32 inch or 4mm OD tube
6	Straight fitting for 6mm OD tube
7	Straight fitting for 1/4 inch OD tube
P	Plug for blanking module

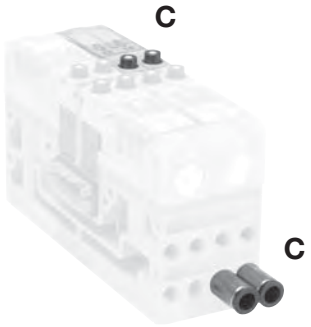
9, 11, 13, 15	Valve type
N*	Double solenoid, dual 3/2, NC/NC
P*	Double solenoid, dual 3/2, NO/NO
Q*	Double solenoid, dual 3/2, 14 end NO - 12 end NC
E	Single solenoid, 2-position - air return, spring assist
2*	Double solenoid, 2-position
5*	Double solenoid, 3-position - APB
B**	Blanking module
C	Intermediate air supply module

* Requires double address circuit board, enclosure "M".
** Requires fitting "P".

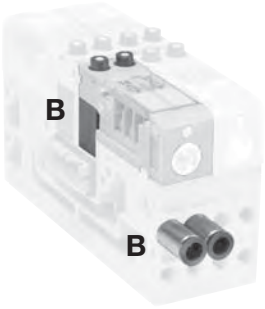
BOLD OPTIONS ARE MOST POPULAR.



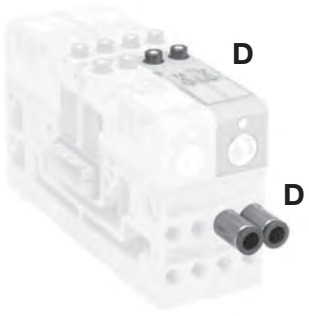
Valve Position A - Character 9
Fitting Position A - Character 10



Valve Position C - Character 13
Fitting Position C - Character 14



Valve Position B - Character 11
Fitting Position B - Character 12



Valve Position D - Character 15
Fitting Position D - Character 16

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How To Order Plug-in Add-A-Fold Assemblies

1. List Add-A-Fold Assembly call out. This automatically includes the end plate kit assembly.
2. List Simple Manifold Assemblies. List left to right, LOOKING AT THE CYLINDER PORTS on the manifold.

Maximum Number of Solenoids
(Maximum Energized Simultaneously)

	25-pin D-sub	Moduflex	Isysnet*	Turck 16 Outputs	Turck 32 Outputs
24VDC	24 (24)	16 (16)	32 (32)	16 (16)	32 (32)

* Maximum of 32 solenoids per manifold. With Bus Extension functionality, 4 manifolds with up to 32 solenoids each can be connected on the same network.

Add-A-Fold Assembly Model Number

AAHM D 3 24 0 0 0 0

Valve series	
Isys micro add-a-fold	AAHM

End plate option	
Turck fieldbus with valve driver module - 16 outputs	A
Turck fieldbus with valve driver module - 32 outputs	B
25-pin, D-sub - 24 outputs	D
Isysnet with valve drive module - 32 outputs	Y
Isysnet with valve drive module and bus extension connector - 32 outputs	W
Isysnet with valve drive module and 24VDC connector - 32 outputs	X
Isysnet with valve drive module and bus extension and 24VDC connector - 32 outputs	Z
Moduflex - 16 outputs	T

Isysnet and Moduflex communication modules must be ordered separately.

	End plate type	
BSPP Threads	BSPP side port, internal pilot	1
	BSPP bottom port, internal pilot	2
	BSPP side port, external pilot	3
	BSPP bottom port, external pilot	4
NPT Threads	NPT side port, internal pilot	5
	NPT bottom port, internal pilot	6
	NPT side port, external pilot	7
	NPT bottom port, external pilot	8

Number of stations*	
4 Valve manifold	04
8 Valve manifold	08
12 Valve manifold	12
16 Valve manifold	16
20 Valve manifold	20
24 Valve manifold	24
28 Valve manifold	28
32 Valve manifold	32

* For an Add-A-Fold part number to be valid, all stations must have a corresponding electrical connection at the end plate. See Maximum Number of Solenoids chart.

3/8" inlet port on end plate		
0	Without fitting	
8	Straight fitting for 8mm OD tube	*BSPP Threads*
A	Straight fitting for 10mm OD tube	
7	Straight fitting for 1/4 inch OD tube	*NPT Threads*
9	Straight fitting for 3/8 inch OD tube	

3/8" exhaust on end plate		
0	Without fitting	
M	Muffler	
8	Straight fitting for 8mm OD tube	*BSPP Threads*
A	Straight fitting for 10mm OD tube	
7	Straight fitting for 1/4 inch OD tube	*NPT Threads*
9	Straight fitting for 3/8 inch OD tube	

M7 pilot port on end plate		
Internal pilot end plate		
0	With standard plug	
External pilot end plate		
0	Without fitting	
4	Straight fitting for 4mm OD tube	*BSPP Threads*
6	Straight fitting for 6mm OD tube	
4	Straight fitting for 5/32 inch OD tube	*NPT Threads*
7	Straight fitting for 1/4 inch OD tube	

Pilot exhaust on end plate		
0	Without fitting	
M	Muffler	
4	Straight fitting for 4mm OD tube	*BSPP Threads*
6	Straight fitting for 6mm OD tube	
4	Straight fitting for 5/32 inch OD tube	*NPT Threads*
7	Straight fitting for 1/4 inch OD tube	

Note:
BSPP fittings can only be used with BSPP Manifolds.
NPT fittings can only be used with NPT Manifolds.

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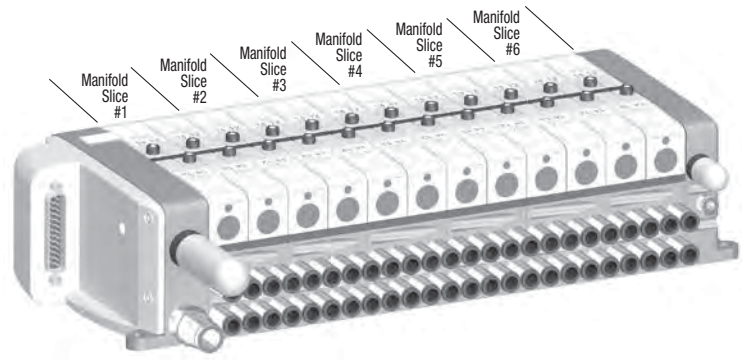
25-pin, D-Sub Manifolds

24 Single Solenoid Valves



Add-A-Fold

Manifold is factory assembled and tested for pneumatic leaks and electrical continuity.

Item	Qty	Description	Part number
01	1	24 valve Add-A-Fold with end plates	**AAHMD5249M0M**
02	6	4 valve simple manifold slices #1-6	**PSM31JAPE7E7E7E7**

Component Level

Item	Qty	Description	Part number
01	1	25-pin, D-sub, end plate	**PSML25AP**
02	24	Single solenoid valve	**HMEVX2049A**
03	6	Manifold, side ported, single address	**PSM21JAP**
04	50	1/4" Tube fittings (in box quantity)	**PS567925**
05	10	3/8" Tube fittings (in box quantity)	**PS568338**
06	1	3/8" Exhaust muffler	**P6M-PAB3**
07	1	1/8" Exhaust muffler	**P6M-PAB1**

Sandwich Regulator

	Description	Kit number
	Common port regulator, 5 to 125 PSI with gauge	**PSMRAX6AP**

Note: Cv values are reduced when using a sandwich regulator to 0.20 for 2-position and Dual 3/2 valves, and 0.17 for 3-position APB valves.

Note: The sandwich regulator passes full pilot pressure from the manifold, allowing the regulated pressure to adjusted down to 5 PSI without affecting valve functionality.

Mufflers

	Description	Part number
	1/8" pilot exhaust – BSPP or NPT	**P6M-PAB1**
	3/8" main exhaust – BSPP or NPT	**P6M-PAB3**
	M7 bottom port pilot exhaust (must be ordered in multiples of 10)	**PS568800**

Flow Controls

	Description	Kit number
	4mm to 4mm or 5/32" to 5/32" OD tube	**FC800-5/32**
	1/4" to 1/4" O.D. tube	**FC800-4**

25-pin, D-Sub Cable (Female)

	Description	Length	Part number
	25-pin, D-sub cable, IP20	3 meters	**P8LMH25M3A**
	25-pin, D-sub cable, IP20	9 meters	**SCD259D**
	25-pin, D-sub cable, IP65	3 meters	**SCD253W**
	25-pin, D-sub cable, IP65	9 meters	**SCD259WE**

Fittings – Must be ordered in multiples of 10

	Thread	Tube O.D.	Part number
Manifold or pilot supply ports – straight			
	M7	4mm or 5/32"	**PS567904**
	M7	6mm	**PS567906**
	M7	1/4"	**PS567925**
Main inlet or exhaust ports			
	3/8" NPT	1/4"	**PS568325**
	3/8" NPT	3/8"	**PS568338**
	3/8" BSPP	8mm	**PS568308**
	3/8" BSPP	10mm	**PS568310**
Pilot exhaust ports			
	1/8" NPT	5/32"	**PS568215**
	1/8" NPT	1/4"	**PS568225**
	1/8" BSPP	4mm	**PS568204**
	1/8" BSPP	6mm	**PS568206**

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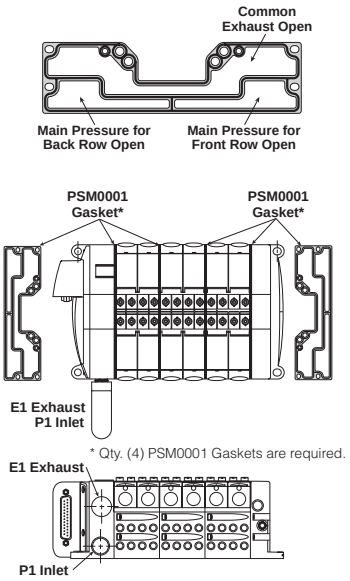
Multiple Pressure Zones

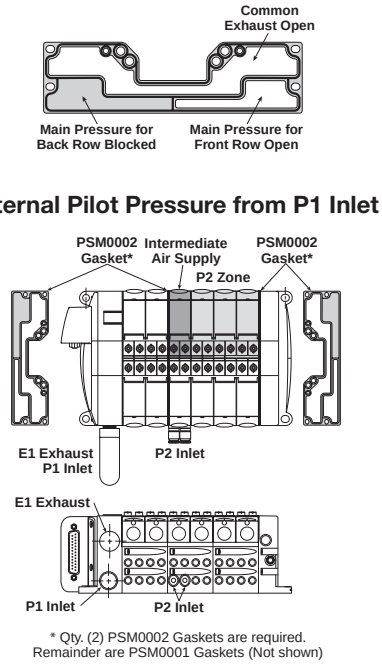
PSM0001 –

All ports open. Common pressure for front and rear manifold.
Common exhausts.
Standard gasket included with each manifold and end plate.



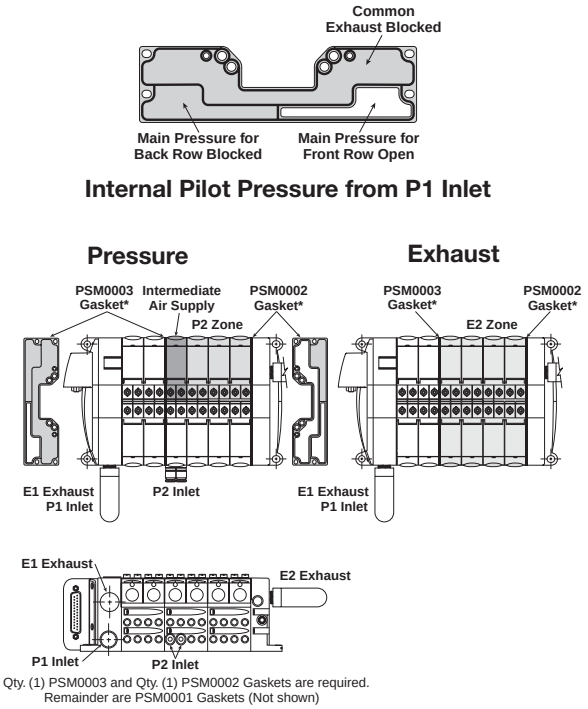
PSM0002 –

Rear manifold blocked for separate pressure supply.
Common exhausts.
Flip gasket to block front of manifold.



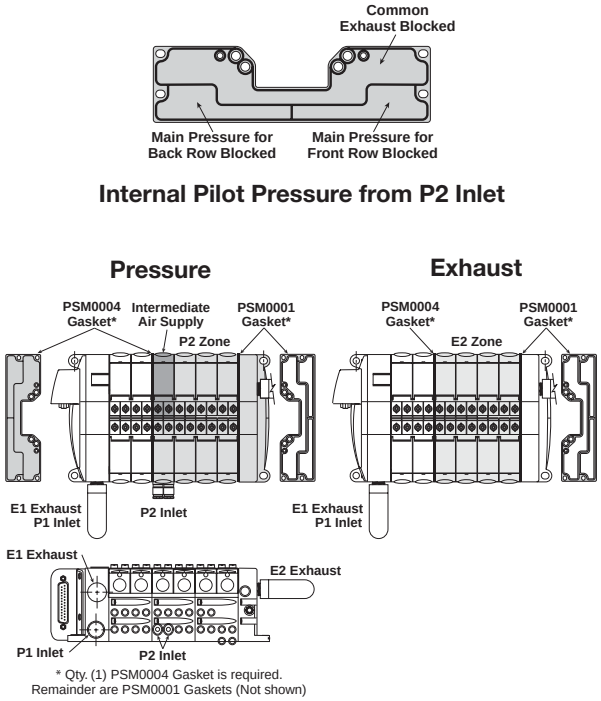
PSM0003 –

Rear manifold blocked for separate pressure supply.
Exhaust blocked also.
Flip gasket to block front of manifold.
If used with bottom ported end plates, second exhaust must be piped from the side of the right end plate.



PSM0004 –

All galleys blocked.
Two pressure zones and two exhaust zones.
If used with bottom ported end plates, second exhaust must be piped from the side of the right end plate.



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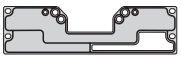
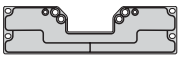
Manifold to Manifold Gaskets*

	Description	Part number
	All galleys passing	**PSM0001**
	Main pressure to rear or front valves blocked, exhaust passing	**PSM0002**
	Main pressure to rear or front valves blocked, exhaust blocked	**PSM0003**
	All galleys blocked	**PSM0004**

* Includes 1 Gasket

Valve Labels*

Description	Part number
Single solenoid diagram	**PSM002E**
Double solenoid diagram	**PSM0022**
Double solenoid diagram – APB	**PSM0025**
Double solenoid diagram – Dual 3/2 NC/NC	**PSM002N**
Double solenoid diagram – Dual 3/2 NO/NO	**PSM002P**
Double solenoid diagram – Dual 3/2, 14 end NO, 12 end NC	**PSM002Q**

*Includes 10 Labels.

Replacement Solenoid Kit

	Description	Part number
	24VDC solenoid kit with screws	**PSM0010**

Replacement Screws

	Description	Part number
	Set of 10 manifold to manifold M3 screws	**PSM0014**

Replacement Override Caps

	Description	Part number
	Set of 10 manual override caps	**PSM0011**

Replacement Regulator Gauge

	Description	Part number
	5 to 125 PSI Gauge	**P0566202**

Replacement Gaskets and Valve Screws

	Description	Part number
	Set of 5 valve to manifold gaskets and 10 screws	**PSM0012**

Replacement Protective Cover

	Description	Part number
	Protective Polyester Cover Set of 10	**PS5706**

Replacement Plugs

	Description	Part number
	Set of 10 M7 plugs (Part No. PS567900) for auxiliary and pilot pressure ports	**PSM0013**

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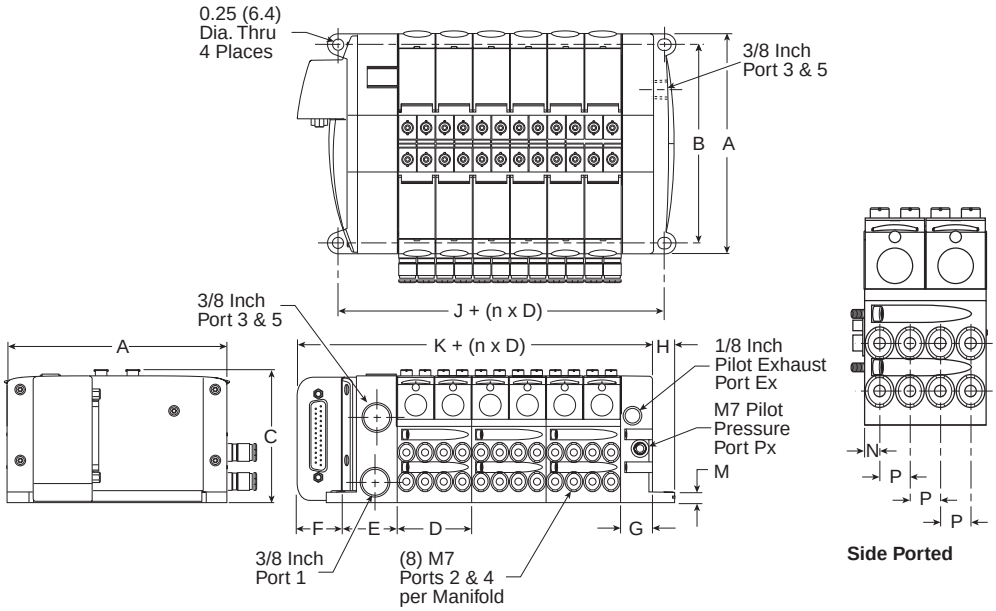
25-pin, D-Sub with Isys Micro Valves, Side Ported

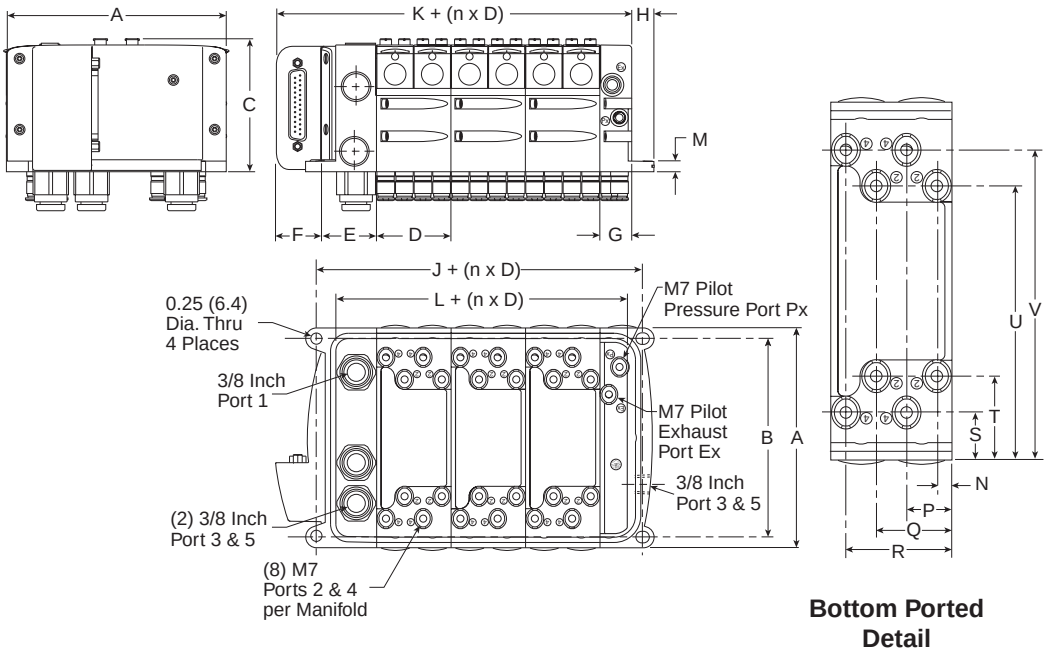


Dimensions

A	B	C	D
4.88 (124.0)	4.41 (112.0)	2.95 (75.0)	1.65 (42.0)
E	**F**	**G**	**H**
1.22 (31.0)	1.02 (26.0)	0.71 (18.0)	0.49 (12.5)
J	**K**	**M**	**N**
2.28 (58.0)	3.44 (87.5)	0.24 (6.1)	0.21 (5.2)
P			
0.41 (10.5)			

Inches (mm)
n = Number of manifolds

25-pin, D-Sub with Isys Micro Valves, Bottom Ported



Dimensions

A	B	C	D
4.88 (124.0)	4.41 (112.0)	2.95 (75.0)	1.65 (42.0)
E	**F**	**G**	**H**
1.22 (31.0)	1.02 (26.0)	0.71 (18.0)	0.49 (12.5)
J	**K**	**L**	**M**
2.28 (58.0)	3.44 (87.5)	1.69 (43.0)	0.24 (6.1)
N	**P**	**Q**	**R**
0.21 (5.3)	0.62 (15.8)	1.03 (26.3)	1.45 (36.8)
S	**T**	**U**	**V**
0.64 (16.40)	1.14 (29.0)	3.73 (94.9)	4.23 (107.4)

Inches (mm)
n = Number of manifolds

Note:
See Fieldbus Section for the dimensions of manifolds utilizing the Isysnet, Turck, or Moduflex end plate type.

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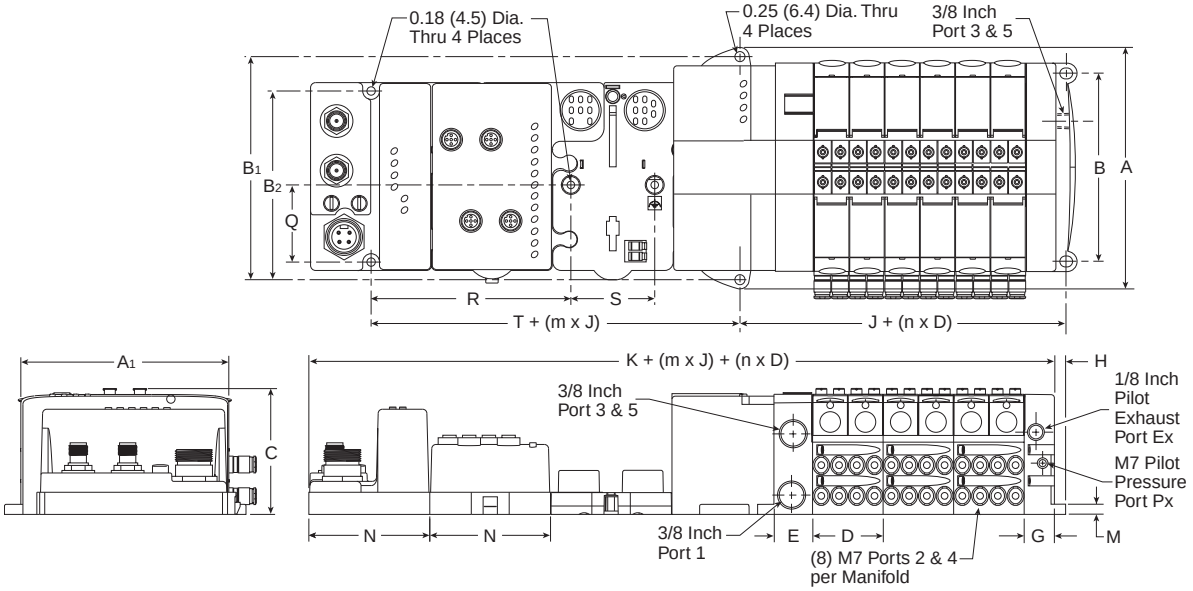
Isysnet with Isys Micro Valves, Side Ported



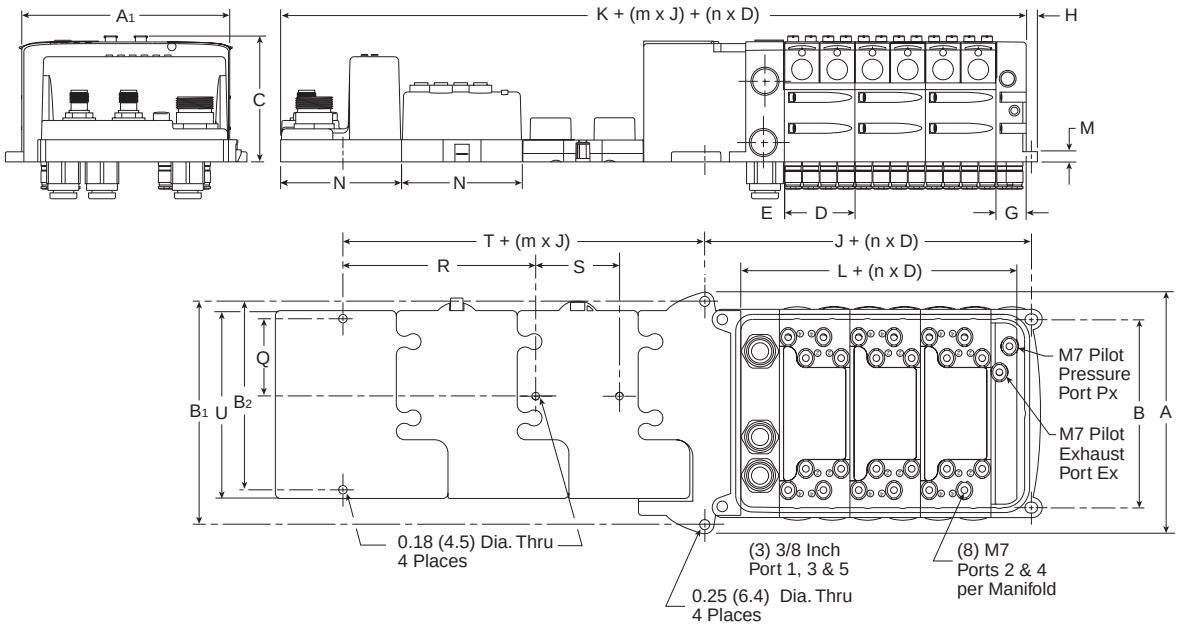
Dimensions

A	A1	B	B1	B2	C	D	E	G
5.67 (144.0)	4.88 (124.0)	4.41 (112.0)	5.24 (133.0)	4.02 (102.0)	2.95 (75.0)	1.65 (42.0)	0.91 (23.0)	0.71 (18.0)

H	J	K	M	N	Q	R	S	T
0.49 (12.5)	2.72 (69.0)	7.32 (186.0)	0.24 (6.1)	2.83 (72.0)	1.81 (46.0)	4.72 (120.0)	2.01 (51.0)	2.01 (51.0)

Inches (mm)
n = Number of Manifolds
m = Number of Modules

Isysnet with Isys Micro Valves, Bottom Ported



Dimensions

A	A1	B	B1	B2	C	D	E	G	H
5.67 (144.0)	4.88 (124.0)	4.41 (112.0)	5.24 (133.0)	4.02 (102.0)	2.95 (75.0)	1.65 (42.0)	0.91 (23.0)	0.71 (18.0)	0.49 (12.5)

J	K	L	M	N	Q	R	S	T	U
2.72 (69.0)	7.32 (186.0)	1.69 (43.0)	0.24 (6.1)	2.83 (72.0)	1.81 (46.0)	4.72 (120.0)	2.01 (51.0)	2.01 (51.0)	4.41 (112)

Inches (mm)
n = Number of Manifolds
m = Number of Modules

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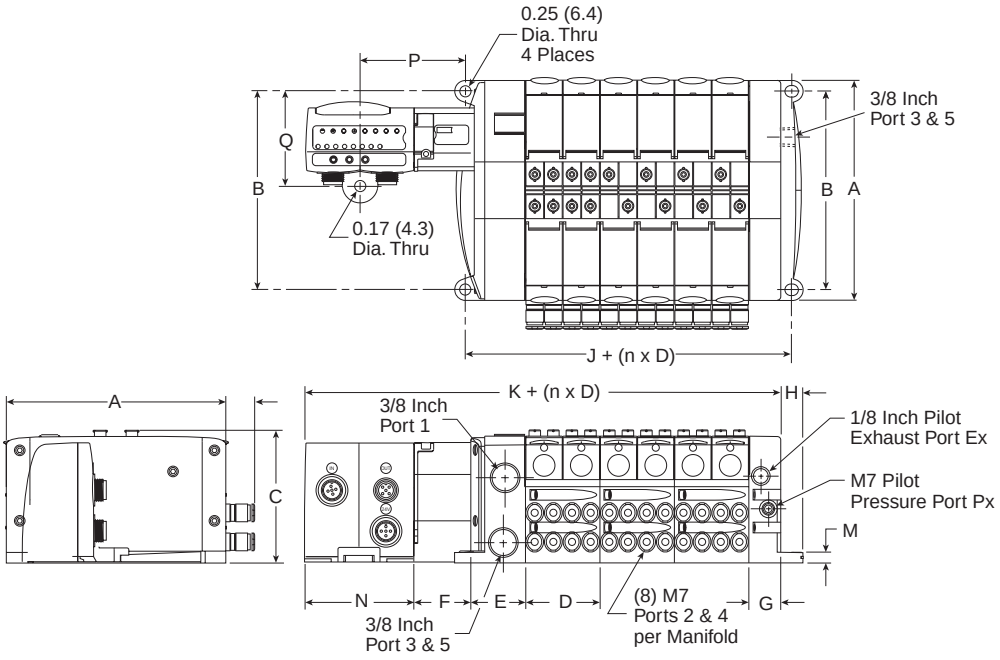
Moduflex with Isys Micro Valves, Side Ported

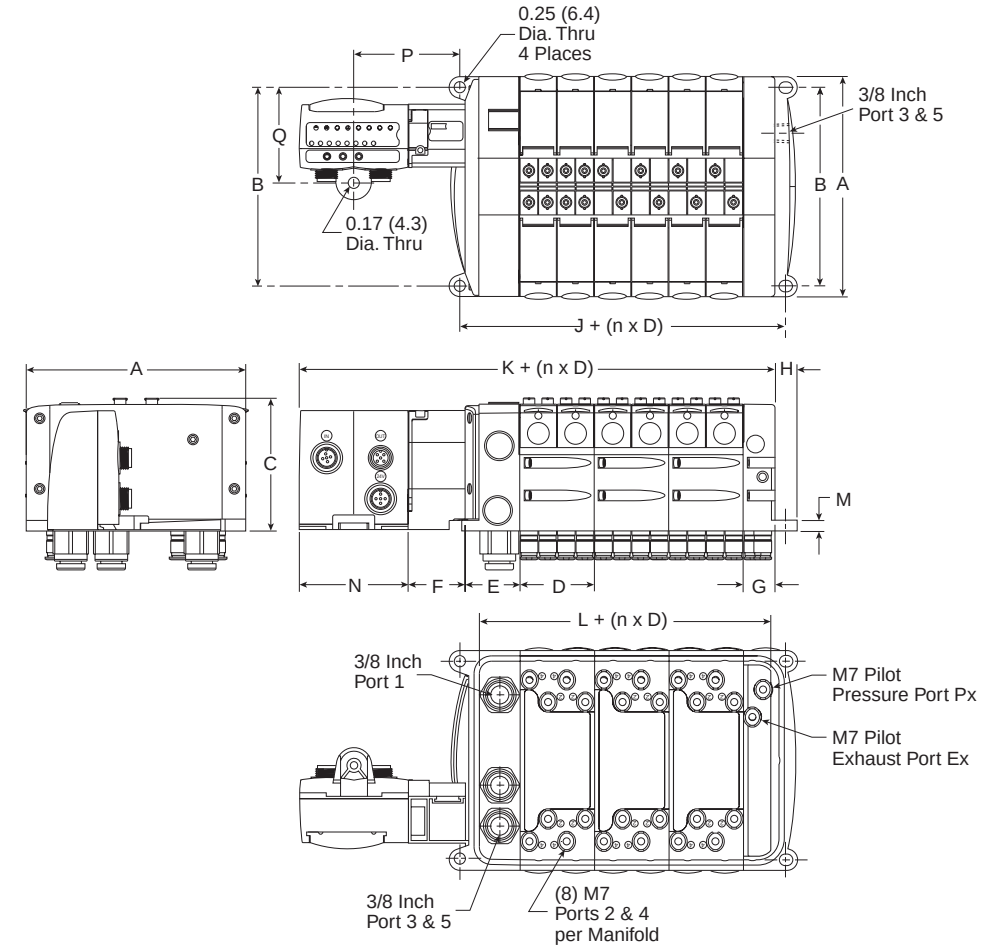


Dimensions

A	B	C	D
4.88 (124.0)	4.41 (112.0)	2.95 (75.0)	1.65 (42.0)
E	**F**	**G**	**H**
1.22 (31.0)	1.28 (32.5)	0.71 (18.0)	0.49 (12.5)
J	**K**	**M**	**N**
2.28 (58.0)	6.10 (155.0)	0.24 (6.1)	2.40 (61.0)
P	**Q**		
2.36 (60.0)	2.07 (52.55)		

Inches (mm)
n = Number of manifolds

Moduflex with Isys Micro Valves, Bottom Ported



Dimensions

A	B	C	D
4.88 (124.0)	4.41 (112.0)	2.95 (75.0)	1.65 (42.0)
E	**F**	**G**	**H**
1.22 (31.0)	1.02 (26.0)	0.71 (18.0)	0.49 (12.5)
J	**K**	**L**	**M**
2.28 (58.0)	6.10 (155.0)	1.69 (43.0)	0.24 (6.1)
N	**P**	**Q**	
2.40 (61.0)	2.36 (60.0)	2.07 (52.55)	

Inches (mm)
n = Number of manifolds

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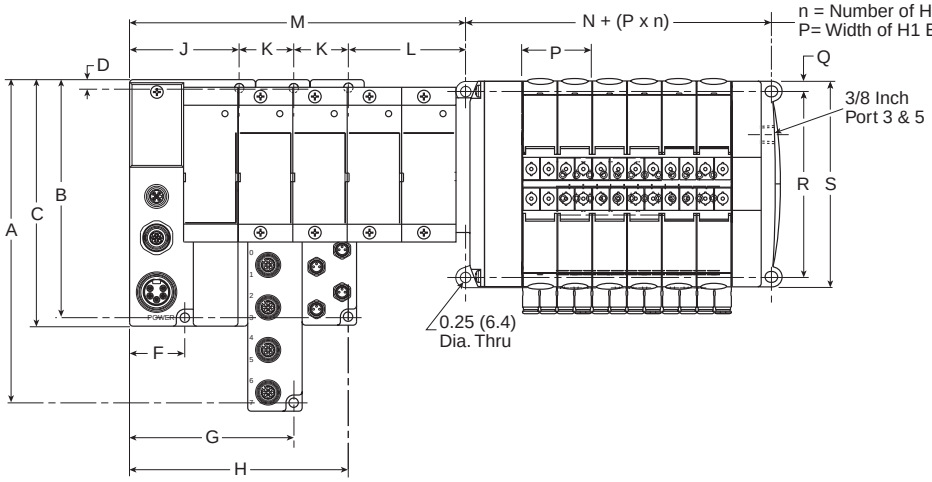
Turck with Isys Micro Valves, Side Ported



Dimensions

A	B	C	D
7.48 (190)	5.51 (140)	5.71 (145)	0.20 (5)
F	**G**	**H**	**J**
1.28 (32.5)	3.79 (96.5)	5.06 (128.5)	2.53 (64.5)
K	**L**	**M**	**N**
1.26 (32)	2.54 (64)	See note 1	2.28 (58)
P	**Q**	**R**	**S**
1.65 (42)	.19 (4.9)	4.41 (112)	4.88 (124)

Note 1: M =J+L+n_2xK, where n_2 = Number of Turck input / output modules
Inches (mm)

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Isys ISO Series

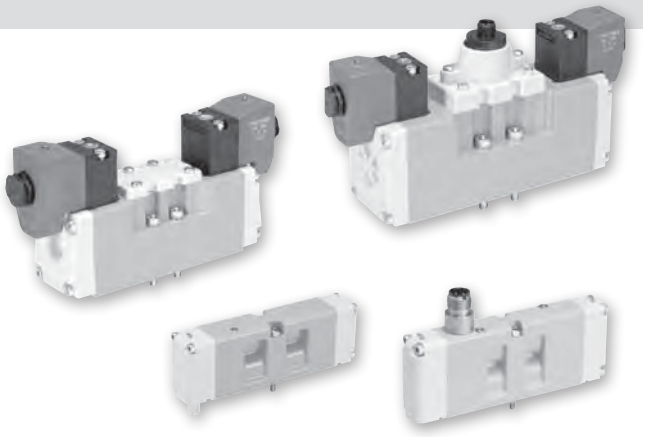
The Isys ISO valve conforms to international standards 15407 and 5599, providing maximum flexibility for end users. As Parker's premier manifold mount product offering, Isys ISO offers machine builders a complete offering with a wide variety of accessories and options in a valve family with flow ranges from 0.55 Cv up to 6.0 Cv. Individual wiring is available with DIN or central connectors, and collective solutions offer installation time savings with either multi-pin connectors or fieldbus solutions.

Ports, Flow
- HB: 1/8 inch, 0.55 Cv
- HA: 1/4 inch, 1.1 Cv
- H1: 3/8 inch, 1.5 Cv
- H2: 1/2 inch, 3.0 Cv
- H3: 3/4 inch, 6.0 Cv

Mounting
- Manifold or subbase

Solenoids
- HB & HA: 24 VDC, 1.0 Watt, and 120 VAC, 1.0 VA
- H1, H2, & H3: 24 VDC, 3.2 Watt, and 120 VAC, 4.5 VA

Certification / approval
- IP65 rated
- CSA / C-US approved



Operating information

Operating pressure:	Vacuum to 145 PSIG (Vacuum to 10 bar)
Pilot pressure:	See chart
Temperature range:	5°F to 120°F (-15°C to 49°C)

Material specifications

Body	Aluminum
End caps	PBT
End plates	Aluminum
Fasteners	Zinc plated steel
Manifolds	Aluminum
Seals	Nitrile
Spool	Aluminum

Operating Pressure

Maximum: 145 PSIG (1000 kPa)

Minimum:

Operator / function	Internal pilot	PSIG (Min. kPa) HB	PSIG (Min. kPa) HA	PSIG (Min. kPa) H1	PSIG (Min. kPa) H2	PSIG (Min. kPa) H3
1	Single solenoid - 2-position	30 (207)	25 (173)	25 (173)	25 (173)	35 (241)
2	Double solenoid- 2-position					
3	Single remote pilot - 2-position **	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum
4	Double remote pilot - 2-position**	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum
5, 6, 7	Double solenoid - 3-position APB, CE, PC	35 (241)	35 (241)	35 (241)	50 (345)	50 (345)
8, 9, 0	Double remote pilot - 3-position** APB, CE, PC	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum
E	Single solenoid pilot - 2-position	30 (207)	30 (207)	35 (241)	45 (310)	45 (310)
	Air return / spring assist					
F	Single remote pilot - 2-position**					
	Air return / spring assist					
N, P, Q	Double solenoid - dual 3/2	30 (207)	N/A	N/A	N/A	N/A
	External pilot*	*	*	*	*	*
All	Isys	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum

* External Pilot Pressure / Remote Pilot Supply - Must meet or exceed minimum pilot pressure for internal pilot option. Not available on Operator / Function N, P, or Q.

** Must be equal to or greater than operating pressure.

Most popular.

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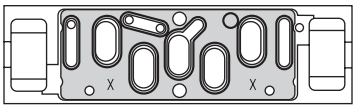
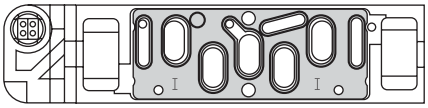
ISO Pneumatic Valve Standard Definitions

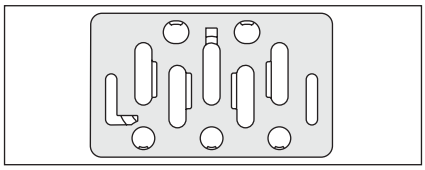
15407-1: Non-Plug-in Standards for Size 01 (26mm) & Size 02 (18mm) Wide Valves



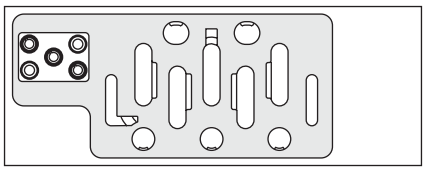
15407-2: Plug-in Standards for Size 01 (26mm) & Size 02 (18mm) Wide Valves



5599-1: Non-Plug-in Standards for Sizes 1, 2, 3

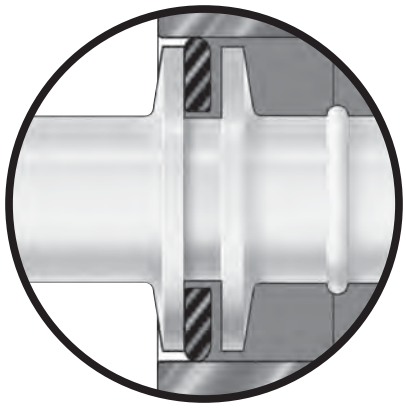


5599-2: Plug-in Standards for Size 1, 2, 3



Wear Compensation System

- Maximum Performance
  - Low Friction
  - Fast Response
  - Lower Operating Pressures
  - Less Wear
- Long Cycle Life - Under pressure, radial expansion of the seal occurs to maintain sealing contact with the valve bore.
- Non-Lube Service - No lubrication required for continuous valve shifting.
- Bi-Directional Spool Seals - Common spool used for any pressure, including vacuum.



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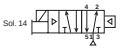
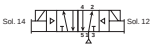
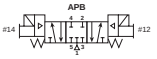
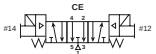
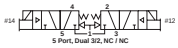
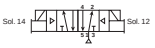
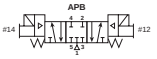
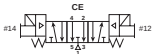
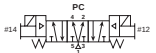
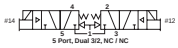
15407-2, Plug-in, Size 18mm (HB)

	Symbol	Type	Cv	Operator	Voltage	Pilot	Non-locking	Locking
		4-way, 2-position, spring return	0.55	Single solenoid	24 VDC	Internal	**HBEVXBG0G9A**	**HBEVXBH0G9A**
						External	**HBEVXLG0G9A**	**HBEVXLH0G9A**
		4-way, 2-position, air return	0.55	Single solenoid	24 VDC	Internal	**HB1VXBG0G9A**	**HB1VXBH0G9A**
						External	**HB1VXLG0G9A**	**HB1VXLH0G9A**
		4-way, 2-position	0.55	Double solenoid	24 VDC	Internal	**HB2VXBG0G9A**	**HB2VXBH0G9A**
						External	**HB2VXLG0G9A**	**HB2VXLH0G9A**
		4-way, 3-position, all ports blocked	0.5	Double solenoid	24 VDC	Internal	**HB5VXBG0G9A**	**HB5VXBH0G9A**
						External	**HB5VXLG0G9A**	**HB5VXLH0G9A**
		4-way, 3-position, center exhaust	0.5	Double solenoid	24 VDC	Internal	**HB6VXBG0G9A**	**HB6VXBH0G9A**
						External	**HB6VXLG0G9A**	**HB6VXLH0G9A**
		4-way, 3-position, pressure center	0.5	Double solenoid	24 VDC	Internal	**HB7VXBG0G9A**	**HB7VXBH0G9A**
						External	**HB7VXLG0G9A**	**HB7VXLH0G9A**
		3-way, 2-position, dual valve, NC/NC	0.45	Double solenoid	24 VDC	Internal	**HBNVXBG0G9A**	**HBNVXBH0G9A**
		3-way, 2-position, dual valve, NO/NO	0.45	Double solenoid	24 VDC	Internal	**HBPVXBG0G9A**	**HBPVXBH0G9A**

	Symbol	Type	Cv	Operator	Voltage	Pilot	Non-locking	Locking
		4-way, 2-position, spring return	0.55	Single solenoid	120 VAC	Internal	**HBEVXBG023A**	**HBEVXBH023A**
						External	**HBEVXLG023A**	**HBEVXLH023A**
		4-way, 2-position, air return	0.55	Single solenoid	120 VAC	Internal	**HB1VXBG023A**	**HB1VXBH023A**
						External	**HB1VXLG023A**	**HB1VXLH023A**
		4-way, 2-position	0.55	Double solenoid	120 VAC	Internal	**HB2VXBG023A**	**HB2VXBH023A**
						External	**HB2VXLG023A**	**HB2VXLH023A**
		4-way, 3-position, all ports blocked	0.5	Double solenoid	120 VAC	Internal	**HB5VXBG023A**	**HB5VXBH023A**
						External	**HB5VXLG023A**	**HB5VXLH023A**
		4-way, 3-position, center exhaust	0.5	Double solenoid	120 VAC	Internal	**HB6VXBG023A**	**HB6VXBH023A**
						External	**HB6VXLG023A**	**HB6VXLH023A**
		4-way, 3-position, pressure center	0.5	Double solenoid	120 VAC	Internal	**HB7VXBG023A**	**HB7VXBH023A**
						External	**HB7VXLG023A**	**HB7VXLH023A**
		3-way, 2-position, dual valve, NC/NC	0.45	Double solenoid	120 VAC	Internal	**HBNVXBG023A**	**HBNVXBH023A**
		3-way, 2-position, dual valve, NO/NO	0.45	Double solenoid	120 VAC	Internal	**HBPVXBG023A**	**HBPVXBH023A**

15407-2, Plug-in, Size 18mm (HB), 2-Station Manifold Bases

End ported bases	Enclosure / Lead length	Solenoid addresses	1/8" NPT	1/8" BSPP
	Circuit board	Single solenoid - 1 address	**PS561151JP**	**PS561152JP**
	Circuit board	Double solenoid - 2 addresses	**PS561151MP**	**PS561152MP**
	Circuit board with 32 output expansion	Single solenoid - 1 address	**PS561151NP**	**PS561152NP**
	Circuit board with 32 output expansion	Double solenoid - 2 addresses	**PS561151PP**	**PS561152PP**
Bottom / end ported bases				
	Circuit board	Single solenoid - 1 address	**PS561161JP**	**PS561162JP**
	Circuit board	Double solenoid - 2 addresses	**PS561161MP**	**PS561162MP**
	Circuit board with 32 output expansion	Single solenoid - 1 address	**PS561161NP**	**PS561162NP**
	Circuit board with 32 output expansion	Double solenoid - 2 addresses	**PS561161PP**	**PS561162PP**

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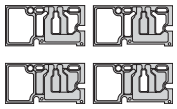
15407-2, Plug-in, Size 18mm (HB) Accessories

	Accessories	Description		Part number
	Sandwich regulator	Common pressure	2-60 PSIG w/ gauge	**PS5638155P**
		Common pressure	5-125 PSIG w/ gauge	**PS5638166P**
		Independent pressure	2-60 PSIG w/ gauge	**PS5638255P**
		Independent pressure	5-125 PSIG w/ gauge	**PS5638266P**
	Gauge adapter kit	Includes 1/8" coupling and long nipple		**PS5651160P**
	Blanking plate kit			**PS5634P**
	Sandwich supply module	1/8" NPT		**PS561600P**
		1/8" BSPP		**PS561601P**
	Sandwich exhaust module	1/8" NPT		**PS561700P**
		1/8" BSPP		**PS561701P**
	Intermediate air supply module	1/8" NPT		**D02P-01-80**
	Sandwich flow control			**PS5635P**
	Manifold to manifold gasket kits	Standard		**PS561AP**
		Blocked #1 port		**PS561BP**
		Blocked #1, 3, 5, ports		**PS561CP**
		Blocked #3, 5 ports		**PS561DP**

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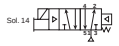
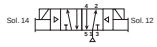
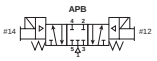
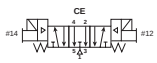
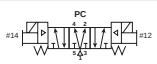
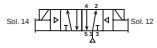
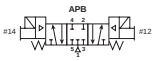
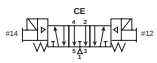
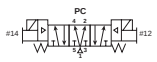
15407-2, Plug-in, Size 26mm (HA)

	Symbol	Type	Cv	Operator	Voltage	Pilot	Non-locking	Locking
		4-way, 2-position, spring return	1.1	Single solenoid	24 VDC	Internal	**HAEVXBG0G9A**	**HAEVXBH0G9A**
						External	**HAEVXLG0G9A**	**HAEVXLH0G9A**
		4-way, 2-position, air return	1.1	Single solenoid	24 VDC	Internal	**HA1VXBG0G9A**	**HA1VXBH0G9A**
						External	**HA1VXLG0G9A**	**HA1VXLH0G9A**
		4-way, 2-position	1.1	Double solenoid	24 VDC	Internal	**HA2VXBG0G9A**	**HA2VXBH0G9A**
						External	**HA2VXLG0G9A**	**HA2VXLH0G9A**
		4-way, 3-position, all ports blocked	1.0	Double solenoid	24 VDC	Internal	**HA5VXBG0G9A**	**HA5VXBH0G9A**
						External	**HA5VXLG0G9A**	**HA5VXLH0G9A**
		4-way, 3-position, center exhaust	1.0	Double solenoid	24 VDC	Internal	**HA6VXBG0G9A**	**HA6VXBH0G9A**
						External	**HA6VXLG0G9A**	**HA6VXLH0G9A**
		4-way, 3-position, pressure center	1.0	Double solenoid	24 VDC	Internal	**HA7VXBG0G9A**	**HA7VXBH0G9A**
						External	**HA7VXLG0G9A**	**HA7VXLH0G9A**

	Symbol	Type	Cv	Operator	Voltage	Pilot	Non-locking	Locking
		4-way, 2-position, spring return	1.1	Single solenoid	120 VAC	Internal	**HAEVXBG023A**	**HAEVXBH023A**
						External	**HAEVXLG023A**	**HAEVXLH023A**
		4-way, 2-position, air return	1.1	Single solenoid	120 VAC	Internal	**HA1VXBG023A**	**HA1VXBH023A**
						External	**HA1VXLG023A**	**HA1VXLH023A**
		4-way, 2-position	1.1	Double solenoid	120 VAC	Internal	**HA2VXBG023A**	**HA2VXBH023A**
						External	**HA2VXLG023A**	**HA2VXLH023A**
		4-way, 3-position, all ports blocked	1.0	Double solenoid	120 VAC	Internal	**HA5VXBG023A**	**HA5VXBH023A**
						External	**HA5VXLG023A**	**HA5VXLH023A**
		4-way, 3-position, center exhaust	1.0	Double solenoid	120 VAC	Internal	**HA6VXBG023A**	**HA6VXBH023A**
						External	**HA6VXLG023A**	**HA6VXLH023A**
		4-way, 3-position, pressure center	1.0	Double solenoid	120 VAC	Internal	**HA7VXBG023A**	**HA7VXBH023A**
						External	**HA7VXLG023A**	**HA7VXLH023A**

15407-2, Plug-in, Size 26mm (HA), Single Subbase

	Enclosure / Lead length	Solenoid addresses	1/4" NPT	1/4" BSPP
	Terminal strip in the base	Double solenoid - 2 addresses	**PS551113CP**	**PS551114CP**

15407-2, Plug-in, Size 26mm (HA), 2-Station Manifold Bases

End ported bases	Enclosure / Lead length	Solenoid addresses	1/4" NPT	1/4" BSPP
	Circuit board	Single solenoid - 1 address	**PS551153JP**	**PS551154JP**
	Circuit board	Double solenoid - 2 addresses	**PS551153MP**	**PS551154MP**
	Circuit board with 32 output expansion	Single solenoid - 1 address	**PS551153NP**	**PS551154NP**
	Circuit board with 32 output expansion	Double solenoid - 2 addresses	**PS551153PP**	**PS551154PP**
	Terminal strip in the base	Double solenoid - 2 addresses	**PS551153CP**	**PS551154CP**
Bottom / end ported bases				
	Circuit board	Single solenoid - 1 address	**PS551163JP**	**PS551164JP**
	Circuit board	Double solenoid - 2 addresses	**PS551163MP**	**PS551164MP**
	Circuit board with 32 output expansion	Single solenoid - 1 address	**PS551163NP**	**PS551164NP**
	Circuit board with 32 output expansion	Double solenoid - 2 addresses	**PS551163PP**	**PS551164PP**
	Terminal strip in the base	Double solenoid - 2 addresses	**PS551163CP**	**PS551164CP**

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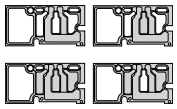
15407-2, Plug-in, Size 26mm (HA) Accessories

	Accessories	Description		Part number
	Sandwich regulator	Common pressure	2-60 PSIG w/ gauge	**PS5538155P**
		Common pressure	5-125 PSIG w/ gauge	**PS5538166P**
		Independent pressure	2-60 PSIG w/ gauge	**PS5538255P**
		Independent pressure	5-125 PSIG w/ gauge	**PS5538266P**
	Gauge adapter kit	Includes 1/8" coupling and long nipple		**PS5651160P**
	Blanking plate kit			**PS5534P**
	Sandwich supply module	1/4" NPT		**PS551600P**
		1/4" BSPP		**PS551601P**
	Sandwich exhaust module	1/4" NPT		**PS551700P**
		1/4" BSPP		**PS551701P**
	Intermediate air supply module	1/4" NPT		**D01P-02-80**
	Sandwich flow control			**PS5535P**
	Manifold to manifold gasket kits	Standard		**PS561AP**
		Blocked #1 port		**PS561BP**
		Blocked #1, 3, 5, ports		**PS561CP**
		Blocked #3, 5 ports		**PS561DP**

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15407-2, Plug-in, Size 18mm & 26mm End Plate Kits

	Electrical option	NPT port	BSPP port
	No connector - use with terminal strip in base	**PS5631010P**	**PS5631011P**
	25-pin, D-Sub	**PS5620L20P**	**PS5620L21P**
	19-pin, round, Brad Harrison	**PS5620L30P**	**PS5620L31P**
	12-pin, M23	**PS5620L40P**	**PS5620L41P**
	16-point terminal strip	**PS5620L50P**	**PS5620L51P**
	19-pin, M23	**PS5620M20P**	**PS5620M21P**
	Moduflex fieldbus	**PS5620M40P**	**PS5620M41P**
	Isysnet, with valve driver module	**PS5620L60P**	**PS5620L61P**
	Turck fieldbus with valve driver module - 16 outputs	**PS5620T10P**	**PS5620T11P**
	Turck fieldbus with valve driver module - 32 outputs	**PS5620T20P**	**PS5620T21P**

15407-2 End Plate Kits with Transition to H2

	Electrical option	NPT port	BSPP port
	25-pin, D-sub	**PS5624L20P**	**PS5624L21P**
	19-pin, round, Brad Harrison	**PS5624L30P**	**PS5624L31P**
	12-pin, M23	**PS5624L40P**	**PS5624L41P**
	16-point terminal strip	**PS5624L50P**	**PS5624L51P**
	19-pin, M23	**PS5624M20P**	**PS5624M21P**
	Moduflex fieldbus	**PS5624M40P**	**PS5624M41P**
	Isysnet, with valve driver module	**PS5624L60P**	**PS5624L61P**
	Turck fieldbus with valve driver module - 16 outputs	**PS5624T10P**	**PS5624T11P**
	Turck fieldbus with valve driver module - 32 outputs	**PS5624T20P**	**PS5624T21P**

Turck, Isysnet, and Moduflex communication modules must be ordered separately. See Fieldbus Section for more information.

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How To Order Plug-in Add-A-Fold Assemblies

1. List Add-A-Fold Assembly call out. This automatically includes the end plate kit assembly.
2. List complete Valve, Regulator, Flow Control and Base model number. List left to right, LOOKING AT THE CYLINDER PORTS on the #12 end of the manifold. The left most station is station 1. (If a blank station is needed, list the blanking plate part number and the individual manifold number in the station specified.)

Example

Application requires a 4-Station manifold.
(Two 18mm + Two 26mm Stations)

Item	Qty.	Part No.	Location
01	1	AAHBD004	
02	1	HB1VXBG0G9A	Station 1
03	1	HB2VXLG0G9A	Station 2
04	1	PS561151MP	Station 1 & 2
05	2	HA1VXBG0G9A	Station 3 & 4
06	1	PS551151MP	Station 3 & 4

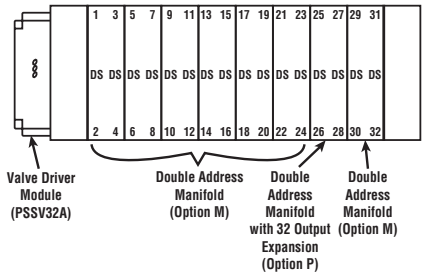
NOTE: Construct manifold assemblies from left to right while looking at the ports. Valves must be ordered as External Pilot when using Sandwich Regulator.

When using an HA or HB manifold base with the "N" Enclosure / Lead Length option:

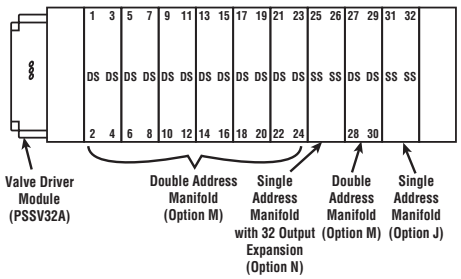
- Outputs 1 – 24 can be single or double address bases. Use a base with "J" or "M" Enclosure / Lead Length option.
- Outputs 25 – 26 are a single address base. Use a base with "N" Enclosure / Lead Length option (this is a single address board with a ribbon connection from the valve driver module, PSSV32A).
- Outputs 27 – 32 can be single or double. Use a base with "J" or "M" Enclosure / Lead Length option.

When using an HA or HB manifold base with the "P" Enclosure / Lead Length option:

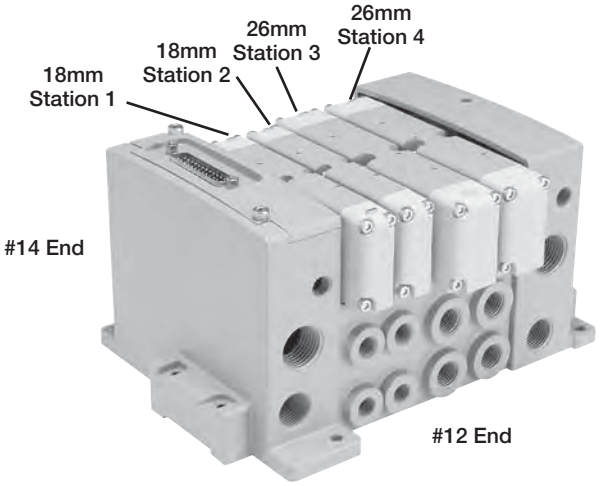
- Outputs 1 – 24 can be single or double address bases. Use a base with "J" or "M" Enclosure / Lead Length option.
- Outputs 25 – 28 are a double address base. Use a base with "P" Enclosure / Lead Length option (this is a double address board with a ribbon connection from the valve driver module, PSSV32A).
- Outputs 29 – 32 can be single or double. Use a base with "J" or "M" Enclosure / Lead Length option.



Option "P"



Option "N"



Example:
4-Station Manifold with (2) 18mm and (2) 26mm Valves on Manifold Bases with 25-pin, D-Sub End Plates

Maximum Number of Solenoids
(Maximum energized simultaneously)

Voltage	Voltage code	25-pin D-sub	19-pin M23 or Brad Harrison	12-pin M23	Moduflex	Isysnet	Turck 16 Outputs	Turck 32 Outputs
24VDC	G9	24 (24)	16 (16)	8 (8)	16 (16)	32 (32)	16 (16)	32 (32)
120VAC*	23	24 (24)	16 (16)	8 (8)	N/A	N/A	N/A	N/A

* Not CSA certified for 25-pin, D-Sub option.

Add-A-Fold Assembly Model Number

AA HB D 0 04

Valve series

Right & left end plate 15407-2 (plug-in, HB 18mm & HA 26mm)	HB*

* Common end plates for HA & HB.

End plate type

Turck fieldbus with valve driver module - 16 outputs	A*
Turck fieldbus with valve driver module - 32 outputs	B*
25-pin, D-sub	D
19-pin, Brad Harrison	E
16 Point terminal strip	F
12-pin, M23	G
19-pin, M23	H
Moduflex fieldbus	T*
Isysnet, with valve driver module	Y*

*Must order communication modules separately.

Thread type

0	NPT
1*	BSPP "G"

* BSPP conforms to ISO 1179-1 with 228-1 threads.

Number of stations*

02
04
•
24
•
32

* Must be ordered in multiples of (2) unless using the HB / HA to H2 Transition Plate.

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15407-2, Plug-in, Size 18mm (HB) & 26mm (HA)

HB 1 VX B G 0 G9 A

Basic series 15407-2	
ISO 15407-2 18mm	HB
ISO 15407-2 26mm	HA

15407-2 Operator / Function	
Single solenoid, 2-position - air return	1
Double solenoid, 2-position	2
Double solenoid, 3-position - APB	5
Double solenoid, 3-position - CE	6
Double solenoid, 3-position - PC	7
Single solenoid, 2-position - air return, spring assist	E
Double solenoid, dual 3/2, NC/NC	N*
Double solenoid, dual 3/2, NO/NO	P*
Double solenoid, dual 3/2, 14 end NC – 12 end NO	Q*

* Available on HB Only, must use Internal Pilot Source Option "B".

Mounting	
15407-2 Valve less base	VX

15407-2 Pilot source / Pilot exhaust	
Internal pilot, port #1 / vented	B
External pilot, port #14 / vented	L*

* Must be specified when using Sandwich Regulators.

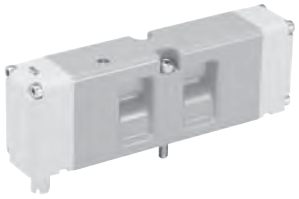
15407-2 Overrides / Lights	
G	Non-locking, flush, push - w/ light
H	Locking, flush, push / turn - w/ light

15407-2 Enclosure / Lead length	
0	Valve less base

15407-2 Voltage & frequency				
	AC		DC	Light & surge suppression
	60Hz	50Hz		
G9			24	LED & suppression
23	120	115		LED & suppression

15407-2 Engineering level	
A	Current

HB: 18mm



HA: 26mm

☐ Most popular.

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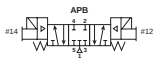
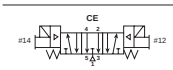
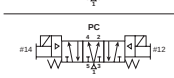
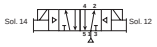
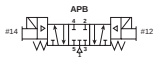
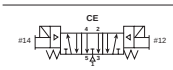
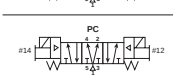
5599-2, Plug-in, Size 1 (H1)

	Symbol	Type	Cv	Operator	Voltage	Pilot	Non-locking	Locking
		4-way, 2-position, spring return	1.5	Single solenoid	24 VDC	Internal	**H1EVXBG0B9D**	**H1EVXBH0B9D**
						External	**H1EVXXG0B9D**	**H1EVXXH0B9D**
		4-way, 2-position, air return	1.5	Single solenoid	24 VDC	Internal	**H11VXBG0B9D**	**H11VXBH0B9D**
						External	**H11VXXG0B9D**	**H11VXXH0B9D**
		4-way, 2-position	1.5	Double solenoid	24 VDC	Internal	**H12VXBG0B9D**	**H12VXBH0B9D**
						External	**H12VXXG0B9D**	**H12VXXH0B9D**
		4-way, 3-position, all ports blocked	1.2	Double solenoid	24 VDC	Internal	**H15VXBG0B9D**	**H15VXBH0B9D**
						External	**H15VXXG0B9D**	**H15VXXH0B9D**
		4-way, 3-position, center exhaust	1.2	Double solenoid	24 VDC	Internal	**H16VXBG0B9D**	**H16VXBH0B9D**
						External	**H16VXXG0B9D**	**H16VXXH0B9D**
		4-way, 3-position, pressure center	1.2	Double solenoid	24 VDC	Internal	**H17VXBG0B9D**	**H17VXBH0B9D**
						External	**H17VXXG0B9D**	**H17VXXH0B9D**

	Symbol	Type	Cv	Operator	Voltage	Pilot	Non-locking	Locking
		4-way, 2-position, spring return	1.5	Single solenoid	120 VAC	Internal	**H1EVXBG023D**	**H1EVXBH023D**
						External	**H1EVXXG023D**	**H1EVXXH023D**
		4-way, 2-position, air return	1.5	Single solenoid	120 VAC	Internal	**H11VXBG023D**	**H11VXBH023D**
						External	**H11VXXG023D**	**H11VXXH023D**
		4-way, 2-position	1.5	Double solenoid	120 VAC	Internal	**H12VXBG023D**	**H12VXBH023D**
						External	**H12VXXG023D**	**H12VXXH023D**
		4-way, 3-position, all ports blocked	1.2	Double solenoid	120 VAC	Internal	**H15VXBG023D**	**H15VXBH023D**
						External	**H15VXXG023D**	**H15VXXH023D**
		4-way, 3-position, center exhaust	1.2	Double solenoid	120 VAC	Internal	**H16VXBG023D**	**H16VXBH023D**
						External	**H16VXXG023D**	**H16VXXH023D**
		4-way, 3-position, pressure center	1.2	Double solenoid	120 VAC	Internal	**H17VXBG023D**	**H17VXBH023D**
						External	**H17VXXG023D**	**H17VXXH023D**

5599-2, Plug-in Single Subbase, Size 1 (H1)

Side ported	Enclosure / Lead length	Solenoid addresses	3/8" NPT	3/8" BSPP
	Terminal strip in base	Double solenoid - 2 address	**PS401115CDP**	**PS401116CDP**
	6" flying leads	Double solenoid - 2 addresses	**PS401115ADP**	**PS401116ADP**
	4-pin, M12 micro connector in base, SAE / Ford wiring	Double solenoid - 2 addresses	**PS4011158FDP**	**PS4011168FDP**

5599-2, Plug-in Manifold Bases, Size 1 (H1)

Bottom / End	Enclosure / Lead length	Solenoid addresses	3/8" NPT	3/8" BSPP
	Circuit board	Single solenoid - 1 address	**PS401165JCP**	**PS401166JCP**
	Circuit board	Double solenoid - 2 addresses	**PS401165MCP**	**PS401166MCP**
	Terminal strip in base	Double solenoid - 2 address	**PS401165CCP**	**PS401166CCP**
	6" flying leads	Double solenoid - 2 addresses	**PS401165ACP**	**PS401166ACP**
	4-pin, M12 micro connector in base, SAE / Ford wiring	Double solenoid - 2 addresses	**PS4011658FCP**	**PS4011668FCP**

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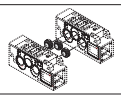
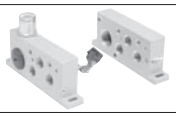
5599-2, Size 1 (H1) Accessories

	Accessory	Description		Part number
	Sandwich regulator	Common pressure	5-125 PSIG w/ gauge	**PS4038166CP**
		Independent pressure	5-125 PSIG w/ gauge	**PS4038266CP**
	Blanking plate kit			**PS4034CP**
	Sandwich flow control			**PS4035CP**
	Manifold to manifold gasket kits			**PS4013P**
	Manifold port isolation kit	Main galley (1, 3, 5)		**PS4032CP**
		Pilot galley		**PS4033CP**
	Auxiliary access plate kit	1/4" & 3/8"	NPT	**PS403000CP**
			BSPP	**PS403001CP**

Plug-in, 5599-2 End Plate Kits, Size 1 (H1)

Electrical option	Description	NPT port	BSPP port
	No connector - use with individually wired base	**PS4031010DP**	**PS4031011DP**
	25-pin, D-sub	**PS4020L20DP**	**PS4020L21DP**
	19-pin, round, Brad Harrison	**PS4020L30DP**	**PS4020L31DP**
	12-pin, M23	**PS4020L40DP**	**PS4020L41DP**
	19-pin, M23	**PS4020M20DP**	**PS4020M21DP**
	Moduflex fieldbus	**PS4020M40DP**	**PS4020M41DP**
	Isysnet, with valve driver module	**PS4020L60DP**	**PS4020L61DP**
	Turck fieldbus with valve driver module - 16 outputs	**PS4020T10DP**	**PS4020T11DP**
	Turck fieldbus with valve driver module - 32 outputs	**PS4020T20DP**	**PS4020T21DP**

Turck, Isysnet, and Moduflex communication modules must be ordered separately. See Fieldbus Section for more information.

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How To Order Plug-in Add-A-Fold Assemblies

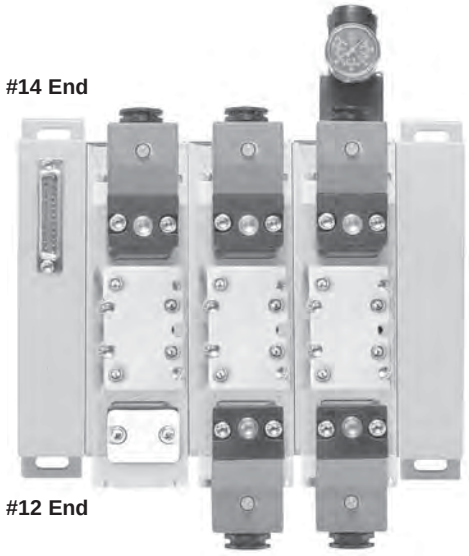
1. List Add-A-Fold Assembly call out. This automatically includes the end plate kit assembly.
2. List complete Valve, Regulator, Flow Control and Base model number. List left to right, LOOKING AT THE CYLINDER PORTS on the #12 end of the manifold. The left most station is station 1. (If a blank station is needed, list the blanking plate part number and the individual manifold number in the station specified.)

Example

Application requires a 3-Station manifold with a valve, regulator on Station 3.

Item	Qty.	Part No.	Location
01	1	AAH1D003	
02	1	H11VXBG0B9D	Station 1
03	1	PS401155MCP	Station 1
04	1	H12VXBG0B9D	Station 2
05	1	PS401155MCP	Station 2
06	1	H12VXXG0B9D	Station 3
07	1	PS4038166CP	Station 3
08	1	PS401155MCP	Station 3

NOTE:
Construct manifold assemblies from left to right while looking at the cylinder ports. Valves must be ordered as External Pilot when using Sandwich Regulator.



Example:
3-Station Manifold with (3) H1 Valves on Manifold Bases and Regulator at Station 3

Maximum Number of Solenoids
(Maximum energized simultaneously)

Voltage	Voltage code	25-pin D-sub	19-pin M23 or Brad Harrison	12-pin M23	Moduflex	Isysnet	Turck 16 Outputs	Turck 32 Outputs
24VDC	G9	24 (24)	16 (16)	8 (8)	16 (16)	24 (21)	16 (16)	24 (21)
120VAC*	23	24 (24)	16 (16)	8 (8)	N/A	N/A	N/A	N/A

* Not CSA certified for 25-pin, D-Sub option.

Add-A-Fold Assembly Model Numbers

AA H1 D 0 03

Valve series	
Right & left end plate	H1

End plate type	
Turck fieldbus with valve driver module - 16 outputs	A*
Turck fieldbus with valve driver module - 32 outputs	B*
25-pin, D-sub	D
19-pin, brad harrison	E
12-pin, M23	G
19-pin, M23	H
Moduflex fieldbus	T*
Isysnet, with valve driver module	X*

* Must order communication modules separately.

Thread type	
0	NPT
1*	BSPP "G"

* BSPP conforms to ISO 1179-1 w 228-1 theads.

Number of stations
01
02
03
04
•
•
24

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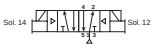
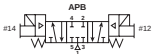
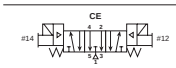
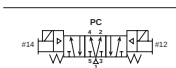
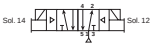
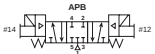
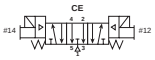
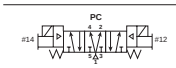
5599-2, Plug-in, Size 2 (H2)

	Symbol	Type	Cv	Operator	Voltage	Pilot	Non-locking	Locking
		4-way, 2-position, spring return	3.0	Single solenoid	24 VDC	Internal	**H2EVXBG0B9D**	**H2EVXBH0B9D**
						External	**H2EVXXG0B9D**	**H2EVXXH0B9D**
		4-way, 2-position, air return	3.0	Single solenoid	24 VDC	Internal	**H21VXBG0B9D**	**H21VXBH0B9D**
						External	**H21VXXG0B9D**	**H21VXXH0B9D**
		4-way, 2-position	3.0	Double solenoid	24 VDC	Internal	**H22VXBG0B9D**	**H22VXBH0B9D**
						External	**H22VXXG0B9D**	**H22VXXH0B9D**
		4-way, 3-position, all ports blocked	2.8	Double solenoid	24 VDC	Internal	**H25VXBG0B9D**	**H25VXBH0B9D**
						External	**H25VXXG0B9D**	**H25VXXH0B9D**
		4-way, 3-position, center exhaust	2.8	Double solenoid	24 VDC	Internal	**H26VXBG0B9D**	**H26VXBH0B9D**
						External	**H26VXXG0B9D**	**H26VXXH0B9D**
		4-way, 3-position, pressure center	2.8	Double solenoid	24 VDC	Internal	**H27VXBG0B9D**	**H27VXBH0B9D**
						External	**H27VXXG0B9D**	**H27VXXH0B9D**

	Symbol	Type	Cv	Operator	Voltage	Pilot	Non-locking	Locking
		4-way, 2-position, spring return	3.0	Single solenoid	120 VAC	Internal	**H2EVXBG023D**	**H2EVXBH023D**
						External	**H2EVXXG023D**	**H2EVXXH023D**
		4-way, 2-position, air return	3.0	Single solenoid	120 VAC	Internal	**H21VXBG023D**	**H21VXBH023D**
						External	**H21VXXG023D**	**H21VXXH023D**
		4-way, 2-position	3.0	Double solenoid	120 VAC	Internal	**H22VXBG023D**	**H22VXBH023D**
						External	**H22VXXG023D**	**H22VXXH023D**
		4-way, 3-position, all ports blocked	2.8	Double solenoid	120 VAC	Internal	**H25VXBG023D**	**H25VXBH023D**
						External	**H25VXXG023D**	**H25VXXH023D**
		4-way, 3-position, center exhaust	2.8	Double solenoid	120 VAC	Internal	**H26VXBG023D**	**H26VXBH023D**
						External	**H26VXXG023D**	**H26VXXH023D**
		4-way, 3-position, pressure center	2.8	Double solenoid	120 VAC	Internal	**H27VXBG023D**	**H27VXBH023D**
						External	**H27VXXG023D**	**H27VXXH023D**

5599-2, Plug-in Single Subbase, Size 2 (H2)

Side ported base	Enclosure / Lead length	Solenoid addresses	1/2" NPT	1/2" BSPP
	Terminal strip in base	Double solenoid - 2 address	**PS411117CCP**	**PS411118CCP**
	6" flying leads	Double solenoid - 2 addresses	**PS411117ACP**	**PS411118ACP**

5599-2, Plug-in Manifold Bases, Size 2 (H2)

Bottom / End ported bases	Enclosure / Lead length	Solenoid addresses	1/2" NPT	1/2" BSPP
	Circuit board	Single solenoid - 1 address	**PS411167JCP**	**PS411168JCP**
	Circuit board	Double solenoid - 2 addresses	**PS411167MCP**	**PS411168MCP**
	Terminal strip in base	Double solenoid - 2 address	**PS411167CCP**	**PS411168CCP**
	6" flying leads	Double solenoid - 2 addresses	**PS411167ACP**	**PS411168ACP**

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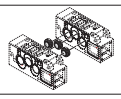
5599-2, Size 2 (H2) Accessories

	Accessory	Description		Part number
	Sandwich regulator	Common pressure	5-125 PSIG w/ gauge	**PS4138166CP**
		Independent pressure	5-125 PSIG w/ gauge	**PS4138266CP**
	Blanking plate kit			**PS4134CP**
	Sandwich flow control			**PS4135CP**
	Manifold to manifold gasket kits			**PS4113P**
	Manifold port isolation kit	Main galley (1, 3, 5)		**PS4132CP**
		Pilot galley		**PS4033CP**

Plug-in, 5599-2 End Plate Kits, Size 2 (H2)

Electrical option	Description	NPT port	BSPP port
	No connector - use with individually wired base	**PS4131010DP**	**PS4131011DP**
	25-pin, D-sub	**PS4120L20DP**	**PS4120L21DP**
	19-pin, round, Brad Harrison	**PS4120L30DP**	**PS4120L31DP**
	12-pin, M23	**PS4120L40DP**	**PS4120L41DP**
	19-pin, M23	**PS4120M20DP**	**PS4120M21DP**
	Moduflex fieldbus	**PS4120M40DP**	**PS4120M41DP**
	Isysnet, with valve driver module	**PS4120L60DP**	**PS4120L61DP**
	Turck fieldbus with valve driver module - 16 outputs	**PS4120T10DP**	**PS4120T11DP**
	Turck fieldbus with valve driver module - 32 outputs	**PS4120T20DP**	**PS4120T21DP**

Turck, Isysnet, and Moduflex communication modules must be ordered separately. See Fieldbus Section for more information.

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How To Order Plug-in Add-A-Fold Assemblies

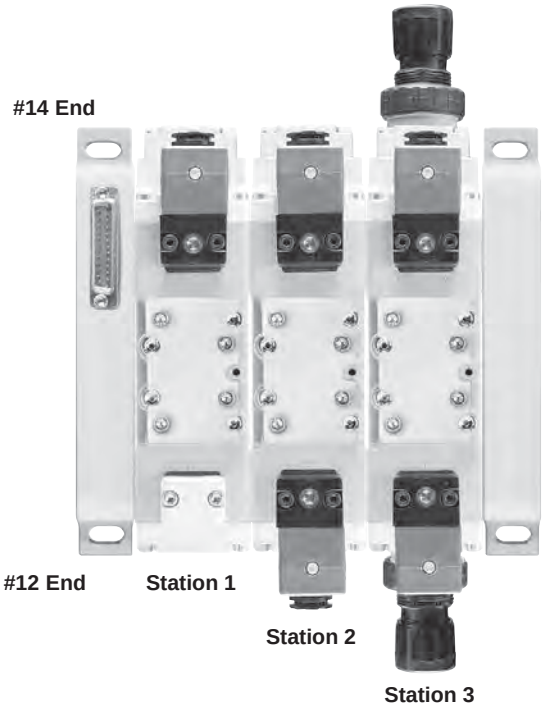
1. List Add-A-Fold Assembly call out. This automatically includes the end plate kit assembly.
2. List complete Valve, Regulator, Flow Control and Base model number. List left to right, LOOKING AT THE CYLINDER PORTS on the #12 end of the manifold. The left most station is station 1. (If a blank station is needed, list the blanking plate part number and the individual manifold number in the station specified.)

Example

Application requires a 3-Station manifold with a valve and regulator on Station 3.

Item	Qty.	Part No.	Location
01	1	AAH2D003	
02	1	H21VXBG0B9D	Station 1
03	1	PS411157MCP	Station 1
04	1	H22VXBG0B9D	Station 2
05	1	PS411157MCP	Station 2
06	1	H22VXXG0B9D	Station 3
07	1	PS4138166CP	Station 3
08	1	PS411157MCP	Station 3

NOTE: Construct manifold assemblies from left to right while looking at the cylinder ports.
Valves must be ordered as External Pilot when using Sandwich Regulator.



Example:
3-Station Manifold with (3) H2 Valves on Manifold Bases and Regulator at Station 3

Maximum Number of Solenoids
(Maximum energized simultaneously)

Voltage	Voltage code	25-pin D-sub	19-pin M23 or Brad Harrison	12-pin M23	Moduflex	Isysnet	Turck 16 Outputs	Turck 32 Outputs
24VDC	G9	24 (24)	16 (16)	8 (8)	16 (16)	24 (21)	16 (16)	24 (21)
120VAC*	23	24 (24)	16 (16)	8 (8)	N/A	N/A	N/A	N/A

* Not CSA certified for 25-pin, D-Sub option.

Add-A-Fold Assembly Model Numbers

AA H2 D 0 03

Valve series

Right & left end plate	H2

End plate type

Turck fieldbus with valve driver module - 16 outputs	A*
Turck fieldbus with valve driver module - 32 outputs	B*
25-pin, D-sub	D†
19-pin, brad harrison	E†
12-pin, M23	G†
19-pin, M23	H†
Moduflex fieldbus	T*
Isysnet, with valve driver module	Y*

* Must order communication modules separately.
† Collective wiring module included.

Thread type

0	NPT
1*	BSPP "G"

* BSPP conforms to ISO 1179-1 w 228-1 theads.

Number of stations

01
02
03
04
•
•
24

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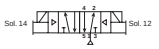
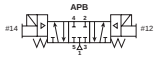
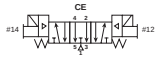
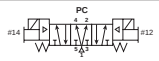
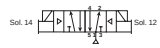
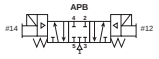
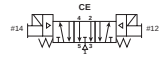
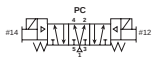
5599-2, Plug-in, Size 3 (H3)

	Symbol	Type	Cv	Operator	Voltage	Pilot	Non-locking	Locking
		4-way, 2-position, spring return	6.0	Single solenoid	24 VDC	Internal	**H3EVXBG0B9D**	**H3EVXBH0B9D**
						External	**H3EVXXG0B9D**	**H3EVXXH0B9D**
		4-way, 2-position, air return	6.0	Single solenoid	24 VDC	Internal	**H31VXBG0B9D**	**H31VXBH0B9D**
						External	**H31VXXG0B9D**	**H31VXXH0B9D**
		4-way, 2-position	6.0	Double solenoid	24 VDC	Internal	**H32VXBG0B9D**	**H32VXBH0B9D**
						External	**H32VXXG0B9D**	**H32VXXH0B9D**
		4-way, 3-position, all ports blocked	5.0	Double solenoid	24 VDC	Internal	**H35VXBG0B9D**	**H35VXBH0B9D**
						External	**H35VXXG0B9D**	**H35VXXH0B9D**
		4-way, 3-position, center exhaust	5.0	Double solenoid	24 VDC	Internal	**H36VXBG0B9D**	**H36VXBH0B9D**
						External	**H36VXXG0B9D**	**H36VXXH0B9D**
		4-way, 3-position, pressure center	5.0	Double solenoid	24 VDC	Internal	**H37VXBG0B9D**	**H37VXBH0B9D**
						External	**H37VXXG0B9D**	**H37VXXH0B9D**

	Symbol	Type	Cv	Operator	Voltage	Pilot	Non-locking	Locking
		4-way, 2-position, spring return	6.0	Single solenoid	120 VAC	Internal	**H3EVXBG023D**	**H3EVXBH023D**
						External	**H3EVXXG023D**	**H3EVXXH023D**
		4-way, 2-position, air return	6.0	Single solenoid	120 VAC	Internal	**H31VXBG023D**	**H31VXBH023D**
						External	**H31VXXG023D**	**H31VXXH023D**
		4-way, 2-position	6.0	Double solenoid	120 VAC	Internal	**H32VXBG023D**	**H32VXBH023D**
						External	**H32VXXG023D**	**H32VXXH023D**
		4-way, 3-position, all ports blocked	5.0	Double solenoid	120 VAC	Internal	**H35VXBG023D**	**H35VXBH023D**
						External	**H35VXXG023D**	**H35VXXH023D**
		4-way, 3-position, center exhaust	5.0	Double solenoid	120 VAC	Internal	**H36VXBG023D**	**H36VXBH023D**
						External	**H36VXXG023D**	**H36VXXH023D**
		4-way, 3-position, pressure center	5.0	Double solenoid	120 VAC	Internal	**H37VXBG023D**	**H37VXBH023D**
						External	**H37VXXG023D**	**H37VXXH023D**

5599-2, Plug-in Single Subbase, Size 3 (H3)

Side ported base	Enclosure / Lead length	Solenoid addresses	3/4" NPT	3/4" BSPP
	Terminal strip in base	Double solenoid - 2 address	**PS421119CCP**	**PS401110CCP**
	6" flying leads	Double solenoid - 2 addresses	**PS421119ACP**	**PS421110ACP**

5599-2, Plug-in Manifold Bases, Size 3 (H3)

Bottom / End ported bases	Enclosure / Lead length	Solenoid addresses	3/4" NPT	3/4" BSPP
	Circuit board	Single solenoid - 1 address	**PS421169JCP**	**PS421160JCP**
	Circuit board	Double solenoid - 2 addresses	**PS421169MCP**	**PS421160MCP**
	Terminal strip in base	Double solenoid - 2 address	**PS421169CCP**	**PS421160CCP**
	6" flying leads	Double solenoid - 2 addresses	**PS421169ACP**	**PS421160ACP**

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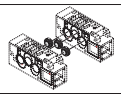
5599-2, Size 3 (H3) Accessories

	Accessory	Description		Part number
	Sandwich regulator	Common pressure	5-125 PSIG w/ gauge	**PS4238166CP**
		Independent pressure	5-125 PSIG w/ gauge	**PS4238266CP**
	Blanking plate kit			**PS4234CP**
	Sandwich flow control			**PS4235CP**
	Manifold to manifold gasket kits			**PS4213P**
	Manifold port isolation kit	Main galley (1, 3, 5)		**PS4232CP**
		Pilot galley		**PS4033CP**

Plug-in, 5599-2 End Plate Kits, Size 3 (H3)

Electrical option		NPT port	BSPP port
	No connector - use with individually wired base	**PS4231010DP**	**PS4231011DP**
	25-pin, D-sub	**PS4220L20DP**	**PS4220L21DP**
	19-pin, round, Brad Harrison	**PS4220L30DP**	**PS4220L31DP**
	12-pin, M23	**PS4220L40DP**	**PS4220L41DP**
	19-pin, M23	**PS4220M20DP**	**PS4220M21DP**
	Moduflex fieldbus	**PS4220M40DP**	**PS4220M41DP**
	Isysnet, with valve driver module	**PS4220L60DP**	**PS4220L61DP**
	Turck fieldbus with valve driver module - 16 outputs	**PS4220T10DP**	**PS4220T11DP**
	Turck fieldbus with valve driver module - 32 outputs	**PS4220T20DP**	**PS4220T21DP**

Turck, Isysnet, and Moduflex communication modules must be ordered separately. See Fieldbus Section for more information.

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How To Order Plug-in Add-A-Fold Assemblies

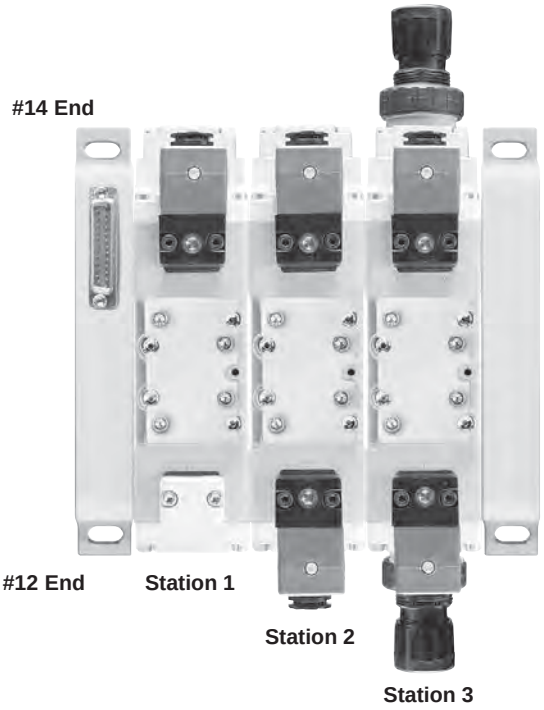
1. List Add-A-Fold Assembly call out. This automatically includes the end plate kit assembly.
2. List complete Valve, Regulator, Flow Control and Base model number. List left to right, LOOKING AT THE CYLINDER PORTS on the #12 end of the manifold. The left most station is station 1. (If a blank station is needed, list the blanking plate part number and the individual manifold number in the station specified.)

Example

Application requires a 3-Station manifold with a valve and regulator on Station 3.

Item	Qty.	Part No.	Location
01	1	AAH3D003	
02	1	H31VXBG0B9D	Station 1
03	1	PS421159MCP	Station 1
04	1	H32VXBG0B9D	Station 2
05	1	PS421159MCP	Station 2
06	1	H32VXXG0B9D	Station 3
07	1	PS4238166CP	Station 3
08	1	PS421159MCP	Station 3

NOTE: Construct manifold assemblies from left to right while looking at the cylinder ports.
Valves must be ordered as External Pilot when using Sandwich Regulator.



Example:
3-Station Manifold with (3) H3 Valves on Manifold Bases and Regulator at Station 3

Maximum Number of Solenoids
(Maximum energized simultaneously)

Voltage	Voltage code	25-pin D-sub	19-pin M23 or Brad Harrison	12-pin M23	Moduflex	Isysnet	Turck 16 Outputs	Turck 32 Outputs
24VDC	G9	24 (24)	16 (16)	8 (8)	16 (16)	24 (21)	16 (16)	24 (21)
120VAC*	23	24 (24)	16 (16)	8 (8)	N/A	N/A	N/A	N/A

* Not CSA certified for 25-pin, D-Sub option.

Add-A-Fold Assembly Model Numbers

AA H3 D 0 03

Valve series	
Right & left end plate	H3

End plate type	
Turck fieldbus with valve driver module - 16 outputs	A*
Turck fieldbus with valve driver module - 32 outputs	B*
25-pin, D-sub	D†
19-pin, brad harrison	E†
12-pin, M23	G†
19-pin, M23	H†
Moduflex fieldbus	T*
Isysnet, with valve driver module	Y*

* Must order communication modules separately.
† Collective wiring module included.

Number of stations
01
02
03
04
•
•
24

Thread type	
0	NPT
1*	BSPP "G"

* BSPP Conforms to ISO 1179-1 w 228-1 Theads.

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Plug-in, 5599-2, Size 1, 2, & 3

H1 E VX B G 0 B9 D

Basic series 5599-2	
ISO 5599-2 Size 1	H1
ISO 5599-2 Size 2	H2
ISO 5599-2 Size 3	H3

5599-2 Operator / Function	
Single solenoid, 2-position - air return	**1**
Double solenoid, 2-position	**2**
Double solenoid, 3-position - APB	**5**
Double solenoid, 3-position - CE	**6**
Double solenoid, 3-position - PC	7
Single solenoid, 2-position - air return, spring assist	**E**

5599-2 Mounting	
5599-2 Valve less vase	VX

5599-2 Pilot source / Pilot exhaust	
Internal pilot, port #1 / vented	**B**
External pilot, port #12 or #14 / vented	X*

* Must be specified when using Sandwich Regulators.

5599-2 Overrides / Lights		
	Voltage code	
B	**42, 45, 57**	**Non-locking, flush, push - w/o light**
C	42, 45, 57	Locking, flush, push / turn - w/o light
G	**B9, 23**	**Non-locking, flush, push - w/ light**
H	B9, 23	Locking, flush, push / turn - w/ light

5599-2 Enclosure / Lead length	
0	None, valve less base

5599-2 Voltage & Frequency				
	AC		DC	Light & surge suppression
	60Hz	50Hz		
42	24			
45			12	
B9			**24**	**LED & suppression**
23	**120**	**115**		**LED & suppression**
57	240			

5599-2 Engineering level	
D	Current

Plug-in, 5599-2 Transition Plate Kits

PS4026 L2 0 C P

Transition plate type*	
H1 to H2 to H3	**PS4025**
H1 to H3	**PS4026**
H1 to H2	**PS4027**
H2 to H3	**PS4028**

* Includes Left Hand and Right Hand End Plates

Engineering level	
C	Basic series PS40

Thread type	
0	NPT
1*	BSPP "G"

* BSPP conforms to ISO 1179-1 w 228-1 threads.

Options	
25-pin, D-sub	**L2**
19-pin, round, brad harrison	**L3**
12-pin, M23	L4
19-pin, M23	M2
Moduflex fieldbus	**M4***
Isysnet, with valve driver module	**L6***
Turck fieldbus with valve driver module - 16 outputs	**T1**
Turck fieldbus with valve driver module - 32 outputs	**T2**

* Must order communication miodule seperately
turck, isysnet, and moduflex communication modules must be ordered separately.
See fieldbus section for more information.

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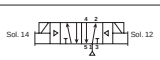
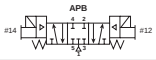
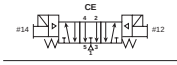
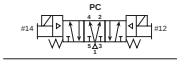
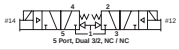
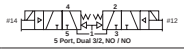
15407-1, Non Plug-in, Size 18mm (HB)

	Symbol	Type	Cv	Operator	Voltage	Pilot	Non-locking	Locking
		4-way, 2-position, spring return	0.55	Single solenoid	24 VDC	Internal	**HBEWXBG2G9000FA**	**HBEWXBH2G9000FA**
						External	**HBEWXLG2G9000FA**	**HBEWXLH2G9000FA**
		4-way, 2-position, air return	0.55	Single solenoid	24 VDC	Internal	**HB1WXBG2G9000FA**	**HB1WXBH2G9000FA**
						External	**HB1WXLG2G9000FA**	**HB1WXLH2G9000FA**
		4-way, 2-position	0.55	Double solenoid	24 VDC	Internal	**HB2WXBG2G9000FA**	**HB2WXBH2G9000FA**
						External	**HB2WXLG2G9000FA**	**HB2WXLH2G9000FA**
		4-way, 3-position, all ports blocked	0.5	Double solenoid	24 VDC	Internal	**HB5WXBG2G9000FA**	**HB5WXBH2G9000FA**
						External	**HB5WXLG2G9000FA**	**HB5WXLH2G9000FA**
		4-way, 3-position, center exhaust	0.5	Double solenoid	24 VDC	Internal	**HB6WXBG2G9000FA**	**HB6WXBH2G9000FA**
						External	**HB6WXLG2G9000FA**	**HB6WXLH2G9000FA**
		4-way, 3-position, pressure center	0.5	Double solenoid	24 VDC	Internal	**HB7WXBG2G9000FA**	**HB7WXBH2G9000FA**
						External	**HB7WXLG2G9000FA**	**HB7WXLH2G9000FA**
		3-way, 2-position, dual valve, NC/NC	0.45	Double solenoid	24 VDC	Internal	**HBNWXBG2G9000FA**	**HBNWXBH2G9000FA**
		3-way, 2-position, dual valve, NO/NO	0.45	Double solenoid	24 VDC	Internal	**HBPWXBG2G9000FA**	**HBPWXBH2G9000FA**

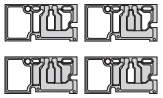
15407-1, Non Plug-in, Size 18mm (HB)

Single subbase	Description	1/8" NPT	1/8" BSPP
	Side ported base	**PL02-01-80**	**PL02-01-70**

2 Station manifold bases	Description	1/8" NPT	1/8" BSPP
	End ported bases	**PS5611510P**	**PS5611520P**

End plate kit	Description	NPT port	BSPP port
	Non-collective wiring end plate	**PS5631010P**	**PS5631011P**

15407-1, Non-Plug-in, Size 18mm (HB) Accessories

	Accessories	Description		Part number
	Sandwich regulator	Common pressure	2-60 PSIG w/ gauge	**PS5637155P**
		Common pressure	5-125 PSIG w/ gauge	**PS5637166P**
		Independent pressure	2-60 PSIG w/ gauge	**PS5637255P**
		Independent pressure	5-125 PSIG w/ gauge	**PS5637266P**
	Gauge adapter kit	Includes 1/8" coupling and long nipple		**PS5651160P**
	Blanking plate kit			**PS5634P**
	Sandwich supply module	1/8" NPT		**PS562600P**
		1/8" BSPP		**PS562601P**
	Sandwich exhaust module	1/8" NPT		**PS562700P**
		1/8" BSPP		**PS562701P**
	Intermediate air supply module	1/8" NPT		**D02P-01-80**
	Sandwich flow control			**PS5642P**
	Manifold to manifold gasket kits	Standard		**PS561AP**
		Blocked #1 port		**PS561BP**
		Blocked #1, 3, 5, ports		**PS561CP**
		Blocked #3, 5 ports		**PS561DP**

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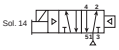
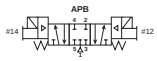
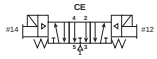
15407-1, Non Plug-in, Size 26mm (HA)

	Symbol	Type	Cv	Operator	Voltage	Pilot	Non-locking	Locking
		4-way, 2-position, spring return	1.1	Single solenoid	24 VDC	Internal	**HAEWXBG2G9000FA**	**HAEWXBH2G9000FA**
						External	**HAEWXLG2G9000FA**	**HAEWXLH2G9000FA**
		4-way, 2-position, air return	1.1	Single solenoid	24 VDC	Internal	**HA1WXBG2G9000FA**	**HA1WXBH2G9000FA**
						External	**HA1WXLG2G9000FA**	**HA1WXLH2G9000FA**
		4-way, 2-position	1.1	Double solenoid	24 VDC	Internal	**HA2WXBG2G9000FA**	**HA2WXBH2G9000FA**
						External	**HA2WXLG2G9000FA**	**HA2WXLH2G9000FA**
		4-way, 3-position, all ports blocked	1.0	Double solenoid	24 VDC	Internal	**HA5WXBG2G9000FA**	**HA5WXBH2G9000FA**
						External	**HA5WXLG2G9000FA**	**HA5WXLH2G9000FA**
		4-way, 3-position, center exhaust	1.0	Double solenoid	24 VDC	Internal	**HA6WXBG2G9000FA**	**HA6WXBH2G9000FA**
						External	**HA6WXLG2G9000FA**	**HA6WXLH2G9000FA**
		4-way, 3-position, pressure center	1.0	Double solenoid	24 VDC	Internal	**HA7WXBG2G9000FA**	**HA7WXBH2G9000FA**
						External	**HA7WXLG2G9000FA**	**HA7WXLH2G9000FA**

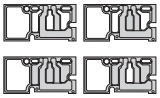
15407-1, Non Plug-in, Size 26mm (HA)

Single subbase	Description	1/4" NPT	1/4" BSPP
	Side ported base	**PL01-02-80**	**PL01-02-70**

2 Station manifold bases	Description	1/4" NPT	1/4" BSPP
	End ported bases	**PS5511530P**	**PS5511540P**

End plate kit	Description	NPT port	BSPP port
	Non-collective wiring end plate	**PS5631010P**	**PS5631011P**

15407-1, Non-Plug-in, Size 18mm (HB) Accessories

	Accessories	Description		Part number
	Sandwich regulator	Common pressure	2-60 PSIG w/ gauge	**PS5537155P**
		Common pressure	5-125 PSIG w/ gauge	**PS5537166P**
		Independent pressure	2-60 PSIG w/ gauge	**PS5537255P**
		Independent pressure	5-125 PSIG w/ gauge	**PS5537266P**
	Gauge adapter kit	Includes 1/8" coupling and long nipple		**PS5651160P**
	Blanking plate kit			**PS5634P**
	Sandwich supply module	1/8" NPT		**PS562600P**
		1/8" BSPP		**PS562601P**
	Sandwich exhaust module	1/8" NPT		**PS562700P**
		1/8" BSPP		**PS562701P**
	Intermediate air supply module	1/8" NPT		**D01P-02-80**
	Sandwich flow control			**PS5542P**
	Manifold to manifold gasket kits	Standard		**PS561AP**
		Blocked #1 port		**PS561BP**
		Blocked #1, 3, 5, ports		**PS561CP**
		Blocked #3, 5 ports		**PS561DP**

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Non Plug-in, 15407-1, Size 18mm (HB) & 26mm (HA)

HB E WX B G 2 G9 000F A

Basic series 15407-1	
ISO 15407-1 18mm	HB
ISO 15407-1 26mm	HA

15407-1 Operator / Function	
Single solenoid, 2-position - air return	1
Double solenoid, 2-position	2
Double solenoid, 3-position - APB	5
Double solenoid, 3-position - CE	6
Double solenoid, 3-position - PC	7
Single solenoid, 2-position - air return, spring assist	E
Double solenoid, dual 3/2, NC/NC	N†
Double solenoid, dual 3/2, NO/NO	P†
Double solenoid, dual 3/2, 14 end NC – 12 end NO	Q†

† Available on HB Only, must use Internal Pilot Source Option "B".

15407-1 Mounting	
Valve less base	WX

15407-1 Pilot source / Pilot exhaust	
B	Internal pilot, port #1 / vented
L*	External pilot, port #14 / vented

* Must be specified when using Sandwich Regulators.

15407-1 Overrides / Lights	
G	Non-locking, flush, push - w/ light
H	Locking, flush, push / turn - w/ light

15407-1 Enclosure / Lead length	
2	4-pin, M12 micro, straight connector

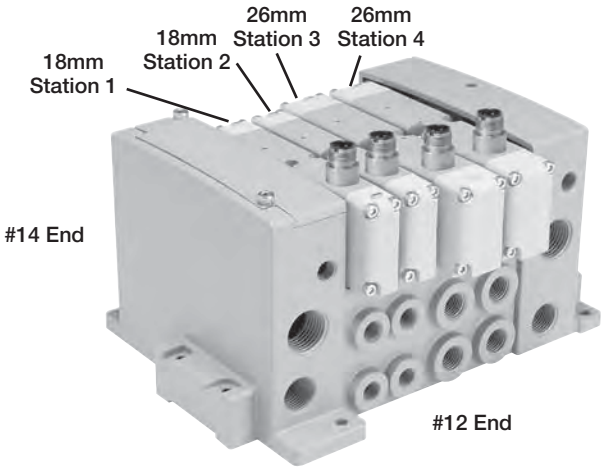
15407-1 Voltage & frequency		
G9	24VDC	LED & suppression

15407-1 Central connector wiring options	
000F	SAE / Ford, ISO 20401

15407-1 Engineering level	
A	Current

How To Order 15407-1 Non Plug-in Add-A-Fold Assemblies

1. List Add-A-Fold Assembly call out. This automatically includes the end plate kit assembly.
2. List complete Valve, Regulator, Flow Control and Base model number. List left to right, LOOKING AT THE CYLINDER PORTS on the #12 end of the manifold. The left most station is station 1. (If a blank station is needed, list the blanking plate part number and the individual manifold number in the station specified.)



Example:
4-Station Manifold with (2) 18mm and (2) 26mm Valves on Manifold Bases

Add-A-Fold Assembly Model Number

AA HBS 0 04

Valve series	
Right & left end plate 15407-1 (HB 18mm & HA 26mm)	HBS†

† For use with PS5511 and PS5611 manifolds.

Thread type	
NPT	0
BSPP "G"	1*

* BSPP conforms to ISO 1179-1 w 228-1 threads for end plate Type "S".

Number of stations*
02
04
•
24
•
32

* Must be ordered in multiples of (2) unless using the HB/HA to H2 transition plate.

Example

Application requires a 4-Station manifold. (Two 18mm + Two 26mm Stations)

Item	Qty.	Part No.	Location
01	1	AAHBS004	
02	1	HB1WXBG2G9000FA	Station 1
03	1	HB2WXBG2G9000FA	Station 2
04	1	PS5611510P	Station 1 & 2
05	2	HA1WXBG2G9000FA	Station 3 & 4
06	1	PS5511510P	Station 3 & 4

NOTE: Construct manifold assemblies from left to right while looking at the ports. Valves must be ordered as External Pilot when using Sandwich Regulator.

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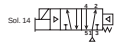
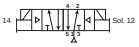
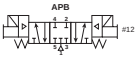
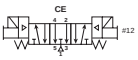
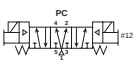
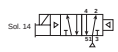
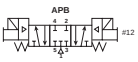
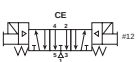
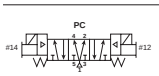
5599-1, Non Plug-in, Size 1 (H1) with Central Connectors

	Symbol	Type	Cv	Operator	Voltage	Enclosure	Pilot	Internal pilot	External pilot
		4-way, 2-position, spring return	1.5	Single solenoid	24 VDC	4-pin, central M12 connector	Internal	**H1EWXBG2B9000FD**	**H1EWXBH2B9000FD**
							External	**H1EWXXG2B9000FD**	**H1EWXXH2B9000FD**
		4-way, 2-position, air return	1.5	Single solenoid	24 VDC	4-pin, central M12 connector	Internal	**H11WXBG2B9000FD**	**H11WXBH2B9000FD**
							External	**H11WXXG2B9000FD**	**H11WXXH2B9000FD**
		4-way, 2-position	1.5	Double solenoid	24 VDC	4-pin, central M12 connector	Internal	**H12WXBG2B9000FD**	**H12WXBH2B9000FD**
							External	**H12WXXG2B9000FD**	**H12WXXH2B9000FD**
		4-way, 3-position, all ports blocked	1.2	Double solenoid	24 VDC	4-pin, central M12 connector	Internal	**H15WXBG2B9000FD**	**H15WXBH2B9000FD**
							External	**H15WXXG2B9000FD**	**H15WXXH2B9000FD**
		4-way, 3-position, center exhaust	1.2	Double solenoid	24 VDC	4-pin, central M12 connector	Internal	**H16WXBG2B9000FD**	**H16WXBH2B9000FD**
							External	**H16WXXG2B9000FD**	**H16WXXH2B9000FD**
		4-way, 3-position, pressure center	1.2	Double solenoid	24 VDC	4-pin, central M12 connector	Internal	**H17WXBG2B9000FD**	**H17WXBH2B9000FD**
							External	**H17WXXG2B9000FD**	**H17WXXH2B9000FD**

	Symbol	Type	Cv	Operator	Voltage		Pilot	Non-locking	Locking
		4-way, 2-position, spring return	1.5	Single solenoid	120 VAC	5-Pin, central 7/8" mini connector	Internal	**H1EWXBG323000FD**	**H1EWXBH323000FD**
							External	**H1EWXXG323000FD**	**H1EWXXH323000FD**
		4-way, 2-position, air return	1.5	Single solenoid	120 VAC	5-Pin, central 7/8" mini connector	Internal	**H11WXBG323000FD**	**H11WXBH323000FD**
							External	**H11WXXG323000FD**	**H11WXXH323000FD**
		4-way, 2-position	1.5	Double solenoid	120 VAC	5-Pin, central 7/8" mini connector	Internal	**H12WXBG323000FD**	**H12WXBH323000FD**
							External	**H12WXXG323000FD**	**H12WXXH323000FD**
		4-way, 3-position, all ports blocked	1.2	Double solenoid	120 VAC	5-Pin, central 7/8" mini connector	Internal	**H15WXBG323000FD**	**H15WXBH323000FD**
							External	**H15WXXG323000FD**	**H15WXXH323000FD**
		4-way, 3-position, center exhaust	1.2	Double solenoid	120 VAC	5-Pin, central 7/8" mini connector	Internal	**H16WXBG323000FD**	**H16WXBH323000FD**
							External	**H16WXXG323000FD**	**H16WXXH323000FD**
		4-way, 3-position, pressure center	1.2	Double solenoid	120 VAC	5-Pin, central 7/8" mini connector	Internal	**H17WXBG323000FD**	**H17WXBH323000FD**
							External	**H17WXXG323000FD**	**H17WXXH323000FD**

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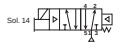
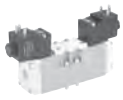
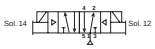
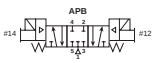
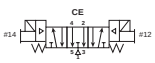
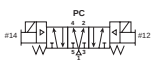
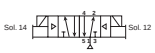
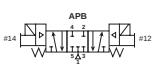
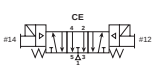
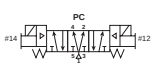
5599-1, Non Plug-in, Size 1 (H1) with 3-Pin DIN Connectors

	Symbol	Type	Cv	Operator	Voltage	Enclosure	Pilot	Internal pilot	External pilot
		4-way, 2-position, spring return	1.5	Single solenoid	24 VDC	3-pin DIN connector on coil	Internal	**H1EWXBBL49D**	**H1EWXBDL49D**
							External	**H1EWXXBL49D**	**H1EWXXDL49D**
		4-way, 2-position, air return	1.5	Single solenoid	24 VDC	3-pin DIN connector on coil	Internal	**H11WXBBL49D**	**H11WXBDL49D**
							External	**H11WXXBL49D**	**H11WXXDL49D**
		4-way, 2-position	1.5	Double solenoid	24 VDC	3-pin DIN connector on coil	Internal	**H12WXBBL49D**	**H12WXBDL49D**
							External	**H12WXXBL49D**	**H12WXXDL49D**
		4-way, 3-position, all ports blocked	1.2	Double solenoid	24 VDC	3-pin DIN connector on coil	Internal	**H15WXBBL49D**	**H15WXBDL49D**
							External	**H15WXXBL49D**	**H15WXXDL49D**
		4-way, 3-position, center exhaust	1.2	Double solenoid	24 VDC	3-pin DIN connector on coil	Internal	**H16WXBBL49D**	**H16WXBDL49D**
							External	**H16WXXBL49D**	**H16WXXDL49D**
		4-way, 3-position, pressure center	1.2	Double solenoid	24 VDC	3-pin DIN connector on coil	Internal	**H17WXBBL49D**	**H17WXBDL49D**
							External	**H17WXXBL49D**	**H17WXXDL49D**

	Symbol	Type	Cv	Operator	Voltage		Pilot	Non-locking	Locking
		4-way, 2-position, spring return	1.5	Single solenoid	120 VAC	3-pin DIN connector on coil	Internal	**H1EWXBBL53D**	**H1EWXBDL53D**
							External	**H1EWXXBL53D**	**H1EWXXDL53D**
		4-way, 2-position, air return	1.5	Single solenoid	120 VAC	3-pin DIN connector on coil	Internal	**H11WXBBL53D**	**H11WXBDL53D**
							External	**H11WXXBL53D**	**H11WXXDL53D**
		4-way, 2-position	1.5	Double solenoid	120 VAC	3-pin DIN connector on coil	Internal	**H12WXBBL53D**	**H12WXBDL53D**
							External	**H12WXXBL53D**	**H12WXXDL53D**
		4-way, 3-position, all ports blocked	1.2	Double solenoid	120 VAC	3-pin DIN connector on coil	Internal	**H15WXBBL53D**	**H15WXBDL53D**
							External	**H15WXXBL53D**	**H15WXXDL53D**
		4-way, 3-position, center exhaust	1.2	Double solenoid	120 VAC	3-pin DIN connector on coil	Internal	**H16WXBBL53D**	**H16WXBDL53D**
							External	**H16WXXBL53D**	**H16WXXDL53D**
		4-way, 3-position, pressure center	1.2	Double solenoid	120 VAC	3-pin DIN connector on coil	Internal	**H17WXBBL53D**	**H17WXBDL53D**
							External	**H17WXXBL53D**	**H17WXXDL53D**

5599-1, Non Plug-in, Size 1 (H1)

Single subbase	Description	3/8" NPT	3/8" BSPP
	Side ported base	**PS4011150CP**	**PS4011160CP**

Manifold bases	Description	3/8" NPT	3/8" BSPP
	Bottom / End ported bases	**PS4011650CP**	**PS4011660CP**

End plate kits	Description	NPT port	BSPP port
	H1 Non-collective wiring end plates	**PS4031010CP**	**PS4031011CP**

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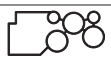
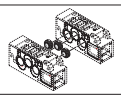
5599-1, Non Plug-in, Size 1 (H1) Accessories

	Accessory	Description		Part number
	Sandwich regulator	Common pressure	5-125 PSIG w/ gauge	**PS4037166CP**
		Independent pressure	5-125 PSIG w/ gauge	**PS4037266CP**
	Blanking plate kit			**PS4034CP**
	Sandwich flow control			**PS4042CP**
	Manifold to manifold gasket kits			**PS4013P**
	Manifold port isolation kit	Main galley (1, 3, 5)		**PS4032CP**
		Pilot galley		**PS4033CP**
	Auxiliary access plate kit	1/4" & 3/8"	NPT	**PS403000CP**
			BSPP	**PS403001CP**

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How To Order Non Plug-in Add-A-Fold Assemblies

1. List Add-A-Fold Assembly call out. This automatically includes the end plate kit assembly.
2. List complete Valve, Regulator, Flow Control and Base model number. List left to right, LOOKING AT THE CYLINDER PORTS on the #12 end of the manifold. The left most station is station 1. (If a blank station is needed, list the blanking plate part number and the individual manifold number in the station specified.)

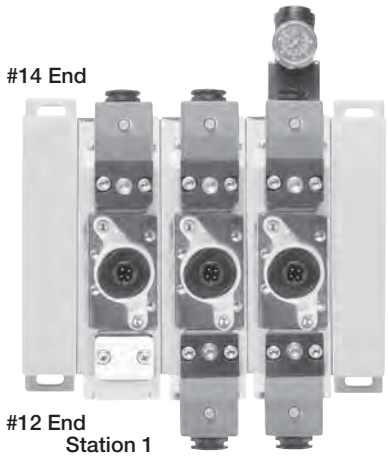
Example

Application requires a 3-Station manifold with a valve, regulator on Station 3.

Item	Qty.	Part No.	Location
01	1	AAH1S003	
02	1	H11WXBG2B9000FD	Station 1
03	1	PS4011550CP	Station 1
04	1	H12WXBG2B9000FD	Station 2
05	1	PS4011550CP	Station 2
06	1	H12WXXG2B9000FD	Station 3
07	1	PS4037166CP	Station 3
08	1	PS4011550CP	Station 3

NOTE: Construct manifold assemblies from left to right while looking at the cylinder ports.

Valves must be ordered as External Pilot when using Sandwich Regulator.



Example:
3-Station Manifold with (3) H1 Valves on Manifold Bases and Regulator at Station 3

Add-A-Fold Assembly Model Number

AA	H1	S	0	03	

Valve series

Right & left end plate	H1

End plate type

Standard - non-collective wiring	S

Thread type

NPT	0
BSPP "G"	1*

* BSPP Conforms to ISO 1179-1 w 228-1 Theads.

Transition plate

Blank	No transition plate
C	H1 to H2
D	H1 to H3

Number of stations

01
02
03
04
•
•
24

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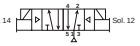
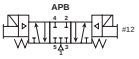
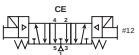
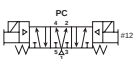
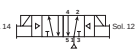
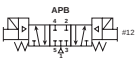
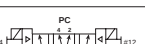
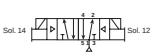
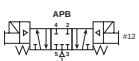
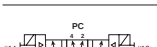
5599-1, Non Plug-in, Size 2 (H2) with Central Connectors

	Symbol	Type	Cv	Operator	Voltage	Enclosure	Pilot	Internal pilot	External pilot
		4-way, 2-position, spring return	3.0	Single solenoid	24 VDC	4-pin, central M12 connector	Internal	**H2EWXBG2B9000FD**	**H2EWXBH2B9000FD**
							External	**H2EWXXG2B9000FD**	**H2EWXXH2B9000FD**
		4-way, 2-position, air return	3.0	Single solenoid	24 VDC	4-pin, central M12 connector	Internal	**H21WXBG2B9000FD**	**H21WXBH2B9000FD**
							External	**H21WXXG2B9000FD**	**H21WXXH2B9000FD**
		4-way, 2-position	3.0	Double solenoid	24 VDC	4-pin, central M12 connector	Internal	**H22WXBG2B9000FD**	**H22WXBH2B9000FD**
							External	**H22WXXG2B9000FD**	**H22WXXH2B9000FD**
		4-way, 3-position, all ports blocked	2.8	Double solenoid	24 VDC	4-pin, central M12 connector	Internal	**H25WXBG2B9000FD**	**H25WXBH2B9000FD**
							External	**H25WXXG2B9000FD**	**H25WXXH2B9000FD**
		4-way, 3-position, center exhaust	2.8	Double solenoid	24 VDC	4-pin, central M12 connector	Internal	**H26WXBG2B9000FD**	**H26WXBH2B9000FD**
							External	**H26WXXG2B9000FD**	**H26WXXH2B9000FD**
		4-way, 3-position, pressure center	2.8	Double solenoid	24 VDC	4-pin, central M12 connector	Internal	**H27WXBG2B9000FD**	**H27WXBH2B9000FD**
							External	**H27WXXG2B9000FD**	**H27WXXH2B9000FD**

	Symbol	Type	Cv	Operator	Voltage		Pilot	Non-locking	Locking
		4-way, 2-position, spring return	3.0	Single solenoid	120 VAC	5-Pin, central 7/8" mini connector	Internal	**H2EWXBG323000FD**	**H2EWXBH323000FD**
							External	**H2EWXXG323000FD**	**H2EWXXH323000FD**
		4-way, 2-position, air return	3.0	Single solenoid	120 VAC	5-Pin, central 7/8" mini connector	Internal	**H21WXBG323000FD**	**H21WXBH323000FD**
							External	**H21WXXG323000FD**	**H21WXXH323000FD**
		4-way, 2-position	3.0	Double solenoid	120 VAC	5-Pin, central 7/8" mini connector	Internal	**H22WXBG323000FD**	**H22WXBH323000FD**
							External	**H22WXXG323000FD**	**H22WXXH323000FD**
		4-way, 3-position, all ports blocked	2.8	Double solenoid	120 VAC	5-Pin, central 7/8" mini connector	Internal	**H25WXBG323000FD**	**H25WXBH323000FD**
							External	**H25WXXG323000FD**	**H25WXXH323000FD**
		4-way, 3-position, center exhaust	2.8	Double solenoid	120 VAC	5-Pin, central 7/8" mini connector	Internal	**H26WXBG323000FD**	**H26WXBH323000FD**
							External	**H26WXXG323000FD**	**H26WXXH323000FD**
		4-way, 3-position, pressure center	2.8	Double solenoid	120 VAC	5-Pin, central 7/8" mini connector	Internal	**H27WXBG323000FD**	**H27WXBH323000FD**
							External	**H27WXXG323000FD**	**H27WXXH323000FD**

5599-1, Non Plug-in, Size 2 (H2) with 3-Pin DIN Connectors

	Symbol	Type	Cv	Operator	Voltage	Enclosure	Pilot	Internal pilot	External pilot
		4-way, 2-position, spring return	3.0	Single solenoid	24 VDC	3-pin DIN connector on coil	Internal	**H2EWXBBL49D**	**H2EWXBCL49D**
							External	**H2EWXXBL49D**	**H2EWXXCL49D**
		4-way, 2-position, air return	3.0	Single solenoid	24 VDC	3-pin DIN connector on coil	Internal	**H21WXBBL49D**	**H21WXBCL49D**
							External	**H21WXXBL49D**	**H21WXXCL49D**
		4-way, 2-position	3.0	Double solenoid	24 VDC	3-pin DIN connector on coil	Internal	**H22WXBBL49D**	**H22WXBCL49D**
							External	**H22WXXBL49D**	**H22WXXCL49D**
		4-way, 3-position, all ports blocked	2.8	Double solenoid	24 VDC	3-pin DIN connector on coil	Internal	**H25WXBBL49D**	**H25WXBCL49D**
							External	**H25WXXBL49D**	**H25WXXCL49D**
		4-way, 3-position, center exhaust	2.8	Double solenoid	24 VDC	3-pin DIN connector on coil	Internal	**H26WXBBL49D**	**H26WXBCL49D**
							External	**H26WXXBL49D**	**H26WXXCL49D**
		4-way, 3-position, pressure center	2.8	Double solenoid	24 VDC	3-pin DIN connector on coil	Internal	**H27WXBBL49D**	**H27WXBCL49D**
							External	**H27WXXBL49D**	**H27WXXCL49D**

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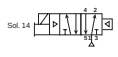
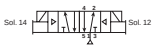
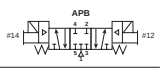
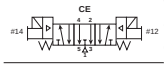
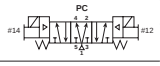
5599-1, Non Plug-in, Size 2 (H2) with 3-Pin DIN Connectors

	Symbol	Type	Cv	Operator	Voltage	Enclosure	Pilot	Non-locking	Locking
		4-way, 2-position, spring return	3.0	Single solenoid	120 VAC	3-pin DIN connector on coil	Internal	**H2EWXBBL53D**	**H2EWXBCL53D**
							External	**H2EWXXBL53D**	**H2EWXXCL53D**
		4-way, 2-position, air return	3.0	Single solenoid	120 VAC	3-pin DIN connector on coil	Internal	**H21WXBBL53D**	**H21WXBCL53D**
							External	**H21WXXBL53D**	**H21WXXCL53D**
		4-way, 2-position	3.0	Double solenoid	120 VAC	3-pin DIN connector on coil	Internal	**H22WXBBL53D**	**H22WXBCL53D**
							External	**H22WXXBL53D**	**H22WXXCL53D**
		4-way, 3-position, all ports blocked	2.8	Double solenoid	120 VAC	3-pin DIN connector on coil	Internal	**H25WXBBL53D**	**H25WXBCL53D**
							External	**H25WXXBL53D**	**H25WXXCL53D**
		4-way, 3-position, center exhaust	2.8	Double solenoid	120 VAC	3-pin DIN connector on coil	Internal	**H26WXBBL53D**	**H26WXBCL53D**
							External	**H26WXXBL53D**	**H26WXXCL53D**
		4-way, 3-position, pressure center	2.8	Double solenoid	120 VAC	3-pin DIN connector on coil	Internal	**H27WXBBL53D**	**H27WXBCL53D**
							External	**H27WXXBL53D**	**H27WXXCL53D**

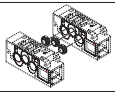
5599-1, Non Plug-in, Size 2 (H2)

Single subbase	Description	1/2" NPT	1/2" BSPP
	Side ported base	**PS4111170CP**	**PS4111180CP**

Manifold bases	Description	1/2" NPT	1/2" BSPP
	Bottom / End ported bases	**PS4111670CP**	**PS4111680CP**
	Note: Manifolds include 2 pipe plugs		

End plate kits	Description	NPT port	BSPP port
	H2 Non-collective wiring end plates	**PS4131010CP**	**PS4131011CP**

5599-1, Non Plug-in, Size 2 (H2) Accessories

	Accessory	Description		Part number
	Sandwich regulator	Common pressure	5-125 PSIG w/ gauge	**PS4137166CP**
		Independent pressure	5-125 PSIG w/ gauge	**PS4137266CP**
	Blanking plate kit			**PS4134CP**
	Sandwich flow control			**PS4142CP**
	Manifold to manifold gasket kits			**PS4113P**
	Manifold port isolation kit	Main galley (1, 3, 5)		**PS4132CP**
		Pilot galley		**PS4033CP**

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How To Order Non Plug-in Add-A-Fold Assemblies

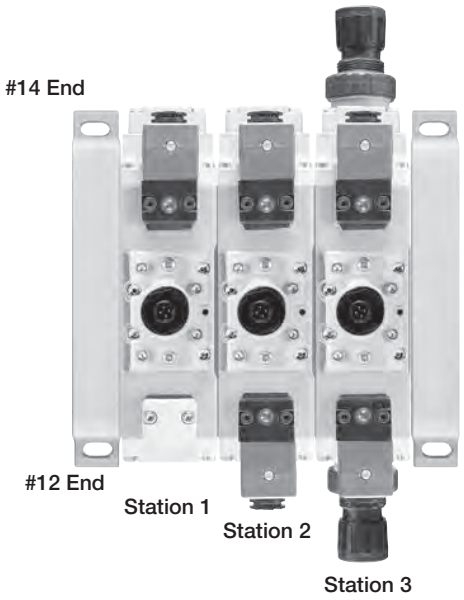
1. List Add-A-Fold Assembly call out. This automatically includes the end plate kit assembly.
2. List complete Valve, Regulator, Flow Control and Base model number. List left to right, LOOKING AT THE CYLINDER PORTS on the #12 end of the manifold. The left most station is station 1. (If a blank station is needed, list the blanking plate part number and the individual manifold number in the station specified.)

Example

Application requires a 3-Station manifold with a valve and regulator on Station 3.

Item	Qty.	Part No.	Location
01	1	AAH2S003	
02	1	H21WXBG2B9000FD	Station 1
03	1	PS4111570CP	Station 1
04	1	H22WXBG2B9000FD	Station 2
05	1	PS4111570CP	Station 2
06	1	H22WXXG2B9000FD	Station 3
07	1	PS4137166CP	Station 3
08	1	PS4111570CP	Station 3

NOTE: Construct manifold assemblies from left to right while looking at the cylinder ports.
Valves must be ordered as External Pilot when using Sandwich Regulator.



Example:
3-Station Manifold with (3) H2 Valves on Manifold Bases and Regulator at Station 3

Add-A-Fold Assembly Model Number

AA H2 S 0 03

Valve series	
Right & left end plate	H2

End plate type	
Standard - non-collective wiring	S

Thread type	
NPT	0
BSPP "G"	1*

* BSPP Conforms to ISO 1179-1 w 228-1 Theads.

Number of stations
01
02
03
04
•
•
24

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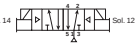
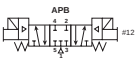
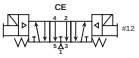
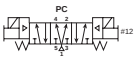
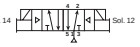
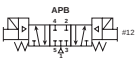
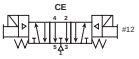
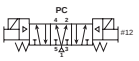
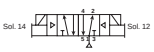
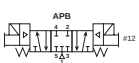
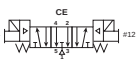
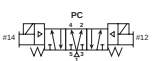
5599-1, Non Plug-in, Size 3 (H3) with Central Connectors

	Symbol	Type	Cv	Operator	Voltage	Enclosure	Pilot	Internal pilot	External pilot
		4-way, 2-position, spring return	6.0	Single solenoid	24 VDC	4-pin, central M12 connector	Internal	**H3EWXBG2B9000FD**	**H3EWXBH2B9000FD**
							External	**H3EWXXG2B9000FD**	**H3EWXXH2B9000FD**
		4-way, 2-position, air return	6.0	Single solenoid	24 VDC	4-pin, central M12 connector	Internal	**H31WXBG2B9000FD**	**H31WXBH2B9000FD**
							External	**H31WXXG2B9000FD**	**H31WXXH2B9000FD**
		4-way, 2-position	6.0	Double solenoid	24 VDC	4-pin, central M12 connector	Internal	**H32WXBG2B9000FD**	**H32WXBH2B9000FD**
							External	**H32WXXG2B9000FD**	**H32WXXH2B9000FD**
		4-way, 3-position, all ports blocked	5.0	Double solenoid	24 VDC	4-pin, central M12 connector	Internal	**H35WXBG2B9000FD**	**H35WXBH2B9000FD**
							External	**H35WXXG2B9000FD**	**H35WXXH2B9000FD**
		4-way, 3-position, center exhaust	5.0	Double solenoid	24 VDC	4-pin, central M12 connector	Internal	**H36WXBG2B9000FD**	**H36WXBH2B9000FD**
							External	**H36WXXG2B9000FD**	**H36WXXH2B9000FD**
		4-way, 3-position, pressure center	5.0	Double solenoid	24 VDC	4-pin, central M12 connector	Internal	**H37WXBG2B9000FD**	**H37WXBH2B9000FD**
							External	**H37WXXG2B9000FD**	**H37WXXH2B9000FD**

	Symbol	Type	Cv	Operator	Voltage	Enclosure	Pilot	Non-locking	Locking
		4-way, 2-position, spring return	6.0	Single solenoid	120 VAC	5-Pin, central 7/8" mini connector	Internal	**H3EWXBG323000FD**	**H3EWXBH323000FD**
							External	**H3EWXXG323000FD**	**H3EWXXH323000FD**
		4-way, 2-position, air return	6.0	Single solenoid	120 VAC	5-Pin, central 7/8" mini connector	Internal	**H31WXBG323000FD**	**H31WXBH323000FD**
							External	**H31WXXG323000FD**	**H31WXXH323000FD**
		4-way, 2-position	6.0	Double solenoid	120 VAC	5-Pin, central 7/8" mini connector	Internal	**H32WXBG323000FD**	**H32WXBH323000FD**
							External	**H32WXXG323000FD**	**H32WXXH323000FD**
		4-way, 3-position, all ports blocked	5.0	Double solenoid	120 VAC	5-Pin, central 7/8" mini connector	Internal	**H35WXBG323000FD**	**H35WXBH323000FD**
							External	**H35WXXG323000FD**	**H35WXXH323000FD**
		4-way, 3-position, center exhaust	5.0	Double solenoid	120 VAC	5-Pin, central 7/8" mini connector	Internal	**H36WXBG323000FD**	**H36WXBH323000FD**
							External	**H36WXXG323000FD**	**H36WXXH323000FD**
		4-way, 3-position, pressure center	5.0	Double solenoid	120 VAC	5-Pin, central 7/8" mini connector	Internal	**H37WXBG323000FD**	**H37WXBH323000FD**
							External	**H37WXXG323000FD**	**H37WXXH323000FD**

5599-1, Non Plug-in, Size 3 (H3) with 3-Pin DIN Connectors

	Symbol	Type	Cv	Operator	Voltage	Enclosure	Pilot	Internal pilot	External pilot
		4-way, 2-position, spring return	6.0	Single solenoid	24 VDC	3-pin DIN connector on coil	Internal	**H3EWXBBL49D**	**H3EWXBCL49D**
							External	**H3EWXXBL49D**	**H3EWXXCL49D**
		4-way, 2-position, air return	6.0	Single solenoid	24 VDC	3-pin DIN connector on coil	Internal	**H31WXBBL49D**	**H31WXBCL49D**
							External	**H31WXXBL49D**	**H31WXXCL49D**
		4-way, 2-position	6.0	Double solenoid	24 VDC	3-pin DIN connector on coil	Internal	**H32WXBBL49D**	**H32WXBCL49D**
							External	**H32WXXBL49D**	**H32WXXCL49D**
		4-way, 3-position, all ports blocked	5.0	Double solenoid	24 VDC	3-pin DIN connector on coil	Internal	**H35WXBBL49D**	**H35WXBCL49D**
							External	**H35WXXBL49D**	**H35WXXCL49D**
		4-way, 3-position, center exhaust	5.0	Double solenoid	24 VDC	3-pin DIN connector on coil	Internal	**H36WXBBL49D**	**H36WXBCL49D**
							External	**H36WXXBL49D**	**H36WXXCL49D**
		4-way, 3-position, pressure center	5.0	Double solenoid	24 VDC	3-pin DIN connector on coil	Internal	**H37WXBBL49D**	**H37WXBCL49D**
							External	**H37WXXBL49D**	**H37WXXCL49D**

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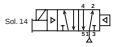
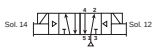
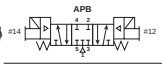
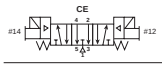
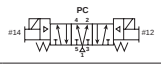
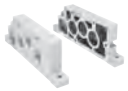
5599-1, Non Plug-in, Size 3 (H3) with 3-Pin DIN Connectors

	Symbol	Type	Cv	Operator	Voltage		Pilot	Non-locking	Locking
		4-way, 2-position, spring return	6.0	Single solenoid	120 VAC	3-pin DIN connector on coil	Internal	**H3EWXBBL53D**	**H3EWXBCL53D**
							External	**H3EWXXBL53D**	**H3EWXXCL53D**
		4-way, 2-position, air return	6.0	Single solenoid	120 VAC	3-pin DIN connector on coil	Internal	**H31WXBBL53D**	**H31WXBCL53D**
							External	**H31WXXBL53D**	**H31WXXCL53D**
		4-way, 2-position	6.0	Double solenoid	120 VAC	3-pin DIN connector on coil	Internal	**H32WXBBL53D**	**H32WXBCL53D**
							External	**H32WXXBL53D**	**H32WXXCL53D**
		4-way, 3-position, all ports blocked	5.0	Double solenoid	120 VAC	3-pin DIN connector on coil	Internal	**H35WXBBL53D**	**H35WXBCL53D**
							External	**H35WXXBL53D**	**H35WXXCL53D**
		4-way, 3-position, center exhaust	5.0	Double solenoid	120 VAC	3-pin DIN connector on coil	Internal	**H36WXBBL53D**	**H36WXBCL53D**
							External	**H36WXXBL53D**	**H36WXXCL53D**
		4-way, 3-position, pressure center	5.0	Double solenoid	120 VAC	3-pin DIN connector on coil	Internal	**H37WXBBL53D**	**H37WXBCL53D**
							External	**H37WXXBL53D**	**H37WXXCL53D**

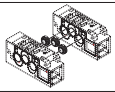
5599-1, Non Plug-in, Size 3 (H3)

Single subbase	Description	3/4" NPT	3/4" BSPP
	Side ported base	**PS4211190CP**	**PS4211180CP**

Manifold bases	Description	3/4" NPT	3/4" BSPP
	Bottom / End ported bases	**PS4211690CP**	**PS4211600CP**
	Note: Manifolds include 2 pipe plugs		

End plate kits	Description	NPT port	BSPP port
	H3 Non-collective wiring end plates	**PS4231010CP**	**PS4231011CP**

5599-1, Non Plug-in, Size 3 (H3) Accessories

	Accessory	Description		Part number
	Sandwich regulator	Common pressure	5-125 PSIG w/ gauge	**PS4237166CP**
		Independent pressure	5-125 PSIG w/ gauge	**PS4237266CP**
	Blanking plate kit			**PS4234CP**
	Sandwich flow control			**PS4242CP**
	Manifold to manifold gasket kits			**PS4213P**
	Manifold port isolation kit	Main galley (1, 3, 5)		**PS4232CP**
		Pilot galley		**PS4033CP**

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How To Order Non Plug-in Add-A-Fold Assemblies

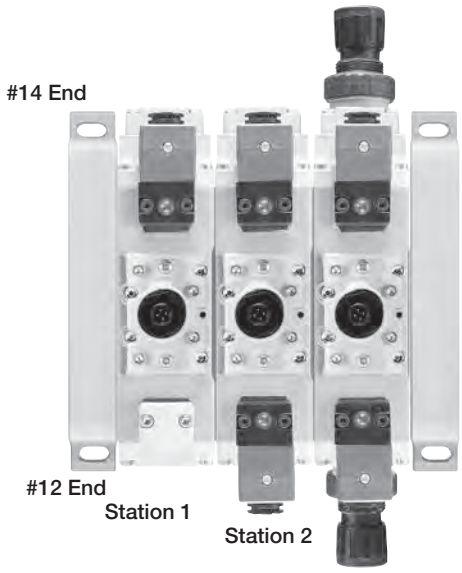
1. List Add-A-Fold Assembly call out. This automatically includes the end plate kit assembly.
2. List complete Valve, Regulator, Flow Control and Base model number. List left to right, LOOKING AT THE CYLINDER PORTS on the #12 end of the manifold. The left most station is station 1. (If a blank station is needed, list the blanking plate part number and the individual manifold number in the station specified.)

Example

Application requires a 3-Station manifold with a valve and regulator on Station 3.

Item	Qty.	Part No.	Location
01	1	AAH3S003	
02	1	H31WXBG2B9000FD	Station 1
03	1	PS4211590CP	Station 1
04	1	H32WXBG2B9000FD	Station 2
05	1	PS4211590CP	Station 2
06	1	H32WXXG2B9000FD	Station 3
07	1	PS4237166CP	Station 3
08	1	PS4211590CP	Station 3

NOTE: Construct manifold assemblies from left to right while looking at the cylinder ports.
Valves must be ordered as External Pilot when using Sandwich Regulator.



Example:
3-Station Manifold with (3) H3 Valves
on Manifold Bases and Regulator at Station 3

Add-A-Fold Assembly Model Number

AA H3 S 0 03 [ ]

Valve series	
Right & left end plate	H3

End plate type	
Standard - non-collective wiring	S

Thread type	
NPT	0

Number of stations
01
02
03
04
•
•
24

Transition plate	
Blank	No transition plate
E	H2 to H3

5599-1 Non Plug-in Transition Plate Kits

PS402601 0 C P

Transition plate type*	
H1 to H2 to H3	PS402501
H1 to H3	PS402601
H1 to H2	PS402701
H2 to H3	PS402801

* Includes left hand and right hand end plates.
Use with PS4... series manifolds only.

Thread type	
0	NPT
1*	BSPP "G"

* BSPP conforms to ISO 1179-1 w 228-1 threads.

Engineering level	
C	Current

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Non Plug-in, 5599-1, Central Connector - Size 1, 2, & 3

H1 E WX B G 2B9 000F D

Basic series 5599-1	
ISO 5599-1 Size 1	H1
ISO 5599-1 Size 2	H2
ISO 5599-1 Size 3	H3

5599 -1 Engineering level	
D	Current

5599-1 Central connector wiring options	
000C	Chrysler
000F*	SAE / Ford, ISO 20401
000G	General Motors

* Complies to ISO 20401 with Enclosure Lead Length "2".

5599-1 Operator / Function	
Single solenoid, 2-position - air return	1
Double solenoid, 2-position	2
Double solenoid, 3-position - APB	5
Double solenoid, 3-position - CE	6
Double solenoid, 3-position - PC	7
Single solenoid, 2-position - air return, spring assist	E

5599-1 Mounting	
Valve less base	WX

5599-1 Pilot source / Pilot exhaust	
Internal pilot, port #1 / vented	B
External pilot, port #12 or #14 / vented	X*

* Must be specified when using Sandwich Regulators.

5599-1 Overrides / Lights	
Non-locking, flush, with light	G
Locking, flush, with light	H

Enclosure / Lead length / Voltage*				
	AC		DC	
	60Hz	50Hz		
1B9†			24	3-pin, central mini connector
123†	120	115		3-pin, central mini connector
2B9			**24**	**4-pin, central M12 connector**
3B9			24	5-pin, central mini connector
323	120	115		5-pin, central mini connector
619‡			24	2-pin, M12 connector on coil

* All coils include LED & suppression
† Operator function "1" or "E"
‡ Only available with wiring option "000F"

Non Plug-in, 5599-1, CNOMO - Size 1, 2, & 3

H1 E WX B B L53 D

Basic series 5599-1	
ISO 5599-1 Size 1	H1
ISO 5599-1 Size 2	H2
ISO 5599-1 Size 3	H3

5599-1 Engineering level	
D	Current

Enclosure / Lead length / Voltage				
	AC		DC	
	60Hz	50Hz		
L42	24			3-pin, 30mm DIN 43650A with CNOMO connector
L45			12	3-pin, 30mm DIN 43650A with CNOMO connector
L49			**24**	**3-pin, 30mm DIN 43650A with CNOMO connector**
L53	**120**	**115**		**3-pin, 30mm DIN 43650A with CNOMO connector**
L57	240			3-pin, 30mm DIN 43650A with CNOMO connector
NXX				Valve less coil

5599-1 Operator / Function	
Single solenoid, 2-position - air return	1
Double solenoid, 2-position	2
Double solenoid, 3-position - APB	5
Double solenoid, 3-position - CE	6
Double solenoid, 3-position - PC	7
Single solenoid, 2-position - air return, spring assist	E

5599-1 Mounting	
Valve less base	WX

5599-1 Pilot source / Pilot exhaust	
Internal pilot, port #1 / vented	B
External pilot, port #12 or #14 / vented	X*

* Must be specified when using Sandwich Regulators.

5599-1 Overrides / Lights	
B	Non-locking, flush, push - no light
C	Locking, flush, push / turn - no light

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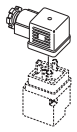
Maximum Number of Solenoids
(Maximum energized simultaneously)

HA & HB	Voltage code	25-pin D-sub	19-pin Brad Harrison	12-Pin M23	19-pin M23	Moduflex	Isysnet	Turck 16 Outputs	Turck 32 Outputs
24VDC	G9	24 (24)	16 (16)	8 (8)	16 (16)	16 (16)	32 (32)	16 (16)	32 (32)
120VAC*	23	24 (24)	16 (16)	8 (8)	16 (16)	N/A	N/A	N/A	N/A

H1, H2 & H3	Voltage code	25-pin D-sub	19-pin Brad Harrison	12-Pin M23	19-pin M23	Moduflex	Isysnet	Turck 16 Outputs	Turck 32 Outputs
12VDC	45	24 (13)	16 (13)	8 (8)	16 (13)	N/A	N/A	N/A	N/A
24VAC*	42	24 (24)	16 (16)	8 (8)	16 (16)	N/A	N/A	N/A	N/A
24VDC	B9	24 (20)	16 (16)	8 (8)	16 (16)	16 (16)	24 (21)	16 (16)	24 (21)
120VAC*	23	24 (24)	16 (16)	8 (8)	16 (16)	N/A	N/A	N/A	N/A

* Not CSA certified for 25-pin, D-sub option.

Female Electrical Connectors (IP65 Rated) 30mm, 3-Pin ISO 4400, (DIN 43650A)



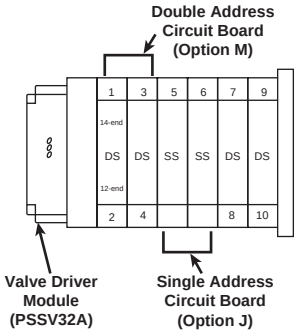
Description	Connector with 6' (2m) cord	Connector
Unlighted	**PS2028JCP**	**PS2028BP**
Light – 6-48V, 50/60Hz; 6-48VDC	**PS2032J79CP***	**PS203279BP**
Light – 120V/60Hz	**PS2032J83CP***	**PS203283BP**
Light – 240V/60Hz	**N/A**	**PS203283BP**

* With surge suppression.

Engineering data:
Conductors: 2 poles plus ground; cable range (connector only): 8 to 10mm (0.31 To 0.39 inch); Contact spacing: 18mm

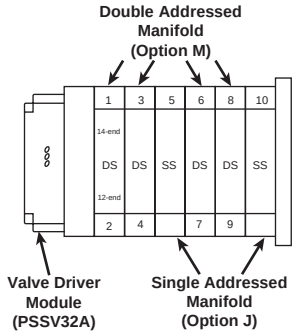
I/O Addressing Examples

HB & HA Example
Two Station Manifold Bases



Notes: SS = Single Solenoid Valve
DS = Double Solenoid Valve
First output address the #14 end of the valve closest to the valve driver module.

H1, H2 & H3 Example:
Single Station Manifold Bases



5599-2 & 5599-1 AUTO Solenoid Kits

Valve size	Voltage code	Coil kit number
H1, H2 & H3	42 (24VAC)	**PS404142P**
	45 (12VDC)	**PS404145P**
	B9 (24VDC)	**PS4041B9P**
	23 (120VAC)	**PS404123P**
	57 (240VAC)	**PS404157P**

Quantity 1

5599-1 CNOMO Solenoid Kits

Voltage code	3-pin, 30mm 'L' coil kit	2-pin, M12 Euro '6' coil kit
19	—	**PS2828619P**
42	**P2FCA442**	—
45	**P2FCA445**	—
49	**P2FCA449**	—
53	**P2FCA453**	—
57	**P2FCA457**	—

Quantity 1

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Pilot Operator - CNOMO

Valve size		Kit number
H1, H2 & H3	Locking	**PS4052CP**
	Non-locking	**PS4053CP**

Manifold Hardware Kits – PS Series

Valve size	Kit number
HA & HB	**PS5612P**
	PS5512P
H1, H2 & H3	**PS4012P**
	PS4112P
	PS4212P

Quantity 12

Valve Bolt Kits

Valve size	Kit number
HA & HB	**PS5687P**
	PS5587P
H1, H2 & H3	**PS4087DP**
	PS4187DP
	PS4287DP

Quantity 12

Valve to Base Gasket Kits

Valve size	Standard	Remote pilot	Dual pressure #3	Dual pressure #5
HA & HB	**PS5605P***	—	—	—
	PS5505P*	—	—	—
H1, H2 & H3	**PS4005DP**	**PS4006DP**	**PS40D3DP**	—
	PS4105DP	**PS4106DP**	**PS41D3DP**	**PS41D5DP**
	PS4205DP	**PS4206DP**	**PS42D3DP**	**PS42D5DP**

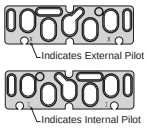
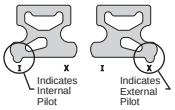
Quantity 1
* Quantity 10

Body Service Kits

Valve size	2-position	3-position		
		APB	CE	PC
HA & HB	**PS5601P**	**PS5602P**	**PS5603P**	**PS5604P**
	PS5501P	**PS5502P**	**PS5503P**	**PS5504P**
H1, H2 & H3	**PS4001CP**	**PS4002CP**	**PS4003CP**	**PS4004CP**
	PS4101CP	**PS4102CP**	**PS4103CP**	**PS4104CP**
	PS4201CP	**PS4202CP**	**PS4203CP**	**PS4204CP**

HB / HA Kit Includes: Spool assembly with seals.
H1, H2, H3 Kit Includes: Spool assembly with seals, all piston seals, return spring, pilot selector gasket, coil to end cap gasket.
Quantity 1

Pilot Select Gasket Kits

	Valve size	Kit number
 HB shown	HB	**PS5605P**
	HA	**PS5505P**
	H1, H2 & H3	**PS4007P**

Quantity 10

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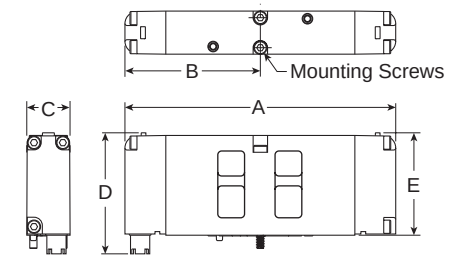
Isys ISO 15407-2, Plug-in, Size 18mm (HB)



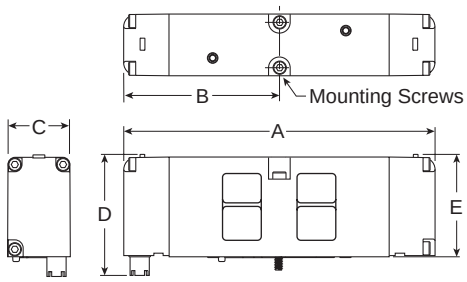
18mm Dimensions

A	B	C	D
4.43 (113)	2.22 (56)	.72 (18)	1.98 (50)

E
1.68 (43)

Inches (mm)

Isys ISO 15407-2, Plug-in, Size 26mm (HA)



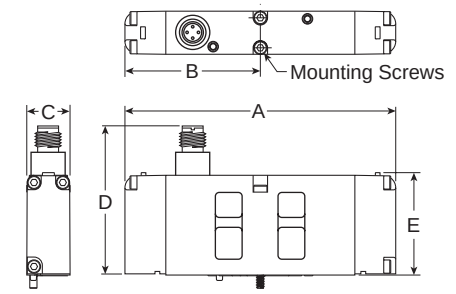
26mm Dimensions

A	B	C	D
5.10 (130)	2.55 (65)	1.02 (26)	1.98 (50)

E
1.66 (42)

Inches (mm)

Isys ISO 15407-1, Non Plug-in, Size 18mm (HB)



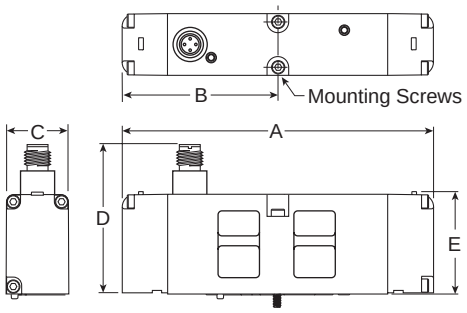
18mm Dimensions

A	B	C	D
4.43 (113)	2.22 (56)	.72 (18)	2.40 (61)

E
1.68 (43)

Inches (mm)

Isys ISO 15407-1, Non Plug-in, Size 26mm (HA)



26mm Dimensions

A	B	C	D
5.10 (130)	2.55 (65)	1.02 (26)	2.40 (61)

E
1.66 (42)

Inches (mm)

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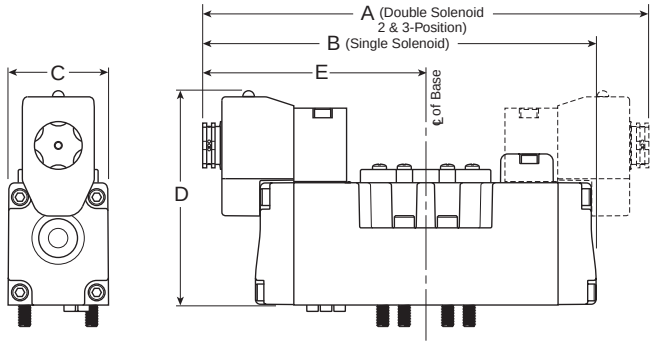
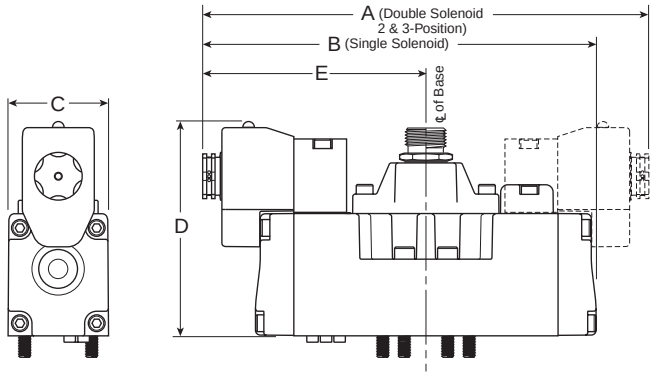
Isys ISO 5599-2



H1 Valves Shown

Isys ISO 5599-1 Auto

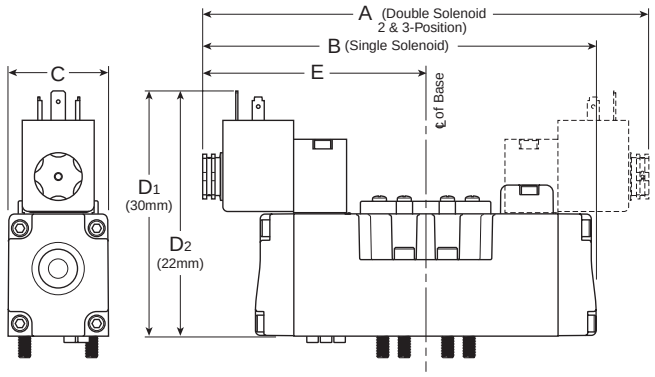


H1 Dimensions

A	A1	B	C
7.32 (186)	5.59 (142)	6.46 (164)	1.65 (42)
D	**D1**	**D2**	**D3**
3.54 (90)	4.29 (109)	4.29 (109)	2.50 (63.5)
D4	**E**	**E1**	
2.48 (63)	3.66 (93)	2.80 (71)	

Inches (mm)

Isys ISO 5599-1 CNOMO

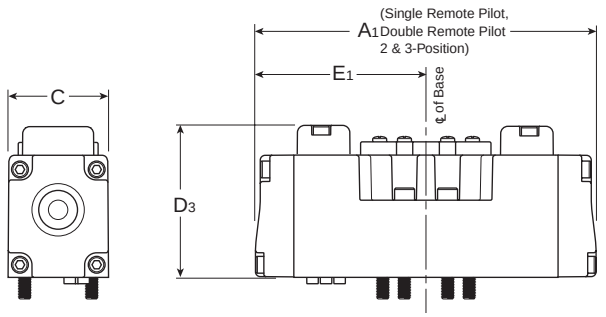


H2 Dimensions

A	A1	B	C
8.35 (212)	6.62 (168)	7.48 (190)	2.17 (55)
D	**D1**	**D2**	**D3**
4.05 (103)	4.80 (122)	4.57 (116)	2.99 (76)
E	**E1**		
4.17 (106)	3.31 (84)		

Inches (mm)

Isys ISO 5599-2 / 5599-1 Remote Pilot



H3 Dimensions

A	A1	B	C
9.68 (246)	6.98 (177)	8.68 (220)	2.17 (55)
D	**D1**	**D2**	**D3**
4.05 (103)	4.80 (122)	4.57 (116)	2.99 (76)
E	**E1**		
4.74 (121)	3.49 (89)		

Inches (mm)

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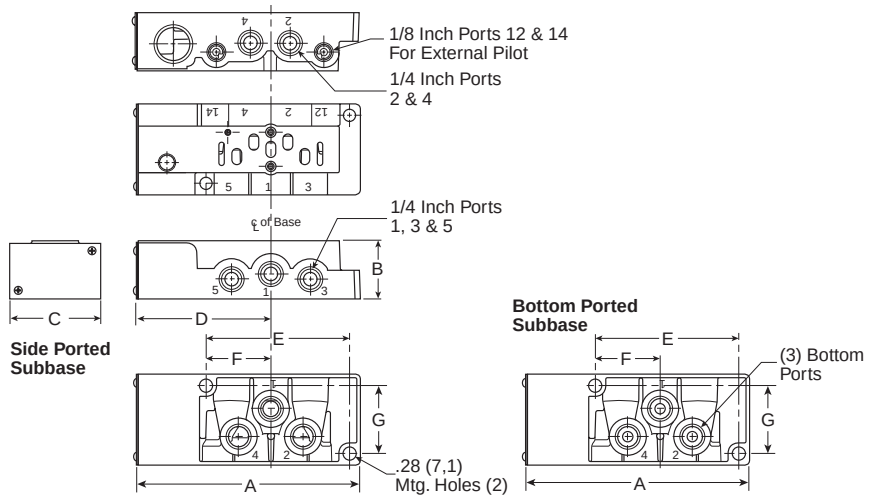
Isys ISO 15407-2 & 15407-1 Size 26mm (HA), Plug-in Subbases

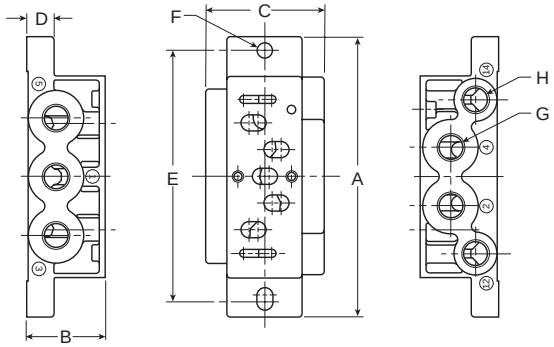


HA Dimensions

A	B	C	D
4.88 (124)	1.28 (32.5)	2.00 (50.8)	2.91 (74)
E	**F**	**G**	
1.43 (36.2)	3.16 (80.2)	1.49 (37.9)	

Inches (mm)

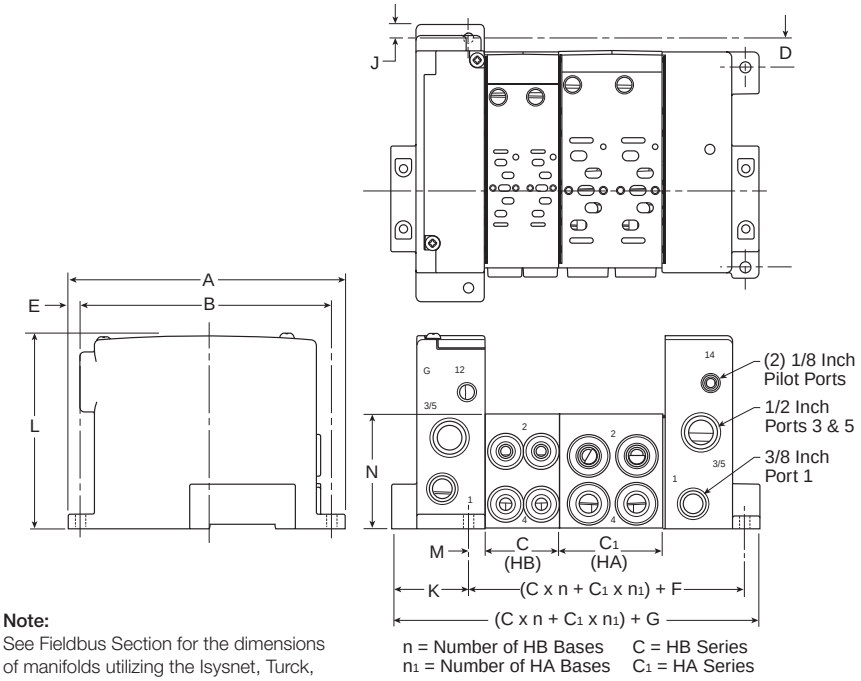
Isys ISO Size 18mm (HB) & 26mm (HA), Non-Plug-in Compact Subbase



Series	Part number	A	B	C	D	E	F	G	H
HB	**PL02**	3.15 (80)	.87 (22)	1.06 (27)	.31 (8)	2.76 (70)	.216 Dia. (Ø 5.5)	1/8	M5
HA	**PL01**	3.94 (100)	1.10 (28)	1.65 (42)	.39 (10)	3.54 (90)	.216 Dia. (Ø 5.5)	1/4	1/8

Inches (mm)

Isys ISO 15407-2 & 15407-1 Size 18mm (HB) & 26mm (HA), PS5611 & PS5511 Manifolds



n = Number of HB Bases C = HB Series
n1 = Number of HA Bases C1 = HA Series

HB & HA Dimensions

A	B	C	C1	D	E
5.98 (152)	5.39 (137)	1.61 (40.8)	2.24 (56.8)	.63 (16)	.30 (7.5)
F	**G**	**H**	**J**	**K**	**L**
2.14 (54.4)	4.12 (104.6)	4.32 (109.8)	.15 (4)	1.68 (42.7)	4.17 (106)
M	**N**				
.33 (8.4)	2.48 (63)				

Inches (mm)

Note:
See Fieldbus Section for the dimensions of manifolds utilizing the Isysnet, Turck, or Moduflex end plate type.

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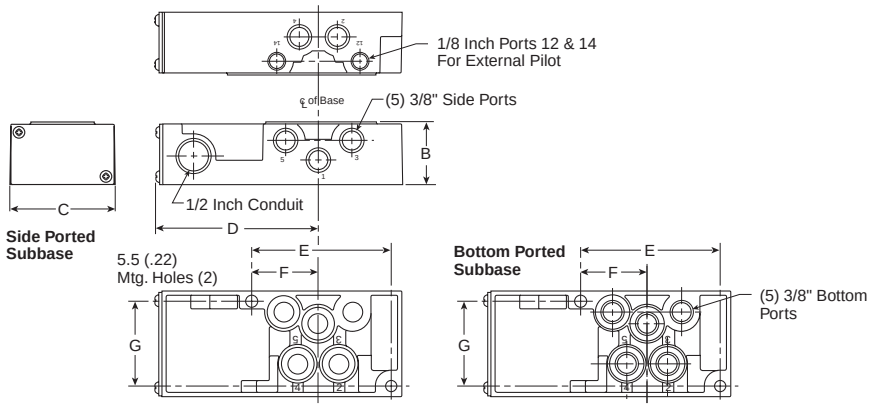
Isys ISO 5599-1 Size H1, PS4011 Subbase



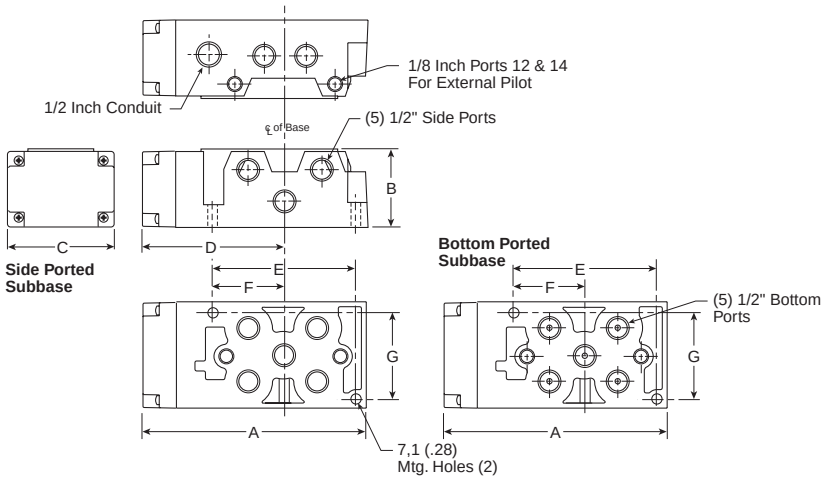
PS4011 Subbase Dimensions

A	B	C	D
5.83 (148)	1.48 (38)	2.50 (64)	3.86 (98)

E	F	G
3.29 (84)	1.57 (40)	2.00 (51)

Inches (mm)

Isys ISO 5599-1 Size H2, PS4111 Subbase



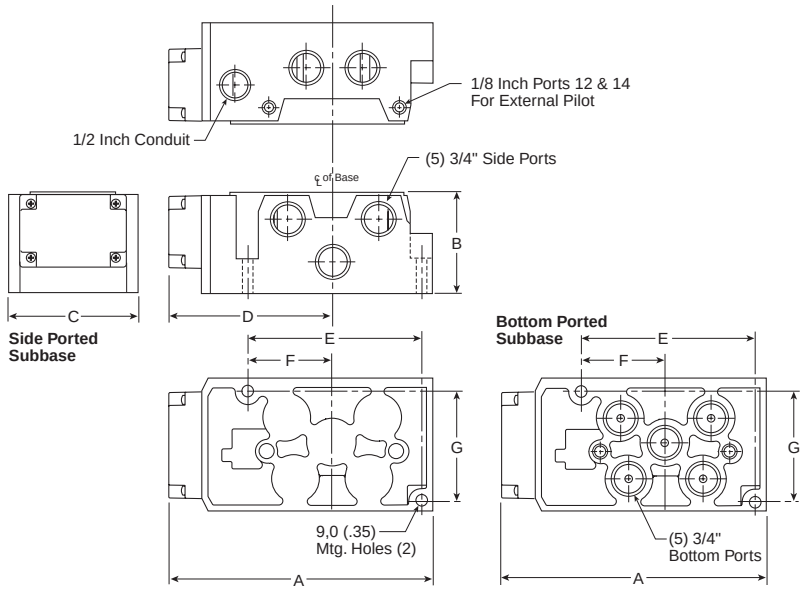
PS4111 Subbase Dimensions

A	B	C	D
6.69 (170)	2.33 (59)	3.15 (80)	4.25 (108)

E	F	G
4.21 (107)	2.07 (52)	2.56 (65)

Inches (mm)

Isys ISO 5599-1 Size H3, PS4211 Subbase



PS4211 Subbase Dimensions

A	B	C	D
7.90 (201)	2.96 (75)	3.90 (99)	4.92 (125)

E	F	G
5.14 (131)	2.50 (64)	3.24 (82)

Inches (mm)

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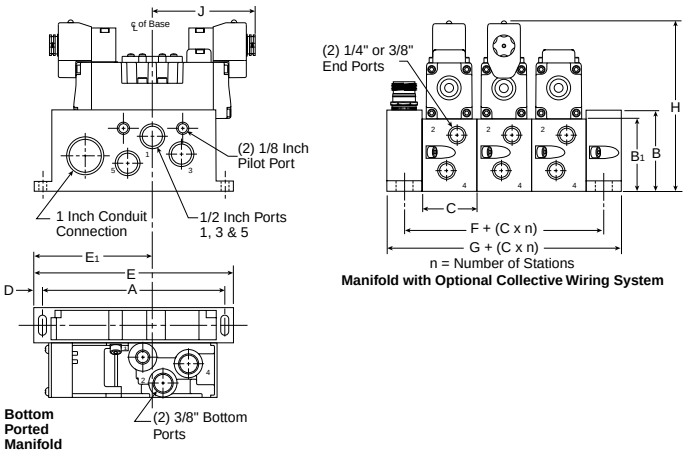
Isys ISO 5599 Size H1, PS4011 Manifold

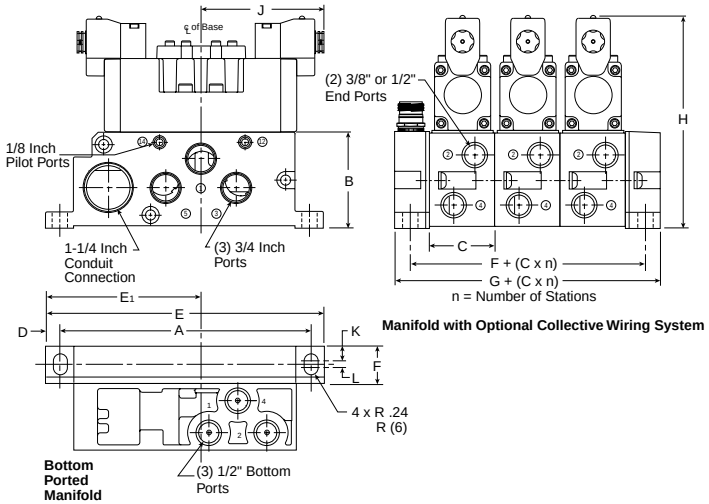


PS4011 Manifold Dimensions

A	B	B1	C	D
6.50 (165)	2.87 (73)	2.64 (67)	1.96 (50)	.33 (8)
E	**E1**	**F**	**G**	**H**
7.15 (182)	4.25 (108)	1.25 (32)	2.50 (63.5)	6.18 (157)
J				
3.66 (93)				

Inches (mm)

Isys ISO 5599 Size H2, PS4111 Manifold

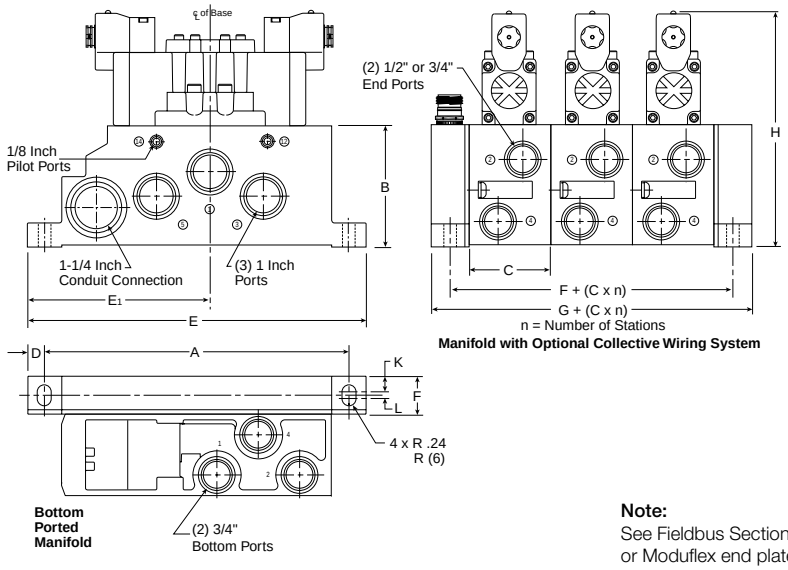


PS4111 Manifold Dimensions

A	B	C	D	E
8.46 (215)	3.35 (85)	2.20 (56)	.47 (12)	9.41 (239)
E1	**F**	**G**	**H**	**J**
5.28 (134)	1.26 (32)	2.60 (63)	7.40 (188)	4.17 (106)
K	**L**			
.65 (16.5)	.24 (6)			

Inches (mm)

Isys ISO 5599 Size H3, PS4211 Manifold



PS4211 Manifold Dimensions

A	B	C	D	E
10.41 (265)	4.13 (105)	2.80 (71)	.59 (15)	11.61 (295)
E1	**F**	**G**	**H**	
6.26 (159)	1.30 (33)	2.60 (63)	8.19 (208)	
K	**L**			
.53 (13.5)	.24 (6)			

Inches (mm)

Note:
See Fieldbus Section for the dimensions of manifolds utilizing the Isysnet, Turck, or Moduflex end plate type.

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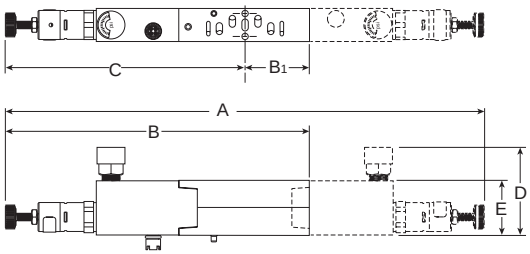
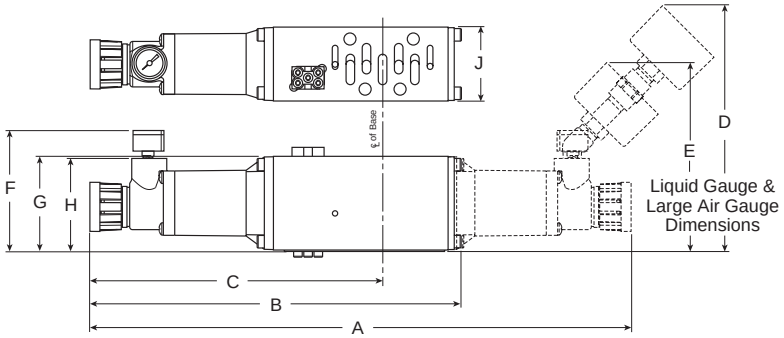
Isys ISO 15407 Sandwich Regulator



Series	Part number	A	B	B1	C	D	E
HB	**PS5637**	10.28 (261)	6.14 (156)	1.02 (26)	5.13 (130)	2.60 (66)	1.18 (30)
HA	**PS5537**	10.00 (254)	6.42 (163)	1.42 (36)	5.00 (127)	2.72 (69)	1.18 (30)

Inches (mm)

Isys ISO 5599, Size H1 Sandwich Regulator

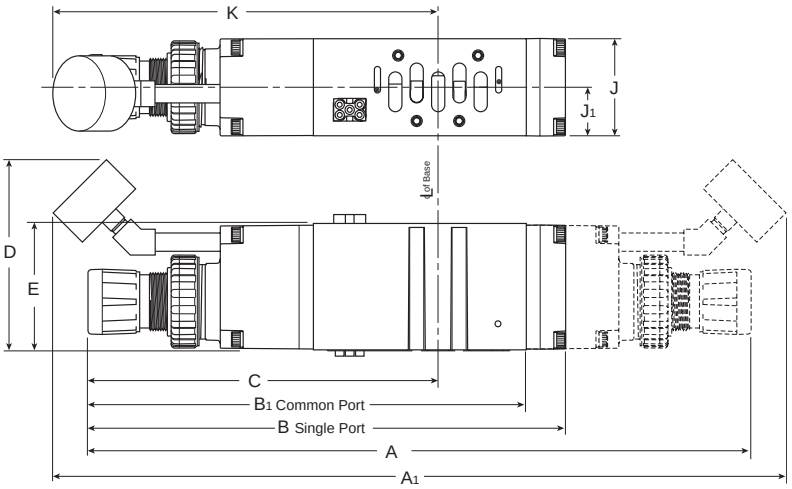


Series	Part number	A	B	C	D	E	F	G	H	J
H1	**PS4037**	11.84 (301)	8.13 (207)	6.40 (163)	5.45 (138	4.25 (108)	2.85 (72)	2.09 (53)	2.05 (52)	1.63 (41)
	PS4038									

Inches (mm)

Isys ISO 5599, Size H2 & H3 Sandwich Regulator

H2 Sandwich Regulator Shown



Series	Part number	A	A1	B	B1	C	D	E	J	J1	K
H2	**PS4137**	14.65 (372	16.18 (411)	10.56 (268)	9.84 (250	7.71 (196)	4.20 (107)	2.80 (71)	2.15 (55)	1.07 (27)	8.50 (216)
	PS4138										
H3	**PS4237**	15.67 (398)	17.15 (436)	11.53 (293)	10.67 (271)	8.37 (213)	4.20 (107)	2.93 (75)	2.50 (64)	1.25 (32)	9.10 (231)
	PS4238										

Inches (mm)

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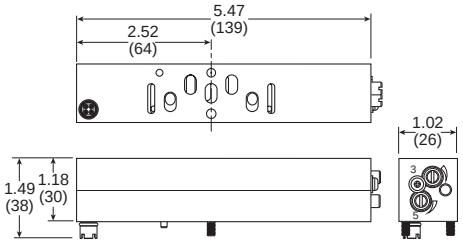
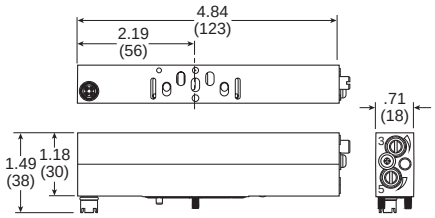
Isys ISO 15407, Size 18mm (HB) & 26mm (HA), Flow Control

HA Flow Control

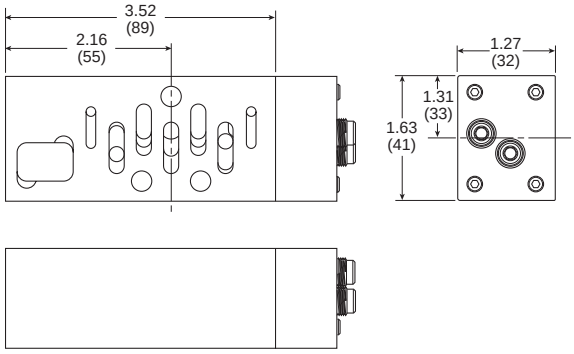


HB Flow Control

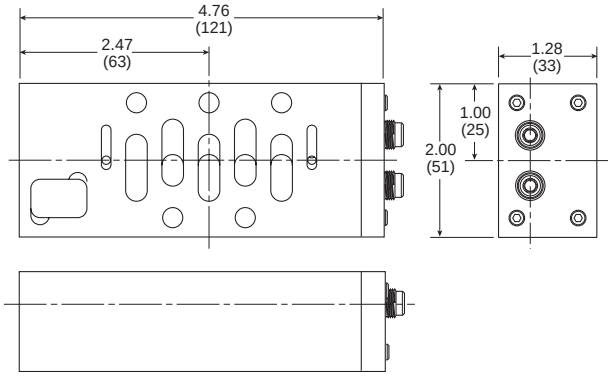


Isys ISO 5599, Size H1, H2 & H3, Flow Control

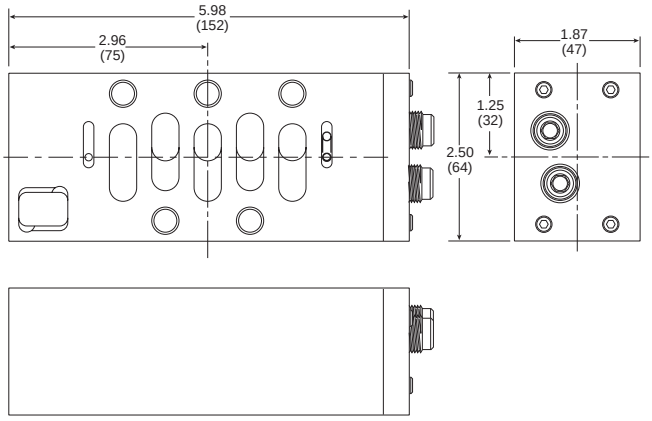
H1 Flow Control



H2 Flow Control



H3 Flow Control



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Fieldbus Systems

Fieldbus Offering

Valve series	Moduflex	Isysnet	Turck
Moduflex	X		
Isys Micro	X	X	X
Isys ISO	X	X	X

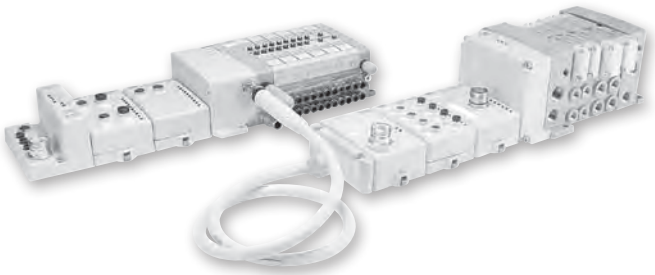
Protocol	Moduflex	Isysnet	Turck
DeviceNet	X	X	X
Ethernet/IP		X	X
Profibus-DP	X	X	X
Profinet			X
Modbus/TCP			X
AS-i	X		
CANopen	X		X
Interbus-S	X		
ControlNet		X	

Options	Moduflex	Isysnet	Turck
Digital inputs / outputs*		X	X
Analog inputs / outputs		X	X
16 Solenoid control*	X		X
32 Solenoid control		X	X
Short circuit protection on inputs			X
Current sensing outputs			X
Bus expansion		X	
DeviceNet subnet			X
Programmable comm modules			X
Power over DeviceNet / CANopen			X
Preferred connectivity		X	
CANopen expansion			X

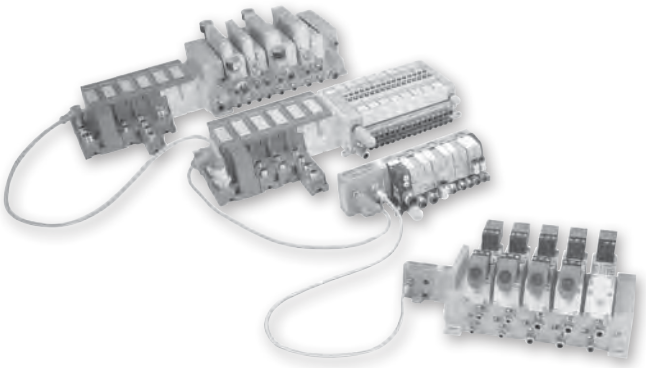
* Modulfex AS-i modules are available with 6 or 8 inputs and 6 or 8 solenoid outputs

The Moduflex Fieldbus System

The Isysnet Fieldbus System



The Turck Fieldbus System



	Turck fieldbus	Isysnet	Moduflex
Solenoid control	Up to 32 solenoids on main valve manifold. Devicenet Subnet Allows an additional 32 solenoids per node 63 nodes maximum. CANopen expansion Allows an additional 64 solenoids per expansion 5 expansions maximum.	Up to 32 solenoids on main valve manifold Isys Micro Bus Expansion Allows an additional 32 solenoids per expansion 3 expansions maximum 1 meter fixed cable length per expansion	Up to 16 solenoids on main valve manifold
I/O capabilities	256 maximum inputs and outputs directly connected to communication module. Devicenet Subnet Allows an additional 256 I/O per node 63 nodes maximum Third party DeviceNet modules can be used CANopen expansion Allows an additional 64 I/O per expansion 5 expansions maximum Third party CANopen modules can be used	Maximum of 256 inputs and 256 outputs directly connected to the communication module, including Isys Micro Bus Expansion.	8 Inputs available on AS-i communication only.
Short circuit protection	SXG and diagnostic electronic modules have each point isolated. All other electronic modules are isolated from the backplane.	Devices must be fused between input / output and electronic module.	

Most popular.

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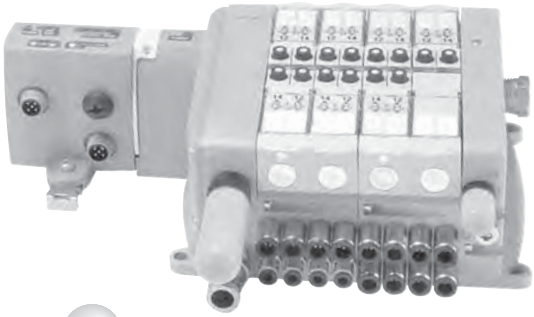
The Moduflex Fieldbus System

Moduflex communication modules directly attach to the end plate. It offers a compact and low cost fieldbus solution.



DeviceNet™ PROFIBUS PROCESS FIELD BUS CANopen INTERBUS-S

Moduflex Features

- Small, compact product design
- Broad protocol offering, including DeviceNet, Profibus, AS-i, CANopen, and Interbus
- Channel-level diagnostics (LED and Electronic)
- Inputs available with AS-i modules
- Horizontal and vertical mounting without derating
- 5g vibration
- Quick-disconnects for I/O and network connectivity
- Built-in panel grounding
- CE certification

Protocol	Part number
Profibus DP	**P2M2HBVP21600**
DeviceNet	**P2M2HBVD21600**
CANopen	**P2M2HBVC21600**
InterBus-S	**P2M2HBVS11600**

Fieldbus Accessories

	Protocol	Connector type	Part number
Power supply Field wireable connector	Profibus DP / InterBus-S / DeviceNet / CANopen	M12 type A female	**P8CS1205AA**
Line termination resistor	Profibus DP	M12 type B	**P8BPA00MB**
	DeviceNet / CANopen	M12 type A	**P8BPA00MA**

ASi INTERFACE

P2M2HBVA10808A

P2M2HBVA10808B

Standard AS-i Protocol (up to 31 nodes)

Communication module for 8 solenoids max.
(2 nodes per module, 4 inputs, 4 solenoids per node)

Input / Output capability	Weight (oz)	Part number
0 inputs and 8 solenoid outputs	5.29	**P2M2HBVA10800**
8 (PNP) inputs on eight (M8) connectors and 8 solenoid outputs	7.05	**P2M2HBVA10808A**
8 (PNP) inputs on four (M12) connectors and 8 solenoid outputs	7.05	**P2M2HBVA10808B**

AS-i Version 2.1 Protocol (up to 62 nodes)

Communication module for 6 solenoids max.
(2 nodes per module, 4 inputs, 3 solenoids per node)

Input / Output capability	Weight (oz)	Part number
0 inputs and 6 solenoid outputs	5.29	**P2M2HBVA20600**
8 (PNP) inputs on eight (M8) connectors and 6 solenoid outputs	7.05	**P2M2HBVA20608A**
8 (PNP) inputs on four (M12) connectors and 6 solenoid outputs	7.05	**P2M2HBVA20608B**

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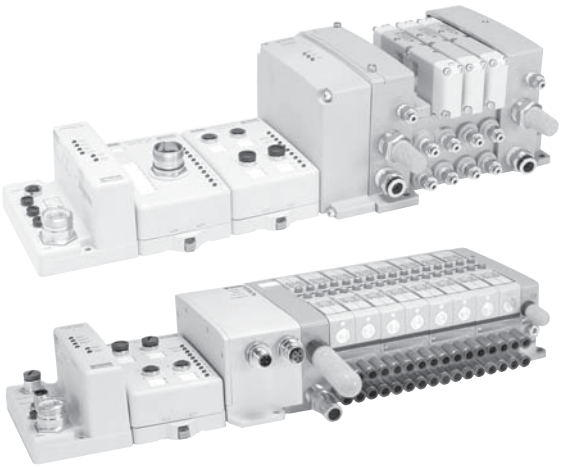
The Isysnet System

Isysnet has four major components:

- Valve driver module provide control for 32 solenoids on a manifold, with bus extension providing connectivity to 3 more manifolds
- I/O modules provide the field interface, system-interface circuitry, and bases for mounting
- Communication modules provide the network-interface circuitry
- Power distribution module provide 5 additional power inputs to the Isysnet system



Isysnet Features

- Highly modular design (4pt – 16pt modularity)
- Broad application coverage
- Channel-level diagnostics (LED)
- Channel-level alarm and annunciation (electronic)
- Channel-level open-wire detection with electronic feedback
- Parameter-level explicit messaging
- Horizontal and vertical mounting without derating
- 5g vibration
- Electronic and mechanical keying
- Robust backplane design
- Quick-disconnects for I/O and network connectivity
- Built-in panel grounding
- Color-coded module labels
- UL, C-UL, and CE certifications (as marked)
- Highly reliable structural integrity
- Optical isolation between field and system circuits

Communications Module

PSSCENA

Protocol	Part number
DeviceNet™	**PSSCDM18PA (7/8" Mini) or PSSCDM12A (M12)**
ControlNet™	**PSSCCNA**
EtherNet I/P™	**PSSCENA**
Profibus-DP®	**PSSCPBA**

All Modules IP67 Certified
EDS and GSD files located at www.parker.com/pneu/Isysnet

Digital Inputs

PSSN16M12A

PSSN8M8A

I/O modules	Voltage	Part number
16 digital inputs M12, 5-pin used with PNP sourcing input device	10 to 28.8VDC	**PSSN16M12A**
8 digital inputs M12, 5-pin used with PNP sourcing input device	10 to 28.8VDC	**PSSN8M12A**
8 digital inputs M12, 5-pin used with NPN sinking input device	10 to 28.8VDC	**PSSP8M12A**
8 digital inputs M8, 3-pin used with PNP sourcing input device	10 to 28.8VDC	**PSSN8M8A**
8 digital inputs M23, 12-pin used with PNP sourcing input device	10 to 28.8VDC	**PSSN8M23A**

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Digital Outputs

PSST16D25A

PSST16M12A

PSST8M12A

I/O modules	Voltage	Part number
16 digital outputs M23, 19-pin used with PNP sourcing outputs	10 to 28.8VDC	**PSST16M23A**
16 digital outputs D-sub, 25-pin used with PNP sourcing outputs	10 to 28.8VDC	**PSST16D25A**
16 digital outputs M12, 5-pin used with PNP sourcing outputs	10 to 28.8VDC	**PSST16M12A**
8 digital outputs M12, 5-pin used with PNP sourcing outputs	10 to 28.8VDC	**PSST8M12A**
8 digital outputs M8, 3-pin used with PNP sourcing outputs	10 to 28.8VDC	**PSST8M8A**
4 digital output, high watt relay M12, 5-pin used with PNP sourcing outputs (2 Amp)	24VDC	**PSSTR4M12A**
8 digital outputs M23, 12-pin used with PNP sourcing outputs	10 to 28.8VDC	**PSST8M23A**

All modules IP67 certified
See www.parker.com/pneu/Isysnet

Analog Inputs

PSSNACM12A

I/O modules	Voltage	Part number
2 Analog inputs voltage M12, 5-pin	-10 to 10VDC or 0 to 10VDC	**PSSNAVM12A**
2 Analog inputs current M12, 5-pin	4 to 20mA or 0 to 20mA	**PSSNACM12A**

All modules IP67 certified
See www.parker.com/pneu/Isysnet

Analog Outputs

PSSTACM12A

I/O modules	Voltage	Part number
2 Analog outputs voltage M12, 5-pin	0 to 10V ± 10V	**PSSTAVM12A**
2 Analog outputs current M12, 5-pin	4 to 20mA or 0 to 20mA	**PSSTACM12A**

All modules IP67 certified
See www.parker.com/pneu/Isysnet

Terminating Base Module

Base module	Part number
Termination base for stand alone units	**PSSTERM**

Used as the last terminating module for a stand alone isysnet assembly.

Power Extender Module

Extender module	Part number
24VDC field power module	**PSSSE24A**

A Power Extender Module must be used on every 14th Module in an Isysnet assembly. See www.parker.com/pneu/Isysnet

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Bus Extender Cable

Description	Voltage	Part number
1 Meter Cable*	24VDC	**PSSEXT1**
3 Meter Cable*	24VDC	**PSSEXT3**

* Requires a PSSSE24 Power Extender Module
IP67 certified
See www.parker.com/pneu/Isysnet

Isys Micro Bus Extender Cable

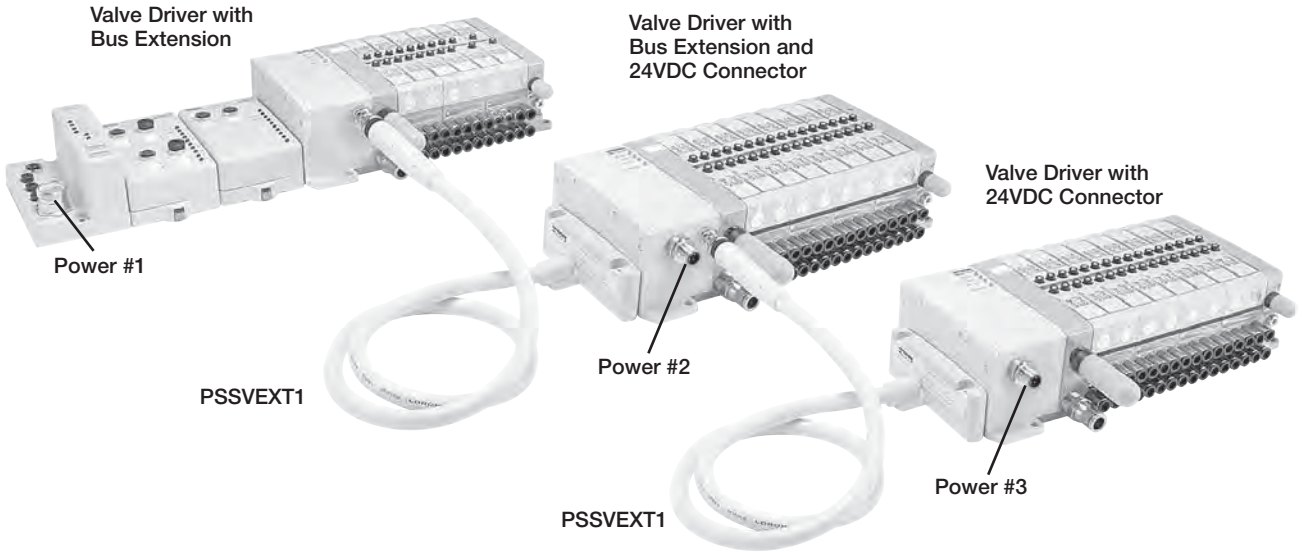
Description	Voltage	Part number
1 Meter Cable*	24VDC	**PSSVEXT1**

* IP67 certified.

Example

Isys Micro with Bus Extension on Valve Driver Module – No additional I/O at the Extension

- Add up to three additional valve manifolds without adding another communication module.
- No PSSSE24A is needed on the Extension when the Valve Driver Module with 24VDC Connector is used.
- Commonly used when many valves are required.
- Bus expansion only available with Isys Micro valves.



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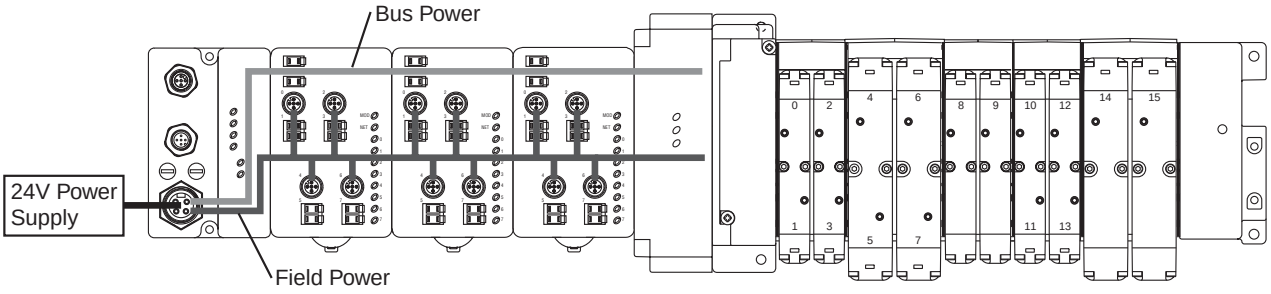
Power Distribution Options for Isys ISO

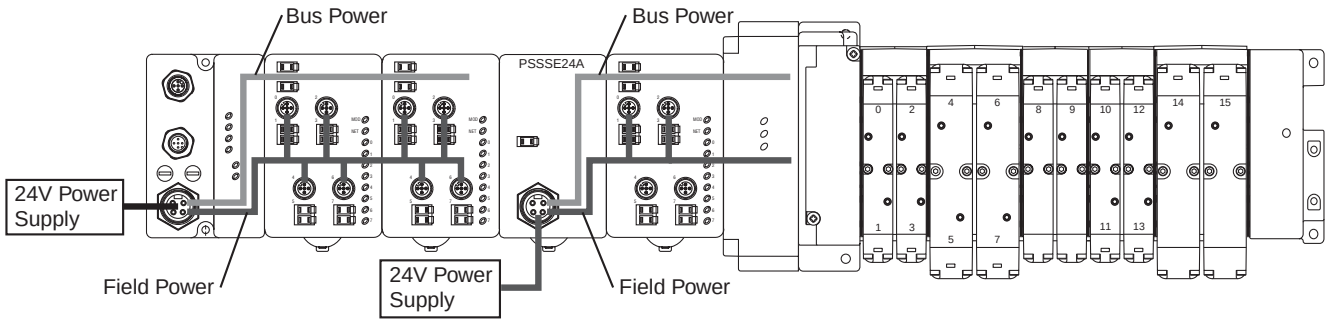
Isysnet Communication and I/O Modules

An auxiliary 24VDC power supply from the communication module provides power to the backplane bus power and I/O module field power. You can connect up to 13 I/O modules with a maximum of 10 A field power, using the auxiliary power.



Isysnet System with 24VDC Expansion Power Unit (PSSSE24A)

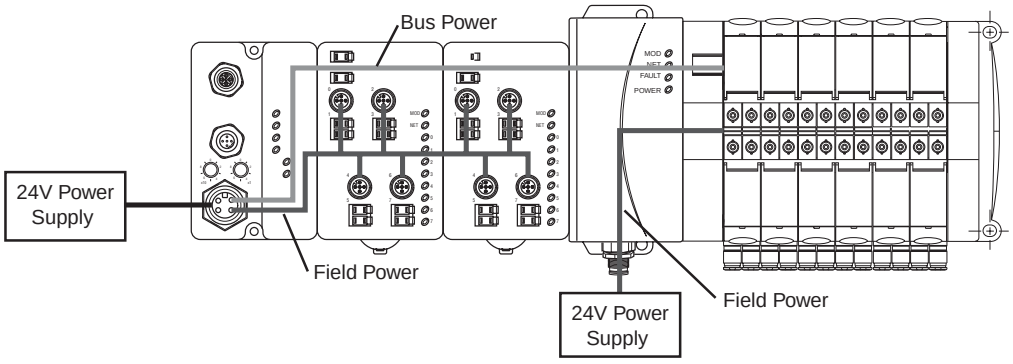
The auxiliary power from the communication module supports up to 13 I/O modules with a maximum of 10 A field power. The 24VDC Power Extender Module (PSSSE24A) extends the backplane bus power and I/O Module field power to support up to 13 more I/O modules. Connect additional Power Extender Modules to expand the I/O assembly up to the maximum of 63 I/O modules. This secondary 24VDC connector on the PSSSE24A can be wired into an Emergency Stop circuit.



Additional Power Distribution Options for Isys Micro

Isysnet Communication Module and Valve Driver Module with 24VDC Connector

The 24VDC power supply from the Communication Adaptor provides power to the backplane bus power and I/O module field power for up to 13 modules and an adapter with a maximum of 10 A Field Power. In this configuration, backplane bus power and I/O module field power are supplied to the input and output modules. The communication module only supplies backplane bus power to the Valve Driver Module, as the Isys Micro with 24VDC Connector separates the field power from the rest of the network. This secondary 24VDC Connector on the Valve Driver Module supplies Field Power to the valves, and can be wired into an Emergency Stop Circuit.



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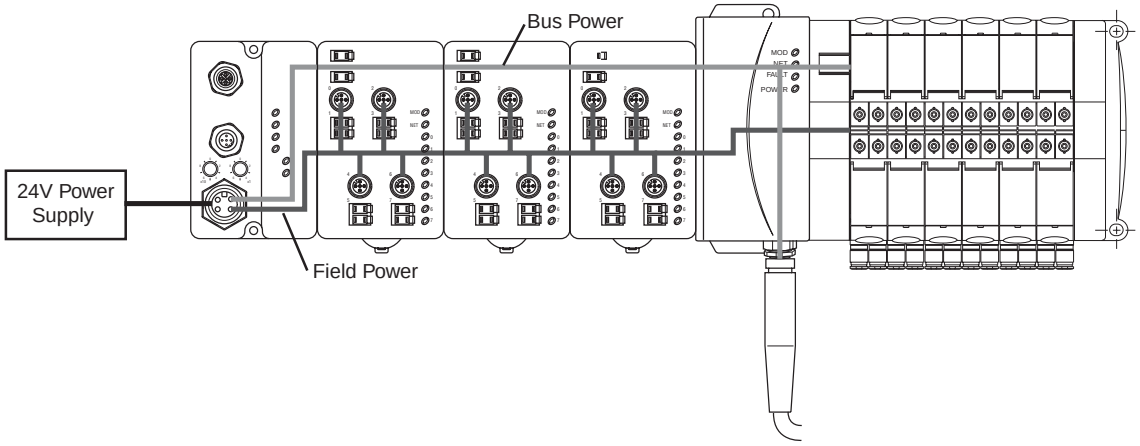
Power Distribution Options for Isys Micro (Continued)

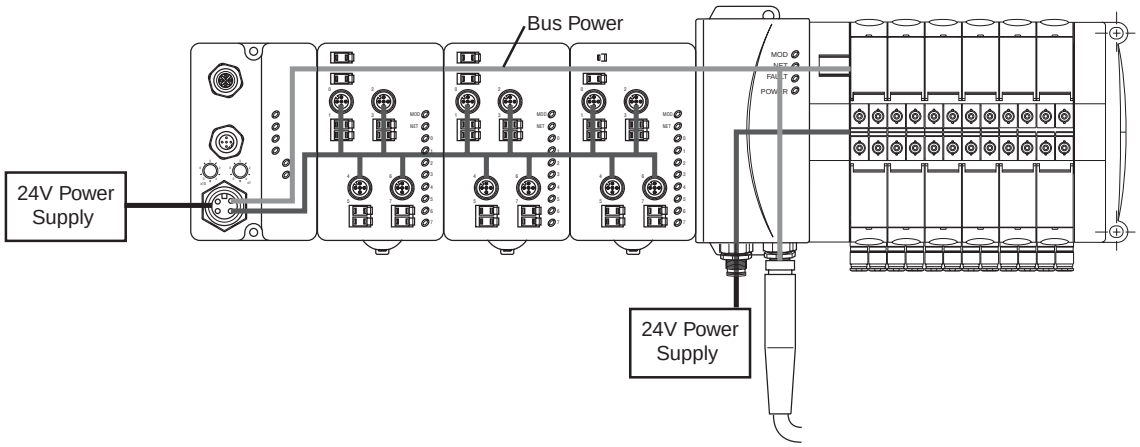
Isysnet Communication Module with Bus Extension Connector and I/O Modules

The 24VDC power supply from the communication module provides power to the backplane bus power and I/O module field power. You can connect up to 13 modules and an adapter with a maximum of 10 A field power, using this power source. The Isys Micro with Bus Extension Connector carries backplane bus power and communication down to another Isysnet Assembly through the PSSVEXT1 cable. If additional Isysnet Input and Output Modules or Isys ISO valve manifold is used on this extension, a PSSSE24A Power Extender Module is required to provide Field Power. If the extension is attached directly to an Isys Micro Manifold, Field Power can be supplied directly by using the 24VDC Connector option.



Isysnet Communication Module with 24VDC and Bus Extension Connectors and I/O Modules

The 24VDC power supply from the communication module provides power to the backplane bus power and I/O module field power. In this configuration, bus power and field power are supplied to the input and output modules. The communication module only supplies bus power to the Valve Driver Module, as the 24VDC Connector separates the Field Power from the rest of the network. This secondary 24VDC connector on the Valve Driver Module supplies field power to the valves, and can be wired into an Emergency Stop Circuit. The Bus Extension Connector carries bus power and communication down to another Isysnet Assembly through the PSSVEXT1 cable. If additional Isysnet input and output modules or Isys ISO valve manifold is used on this extension, a PSSSE24A Power Extender Module is required to provide field power. If the extension is attached directly to an Isys Micro Manifold with 24VDC Connector, field power can be supplied directly by using the 24VDC Connector option.



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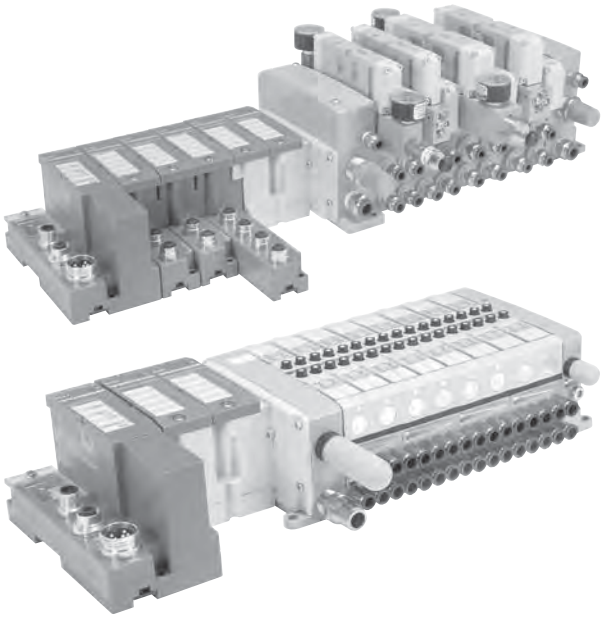
The Turck Fieldbus System

Isysnet has four major components:

- **Valve driver module** provide control for either 16 or 32 solenoids on a manifold
- **I/O modules** provide the field interface and system-interface circuitry
- **Communication modules** provide the network-interface circuitry
- **Power distribution module** provide 5 additional power inputs to the Turck system



Turck Features

- Highly modular design (4pt – 16pt modularity)
- Broad application coverage
- Channel-level diagnostics (LED and electronic)
- Channel-level alarm and annunciation (electronic)
- Channel-level open-wire detection with electronic feedback
- Channel-level short-circuit detection with electronic feedback
- Horizontal and vertical mounting without derating
- 5g vibration
- Electronic and mechanical keying
- Robust backplane design
- Quick-disconnects for I/O and network connectivity
- Built-in panel grounding
- Color-coded module labels
- UL, C-UL, and CE certifications (as marked)
- Highly reliable structural integrity
- Optical isolation between field and system circuits

Communication Modules

CANopen	**BL67-GW-CO**
CANopen with power over network	**BL67-GW-CO-T**
DeviceNet with power over network	**BL67-GW-DN**
Profibus DP	**BL67-GW-DPV1**
Multiproticol communication module (Ethernet / IP, Profinet, Modbus / TCP)	**BL67-GW-EN**
Ethernet / IP communication module	**BL67-GW-EN-IP**
Profinet communication module	**BL67-GW-EN-PN**
Modbus / TCP communication module with DeviceNet subnet	**BL67-GW-EN-DN**
Ethernet / IP communication module with DeviceNet subnet	**BL67-GW-EN-IP-DN**

Programmable Communication Modules

Profibus DP	**BL67-PG-DP**
Modbus / TCP communication module	**BL67-PG-EN**
Ethernet / IP communication module	**BL67-PG-EN-IP**
Modbus / TCP communication module with DeviceNet subnet	**BL67-PG-EN-DN**
Ethernet / IP communication module with DeviceNet subnet	**BL67-PG-EN-IP-DN**

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Digital Input Modules

	I/O modules	Voltage	Part number
	8 PNP input module	7 to 30 VDC	**BL67-8DI-P**
	8 PNP input module, with diagnostics	7 to 30 VDC	**BL67-8DI-PD**
	8 NPN input module	24 VDC	**BL67-8DI-N**

	Base module	Part number
	8 x M8, 3 pole, female	**BL67-B-8M8**
	4 x M12, 5 pole, female, A-code	**BL67-B-4M12**
	4 x M12, 5 pole, female, A-code	**BL67-B-4M12-P**
	1 x M23, 12 pole, female	**BL67-B-1M23**

I/O modules	Voltage	Part number
4 PNP input module	7 to 30 VDC	**BL67-4DI-P**
4 PNP input module, with diagnostics	7 to 30 VDC	**BL67-4DI-PD**
4 NPN input module	24 VDC	**BL67-4DI-N**

	Base module	Part number
	4 x M8, 3 pole, female	**BL67-B-4M8**
	2 x M12, 5 pole, female, A-code	**BL67-B-2M12**
	2 x M12, 5 pole, female, A-code	**BL67-B-2M12-P**
	4 x M12, 5 pole, female, A-code	**BL67-B-4M12**
	1 x M23, 12 pole, female	**BL67-B-1M23**

Digital Output Modules

	I/O modules	Output current	Part number
	8 PNP output module	0.5 amps per channel	**BL67-8DO-0.5A-P**
	8 NPN output module	0.5 amps per channel	**BL67-8DO-0.5A-N**

	Base module	Part number
	8 x M8, 3 pole, female	**BL67-B-8M8**
	4 x M12, 5 pole, female, A-code	**BL67-B-4M12**
	4 x M12, 5 pole, female, A-code	**BL67-B-4M12-P**
	1 x M23, 12 pole, female	**BL67-B-1M23**

I/O modules	Output Current	Part number
4 PNP output module	0.5 amps per channel	**BL67-4DO-0.5A-P**
4 PNP output module	2 amps per channel	**BL67-4DO-2A-P**
4 PNP output module	4 amps per channel	**BL67-4DO-4A-P**
4 NPN output module	2 amps per channel	**BL67-4DO-2A-N**

	Base module	Part number
	4 x M8, 3 pole, female	**BL67-B-4M8**
	2 x M12, 5 pole, female, A-code	**BL67-B-2M12**
	2 x M12, 5 pole, female, A-code	**BL67-B-2M12-P**
	4 x M12, 5 pole, female, A-code	**BL67-B-4M12**
	1 x M23, 12 pole, female	**BL67-B-1M23**

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Digital Output Modules

I/O modules	Output current	Part number
16 PNP output module	0.14 amps per channel	**BL67-16DO-0.1A-P**

	Base module	Part number
	1 x M23, 19 pole, female	**BL67-B-1M23-19**

Relay Output Modules

I/O modules	Output current	Part number
8 normally open relays	0.14 amps per channel	**BL67-8DO-R-NO**

	Base module	Part number
	4 x M12, 5 pole, female, A-code	**BL67-B-4M12-P**

Analog Input Modules

I/O modules	Input type	Part number
4 configurable current or voltage analog input module	4 to 20 mA or 0 to 20 mA -10 to +10 VDC or 0 to +10 VDC	**BL67-4AI-V/I**

	Base module	Part number
	4 x M12, 5 pole, female, A-code	**BL67-B-4M12**

I/O modules	Input type	Part number
2 Current analog input module	4 to 20 mA or 0 to 20 mA	**BL67-2AI-I**
2 Voltage analog input module	-10 to +10 VDC or 0 to +10 VDC	**BL67-2AI-V**
2 Temperature analog input module	PT100, PT200, PT500, PT1000, Ni100, Ni1000	**BL67-2AI-PT**
2 Temperature analog input module	Type B, E, J, K, N R, S, T	**BL67-2AI-TC**

	Base module	Part number
	2 x M12, 5 pole, female, A-code	**BL67-B-2M12**

Combination Input / Output Modules

I/O modules	Input voltage & output current	Part number
4 PNP output 4 PNP input module, with diagnostics	7 to 30 VDC 0.5 Amps	**BL67-4DI4DO-PD**
8 PNP configurable input or output module, with diagnostics	7 to 30 VDC 0.5 Amps	**BL67-8XSG-PD**

	Base module	Part number
	8 x M8, 3 pole, female	**BL67-B-8M8**
	4 x M12, 5 pole, female, A-code	**BL67-B-4M12**
	4 x M12, 5 pole, female, A-code	**BL67-B-4M12P**

Analog Output Modules

I/O modules	Input type	Part number
4 Voltage analog output module	-10 to +10 VDC or 0 to +10 VDC	**BL67-4AO-V**

	Base module	Part number
	4 x M12, 5 pole, female, A-code	**BL67-B-4M12**

I/O modules	Input type	Part number
2 Current analog output module	4 to 20 mA or 0 to 20 mA	**BL67-2AO-I**
2 Voltage analog output module	-10 to +10 VDC or 0 to +10 VDC	**BL67-2AO-V**

	Base module	Part number
	2 x M12, 5 pole, female, A-code	**BL67-B-2M12**

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Combination Analog Input / Output Modules

I/O modules	Output current	Part number
4 configurable input and 4 configurable output current or voltage analog module	4 to 20 mA or 0 to 20 mA -10 to +10 VDC or 0 to +10 VDC	**BL67-4AI4AO-V/I**

	Base module	Part number
	8 x M8, 3 pole, female	**BL67-B-8M8**
	4 x M12, 5 pole, female, A-code	**BL67-B-4M12**

I/O modules	Output current	Part number
2 configurable input and 2 configurable output current or voltage analog module	4 to 20 mA or 0 to 20 mA -10 to +10 VDC or 0 to +10 VDC	**BL67-2AI2AO-V/I**

	Base module	Part number
	8 x M8, 3 pole, female	**BL67-B-8M8**

CANopen Subnet Module

Extender module	Capacity	Part number
1 CANopen connection	64 bits of inputs or outputs	**BL67-1CVI**

	Base module	Part number
	1 x M12, 5 pole, female, A-code	**BL67-B-1M12**

Serial Interface Module

Extender module	Capacity	Part number
1 RS232 serial interface	300 to 115200 bps	**BL67-1RS232**
1 RS485 or 422 serial interface	300 to 115200 bps	**BL67-1RS485/422**

	Base module	Part number
	1 x M12, 5 pole, female, A-code	**BL67-B-1M12**
	1 x M12, 8 pole, female, A-code	**BL67-B-1M12-8**
	1 x M23, 12 pole, female	**BL67-B-1M23**

Power Extender Module

Extender module	Current capacity	Part number
24 VDC field power module	10 amps input	**BL67-PF-24VDC**

	Base module	Part number
	5 Pole mini connector to supply bus power and field power	**BL67-B-1RSM**
	5 Pole mini connector to field power only	**BL67-B-1RSM-VO**
	4 Pole mini connector to supply bus power and field power	**BL67-B-1RSM-4**

SSI and Counting Modules

Extender module	Capacity	Part number
1 SSI sensor interface	65 kbps up to 1 Mbps	**BL67-1SSI**
1 counter interface	Up to 250 kHz	**BL67-1CNT/ENC**

	Base module	Part number
	1 x M12, 8 pole, female, A-code	**BL67-B-1M12-8**
	1 x M23, 12 pole, female	**BL67-B-1M23**

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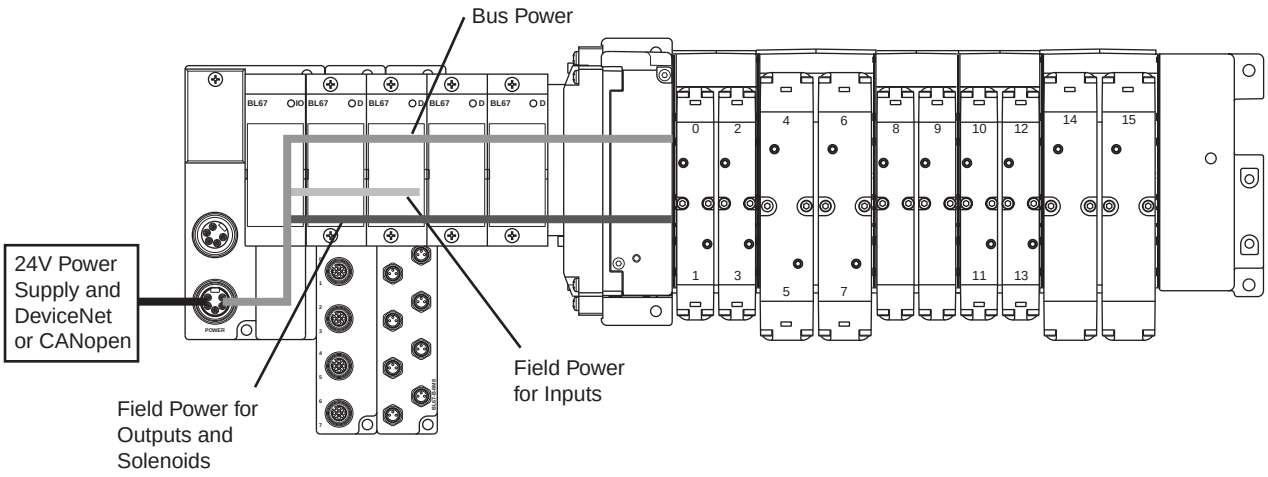
Power Distribution Options for Turck Fieldbus

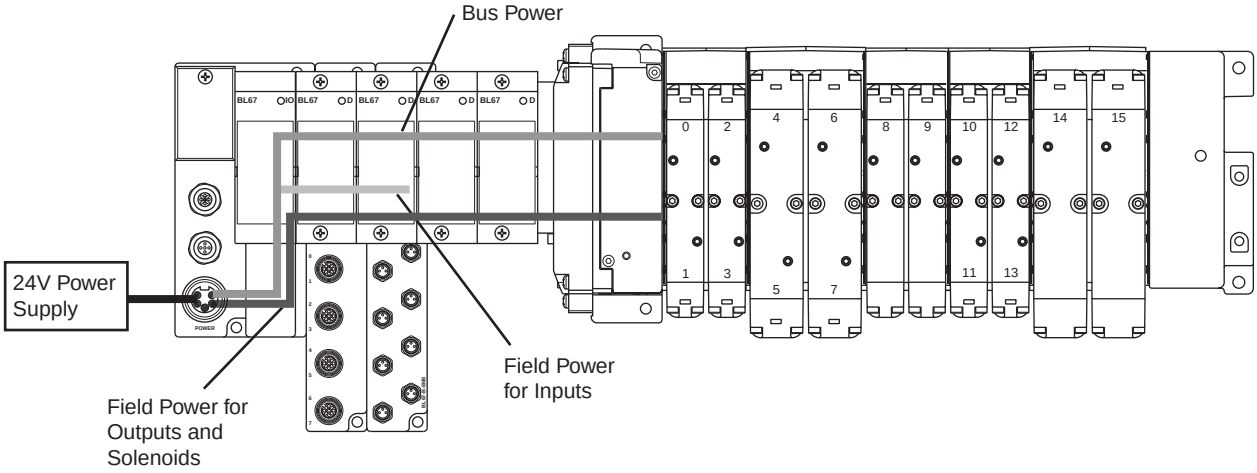
Turck Communication and I/O Modules - DeviceNet and CANopen, Power over Network

The 24VDC power supply pins from the DeviceNet or CANopen network connection on the communication module provides a single power circuit. This circuit provides 1.5 A bus power, 4 A field power for inputs and 8A field power for outputs.



Turck Communication and I/O Modules - Ethernet/IP, Modbus/TCP, Profinet, Profibus, and CANopen

An auxiliary 24VDC power supply from the communication module provides power across two separate circuits. The first circuit provides 1.5 A bus power and 4 A field power for inputs. The second circuit provides 10A field power for outputs which can be wired to an e-stop circuit to kill all outputs.



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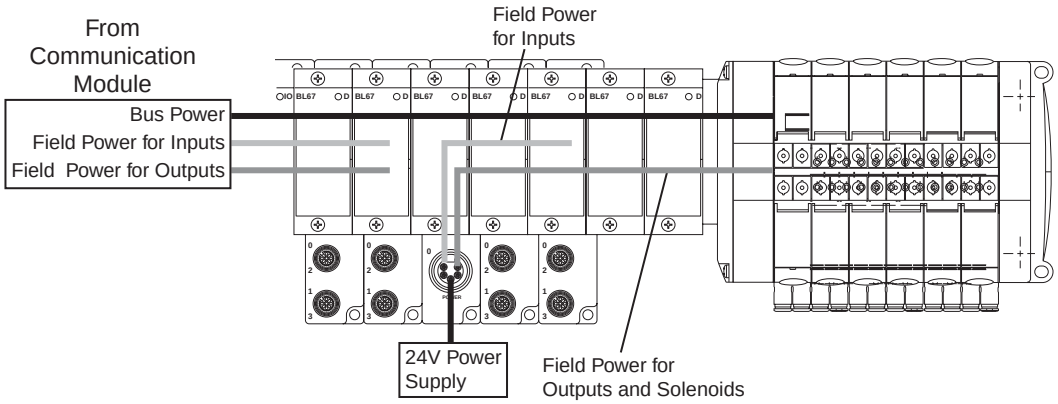
Power Distribution Options for Turck Fieldbus

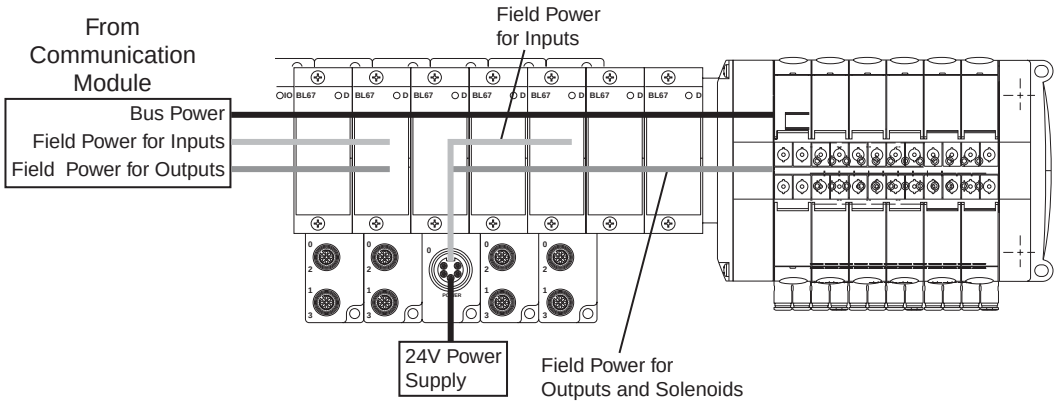
24VDC Power Extender Module (BL67-PF-24VDC) with Base Module BL67-B-1RSM

This configuration creates an auxiliary 24VDC power supply and provides power across two separate circuits, regardless of the communication module used. The first circuit provides 4 A field power for inputs. The second circuit provides 10A field power for outputs which can be wired to an e-stop circuit to kill all outputs and solenoids to the right of the module. The 1.5 A bus power is uninterrupted, and is still supplied from the communication module.



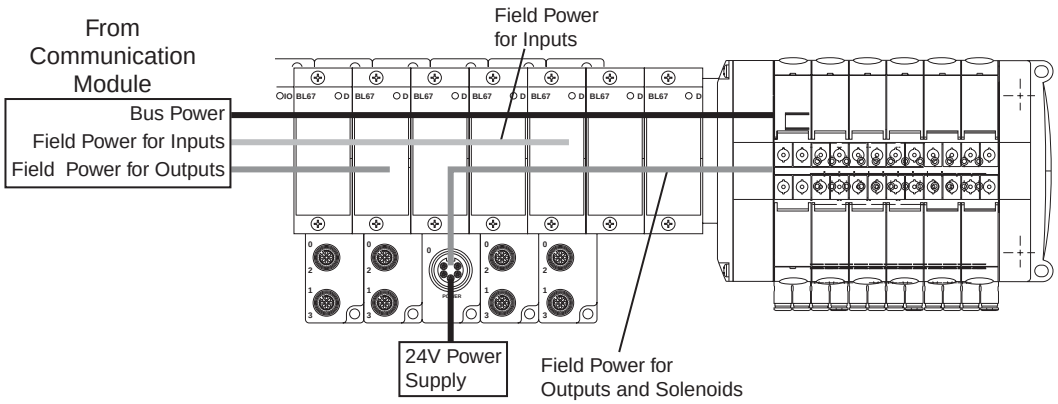
24VDC Power Extender Module (BL67-PF-24VDC) with Base Module BL67-B-1RSM-4

This configuration creates an auxiliary 24VDC power supply and provides power across one circuit, regardless of the communication module used. This circuit provides 4 A field power for inputs and 10A field power for outputs. The 1.5 A bus power is uninterrupted, and is still supplied from the communication module.



24VDC Power Extender Module (BL67-PF-24VDC) with Base Module BL67-B-1RSM-VO

This configuration creates an auxiliary 24VDC power supply and provides power across one circuit, regardless of the communication module used. This circuit provides 10A field power for outputs which can be wired to an e-stop circuit to kill all outputs and solenoids to the right of the module. The 1.5 A bus power and 4 A field power for inputs are uninterrupted, and are still supplied from the communication module.



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7/8" Mini Power Cables

Description	Part number
4 pin female to flying lead cable, TPE	**RKM 46-xM/S1587**
5 pin female to flying lead cable, TPE	**RKM 56-xM/S1587**
4 pin male to female cable, TPE	**RSM RKM 46-x/S1587**
5 pin male to female cable, TPE	**RSM RKM 56-x/S1587**
4 pin right angle female to flying lead cable, TPE	**WKM 46-xM/S1587**
5 pin right angle female to flying lead cable, TPE	**WKM 56-xM/S1587**

Where x = 2, 4, 5, 6, 8, 10 meter standard lengths

Power Tee

Description	Part number
4 pin Male to 2 female sockets	**RSM-2RKM 40**
5 pin Male to 2 female sockets	**RSM-2RKM 50**

M12 A-code Cables

Description	Part number
4 pin female to flying lead cable, PVC	**RKC 4.4T-***
4 pin male to flying lead cable, PVC	**RSC 4.4T-***
4 pin male to female cable, PVC	**RKC 4.4T-*-RSC 4.4T**
5 pin female to flying lead cable, TPE	**RKC 4.5T-*/S1587**
5 pin male to flying lead cable, TPE	**RSC 4.5T-*/S1587**
5 pin male to female cable, TPE	**RKC 4.5T-*-RSC 4.5T/S1587**

Where * = 1, 2, 3, 4 meter standard lengths

M8 Cables

Description	Part number
3 pin female to flying lead cable, PUR	**PKG 3M-*M/S90**
3 pin male to flying lead cable, PUR	**PSG 3M-*M/S90**
3 pin male to female cable, PUR	**PKG 3M-*M-PSG 3M/S90**

Where * = 1, 2, 3, 4 meter standard lengths

M23 Cables

Description	Part number
12 pin, double ended female thread with male pins and female socket, PUR. Pinout optimized for isysnet fieldbus.	**CSCM CKCM 12-11-x/S90**
19 pin, double ended female thread with male pins and female socket, PUR. Pinout optimized for isysnet fieldbus.	**CSM CKM 19-19-x/S90**
19 pin, 90° double ended female thread with male pins and female socket, PUR. Pinout optimized for turck fieldbus.	**CSWM CKWM 19-19-x/CS12852**

Where x = 1, 2, 3, 4 meter standard lengths

Profibus Cables

Description	Part number
M12 Male to M12 Female, PUR	**RSSW RKSW 455-xM**

Where x = 2, 4, 5, 6, 8, 10 meter standard lengths

M12 A-code Cables

Description	Part number
4 pin female to flying lead cable, PVC	**RKC 4.4T-***
4 pin male to flying lead cable, PVC	**RSC 4.4T-***
4 pin male to female cable, PVC	**RKC 4.4T-*-RSC 4.4T**
5 pin female to flying lead cable, TPE	**RKC 4.5T-*/S1587**
5 pin male to flying lead cable, TPE	**RSC 4.5T-*/S1587**
5 pin male to female cable, TPE	**RKC 4.5T-*-RSC 4.5T/S1587**

Where * = 1, 2, 3, 4 meter standard lengths

Profibus Terminating Resistor

Description	Part number
M12 male pin terminating resistor	**P8BPA00MB**

Ethernet Cables

Description	Part number
M12 female to M12 male, PUR	**RSSD RKSD 443-xM**
RJ45 to M12 male, PUR	**RSSD RJ45S 443-xM**

Where x = 2, 5, 10, 15, 20, 30 meter standard lengths

DeviceNet and CANopen Cables

Description	Part number
7/8" mini male to 7/8" mini female, PUR	**RSM RKM 5711-xM**
7/8" mini male to M12 female, PUR	**RSM RKC 5711-xM**
M12 male to M12 female, PUR	**RSC RKC 5711-xM**
M12 male to 7/8" mini female, PUR	**RSC RKM 5711-xM**

Where x = 2, 4, 5, 6, 8, 10 meter standard lengths

Bus Power Tee

Description	Part number
Bus power tee	**RSM RKM 57 WSM 40 PST**

For systems not equipped with Power over network, combines separate network and power feeds into the communication module. Includes reverse current protection

DeviceNet and CANopen Terminating Resistor

Description	Part number
7/8" Mini Male Pin Terminating Resistor	**RSM 57-TR2**
M12 Male Pin Terminating Resistor	**P8BPA00MA**

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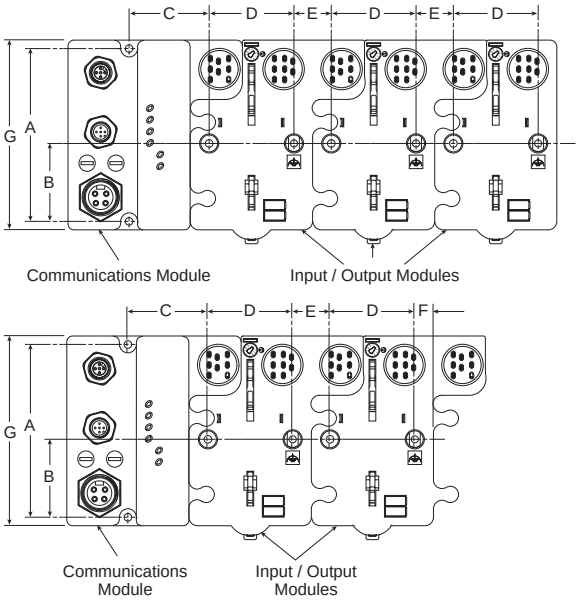
www.parker.com/pneumatics

Isysnet with Isys ISO Valves



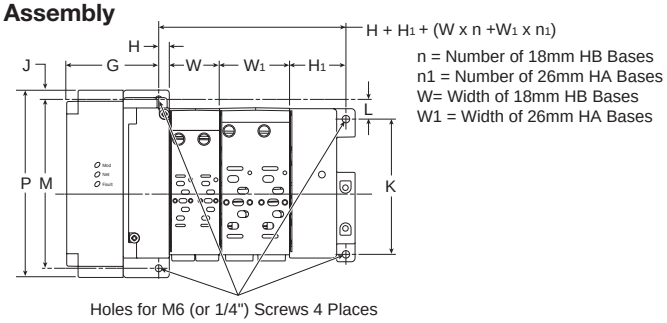
Dimensions

A	B	C	D
4.00 (102)	1.80 (46)	1.90 (48)	2.00 (50)

E	F	G
.87 (22)	.43 (11)	4.41 (112)

Inches (mm)

HB - HA Manifold Assembly



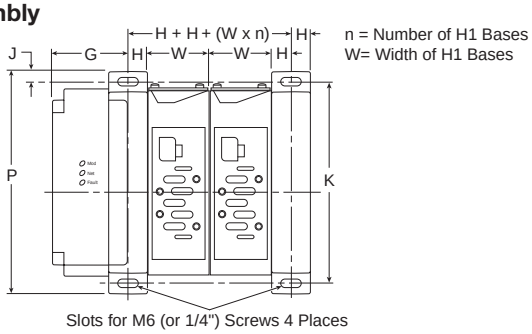
HB - HA Dimensions

G	H	H1	J	K
2.68 (68)	.33 (8.4)	1.80 (45.8)	.15 (4)	4.32 (110)

L	M	P	W	W1
.63 (16)	5.39 (137)	5.98 (152)	1.61 (40.8)	2.24 (56.8)

Inches (mm)

H1 Manifold Assembly



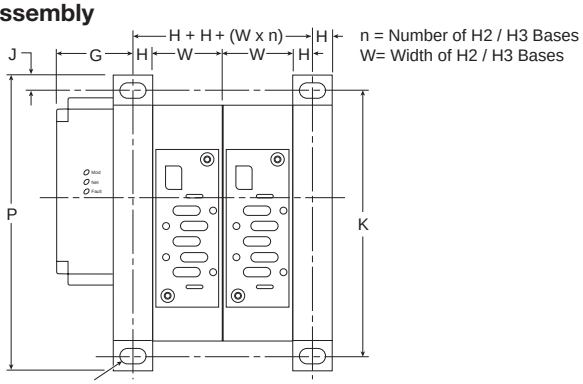
H1 Dimensions

G	H	J	K	P
2.20 (56)	.63 (15.9)	.33 (8.5)	6.50 (165)	7.17 (182)

W
1.93 (49)

Inches (mm)

H2 - H3 Manifold Assembly



H2 Dimensions

G	H	J	K	P
2.34 (59.5)	.65 (16.5)	.47 (12)	8.46 (215)	9.41 (239)

W
2.20 (56)

Inches (mm)

H3 Dimensions

G	H	J	K	P
2.34 (59.5)	.65 (16.5)	.59 (15)	10.43 (265)	11.61 (295)

W
2.80 (71)

Inches (mm)

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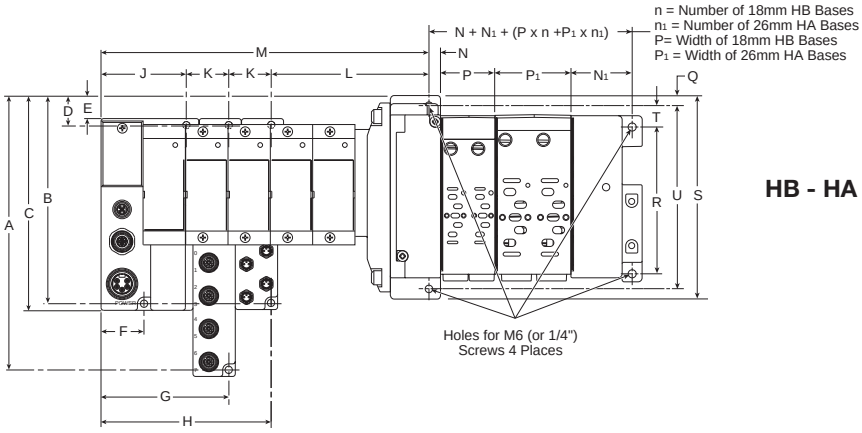
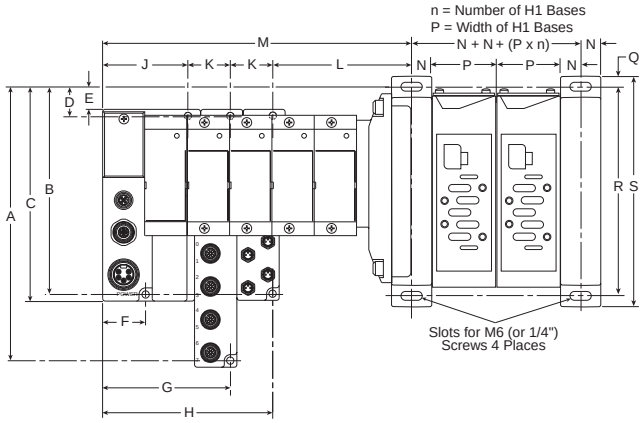
Richland, Michigan
www.parker.com/pneumatics

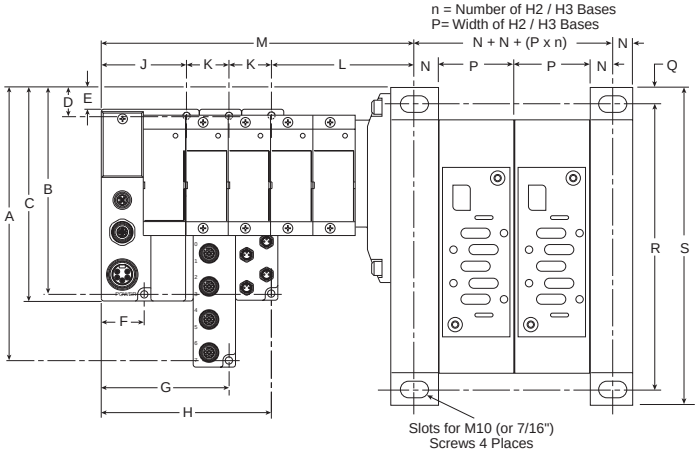
Turck with Isys ISO Valves



HB - HA Manifold Assembly



H1 Manifold Assembly



H2 - H3 Manifold Assembly

Dimensions

	A	B	C	D	E	F	G	H	J	K	L	M	N	N1	P	P1	Q	R	S	T	U
HA / HB	8.05 (204.5)	6.08 (154.5)	6.28 (159.5)	0.75 (19.5)	0.57 (14.5)	1.28 (32.5)	3.79 (96.5)	5.06 (128.5)	2.53 (64.5)	1.26 (32)	4.75 (120.8)	See note 1	.33 (8.4)	1.80 (45.8)	1.61 (40.8)	2.24 (56.8)	.15 (4)	4.32 (110)	5.98 (152)	.63 (16)	5.39 (137)
H1	8.53 (216.7)	6.56 (166.7)	6.76 (171.7)	1.25 (31.7)	1.05 (26.7)	1.28 (32.5)	3.79 (96.5)	5.06 (128.5)	2.53 (64.5)	1.26 (32)	4.27 (108.5)	See note 1	.63 (15.9)	—	1.93 (49)	—	.33 (8.5)	6.50 (165)	7.17 (182)	—	—
H2	8.38 (212.9)	6.41 (162.9)	6.61 (167.9)	1.10 (27.9)	.90 (22.9)	1.28 (32.5)	3.79 (96.5)	5.06 (128.5)	2.53 (64.5)	1.26 (32)	4.34 (110)	See note 1	.65 (16.5)	—	2.20 (56)	—	.47 (12)	8.46 (215)	9.41 (239)	—	—
H3	8.62 (218.9)	6.65 (168.9)	6.85 (173.9)	1.33 (33.9)	1.14 (28.9)	1.28 (32.5)	3.79 (96.5)	5.06 (128.5)	2.53 (64.5)	1.26 (32)	4.34 (110)	See note 1	.65 (16.5)	—	2.80 (71)	—	.59 (15)	10.43 (265)	11.61 (295)	—	—

Note 1: M =J+L+n_2xK, where n_2 = Number of Turck input / output modules
Inches (mm)

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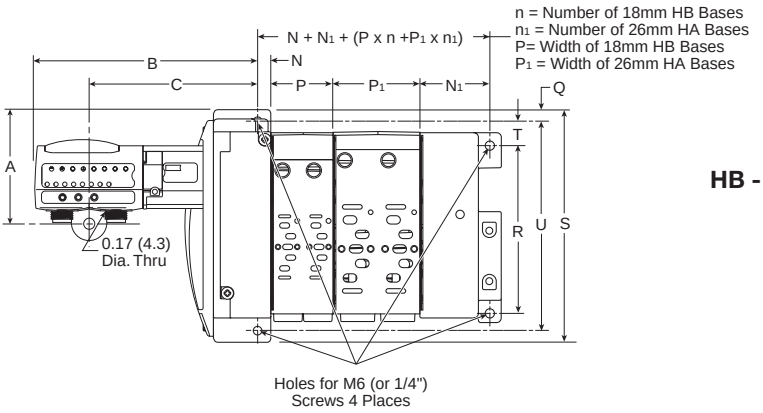
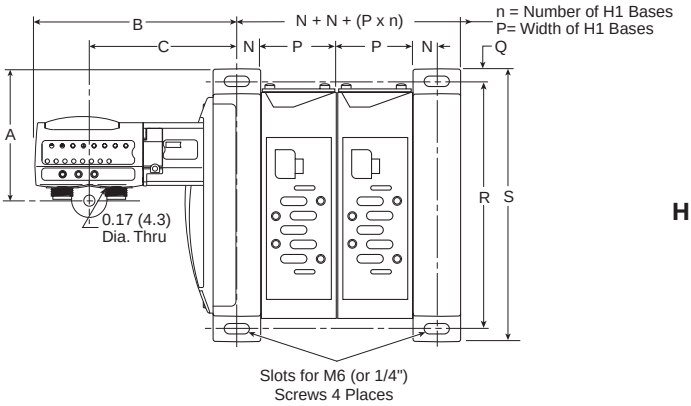
Richland, Michigan
www.parker.com/pneumatics

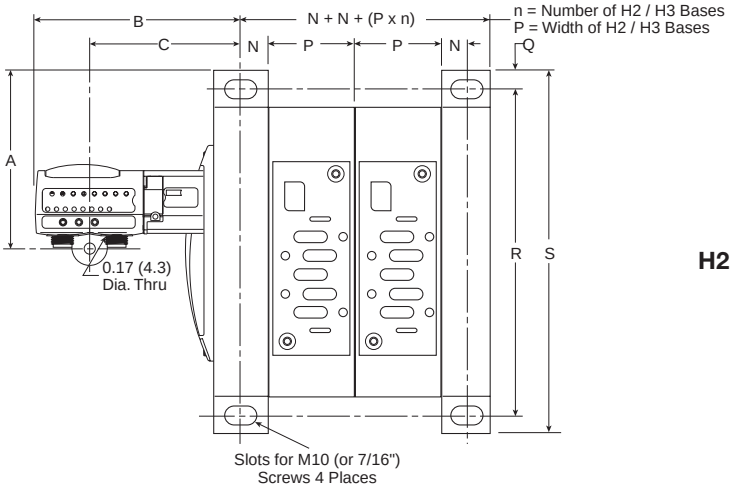
Moduflex with Isys ISO Valves



HB - HA Manifold Assembly



H1 Manifold Assembly



H2 - H3 Manifold Assembly

Dimensions

	A	B	C	N	N1	P	P1	Q	R	S	T	U
HA / HB	2.75 (69.8)	5.61 (142.5)	4.40 (111.8)	.33 (8.4)	1.80 (45.8)	1.61 (40.8)	2.24 (56.8)	.15 (4)	4.32 (110)	5.98 (152)	.63 (16)	5.39 (137)
H1	3.23 (82)	6.33 (160.9)	5.13 (130.2)	.63 (15.9)	—	1.93 (49)	—	.33 (8.5)	6.50 (165)	7.17 (182)	—	—
H2	3.08 (78.2)	6.40 (161.5)	5.19 (131.8)	.65 (16.5)	—	2.20 (56)	—	.47 (12)	8.46 (215)	9.41 (239)	—	—
H3	3.31 (84.2)	6.40 (161.5)	5.19 (131.8)	.65 (16.5)	—	2.80 (71)	—	.59 (15)	10.43 (265)	11.61 (295)	—	—

Inches (mm)

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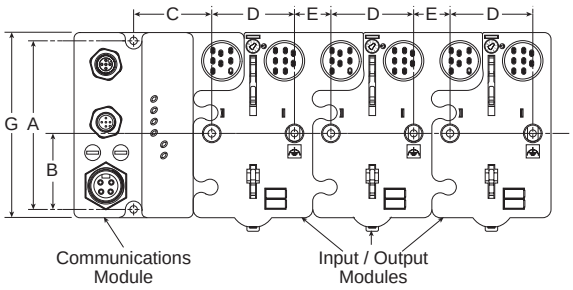
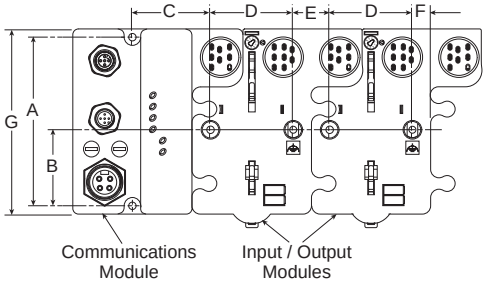
Isysnet with Isys Micro Valves



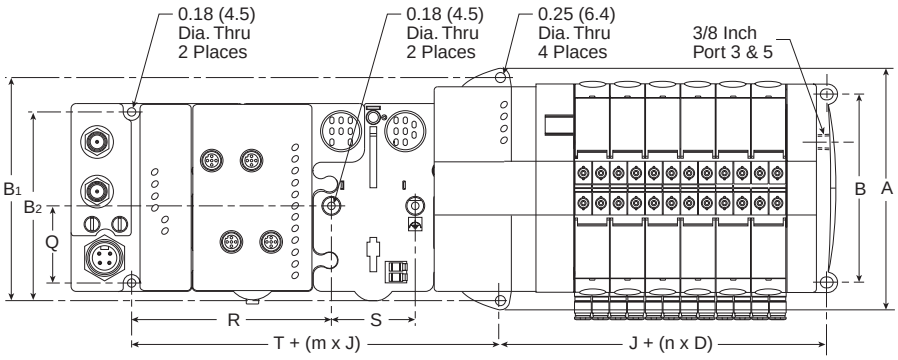


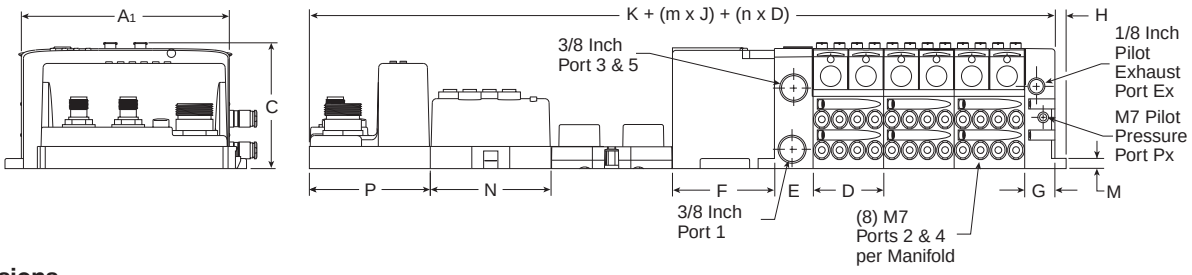
Dimensions

A	B	C	D
4.00 (102)	1.80 (46)	1.90 (48)	2.00 (50)

E	F	G
.87 (22)	.43 (11)	4.41 (112)

Inches (mm)





Dimensions

A	A1	B	B1	B2	C	D	E	F	G
5.67 (144.0)	4.88 (124.0)	4.41 (112.0)	5.24 (133.0)	4.02 (102.0)	2.95 (75.0)	1.65 (42.0)	0.91 (23.0)	2.40 (61.0)	0.71 (18.0)

H	J	K	M	N	P	Q	R	S	T
0.49 (12.5)	2.72 (69.0)	7.32 (186.0)	0.24 (6.1)	2.83 (72.0)	2.83 (72.0)	1.81 (46.0)	4.72 (120.0)	2.01 (51.0)	2.01 (51.0)

Inches (mm)

n = Number of Manifolds
m = Number of Modules

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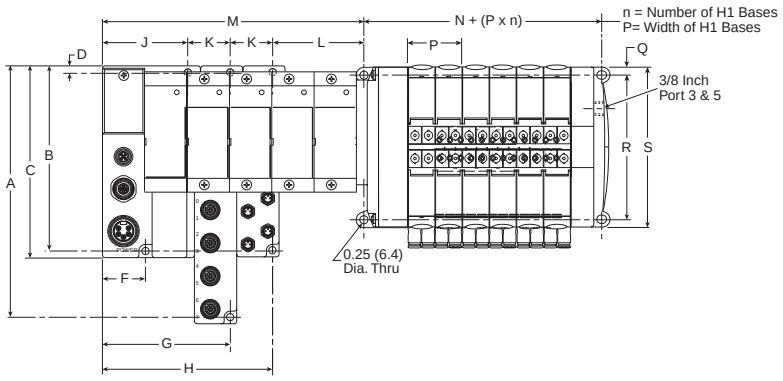
Turck with Isys Micro Valves

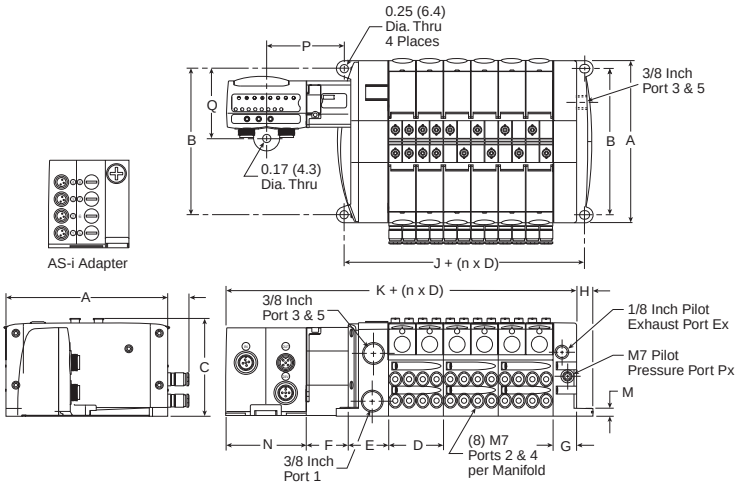


Dimensions

A	B	C	D	F	G	H	J	K	L	M	N	P	Q	R	S
7.48	5.51	5.71	0.20	1.28	3.79	5.06	2.53	1.26	2.54	See	2.28	1.65	.19	4.41	4.88
(190)	(140)	(145)	(5)	(32.5)	(96.5)	(128.5)	(64.5)	(32)	(64)	note 1	(58)	(42)	(4.9)	(112)	(124)

Note 1: M =J+L+n_2xK, where n_2 = Number of Turck input / output modules
Inches (mm)

Moduflex Adapter, Side Ported



n = Number of Manifolds

Dimensions

A	B	C	D	E	F	G	H	J	K	M	N	P	Q
4.88	4.41	2.95	1.65	1.22	1.28	0.71	0.49	2.28	6.10	0.24	2.40	2.36	2.07
(124.0)	(112.0)	(75.0)	(42.0)	(31.0)	(32.5)	(18.0)	(12.5)	(58.0)	(155.0)	(6.1)	(61.0)	(60.0)	(52.5)

Inches (mm)

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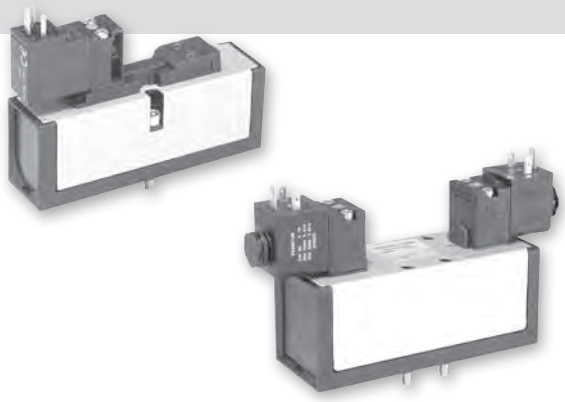
DX ISOMAX Series



The ISOMAX range of directional control valves complies with ISO 15407-1 and VDMA 24563 for sizes 02 and 01 and ISO 5599-1 for sizes 1, 2 and 3. ISOMAX provides flows from 0.55 Cv to 4.15 Cv.

The ISOMAX range includes valves for pneumatic and electrical actuation with a wide choice of subbases and manifolds to suit different application needs.

All ISOMAX products use high-tech ceramic switching technology providing:

Excellent reliability
- Long life in excess of 100 million operations*
- Operates with lubricated or non-lubricated air
- Low sensitivity to air quality changes

High performance
- Slide valve concept allows high flow / size ratio and short response time due to short slide stroke and low friction

Stable long lasting performances
- Low friction switching: minimum wear of the valve member / seal assembly

Valves fitted with switchable selector to give internal or external pilot supply

Corrosion free and modern design

Vacuum operation

Dual pressure

* Refer to our warranty conditions.

Operating information

Operating Pressure: Vacuum to 145 PSIG (10 bar)

Function		M.O.P (PSIG)
20, 21, 22, 23	2-position, spring return	36
50, 51, 53, 54	2-position, air return	30
04, 05, 06, 08	2-position	15
09, 11, 12, 27	3-position, CE	45
16, 18, 19, 25	3-position, APB	45

Working temperatures: -10°C to 60°C (14°F to 140°F)
Storage temperatures: -20°C to 70°C (-4°F to 158°F)

Material specifications

Body	Polyamide reinforced fiberglass
Casing	Anodized aluminum
End plates	Painted zinc plated steel
Function selector	Polyamide reinforced fiberglass
Screws	Zinc plated steel
Seals	Nitrile
Seat	Ceramic
Springs	Stainless steel
Top cover seals	Polyester
Valve members	Self lubricating acetal
Valve plate	Zinc

Most popular.

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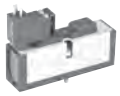
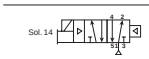
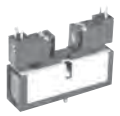
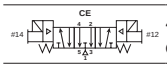
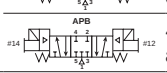
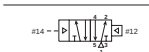
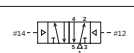
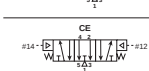
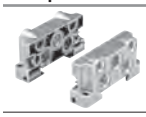
DX02 ISO Valves

	Symbol	Type	Cv	Operator	Pilot	Override	24 VDC	120 VAC
		4-way, 2-position, spring return	0.55	Single solenoid	Internal	Non-locking	**DX02-621-951M**	**DX02-621-951J**
		4-way, 2-position, air return	0.55	Single solenoid	Internal	Non-locking	**DX02-651-951M**	**DX02-651-951J**
		4-way, 2-position	0.55	Double solenoid	Internal	Non-locking	**DX02-606-951M**	**DX02-606-951J**
		4-way, 3-position, center exhaust	0.4	Double solenoid	Internal	Non-locking	**DX02-611-951M**	**DX02-611-951J**
		4-way, 3-position, all ports blocked	0.4	Double solenoid	Internal	Non-locking	**DX02-616-951M**	**DX02-616-951J**

	Symbol	Type	Cv	Operator	Pilot	Part number
		4-way, 2-position, spring return	0.55	Single remote pilot	Remote	**DX02-421-60**
		4-way, 2-position, air return	0.55	Single remote pilot	Remote	**DX02-451-60**
		4-way, 2-position	0.55	Double remote pilot	Remote	**DX02-406-60**
		4-way, 3-position, center exhaust	0.4	Double remote pilot	Remote	**DX02-411-60**
		4-way, 3-position, all ports blocked	0.4	Double remote pilot	Remote	**DX02-416-60**

DX02 Series Subbase & Manifolds

Single subbase		1/8" NPT	1/8" BSPP
	Side ported base	**PL02-01-80**	**PL02-01-70**
2 Station manifold bases			
	End ported bases	1/8" NPT	1/8" BSPP
		PJLP02-201-80	**PJLP02-201-70**
End plate kit		1/8" NPT port	1/8" BSPP port
		**PEJ02-02-80**	**PEJ02-02-70**

Add-A-Fold Assembly Model Number

AA **02U** **0** **04**

Valve series	
Right & left end plate DX02	02U*

* For use with PJLP02 Manifolds.

Thread type	
NPT	0
BSPP "G"	1

Number of stations*
02
04
•
24
•
32

* Must be ordered in multiples of (2)

DX02 Series Accessories

Accessory		Description		Part number
Sandwich regulator		Common pressure	2-60 PSIG w/ gauge	**PS5637155P**
		Common pressure	5-125 PSIG w/ gauge	**PS5637166P**
		Independent pressure	2-60 PSIG w/ gauge	**PS5637255P**
		Independent pressure	5-125 PSIG w/ gauge	**PS5637266P**
Gauge adapter kit		Includes 1/8" coupling and long nipple		**PS5651160P**
Blanking plate kit				**PS5634P**
Sandwich supply module		1/8" NPT		**PS562600P**
		1/8" BSPP		**PS562601P**
Sandwich exhaust module		1/8" NPT		**PS562700P**
		1/8" BSPP		**PS562701P**
Intermediate air supply module		1/8" NPT		**D02P-01-80**
Sandwich flow control				**PS5642P**
Manifold to manifold gasket kits		Used with manifold PJLP02		**DX02M2MGSKT**
Manifold port isolation kits (main galley 1, 3, & 5)		For use on PJLP and PJL series manifolds. Kit includes: plugs with o-rings.		**D02BD0**
Manifold hardware kit		Includes 10 bolts, 10 washers, 10 nuts		**DX02M2MB**

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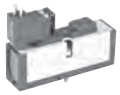
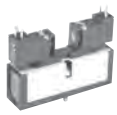
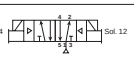
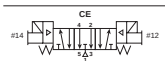
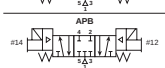
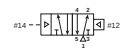
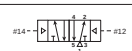
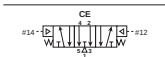
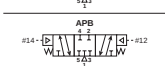
DX01 ISO Valves

	Symbol	Type	Cv	Operator	Pilot	Override	24 VDC	120 VAC
		4-way, 2-position, spring return	0.75	Single solenoid	Internal	Non-locking	**DX01-621-951M**	**DX01-621-951J**
		4-way, 2-position, air return	0.75	Single solenoid	Internal	Non-locking	**DX01-651-951M**	**DX01-651-951J**
		4-way, 2-position	0.75	Double solenoid	Internal	Non-locking	**DX01-606-951M**	**DX01-606-951J**
		4-way, 3-position, center exhaust	0.5	Double solenoid	Internal	Non-locking	**DX01-611-951M**	**DX01-611-951J**
		4-way, 3-position, all ports blocked	0.5	Double solenoid	Internal	Non-locking	**DX01-616-951M**	**DX01-616-951J**

	Symbol	Type	Cv	Operator	Pilot	Part number
		4-way, 2-position, spring return	0.75	Single remote pilot	Remote	**DX01-421-60**
		4-way, 2-position, air return	0.75	Single remote pilot	Remote	**DX01-451-60**
		4-way, 2-position	0.75	Double remote pilot	Remote	**DX01-406-60**
		4-way, 3-position, center exhaust	0.5	Double remote pilot	Remote	**DX01-411-60**
		4-way, 3-position, all ports blocked	0.5	Double remote pilot	Remote	**DX01-416-60**

DX01 Series Subbase & Manifolds

Single subbase		1/4" NPT	1/4" BSPP
	Side ported base	**PL01-02-80**	**PL01-02-70**
2 Station manifold bases			
	End ported bases	1/4" NPT	1/4" BSPP
		PJLP01-202-80	**PJLP01-202-70**
End plate kit		1/4" NPT port	1/4" BSPP port
		PEJ01-03-80	**PEJ01-03-70**

Add-A-Fold Assembly Model Number

AA 01U 0 04

Valve series	
Right & left end plate DX01	01U*

* For use with PJLP01 or PJL01 Manifolds.

Thread type	
NPT	0
BSPP "G"	1

Number of stations*
02
04
•
24
•
32

* Must be ordered in multiples of (2)

DX01 Series Accessories

Accessory		Description		Part number
Sandwich regulator		Common pressure	2-60 PSIG w/ gauge	**PS5537155P**
		Common pressure	5-125 PSIG w/ gauge	**PS5537166P**
		Independent pressure	2-60 PSIG w/ gauge	**PS5537255P**
		Independent pressure	5-125 PSIG w/ gauge	**PS5537266P**
Gauge adapter kit		Includes 1/8" coupling and long nipple		**PS5651160P**
Remote pilot access plate kit		1/4" NPT		**PS551500P**
		1/4" BSPP		**PS551501P**
Blanking plate kit				**PS5534P**
Sandwich supply module		1/4" NPT		**PS552600P**
		1/4" BSPP		**PS552601P**
Sandwich exhaust module		1/4" NPT		**PS552700P**
		1/4" BSPP		**PS552701P**
Intermediate air supply module		1/4" NPT		**D01P-02-80**
Sandwich flow control				**PS5542P**
Manifold to manifold gasket kits		Used with manifold PJLP02		**DX01M2MGSKT**
Manifold port isolation kits (main galley 1, 3, & 5)		For use on PJLP and PJL series manifolds. Kit includes: plugs with o-rings.		**D01BD0**
Manifold hardware kit		Includes 10 bolts, 10 washers, 10 nuts		**DX02M2MB**

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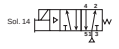
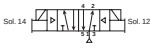
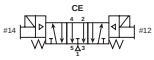
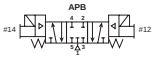
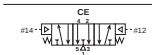
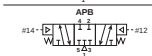
DX1 ISO Valves

	Symbol	Type	Cv	Operator	Pilot	Override	24 VDC	120 VAC
		4-way, 2-position, spring return	1.15	Single solenoid	Internal	Non-locking	**DX1-621-BL49**	**DX1-621-BL53**
						Locking	**DX1-621-CL49**	**DX1-621-CL53**
		4-way, 2-position, air return	1.15	Single solenoid	Internal	Non-locking	**DX1-651-BL49**	**DX1-651-BL53**
						Locking	**DX1-651-CL49**	**DX1-651-CL53**
		4-way, 2-position	1.15	Double solenoid	Internal	Non-locking	**DX1-606-BL49**	**DX1-606-BL53**
						Locking	**DX1-606-CL49**	**DX1-606-CL53**
		4-way, 3-position, center exhaust	0.75	Double solenoid	Internal	Non-locking	**DX1-611-BL49**	**DX1-611-BL53**
						Locking	**DX1-611-CL49**	**DX1-611-CL53**
		4-way, 3-position, all ports blocked	0.75	Double solenoid	Internal	Non-locking	**DX1-616-BL49**	**DX1-616-BL53**
						Locking	**DX1-616-CL49**	**DX1-616-CL53**

	Symbol	Type	Cv	Operator	Pilot	Part number
		4-way, 2-position, spring return	1.15	Single remote pilot	Remote	**DX1-421-60**
		4-way, 2-position, air return	1.15	Single remote pilot	Remote	**DX1-451-60**
		4-way, 2-position	1.15	Double remote pilot	Remote	**DX1-406-60**
		4-way, 3-position, center exhaust	0.75	Double remote pilot	Remote	**DX1-411-60**
		4-way, 3-position, all ports blocked	0.75	Double remote pilot	Remote	**DX1-416-60**

DX1 Series Subbase & Manifolds

Single subbase	Description	3/8" NPT	3/8" BSPP
	Side ported base	**PS4011150CP**	**PS4011160CP**

Manifold bases		3/8" NPT	3/8" BSPP
	End ported bases	**PS4011550CP**	**PS4011560CP**
	Bottom / End ported bases	**PS4011650CP**	**PS4011660CP**

End plate kits		NPT port	BSPP port
	DX1 non-collective wiring end plates	**PS4031010CP**	**PS4031011CP**

5599-1, DX1 Accessories

Accessories		Description		Part number
Sandwich regulator		Common pressure	5-125 PSIG w/ gauge	**PS4037166CP**
		Independent pressure	5-125 PSIG w/ gauge	**PS4037266CP**
Remote pilot access plate kit		1/8" NPT		**PS401500CP**
		1/8" BSPP		**PS401501CP**
Blanking plate kit				**PS4034CP**
Sandwich flow control				**PS4042CP**
Manifold to manifold gasket kit				**PS4013P**
Manifold port isolation kits		Main galley (1, 3, 5)		**PS4032CP**
Manifold port isolation kits		Pilot galley		**PS4033CP**
Auxiliary access plate kit		1/4" & 3/8"	NPT	**PS403000CP**
			BSPP	**PS403001CP**

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How To Order Add-A-Fold Assemblies

1. List Add-A-Fold Assembly call out. This automatically includes the end plate kit assembly.
2. List complete valve/base model number. List left to right, looking at the cylinder ports on the #12 end of the manifold. The left most station is station 1.

   (If a blank station is needed, list the blanking plate part number and the individual manifold number in the station specified.)

AA H1 S 0 03 —

Valve series	
DX1, ISO Size 1	H1

End plate type	
Standard non-collective wiring	S

Port type	
NPT	0
BSPP "G"	1

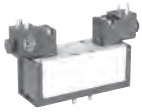
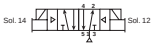
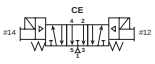
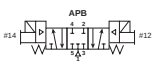
Number of stations*
01
•
•
•
24

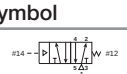
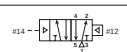
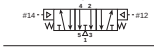
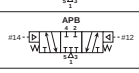
Transition plate	
Blank	No transition plate
C	DX1 to DX2
D	DX1 to DX3

Example: Application requires a 3-Station manifold.

Qty.	Part No.
1	AAH1S003
1	DX1-621-BL49 ..... Valve Station 1
1	PS4011550CP .....Base Station 1
1	DX1-616-BL49 ..... Valve Station 2
1	PS4011550CP .....Base Station 2
1	DX1-611-BL49 ..... Valve Station 3
1	PS4011550CP .....Base Station 3

DX2 ISO Valves

	Symbol	Type	Cv	Operator	Pilot	Override	24 VDC	120 VAC
		4-way, 2-position, spring return	2.5	Single solenoid	Internal	Non-locking	**DX2-621-BL49**	**DX2-621-BL53**
						Locking	**DX2-621-CL49**	**DX2-621-CL53**
		4-way, 2-position, air return	2.5	Single solenoid	Internal	Non-locking	**DX2-651-BL49**	**DX2-651-BL53**
						Locking	**DX2-651-CL49**	**DX2-651-CL53**
		4-way, 2-position	2.5	Double solenoid	Internal	Non-locking	**DX2-606-BL49**	**DX2-606-BL53**
						Locking	**DX2-606-CL49**	**DX2-606-CL53**
		4-way, 3-position, center exhaust	2.4	Double solenoid	Internal	Non-locking	**DX2-611-BL49**	**DX2-611-BL53**
						Locking	**DX2-611-CL49**	**DX2-611-CL53**
		4-way, 3-position, all ports blocked	2.4	Double solenoid	Internal	Non-locking	**DX2-616-BL49**	**DX2-616-BL53**
						Locking	**DX2-616-CL49**	**DX2-616-CL53**

	Symbol	Type	Cv	Operator	Pilot	Part number
		4-way, 2-position, spring return	2.5	Single remote pilot	Remote	**DX2-421-60**
		4-way, 2-position, air return	2.5	Single remote pilot	Remote	**DX2-451-60**
		4-way, 2-position	2.5	Double remote pilot	Remote	**DX2-406-60**
		4-way, 3-position, center exhaust	2.4	Double remote pilot	Remote	**DX2-411-60**
		4-way, 3-position, all ports blocked	2.4	Double remote pilot	Remote	**DX2-416-60**

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DX2 Series Subbase & Manifolds

Single subbase	Description	1/2" NPT	1/2" BSPP
	Side ported base	**PS4111170CP**	**PS4111180CP**

Manifold bases		1/2" NPT	1/2" BSPP
	Bottom / End ported bases	**PS4111670CP**	**PS4111680CP**
	Note: Manifolds include 2 pipe plugs		

End plate kits		NPT port	BSPP port
	H2 Non-collective wiring end plates	**PS4131010CP**	**PS4131011CP**

5599-1, DX2 Accessories

Accessories	Description		Part number
Sandwich regulator	Common pressure	5-125 PSIG w/ gauge	**PS4137166CP**
	Independent pressure	5-125 PSIG w/ gauge	**PS4137266CP**
Remote pilot access plate kit	1/8" NPT		**PS411500CP**
	1/8" BSPP		**PS411501CP**
Blanking plate kit			**PS4134CP**
Sandwich flow control			**PS4142CP**
Manifold to manifold gasket kit			**PS4113P**
Manifold port isolation kits	Main galley (1, 3, 5)		**PS4132CP**
Manifold port isolation kits	Pilot galley		**PS4033CP**

How To Order Add-A-Fold Assemblies

1. List Add-A-Fold Assembly call out. This automatically includes the end plate kit assembly.
2. List complete valve/base model number. List left to right, looking at the cylinder ports on the #12 end of the manifold. The left most station is station 1.

   (If a blank station is needed, list the blanking plate part number and the individual manifold number in the station specified.)

AA	H2	S	0	03	—

Valve series

DX2, ISO Size 2	H2

End plate type

Standard non-collective wiring	S

Port type

NPT	0
BSPP "G"	1

Number of stations

01
•
•
•
21

Transition plate

Blank	No transition plate
C	DX1 to DX2
D	DX1 to DX3

Example: Application requires a 3-station manifold.

Qty.	Part No.
1	AAH2S003
1	DX2-621-BL49 ..... Valve Station 1
1	PS4111570CP .....Base Station 1
1	DX2-616-BL49 ..... Valve Station 2
1	PS4111570CP .....Base Station 2
1	DX2-611-BL49 ..... Valve Station 3
1	PS4111570CP .....Base Station 3

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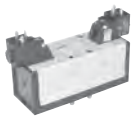
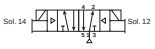
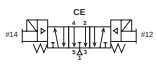
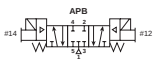
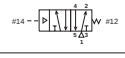
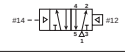
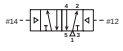
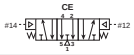
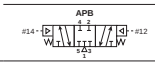
DX3 ISO Valves

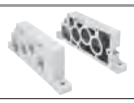
	Symbol	Type	Cv	Operator	Pilot	Override	24 VDC	120 VAC
		4-way, 2-position, spring return	4.15	Single solenoid	Internal	Non-locking	**DX3-621-BL49**	**DX3-621-BL53**
						Locking	**DX3-621-CL49**	**DX3-621-CL53**
		4-way, 2-position, air return	4.15	Single solenoid	Internal	Non-locking	**DX3-651-BL49**	**DX3-651-BL53**
						Locking	**DX3-651-CL49**	**DX3-651-CL53**
		4-way, 2-position	4.15	Double solenoid	Internal	Non-locking	**DX3-606-BL49**	**DX3-606-BL53**
						Locking	**DX3-606-CL49**	**DX3-606-CL53**
		4-way, 3-position, center exhaust	4.0	Double solenoid	Internal	Non-locking	**DX3-611-BL49**	**DX3-611-BL53**
						Locking	**DX3-611-CL49**	**DX3-611-CL53**
		4-way, 3-position, all ports blocked	4.0	Double solenoid	Internal	Non-locking	**DX3-616-BL49**	**DX3-616-BL53**
						Locking	**DX3-616-CL49**	**DX3-616-CL53**

	Symbol	Type	Cv	Operator	Pilot	Part number
		4-way, 2-position, spring return	4.15	Single remote pilot	Remote	**DX3-421-60**
		4-way, 2-position, air return	4.15	Single remote pilot	Remote	**DX3-451-60**
		4-way, 2-position	4.15	Double remote pilot	Remote	**DX3-406-60**
		4-way, 3-position, center exhaust	4.0	Double remote pilot	Remote	**DX3-411-60**
		4-way, 3-position, all ports blocked	4.0	Double remote pilot	Remote	**DX3-416-60**

DX3 Series Subbase & Manifolds

Single subbase	Description	3/4" NPT	3/4" BSPP
	Side ported base	**PS4211170CP**	**PS4211180CP**

Manifold bases		3/4" NPT	3/4" BSPP
	Bottom / End ported bases	**PS4211690CP**	**PS4211600CP**
	Note: Manifolds include 2 pipe plugs		

End plate kits		NPT port	BSPP port
	H3 Non-collective wiring end plates	**PS4231010CP**	**PS4231011CP**

5599-1, DX3 Accessories

Accessories		Description		Part number
Sandwich regulator		Common pressure	5-125 PSIG w/ gauge	**PS4237166CP**
		Independent pressure	5-125 PSIG w/ gauge	**PS4237266CP**
Remote pilot access plate kit		1/8" NPT		**PS421500CP**
		1/8" BSPP		**PS421501CP**
Blanking plate kit				**PS4134CP**
Sandwich flow control				**PS4242CP**
Manifold to manifold gasket kit				**PS4213P**
Manifold port isolation kits		Main galley (1, 3, 5)		**PS4232CP**
Manifold port isolation kits		Pilot galley		**PS4033CP**

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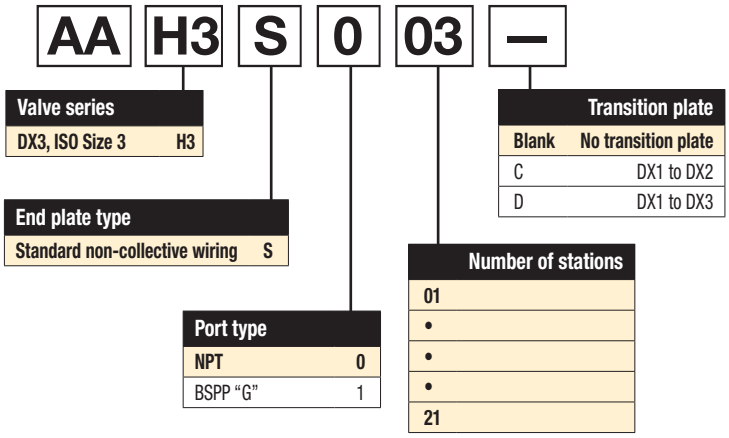
How To Order Add-A-Fold Assemblies

1. List Add-A-Fold Assembly call out. This automatically includes the end plate kit assembly.
2. List complete valve/base model number. List left to right, looking at the cylinder ports on the #12 end of the manifold. The left most station is station 1.

   (If a blank station is needed, list the blanking plate part number and the individual manifold number in the station specified.)



Example: Application requires a 3-station manifold.

Qty.	Part No.	
1	AAH3S003	
1	DX3-621-BL49	Valve Station 1
1	PS4111590CP	Base Station 1
1	DX3-616-BL49	Valve Station 2
1	PS4111590CP	Base Station 2
1	DX3-611-BL49	Valve Station 3
1	PS4111590CP	Base Station 3

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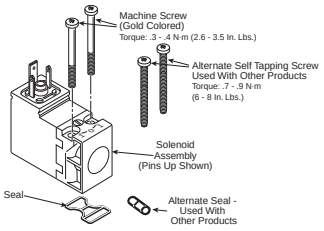
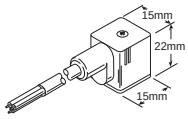
15mm 3-Pin DIN 43650C Replacement Solenoid Kits

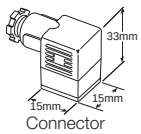


Voltage	Non-locking	Locking
24VDC	**PS2982B49P**	**PS2982C49P**
110/50, 120/60	**PS2982B53P**	**PS2982C53P**

15mm 3-Pin DIN 43650C Connectors



Connector with cord



Connector only

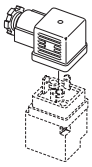
Description	Connector with 6' (2m) Cord	Connector
No circuit board	**PS2932JBP**	**PS2932BP**
Light – 24DC	**PS2946J79BP***	**PS294679BP**
Light – 110/120VAC	**PS2946J83BP***	**PS294683BP**

* LED with surge suppression.

Note: Max. ø6.5mm cable size required for connector without 6' (2m) cord. IP65 rated when properly installed.

Engineering Data:
Conductors: 2 poles plus ground
Cable range (Connector only): 4 to 6mm (0.16 to 0.24 Inch)
Contact spacing: 8mm

Female Electrical Connectors (IP65 Rated) 30mm, 3-Pin ISO 4400, (DIN 43650A)



Description	Connector with 6' (2m) cord	Connector
Unlighted	**PS2028JCP**	**PS2028BP**
Light – 6-48V, 50/60Hz; 6-48VDC	**PS2032J79CP***	**PS203279BP**
Light – 120V/60Hz	**PS2032J83CP***	**PS203283BP**
Light – 240V/60Hz	**N/A**	**PS203283BP**

* With surge suppression.

Engineering data:
Conductors: 2 poles plus ground; cable range (connector only): 8 to 10mm (0.31 To 0.39 inch); Contact spacing: 18mm

5599-1 CNOMO Solenoid Kits

Voltage code	3-pin, 30mm 'L' coil kit	2-pin, M12 Euro '6' coil kit
19	—	**PS2828619P**
42	**P2FCA442**	—
45	**P2FCA445**	—
49	**P2FCA449**	—
53	**P2FCA453**	—
57	**P2FCA457**	—

Quantity 1

Pilot Operator - CNOMO

Valve size		Kit number
DX1, DX2 & DX3	Locking	**PS4052CP**
	Non-locking	**PS4053CP**

CNOMO Operator Adapter

Description	Kit number
Operator adapter	**PS2855P**

Manifold to Manifold Gasket Kits

	Size	Part number
	DX02*	**DX02M2MGSKT (PJLP02)**
	DX01*	**DX01M2MGSKT (PJLP01)**

* Gaskets used with PS5611 & PS5511 manifolds.

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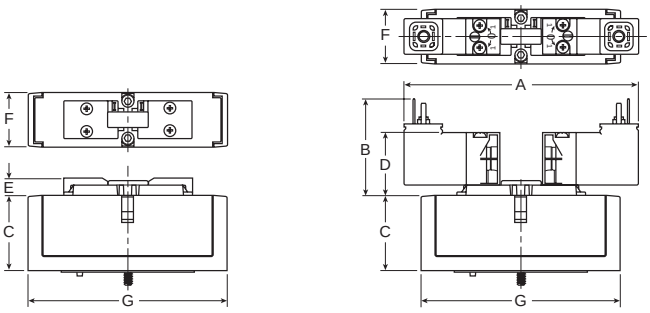
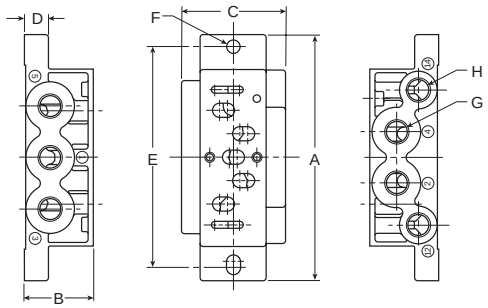
DX01 & DX02 Valve Dimensions



Series	A	B	C	D	E	F	G
DX02	4.06 (103)	1.61 (41)	1.41 (36)	1.06 (27)	.31 (8)	.71 (18)	3.15 (80)
DX01	4.06 (103)	1.61 (41)	1.41 (36)	1.06 (27)	.31 (8)	1.02 (26)	3.94 (100)

Inches (mm)

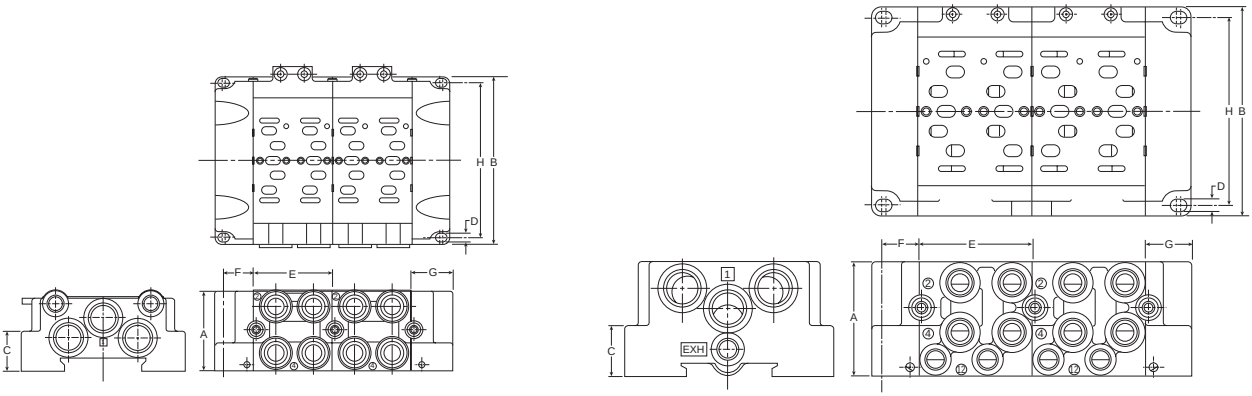
DX01 & DX02 Individual Subbase Dimensions



Series	Part number	A	B	C	D	E	F	G	H
DX02	**PL02**	3.15 (80)	.87 (22)	1.06 (27)	.31 (8)	2.76 (70)	.216 Dia. (Ø 5.5)	1/8	M5
DX01	**PL01**	3.94 (100)	1.10 (28)	1.65 (42)	.39 (10)	3.54 (90)	.216 Dia. (Ø 5.5)	1/4	1/8

Inches (mm)

DX01 & DX02 2-Station Manifold Base Dimensions



Series	Part number	A	B	C	D	E	F	G	H
DX02	**PJLP02 / PEJ02**	1.52 (38.5)	3.15 (80)	.47 (12)	.165 Dia. (Ø 4.2)	1.50 (38)	.55 (14)	.71 (18)	2.83 (72)
DX01	**PJL01 / PJLP01 / PEJ01**	2.17 (55)	3.94 (100)	.94 (24)	.216 Dia. (Ø 5.5)	2.13 (54)	.67 (17)	.87 (22)	3.54 (90)

Inches (mm)

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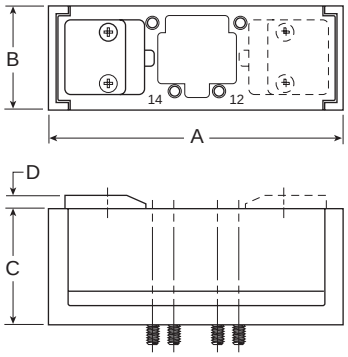
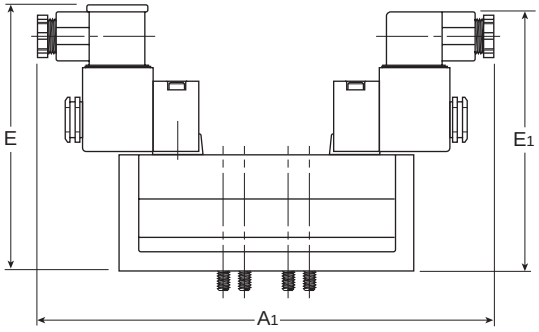
DX1, DX2 & DX3 Air Operated Valve Dimensions



Series	A	B	C	D
DX1	4.72 (120)	1.65 (42)	1.85 (47)	.20 (5)
DX2	5.51 (140)	2.13 (54)	2.30 (58.5)	.20 (5)
DX3	6.69 (170)	2.68 (68)	2.80 (71)	.20 (5)

Inches (mm)

DX1, DX2 & DX3 Solenoid Operated Valve Dimensions



Series	A_1	E	E_1	E_2
DX1	7.97 (202.5)	4.43 (112.5)	4.69 (119)	4.53 (115)
DX2	8.58 (218)	4.86 (123.5)	5.12 (130)	4.98 (126.5)
DX3	9.27 (235.5)	5.35 (136)	5.61 (142.5)	5.47 (139)

Inches (mm)

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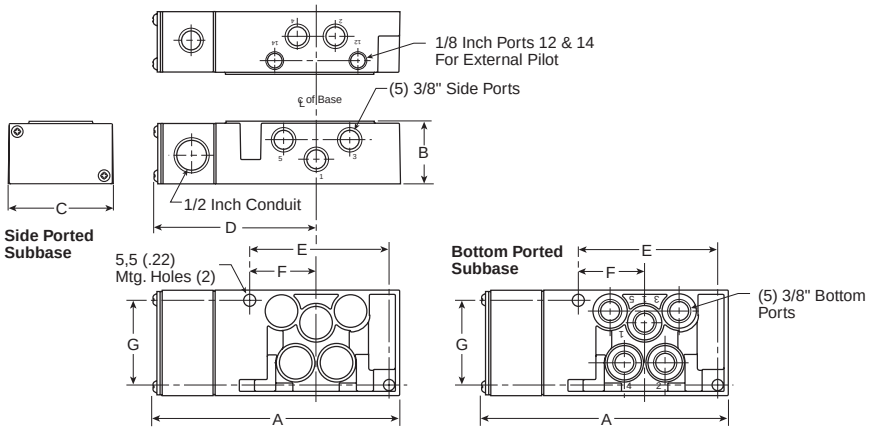
DX1 Subbase Dimensions

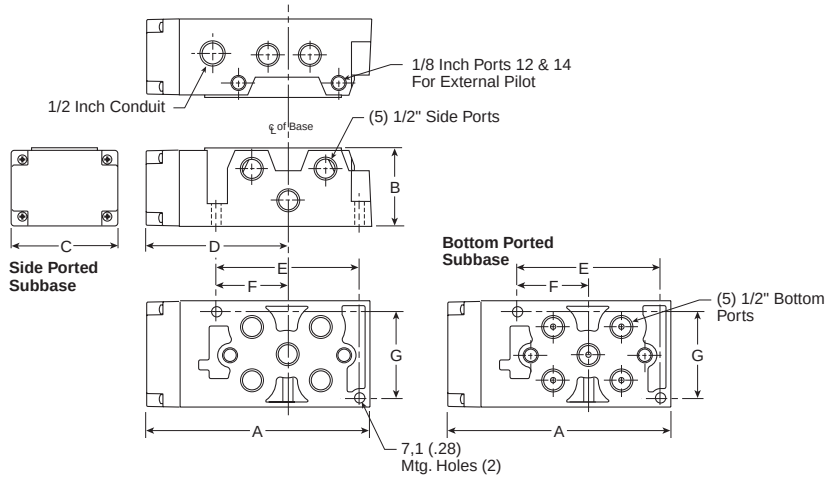


PS4011 Subbase

A	B	C	D
5.83 (148)	1.48 (38)	2.50 (64)	3.86 (98)
E	**F**	**G**	
3.29 (84)	1.57 (40)	2.00 (51)	

Inches (mm)

DX2 Subbase Dimensions

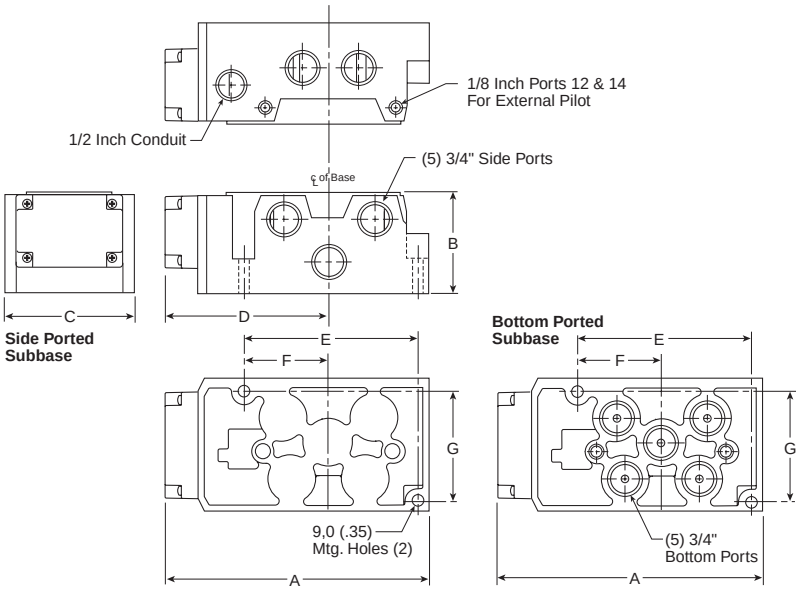


PS4111 Subbase

A	B	C	D
6.69 (170)	2.33 (59)	3.15 (80)	4.25 (108)
E	**F**	**G**	
4.21 (107)	2.07 (52)	2.56 (65)	

Inches (mm)

DX3 Subbase Dimensions



PS4211 Subbase

A	B	C	D
7.90 (201)	2.96 (75)	3.90 (990)	4.92 (125)
E	**F**	**G**	
5.14 (131)	2.50 (64)	3.24 (82)	

Inches (mm)

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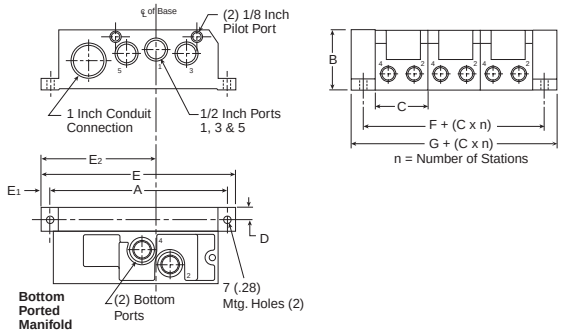
DX1 Manifold Dimensions



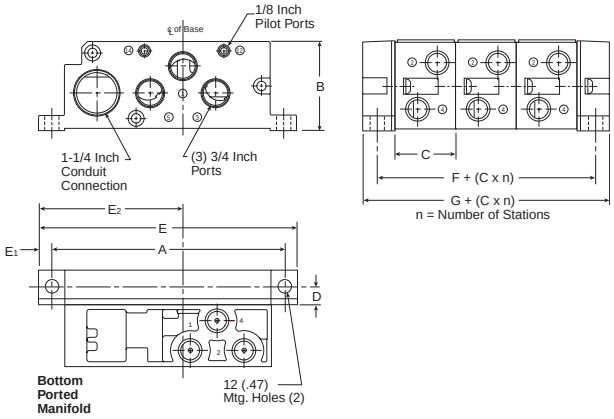
PS4011 Manifold

A	B	C	D	E
6.50 (165)	2.20 (56)	1.93 (49)	.44 (11)	7.15 (182)

E1	E2	F	G
.33 (8)	4.25 (108)	.87 (22)	1.80 (46)

Inches (mm)

DX2 Manifold Dimensions



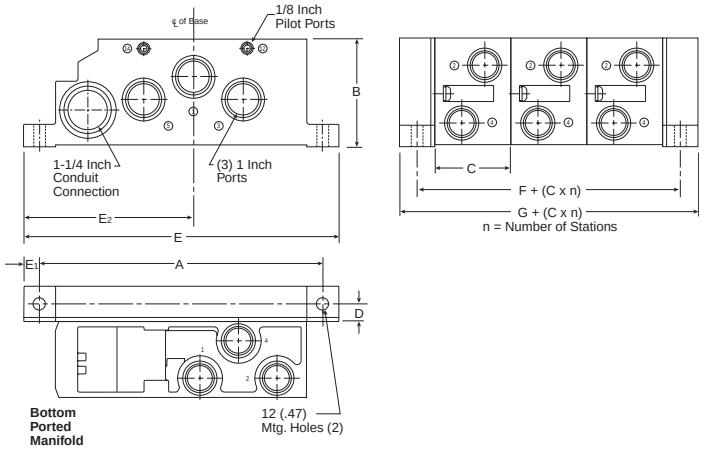
PS4111 Manifold

A	B	C	D	E
8.46 (215)	3.35 (85)	2.20 (56)	.59 (15)	9.41 (239)

E1	E2	F	G
.47 (12)	5.28 (134)	1.18 (30)	2.36 (60)

Inches (mm)

DX3 Manifold Dimensions



PS4211 Manifold

A	B	C	D	E
10.41 (265)	4.13 (105)	2.80 (71)	.65 (175)	11.61 (295)

E1	E2	F	G
.59 (15)	6.26 (159)	1.30 (33)	2.60 (63)

Inches (mm)

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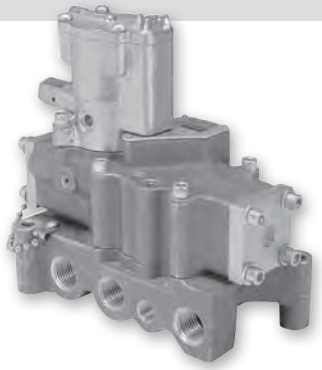
Valvair II Series



Features

- Full air operation for fastest response
- "Plug-In" option simplifies maintenance and installation Reduces downtime. No wiring or plumbing to disturb
- "Direct pipe" design for economy and performance
- Variety of operators available; direct conduit, (JIC) junction box, NEMA 4, hazardous duty, (UL, CSA), and remote air pilot
- Field convertible to external pilot supply for vacuum or other services
- Synthetic rubber o-ring seals are specially compounded for minimum compression and friction for superior wear and abrasion resistance
- Precision ground spool "floats" on o-ring seals. Closed center cross-over design saves air
- General Purpose Approvals
  - CSA - Canadian Standards Association File number 42024
- Hazardous Duty Approvals
  - UL - Underwriters Laboratories, Inc. File number E42542 Category Y107
  - CSA - Canadian Standards Association File number 24349

Material specifications

Manifolds & subbases	Aluminum alloy	
Other seals	Nitrile	
Resilient seals: in valve body		
Dynamic	Polyurethane base on 3/8" basic valves*	
Static / dynamic	Nitrile base w / 12% Molybdenum Disulphide on 1/4" & 1/2" basic valves	
Shock pads	Polyurethane	
Solenoid bodies	Plated zinc alloy	
Internal components	Corrosion resistant steel	
Resilient seals	Standard service	Nitrile
	Special service (continuous duty)	Fluorocarbon & Silicone
Other seals	Nitrile	
Coil	Class "B" epoxy encapsulated (Class "H" also available on some models, consult supplier)	
Valve bodies	Aluminum alloy	
Valve spacers	Brass	
Valve spool	Aluminum alloy with special coating on 3/8" basic valves*.	
	Hard chrome plated AISI type 416 stainless steel on 1/4" & 1/2" basic valves.	

* These materials are specially designed for valves used on non-lubricated service

Operating information

Pressure range for solenoid operated valves

Media	Internal pilot supply			External pilot supply			
	1/4"	3/8"	1/2"	1/4"	3/8"	1/2"	1"
Air	35-140* PSIG			N.A.	Main	0-250 PSIG	
					Pilot	35-140* PSIG	
Vacuum	do not use			N.A.	Main	within 1 Hg of perfect	
					Pilot	35-140* PSIG	
Other	Consult supplier						

* 200 PSIG solenoid is optional (consult supplier).

Pressure range for remote pilot operated valves

Media		Valve type	
		Single	Double & 3-position
Air	Main	35-250 PSIG	0-250 PSIG
	Pilot	35-200 PSIG	35-200 PSIG
Vacuum	Main	Do not use	Within 1" Hg of perfect
	Pilot	Do not use	35-200 PSIG
Other	Consult supplier		

Ambient temperature – standard service solenoid operator

Minimum	Maximum	
	Intermittent duty	Continuous duty
0°F	125°F	100°F

Special service (continuous duty) solenoid operator

0°F	125°F	125°F

Ambient temperature – remote pilot operated valves

0°F	200°F

As the above chart indicates, Standard Duty Solenoids may be used on continuous duty but ambient temperature is de-rated.

In some cases, Special Service Solenoids may be rated for higher ambient temperatures (consult supplier).

⚠ **Caution:**
If it is possible that the ambient temperature may fall below freezing, the medium must be moisture free to prevent internal damage and unpredictable behavior.

Most popular.

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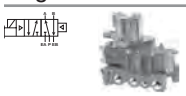
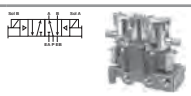
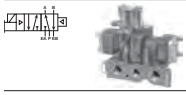
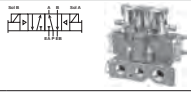
4-way, 5-port, 2-position, Plug-in

L675 (3/8" basic valve) Single solenoid	L655 (3/8" basic valve) Double solenoid	Nominal Cv	Port size (NPT)	Subbase (Side ports)	Manifold† (End & bottom ports)	Voltage	Valve only	
							Single solenoid	Double solenoid
		4.8	3/8"	**K022090**	**K142230**	120V 60Hz	**L6753910253**	**L6553910253**
		4.8	1/2"	**K022091**	**K142231**	110V 50Hz		
		4.8	3/4"	**K022101**	**K142270**	24VDC	**L6753310249**	**L6553310249**

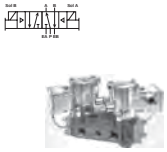
L675 (1" basic valve) Single solenoid	L655 (1" basic valve) Double solenoid	Nominal Cv	Port size (NPT)	Subbase (Side ports)	Voltage	Valve only	
						Single solenoid	Double solenoid
					120V 60Hz	**L6758910253**	**L6558910253**
		11.3	1"	**K022095**	110V 50Hz		
					24VDC	**L6758310249**	**L6558310249**

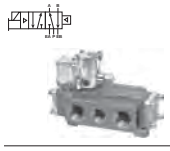
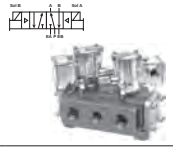
4-way, 5-port, 3-position, Plug-in

L665 (3/8" basic valve) Double solenoid	Nominal Cv	Port size (NPT)	Subbase (side ports)	Manifold† (end & bottom ports)	Voltage	Valve only
						Double solenoid
	4.8	3/8"	**K022090**	**K142230**	120V 60Hz	**L6653921153**
		1/2"	**K022091**	**K142231**	110V 50Hz	
		3/4"	**K022101**	**K142270**	24VDC	**L6653321149**

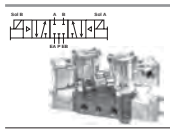
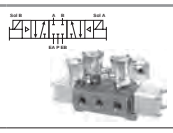
L665 (1" basic valve) Double solenoid	Nominal Cv	Port size (NPT)	Subbase (side ports)	Manifold (end & bottom ports)	Voltage	Valve only
						Double solenoid
	11.3			—	120V 60Hz	**L6658921153**
		1"	**K022095**	—	110V 50Hz	
				—	24VDC	**L6658321149**

4-way, 5-port, 2-position, Direct Pipe Ported

L705 (3/8" basic valve) single solenoid	L685 (3/8" basic valve) double solenoid	Port size (NPT)		Nominal Cv	Voltage	Operator type	Valve	
		P, A & B	EA & EB				Single solenoid	Double solenoid
		3/8"	1/2"	4.8	120V 60Hz	Junction box	**L7053910253**	**L6853910253**
		1/2"	1/2"		110V 50Hz		**L7054910253**	**L6854910253**
		3/8"	1/2"	4.8	24VDC	Junction box	**L7053610249**	**L6853610249**
		1/2"	1/2"				**L7054610249**	**L6854610249**
		3/8"	1/2"	4.8	120V 60Hz	Basic	**L7053310253**	**L6853310253**
		1/2"	1/2"		110V 50Hz		**L7054310253**	**L6854310253**

L705 (1" basic valve) single solenoid	L685 (1" basic valve) double solenoid	Port size (NPT)		Nominal Cv	Voltage	Operator type	Valve	
		P, A & B	EA & EB				Single solenoid	Double solenoid
		1"	1-1/4"	12.0	120V 60Hz	Junction box	**L7058910253**	**L6858910253**
		1-1/4"	1-1/4"		110V 50Hz		**L7059910253**	**L6859910253**
		1"	1-1/4"	12.0	24VDC	Junction box	**L7058610249**	**L6858610249**
		1-1/4"	1-1/4"				**L7059610249**	**L6859610249**

4-way, 5-port, 3-position, Direct Pipe Ported

L695 (3/8" basic valve) double solenoid	L695 (1" basic valve) double solenoid	Port size (NPT)		Nominal Cv	Voltage	Operator type	Valve	
		P, A & B	EA & EB				3/8" basic size	1" basic size
		3/8"	1/2"	4.5	120V 60Hz	Junction box	**L6953921153**	—
		1/2"	1/2"				**L6954921153**	—
		1"	1-1/4"	12.0	110V 50Hz		—	**L6958921153**
		1-1/4"	1-1/4"				—	**L6959921153**

† Manifolds include mounting hardware, except for port adapters.

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Lubricated Non-Lubricated Service
2-position, Plug-In, 3/8" & 1" Basic Size

L 67 5 3 9 10 2 53

Type	
Double	**65**
Single	**67**

Operator	
Remote	4
Solenoid	**5**

Size	
3/8" Basic	**3**
1" Basic	**8**

Operator options	
Solenoid (basic) or remote	**1**
Solenoid with locking override	3
Solenoid w/light (120VAC, 24VDC) & non-locking override	8
Solenoid w/light (120VAC, 24VDC) & locking override	**9**

Enclosure "Class"	
10	**Standard (NEMA 1 & 12) or remote**

Duty Cycle	
2	**Standard service, solenoid or remote**
4	Continuous service solenoid

Voltage & frequency			
	60Hz	**50Hz**	**DC**
45			12
49			**24**
53	**120**	**110**	
57	240	220	

Lubricated or Non-Lubricated Service
3-position, Plug-In, 3/8" & 1" Basic Size

L 66 5 3 9 21 1 53

Type	
Double	**66**

Operator	
Remote	4
Solenoid	**5**

Size	
3/8" Basic	**3**
1" Basic	**8**

Operator options	
Solenoid (basic) or remote	**1**
Solenoid with locking override	3
Solenoid w/light (120VAC, 24VDC) & non-locking override	**8**
Solenoid w/light (120VAC, 24VDC) & locking override	**9**

Enclosure "class"	
21	**All ports blocked in neutral (NEMA 1 & 12 enclosure) or remote**
22	Cyl. Ports open to exhuast in neutral (NEMA 1 & 12 enclosure) or remote
23	Cyl. Ports open to inlet in neutral (NEMA 1 & 12 enclosure) or remote

Duty cycle	
1	**Standard service, solenoid or remote**
5	Continuous service solenoid

Voltage & frequency			
	60Hz	**50Hz**	**DC**
45			12
49			**24**
53	**120**	**110**	
57	240	220	

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Lubricated or Non-Lubricated Service
2-position, Direct Pipe Ported, 3/8" & 1" Basic Size

L	70	5	3	9	10	2	53	—

Type

Double	**68**
Single	**70**

Operator

Remote	4
Solenoid	**5**

Size

3/8" NPT inlet & cylinder 1/2" NPT exhaust	**3**
1/2" NPT inlet, cylinder & exhaust	**4**
1" NPT inlet & cylinder 1-1/4" NPT exhaust	**8**
1-1/4" NPT inlet cylinder & exhaust	9*

* Not available operator option 4 - Remote pilot.

Operator options

Solenoid (basic) or remote	1
Solenoid with locking override	**3**
Solenoid w/ junction box & locking override	6
Solenoid w/ junction box & light (120VAC, 24VDC) & non-locking override	**8**
Solenoid w/ junction box & light (120VAC, 24VDC) & locking override	**9**

Enclosure "Class"

10	**Standard (NEMA 1 & 12) or remote**
60*†	Hazardous duty (NEMA 7 & 9)
80†	NEMA 4

* Voltage 49 / 53 only.

† Use with operator options 1, 2 & 3 only, voltage 53 only.

Duty cycle

2	**Standard service, solenoid or remote**
4	Continuous service solenoid

Voltage & frequency

	60Hz	50Hz	DC
45			12
49			**24**
53	**120**	**110**	
57	240	220	

Lead length

Blank	**19" (Standard)**

Lubricated or Non-Lubricated Service
3-position, Direct Pipe Ported, 3/8" & 1" Basic Size

L	69	5	3	9	21	1	53	—

Type

Double	**69**

Operator

Remote	4
Solenoid	**5**

Size

3/8" NPT inlet & cylinder 1/2" NPT exhaust	**3**
1/2" NPT inlet, cylinder & exhaust	**4**
1" NPT inlet & cylinder 1-1/4" NPT exhaust	8
1-1/4" NPT inlet cylinder & exhaust	9*

* Not available operator option 4 - Remote pilot.

Operator options

Solenoid (basic) or remote	1
Solenoid with locking override	**3**
Solenoid w/ junction box & locking override	6
Solenoid w/ junction box & light (120VAC, 24VDC) & non-locking override	8
Solenoid w/ junction box & light (120VAC, 24VDC) & locking override	**9**

Enclosure "Class"

	All ports blocked in neutral
21	**Standard (NEMA 1 & 12) or remote**
71*†	Hazardous duty (NEMA 7 & 9)
91†	NEMA 4
	Cylinder ports open to exhaust in neutral
22	Standard (NEMA 1 & 12) or remote
72*†	Hazardous duty (NEMA 7 & 9)
92†	NEMA 4
	Cylinder ports open to inlet in neutral
23	Standard (NEMA 1 & 12) or remote
73*†	Hazardous duty (NEMA 7 & 9)
93†	NEMA 4

* Voltage 49 / 53 only.

† Use with operator options 1, 2 & 3 only, voltage 53 only.

Duty cycle

1	**Standard service, solenoid or remote**
5	Continuous service solenoid

Voltage & frequency

	60Hz	50Hz	DC
45			12
49			**24**
53	**120**	**110**	
57	240	220	

Lead length

Blank	**19" (Standard)**

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Plug-in Pilot

With indicator light

Description	Standard service		Special service	
Override type	**Locking**	**Non-locking**	**Locking**	**Non-locking**
With override (120VAC)	**K175903553**	**K175803553**	**K185902553**	**K185802553**
With override (Other than 120VAC)	**K1753035****	—	**K1853025****	—

** Voltage code - (reference model index for availability)

NEMA 1 & 12

Basic Pilot

JIC Pilot

Description	Standard service		Special service	
Override type	**Locking**	**Non-locking**	**Locking**	**Non-locking**
Basic with override	**K0653035****	—	**K0853025****	—
JIC with junction box & override	**K0656035****	**K0655035****	**K0856025****	**K0855025****
JIC pilot with junction box & override & indicator lights (120VAC Only)	**K0659035****	**K0658035****	**K0859025****	**K0858025****

** Voltage code - (reference model index for availability)

NEMA 4, 7 & 9

Hazardous Duty

NEMA 4 Pilot

Description	Standard service		Special service	
Hazardous duty pilot - UL & CSA	**K0251035**†**		**K0451025**†**	
NEMA 4 pilot	**K2351035**†**		—	
Override type	**Locking**	**Non-locking**	**Locking**	**Non-locking**
Hazardous duty with override	**K0253035**†**	**K0252035**†**	**K0453025**†**	**K0452025**†**
NEMA 4 with override	—	**K2353035**†**	**K2352035**†**	—

† 49 / 53 only ** Voltage code - (reference model index for availability)

Service Kits

Basic valve		Solenoid operated * Standard service (intermittent duty)		Special service ** (continuous duty)		Remote pilot operated	
Size	**Series (prefix)**	**Single**	**Double 2 & 3-position**	**Single**	**Double 2 & 3-position**	**Single**	**Double 2 & 3-position**
3/8"	L65	—	**K352126**	—	**K352127**	—	**K352355**
	L66	—	**K352126**	—	**K352127**	—	**K352355**
	L67	**K352124**	—	**K352125**	—	**K352362**	—
	L68	—	**K352126**	—	**K352127**	—	**K352355**
	L69	—	**K352126**	—	**K352127**	—	**K352355**
	L70	**K352124**	—	**K352125**	—	**K352362**	—
1"	L65	—	**K352130**	—	**K352131**	—	**K352360**
	L66	—	**K352130**	—	**K352131**	—	**K352360**
	L67	**K352128**	—	**K352129**	—	**K352359**	—
	L68	—	**K352130**	—	**K352131**	—	**K352360**
	L69	—	**K352130**	—	**K352131**	—	**K352360**
	L70	**K352128**	—	**K352129**	—	**K352359**	—

Notes:
* Kits for solenoid operated valves include solenoid service kits.
** Special service (continuous duty) solenoids may be identified as having gold colored solenoid tops.

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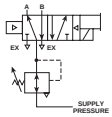
Modular Pneumatic Controls, Plug-In Sandwich Block Design for Modular Port Regulation

These modular regulators assemble to any 3/8" basic valve interface pattern.

Common Port Regulator

Pressure Adjustment	Pressure Range PSIG	Part number Assembly "A"	Assembly "B"
Manual	1 - 60	**L55402308C**	**L55408302C**
	2 - 125	**L55403308C**	**L55408303C**
Remote	0 - 140	**L55411308C**	**L55408311C**

* Assembly "A" places the regulator on the end opposite the electrical junction box. Assembly "B" places the regulator over the electrical junction box.

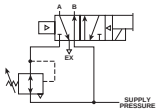


Regulated pressure at both "A" & "B"

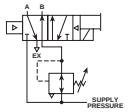
Single Port Regulator

Pressure adjustment	Pressure range PSIG	Part number Reduced pressure Cyl. port "A"	Cyl. port "B"
Manual	1 - 60	**L55405307C**	**L55407305C**
	2 - 125	**L55406307C**	**L55407306C**
Remote	0 - 140	**L55414307C**	**L55407314C**

* Assembly "A" places the regulator on the end opposite the electrical junction box. Assembly "B" places the regulator over the electrical junction box. Convert valve to external pilot.



Supply pressure at "B" & regulated at "A"

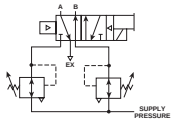


Supply pressure at "A" & regulated at "B"

Independent Port Regulator

Pressure adjustment	Cylinder port "A" PSIG	Part number Cylinder port "B" 5 - 60	10 - 125†
Manual	1 - 60	**L55405305C**	—
Remote	0 - 140	—	**L55414314C†**

† Remote operator units 0-140 PSIG. Convert valve to external pilot.



Independently regulated pressure at both "A" & "B"

Blank Station Covers

Manifold assembly		Blank cover kit
K142230	3/8" Basic valve	
K142231	3/8" Basic valve	**K06020003**
K142270	3/8" Basic valve	

Flush Type Hex Drive Pipe Plugs for Port Isolation

Size (NPTF)	Part number
1/8"	**K21R02012L**
1/4"	**K21R02025L**
3/8"	**K21R02037L**
1/2"	**K21R02050L**
3/4"	**K21R02075L**

Interchangeable Manual Override Assemblies for Solenoid Operators

Non-locking type	Locking type
K162001	**K152003**

Replacement Solenoid Coil

L□□□ □□ □□□ ** — **Voltage Code**

Voltage code	Voltage 60 Hz	50 Hz	DC	Coil number Plug-In	Flying lead (19") *
**					
49	—	—	24†	**K593060 K593274‡**	**K593014**
53	120†	110	—	**K593071 K593125‡**	**K593025**
57	240†	220	—	**K593081**	**K593035**

Notes: Bold Face type indicated primary coil rating.

† Indicates voltages approved for solenoid operators designed for use in hazardous locations.

* 19" Coil lead length is standard. Other lead lengths may be available, consult supplier.

‡ Assembly includes indicator light socket, less light.

Conversion Kits: Lubricated to Non-Lubricated Operation

Basic size	Operators (solenoid or remote pilot) Single	Double (2-position)
3/8"	**K322012**	**K322013**

Electrical Connectors Single or Double Solenoid Valves

Basic size	Valve body Single solenoid	Double solenoid	Subbase / manifold 19" leads	72" leads
3/8" 1"	**H02723**	**H02722**	**H02713**	**H02789**

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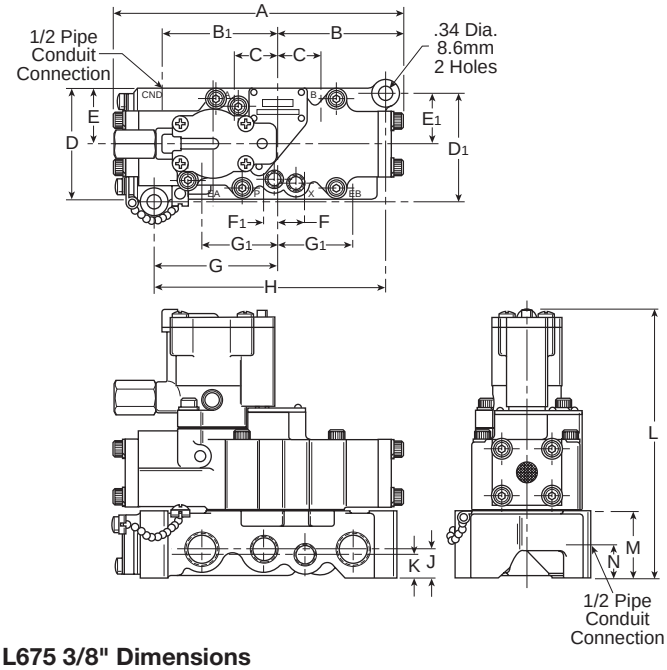
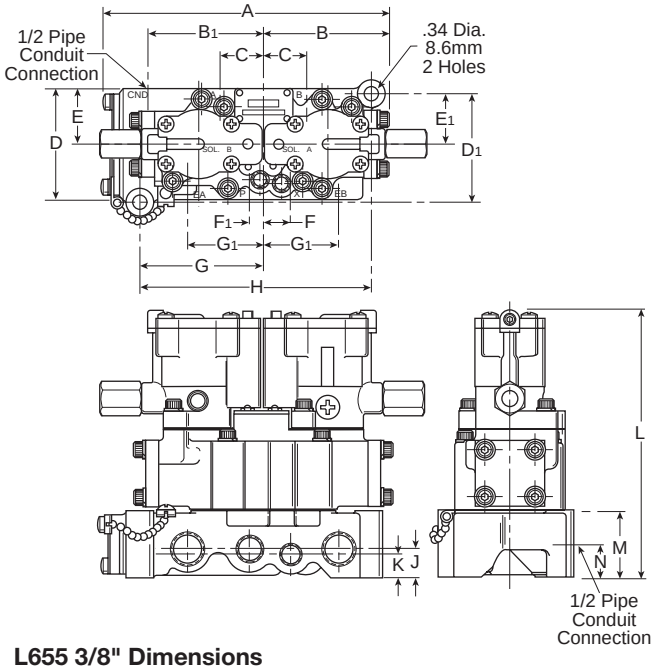


L675 3/8" Dimensions

A	B	B1	C	D	D1	E	E1	F
7.56	3.32	2.94	1.12	2.88	2.84	1.44	1.34	.75
(192)	(84.3)	(74.7)	(28.4)	(73.2)	(72.1)	(36.6)	(34)	(19.1)

F1	G	G1	H	J	K	L	M	N
.38	3.16	2.00	6.03	.75	.62	6.93	1.75	1.00
(9.7)	(80.3)	(50.8)	(153.2)	(19.1)	(15.7)	176)	(44.5)	(25.4)

Inches (mm)

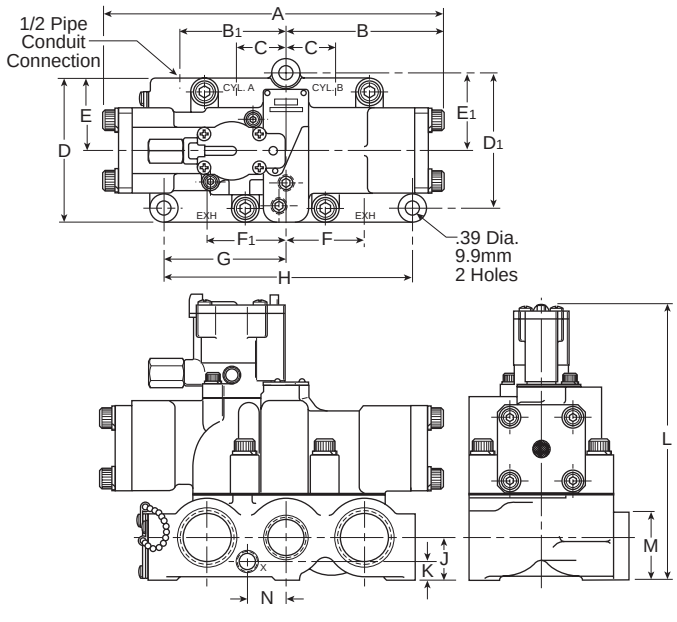


L655 3/8" Dimensions

A	B	B1	C	D	D1	E	E1	F
7.38	3.32	2.94	1.12	2.88	2.84	1.44	1.34	.75
(187.5)	(84.3)	(74.7)	(28.4)	(73.2)	(72.1)	(36.6)	(34)	(19.1)

F1	G	G1	H	J	K	L	M	N
.38	3.16	2.00	6.03	.75	.62	6.93	1.75	1.00
(9.7)	(80.3)	(50.8)	(153.2)	(19.1)	(15.7)	176)	(44.5)	(25.4)

Inches (mm)

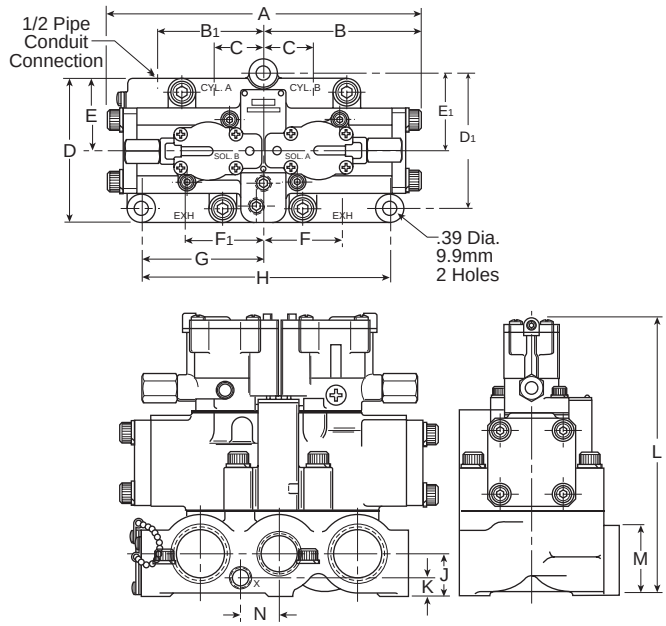


L675 1" Dimensions

A	B	B1	C	D	D1	E	E1	F
10.46	4.75	2.94	3.38	4.56	4.28	2.28	2.44	2.45
(265.7)	(120.6)	(74.7)	(85.8)	(115.8)	(108.7)	(57.9)	(62)	(62.2)

F1	G	H	J	K	L	M	N
2.46	3.81	7.62	1.31	.59	8.74	2.09	1.22
(62.5)	(96.8)	(193.5)	(33.3)	(15)	(222)	(53.1)	(31)

Inches (mm)



L655 1" Dimensions

A	B	B1	C	D	D1	E	E1	F
9.50	4.75	3.38	1.53	4.56	4.28	2.28	2.44	2.45
(241.3)	(120.6)	(85.8)	(38.9)	(115.8)	(108.7)	(57.9)	(62)	(62.2)

F1	G	H	J	K	L	M	N
2.46	3.81	7.62	1.31	.59	8.74	2.09	1.22
(62.5)	(96.8)	(193.5)	(33.3)	(15)	(222)	(53.1)	(31)

Inches (mm)

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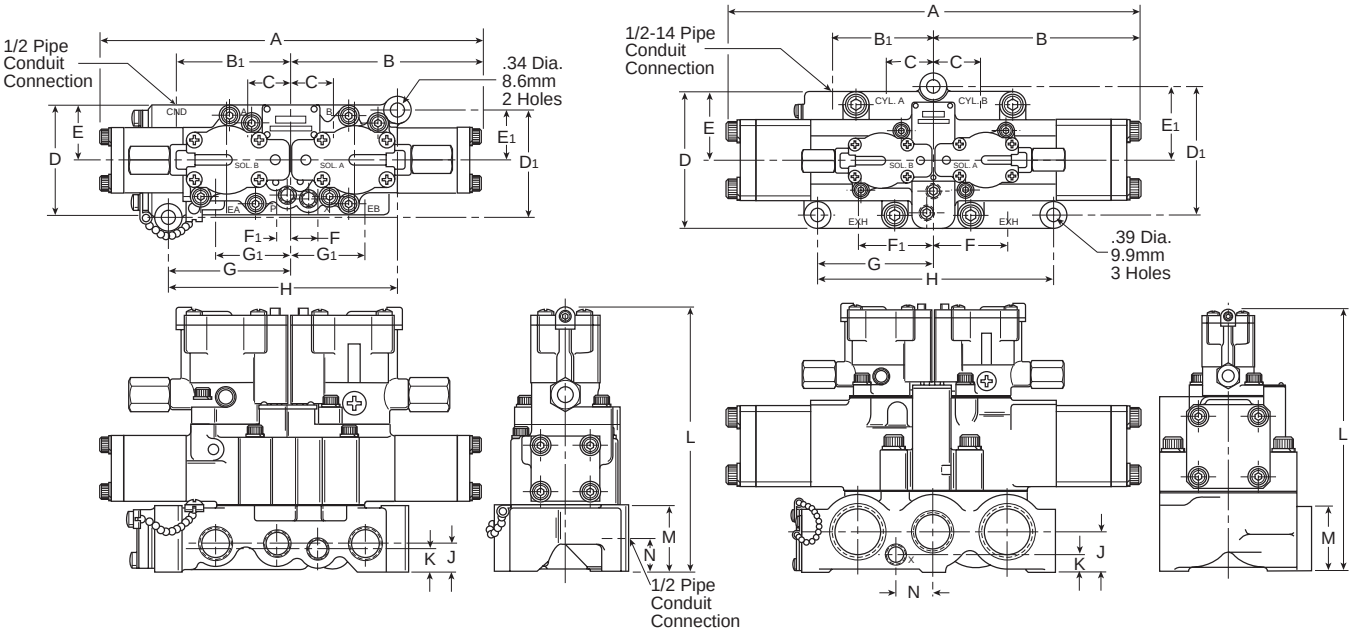


L665 3/8" Dimensions

A	B	B1	C	D	D1	E	E1	F
9.64 (244.8)	4.82 (122.4)	2.94 (74.7)	1.12 (28.4)	2.88 (73.2)	2.84 (72.1)	1.44 (36.6)	1.34 (34)	.75 (19.1)

F1	G	G1	H	J	K	L	M
.38 (9.7)	3.16 (80.3)	2.00 (50.8)	6.03 (153.2)	.75 (19.1)	.62 (15.7)	6.93 (176)	1.00 (25.4)

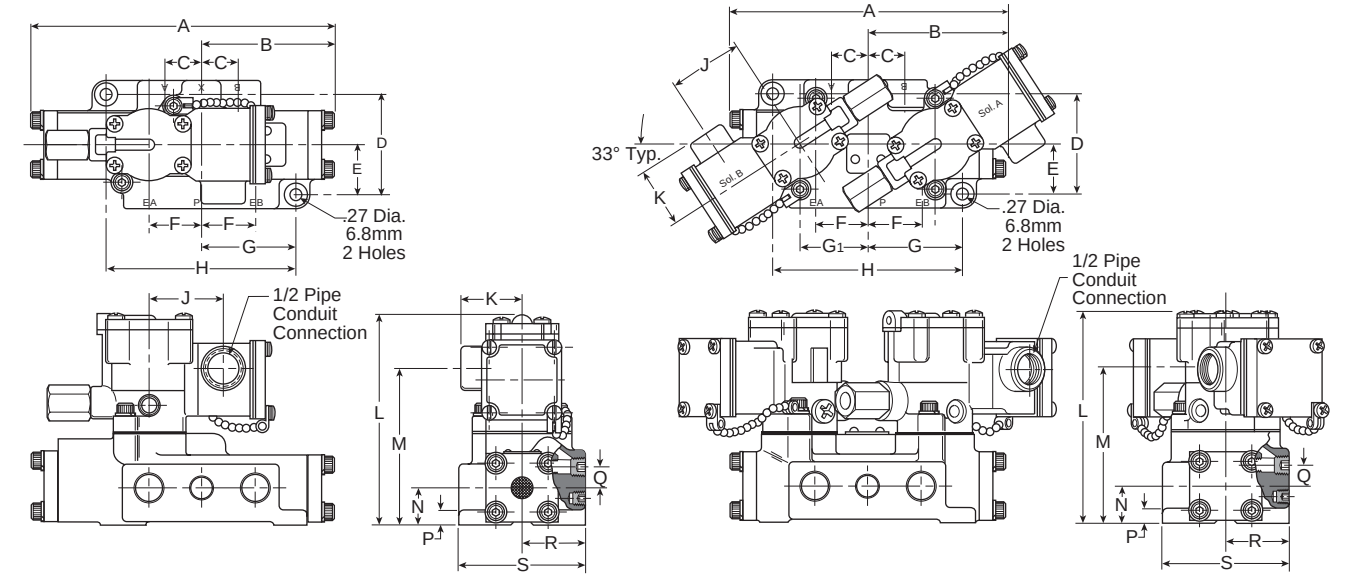
Inches (mm)

L665 1" Dimensions

A	B	B1	C	D	D1	E	E1	F
13.62 (345.9)	6.81 (173)	3.38 (85.8)	1.53 (38.9)	4.56 (115.8)	4.28 (108.7)	2.28 (57.9)	2.44 (62)	2.45 (62.2)

F1	G	H	J	K	L	M	N
2.46 (62.5)	3.81 (96.8)	7.62 (193.5)	1.31 (33.3)	.59 (15)	8.74 (222)	2.09 (53.1)	1.22 (31)

Inches (mm)



L705 3/8" Dimensions

A	B	C	D	E	F	G	H	J
7.56 (192)	3.32 (84.3)	.90 (22.9)	2.56 (65)	1.28 (32.5)	1.33 (33.8)	2.34 (59.4)	4.69 (119.1)	1.82 (46.2)

K	L	M	N	P	Q	R	S
1.50 (38.1)	5.35 (135.9)	3.91 (99.3)	.94 (23.9)	.38 (9.7)	.53 (13.5)	1.62 (41.1)	3.25 (82.6)

Inches (mm)

L685 3/8" Dimensions

A	B	C	D	E	F	G	G1	H
7.56 (192)	3.32 (84.3)	.90 (22.9)	2.56 (65)	1.28 (32.5)	1.33 (33.8)	2.34 (59.4)	1.66 (42.4)	4.69 (119.1)

J	K	L	M	N	P	Q	R	S
1.82 (46.2)	1.50 (38.1)	5.35 (135.9)	3.91 (99.3)	.94 (23.9)	.38 (9.7)	.53 (13.5)	1.62 (41.1)	3.25 (82.6)

Inches (mm)

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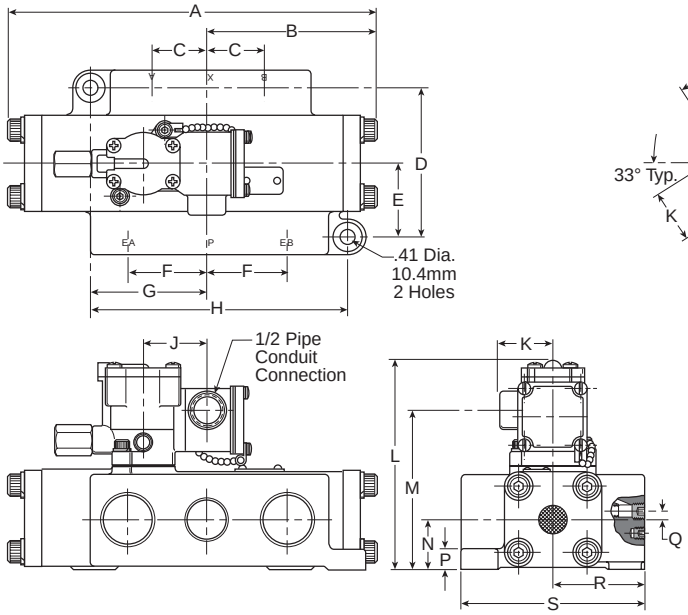
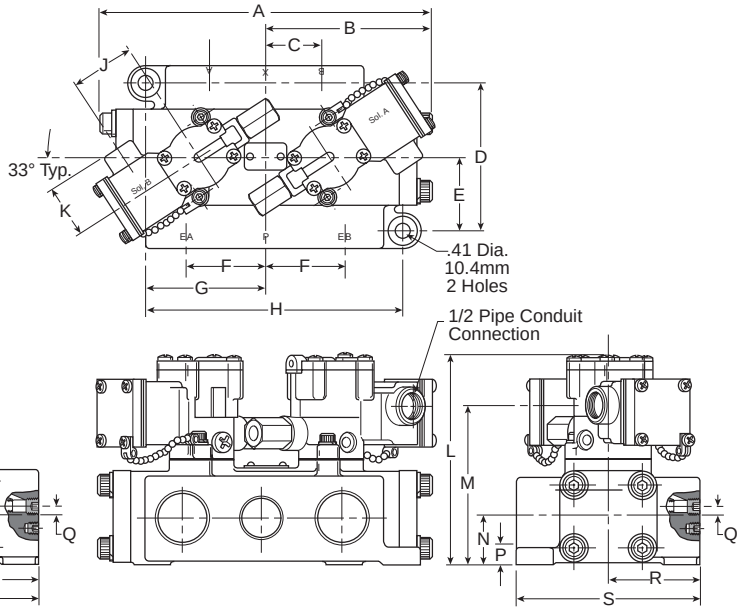


L705 1" Dimensions

A	B	C	D	E	F	G	H	J
10.46 (265.7)	4.75 (120.6)	1.62 (41.1)	4.25 (108)	2.12 (53.8)	2.19 (55.6)	3.44 (87.4)	7.44 (189)	1.82 (46.2)

K	L	M	N	P	Q	R	S
1.50 (38.1)	6.44 (163.6)	4.95 (125.7)	1.50 (38.1)	.69 (17.5)	.20 (5.1)	2.62 (66.5)	5.25 (133.4)

Inches (mm)

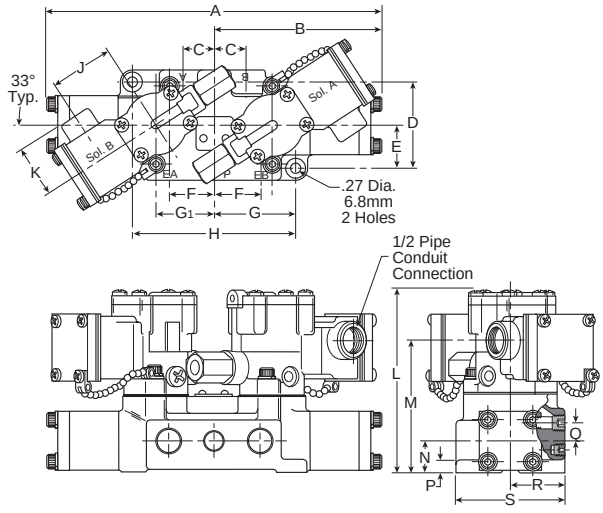


L685 1" Dimensions

A	B	C	D	E	F	G	H	J
9.50 (241.3)	4.75 (120.6)	1.62 (41.1)	4.25 (108)	2.12 (53.8)	2.19 (55.6)	3.44 (87.4)	7.44 (189)	1.82 (46.2)

K	L	M	N	P	Q	R	S
1.50 (38.1)	6.44 (163.6)	4.95 (125.7)	1.50 (38.1)	.69 (17.5)	.20 (5.1)	2.62 (66.5)	5.25 (133.4)

Inches (mm)

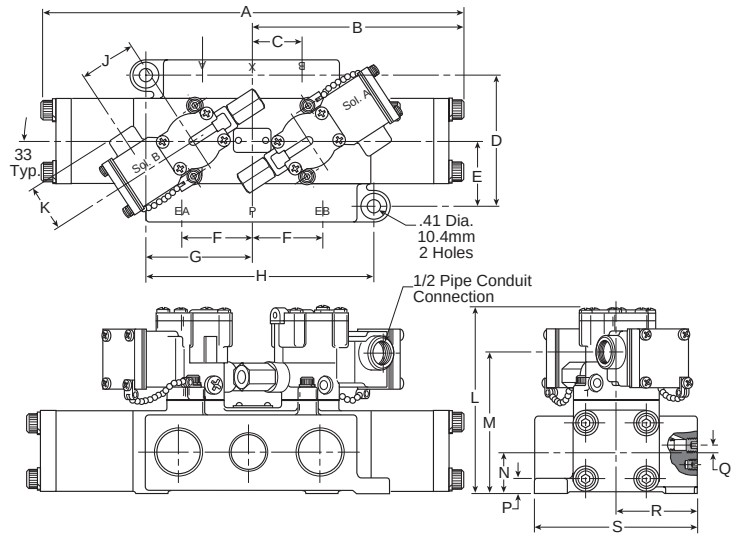


L695 3/8" Dimensions

A	B	C	D	E	F	G	G1	H
9.64 (244.8)	4.82 (122.4)	.90 (22.9)	2.56 (65)	1.28 (32.5)	1.33 (33.8)	2.34 (59.4)	1.66 (42.4)	4.69 (119.1)

J	K	L	M	N	P	Q	R	S
1.82 (46.2)	1.50 (38.1)	5.35 (135.9)	3.91 (99.3)	.94 (23.9)	.38 (9.7)	.53 (13.5)	1.62 (41.1)	3.25 (82.6)

Inches (mm)



L695 1" Dimensions

A	B	C	D	E	F	G	H	J
13.63 (346.2)	6.81 (173)	1.62 (41.1)	4.25 (108)	2.12 (53.8)	2.19 (55.6)	3.44 (87.4)	7.44 (189)	1.82 (46.2)

K	L	M	N	P	Q	R	S
1.50 (38.1)	6.44 (163.6)	4.95 (125.7)	1.50 (38.1)	.69 (17.5)	.20 (5.1)	2.62 (66.5)	5.25 (133.4)

Inches (mm)

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Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Plug-in Manifold, 3/8" Basic

K142230 .....Cylinder ports 3/8" NPTF

K142231 .....Cylinder ports 1/2" NPTF

K142270 .....Cylinder ports 3/4" NPTF
Exhaust port..... 1" NPTF
Inlet port..... 1" NPTF
Conduit port.....1-1/4" NPTF

Note: Manifold assemblies include mounting hardware.

Parker Hannifin Corporation
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DIrectair 2 & 4 Series

Features

Directair 2, 1/8" valves
Poppet style – .17 Cv
- Economical
- 3-way normally closed function

Directair 2, 1/8" valves
Packed bore style – .20 Cv
- Stainless steel spool
- Fluorocarbon o-rings
- 3-way & 4-way

Directair 4, 1/4" valves
Packed bore style – .83 Cv
- Stainless steel spool
- Fluorocarbon o-rings
- 3-way & 4-way

Material specifications

Body and operator housings	Aluminum extrusion
Bushings and pilot piston	Brass
Dynamic seals	Fluorocarbon
O-rings	Buna (nitrile)
Poppet ball	Nylon
Spacers - Directair 2	Aluminum
Spacers - Directair 4	Zinc die cast
Spool	Stainless steel

Lubrication

For maximum service life use clean, lubricated air. Valves are shipped pre-lubricated and can be operated without additional lubrication with reduced service life.

Suggested Lubricant

F442 Oil

Operating information

Operating pressure	Vacuum to150 PSI (28 inHg to 1035 kPa)*
Temperature range	32°F to 175°F (0°C to 80°C)

* Poppet valves cannot be used for vacuum.
Minimum operating pressure = 0 PSIG.

⚠ ***CAUTION:***
If it is possible that the ambient temperature may fall below freezing, the medium must be moisture free to prevent internal damage or unpredictable behavior.

Mechanically operated actuating forces in lbs. 1/4" Directair 4 valves

	2-Position Spring Return	2-Position Manual Return	3-Position Spring Return	3-Position Manual Return
Button Actuator	13.0	2.0	13.0	N/A
Roller Actuator	13.0	N/A	N/A	N/A
Lever Actuator	4.0	2.0	4.0	2.5

Notes: N/A = Not Applicable
All valves are at 100 PSIG inlet pressure to the valve.

☐ Most popular.

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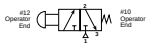
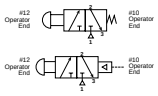
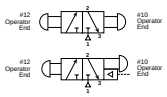
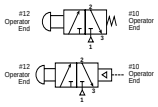
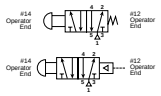
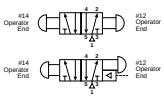
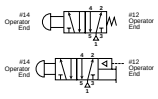
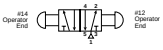
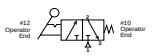
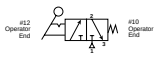
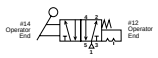
3-way & 4-way Valves

	Symbol	Port size	Cv	Description	Valve type	Part number
Button operated, 3-way		1/8"	.17	3-way, spring return	Poppet	**404411000**
		1/8"	.20	3-way, spring return	Spool	**414411000**
		1/8"	.20	3-way, spring return, foot mounted	Spool	**414421000**
		1/8"	.20	3-way, pilot return	Spool	**414451000**
		1/8"	.20	3-way, manual return	Spool	**414931000**
		1/8"	.20	3-way, manual return, foot mounted	Spool	**414941000**
		1/8"	.20	3-way, manual or pilot return	Spool	**414951000**
		1/4"	.83	3-way, spring return	Spool	**524411000**
		1/4"	.83	3-way, pilot return	Spool	**524451000**
		1/4"	.83	3-way, manual return	Spool	**524431000**
Button operated, 4-way		1/8"	.20	4-way, spring return	Spool	**410411000**
		1/8"	.20	4-way, spring return, foot mounted	Spool	**410421000**
		1/8"	.20	4-way, pilot return	Spool	**410451000**
		1/8"	.20	4-way, manual return	Spool	**410931000**
		1/8"	.20	4-way, manual return, foot mounted	Spool	**410941000**
		1/8"	.20	4-way, manual or pilot return	Spool	**410951000**
		1/4"	.83	4-way, spring return	Spool	**520411000**
		1/4"	.83	4-way, pilot return	Spool	**520451000**
		1/4"	.83	4-way, manual return	Spool	**520431000**
Toggle operated, detented		1/8"	.17	3-way, spring return	Poppet	**404811000**
		1/8"	.20	3-way, spring return	Spool	**414811000**
		1/8"	.20	3-way, spring return, foot mounted	Spool	**414821000**
		1/8"	.20	4-way, spring return	Spool	**410811000**
		1/8"	.20	4-way, spring return, foot mounted	Spool	**410821000**

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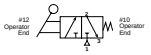
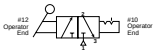
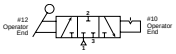
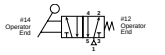
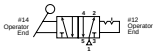
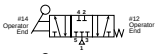
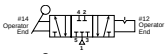
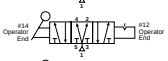
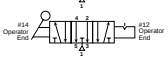
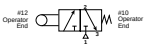
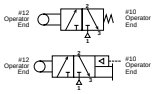
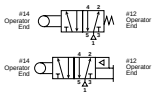
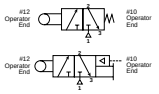
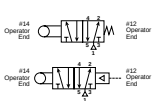
3-way & 4-way Valves

	Symbol	Port size	Cv	Description	Valve type	Part number
Lever operated		1/4"	.83	3-way, spring return	Spool	**524811000**
		1/4"	.83	3-way, manual return	Spool	**524831000**
		1/4"	.83	3-way, 3-Position detented, all ports blocked	Spool	**523831000**
		1/4"	.83	4-way, spring return	Spool	**520811000**
		1/4"	.83	4-way, manual return	Spool	**520831000**
		1/4"	.83	4-way, spring centered, closed center	Spool	**521811000**
		1/4"	.83	4-way, spring centered, pressure center	Spool	**522811000**
		1/4"	.83	4-way, spring centered, exhaust center	Spool	**529811000**
		1/4"	.83	4-way, detented, closed center	Spool	**521831000**
		1/4"	.83	4-way, detented, pressure center	Spool	**522831000**
		1/4"	.83	4-way, detented, exhaust center	Spool	**529831000**
Roller operated		1/8"	.20	3-way, spring return	Poppet	**404211000**
		1/8"	.20	3-way, spring return	Spool	**414211000**
		1/8"	.20	3-way, spring return, foot mounted	Spool	**414221000**
		1/8"	.20	3-way, pilot return	Spool	**414251000**
		1/8"	.20	4-way, spring return	Spool	**410211000**
		1/8"	.20	4-way, spring return, foot mounted	Spool	**410221000**
		1/8"	.20	4-way, pilot return	Spool	**410251000**
Roller operated		1/4"	.83	3-way, spring return, delrin roller	Spool	**524211000**
		1/4"	.83	3-way, pilot return, delrin roller	Spool	**524251000**
		1/4"	.83	3-way, spring return, steel roller	Spool	**524A11000**
		1/4"	.83	3-way, pilot return, steel roller	Spool	**524A51000**
		1/4"	.83	4-way, spring return, delrin roller	Spool	**520211000**
		1/4"	.83	4-way pilot return, delrin roller	Spool	**520251000**
		1/4"	.83	4-way, spring return, steel roller	Spool	**520A11000**
		1/4"	.83	4-way, pilot return, steel roller	Spool	**520A51000**

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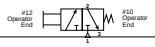
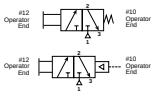
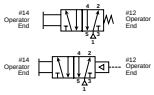
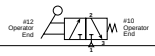
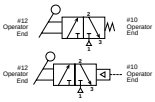
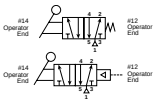
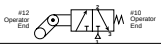
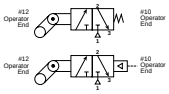
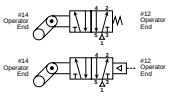
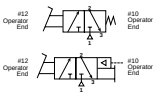
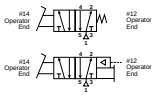
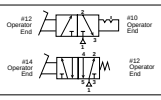
3-way & 4-way Valves

	Symbol	Port size	Cv	Description	Valve type	Part number
Plunger operated		1/8"	.17	3-way, spring return	Poppet	**404111000**
		1/8"	.20	3-way, spring return	Spool	**414111000**
		1/8"	.20	3-way, spring return, foot mounted	Spool	**414121000**
		1/8"	.20	3-way, pilot return	Spool	**414151000**
		1/8"	.17	4-way, spring return	Spool	**410111000**
		1/8"	.20	4-way, spring return, foot mounted	Spool	**410121000**
		1/8"	.20	4-way, pilot return	Spool	**410151000**
Hand lever operated		1/8"	.17	3-way, spring return	Poppet	**404711000**
		1/8"	.20	3-way, spring return	Spool	**414711000**
		1/8"	.20	3-way, spring return, foot mounted	Spool	**414721000**
		1/8"	.20	3-way, pilot return	Spool	**414751000**
		1/8"	.20	4-way, spring return	Spool	**410711000**
		1/8"	.20	4-way, spring return, foot mounted	Spool	**410721000**
		1/8"	.20	4-way, pilot return	Spool	**410751000**
One way tripper operated		1/8"	.17	3-way, spring return	Poppet	**404311000**
		1/8"	.20	3-way, spring return	Spool	**414311000**
		1/8"	.20	3-way, spring return, foot mounted	Spool	**414321000**
		1/8"	.20	3-way, pilot return	Spool	**414351000**
		1/8"	.20	4-way, spring return	Spool	**414311000**
		1/8"	.20	4-way, spring return, foot mounted	Spool	**414321000**
		1/8"	.20	4-way, pilot return	Spool	**414351000**
Pedal operated		1/4"	.83	3-way, spring return	Spool	**524711000**
		1/4"	.83	3-way, pilot return	Spool	**524751000**
		1/4"	.83	4-way, spring return	Spool	**520711000**
		1/4"	.83	4-way, pilot return	Spool	**520751000**

⚠ ***CAUTION:***
This valve shall not be used to actuate a punch press. Do not use this valve on punch presses or press brakes. See OSHA 1910.217.

Treadle operated		1/4"	.83	3-way, treadle operated, detented	Spool	**524931000**
		1/4"	.83	4-way, treadle operated, detented	Spool	**520931000**

⚠ ***CAUTION:***
This valve shall not be used to actuate a punch press. Do not use this valve on punch presses or press brakes. See OSHA 1910.217.

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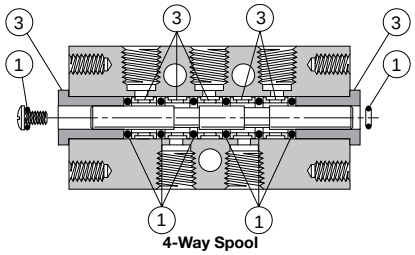
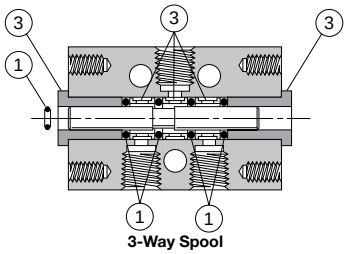
Service kits – 1/8 port size valves (DA2)

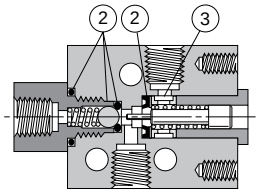
①	Spool valve seal kit (3 & 4-way, direct pipe ported)	**410008000**
②	Poppet valve seal kit	**404118000**
③	Body service kit	**410008005**



4-Way Spool



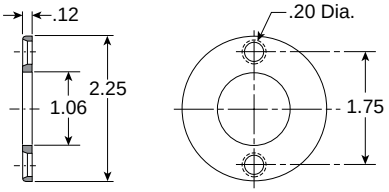
3-Way Spool



3-Way Poppet

Panel Mounting Kit – No. 520838004

Available for panel mounting direct pipe ported, lever operated 1/4" Directair 4 Series valves only. Kit includes a flange and two screws.

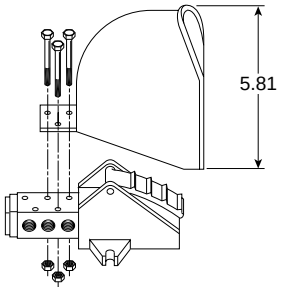


Pedal Guard Kit – No. 520718001

Pedal guard meets safety requirements for foot operated valves by protecting pedal from accidental tripping from all angles. Guard is constructed of lightweight aluminum casting for strength and durability. Bolts quickly into place with only three screws without special valve mounting. One model fits any pedal (not treadle) operated 1/4" Directair 4 Series valve.

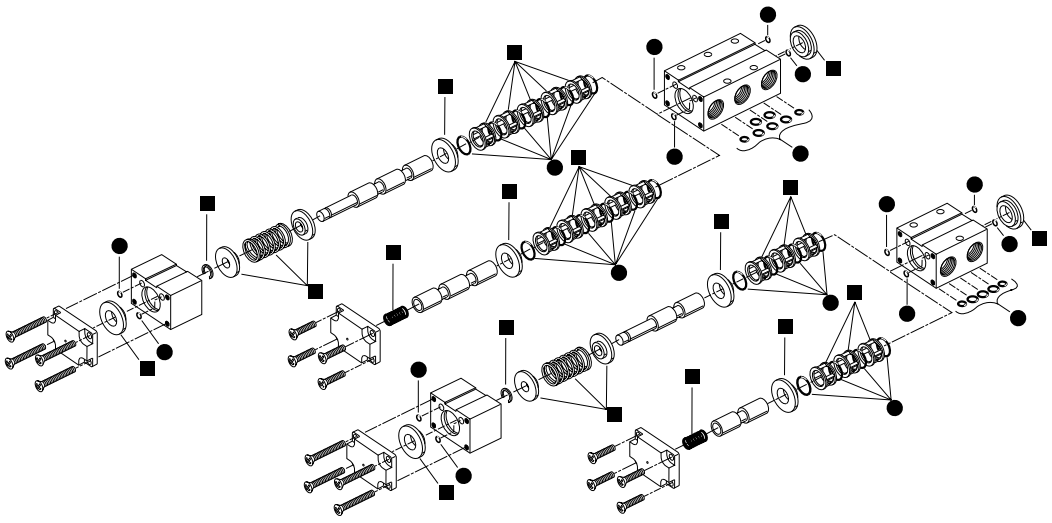
⚠ ***CAUTION:***

This valve shall not be used to actuate a punch press.
Do not use this valve on punch presses or press brakes.
See OSHA 1910.217.



Service kits – 1/4 port size valves (DA4)

●	**Valve seal kit** (Contains all soft seals found in 3 & 4-way bodies and all actuator styles.)	**520008050**
	All fluorocarbon	**520008500**
■	**Body service kit** (Contains bushing, springs, retainers and shell from 2 & 3-position, 3 & 4-way bodies.)	**520018005**



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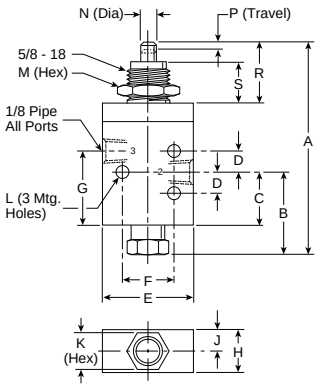
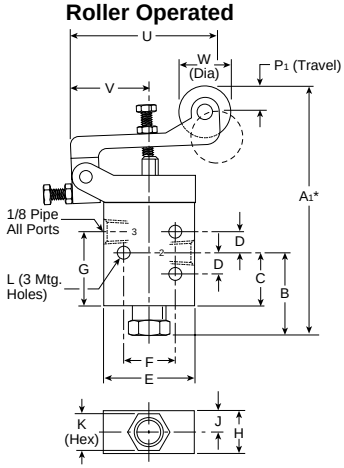
Plunger, Roller, One-way Tripper & Toggle Operated — 3-Way, 3-Port, 2-Position – 1/8" Ports

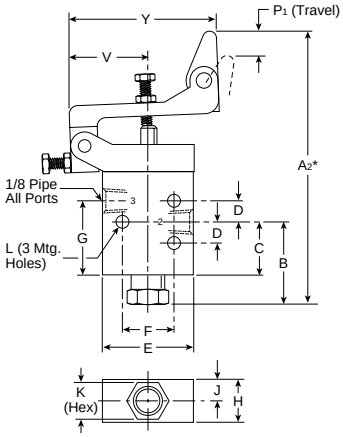
Plunger Operated



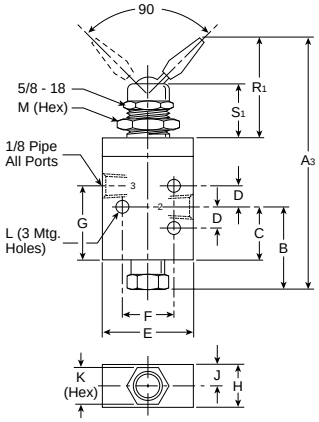
Roller Operated



One-Way Tripper Operated



Toggle Operated



3-Way, 3-Port, 2-Position

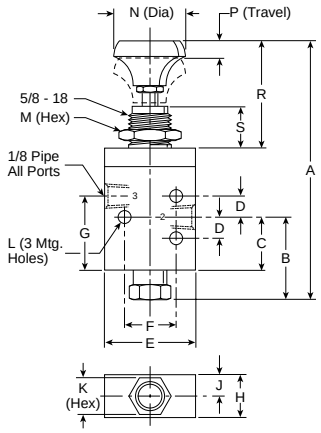
A	A1*	A2*	A3	B
3.37	4.21	4.46	3.99	1.03
(86)	(107)	(113)	(101)	(26)
C	**D**	**E**	**F**	**G**
.55	.31	1.31	.75	.90
(14)	(8)	(33)	(19)	(23)
H	**J**	**K**	**L**	**M**
.62	.31	.56	.19	.88
(16)	(8)	(14)	(5)	(22)
N	**P**	**P1**	**R**	**R1**
.25	.17	.38	.91	1.53
(6)	(4)	(10)	(23)	(39)
S	**S1**	**U**	**V**	**W**
.62	.78	2.28	1.19	.75
(16)	(20)	(58)	(30)	(19)
X	**Y**			
.19	2.19			
(5)	(56)			

* Dimensions may be reduced .44" using adjusting screw.

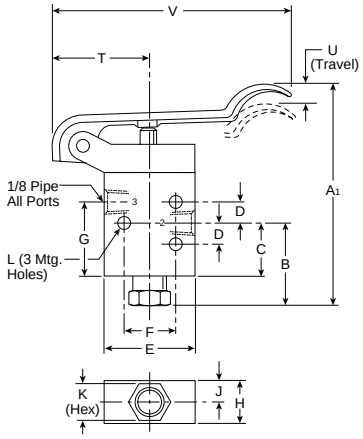
Inches (mm)

Button & Hand Lever Operated — 3-Way, 3-Port, 2-Position – 1/8" Ports

Button Operated



Hand Lever Operated



3-Way, 3-Port, 2-Position

A	A1	B	C	D
4.13	3.34	1.03	.55	.31
(105)	(85)	(26)	(14)	(8)
E	**F**	**G**	**H**	**J**
1.31	.75	.90	.62	.31
(33)	(19)	(23)	(16)	(8)
K	**L**	**M**	**N**	**P**
.56	.19	.88	1.06	.17
(14)	(5)	(22)	(27)	(4)
R	**S**	**T**	**U**	**V**
1.67	.63	1.19	.53	3.38
(42)	(16)	(30)	(13)	(86)

Inches (mm)

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Pneumatic Division
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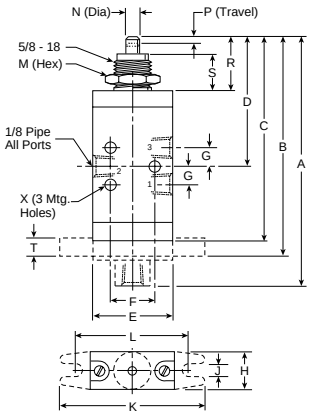
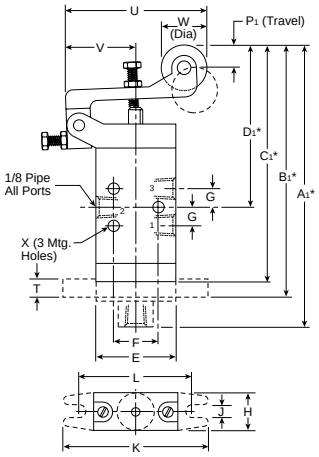
Plunger, Roller, One-way Tripper & Toggle Operated — 3-Way, 3-Port, 2-Position – 1/8" Ports

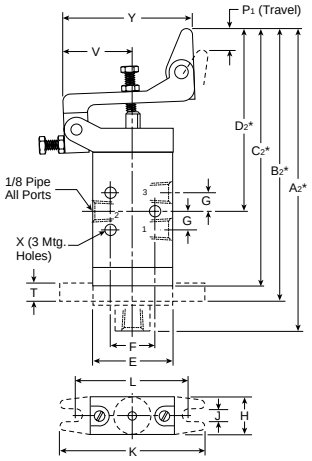
Plunger Operated



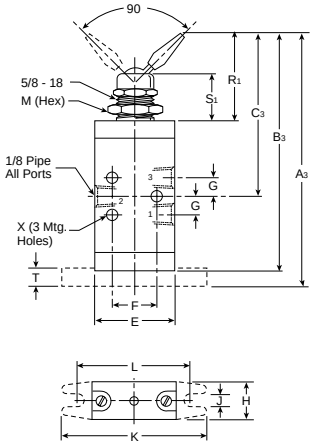
Roller Operated



One-Way Tripper Operated



Toggle Operated



3-Way, 3-Port, 2-Position

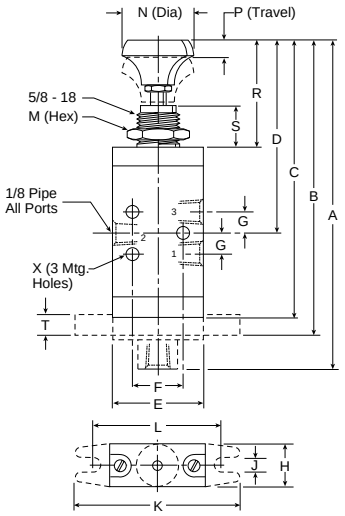
A	A₁*	A₂*	A₃	B
4.14 (105)	4.98 (126)	5.23 (133)	4.23 (107)	3.61 (92)
B₁	**B₂**	**B₃**	**C**	**C₁**
4.45 (113)	4.70 (119)	4.00 (102)	3.38 (86)	4.22 (107)
C₂	**C₃**	**D**	**D₁**	**D₂**
4.47 (113)	2.75 (70)	2.05 (52)	2.98 (76)	3.22 (82)
E	**F**	**G**	**H**	**J**
1.31 (33)	.75 (19)	.31 (8)	.62 (16)	.20 (5)
K	**L**	**M**	**N**	**P**
2.38 (60)	1.88 (48)	.88 (22)	.25 (6)	.17 (4)
P₁	**R**	**R₁**	**S**	**S₁**
.38 (10)	.91 (23)	1.53 (39)	.62 (16)	.78 (20)
T	**U**	**V**	**W**	**X**
.25 (6)	2.28 (58)	1.19 (30)	.75 (19)	.19 (5)
Y				
2.19 (56)				

* Dimensions may be reduced .44" using adjusting screw.

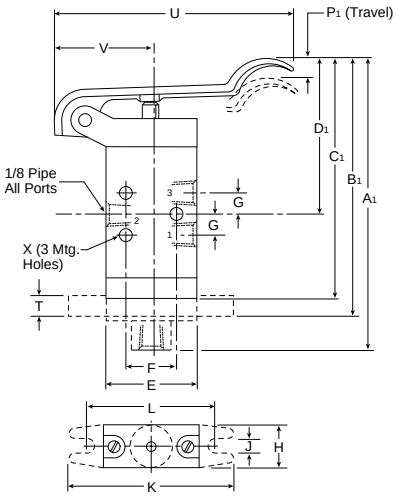
Inches (mm)

Button, Hand Lever Operated — 3-Way, 3-Port, 2-Position – 1/8" Ports

Button Operated



Hand Lever Operated



3-Way, 3-Port, 2-Position

A	A₁	B	B₁	C
5.08 (129)	4.29 (109)	4.55 (115)	3.77 (96)	4.31 (109)
C₁	**D**	**D₁**	**E**	**F**
3.53 (90)	3.08 (78)	2.29 (58)	1.31 (33)	.75 (19)
G	**H**	**J**	**K**	**L**
.31 (8)	.62 (16)	.20 (5)	2.38 (60)	1.88 (48)
M	**N**	**P**	**P₁**	**R**
.88 (22)	1.06 (27)	.17 (4)	.53 (13)	1.67 (42)
S	**T**	**U**	**V**	**X**
.63 (16)	.25 (6)	3.38 (86)	1.19 (30)	.19 (5)
Y				
.59 (15)				

Inches (mm)

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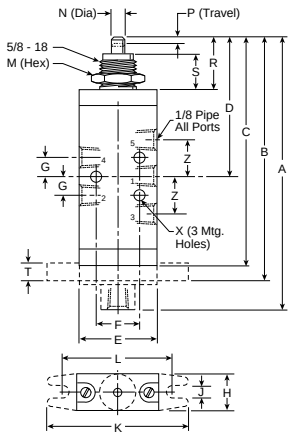
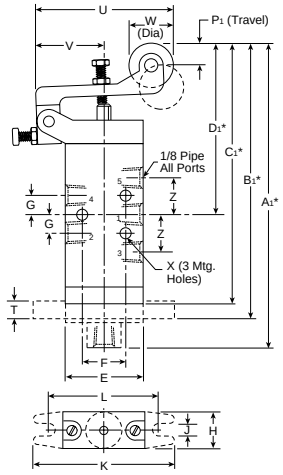
www.parker.com/pneumatics

Plunger, Roller, One-way Tripper & Toggle Operated — 4-Way, 5-Port, 2-Position – 1/8" Ports

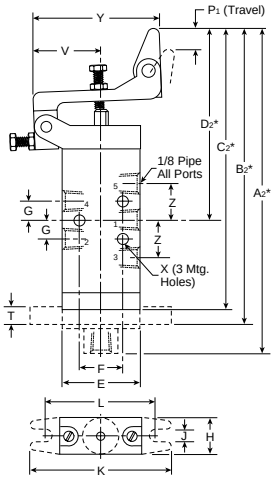
Plunger Operated



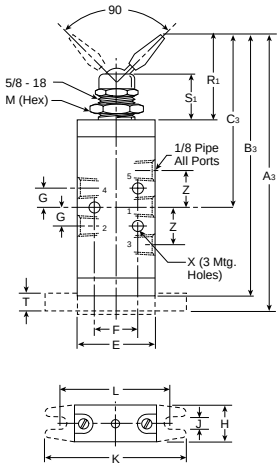
Roller Operated



One-Way Tripper Operated



Toggle Operated



4-Way, 5-Port, 2-Position

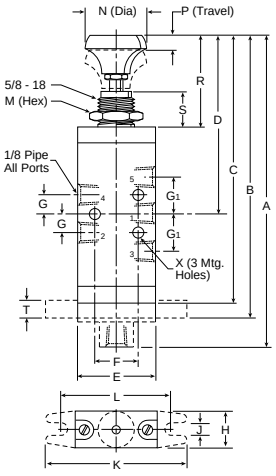
A	A_1*	A_2*	A_3	B
4.75 (121)	5.59 (142)	5.84 (148)	4.84 (123)	4.22 (107)
B_1*	**B_2***	**B_3**	**C**	**C_1***
5.06 (128)	5.31 (135)	4.61 (117)	3.99 (102)	4.83 (123)
C_2*	**C_3**	**D**	**D_1***	**D_2***
5.08 (129)	3.06 (78)	2.44 (62)	3.28 (83)	3.53 (90)
E	**F**	**G**	**H**	**J**
1.31 (33)	.75 (19)	.31 (8)	.62 (16)	.20 (5)
K	**L**	**M**	**N**	**P**
2.38 (60)	1.88 (48)	.88 (22)	.25 (6)	.17 (4)
P_1	**R**	**R_1**	**S**	**S_1**
.38 (10)	.91 (23)	1.53 (39)	.62 (16)	.78 (20)
T	**U**	**V**	**W**	**X**
.25 (6)	2.28 (58)	1.19 (30)	.75 (19)	.19 (5)
Y	**Z**			
2.19 (56)	.62 (16)			

* Dimensions may be reduced .44" using adjusting screw.

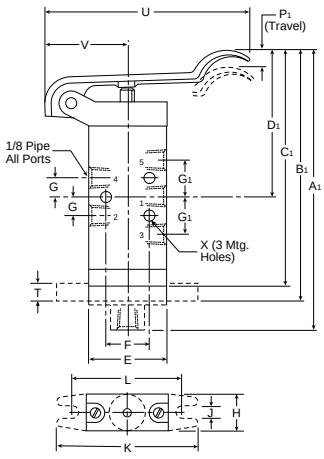
Inches (mm)

Button & Hand Lever Operated — 4-Way, 5-Port, 2-Position – 1/8" Ports

Button Operated



Hand Lever Operated



4-Way, 5-Port, 2-Position

A	A_1	B	B_1	C
5.69 (144)	4.90 (124)	5.16 (131)	4.38 (111)	4.92 (125)
C_1	**D**	**D_1**	**E**	**F**
4.14 (105)	3.67 (93)	2.90 (74)	1.31 (33)	.75 (19)
G	**G_1**	**H**	**J**	**K**
.31 (8)	.63 (16)	.62 (16)	.20 (5)	2.38 (60)
L	**M**	**N**	**P**	**P_1**
1.88 (48)	.88 (22)	1.06 (27)	.17 (4)	.53 (13)
R	**S**	**T**	**U**	**V**
1.67 (42)	.63 (16)	.25 (6)	3.38 (86)	1.19 (30)
X	**Y**			
.19 (5)	.59 (15)			

Inches (mm)

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Richland, Michigan
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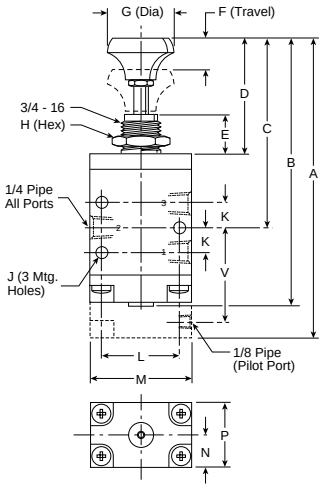
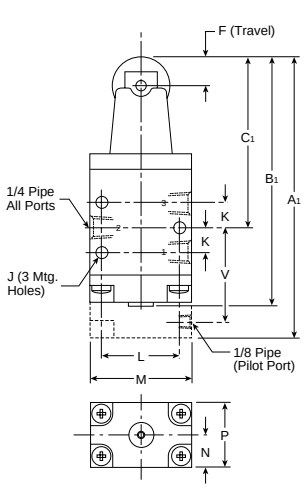
Button & Roller Operated — 3-Way, 3-Port, 2-Position

Button Operated



Roller Operated



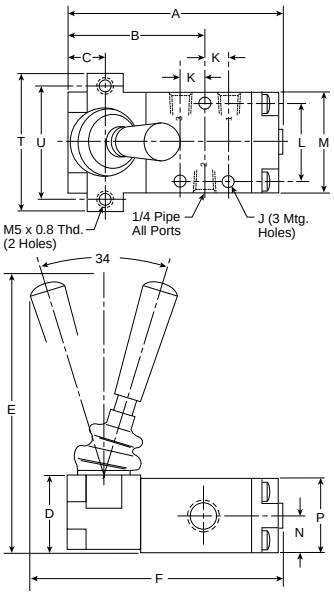
3-Way, 3-Port, 2-Position

A	A1	B	B1	C
4.91 (125)	4.25 (108)	4.44 (113)	3.78 (96)	3.10 (79)
C1	**D**	**E**	**F**	**G**
2.44 (62)	2.00 (51)	.63 (16)	.32 (8)	1.05 (27)
H	**J**	**K**	**L**	**M**
1.00 (25)	.19 (5)	.41 (10)	1.25 (32)	1.63 (42)
N	**P**	**V**		
.53 (14)	1.06 (27)	1.52 (39)		

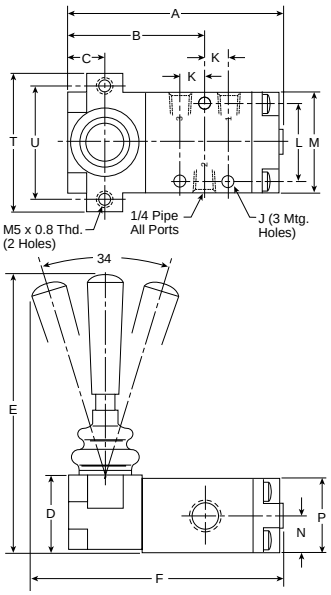
Inches (mm)

Lever & Pedal Operated — 3-Way, 3-Port, 2 & 3-Position

Lever Operated 2-Position



Lever Operated 3-Position

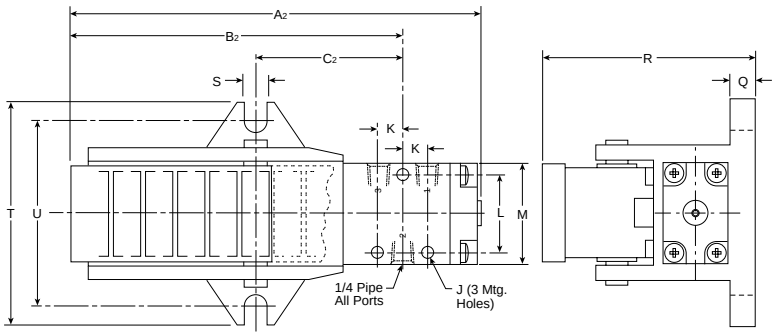


3-Way, 3-Port, 2 & 3-Position

A	A1	B	B1	C
3.31 (84)	6.55 (166)	1.97 (50)	5.20 (132)	.53 (14)
C1	**D**	**E**	**F**	**J**
2.19 (56)	1.12 (28)	4.06 (103)	3.90 (99)	.19 (5)
K	**L**	**M**	**N**	**P**
.41 (10)	1.25 (32)	1.63 (42)	.53 (14)	1.06 (27)
Q	**R**	**S**	**T**	**T1**
.37 (10)	2.40 (61)	.34 (9)	2.13 (54)	3.50 (89)
U	**U1**			
1.75 (44)	3.00 (76)			

Inches (mm)

Pedal / Treadle Operated



CAUTION:

This valve shall not be used to actuate a punch press.
Do not use this valve on punch presses or press brakes.
See OSHA 1910.217.

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
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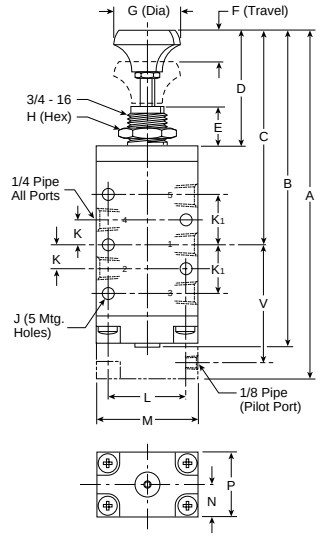
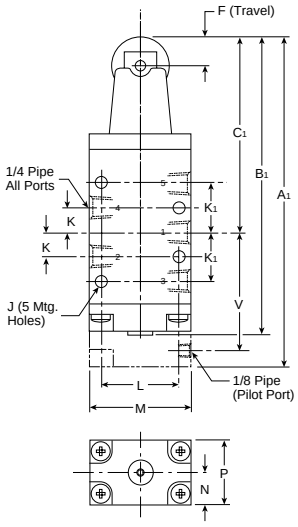
Button, Roller, Pedal & Treadle, Lever Operated — 4-Way, 5-Port, 2-Position

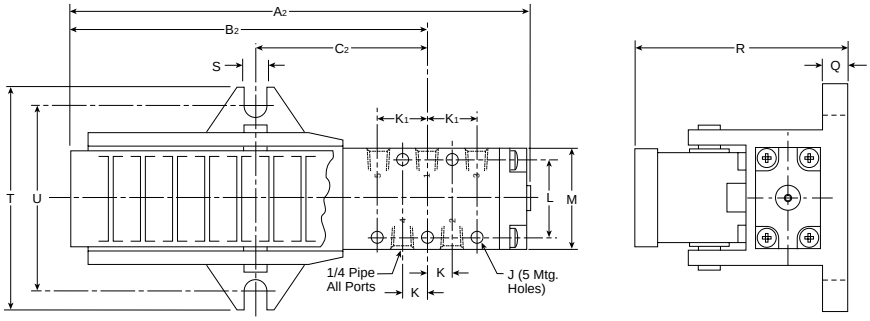
Button Operated



Roller Operated



Pedal and Treadle Operated



4-Way, 5-Port, 2-Position

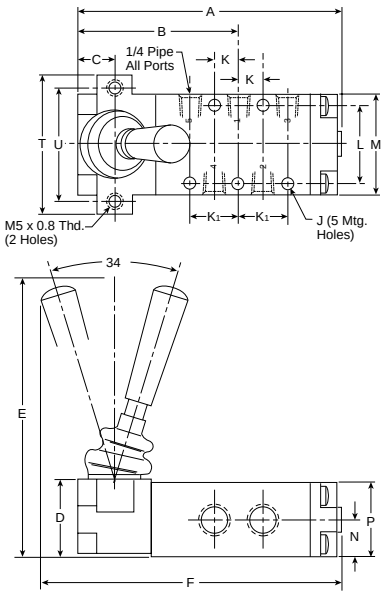
A	A1	A2	B	B1
5.75 (146)	5.13 (130)	7.41 (189)	5.28 (134)	4.66 (118)
B2	**C**	**C1**	**C2**	**D**
5.63 (143)	3.50 (89)	2.88 (73)	2.64 (67)	2.00 (51)
E	**F**	**G**	**H**	**J**
.63 (16)	.32 (8)	1.05 (27)	1.00 (25)	.19 (5)
K	**K1**	**L**	**M**	**N**
.44 (11)	.84 (21)	1.25 (32)	1.63 (41)	.53 (14)
P	**Q**	**R**	**S**	**T**
1.06 (27)	.37 (10)	2.40 (61)	.34 (9)	3.50 (89)
U	**V**			
3.00 (76)	1.96 (50)			

Inches (mm)

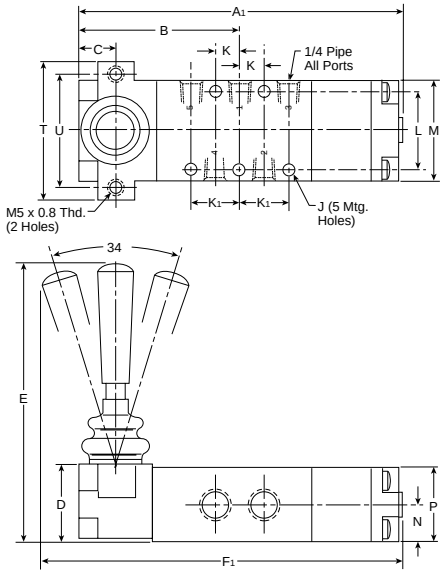
CAUTION:
This valve shall not be used to actuate a punch press. Do not use this valve on punch presses or press brakes. See OSHA 1910.217.

Lever Operated — 4-Way, 5-Port, 2 & 3-Position

Lever Operated 2-Position



Lever Operated 3-Position



4-Way, 5-Port, 2 & 3-Position

A	A1	B	C	D
4.19 (106)	5.09 (129)	2.41 (61)	.53 (14)	1.12 (28)
E	**F**	**F1**	**J**	**K**
4.06 (103)	4.78 (121)	5.78 (147)	.19 (5)	.44 (11)
K1	**L**	**M**	**N**	**P**
.84 (21)	1.25 (32)	1.63 (42)	.53 (14)	1.06 (27)
T	**U**			
2.13 (54)	1.75 (44)			

Inches (mm)

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Viking Xtreme Lever Operated Series

The Viking Xtreme Manual valve range is robust, versatile and combines high performance with compact installation dimensions. The valves rugged lever actuator has been specifically designed for gloved hands to suit mobile applications in the most arduous of environments. Available in 3/2, 5/2 and 5/3 functions with either spring return or detented lever. The lever actuated versions are available across the entire range from 1/8 to 1/2 port sizes.

- **Heavy duty lever**
- **Inline valve**
  – 1/8", 1/4", 3/8", 1/2" NPT & BSPP
- **2-position models**
  – 4-way & 3-way
- **3-position models**
  – all ports blocked
  – pressure center
  – center exhaust
- **Over-moulded single piece aluminium spool**
  – Reduced product complexity
  – Increased flow
  – Wide operating temperature range
  – Stable seal performance even with high flow / pressure drop across spool.

Operating information

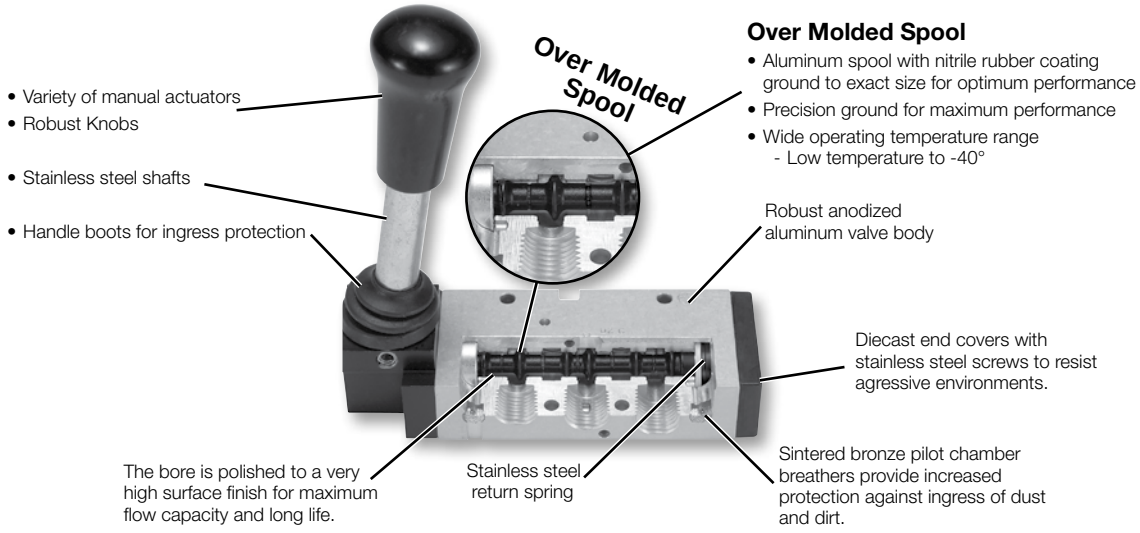
Operating pressure:	Type A & B: Vacuum to 232 PSIG (Vacuum to 16 bar Max.)	
	Type C & D: Vacuum to 174 PSIG (Vacuum to 12 bar Max.)	
Temperature range:	Xtreme:	-40°F to 140°F (-40°C to 60°C)

Material specifications

End covers	Anodized aluminum
Lever	Reinforced polyamide plastic
Lever housing	Acetal plastic
Piston	Acetal plastic / anodized aluminum
Seals	Nitrile rubber
Screws	Stainless steel
Spool	Aluminum & nitrile rubber
Springs	Stainless steel
Valve body	Anodized aluminum

Lever Handle – 1/8" valve size, 5/2 & 5/3 only	Twist Handle – 1/4" valve sizes	Lever Handle – All other valve sizes

Features



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Richland, Michigan
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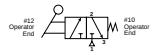
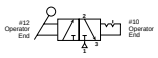
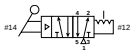
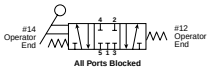
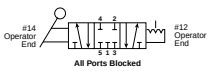
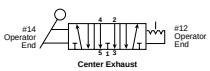
3/2 - 2-position	Symbol	Valve type	Port size	Cv	Weight lb (kg)	Part number NPT	Part number BSPP
		Lever spring return	1/8	0.6	0.73 (0.33)	**P2LAX391VS**	**P2LAX311VS**
			1/4	1.5	0.73 (0.33)	**P2LBX392VS**	**P2LBX312VS**
			3/8	2.5	0.88 (0.40)	**P2LCX393VS**	**P2LCX313VS**
			1/2	2.7	1.32 (0.60)	**P2LDX394VS**	**P2LDX314VS**
		Lever detent	1/8	0.7	0.73 (0.33)	**P2LAX391VV**	**P2LAX311VV**
			1/4	1.3	0.73 (0.33)	**P2LBX392VV**	**P2LBX312VV**
			3/8	2.5	0.88 (0.40)	**P2LCX393VV**	**P2LCX313VV**
			1/2	2.7	1.32 (0.60)	**P2LDX394VV**	**P2LDX314VV**

5/2 - 2-position	Symbol	Valve type	Port size	Cv	Weight lb (kg)	Part number NPT	Part number BSPP
		Lever spring return	1/8	0.6	0.40 (0.18)	**P2LAX591VS**	**P2LAX511VS**
			1/4	1.5	0.73 (0.33)	**P2LBX592VS**	**P2LBX512VS**
			3/8	2.5	0.88 (0.40)	**P2LCX593VS**	**P2LCX513VS**
			1/2	2.7	1.32 (0.60)	**P2LDX594VS**	**P2LDX514VS**
		Lever detent	1/8	0.7	0.40 (0.18)	**P2LAX591VV**	**P2LAX511VV**
			1/4	1.3	0.73 (0.33)	**P2LBX592VV**	**P2LBX512VV**
			3/8	2.5	0.88 (0.40)	**P2LCX593VV**	**P2LCX513VV**
			1/2	2.7	1.32 (0.60)	**P2LDX594VV**	**P2LDX514VV**

5/3 - 3-position, all ports blocked	Symbol	Valve type	Port size	Cv	Weight lb (kg)	Part number NPT	Part number BSPP
		Lever spring center	1/8	0.6	0.40 (0.18)	**P2LAX69111**	**P2LAX61111**
			1/4	1.5	0.73 (0.33)	**P2LBX69211**	**P2LBX61211**
			3/8	2.5	1.56 (0.71)	**P2LCX69311**	**P2LCX61311**
			1/2	2.7	1.61 (0.73)	**P2LDX69411**	**P2LDX61411**
		Lever detent	1/8	0.7	0.40 (0.18)	**P2LAX69122**	**P2LAX61122**
			1/4	1.3	0.73 (0.33)	**P2LBX69222**	**P2LBX61222**
			3/8	2.5	1.56 (0.71)	**P2LCX69322**	**P2LCX61322**
			1/2	2.7	1.61 (0.73)	**P2LDX69422**	**P2LDX61422**

5/3 - 3-position, pressure center	Symbol	Valve type	Port size	Cv	Weight lb (kg)	Part number NPT	Part number BSPP
		Lever spring center	1/8	0.6	0.40 (0.18)	**P2LAX79111**	**P2LAX71111**
			1/4	1.5	0.73 (0.33)	**P2LBX79211**	**P2LBX71211**
			3/8	2.5	1.56 (0.71)	**P2LCX79311**	**P2LCX71311**
			1/2	2.7	1.61 (0.73)	**P2LDX79411**	**P2LDX71411**
		Lever detent	1/8	0.7	0.40 (0.18)	**P2LAX79122**	**P2LAX71122**
			1/4	1.3	0.73 (0.33)	**P2LBX79222**	**P2LBX71222**
			3/8	2.5	1.56 (0.71)	**P2LCX79322**	**P2LCX71322**
			1/2	2.7	1.61 (0.73)	**P2LDX79422**	**P2LDX71422**

Most popular.

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Pneumatic Division
Richland, Michigan
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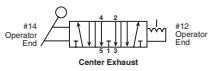
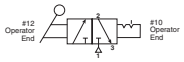
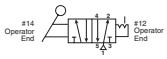
5/3 - 3-position, center exhaust	Symbol	Valve type	Port size	Cv	Weight lb (kg)	Part number NPT	Part number BSPP
		Lever spring center	1/8	0.6	0.40 (0.18)	**P2LAX89111**	**P2LAX81111**
			1/4	1.5	0.73 (0.33)	**P2LBX89211**	**P2LBX81211**
			3/8	2.5	1.56 (0.71)	**P2LCX89311**	**P2LCX81311**
			1/2	2.7	1.61 (0.73)	**P2LDX89411**	**P2LDX81411**
		Lever detent	1/8	0.7	0.40 (0.18)	**P2LAX89122**	**P2LAX81122**
			1/4	1.3	0.73 (0.33)	**P2LBX89222**	**P2LBX81222**
			3/8	2.5	1.56 (0.71)	**P2LCX89322**	**P2LCX81322**
			1/2	2.7	1.61 (0.73)	**P2LDX89422**	**P2LDX81422**

3/2 - 2-position	Symbol	Valve type	Port size	Cv		Part number NPT	Part number BSPP
		Twist handle detent	1/4	1.3	0.73 (0.33)	**P2LBX392JJ**	**P2LBX312JJ**

5/2 - 2-position	Symbol	Valve type	Port size	Cv		Part number NPT	Part number BSPP
		Twist handle detent	1/4	1.3	0.73 (0.33)	**P2LBX592JJ**	**P2LBX512JJ**

Manual Operated Valves

Vacuum to 232 PSIG (Vacuum to 16 bar) -40°F to 158°F (-40°C to 70°C)

P2L A X 5 91 VS

Valve size	
1/8"	A
1/4"	**B**
3/8"	**C**
1/2"	D

Valve type / function	
3/2 NC - 2-position	**3**
5/2 2-position	**5**
5/3 3-position, APB	**6**
5/3 3-position, PC	7
5/3 3-position, CE	**8**

Main port thread	
11	G1/8 (P2LA)
12	G1/4 (P2LB)
13	G3/8 (P2LC)
14	G1/2 (P2LD)
91	**1/8" NPT (P2LA)**
92	**1/4" NPT (P2LB)**
93	**3/8" NPT (P2LC)**
94	**1/2" NPT (P2LD)**

Actuator / return	
JJ*	**Twist handle detent, 2-position**
VS	**Spring return lever, 2-position, 90° to ports**
VV	**Lever, detent, 2-position, 90° to ports**
11	Spring centered lever, 3-position, 90° to ports
22	Lever, detent, 3-position, 90° to ports

* Not available with 3-position valves. Available Size B only.

NOTE: For ATEX certified remote air pilot valves, build the valve part number from the model number index for remote pilot and add "-EX" following the number.
Example: P2LAX591PS-EX

Most popular.

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Exhaust Mufflers

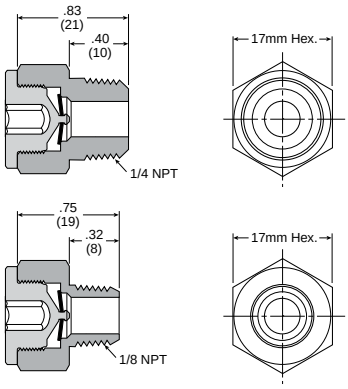
Pipe thread	Part number
M5	**P6M-PAC5**
1/8" NPT	**EM12**
1/4" NPT	**EM25**
3/8" NPT	**EM37**
1/2" NPT	**EM50**

P6M - Plastic; EM - Sintered bronze

Plastic Silencers

Thread size	Part number NPT	Part number BSPT	A (mm)	B (mm)
M5	**AS-5**		.43 (11)	.32 (8)
1/8"	**ASN-6**	**AS-6**	1.57 (40)	.63 (16)
1/4"	**ASN-8**	**AS-8**	2.56 (65)	.83 (21)
3/8"	**ASN-10**	**AS-10**	3.35 (85)	.98 (25)
1/2"	**ASN-15**	**AS-15**	3.74 (95)	1.18 (30)

Exhaust Protector



Features

- 1/8 and 1/4 NPT male sizes
- Fitted with a brass pipe adapter and a fluorocarbon membrane
- Resistant to rust, clog, wash down and contamination

Applications

These protectors are intended for mobile applications, quick venting applications and alternative exhaust port breathers that require protection against clogging.

Ideal for valves exposed to harsh environmental conditions (which can cause a “caking up” in the exhaust pipe ports where the bronze mufflers or breather vents are installed).

Particularly suitable for time-sensitive applications such as axle-lift suspensions or pushers or tag axles.

Specifications

Operating pressure ..... 0 – 150 PSIG
(0 to 10 bar, 0 to 1034 kPa)

Operating temperature .....-40°F to 158°F (-40°C to 70°C)

Material:

Body and pipe adapter ..... Brass
Membrane .....Fluorocarbon

Flow Data (SCFM)

Part number	Size	60 PSIG inlet	90 PSIG inlet	125 PSIG inlet
E90016	1/8"	40.1	56.5	75.5
E90017	1/4"	44.6	62.7	83.5

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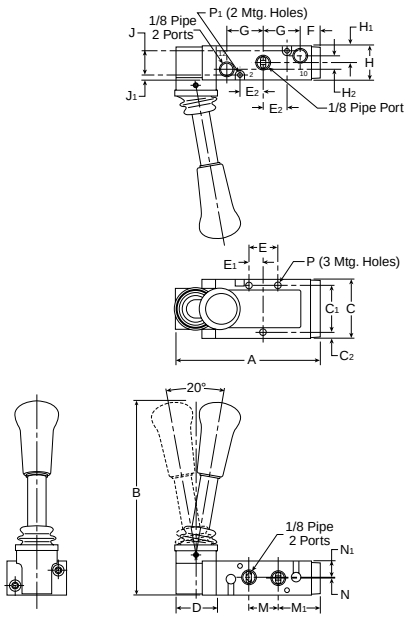
P2LAX 3/2 Hand Lever Operated

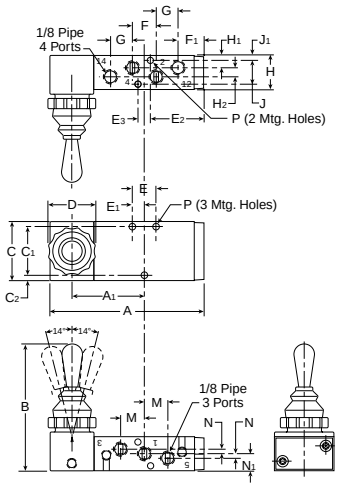


P2LAX 3/2 (hand lever)

A	B	C
3.88 (99)	5.23 (133)	1.57 (40)
C1	**C2**	**D**
1.26 (32)	.16 (4)	1.06 (27)
E	**E1**	**E2**
.79 (20)	.39 (10)	.63 (16)
F	**G**	**H**
.55 (14)	.98 (25)	.87 (22)
H1	**H2**	**J**
.42 (10.6)	.02 (0.5)	.65 (16.5)
J1	**M**	**M1**
.11 (2.9)	.79 (20)	1.14 (29)
N	**N1**	**P**
.18 (4.5)	.26 (6.6)	Ø .17 Ø (4.3)
P1		
Ø .12 Ø (3.1)		

Inches (mm)

P2LAX 5/2 & 5/3 Hand Lever Operated

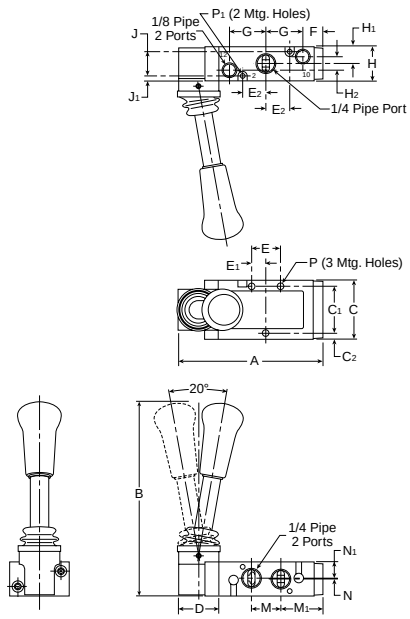


P2LAX 5/2 & 5/3 (hand lever)

A	A1	B
4.02 (102)	1.89 (48)	3.23 (82)
C	**C1**	**C2**
1.57 (40)	1.30 (33)	.14 (3.5)
D	**E2**	**E3**
1.18 (30)	1.42 (36)	.33 (8.5)
F	**F1**	**G**
.63 (16)	.67 (17)	.59 (15)
H	**H1**	**H2**
.87 (22)	.31 (8)	.24 (6)
J	**J1**	**M**
.63 (16)	.12 (3)	.63 (16)
N	**N1**	**P**
.12 (3)	.43 (11)	Ø .16 Ø (4.1)

Inches (mm)

P2LBX 3/2 Hand Lever Operated

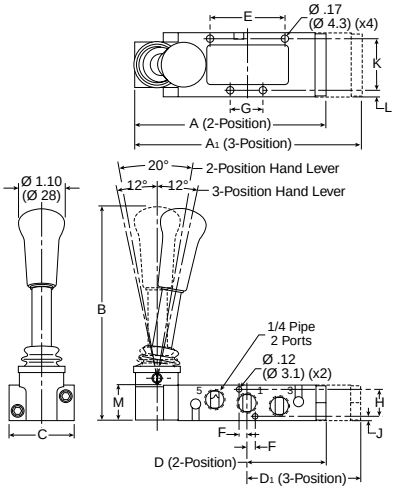


P2LBX 3/2 (hand lever)

A	B	C
3.88 (99)	5.23 (133)	1.57 (40)
C1	**C2**	**D**
1.26 (32)	.16 (4)	1.06 (27)
E	**E1**	**E2**
.79 (20)	.39 (10)	.63 (16)
F	**G**	**H**
.55 (14)	.98 (25)	.87 (22)
H1	**H2**	**J**
.42 (10.6)	.02 (0.5)	.65 (16.5)
J1	**M**	**M1**
.11 (2.9)	.79 (20)	1.14 (29)
N	**N1**	**P**
.18 (4.5)	.26 (6.6)	Ø .17 Ø (4.3)
P1		
Ø .12 Ø (3.1)		

Inches (mm)

P2LBX 5/2 & 5/3 Hand Lever Operated



P2LBX 5/2 & 53 (hand lever)

A	A1	B
4.67 (118.5)	5.51 (140)	5.19 (131.8)
C	**D**	**D1**
1.57 (40)	1.93 (49)	2.35 (59.8)
E	**F**	**G**
1.81 (46)	.20 (5)	.79 (20)
H	**J**	**K**
.65 (16.5)	.11 (2.85)	1.26 (32)
L	**M**	
.16 (4)	.87 (22.2)	

Inches (mm)

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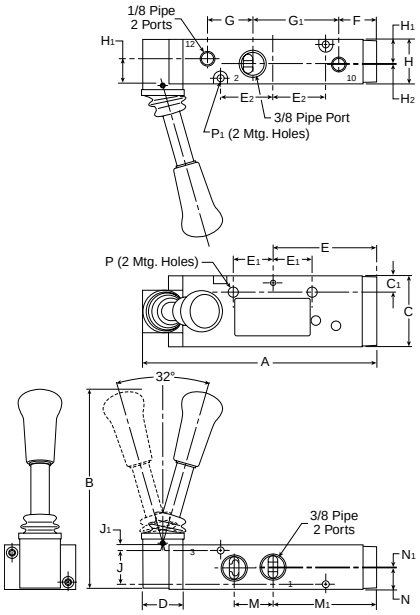
P2LCX 3/2 Hand Lever Operated

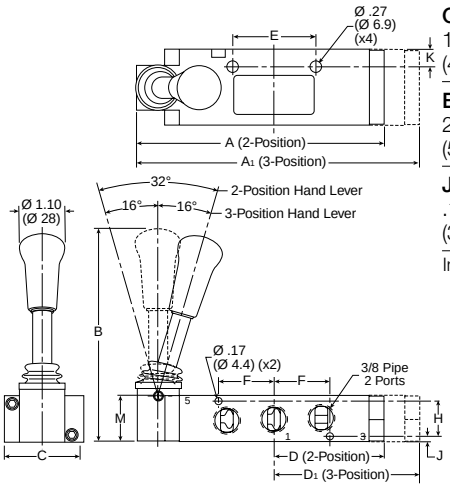


P2LCX 3/2 (hand lever)

A	B	C
6.20 (158)	5.36 (136)	1.89 (48)
C1	**D**	**E**
.43 (11)	1.06 (27)	2.76 (70)
E1	**E2**	**F**
1.04 (27)	1.40 (36)	1.02 (26)
G	**G1**	**H**
1.22 (31)	2.24 (57)	1.18 (30)
H1	**H2**	**J**
.67 (17)	.02 (0.5)	.91 (23)
J1	**M**	**M1**
.14 (3.5)	1.18 (30)	2.76 (70)
N	**N1**	**P**
.59 (15)	.04 (1)	Ø .27 Ø (6.9)
P1		
Ø .17 Ø (4.4)		

Inches (mm)

P2LCX 5/2 & 5/3 Hand Lever Operated

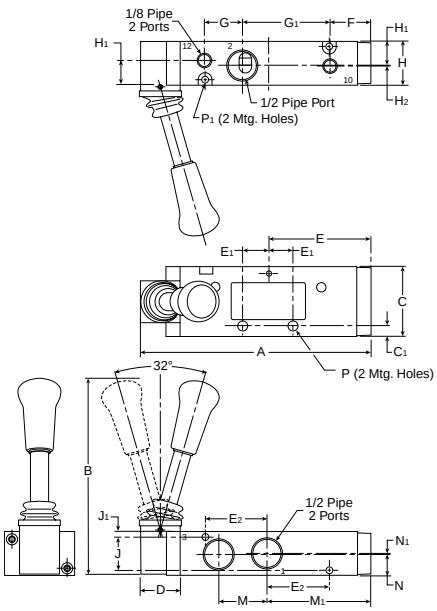


P2LCX 5/2 & 5/3 (hand lever)

A	A1	B
6.20 (157.5)	7.07 (179.5)	5.36 (136.3)
C	**D**	**D1**
1.89 (48)	2.76 (70)	3.19 (81)
E	**F**	**H**
2.09 (53)	1.40 (35.5)	.91 (23)
J	**K**	**M**
.14 (3.5)	.43 (11)	1.18 (30)

Inches (mm)

P2LDX 3/2 Hand Lever Operated

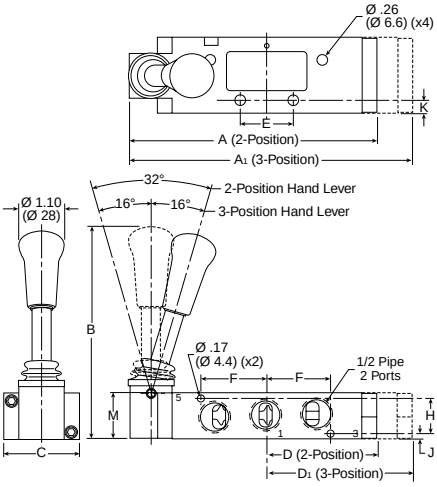


P2LDX 3/2 (hand lever)

A	B	C
6.20 (158)	5.36 (136)	1.89 (48)
C1	**D**	**E**
.30 (7.5)	1.06 (27)	2.76 (70)
E1	**E2**	**F**
.67 (17)	1.65 (42)	1.08 (28)
G	**G1**	**H**
.98 (25)	2.36 (60)	1.18 (30)
H1	**H2**	**J**
.67 (17)	.02 (0.5)	.91 (23)
J1	**M**	**M1**
.14 (3.5)	1.30 (33)	2.76 (70)
N	**N1**	**P**
.59 (15)	.04 (1)	Ø .26 Ø (6.6)
P1		
Ø .17 Ø (4.4)		

Inches (mm)

P2LDX 5/2 & 5/3 Hand Lever Operated



P2LDX 5/2 & 5/3 (hand lever)

A	A1	B
6.20 (157.5)	7.07 (179.5)	5.36 (136.3)
C	**D**	**D1**
1.89 (48)	3.19 (81)	2.76 (70)
E	**F**	**H**
1.34 (34)	1.65 (42)	.91 (23)
J	**K**	**M**
.14 (3.5)	.30 (7.5	1.18 (30)

Inches (mm)

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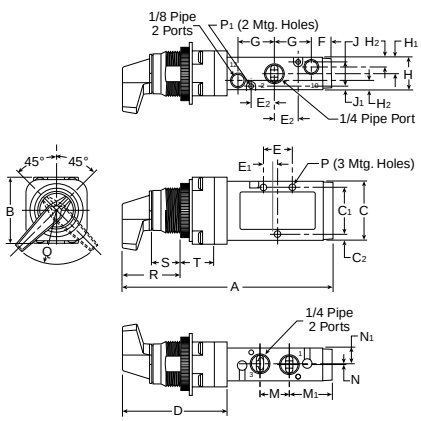
www.parker.com/pneumatics

P2LBX 3/2 Twist Lever Operated

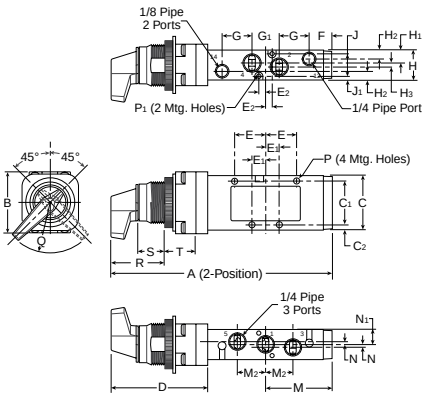


P2LBX 3/2 (hand lever)

A	B	C
5.67 (144)	1.79 (45.5)	1.57 (40)
C_1	**C_2**	**D**
1.26 (32)	.16 (4)	2.87 (73)
E	**E_1**	**E_2**
.79 (20)	.39 (10)	.63 (16)
F	**G**	**H**
.55 (14)	.98 (25)	.87 (22.2)
H_1	**H_2**	**J**
.44 (11.1)	.26 (6.6)	.65 (16.5)
J_1	**M**	**M_1**
.11 (2.9)	.79 (20)	1.14 (29)
N	**N_1**	**P**
.02 (0.5)	.42 (10.6)	Ø .17 Ø (4.3)
P_1	**Q**	**R**
Ø .12 Ø (3.1)	1.5R (38.1)R	1.85 (47)
S	**T**	
1.10 (28)	.67 (17)	

Inches (mm)

P2LBX 5/2 Twist Lever Operated

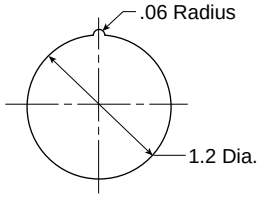


P2LBX 5/2 (hand lever)

A	B	C
6.46 (164)	1.79 (45.5)	1.57 (40)
C_1	**C_2**	**D**
1.26 (32)	.15 (4)	2.87 (73)
E	**E_1**	**E_2**
.91 (23)	.39 (10)	.20 (5)
F	**G**	**G_1**
.67 (17)	.87 (22)	.79 (20)
H	**H_1**	**H_2**
.87 (22.2)	.44 (11.1)	.26 (6.6)
H_3	**J**	**J_1**
.12 (3)	.65 (16.5)	.11 (2.9)
M	**N**	**N_1**
1.93 (49)	.08 (0.2)	.44 (11.1)
P	**P_1**	**Q**
Ø .17 Ø (4.3)	Ø .12 Ø (3.1)	1.5R (38.1)R
R	**S**	**T**
1.85 (47)	1.10 (28)	.67 (17)

Inches (mm)

Panel Cutout Detail (All Port Sizes)



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Pneumatic Division
Richland, Michigan
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42 Lever / Pedal Series

Features

Heavy duty lever
- Parallel mount handle
- Perpendicular mount handle

Heavy duty foot pedal

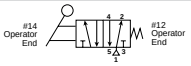
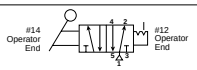
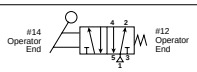
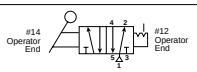
2 port sizes
- 1/4" port – 1.3 to 2.2 Cv
- 3/8" port – 1.3 to 2.9 Cv

2-position and 3-position valves

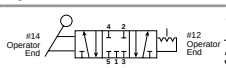
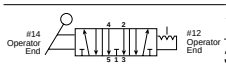
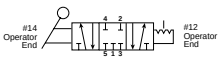
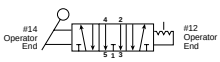
Operating information

Operating pressure: Vacuum to 150 PSI (710 mmHg to 1035 kPa)
Temperature range: 0°F to 140°F (-18°C to 60°C)

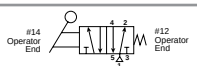
Lever Valve - 2-Position

	Symbol	Port size	Cv	Description	Valve type	Part number
		1/4"	2.2	Inline, parallel	2-position, spring return	**422CS011K**
		3/8"	2.9	Inline, parallel	2-position, spring return	**422CS021K**
		1/4"	2.2	Inline, parallel	2-position, detent	**422CS011W**
		3/8"	2.9	Inline, parallel	2-position, detent	**422CS021W**
		1/4"	2.2	Inline, perpendicular	2-position, spring return	**422CR011K**
		3/8"	2.9	Inline, perpendicular	2-position, spring return	**422CR021K**
		1/4"	2.2	Inline, perpendicular	2-position, detent	**422CR011W**
		3/8"	2.9	Inline, perpendicular	2-position, detent	**422CR021W**

Lever Valve - 3-Position

	Symbol	Port size	Cv	Description	Valve type	Part number
		1/4"	1.3	Inline, parallel	3-position APB	**422CS013W**
		3/8"	1.3	Inline, parallel	3-position, APB	**422CS023W**
		1/4"	1.3	Inline, parallel	3-position, CE	**422CS014W**
		3/8"	1.3	Inline, parallel	3-position, CE	**422CS024W**
		1/4"	1.3	Inline, perpendicular	3-position, APB	**422CR013W**
		3/8"	1.3	Inline, perpendicular	3-position, APB	**422CR023W**
		1/4"	1.3	Inline, perpendicular	3-position, CE	**422CR014W**
		3/8"	1.3	Inline, perpendicular	3-position, CE	**422CR024W**

Foot Pedal Valve - 2-Position

	Symbol	Port size	Cv	Description	Valve type	Part number
		1/4"	2.2	Foot pedal	2-position, spring return	**422CT011K**
		3/8"	2.9	Foot pedal	2-position, spring return	**422CT021K**
				Foot pedal guard		**PS2043P**

⚠ ***CAUTION:***
This valve shall not be used to actuate a punch press. Do not use this valve on punch presses or press brakes. See OSHA 1910.217.

Valve body service kits, single pressure

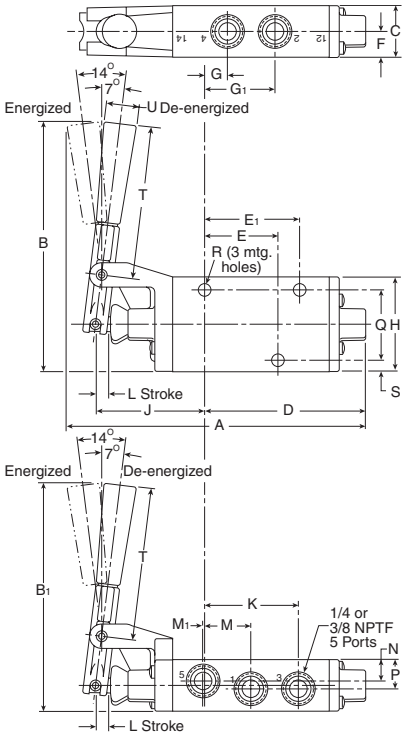
2-position valve	**PS2038P**
3-position valve	**PS2041P**

Kit includes: all soft seals and spool.

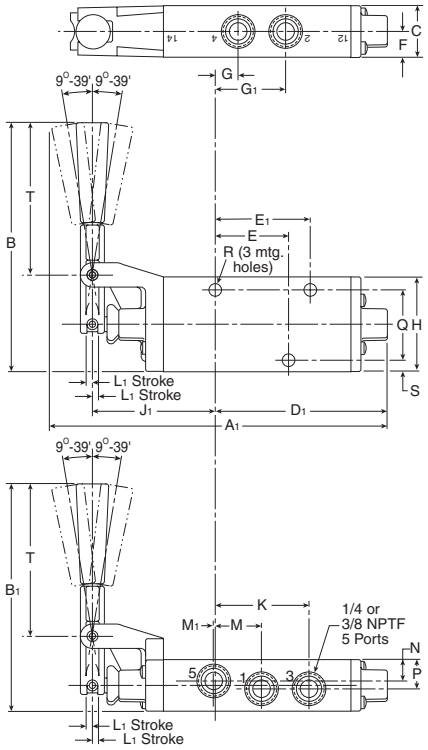
☐ Most popular.

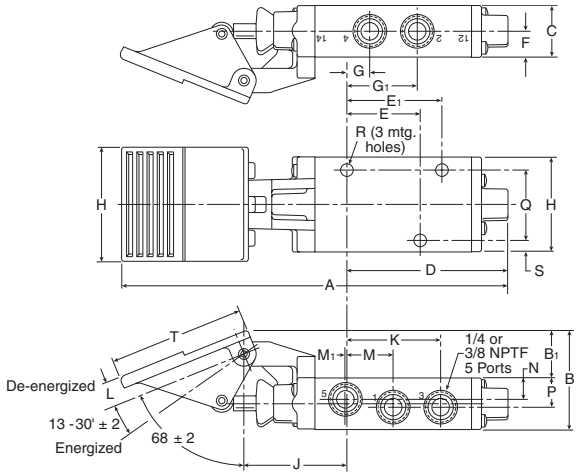
Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

2-Position



3-Position





Lever Valve

A	A1	B	B1	C
6.70 (170)	7.58 (193)	5.55 (141)	5.05 (128)	1.15 (29)
D	**D1**	**E**	**E1**	**F**
3.59 (91)	3.83 (97)	1.58 (40)	2.06 (52)	.57 (14)
G NPT		**G1 NPT**		**H**
1/4" .51 (13) 3/8" .55 (14)		1/4" 1.56 (40) 3/8" 1.51 (38)		2.13 (54)
J	**J1**	**K NPT**		**L**
2.44 (62)	2.80 (71)	1/4" 2.08 (53) 3/8" 2.13 (54)		.25 (6)
L1	**M**	**M1 NPT**		**N**
.18 (5)	1.03 (36)	1/4" .02 (.5) 3/8" .06 (2)		.50 (13)
P	**Q**	**R**	**S**	**T**
.65 (17)	1.58 (40)	.33 (8)	.27 (7)	3.42 (87)
U Dia				
.75 (19)				

Inches (mm)

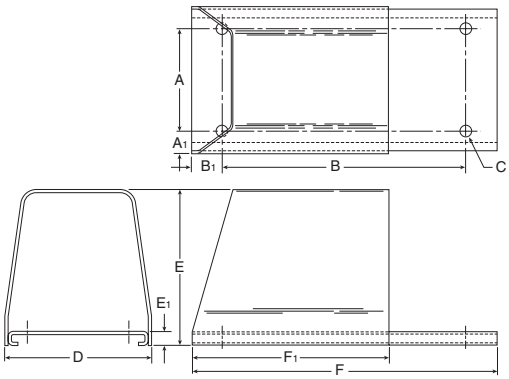
Foot Pedal Valve

A	B	B1	C	D
8.64 (220)	2.18 (55)	1.03 (26)	1.15 (29)	3.59 (91)
E	**E1**	**F**	**G NPT**	
1.58 (40)	2.06 (52)	.57 (14)	1/4" .51 (13) 3/8" .55 (14)	
G1 NPT		**H**	**H1**	**J**
1/4" 1.56 (40) 3/8" 1.51 (38)		2.13 (54)	2.50 (64)	2.32 (59)
K NPT		**L**	**M**	
1/4" 2.08 (53) 3/8" 2.13 (54)		.60 (15)	1.03 (26)	
M1 NPT		**N**	**P**	**Q**
1/4" .02 (.5) 3/8" .06 (2)		.50 (13)	.65 (17)	1.58 (40)
R	**S**	**T**	**U**	
.33 (8)	.27 (7)	3.00 (76)	.48 (11)	

Inches (mm)

⚠ *CAUTION:*

This valve shall not be used to actuate a punch press.
Do not use this valve on punch presses or press brakes.
See OSHA 1910.217.



Foot Valve Guard: PS2043P

A	A1	B	B1	C
4.50 (114)	.75 (19)	10.50 (267)	1.25 (32)	.48 (11)
D	**E**	**E1**	**F**	**F1**
6.00 (152)	7.13 (181)	.50 (13)	13.00 (330)	8.38 (213)

Inches (mm)

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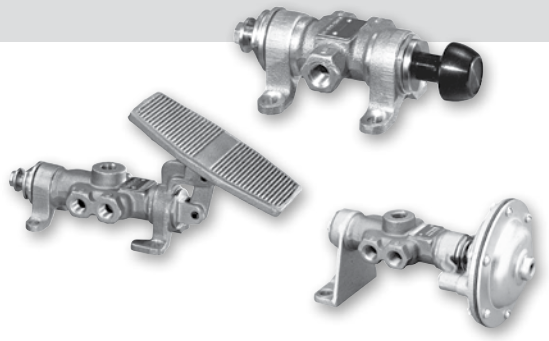
M0 Series



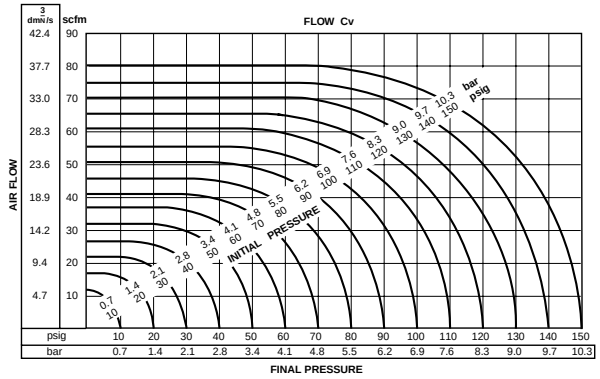
Features

- 1/4" to 3/4" NPTF ports
- Standard operators listed. Consult factor for variations in orientation
- Standard 2 position 3-way and 4-way valves listed. Consult factory for 2-way and 3 position valves
- Corrosion resistant bronze body
- High flow brass spacers position o-ring, permit reverse piping and vacuum service
- Specially compounded o-rings suitable for non-lube air service and low pressure oil service
- Floating stem of hard chrome plated stainless steel; no metal to metal contact
- Closed at crossover design for air savings
- Piped exhaust convenient for muffling
- Interchangeable operators
- Interchangeable end sections
- Service without disturbing plumbing
- Dual mounting brackets on most models

Flow Cv ratings

Valve type	Port size	Port 1 to 2	Port 1 to 3	Port 2 to 3	Port 2 to 4	Port 3 to 4
3-way 2-position	1/4	2.4	—	2.4	—	—
	3/8	3.2	—	3.4	—	—
	1/2	5.0	—	5.1	—	—
	3/4	9.5	—	9.8	—	—
4-way 2-position	1/4	2.4	2.4	—	2.0	2.2
	3/8	3.4	3.2	—	3.0	3.1
	1/2	5.2	5.3	—	4.7	4.7
	3/4	8.7	9.2	—	7.9	8.0

Flow Cv



Flow capacities

The capacity curves shown in the chart are for a theoretical valve having a Cv = 1.0 for air at standard conditions.

Flow rating determined in accordance with NFPA recommended standard NFPA/T3.21.3 - 1974.

Operating information

Pressure limitations
knob (manual and spring return) and palm operators (manual and spring return)

Media	Port size	PSI (kPa) 3-way	PSI (kPa) 4-way
Air and Hydraulic	1/4	200 (1380)	180 (1240)
	3/8	175 (1210)	170 (1170)
	1/2	160 (1100)	150 (1030)
	3/4	150 (1030)	150 (1030)
Vacuum	All	Within 1" Hg of perfect	
Other	Consult factory		

Pressure limitations
knob (detent), lever, pedal, treadle, clevis, cam air operated diaphragm and cylinder

Media	Port size	PSI (kPa) 3-way	PSI (kPa) 4-way
Air and Hydraulic	1/4	225 (1550)	225 (1550)
	3/8	225 (1550)	225 (1550)
	1/2	215 (1480)	215 (1480)
	3/4	200 (1380)	200 (1380)
Vacuum	All	Within 1" Hg of perfect	
Other	Consult factory		

Temperature range: -15°F to 200°F (-26° to 93°C)

Lubrication: For best results and service life use clean, moisture free lubricated air.

Material specifications

Body	High pressure valve bronze
Knobs and palm buttons	Anodized aluminum
Operators	Iron castings; steel rod, bar and tube, and plated for corrosion resistance
O-rings	Buna-N and impregnated with Molybdenum Disulfide
Spacers and end bearings	Brass bar stock
Springs	high quality steel and plated for corrosion resistance
Stem	Stainless steel and hard chrome plated

Warnings

⚠ Install guards on all hand operated valves if accidental operation can cause personal injury.

⚠ Foot operated valves must be protected against inadvertent operation that can cause serious bodily injury. Use of a guard is strongly recommended as it will reduce the likelihood of inadvertent operation.

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M0 Series Air Pilot, Manual & Mechanically Actuated Valves

3-way and 4-way knob operated		Description	Part number 1/4 NPT	Part number 3/8 NPT	Part number 1/2 NPT	Part number 3/4 NPT
		3-way, detent ball, foot bracket	**M05422448**	**M05432448**	**M05442448**	**M05462448**
		3-way, detent ball, panel mount with nut	**M05822451**	**M05832451**	**M05842451**	**M05862451**
		3-way, N.C., manual, foot bracket	**M08521848**	**M08531848**	**M08541848**	**M08561848**
		3-way, N.C., manual, panel nut	**M08521851**	**M08531851**	**M08541851**	**M08561851**
		3-way, N.C., pull to operate, spring return, foot bracket	**M09721848**	**M09731848**	**M09741848**	**M09761848**
		3-way, N.C., pull to operate, spring return, panel mount with nut	**M06421851**	**M06431851**	**M06441851**	**M06461851**
		3-way, N.C., push to operate, spring return, foot bracket	**M09821848**	**M09831848**	**M09841848**	**M09861848**
		3-way, N.C., push to operate, spring return, panel mount with nut	**M06521851**	**M06531851**	**M06541851**	**M06561851**
		4-way, detent ball, foot bracket	**M05425448**	**M05435448**	**M05445448**	**M05465448**
		4-way, detent ball, panel mount with nut	**M05825451**	**M05835451**	**M05845451**	**M05865451**
		4-way, manual, foot bracket	**M08524648**	**M08534648**	**M08544648**	**M08564648**
		4-way, manual, panel nut	**M08524651**	**M08534651**	**M08544651**	**M08564651**
		4-way, pull to operate, spring return, foot bracket	**M09724648**	**M09734648**	**M09744648**	**M09764648**
		4-way, pull to operate, spring return, panel mount with nut	**M06424651**	**M06434651**	**M06444651**	**M06464651**
		4-way, push to operate, spring return, foot bracket	**M09824648**	**M09834648**	**M09844648**	**M09864648**
		4-way, push to operate, spring return, panel mount with nut	**M06524651**	**M06534651**	**M06544651**	**M06564651**
3-way and 4-way palm button operated						
		3-way, N.C., pull palm button to operate, spring return, panel mount with nut	**M06421859**	**M06431859**	**M06441859**	**M06461859**
		3-way, N.C., push palm button to operate, spring return, panel mount with nut	**M06521859**	**M06531859**	**M06541859**	**M06561859**
		4-way, pull palm button to operate, spring return panel mount with nut	**M06424659**	**M06434659**	**M06444659**	**M06464659**
		4-way, push palm button to operate, spring return, panel mount with nut	**M06524659**	**M06534659**	**M06544659**	**M06564659**
3-way and 4-way lever operated						
		3-way, detent ball, foot bracket	**M05422443**	**M05432443**	**M05442443**	**M05462443**
		3-way, manual, foot bracket	**M08521843**	**M08531843**	**M08541843**	**M08561843**
		3-way, N.C., pull lever to operate, spring return, foot bracket	**M09621843**	**M09631843**	**M09641843**	**M09661843**
		3-way, N.C., push lever to operate, spring return, foot bracket	**M09521843**	**M09531843**	**M09541843**	**M09561843**
		4-way, detent ball, foot bracket	**M05425443**	**M05435443**	**M05445443**	**M05465443**
		4-way, manual, foot bracket	**M08524643**	**M08534643**	**M08544643**	**M08564643**
		4-way, pull lever to operate, spring return, foot bracket	**M09624643**	**M09634643**	**M09644643**	**M09664643**
		4-way, push lever to operate, spring return, foot bracket	**M09524643**	**M09534643**	**M09544643**	**M09564643**

Most popular.

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M0 Series Air Pilot, Manual & Mechanically Actuated Valves

3-way and 4-way, foot operated: treadle / pedel type	Description	Part number 1/4 NPT	Part number 3/8 NPT	Part number 1/2 NPT	Part number 3/4 NPT
	3-way, treadle operated, detent ball, foot bracket	**M05422488**	**M05432488**	**M05442488**	**–**
	3-way, treadle operated, manual return, foot bracket	**M08521888**	**M08531888**	**M08541888**	**–**
	3-way, N.C., spring return, pedel operated, foot bracket	**M06221840**	**M06231840**	**M06241840**	**–**
	4-way, treadle operated, denent ball, foot bracket	**M05425488**	**M05435488**	**M05445488**	**–**
	4-way, treadle operated, manual return, foot bracket	**M08524688**	**M08534688**	**M08544688**	**–**
	4-way, spring return, pedel operated, foot bracket	**M06224640**	**M06234640**	**M06244640**	**–**

⚠ ***CAUTION:***
This valve shall not be used to actuate a punch press. Do not use this valve on punch presses or press brakes. See OSHA 1910.217.

3-way and 4-way air operated : diaphram or cylinder					
	3-way, N.C., single air diaphram, air signal to actuate, spring return foot bracket	**M08421830**	**M08431830**	**M08441830**	**–**
	3-way, single air cylinder signal to actuate, spring return foot bracket	**M08521826**	**M08531826**	**M08541826**	**M08561826**
	3-way, double air diaphram	**M03321833**	**M03331833**	**M03341833**	**–**
	3-way, double air cylinder foot bracket	**M01921819**	**M01931819**	**M01941819**	**M01961819**
	4-way, single air diaphram, air signal to actuate, spring return foot bracket	**M08424630**	**M08434630**	**M08444630**	**–**
	4-way, single air cylinder signal to actuate, spring return foot bracket	**M08524626**	**M08534626**	**M08544626**	**M08564626**
	4-way, double air diaphram	**M03324633**	**M03334633**	**M03344633**	**–**
	4-way, double air cylinder foot bracket	**M01924619**	**M01934619**	**M01944619**	**M01964619**

Note: diaphragm operators : pilot signal pressures from 20 to 60 psi. Cylinder operators : pilot signal pressures from 20 to 250 psi.

3-way and 4-way clevis operated					
	3-way, manual, foot bracket	**M08521805**	**M08531805**	**M08541805**	**M08561805**
	3-way, N.C., pull to operate, spring return foot bracket	**M09621805**	**M09631805**	**M09641805**	**M09661805**
	3-way, N.C., push to operate, spring return, foot bracket	**M09521805**	**M09531805**	**M09541805**	**M09561805**
	4-way, manual, foot bracket	**M08524605**	**M08534605**	**M08544605**	**M08564605**
	4-way, pull clevis to operate, spring return, foot bracket	**M09624605**	**M09634605**	**M09644605**	**M09664605**
	4-way, push clevis to operate, spring return, foot bracket	**M09524605**	**M09534605**	**M09544605**	**M09564605**

3-way and 4-way cam operated					
	3-way, N.C., spring return, cam operated, foot bracket	**M09521803**	**M09531803**	**M09541803**	**M09561803**
	4-way, spring return, cam operatred, foot bracket	**M09524603**	**M09534603**	**M09544603**	**M09564603**

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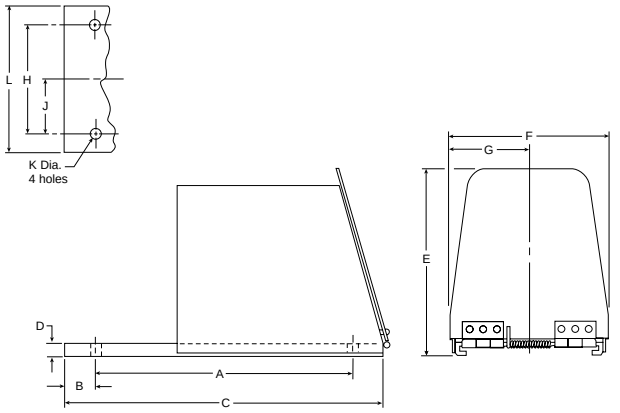
Pedal Guard
(Fits all pedal operated valves)

Description	Model number
Guard with door	**M232001**
Guard without door	**M232002**
Guard with door for 1/4 and 3/8 valve	**M232003***
Guard without door for 1/4 and 3/8 valve	**M232004***
Guard with door for 1/2 and 3/4	**M232005***
Guard without door for 1/2 and 3/4	**M232006***

* Includes mounting hardware.



CAUTION:

Foot valves utilizing this guard shall not be used to actuate a punch press.
Do not use this valve on punch presses or press brakes.
See OSHA 1910.217.

Dimensions

A	B	C	D	E	F	G
10.50	1.25	13.00	.50	7.38	6.36	3.18
266.7	31.8	330.2	12.7	187.4	161.5	80.8

H	J	K	L
4.50	2.25	.44	6.00
114.3	57.2	11.2	152.4

Service Kits

(Field service instructions)

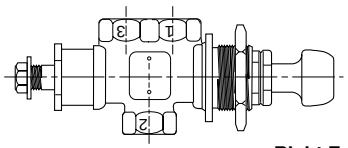
Description (For all 3 & 4-way valves)	1/4	3/8	1/2	3/4
Manual & mechanical operators	**M242001**	**M242002**	**M242003**	**M242004**
Cylinder (single, double & double-acting)	**M242006**	**M242007**	**M242008**	**M242009**
Diaphragm (single & double)	**M242011**	**M242012**	**M242013**	**M242014**

M0 valve 9 digit part number dissection

The M0 Valve Series has with wide variety of operating and return ends which can be ordered either on the left or right hand side of the valve body. Common part numbers on the previous pages can be ordered with the left and right hand ends swapped. Swapping operator and return end sections does not change the spool function, but can reverse the expected function of the valve. For example, a 3-way, normally closed, “NC”, spring return valve will become a 3-way normally open, “NO”, valve when the operator and return secton is swapped. There are other non-cataloged options available and this part number dissection will enable you to discuss your valve part number with the factory for options.

3-way

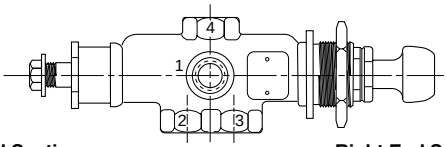
Series name	Left end	Port size	Body function	Right end
M0	XX	X	XX	XX



Left End Section in relation to port #2 ← → **Right End Section in relation to port #2**

4-way

Series name	Left end	Port size	Body function	Right end
M0	XX	X	XX	XX



Left End Section in relation to port #2 ← → **Right End Section in relation to port #3**

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LV / LVSS Series

Lockout valves are installed in pneumatic drop legs, or individual pneumatic control lines. In accordance with OSHA procedures, lockout valves are used during maintenance and service procedures of pneumatically (air) operated equipment.

- Used for compliance with OSHA 29 CFR part 1910
- 1/4" to 2" pipe sizes. NPT or BSPP
- Yellow cast aluminum body with red handle or stainless steel (NACE MR0175 / ISO 15156)
- Inline or surface mountable
- Built in port for pressure verification to meet ANSI B11 and PMMI B155 requirements

Material specifications

Description	LV / EZ	LVSS
Body:	Cast aluminum alloy	Stainless steel
Handle:	Plastic	Stainless steel
Spool:	Aluminum	Stainless steel
Seals:	Carboxylated nitrile	Carboxylated nitrile
Detent spring:	Stainless steel	Stainless steel
Grease:	Magnalube G †	Magnalube G †

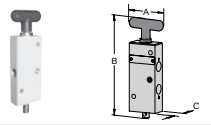
† Trademark Magnalube

Operating information

Operating pressure:	LV	EZ	LVSS
Compact	15 to 145 PSIG	–	–
Standard	15 to 300 PSIG	15 to 300 PSIG	15 to 300 PSIG
High flow	15 to 300 PSIG	–	–
Operating temperature:	40°F to 175°F	40°F to 175°F	30°F to 175°F

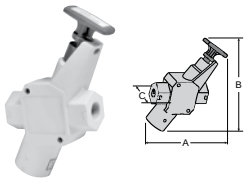
Operating media: Clean, dry, compressed air (5 micron)

Compact



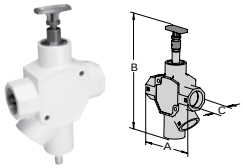
Port in / out	Port exhaust	A (in)	B (in)	C (in)	Wt (lb)	Part number *
1/4	3/8	2.3	6.5	1.0	0.9	**LV2N3B**
3/8	3/8	2.3	6.5	1.0	0.9	**LV3N3B**

Standard



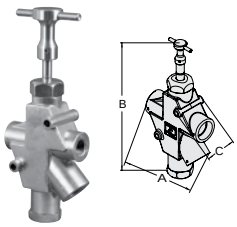
Port in / out	Port exhaust	A (in)	B (in)	C (in)	Wt (lb)	Part number *
3/8	3/4	6.4	8.8	2.0	2.0	**LV3N6B**
1/2	3/4	6.4	8.8	2.0	2.0	**LV4N6B**
3/4	3/4	6.4	8.8	2.0	2.0	**LV6N6B**
3/4	1-1/4	7.6	10.6	2.3	3.2	**LV6NAB**
1	1-1/4	7.6	10.6	2.3	3.2	**LV8NAB**
1-1/4	1-1/4	7.6	10.6	2.3	3.2	**LVANAB**

High Flow



Port in / out	Port exhaust	A (in)	B (in)	C (in)	Wt (lb)	Part number *
1-1/2	2	8.2	14.9	3.0	8.2	**LVBNCB**
2	2	8.2	14.9	3.0	8.2	**LVCNCB**

Stainless Steel



Port in / out	Port exh.	A (in)	B (in)	C (in)	Wt (lb)	Part number *
1/4	1/4	3.5	8.6	2.1	3.8	**LV2N2BSS**
3/8	1/2	4.3	10.5	1.8	6.0	**LV3N4BSS**
1/2	1/2	4.3	10.5	1.8	6.0	**LV4N4BSS**
3/4	1	6.0	14.1	2.5	13	**LV6N8BSS**
1	1	6.0	14.1	2.5	13	**LV8N8BSS**
1-1/2	2	8.2	18.5	4.0	35	**LVBNCBSS**
2	2	8.2	18.5	4.0	35	**LVCNCBSS**

* For BSPP ports, change 4th digit from "N" to "B"

☐ Most popular.

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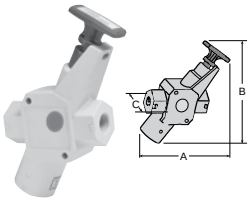
EZ Series

The EZ series meets all the same standards as the LV series with the added feature of a soft start when opened. There are still 2 detented positions for the handle (push close, pull to open), but when pulled open, an adjustable needle valve controls the rate of pressure build-up. This can protect equipment during start up after maintenance. The EZ is distinguisable from the LV series by the blue dot on the label.

EZ Series



Port in / out	Port exhaust	A (in)	B (in)	C (in)	Wt (lb)	Part Number *
3/8	3/4	6.4	8.8	2.0	2.1	**EZ03NB6**
1/2	3/4	6.4	8.8	2.0	2.1	**EZ04NB6**
3/4	3/4	6.4	8.8	2.0	2.1	**EZ06NB6**
3/4	1-1/4	7.7	10.8	2.3	3.2	**EZ06NBA**
1	1-1/4	7.7	10.8	2.3	3.2	**EZ08NBA**
1-1/4	1-1/4	7.7	10.8	2.3	3.2	**EZ0ANBA**

* For BSPP ports, change 5th digit from “N” to “B”

LV / EZ Accessories

High Flow Silencers

Pipe size	Part number NPT	Part number BSPT
3/8	**ES37MC**	**ESB37MC**
3/4	**ES75MC**	**ESB75MC**
1-1/4	**ES125MC**	**ESB125MC**
2	**ES200MC**	**ESB200MC**

Stainless Steel Mufflers

Pipe size	Part number NPT
1/4	**5500A2004**
1/2	**5500A4004**
1	**5500A6004**
2	**5500A9004 ****

** Nickel Plated

Pop-up Pressure Indicator

Brass – Part # 988A30 – Can be used on all LV or EZ series to provide visual verification of line exhaust

Stainless – Part# 1155H30 – Can be used on SS LV series to provide visual verification of line exhaust

Pressure Switch

- Part # PPS1-2C3-RHM (DIN 9.4mm connector)
- Part # PPS1-2C3-RWL (18” leads)
- Signal verification of line exhaust
- Field adjustable set point

☐ Most popular.

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

PL / VL Series

These are 4-Way, 3-Position, rotary disc, direct-operated air valves. Two different types of control are offered. The forged bronze disc and the cast iron surface upon which the disc works are ground and lapped to provide a leak-proof seal. Air pressure from the inlet port is confined beneath the disc, making the seal tighter as the pressure increases, yet friction between the lapped surfaces is so low that only 15 pounds of force is required to move the lever at 100 PSI line pressure. The need for packing to seal around the stem is eliminated.

Valve can be furnished for gasketing to a manifold on customer's machine or with an adaptor for tapped bottom porting.

Valves are detented.

Operating handles may be installed in any of four positions.

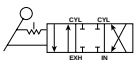
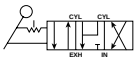
Operating information

Operating pressure: 0 to 150 PSI (0 to 1035 kPa)

Temperature range: 18°F to 200°F (-8°C to 93°C)

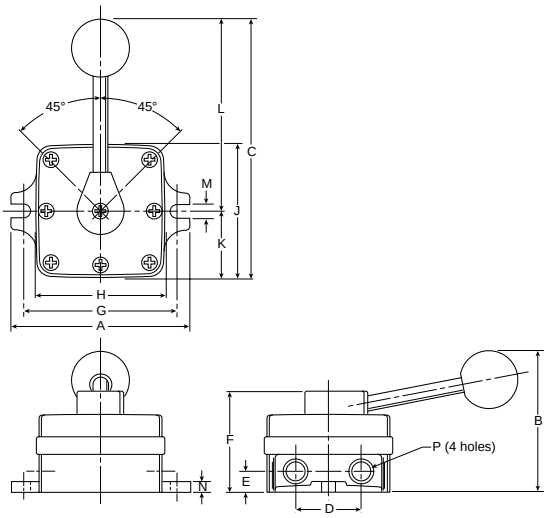
Lubrication: Filtered and lubricated air recommended for maximum valve life and minimum maintenance.

PL-VL Series Valves

Symbol	Port Size	Description	Cv	Part number
	1/4" NPT	4-way, 3-position, detent, closed center	2.5	**PL25**
	3/8" NPT	4-way, 3-position, detent, closed center	3.0	**PL37**
	1/2" NPT	4-way, 3-position, detent, closed center	6.2	**PL50**
	1/4" NPT	4-way, 3-position, detent, exhaust center	2.5	**VL25**
	3/8" NPT	4-way, 3-position, detent, exhaust center	3.0	**VL37**
	1/2" NPT	4-way, 3-position, detent, exhaust center	6.2	**VL50**

Service kits

Description	Valve size	Part number
Lever assembly service kits	PL25, PL25HP, PL37, PL37HP, VL25, & VL37	**PL2425BP**
	PL50, PL50HP & VL50	**PL2424BP**
Body gasket	PL25, PL25HP, PL37, PL37HP, VL25, & VL37	**P66837**
	PL50, PL50HP & VL50	**P66829**



PL-VL Dimensions

	A	B	C	D	E	F	G	H	J	K	L	M	N	P
PL-25 **VL-25**	4.75 (121)	3.81 (97)	6.81 (173)	1.69 (43)	.56 (14)	2.75 (70)	4.12 (105)	3.50 (89)	3.50 (89)	1.69 (43)	5.06 (129)	.34 (9)	.28 (7)	1/4 NPT
PL-37 **VL-37**	4.75 (121)	3.81 (97)	6.81 (173)	1.69 (43)	.56 (14)	.56 (14)	4.12 (105)	3.50 (89)	3.50 (89)	1.69 (43)	5.06 (129)	.34 (9)	.28 (7)	3/8 NPT
PL-50 **VL-50**	5.62 (143)	4.44 (113)	8.94 (227)	2.12 (54)	.66 (17)	3.25 (83)	5.00 (127)	4.38 (111)	4.38 (111)	2.12 (54)	6.75 (171)	.34 (9)	.34 (9)	1/2 NPT

inches (mm)

Most popular.

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

HV Valve Series

Features

- Compact and simple design
- Rotary disc, direct operated valves
- Side porting
- Detent action smooth lever actuation
- General pneumatic applications

Lubrication

Filtered and lubricated air recommended for maximum valve life and minimum maintenance.

Material specifications

Cover	Zinc
Body	Aluminum
Seals	Polyurethane

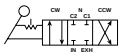
Operating information

Operating pressure: 0 to 150 PSI (0 to 10 bar)

Temperature range: 32°F to 166°F (0°C to 60°C)

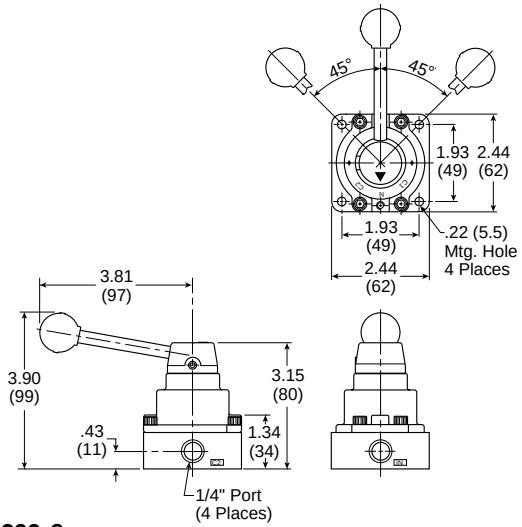
Lubrication: Filtered and lubricated air recommended for maximum valve life and minimum maintenance.

HV Valve Series

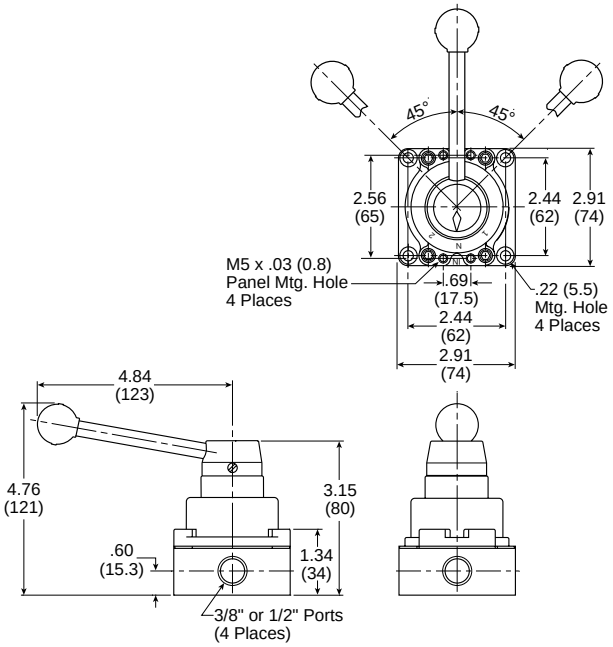
Symbol	Port size	Description	Cv (ANSI)	Cv (JIS)	Part number
	1/4" NPT	4-way, 3-position	0.5	0.4	**HVN4200-8**
	3/8" NPT	4-way, 3-position	1.4	2.72	**HVN4400-10**
	1/2" NPT	4-way, 3-position	1.5	3.26	**HVN4400-15**

Service kits

Description	Valve size	Part number
Disk & seal service kits	HV4200	**HVRK420001**
	HV4400	**HVRK440001**



HVN4200-8



HVN4400-10, 15

Most popular.

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Richland, Michigan
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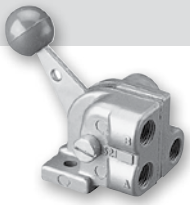
Hand Operated Sliding Seal Valves

Sliding seal valves provide 3 or 4-Way directional control in a compact body size. Comfortable hand lever is easy to operate and maintains set position. Disc type valve has minimum number of moving parts. Valves should be used with filtered and lubricated air.

***CAUTION*:**
Install guards on all hand operated valves.
Accidental operation can cause personal injury.



1/8" 3-Way

1/4" 4-Way

Material specifications

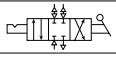
Internal components	Brass, stainless steel
Body	Die cast zinc
Seals	Buna N

Operating information

Operating pressure: Max. 200 PSIG air only
Min. 26" Hg vacuum

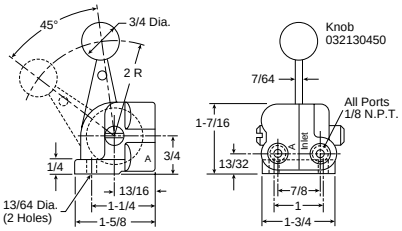
Temperature range: -40°F to 212°F (-40°C to 100°C)
(If it is possible that the ambient temperature may fall below freezing, the medium must be moisture free to prevent internal damage or unpredictable behavior.)

Hand Operated Sliding Seal Valve

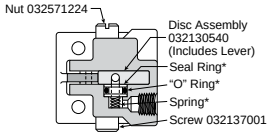
Symbol	Port size	Function	Cv (Avg)	Service kit*	Part number
	1/8"	3-way, 2-position, detented	0.54	**032130899**	**032130599**
	1/8"	4-way, 2-position, detented	0.54	**032130899**	**032140299**
	1/4"	3-way, 2-position, detented	1.25	**008230299**	**008230109**
	1/4"	4-way, 3-position, detented, center blocked	1.25	**008230299**	**008240109**

Note: 3-Way exhaust passage is through an untapped hole in bottom side of valve.

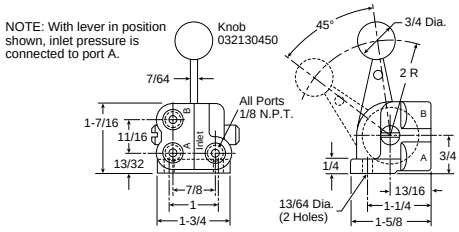
1/8" 3-Way 032130599



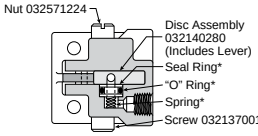
Service Kit 032130899*



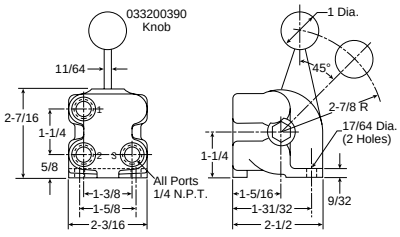
1/8" 4-Way 032140299



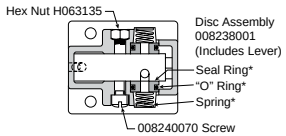
Service Kit 032130899*



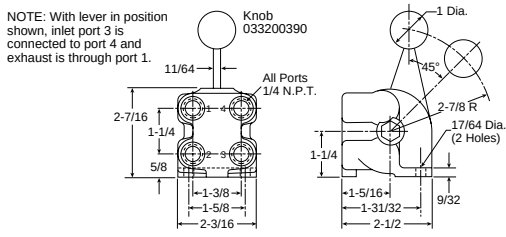
1/4" 3-Way 008230109



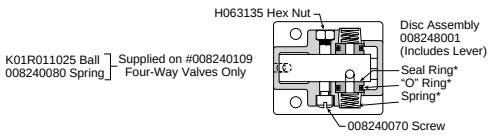
Service Kit 032130899*



1/4" 4-Way 008240109



Service Kit 032130899*



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* Service kits contain asterisk items

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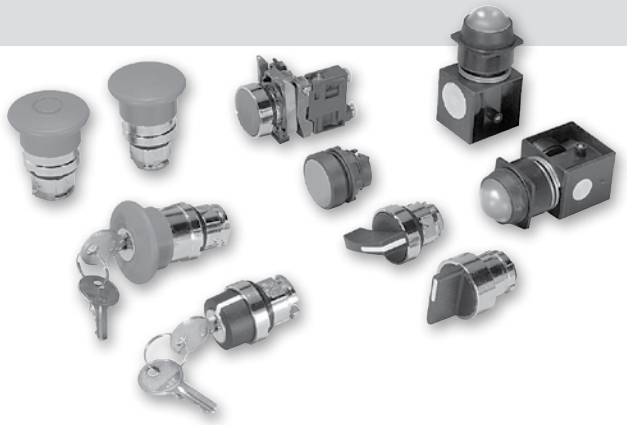
Control Panel Products

HUMAN-MACHINE DIALOG requires devices such as push buttons and selector switches to provide command inputs. A wide variety of these devices are available to meet most application needs; in both pneumatic and electrical switch bodies. All of these devices use the 22 mm (7/8") mounting standard.



Complete Assemblies– 3/2 Valve Bodies with 5/32" Instant Straight Connections

Flush Push Buttons

	Color	Function	Type of switching*	Part number
	Black	Spring return	NNP	**PXBB3111BA2**
	Green			**PXBB3111BA3**
	Red			**PXBB3111BA4**
	Black	Spring return	NNP+NP	**PXBB3251BA2**
	Black	Spring return	Single universal 3-way	**PXBB4131BA2**
	Green			**PXBB4131BA3**
	Red			**PXBB4131BA4**
	Black	Spring return	Dual universal 3-way	**PXBB4231BA2**

* Type of switching: Universal 3-way: valve can be connected either as NP or NNP as required by connecting the primary air supply to port 1 or port 3.

Note: Mount up to three valves on mounting ring.

Mushroom Head Push Buttons (40mm Diameter)

	Color	Function	Type of switching*	Part number
	Black	Spring return	NNP	**PXBB3111BC2**
	Red	Push-pull		**PXBB3111BT4**
	Red	Push-pull	NP	**PXBB3121BT4**
	Black	Spring return	Single universal 3-way	**PXBB4131BC2**
	Red	Push-pull		**PXBB4131BT4**

* Type of switching: Universal 3-way: valve can be connected either as NP or NNP as required by connecting the primary air supply to port 1 or port 3.

Note: Mount up to three valves on mounting ring.

Selector Switches

	Color	Function	Type of switching*	Part number
	Black	2 maintained positions with std. handle	NNP	**PXBB3111BD2**
	Black		NNP+NNP	**PXBB3211BD2**
	Black		NNP+NP	**PXBB3251BD2**
	Black	3 maintained positions with std. handle	NNP+NNP	**PXBB3211BD3**
	Black		NNP+NP	**PXBB3251BD3**
	Black	3 positions, spring return to center with long handle	NNP+NNP	**PXBB3211BJ5**
	Black	2 maintained positions with std. Handle	Single universal 3-way	**PXBB4131BD2**
	Black	2 maintained positions with std. handle	Dual universal 3-way	**PXBB4231BD2**
	Black	3 maintained positions with std. handle	Dual universal 3-way	**PXBB4231BD3**
	Black	3 maintained positions with long handle	Dual universal 3-way	**PXBB4231BJ5**

* Type of switching: Universal 3-way: valve can be connected either as NP or NNP as required by connecting the primary air supply to port 1 or port 3.

☐ Most popular.

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For Use With PXBB Valve Bodies and ZBE Electrical Switch Bodies

Push Buttons

	Color	Function	Type	Plastic head** Part number	Metal head* Part number
	Black	Spring return	Flush	**ZB5AA2**	**ZB4BA2**
	Green			**ZB5AA3**	**ZB4BA3**
	Red			**ZB5AA4**	**ZB4BA4**
	Yellow			—	**ZB4BA5**
	Blue			—	**ZB4BA6**
	Black	Spring return	Extended	**ZB5AL2**	**ZB4BL2**
	Green			**ZB5AL3**	**ZB4BL3**
	Red			**ZB5AL4**	**ZB4BL4**
	Yellow			—	**ZB4BL5**
	Black	Spring return	Booted	—	**ZB4BP2**
	Green			—	**ZB4BP3**
	Red			—	**ZB4BP4**
	Black	Detent 2 position	Flush	—	**ZB4BH02**
	Green			—	**ZB4BH03**
	Red			—	**ZB4BH04**

* ZB4*** model numbers are metal head operators
** ZB5*** model numbers are plastic head operators

Selector Switches

Standard black handle

	Description	Function	Part number*
	Maintained	2 positions	**ZB4BD2**
	Spring return from right to left		**ZB4BD4**
	Maintained	3 positions	**ZB4BD3**
	Spring return to center from left and right		**ZB4BD5**
	Maintained right spring return from left to center	3 positions	**ZB4BD7**
	Maintained left spring return from right to center	3 positions	**ZB4BD8**

Long Black Handle

	Maintained	2 positions	**ZB4BJ2**
	Spring return from right to left		**ZB4BJ4**
	Maintained	3 positions	**ZB4BJ3**
	Spring return to center from left and right		**ZB4BJ5**

* ZB4*** model numbers are metal head operators

Mushroom Head Push Buttons

	Color	Function	Description	Part number*
	Black	Spring return	Ø 40mm head	**ZB4BC2**
	Green			**ZB4BC3**
	Red			**ZB4BC4**
	Black	Latching push-pull		**ZB4BT2**
	Black	Spring return	Ø 60mm head	**ZB4BR2**
	Green			**ZB4BR3**
	Red			**ZB4BR4**

* ZB4*** model numbers are metal head operators

For Push Buttons and Visual Indicators

Mounting Ring for Valve Bodies, Switch Bodies and Operating Heads

Description		Part number
	Metal mounting ring	**ZB4BZ009**
	Plastic mounting ring	**ZB5AZ009**

Note: To release push button from mounting ring, pull lever on top of mounting ring up and remove push button operator. To assemble push button operator to mounting ring, align arrows and snap into place.

Key Operated Selectors

	Key withdrawal	Function	Part number*
	Left	2 maintained positions	**ZB4BG2**
	Left and right		**ZB4BG4**
	Center	3 maintained positions	**ZB4BG3**
	Left and right		**ZB4BG5**
	Center	3 positions 2 spring return to center	**ZB4BG7**

* ZB4*** Model numbers are metal head operators

Mushroom Head Push Buttons with Key Select

	Color	Function	Description	Part number*
	Red	Latching turn to release	Ø 40mm head	**ZB4BS844**
	Red	Key latching		**ZB4BS944**

* ZB4**** model numbers are metal head operators

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Richland, Michigan
www.parker.com/pneumatics

For Use With 2B4*** Metal Operating Heads

3/2 Valve Bodies with Mounting Ring

PXBB3111B

PXBB4131B

Connections	Function	Type of switching*	Part number
5/32" Instant	3/2	NNP	**PXBB3111B**
5/32" Instant	3/2	NP	**PXBB3121B**
5/32" Instant	3/2	Universal 3-way	**PXBB4131B**

* NNP: Normally non-passing.

Note: Mount up to 3 valves on mounting ring for push buttons.
Mount up to 2 valves on mounting ring for selector switches, valves cannot be mounted in center position.

Additional Valve Bodies

PXBB3911

PXBB4932

PXBB4931

Connections	Function	Type of switching*	Part number
5/32" instant straight	3/2	NNP	**PXBB3911**
5/32" instant swivel			**PXBB3912**
5/32" instant straight	3/2	NP	**PXBB3921**
5/32" instant swivel			**PXBB3922**
5/32" instant straight	3/2	Universal	**PXBB4931**
5/32" instant swivel		3 way	**PXBB4932**

* NNP: Normally non-passing.

For Push Buttons and Visual Indicators

Legend Plates for PXBB Devices (22mm)

	Description	Part number
Without text for customer engraving		
	Black / red background (white letters)	**ZBY2101**
	Yellow / white background (black letters)	**ZBY4101**
With text for push buttons		
	Start	**ZBY2303**
	Stop	**ZBY2304**
	Forward	**ZBY2305**
	Reverse	**ZBY2306**
	Up	**ZBY2307**
	Down	**ZBY2308**
	Right	**ZBY2309**
	Left	**ZBY2310**
	On	**ZBY2311**
	Off	**ZBY2312**
	Open	**ZBY2313**
	Close	**ZBY2314**
	Inch	**ZBY2321**
	Reset	**ZBY2323**
	Power On	**ZBY2326**
	Slow	**ZBY2327**
	Fast	**ZBY2328**
	Emergency stop	**ZBY2330**
	Run	**ZBY2334**
With text for 2-position selectors		
	Off On	**ZBY2367**
With text for 3-position selectors		
	Hand Off Auto	**ZBY2387**

Blank Legend Plates for Inscription

For PXBB devices (2 lines of 11 characters maximum)

Please indicate the required text when ordering.
(Allow 3 weeks for delivery)

Description	Part number
Black background / White letters	**ZBY2002**

For 22mm Visual Indicators Only

2 lines of 11 characters maximum

Please indicate the required text when ordering.
(Allow 3 weeks for delivery)

Description	Part number
Black background / white letters	**ZB2BY2002**

Electrical Switch Bodies

When combined with pneumatic valves ,these contact blocks allow different forms of power to be provided from a single push button. Can be mounted with both types of valves PXBB3 / PXBB4.

	Type of contact	Part number
	Normally open (NO)	**ZBE101**
	Normally closed (NC)	**ZBE102**

Note: Plastic mounting ring ZB5AZ009 to be used with ZB5 plastic operating heads. Metal mounting ring ZB4BZ009 to be used with ZB4 metal operating heads.

Electrical specification: 240V, 10 Amp

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Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

With 5/32" Instant Connections

22mm Visual Indicators

Black Plastic Bezel	Color	Part number "ON" indicator	Part number "OFF" indicator
	Green	**PXVF131**	**PXVF1213**
	Red	**PXVF141**	**PXVF1214**
	Yellow	**PXVF151**	**PXVF1215**
	Blue	**PXVF161**	**PXVF1216**
	White	**PXVF111**	**PXVF1211**

Notes: The Pneumatic Indicators are black in one position and colored in the other. The colored position corresponds either to the presence of a pressure ("ON" Indicator) or the absence of pressure ("OFF" Indicator).

Two-Hand Controls

	Connections	Part number
	5/32" Instant	**PXPC111**

Mounting Accessories

	Color	Description	Part number
	—	Plastic head (ZB5) mounting nut tightening tool	**ZB5AZ905**
	Black plastic	Guard for 40mm	**ZBZ1602**

Two-Hand Control Module

	Connections	Part number
	5/32" Instant	**PXPA11**

Two-Hand Control Module Guard

	Base component	Part number
	PXPC111	**PPRL15**

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Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Sensing

To achieve the sensing or feedback function, pneumatic sensors can be:

- Limit switches in a variety of sizes and configurations
- Pressure switches with many adjustable ranges
- Components designed specifically for pneumatic technology using pressure variation, air bleed or blocking for detection.

A wide variety of pneumatic sensors are available to suit any application requirement.

Material specifications

Body	Zinc alloy
Poppets	Polyurethane
Seals	Nitrile (Buna N)

Operating information

Operating pressure:	40 to 115 PSIG (3 to 8 bar)
Operating temperature:	
Operating	32°F to 122°F (0°C to 50°C)
Storage	-22°F to 140°F (-30°C to 60°C)

3/2 Miniature Direct Acting Limit Switches

1/16" I.D. Internal Orifice

	Actuator	Type of switching*	Flow SCFM (Nl/min)	Nominal bore	Connection	Part number
	Steel plunger operating levers available	NNP	2.2 (60)	1/16" (1.5mm)	5/32" instant	**PXCM111**
					10-32 UNF	**PXCM115**
	Plastic roller	NNP	3.0 (85)		5/32" instant	**PXCM121**
					10-32 UNF	**PXCM125**

7/64" I.D. Internal Orifice

	Plastic roller	NNP			5/32" instant	**PXCM521**

Actuators For Steel Plunger (Use with PXCM11*)

	Plastic roller lever	**PXCZ11**
	Plastic roller lever, one way trip	**PXCZ12**

3/2 Compact Pilot Operated Limit Switches

7/64" I.D. Internal Orifice, 5/32" Instant Connections, Pipeable Exhaust Port

	Actuator	Type of switching*	Flow SCFM (Nl/min)	Nominal bore	Connection	Part number
	Steel plunger operating levers available	NNP	8.8 (250)	7/64" (2.5mm)	5/32" instant	**PXCM601A110**
	Steel roller plunger					**PXCM601A102**
	90° Steel roller plunger					**PXCM601A103**

* NNP: Normally non-passing.

☐ Most popular.

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Standard Duty Limit Switches – "K" Series

Plunger Operated Limit Switches
1/8" I.D. Internal Orifice, 5/32" Instant Connections, Pipeable Exhaust Port

	Actuator	Type of switching*	Flow SCFM (Nl/min)	Nominal bore	Connection	Part number
	Steel plunger	NNP	7.4 (210)	1/8" (3mm)	5/32" instant	**PXCK21101**
		NP				**PXCK22101**
	Steel roller plunger	NNP				**PXCK21102**
		NP				**PXCK22102**
	Plastic roller plunger	NNP				**PXCK21121**
		NP				**PXCK22121**
	Cats whisker	NNP				**PXCK21106**
		NP				**PXCK22106**

Roller Operated Limit Switches
1/8" I.D. Internal Orifice, 5/32" Instant Connections, Pipeable Exhaust Port

	Actuator	Type of switching*	Flow SCFM (Nl/min)	Nominal bore	Connection	Part number
	Fixed delrin roller lever multi-function head actuates: - from right and left - from right - from left	NNP	7.4 (210)	1/8" (3mm)	5/32" instant	**PXCK2110031**
		NP				**PXCK2210031**
	Adjustable delrin roller lever multi-function head actuates: - from right and left - from right - from left	NNP				**PXCK2110041**
		NP				**PXCK2210041**

Separate Pneumatic Switch Bodies

	Actuator	Type of switching*	Part number
	For use with ZCK series operating heads	NNP	**PXCK211**
		NP	**PXCK221**

Pneumatic Switch Bodies with Rotary Heads

	Actuator	Type of switching*	Part number
	Multi-function head actuates: - from right and left - from right - from left	NNP	**PXCK21100**
		NP	**PXCK22100**

* NNP: Normally non-passing.
NNP: Normally passing.

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Standard Duty Limit Switches – "K" Series

Operating Heads
For Use With PXCK Switch Bodies

	Actuator	Description	Part number
Rotary operated			
	—	Die cast zinc	**ZCKG00**
Plunger operated			
	Roller plunger	Plunger operated	**ZCKD02**
	Whisker		**ZCKD06**
	Rod plunger		**ZCKD10**
	Delrin roller lever on plunger		**ZCKD21**
	Steel roller lever on plunger		**ZCKD23**

Operating Levers for Rotary Heads
For Use With Rotary Head ZCKG00

	Actuator	Description	Part number
ZCKY81 ZCKY91	Steel 1/8" square	Rod levers	**ZCKY51**
	Fiberglas 1/8" dia. round		**ZCKY52**
	Plastic spring rod lever		**ZCKY81**
	Metal spring rod lever		**ZCKY91**
	Delrin roller lever	Roller levers	**ZCKY11**
	Steel roller lever		**ZCKY13**
	Adjust. delrin roller lever		**ZCKY41**
	Adjust. steel roller lever		**ZCKY43**

Heavy Duty Limit Switches – "J" Series

Switch Bodies Only

	Type of switching*	Part number
PXCJ117	NNP	**PXCJ117**
	NP	**PXCJ127**

Operating Levers for Rotary Heads
Die Cast Zinc. For Use With PXCJ Switch Bodies

	Operator	Description	Part number
ZC2JY11	Delrin roller	Spring return	**ZC2JY11**
ZC2JY31	Steel roller		**ZC2JY13**
	Offset delrin roller		**ZC2JY21**
	Plastic spring rod		**ZC2JY81**
	Metal spring rod		**ZC2JY91**
ZC2JY81	Delrin roller	Adjustable roller	**ZC2JY31**
ZC2JY91	Offset delrin roller		**ZC2JY41**
		Rod lever	**ZC2JY51**
	Single track, delrin roller	Fork lever	**ZC2JY71**
	Double track, delrin rollers		**ZC2JY61**

* NNP: Normally non-passing.
NNP: Normally passing.

Separate Pneumatic Switch Bodies

	Direction of actuator	Type of switching*	Part number
PXCJ11701	Right & left, spring return	NNP	**PXCJ11701**
	Right or left, spring return		**PXCJ11705**
	Right & left, spring return	NP	**PXCJ12701**
	Right or left, spring return		**PXCJ12705**

Top Plunger & Rotary Operating Heads
Die Cast Zinc. For Use With PXCJ Switch Bodies

	Operation	Description	Part number
Top Plunger Type			
ZC2JE70	Top push	Spring return	**ZC2JE61**
	Top roller push		**ZC2JE62**
	Side push		**ZC2JE63**
	Cat's whisker		**ZC2JE70**
Rotary Type			
ZC2JE01	From left & right	Spring return	**ZC2JE01**
	Counterclockwise from right		**ZC2JE02**
	Clockwise from left		**ZC2JE03**
	From left or right		**ZC2JE05**
	Maintained positions		**ZC2JE09**

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The blocking valve is a single acting spring return 2/2 valve in a fitting format. The device requires a pneumatic pilot signal to open, which allows free flow of air or neutral gas. As long as a pilot signal is present, the device will remain open. When the pilot signal is removed, the internal spring will close the blocking valve, bubble tight.

These devices have two primary design uses: (1) to prevent unwanted gravity induced motion in cylinders during shut down procedures or during periods of lost supply pressure and (2) freezing the cylinder position by using a blocking valve at each end of the cylinder. Application needs such as tool or work piece protection, horizontal indexing or inspection stops are often satisfied by these devices.

Material specifications

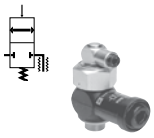
Body	Zinc alloy

Operating information

Operating pressure:	0 to 150 PSIG (0 to 10.3 bar)
Operating temperature:	
Operating	5°F to 140°F (-15°C to 60°C)
Storage	-40°F to 160°F (-40°C to 70°C)

For Cylinder Mounting
(Can also be mounted in Threshold Sensor Banjo)

With Instant Tube Fittings

BSPP					NPT			
Symbol	Connection for pilot	Cylinder port thread (male)	Connection for tube	Part number	Connection for pilot	Cylinder port thread (male)	Connection for tube	Part number
 PWBA3469	4mm Tube	1/8"	6mm	**PWBA1468**	5/32" Tube	1/8"	1/4"	**PWBA3468**
		1/4"	6mm	**PWBA1469**		1/4"	1/4"	**PWBA3469**
		1/4"	8mm	**PWBA1489**		3/8"	3/8"	**PWBA3493**
		3/8"	8mm	**PWBA1483**		1/2"	1/2"	**PWBA3412**
		3/8"	10mm	**PWBA1493**				
		1/2"	12mm	**PWBA1412**				

With Threaded Connections and Tube Pilot Port

BSPP					NPT			
Symbol	Connection for pilot	Cylinder port thread (male)	Connection from valve (female)	Part number	Connection for pilot	Cylinder port thread (male)	Connection from valve (female)	Part number
PWBA3833	4mm Tube	1/8"	1/4"	**PWBA1898**	5/32" * Tube	1/8"	1/8"	**PWBA3888**
		1/4"	1/4"	**PWBA1899**		1/4"	1/4"	**PWBA3899**
	M5 Female	3/8"	3/8"	**PWBA1833**		3/8"	3/8"	**PWBA3833**
		1/2"	1/2"	**PWBA1822**		1/2"	1/2"	**PWBA3822**

* Instant fitting

With Threaded Connections and Threaded Pilot Port

NPT			
Connection for pilot	Cylinder port thread (male)	Connection from valve	Part number
1/8" pipe	1/8"	1/8"	**PWBA38887**
	1/4"	1/4"	**PWBA38997**
	3/8"	3/8"	**PWBA38337**
	1/2"	1/2"	**PWBA38227**

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The plug-in threshold sensors provide feedback information on pneumatic cylinder status in either pneumatic or electrical outputs. Mounted into the cylinder port, these devices monitor the back pressure of the cylinder's exhaust. When the cylinder's piston stops, the back pressure rapidly drops and the threshold sensor provides the desired output. Ideal for variable stroke applications such as robotics where other sensor type devices such as limit switches are impractical, these devices provide a signal whenever the cylinder stops motion.

The threshold sensor consists of two complementary sub assemblies (1) the banjo fitting and (2) the plug-in sensor element. In all cases, the sensor is easily plugged into the banjo fitting and locked in place with a spring clip. The banjo fitting is designed to accept (piggy backed) other functional fittings such as flow controls or blocking valves. Simply select the sensor based on the type feedback signal that best fits the application.

Material specifications

Body	Thermoplastic
Mounting screw	Brass

Operating information

Operating pressure:	0 to 150 PSIG (0 to 10.3 bar)
Operating temperature:	
Operating	5°F to 140°F (-15°C to 60°C)
Storage	-40°F to 160°F (-40°C to 70°C)

Banjo Sockets (with Sensor Clip)

	Port size	Wrench	Part number
	10-32	5/16" Hex	**PWSB1557**
	1/8"	3/16" Allen	**PWSB1887**
	1/4"	5/16" Allen	**PWSB1997**
	3/8"	3/8" Allen	**PWSB1337**
	1/2"	1/2" Allen	**PWSB1227**

Plug-in Sensors

	Output	Connection	Part number
	Pneumatic	5/32" push-in	**PWSP111**
	Electrical	3-wire cable (6 ft)	**PWSM1012**

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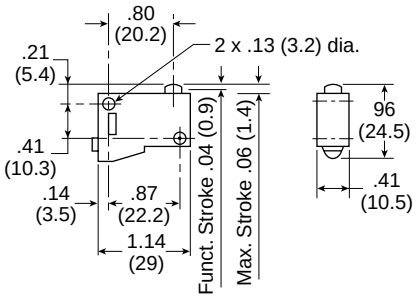
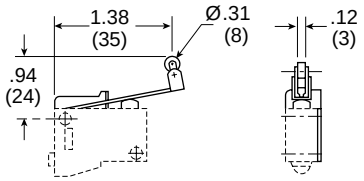
Miniature Limit Switches

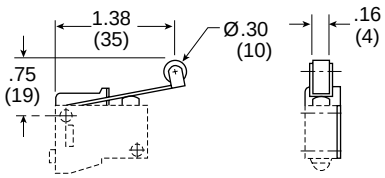
PXCM111



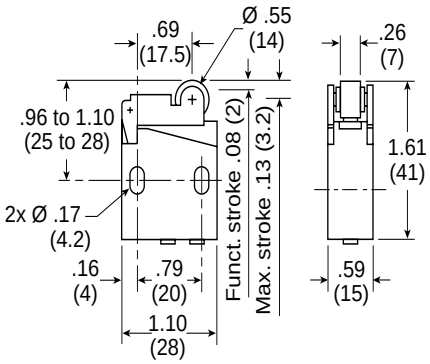
PXCZ12



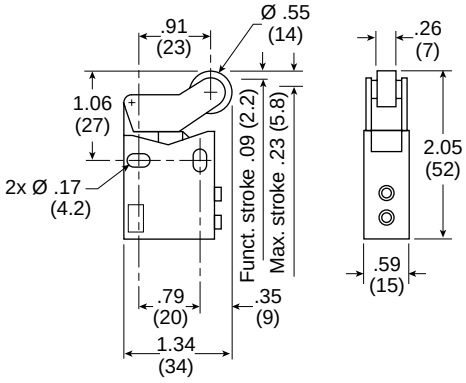
PXCZ11



PXCM121, PXCM131

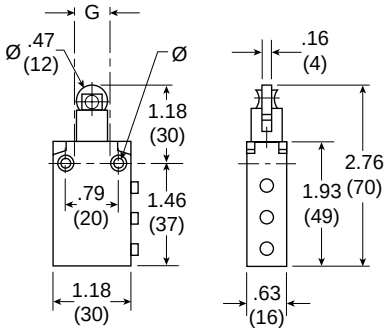


PXCM521



Compact Limit Switches

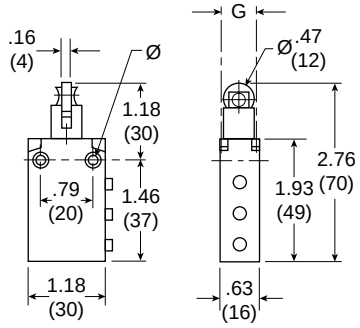
PXCM601A102



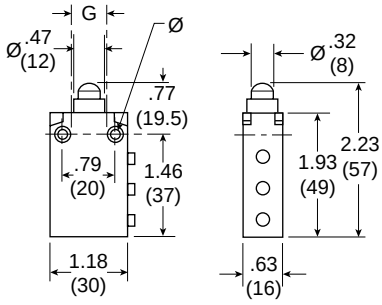
Ø:
2 mounting holes Ø .17" (4.3)
2 countersunk Ø .32" (8.2)
depth 4 mm

G:
top mounting holes, 2 x M5
.71" (18 mm) centers

PXCM601A103



PXCM601A110



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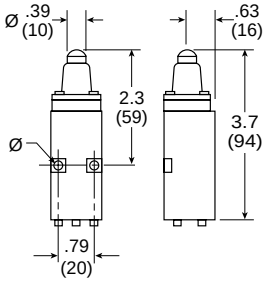
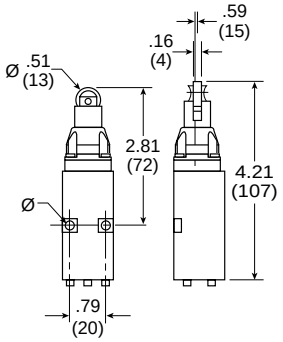
K Series

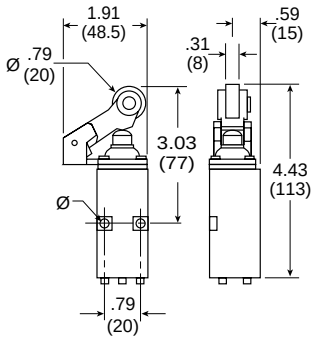
PXCK21101, PXCK22101



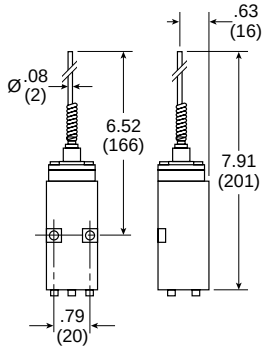
PXCK21102, PXCK22102



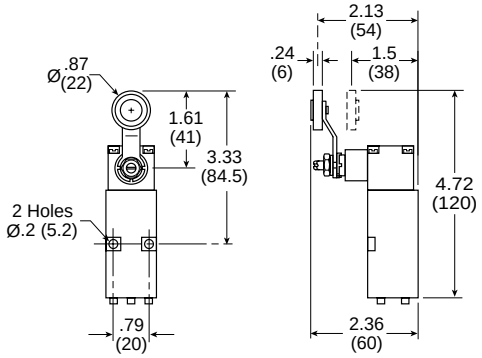
PXCK21121, PXCK22121



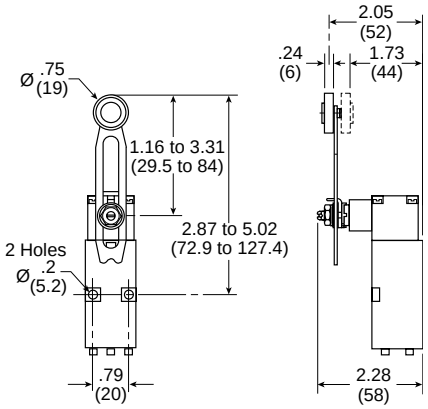
PXCK21106, PXCK22106



PXCK2110031, PXCK2210031

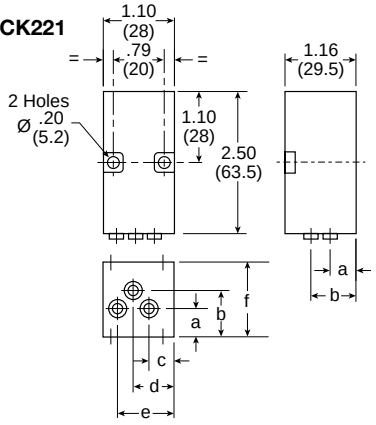


PXCK2110041, PXCK2210041



Pneumatic Switch Bodies

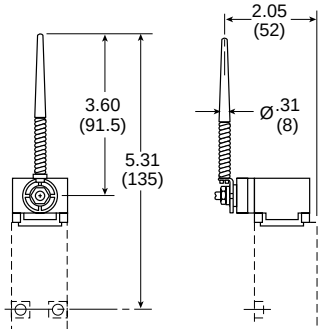
PXCK211, PXCK221



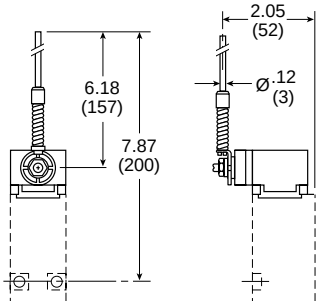
	inch	mm
a	.39	10
b	.77	19.5
c	.35	9
d	.61	15.5
e	.87	22
r	1.66	29.5

Rotary Heads with Operating Levers

ZCKY81



ZCKY91



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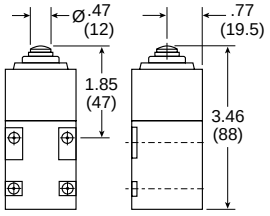
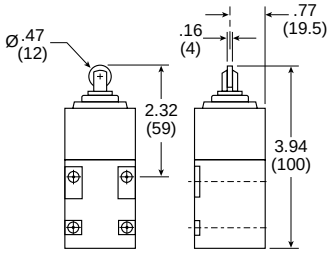
J Series

Switch Body With Plunger Heads

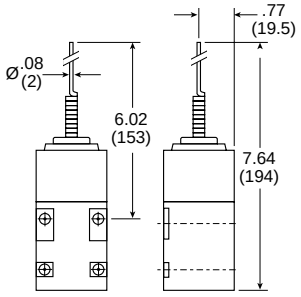
With ZC2JE61



With ZC2JE62

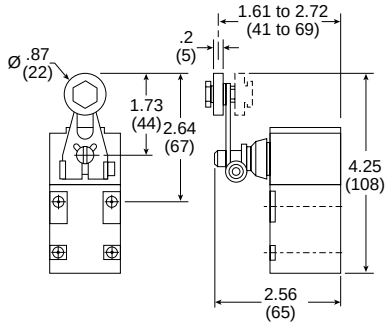


With ZC2JE70

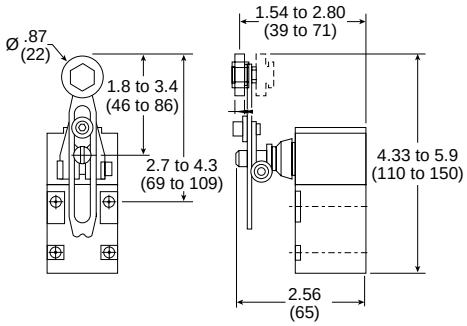


Switch Body With Rotary Heads and Operating Levers

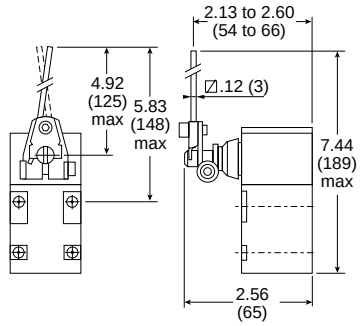
With ZC2JY11



With ZC2JY31

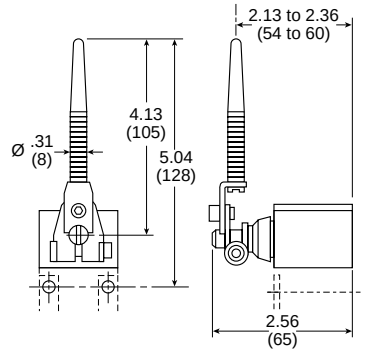


With ZC2JY51

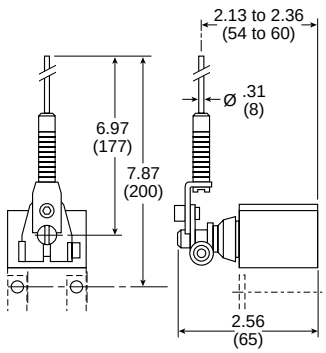


Rotary Heads With Operating Levers

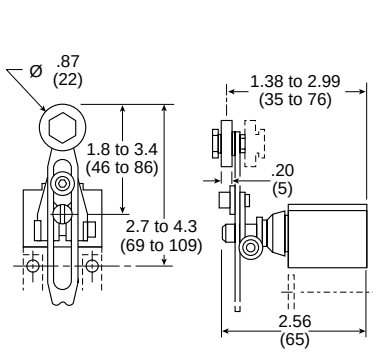
ZC2JY81



ZC2JY91

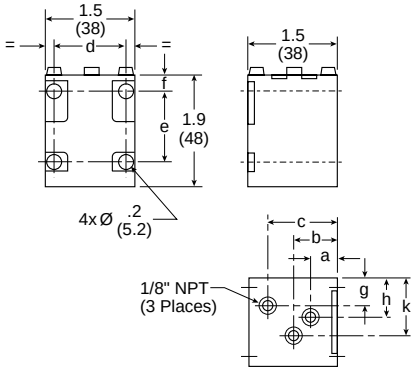


ZC2JY41



Pneumatic Switch Bodies

PXCJ117, PXCJ127



	inch	mm
a	.47	12
b	.75	19
c	1.16	29.5
d	1.14 to 1.18	29 to 30
e	1.18	30
f	.28	7
g	.43	11
h	.51	13
k	.94	24

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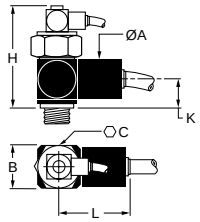
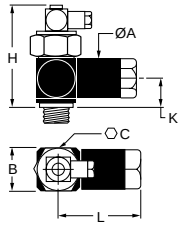
Blocking Valves

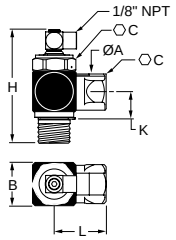
PWBA14/34



PWBA18/38



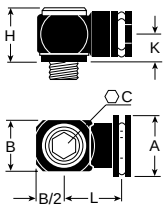
PWBA38



ØA	B	C	K	H	L	Flow*	Part number
0.86" (22)	0.82" (21)	0.94" (24)	0.53" (13.5)	2.32" (59)	1.54" (39)	14.8	**PWBA1468/3468**
0.86" (22)	0.82" (21)	0.94" (24)	0.53" (13.5)	2.09" (53)	1.54" (39)	19.4	**PWBA1469/3469 PWBA1489**
1.06""(27)	1.10" (28)	0.94" (24)	0.55" (14)	2.09" (53)	1.98" (50)	45.9	**PWBA1483 PWBA1493/3493**
1.22" (31)	1.30" (33)	1.30" (33)	0.94" (24)	2.59" (66)	2.59" (66)	81.2	**PWBA1412/3412**
0.86" (22)	0.82" (21)	0.94" (24)	0.53" (13.5)	2.32" (59)	1.71" (43.5)	14.8	**PWBA1898/3888**
0.86" (22)	0.82" (21)	0.94" (24)	0.53" (13.5)	2.09" (53)	1.71" (43.5)	19.4	**PWBA1899/3899**
1.06" (27)	1.10" (28)	0.94" (24)	0.55" (14)	2.09" (53)	2.18" (55)	45.9	**PWBA1833/3833**
1.22" (31)	1.30" (33)	1.30" (33)	0.94" (24)	2.59" (66)	2.47" (63)	81.2	**PWBA1822/3822**
0.75" (19)	0.87" (22)	0.83" (21)	0.67" (17)	2.20" (56)	1.73" (44)	14.8	**PWBA38887**
0.75" (19)	0.87" (22)	0.83" (21)	0.67" (17)	2.20" (56)	1.73" (44)	19.4	**PWBA38997**
1.06" (27)	1.18" (30)	1.06" (27)	0.91" (23)	2.64" (67)	1.42" (36)	45.9	**PWBA38337**
1.06" (27)	1.18" (30)	1.06" (27)	0.91" (23)	2.64" (67)	1.42" (36)	81.2	**PWBA38227**

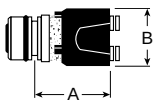
Threshold Sensors

Banjo Socket



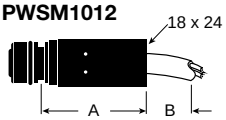
A	B	C	H	K	L	Part number
.98 (25)	.43 (11)	5/16" Hex	.79 (20)	.40 (10)	.67 (17)	**PWSB1557**
.98 (25)	.63 (16)	3/16" Allen	.71 (18)	.40 (10)	.79 (20)	**PWSB1887**
.98 (25)	.83 (21)	5/16" Allen	.71 (18)	.40 (10)	.87 (22)	**PWSB1997**
.98 (25)	1.10 (28)	3/8" Allen	.79 (20)	.47 (12)	.98 (25)	**PWSB1337**
.98 (25)	1.30 (33)	1/2" Allen	.93 (24)	.55 (14)	1.02 (26)	**PWSB1227**

PWSP111



A	B	Part number
.87 (22)	.79 (20)	**PWSP111**
1.26 (32)	.79 (20)	**PWSM1012**

PWSM1012



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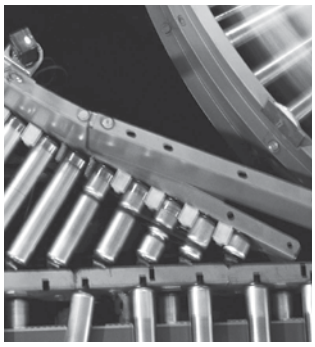

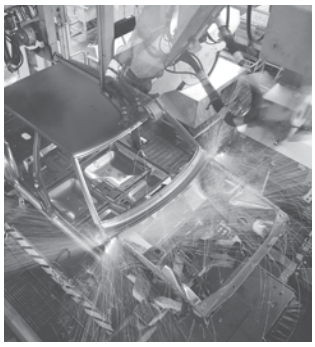

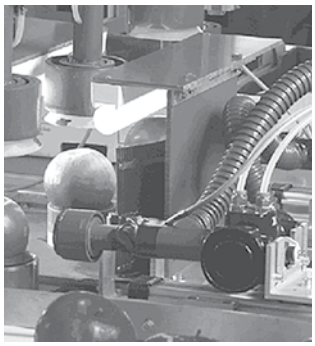

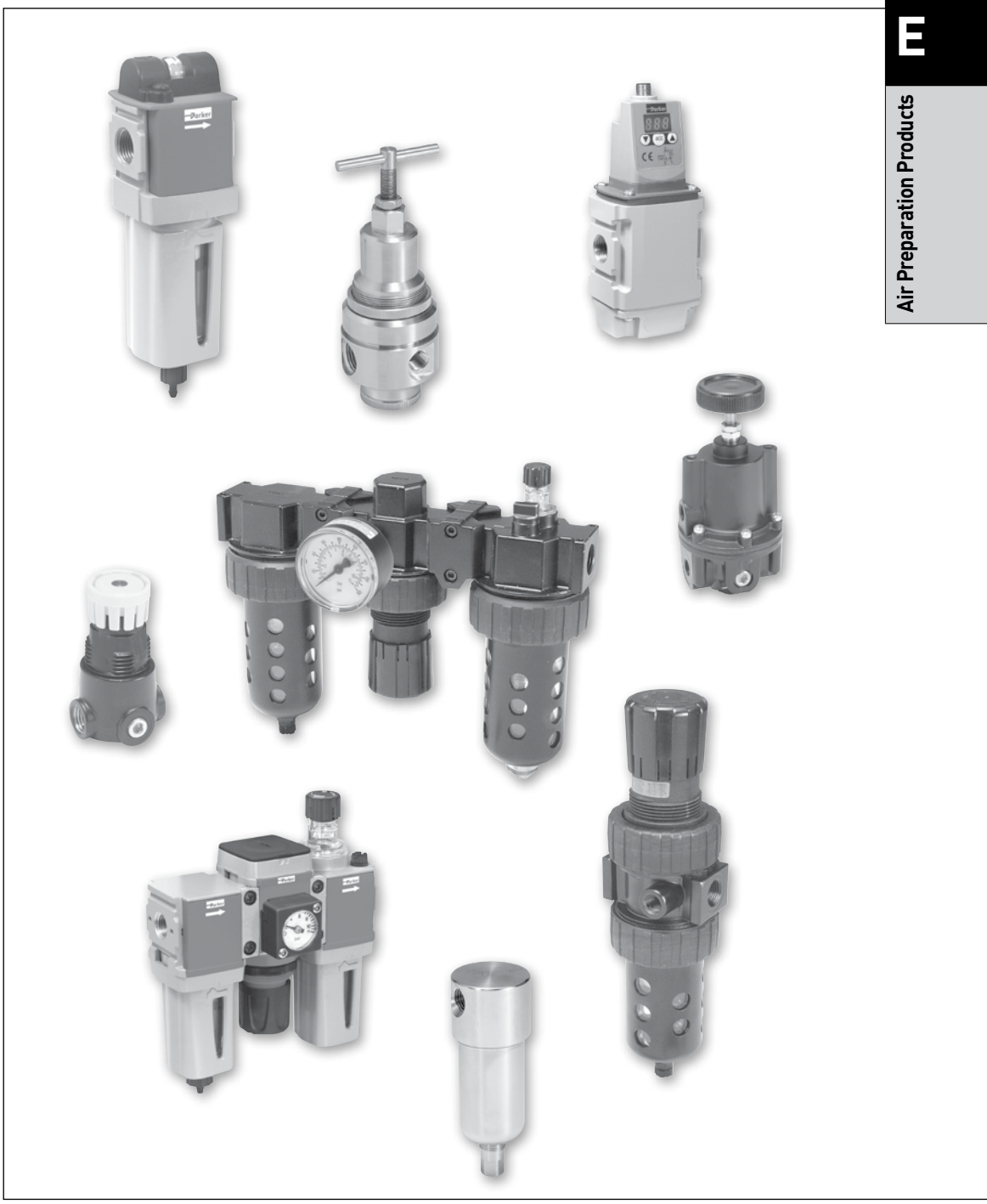

Air Preparation Products

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Air Preparation Products

Global FRL's

- Port size: 1/4 through 3/4 inch
- Maximum supply pressure: 300 PSIG
- Operating temperature: -13°F through 150°F
- Filters, regulators, filter / regulators, lubricators and accessories

E3

General Industrial FRL's

- Port size: 1/8 through 3 inch
- Maximum supply pressure: 250 PSIG
- Operating temperature: 32°F through 150°F
- Filters, regulators, filter / regulators, lubricators and accessories

E83

Prep-Air II FRL's

- Compact & standard
- Port size: 1/4 through 3/4 inch
- Filters, regulators, filter / regulators, lubricators and accessories
- Operating temperature: 32°F through 175°F
- Point of use applications
- Modular construction

E44

Stainless Steel FRL's

- Port sizes: 1/4 and 1/2 inch
- Stainless steel construction handles most corrosive environments
- Operating temperature -40°F through 180°F
- Meets NACE specifications MR-01-75/ISO 15156
- Filters, regulators, filter / regulators, and lubricators

E104

Miniature FRL's

- Port size: 1/8 through 3/8 inch
- Filters, regulators, filter / regulators, lubricators and accessories
- Operating temperature: -4°F through 125°F
- Non-modular construction
- Ideal for point of use applications

E63

Precision / Proportional Regulators

- Port sizes: 1/4 through 2 inch
- Maximum supply pressure: 300 PSIG
- Operating temperature: -40°F through 200°F
- High precision
- Electronic proportional

E111

P3N FRL's

- Port size: 3/4 through 1-1/2 inch
- Filters, regulators, filter / regulators, lubricators and accessories
- Operating temperature: 32°F through 175°F
- High flow

E74

Bulk Liquid Separators

- Port sizes 1/4 through 6 inch flange
- High liquid removal efficiencies at all flow conditions
- Low maintenance
- Suitable for variable flow compressors

E122

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Global Modular Particulate Filters

- Integral 1/4", 3/8", 1/2", or 3/4" ports (NPT, BSPP & BSPT)
- High efficiency 5 micron element as standard
- Excellent water removal efficiency
- Robust but lightweight aluminum construction
- Positive bayonet latch to ensure correct & safe fitting

P31 **P32** **P33**

Operating information

		P31 (Mini)	P32 (Compact)	P33 (Standard)
Supply pressure (max):				
Plastic Bowl		10 bar (150 PSIG)	10 bar (150 PSIG)	10 bar (150 PSIG)
Metal Bowl		17 bar (250 PSIG)	17 bar (250 PSIG)	17 bar (250 PSIG)
Operating temperature:				
Plastic Bowl		-10°C to 52°C (14°F to 25°F)	-25°C to 52°C (-13°F to 25°F)	-25°C to 52°C (-13°F to 25°F)
Metal Bowl		-10°C to 65.5°C (14°F to 150°F)	-25°C to 65.5°C (-13°F to 150°F)	-25°C to 65.5°C (-13°F to 150°F)
Standard filtration:		5 micron	5 micron	5 micron
Flow Capacity*:	1/4	12 dm^3/s (25 SCFM)*	18 dm^3/s (38 SCFM)*	—
	3/8	—	30 dm^3/s (64 SCFM)*	—
	1/2	—	38 dm^3/s (80 SCFM)*	40 dm^3/s (85 SCFM)*
	3/4	—	—	48 dm^3/s (102 SCFM)*

*Inlet pressure 6.3 bar (91.3 PSIG), pressure 0.34 bar (4.9 PSIG).

For Flow Curve Charts please see page E34.

Ordering information

P31F **A** **9** **2** **E** **G** **M** **N**

Basic series	
Global modular mini particulate filter	P31F
Global modular compact particulate filter	P32F
Global modular standard particulate filter	P33F

Engr level	
Current	A

Thread type	
BSPP	1
BSPT	2
NPT	9

Port size	
1/4 (P31, P32)	2
3/8 (P32)	3
1/2 (P32, P33)	4
3/4 (P33)	6

Element	
5µ Element	E

Bowl type	
G	Poly bowl with bowl guard
M	Metal bowl without sight gauge
S*	Metal bowl with sight gauge

* Not available with P31 Series.

Drain type	
M	Manual drain
A	Auto drain (P32, P33)
B	Pulse drain (P31)

Mounting	
N	No bracket

Bold items are most common.

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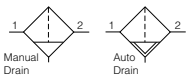
Particulate Filters



Port size	Bowl type	Drain type	Element type	Part number P31	P32	P33
1/4"	Poly	Manual	5 micron	**P31FA92EGMN**	**P32FA92EGMN**	
1/4"	Poly	Pulse	5 micron	**P31FA92EGBN**		
1/4"	Poly	Auto	5 micron		**P32FA92EGAN**	
1/4"	Metal	Manual	5 micron	**P31FA92EMMN**	**P32FA92ESMN**	
1/4"	Metal	Pulse	5 micron	**P31FA92EMBN**		
1/4"	Metal	Auto	5 micron		**P32FA92ESAN**	
3/8"	Poly	Manual	5 micron		**P32FA93EGMN**	
3/8"	Poly	Auto	5 micron		**P32FA93EGAN**	
3/8"	Metal	Manual	5 micron		**P32FA93ESMN**	
3/8"	Metal	Auto	5 micron		**P32FA93ESAN**	
1/2"	Poly	Manual	5 micron		**P32FA94EGMN**	**P33FA94EGMN**
1/2"	Poly	Auto	5 micron		**P32FA94EGAN**	**P33FA94EGAN**
1/2"	Metal	Manual	5 micron		**P32FA94ESMN**	**P33FA94ESMN**
1/2"	Metal	Auto	5 micron		**P32FA94ESAN**	**P33FA94ESAN**
3/4"	Poly	Manual	5 micron			**P33FA96EGMN**
3/4"	Poly	Auto	5 micron			**P33FA96EGAN**
3/4"	Metal	Manual	5 micron			**P33FA96ESMN**
3/4"	Metal	Auto	5 micron			**P33FA96ESAN**

Service kits

Description		P31	P32	P33
Plastic bowl / bowl guard	Manual drain	**P31KA00BGM**	**P32KA00BGM**	**P33KA00BGM**
	Pulse drain	**P31KA00BGB**		
	Auto drain		**P32KA00DA**	**P32KA00DA**
Metal bowl w/o sight gauge	Manual drain	**P31KA00BMM**		
	Pulse drain	**P31KA00BMB**		
	Auto drain		**P32KA00DA**	**P32KA00DA**
Metal bowl / sight gauge	Manual drain		**P32KA00BSM**	**P33KA00BSM**
	Auto drain		**P32KA00DA**	**P32KA00DA**
Filter element	5µ particulate	**P31KA00ESE**	**P32KA00ESE**	**P33KA00ESE**
C-bracket	Fits to body	**P31KA00MW**		
L-bracket	Fits to body		**P32KA00ML**	**P33KA00ML**
T-bracket	Fits to body connector		**P32KA00MB**	**P32KA00MB**
	With body connector	**P31KA00MT**	**P32KA00MT**	**P33KA00MT**
Body connector		**P31KA00CB**	**P32KA00CB**	**P32KA00CB**
Differential pressure indicator (replacement)		**P31KA00RQ**	**P32KA00RQ**	**P32KA00RQ**

☐ Most popular.

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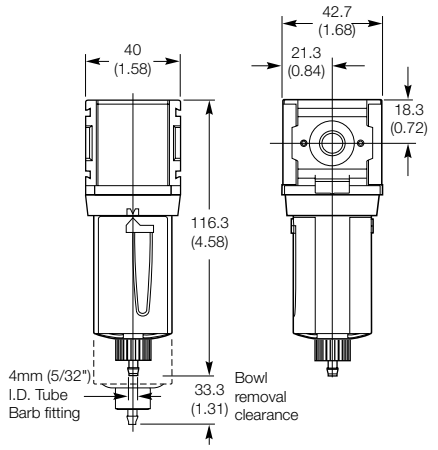
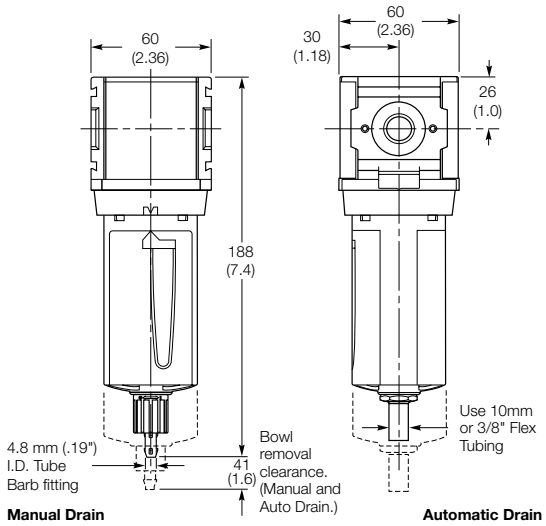
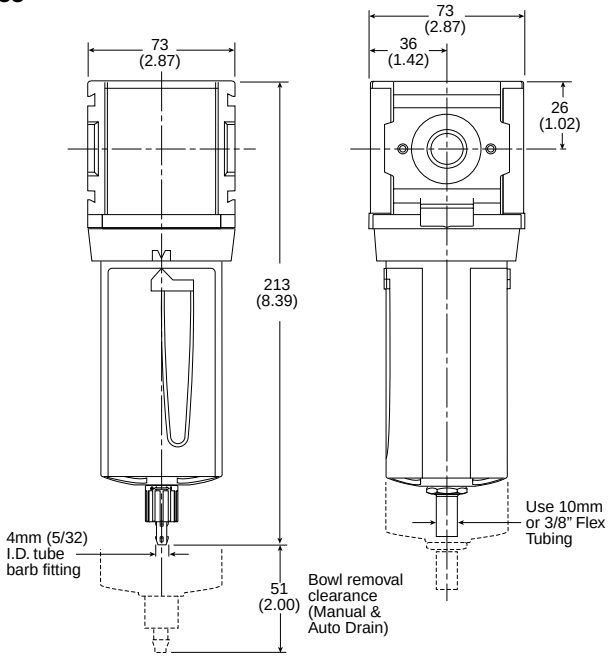
P31



P32



P33



Material specifications

Description		P31	P32	P33
Body		Aluminum	Aluminum	Aluminum
Body cap		N/A	N/A	ABS
Bowl	Plastic bowl	Polycarbonate	Polycarbonate	Polycarbonate
	Metal bowl	Aluminum	Aluminum	Aluminum
Bowl guard		Nylon	Nylon	Nylon
Deflector		N/A	Polypropylene	Polypropylene
Element retainer / baffle		Acetal	Acetal	Acetal
Filter element		Sintered Polyethylene	Sintered Polyethylene	Sintered Polyethylene
Seals		Nitrile	Nitrile	Nitrile
Sight gauge	Metal bowl	N/A	Polycarbonate	Polycarbonate

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Global Modular Coalescing & Adsorber Filters

- Integral 1/4", 3/8", 1/2", 3/4" ports (NPT, BSPP & BSPT)
- Removes liquid aerosols and sub micron particles
- Oil free air for critical applications, such as air gauging, pneumatic instrumentation and control
- Positive bayonet latch to ensure correct & safe fitting
- Adsorbing activated carbon element removes oil vapors and most hydrocarbons

Note: To optimize the life of coalescing element, it is advisable to install a pre-filter with a 5 micron element upstream of the coalescing filter. To optimize the life of an Adsorber it is advisable to install a Coalescing Filter upstream of the Adsorber. Adsorber element should be replaced approximately every 1000 hours of service.

P31

P32

P33

Operating information

	P31 (Mini)	P32 (Compact)	P33 (Standard)
Supply pressure (max):			
Plastic Bowl	10 bar (150 PSIG)	10 bar (150 PSIG)§	10 bar (150 PSIG)§
Metal Bowl	17 bar (250 PSIG)	10 bar (150 PSIG)§	10 bar (150 PSIG)§
Operating temperature:			
Plastic Bowl	-10°C to 52°C (14°F to 125°F)	-25°C to 52°C (-13°F to 125°F)	-25°C to 52°C (-13°F to 125°F)
Metal Bowl	-10°C to 65.5°C (14°F to 150°F)	-25°C to 65.5°C (-13°F to 150°F)	-25°C to 65.5°C (-13°F to 150°F)
Standard filtration:	1.0 and 0.01 micron	1.0 and 0.01 micron	1.0 and 0.01 micron
Flow Capacity:			
1.0 Micron Coalescing –			
Energy Efficient Flow*	3.8 dm^3/s (8 SCFM)	17 dm^3/s (36 SCFM)	32 dm^3/s (68 SCFM)
Maximum Flow**	6 dm^3/s (13 SCFM)	27 dm^3/s (57 SCFM)	44 dm^3/s (93 SCFM)
0.01 Micron Coalescing –			
Energy Efficient Flow*	2 dm^3/s (4.2 SCFM)	11 dm^3/s (23 SCFM)	20 dm^3/s (42 SCFM)
Maximum Flow**	3.8 dm^3/s (8 SCFM)	28 dm^3/s (38 SCFM)	34 dm^3/s (72 SCFM)
Activated Carbon Adsorber			
Rated Flow*:	6 dm^3/s (13 SCFM)	27 dm^3/s (57 SCFM)	44 dm^3/s (93 SCFM)

* Inlet pressure 6.3 bar (91.3 PSIG), pressure drop 0.2 bar (3 PSIG) saturated element.

** Inlet pressure 6.3 bar (91.3 PSIG), pressure drop 0.4 bar (6 PSIG) saturated element.

§ Without pressure indicator (DPI) – max. supply pressure for metal bowl version is 17 bar (250 psig).

For Flow Curve Charts please see page E35.

Ordering information

P31F **A** **9** **2** **C** **G** **M** **N**

Basic series

Global modular mini coalescing filter	**P31**
Global modular compact coalescing filter	**P32**
Global modular standard coalescing filter	**P33**

Engr level

Current	**A**

Thread type

BSPP	**1**
BSPT	2
NPT	**9**

Port size

1/4 (P31, P32)	**2**
3/8 (P32)	**3**
1/2 (P32, P33)	**4**
3/4 (P33)	**6**

Element

C	**0.01µ Element**
D	**0.01µ Element with DPI**
9	**1µ Element**
Q	**1µ Element with DPI**
A	**Adsorber**

Bowl type

G	**Poly bowl with bowl guard**
M	**Metal bowl without sight gauge**
S*	**Metal bowl with sight gauge**

* Not available with P31 Series.

Drain type

M	**Manual drain**
A	**Auto drain (P32, P33)**
B	**Pulse drain (P31)**

Mounting

N	**No bracket**

Bold items are most common.

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Coalescing and Adsorber Filters,

(1 micron and absorber elements available)

Port size	Bowl type	Drain type	Element type	Part number P31	P32	P33
1/4"	Poly	Manual	0.01 micron	**P31FA92CGMN**	**P32FA92DGMN**	
1/4"	Poly	Pulse	0.01 micron	**P31FA92CGBN**		
1/4"	Poly	Auto	0.01 micron		**P32FA92DGAN**	
1/4"	Metal	Manual	0.01 micron	**P31FA92CMMN**	**P32FA92DSMN**	
1/4"	Metal	Pulse	0.01 micron	**P31FA92CMBN**		
1/4"	Metal	Auto	0.01 micron		**P32FA92DSAN**	
3/8"	Poly	Manual	0.01 micron		**P32FA93DGMN**	
3/8"	Poly	Auto	0.01 micron		**P32FA93DGAN**	
3/8"	Metal	Manual	0.01 micron		**P32FA93DSMN**	
3/8"	Metal	Auto	0.01 micron		**P32FA93DSAN**	
1/2"	Poly	Manual	0.01 micron		**P32FA94DGMN**	**P33FA94DGMN**
1/2"	Poly	Auto	0.01 micron		**P32FA94DGAN**	**P33FA94DGAN**
1/2"	Metal	Manual	0.01 micron		**P32FA94DSMN**	**P33FA94DSMN**
1/2"	Metal	Auto	0.01 micron		**P32FA94DSAN**	**P33FA94DSAN**
3/4"	Poly	Manual	0.01 micron			**P33FA96DGMN**
3/4"	Poly	Auto	0.01 micron			**P33FA96DGAN**
3/4"	Metal	Manual	0.01 micron			**P33FA96DSMN**
3/4"	Metal	Auto	0.01 micron			**P33FA96DSAN**

Service kits

Description		P31	P32	P33
Plastic bowl / bowl guard	Manual drain	**P31KA00BGM**	**P32KA00BGM**	**P33KA00BGM**
	Pulse drain	**P31KA00BGB**		
	Auto drain		**P32KA00DA**	**P32KA00DA**
Metal bowl w/o sight gauge	Manual drain	**P31KA00BMM**		
	Pulse drain	**P31KA00BMB**		
	Auto drain		**P32KA00DA**	**P32KA00DA**
Metal bowl / sight gauge	Manual drain		**P32KA00BSM**	**P33KA00BSM**
	Auto drain		**P32KA00DA**	**P32KA00DA**
Filter element	1µ coalescing	**P31KA00ES9**	**P32KA00ES9**	**P33KA00ES9**
	0.01µ coalescing	**P31KA00ESC**	**P32KA00ESC**	**P33KA00ESC**
	Activated carbon adsorber	**P31KA00ESA**	**P32KA00ESA**	**P33KA00ESA**
C-bracket	Fits to body	**P31KA00MW**		
L-bracket	Fits to body		**P32KA00ML**	**P33KA00ML**
T-bracket	Fits to body connector		**P32KA00MB**	**P32KA00MB**
	With body connector	**P31KA00MT**	**P32KA00MT**	**P32KA00MT**
Body connector		**P31KA00CB**	**P32KA00CB**	**P32KA00CB**
Differential pressure indicator (replacement)		**P31KA00RQ**	**P32KA00RQ**	**P32KA00RQ**

☐ Most popular.

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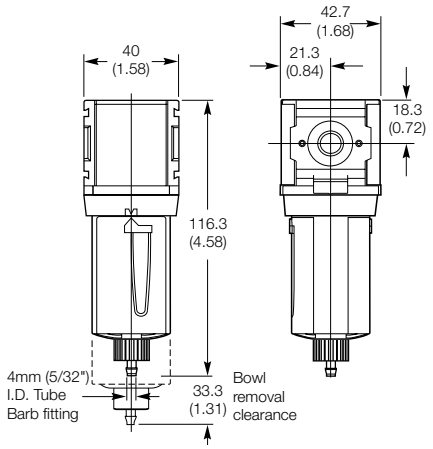
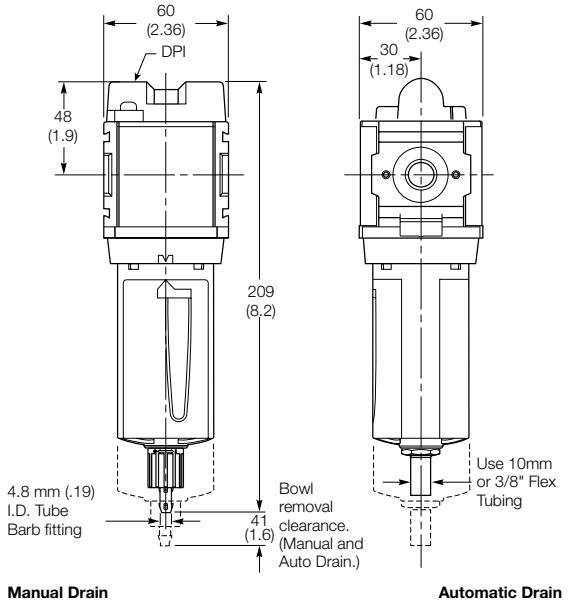
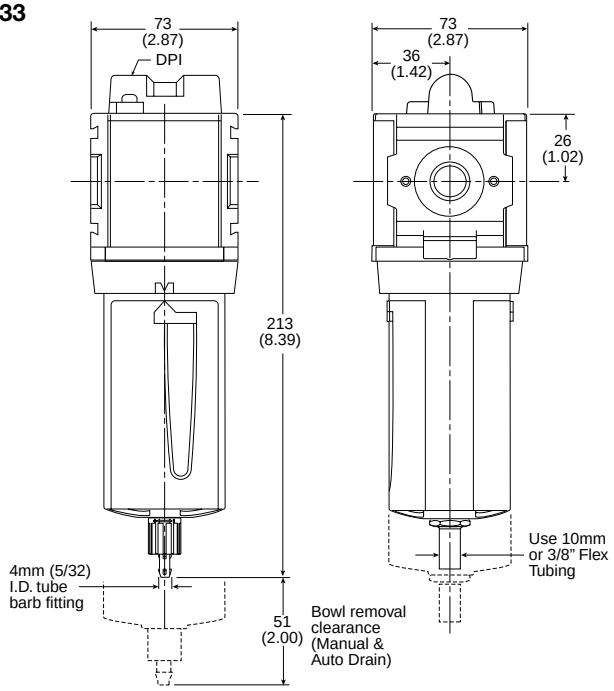
P31



P32



P33



Material specifications

Description		P31	P32	P33
Body		Aluminum	Aluminum	Aluminum
Body cap		N/A	N/A	ABS
Bowl	Plastic bowl	Polycarbonate	Polycarbonate	Polycarbonate
	Metal bowl	Aluminum	Aluminum	Aluminum
Bowl guard		Nylon	Nylon	Nylon
Filter element		Borosilicate cloth, 1.0 and .01 micron	Borosilicate cloth, 1.0 and .01 micron	Borosilicate cloth, 1.0 and .01 micron
Adsorber		Activated corbon	Activated corbon	Activated corbon
Seals		Nitrile	Nitrile	Nitrile
Sight gauge	Metal bowl	N/A	Polycarbonate	Polycarbonate

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Global Modular Regulators

- Integral 1/4", 3/8", 1/2", 3/4" ports (NPT, BSPP & BSPT)
- Robust but lightweight aluminum construction
- Secondary pressure ranges 0-2 bar (0-30 PSIG), 0-4 bar, (0-60 PSIG), 0-8 bar (0-125 PSIG)
- Secondary aspiration plus balanced poppet provides quick response and accurate pressure regulation.
- Relieving & Non-relieving types
- Non-rising knob

P31

P32

P33

⚠ WARNING

Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed maximum primary pressure rating.

CAUTION:

REGULATOR PRESSURE ADJUSTMENT –
The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design.
For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

Operating information

		P31 (Mini)	P32 (Compact)	P33 (Standard)
Supply pressure (max):		20 bar (300 PSIG)	20 bar (300 PSIG)	20 bar (300 PSIG)
Operating temperature:		-20°C to 65.5°C (-4°F to 150°F)	-25°C to 65.5°C (-13°F to 150°F)	-25°C to 65.5°C (-13°F to 150°F)
Units with square gauges:		-15°C to 65.5°C (5°F to 150°F)		
Flow Capacity*:	1/4	30 dm^3/s (64 SCFM)	41 dm^3/s* (81 SCFM)*	—
	3/8	—	65 dm^3/s* (138 SCFM)*	—
	1/2	—	67 dm^3/s* (142 SCFM)*	100 dm^3/s* (212 SCFM)*
	3/4	—	—	100 dm^3/s* (212 SCFM)*

* Inlet pressure 10 bar (145 PSIG). Secondary pressure 6.3 bar (91.3 PSIG), pressure drop 1 bar (14.7 PSIG)

For Flow Curve Charts please see page E36.

Ordering information

P31R A 9 2 B N N P

Basic series	
Global modular mini regulator	P31R
Global modular compact regulator	P32R
Global modular standard regulator	P33R

Engr level	
Current	A

Thread type	
BSPP	1
BSPT	2
NPT	9

Port size	
1/4 (P31, P32)	2
3/8 (P32)	3
1/2 (P32, P33)	4
3/4 (P33)	6

Relief	
Relieving	B
Non-relieving	N
Reverse flow-relieving	R

Adjustment range		
P31 & P32 with square gauge		With round gauge
psig	bar	
1 = 30*	V = 2*	Z 2 bar; 30 psig; 0.2 MPa
3 = 60	S = 4	M 4 bar; 60 psig; 0.4 MPa
5 = 125	T = 8	G 8 bar; 125 psig; 0.8 MPa
		J§‡ 17 bar; 250 psig; 1.7 MPa
		Without gauge
		Y 2 bar; 30 psig; 0.2 MPa
		L 4 bar; 60 psig; 0.4 MPa
		N 8 bar; 125 psig; 0.8 MPa
		H§‡ 17 bar; 250 psig; 1.7 MPa

Mounting	
P	Plastic panel mount nut

* Unit comes with 0-4 bar or 0-60 psig gauge respectively.
§ Not available with poly bowl with bowl guard.
‡ Not available with P31 Series.

Bold items are most common.

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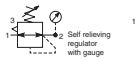
Regulators



Port size	Pressure (relieving)	Gauge	Part number P31	P32	P33
1/4"	8 bar (125 PSIG)	—	**P31RA92BNNP**	**P32RA92BNNP**	
1/4"	8 bar (125 PSIG)	Square	**P31RA92BN5P**		
1/4"	8 bar (125 PSIG)	Round		**P32RA92BNGP**	
3/8"	8 bar (125 PSIG)	—		**P32RA93BNNP**	
3/8"	8 bar (125 PSIG)	Round		**P32RA93BNGP**	
1/2"	8 bar (125 PSIG)	—		**P32RA94BNNP**	**P33RA94BNNP**
1/2"	8 bar (125 PSIG)	Round		**P32RA94BNGP**	**P33RA94BNGP**
3/4"	8 bar (125 PSIG)	—			**P33RA96BNNP**
3/4"	8 bar (125 PSIG)	Round			**P33RA96BNGP**

Service kits

Description			P31	P32	P33
Regulator repair kit		Relieving	**P31KA00RB**	**P32KA00RB**	**P33KA00RB**
		Non-relieving	**P31KA00RC**	**P32KA00RC**	**P33KA00RC**
Panel mount nut		Aluminum	**P31KA00MM**	**P32KA00MM**	**P33KA00MM**
		Plastic	**P31KA00MP**	**P32KA00MP**	**P33KA00MP**
Angle bracket		Uses panel mount threads	**P31KA00MR**	**P32KA00MR**	**P33KA00MR**
T-bracket		With body connector	**P31KA00MT**	**P32KA00MT**	**P32KA00MT**
T-bracket					**P32KA00MB**
Body connector			**P31KA00CB**	**P32KA00CB**	**P32KA00CB**
Gauges -	Square flush mount gauge	0-4 bar	**K4511SCR04B**	**K4511SCR04B**	
		0-10 bar	**K4511SCR11B**	**K4511SCR11B**	
		0-60 PSIG	**K4511SCR060**	**K4511SCR060**	
		0-160 PSIG	**K4511SCR160**	**K4511SCR160**	
	1.00" round 1/8" center back mount	0-60 PSIG / 0-4 bar	**K4510N18060**		
		0-160 PSIG / 0-11 bar	**K4510N18160**		
	40mm round 1/8" center back mount	0-30 PSIG / 0-2 bar	**K4515N18030**		
		0-60 PSIG / 0-4 bar	**K4515N18060**		
		0-160 PSIG / 0-11 bar	**K4515N18160**		
	50mm (2") round 1/4" center back mount	0-30 PSIG / 0-2 bar / 0-0.2 MPa		**K4520N14030**	**K4520N14030**
		0-60 PSIG / 0-4 bar / 0-0.4 MPa		**K4520N14060**	**K4520N14060**
		0-160 PSIG / 0-11 bar / 0-1.1 MPa		**K4520N14160**	**K4520N14160**
		0-300 PSIG / 0-20 bar / 0-2 MPa		**K4520N14300**	**K4520N14300**
	44mm (1-3/4") digital round 1/4" center back mount	0-160 PSIG / 0-11 bar / 0-1.1 MPa		**K4517N14160D**	**K4517N14160D**

☐ Most popular.

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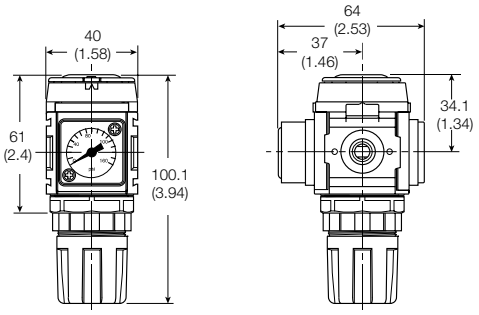
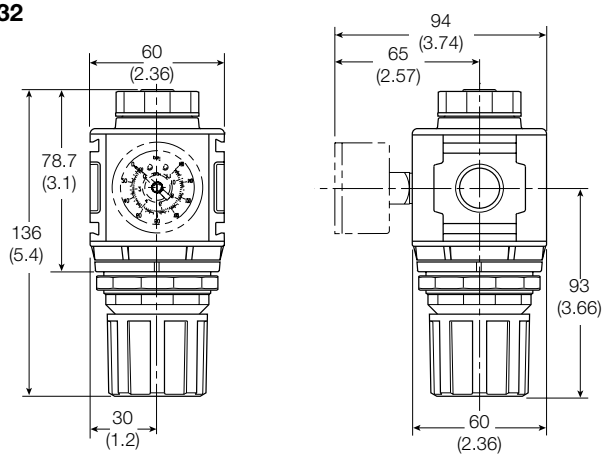
P31



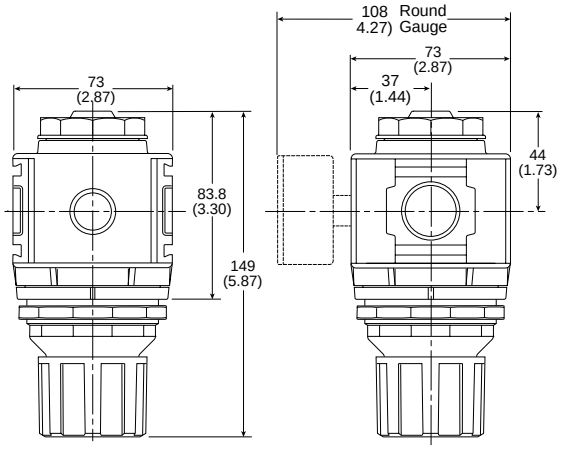
NOTE: 31.7 mm (1.25 in.) hole required for panel nut mounting.

P32



NOTE: 51 mm (2.00 in.) hole required for panel nut mounting.

P33



NOTE: 61 mm (2.40 in.) hole required for panel nut mounting.

Material specifications

Description	P31	P32	P33
Body	Aluminum	Aluminum	Aluminum
Adjustment knob	N/A	N/A	Acetal
Body cap	ABS	ABS	ABS
Bonnet	PBT	33% glass-filled nylon	33% glass-filled nylon
Diaphragm assembly	Brass / nitrile	Nitrile / zinc	Nitrile / zinc
Valve assembly	Brass / nitrile	Brass / nitrile	Brass / nitrile / acetal
Springs	Steel	Steel S.S. (main regulating valve)	Steel S.S. (main regulating valve)
Seals	Nitrile	Nitrile	Nitrile
Panel nut	Acetal	Acetal	Acetal

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Global Modular Common Regulators

- Manifold style regulator with line pressure on both sides
- Pressure output is at front or rear
- Integral 1/4", 3/8" or 1/2" ports (NPT, BSPP & BSPT)
- Robust construction
- Secondary pressure ranges 0-2 bar (0-30 PSIG), 0-4 bar, (0-60 PSIG), 0-8 bar (0-125 PSIG), 0-17 bar (0-250 PSIG)
- Secondary aspiration plus balanced poppet provides quick response and accurate pressure regulation
- Relieving & Non-relieving types
- Non-rising knob

⚠ WARNING

Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed maximum primary pressure rating.

CAUTION:

REGULATOR PRESSURE ADJUSTMENT –
The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design.
For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

Operating information

		P31 (Mini)	P32 (Compact)
Supply pressure (max):		20 bar (300 PSIG)	20 bar (300 PSIG)
Operating temperature:		-20°C to 65.5°C (-4°F to 150°F)	-25°C to 65.5°C (-13°F to 150°F)
Flow Capacity*:	1/4	18 dm^3/s* (38 SCFM)*	28 dm^3/s* (59 SCFM)*
	3/8	—	28 dm^3/s* (59 SCFM)*
	1/2	—	28 dm^3/s* (59 SCFM)*

* Inlet pressure 10 bar (145 PSIG). Secondary pressure 6.3 bar (91.3 PSIG), pressure drop 1 bar (14.7 PSIG)

For Flow Curve Charts please see page E36.

Ordering information

P31H A 9 2 B N N P

Basic series	
Global modular mini common regulator	P31H
Global modular compact common regulator	P32H

Engr level	
Current	A

Thread type	
BSPP	1
BSPT	2
NPT	9

Port size	
2	1/4 (P31, P32)
3	3/8 (P32)
4	1/2 (P32)

Relief	
B	Relieving
N	Non-relieving

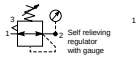
Adjustment range Without gauge	
Y	2 bar; 30 psig; 0.2 MPa
L	4 bar; 60 psig; 0.4 MPa
N	8 bar; 125 psig; 0.8 MPa
H*	17 bar; 250 psig; 1.7 MPa

* Not available with P31 Series.
Order gauges separately - see next page.

Mounting	
P	Plastic panel mount nut

Bold items are most common.

Regulators



Port size	Pressure	Part number P31	Part number P32
1/4"	8 bar (125 PSIG) relieving	**P31HA92BNNP**	**P32HA92BNNP**
3/8"	8 bar (125 PSIG) relieving		**P32HA93BNNP**
1/2"	8 bar (125 PSIG) relieving		**P32HA94BNNP**

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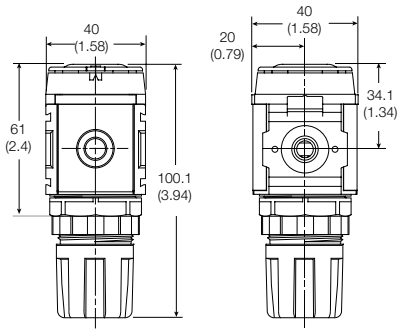
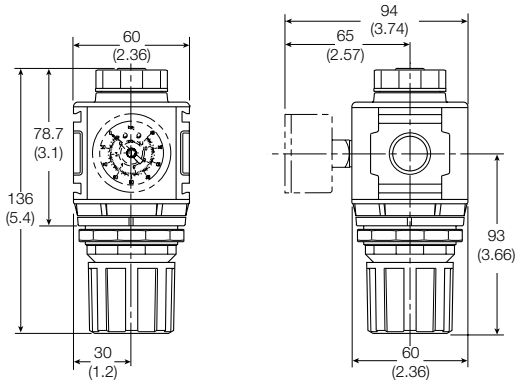
P31



NOTE: 31.7 mm (1.25 in.) hole required for panel nut mounting.

P32



NOTE: 51 mm (2.00 in.)hole required for panel nut mounting.

Service kits

Description			P31	P32
Regulator repair kit	Relieving		**P31KA00RB**	**P32KA00RB**
	Non-relieving		**P31KA00RC**	**P32KA00RC**
Panel mount nut	Aluminum		**P31KA00MM**	**P32KA00MM**
	Plastic		**P31KA00MP**	**P32KA00MP**
Angle bracket (uses panel mount threads)			**P31KA00MR**	**P32KA00MR**
T-bracket	With body connector		**P31KA00MT**	**P32KA00MT**
	Fits to body connector		**P31KA00MB**	**P32KA00MB**
Body connector			**P31KA00CB**	**P32KA00CB**
Gauges -	Square flush mount gauge	0-4 bar	**K4511SCR04B**	**K4511SCR04B**
		0-10 bar	**K4511SCR11B**	**K4511SCR11B**
		0-60 PSIG	**K4511SCR060**	**K4511SCR060**
		0-160 PSIG	**K4511SCR160**	**K4511SCR160**
	Square with adapter kit	0-4 bar	**P6G-PR11040**	**P6G-PR11040**
		0-10 bar	**P6G-PR11100**	**P6G-PR11100**
		0-60 PSIG	**P6G-PR11P06**	**P6G-PR11P06**
		0-160 PSIG	**P6G-PR11P16**	**P6G-PR11P16**
	1.00" round 1/8" center back mount	0-60 PSIG / 0-4 bar	**K4510N18060**	
		0-160 PSIG / 0-11 bar	**K4510N18160**	
	50mm (2") round 1/4" center back mount	0-30 PSIG / 0-2 bar / 0-0.2 MPa		**K4520N14030**
		0-60 PSIG / 0-4 bar / 0-0.4 MPa		**K4520N14060**
		0-160 PSIG / 0-11 bar / 0-1.1 MPa		**K4520N14160**
		0-300 PSIG / 0-20 bar / 0-2 MPa		**K4520N14300**
	44mm (1-3/4") digital round 1/4" center back mount	0-160 PSIG / 0-11 bar / 0-1.1 MPa		**K4517N14160D**

Material specifications

Description	P31	P32
Body	Aluminum	Aluminum
Adjustment knob	Acetal	Acetal
Bonnet	33% Glass-filled PBT	33% Glass-filled nylon
Diaphragm assembly	Brass / nitrile	Nitrile / zinc
Valve assembly	Brass / nitrile	Brass / nitrile
Springs		Steel S.S. (Main regulating valve)
Seals		Nitrile
Panel nut		Acetal

Most popular.

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
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Global Modular Filter / Regulators

- Integral 1/4", 3/8", 1/2", 3/4" ports (NPT, BSPP & BSPT)
- High efficiency 5 micron element as standard
- Excellent water removal efficiency
- Robust but lightweight aluminum construction
- Positive bayonet latch to ensure correct & safe fitting
- Secondary pressure ranges 0-2 bar (0-30 PSIG), 0-4 bar, (0-60 PSIG), 0-8 bar (0-125 PSIG), 0-17 bar (0-250 PSIG)
- Secondary aspiration plus balanced poppet provides quick response and accurate pressure regulation

P31

P32

P33

⚠ WARNING

Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed maximum primary pressure rating.

CAUTION:

REGULATOR PRESSURE ADJUSTMENT –
The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design.
For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

Operating information

		P31 (Mini)	P32 (Compact)	P33 (Standard)
Supply pressure (max):				
Plastic Bowl		10 bar (150 PSIG)	10 bar (150 PSIG)	10 bar (150 PSIG)
Metal Bowl		17 bar (250 PSIG)	17 bar (250 PSIG)	17 bar (250 PSIG)
Operating temperature:				
Plastic Bowl		-10°C to 52°C (14°F to 125°F)	-25°C to 52°C (-13°F to 125°F)	-25°C to 52°C (-13°F to 125°F)
Metal Bowl		-10°C to 65.5°C (14°F to 150°F)	-25°C to 65.5°C (-13°F to 150°F)	-25°C to 65.5°C (-13°F to 150°F)
Units with square gauges:		-15°C to 65.5°C (5°F to 150°F)		
Standard filtration:		5 micron	5 micron	5 micron
Flow Capacity*:	1/4	14 dm^3/s* (30 SCFM)*	42 dm^3/s* (89 SCFM)*	–
	3/8	–	58 dm^3/s* (123 SCFM)*	–
	1/2	–	64 dm^3/s* (136 SCFM)*	90 dm^3/s* (191 SCFM)*
	3/4	–	–	98 dm^3/s* (208 SCFM)*

* Inlet pressure 10 bar (145 PSIG). Secondary pressure 6.3 bar (91.3 PSIG), pressure drop 1 bar (14.7 PSIG)

For Flow Curve Charts please see page E37.

Ordering information

P31E A 9 2 E G M B N 5 P

Basic series	
Global modular mini filter / regulator	P31E
Global modular compact filter / regulator	P32E
Global modular standard filter / regulator	P33E

Engr level	
Current	A

Thread type	
BSPP	1
BSPT	2
NPT	9

Element	
5µ Element	E

Port size	
1/4 (P31, P32)	2
3/8 (P32)	3
1/2 (P32, P33)	4
3/4 (P33)	6

Bowl type	
Poly bowl with bowl guard	G
Metal bowl without sight gauge	M
Metal bowl with sight gauge	S

Drain type	
M	Manual drain
A	Auto drain (P32, P33)
B	Pulse drain (P31)

Relief	
B	Relieving
N	Non-relieving

Mounting	
P	Plastic panel mount nut

Adjustment range			
P31 & P32 with square gauge			With round gauge
psig	bar		
1 = 30*	V = 2*	Z	2 bar; 30 psig; 0.2 MPa
3 = 60	S = 4	M	4 bar; 60 psig; 0.4 MPa
5 = 125	T = 8	G	8 bar; 125 psig; 0.8 MPa
		J§‡	17 bar; 250 psig; 1.7 MPa
			Without gauge
		Y	2 bar; 30 psig; 0.2 MPa
		L	4 bar; 60 psig; 0.4 MPa
		N	8 bar; 125 psig; 0.8 MPa
		H§‡	17 bar; 250 psig; 1.7 MPa

* Unit comes with 0-4 bar or 0-60 psig gauge respectively.
§ Not available with poly bowl with bowl guard.
‡ Not available with P31 Series.

Bold items are most common.

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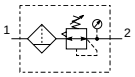
Filter / Regulator



Port size	Pressure (relieving)	Bowl type	Drain type	Part number P31	P32	P33
1/4"	8 bar (125 PSIG)	Poly	Manual	**P31EA92EGMBN5P**	**P32EA92EGMBNGP**	
1/4"	8 bar (125 PSIG)	Poly	Pulse	**P31EA92EGBBN5P**		
1/4"	8 bar (125 PSIG)	Poly	Auto		**P32EA92EGMBNGP**	
1/4"	8 bar (125 PSIG)	Metal	Manual	**P31EA92EMMBN5P**	**P32EA92ESMBNGP**	
1/4"	8 bar (125 PSIG)	Metal	Pulse	**P31EA92EMBBN5P**		
1/4"	8 bar (125 PSIG)	Metal	Auto		**P32EA92ESABNGP**	
3/8"	8 bar (125 PSIG)	Poly	Manual		**P32EA93EGMBNGP**	
3/8"	8 bar (125 PSIG)	Poly	Auto		**P32EA93EGABNGP**	
3/8"	8 bar (125 PSIG)	Metal	Manual		**P32EA93ESMBNGP**	
3/8"	8 bar (125 PSIG)	Metal	Auto		**P32EA93ESABNGP**	
1/2"	8 bar (125 PSIG)	Poly	Manual		**P32EA94EGMBNGP**	**P33EA94EGMBNGP**
1/2"	8 bar (125 PSIG)	Poly	Auto		**P32EA94EGABNGP**	**P33EA94EGABNGP**
1/2"	8 bar (125 PSIG)	Metal	Manual		**P32EA94ESMBNGP**	**P33EA94ESMBNGP**
1/2"	8 bar (125 PSIG)	Metal	Auto		**P32EA94ESABNGP**	**P33EA94ESABNGP**
3/4"	8 bar (125 PSIG)	Poly	Manual			**P33EA96EGMBNGP**
3/4"	8 bar (125 PSIG)	Poly	Auto			**P33EA96EGABNGP**
3/4"	8 bar (125 PSIG)	Metal	Manual			**P33EA96ESMBNGP**
3/4"	8 bar (125 PSIG)	Metal	Auto			**P33EA96ESABNGP**

☐ Most popular.

Service kits

Description		P31	P32	P33
Plastic bowl / bowl guard	Manual drain	**P31KA00BGM**	**P32KA00BGM**	**P33KA00BGM**
	Pulse drain	**P31KA00BGB**		
	Auto drain		**P32KA00DA**	**P32KA00DA**
Metal bowl w/o sight gauge	Manual drain	**P31KA00BMM**		
	Pulse drain	**P31KA00BMB**		
	Auto drain		**P32KA00DA**	**P32KA00DA**
Metal bowl / sight gauge	Manual drain		**P32KA00BSM**	**P33KA00BSM**
	Auto drain		**P32KA00DA**	**P32KA00DA**
Filter element	5µ particulate	**P31KA00ESE**	**P32KA00ESE**	**P33KA00ESE**
Regulator repair kit	Relieving	**P31KB00RB**	**P32KB00RB**	**P33KA00RB**
	Non-relieving	**P31KB00RC**	**P32KB00RC**	**P33KA00RC**
Panel mount nut	Aluminum	**P31KA00MM**	**P32KA00MM**	**P331KA00MM**
	Plastic	**P31KA00MP**	**P32KA00MP**	**P33KA00MP**
Angle bracket (uses panel mount threads)		**P31KA00MR**	**P32KA00MR**	**P33KA00MR**
C-bracket	Fits to body	**P31KA00MW**		
T-bracket	Fits to body connector		**P32KA00MB**	**P32KA00MB**
	With body connector	**P31KA00MT**	**P32KA00MT**	**P32KA00MT**
Body connector		**P31KA00CB**	**P32KA00CB**	**P32KA00CB**
Gauges - square flush mount gauge	0-4 bar	**K4511SCR04B**		
	0-10 bar	**K4511SCR11B**		
	0-60 PSIG	**K4511SCR060**		
	0-160 PSIG	**K4511SCR160**		
50mm (2") round 1/4" center back mount	0-30 PSIG / 0-2 bar / 0-0.2 MPa		**K4520N14030**	**K4520N14030**
	0-60 PSIG / 0-4 bar / 0-0.4 MPa		**K4520N14060**	**K4520N14060**
	0-160 PSIG / 0-11 bar / 0-1.1 MPa		**K4520N14160**	**K4520N14160**
	0-300 PSIG / 0-20 bar / 0-2 MPa		**K4520N14300**	**K4520N14300**
44mm (1-3/4") digital round 1/4" center back mount	0-160 PSIG / 0-11 bar / 0-1.1 MPa		**K4517N14160D**	**K4517N14160D**

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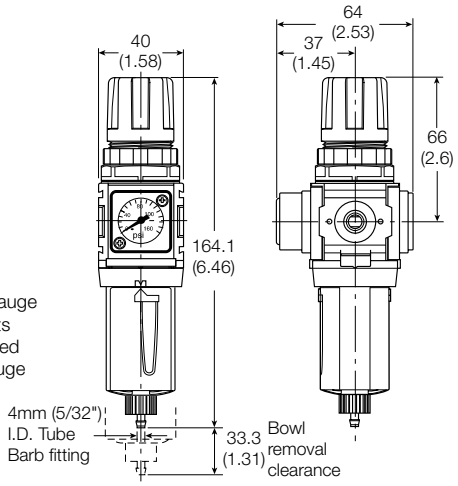
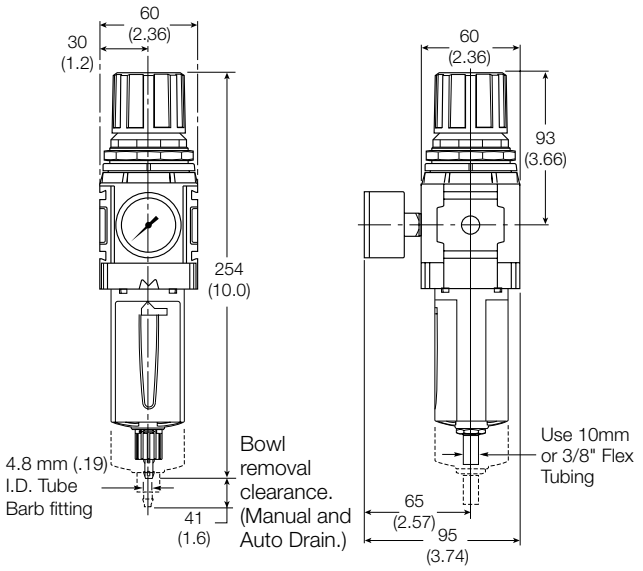
P31



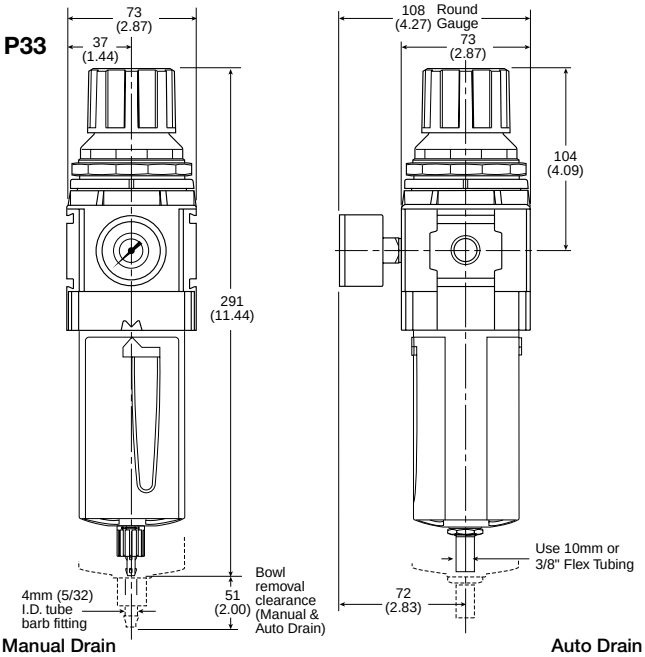
Note:
Flush-mounted gauge kits will not fit units originally purchased with threaded gauge ports.

P32



Manual Drain | Auto Drain

P33



Manual Drain | Auto Drain

Material Specifications

Description		P31	P32	P33
Body		Aluminum	Aluminum	Aluminum
Adjustment knob		Acetal	Acetal	Acetal
Body cap		ABS	ABS	ABS
Bonnet		PBT	33% glass-filled nylon	33% glass-filled nylon
Element retainer/baffle		N/A	Acetal	Acetal
Bowl	Plastic bowl	Polycarbonate	Polycarbonate	Polycarbonate
	Metal bowl	Aluminum	Zinc	Aluminum
Bowl guard		Nylon	Nylon	Nylon
Filter element		Sintered polyethylene	Sintered polyethylene	Polyethylene
Seals		Nitrile	Nitrile	Nitrile
Springs	Main regulating / valve	Steel	Steel / S.S.	Steel
Valve assembly		Brass / nitrile	Brass / nitrile	Brass / nitrile
Diaphragm assembly		Brass / nitrile	Nitrile / zinc	Nitrile / zinc
Panel nut		Acetal	Acetal	Acetal
Sight gauge	Metal bowl	N/A	Polycarbonate	Polycarbonate

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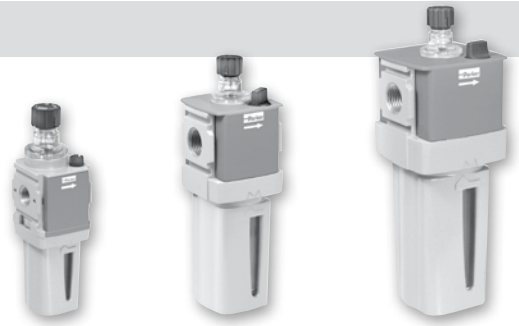
Global Modular Lubricators

- Integral 1/4", 3/8", 1/2", 3/4" ports (NPT, BSPP & BSPT)
- Robust but lightweight aluminum construction
- Proportional oil delivery over a wide range of air flows
- Finger tip ratchet control for precise oil drip rate adjustment



P31 **P32** **P33**

Operating information

Supply pressure (max):	Plastic Bowl	10 bar (150 PSIG)
	Metal Bowl	17 bar (250 PSIG)
Operating temperature:	Plastic Bowl	-10°C to 52°C (14°F to 125°F)
	Metal Bowl	-10°C to 65.5°C (14°F to 150°F)
Standard filtration:		5 micron

		P31 (Mini)	P32 (Compact)	P33 (Standard)
Flow Capacity*:	1/4	13 dm^3/s (28 SCFM)	18 dm^3/s (38 SCFM)	–
	3/8	–	32 dm^3/s (68 SCFM)	–
	1/2	–	47 dm^3/s (100 SCFM)	48 (102 SCFM)
	3/4	–	–	68 dm^3/s (144 SCFM)

* Inlet pressure 6.3 bar (91.3 PSIG), pressure drop 0.34 bar (4.9 PSIG).

For Flow Curve Charts please see page E38.

Ordering information

P31L **A** **9** **2** **L** **G** **N** **N**

Basic series	
Global modular mini lubricator	P31L
Global modular compact lubricator	P32L
Global modular standard lubricator	P33L

Engr level	
Current	A

Thread type	
BSPP	1
BSPT	2
NPT	9

Port size	
1/4 (P31, P32)	2
3/8 (P32)	3
1/2 (P32, P33)	4
3/4 (P33)	6

Lube type	
L	Oil mist standard sight dome

Bowl type	
G	Poly bowl with bowl guard
M	Metal bowl without sight gauge
S*	Metal bowl with sight gauge

* Not available with P31 Series.

Drain type	
N	No drain closed end

Mounting	
N	No bracket

Bold items are most common.

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Lubricators

Lubricator with drain

Port size	Bowl type	Type	Part number P31	P32	P33
1/4"	Poly / no drain	Mist	**P31LA92LGNN**	**P32LA92LGNN**	
1/4"	Metal / no drain	Mist / sight gauge	**P31LA92LMNN**	**P32LA92LSNN**	
3/8"	Poly / no drain	Mist		**P32LA93LGNN**	
3/8"	Metal / no drain	Mist / sight gauge		**P32LA93LSNN**	
1/2"	Poly / no drain	Mist		**P32LA94LGNN**	**P33LA94LGNN**
1/2"	Metal / no drain	Mist / sight gauge		**P32LA94LSNN**	**P33LA94LSNN**
3/4"	Poly / no drain	Mist			**P33LA96LGNN**
3/4"	Metal / no drain	Mist / sight gauge			**P33LA96LSNN**

Service kits

Description		P31	P32	P33
Plastic bowl / bowl guard / no drain		**P31KA00BGN**	**P32KA00BGN**	**P33KA00BGN**
Drip control assembly		**P32KA00PG**	**P32KA00PG**	**P32KA00PG**
Fill plug		**P31KA00PL**	**P32KA00PL**	**P32KA00PL**
C-bracket	Fits to body	**P31KA00MW**		
L-bracket			**P32KA00ML**	**P33KA00ML**
T-bracket	Fits to body connector		**P32KA00MB**	**P32KA00MB**
	With body connector	**P31KA00MT**	**P32KA00MT**	**P32KA00MT**
Body connector		**P31KA00CB**	**P32KA00CB**	**P32KA00CB**
Lubricant* (1 quart)		**F442001**	**F442001**	**F442001**

* Petroleum based oil of 100 to 200 SUS viscosity at 38°C (100°F) and an aniline point greater than 93°C (200°F). **DO NOT USE OILS WITH ADDITIVES,COMPOUNDED OILS CONTAINING SOLVENTS, GRAPHITE, DETERGENTS, OR SYNTHETIC OILS.**

☐ Most popular.

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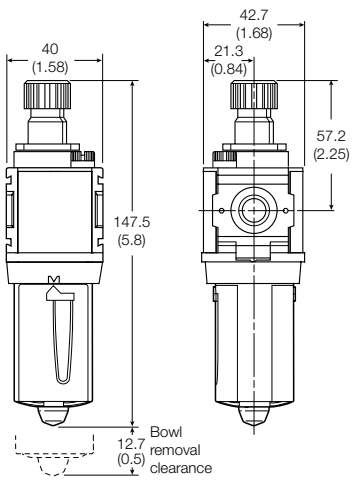
P31



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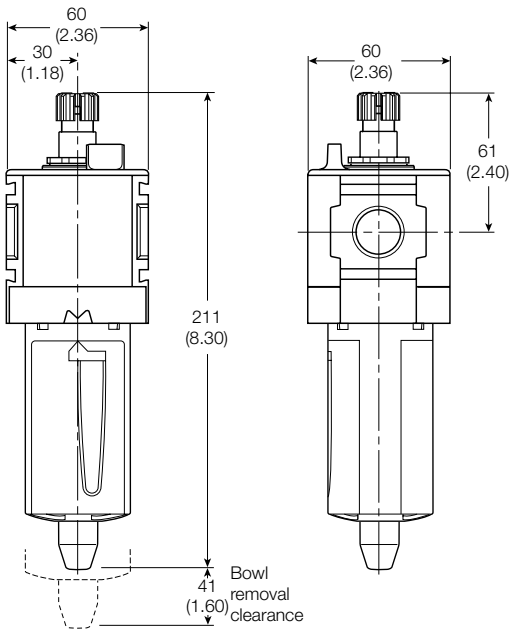

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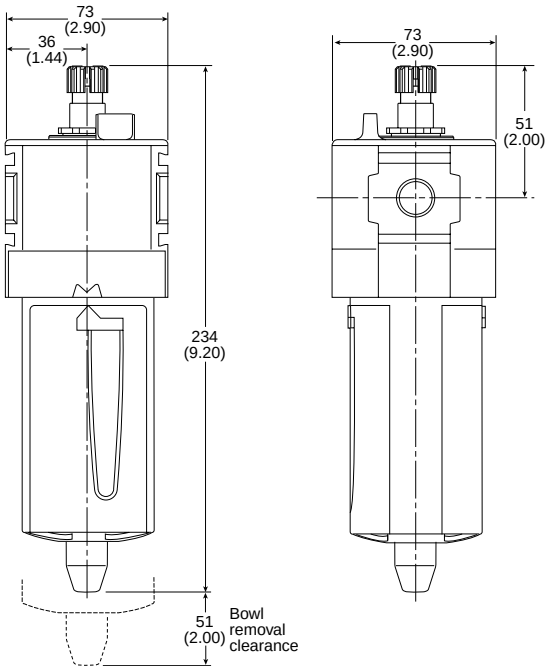

Material Specifications

Description		P31	P32	P33
Body		Aluminum	Aluminum	Aluminum
Body cap		N/A	N/A	ABS
Bowl	Plastic bowl	Polycarbonate	Polycarbonate	Polycarbonate
	Metal bowl	Aluminum	Aluminum	Aluminum
Bowl guard		Nylon	Nylon	Nylon
Seals		Nitrile	Nitrile	Nitrile
Sight dome		Polycarbonate	Polycarbonate	Polycarbonate
Suggested lubricant		ISO / ASTM VG32	ISO / ASTM VG32	ISO / ASTM VG32
Pick-up filter		Sintered bronze	Sintered bronze	Sintered bronze
Sight gauge	Metal bowl	N/A	Polycarbonate	Polycarbonate

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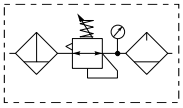
Global Modular Combinations

Filter + Regulator + Lubricator Combinations + Poly Bowl

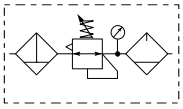
5 micron element, 8 bar (116 PSIG) Regulator + Gauge and Wall Mounting Brackets
Inlet pressure 10 bar (145 PSIG), Secondary pressure 6.3 bar (91.3 PSIG),
1 bar (14.5 PSIG) pressure drop.



Port size	Drain type	Part number		
		P31 Series	P32 Series	P33 Series
1/4"	Manual	**P31CB92GEMN5LNW**	**P32CB92GEMNGLNW**	
1/4"	Pulse	**P31CB92GEBN5LNW**		
1/4"	Auto		**P32CB92GEANGLNW**	
3/8"	Manual		**P32CB93GEMNGLNW**	
3/8"	Auto		**P32CB93GEANGLNW**	
1/2"	Manual		**P32CB94GEMNGLNW**	**P33CB94GEMNGLNW**
1/2"	Auto		**P32CB94GEANGLNW**	**P33CB94GEANGLNW**
3/4"	Manual			**P33CB96GEMNGLNW**
3/4"	Auto			**P33CB96GEANGLNW**

Filter / Regulator + Lubricator Combinations + Poly Bowl

5 micron element, 8 bar (116 PSIG) Regulator + Gauge and Wall Mounting Brackets
Inlet pressure 10 bar (145 PSIG), Secondary pressure 6.3 bar (91.3 PSIG),
1 bar (14.5 PSIG) pressure drop.



Port size	Drain type	Part number		
		P31 Series	P32 Series	P33 Series
1/4"	Manual	**P31CA92GEMN5LNW**	**P32CA92GEMNGLNW**	
1/4"	Pulse	**P31CA92GEBN5LNW**		
1/4"	Auto		**P32CA92GEANGLNW**	
3/8"	Manual		**P32CA93GEMNGLNW**	
3/8"	Auto		**P32CA93GEANGLNW**	
1/2"	Manual		**P32CA94GEMNGLNW**	**P33CA94GEMNGLNW**
1/2"	Auto		**P32CA94GEANGLNW**	**P33CA94GEANGLNW**
3/4"	Manual			**P33CA96GEMNGLNW**
3/4"	Auto			**P33CA96GEANGLNW**

⚠ WARNING

Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed maximum primary pressure rating.

CAUTION:

REGULATOR PRESSURE ADJUSTMENT –
The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design.
For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

☐ Most popular.

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Ordering information

Filter / Regulator coding
(use with codes: A M)

Filter coding
(use with combo codes: B F G). For multiple filters, repeat as needed

Regulator coding
(use with combo code: B)

Lubricator coding
(use with combo codes: A B)

Assembly configuration

P31	C	B	9	2	G	E	M	N	5	L	N	W

Combination

B/V + Combination	Q*
Combination + B/V*	X
Combination	C

* B/V = Ball valve.

Thread type

BSPP	1
BSPT	2
NPT	9

Combination type*

F/R+L	A	F+Fc+Fa	G
F+R+L	B	F/R+Fc	M
F+Fc	F	F+Fc1+Fc	Q

*** Combination type**
F = 5µ
Fc1 = 1µ
Fc = .01µ
Fa = Adsorber

Port size

1/4 (P31, P32)	2
3/8 (P32)	3
1/2 (P32, P33)	4
3/4 (P33)	6

Bowl type

Poly bowl with bowl guard	G
Metal bowl without sight gauge	M*
Metal bowl with sight gauge	S‡

* Not available when using lubricator.
‡ Not available with P31 Series.

Note: All bowl types are the same for each component.
Example: If a "G" is specified for a F+L, both units would get a poly bowl with bowl guard.

Element

0.01µ Element	C
0.01µ Element with DPI	D*
5µ Element	E
5µ Element with DPI	F*†
1µ Element	9
1µ Element with DPI	Q*
Adsorber	A

* Not available with F/R.

Drain type

Auto drain	A†
Manual drain	M
Pulse drain	B

† Not available on P31 Series

Relief adjustment

Non-rising knob relieving	N

Adjustment range

P31 & P32 with square gauge				With round gauge	
psig		bar			
1 = 30*		V = 2*		Z	2 bar; 30 psig; 0.2 MPa
3 = 60		S = 4		M	4 bar; 60 psig; 0.4 MPa
5 = 125		T = 8		G	8 bar; 125 psig; 0.8 MPa
				J§‡	17 bar; 250 psig; 1.7 MPa
				Without gauge	
				Y	2 bar; 30 psig; 0.2 MPa
				L	4 bar; 60 psig; 0.4 MPa
				N	8 bar; 125 psig; 0.8 MPa
				H§‡	17 bar; 250 psig; 1.7 MPa

* Unit comes with 0-4 bar or 0-60 psig gauge respectively.
§ Not available with poly bowl with bowl guard.
‡ Not available with P31 Series.

Lube type

Oil mist standard sight dome	L

Drain type

No drain closed end	N

Mounting

No bracket	A
Port blocks	C*
Port blocks with wall brkt	D*
Wall bracket	W

* For P31 Series 3/8" Port Blocks please order separately.
See Kits section.

Bold items are most common.

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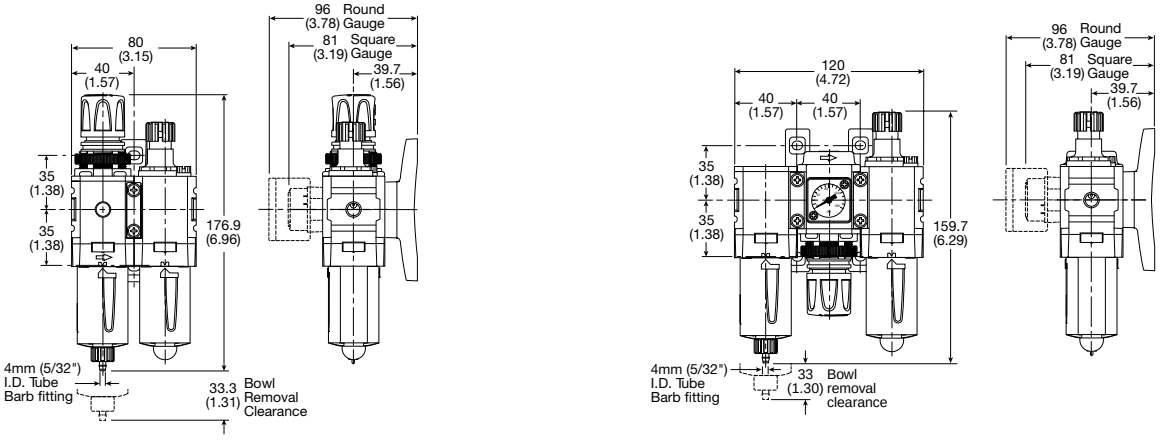
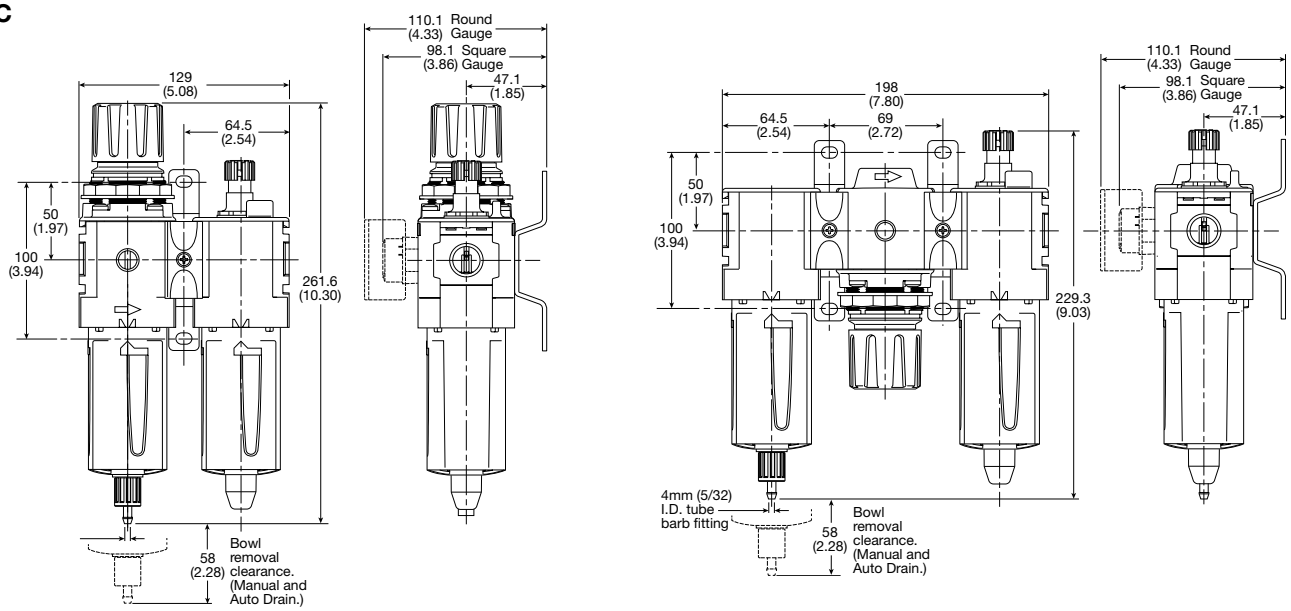
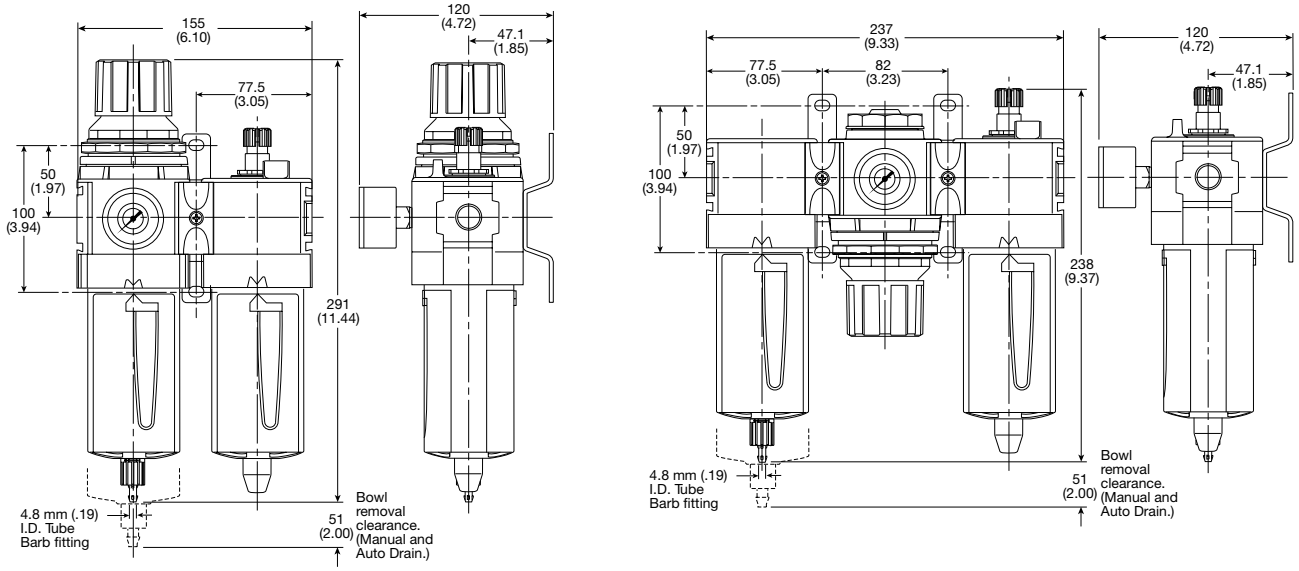
P31C



P32C



P33C



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Global Modular Electronic Proportional Regulators

- Very fast response times
- Accurate output pressure
- Micro parameter settings
- Selectable I/O parameters
- Quick, full flow exhaust
- LED display indicates output pressure
- No air consumption in steady state
- Multiple mounting options
- Protection to IP65
- P31P flows to 19 dm3/s (40 SCFM)
- P32P flows to 57 dm3/s (120 SCFM)

P31PA Series
Bottom exhaust

P32PA Series
Bottom exhaust

Ordering information

P31P	A	9	2	A	D	2		V		D	1	

Body size

Global modular mini (1/4")	P31P
Global modular compact (1/2")	P32P

Engr level

Current	A

Thread type

BSPP	1
BSPT	2
NPT	9

Port size

Global modular mini (1/4")	2
Global modular compact (1/2")	4

Version

Bottom ported exhaust (NC)	A
Bottom ported forced exhaust (NO)†	E

† When the supply voltage is lost the unit will automatically exhaust the regulated pressure to 0 bar (atmospheric pressure)

Pressure range

Z	0 - 2 bar (0-29 PSIG)
D	0 - 10 bar (0-145 PSIG)

Power supply

2	24 volts

Control signal

V	0-10V‡

‡ Factory setting is 0-10 V control signal. 4-20 mA control signal available via parameter 4 on keypad.

Input Connector

1	M12 (4-pin)

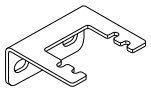
Output signal

D	Digital, PNP
P	PNP or 0-10V
N	NPN or 0-10V
M	4-20mA fixed

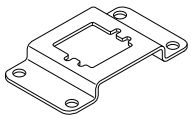
D) Digital PNP output only, no analog output selectable
P) Digital PNP and analogue 0-10V outputs selectable, by means of parameter 6. (Factory default 0-10V)
N) Digital NPN and analog 0-10 V outputs selectable by means of parameter 6. Factory default 0-10V)
M) Analog 4-20mA output only.
Note: On all analog outputs the F.S. value can be adjusted by means of parameter 8.

Bold items are most common.

P31P mounting brackets



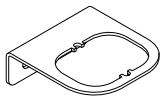
L-bracket



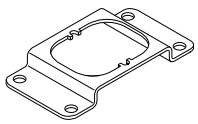
Foot bracket

Description	Part number
L-bracket mounting kit	**P3HKA00ML**
Foot bracket mounting kit	**P3HKA00MC**

P32P mounting brackets



L-bracket



Foot bracket

Description	Part number
L-bracket mounting kit	**P3KKA00ML**
Foot bracket mounting kit	**P3KKA00MC**

Cables

Part number	Description
CB-M12-4P-2M	2 mtr. cable with moulded straight M12x1 connector

☐ Most popular.

For Flow Curve Charts please see page E39.

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Technical information

Working medium
Compressed air or inert gasses, filtered to 40µ.

Supply pressure

Max. operating pressure:
2 bar unit: .....3 bar (43.5 PSIG)
10 bar unit: .....10.5 bar (152 PSIG)
Min. Operating Pressure ..... P2 pressure + 0.5 bar (7.3 PSIG)

Pressure control range
Available in three pressure ranges, 0-2 bar (0-29 PSIG), 0-7 bar (0-101.5 PSIG) or 0-10 bar (0-145 PSIG). Pressure range can be changed through the software at all times. (parameter 19)

Temperature range
0°C up to +50°C (32°F up to 122°F)

Weights:
P31P = 0.291 kg (0.64 lbs)
P32P = 0.645 kg (1.42 lbs)

Air consumption
No consumption in stable regulated situation.

Display
The regulator is provided with a digital display, indicating the output pressure, either in bar or PSIG.
The factory setting is as indicated on the label, can be changed through to software at all times (parameter 14)

⚠ WARNING

Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed maximum primary pressure rating.

Supply voltage
24 VDC +/- 10%

Power consumption
Max. 1.1W with unloaded signal outputs

Control signals
The electronic pressure regulator can be externally controlled through an analogue control signal of either 0-10V or 4-20mA. (parameter 4).

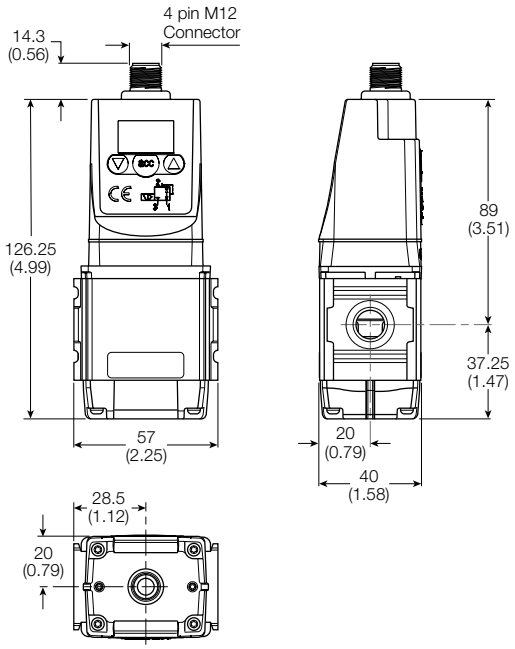
Output signals
As soon as the output pressure is within the signal band a signal is given of 24VDC, PNP Ri = 1 kOhm
Outside the signal band this connection is 0V.

Connections
(In case of output signal (Option D)
Central M12 connector 4-pole

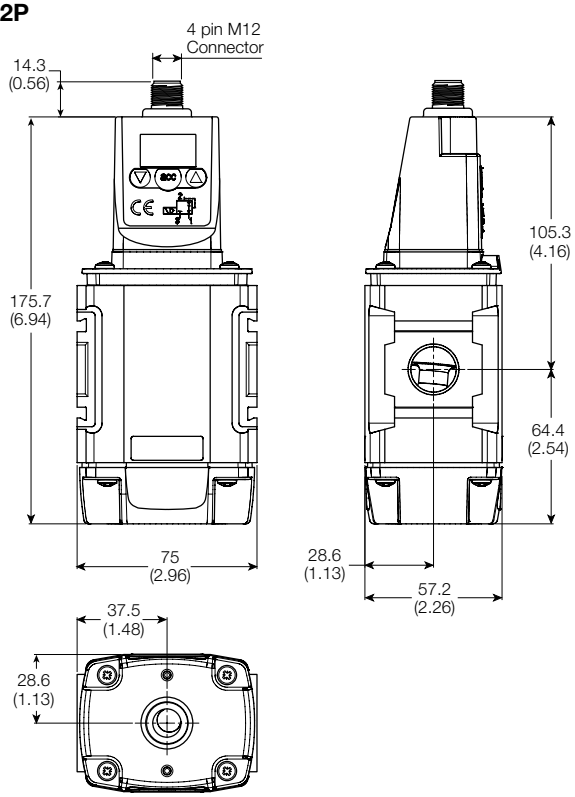
The electrical connections are as follows:

Pin No.		Function	Color
1	24 V	Supply	Brown
2	0 to 10 V	Control Signal Ri = 100k Ω	White
	4 to 20mA	Control Signal Ri = 500 Ω	
3	0 V (GND)	Supply	Blue
4	24 V	Alarm Output Signal	Black

P31P



P32P



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Global Modular Soft Start / Dump Valves

- Modular design with 1/4" or 1/2" integral ports (NPT, BSPP & BSPT)
- The 3-way, 2-position function automatically dumps downstream pressure on the loss of pilot signal
- Adjustable slow start
- Solenoid or air pilot options
- High flow & exhaust capability
- Silencer included

P31TA Series shown
Bottom exhaust

P32TA Series shown
Bottom exhaust

Operating information

Operating pressure (max):	Solenoid Air pilot	10 bar (150 PSIG) 17 bar (250 PSIG)
Operating pressure (min):		3 bar (44 PSIG)
Operating temperature (max):	Solenoid Air pilot	50°C (122°F) 80°C (176°F)
Flow Capacity*:	P31 Series P32 Series	17 dm^3/s (36 SCFM) 48 dm^3/s (97 SCFM)

*Inlet pressure 6.3 bar (91.3 PSIG), pressure drop 1 bar (14.5 PSIG).

For Flow Curve Charts please see page E39.

Ordering information

P31T A 9 2 S G N — **Solenoid type only: C 2CN**

Body size

Combined soft start / dump valve (1/4")	P31T
Combined soft start / dump valve (1/2")	P32T
Dump valve (1/4")	P31D
Dump valve (1/2")	P32D
Soft start	P31S
Soft start	P32S

Engr level

Current	A

Thread type

BSPP	1
BSPT	2
NPT	9

Port size

Global modular mini (1/4")	2
Global modular compact (1/2")	4

Pilot type

P	External air pilot
S	Solenoid pilot
Y*	Internal air pilot

* Only available on P31SA & P32SA Dump Valves.

Actuator interface

0	Internal Pilot
G	15mm solenoid (P31 only)
C	30mm solenoid
P*	Threaded air pilot

* Only available on P31SA & P32SA Dump Valves.

Solenoid type

C	15mm (P31 series only)
A	30mm CNOMO coil (P32 only)
D	30mm CNOMO coil (M12 connection) (P32 only)

Solenoid voltage

2CN	24VDC non locking manual overide
3GN	120VAC non locking manual overide
1FN	120VAC non locking manual override (P31 series only)

Note:
P32 unit used for both P32 & P33 series

Bold items are most common.

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Combined soft start / Dump valves (P31T / P32T)

Port size	Description	Part number
1/4"	120VAC Solenoid & cable plug	**P31TA92SGNC1FN**
1/4"	24VDC Solenoid & cable plug	**P31TA92SGNC2CN**
1/4"	External air pilot operated	**P31TA92PPN**
1/2"	120VAC 30mm coil & cable plug included	**P32TA94SCNA3GN**
1/2"	24VDC 30mm coil & cable plug included	**P32TA94SCNA2CN**
1/2"	External air pilot operated	**P32TA94PPN**

Note: Includes exhaust silencer. Flow with 6.3 bar (91.3) PSIG) inlet and 1 bar (14.5 PSIG) pressure drop.

Dump valves (P31D / P32D)

Port size	Description	Part number
1/4"	120VAC Solenoid & cable plug	**P31DA92SGNC1FN**
1/4"	24VDC Solenoid & cable plug	**P31DA92SGNC2CN**
1/4"	External air pilot operated	**P31DA92PPN**
1/2"	120VAC 30mm coil & cable plug included	**P32DA94SCNA3GN**
1/2"	24VDC 30mm coil & cable plug included	**P32DA94SCNA2CN**
1/2"	External air pilot operated	**P32DA94PPN**

Note: Includes exhaust silencer.

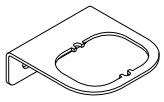
Soft starts (P31S / P32S)

Port size	Description	Part number
1/4"	120VAC Solenoid & cable plug	**P31SA92SGNC1FN**
1/4"	24VDC Solenoid & cable plug	**P31SA92SGNC2CN**
1/4"	Internal air pilot operated	**P31SA92Y0N**
1/4"	External air pilot operated	**P31SA92PPN**
1/2"	120VAC 30mm coil & cable plug included	**P32SA94SCNA3GN**
1/2"	Internal air pilot operated	**P32SA92Y0N**
1/2"	24VDC 30mm coil & cable plug included	**P32SA94SCNA2CN**
1/2"	External air pilot operated	**P32SA94PPN**

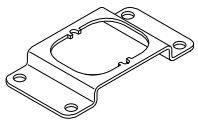
Material specifications

Body	Aluminum
Body cover	Polyester
Seals	Nitrile NBR

P31P mounting brackets



L-bracket



Foot bracket

Description	Part number
L-bracket mounting kit	**P3HKA00ML**
Foot bracket mounting kit	**P3HKA00MC**

☐ Most popular.

Note:
For solenoid operators and cable plugs (connectors) see pages E28 to E29.

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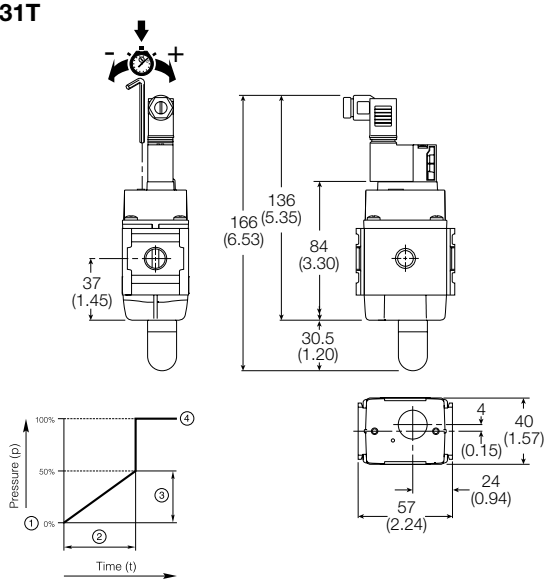
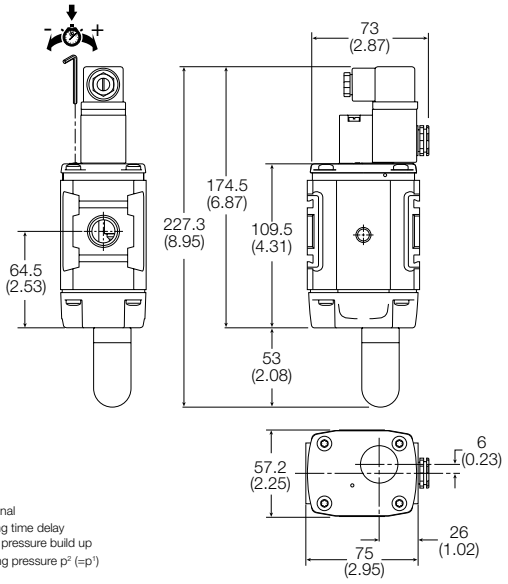
P31T

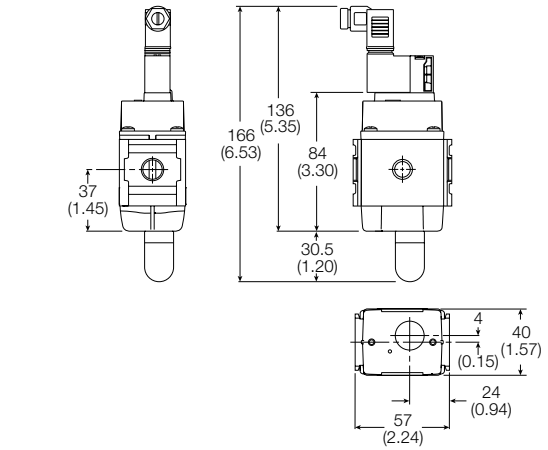


P32T

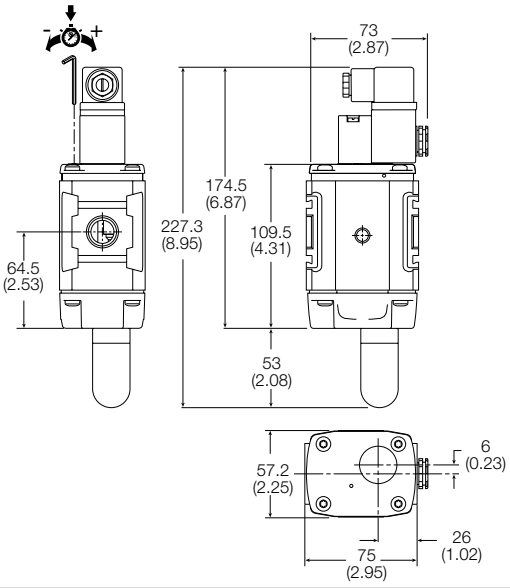


① Start signal
② Switching time delay
③ Gradual pressure build up
④ Operating pressure p^2 (=p^1)

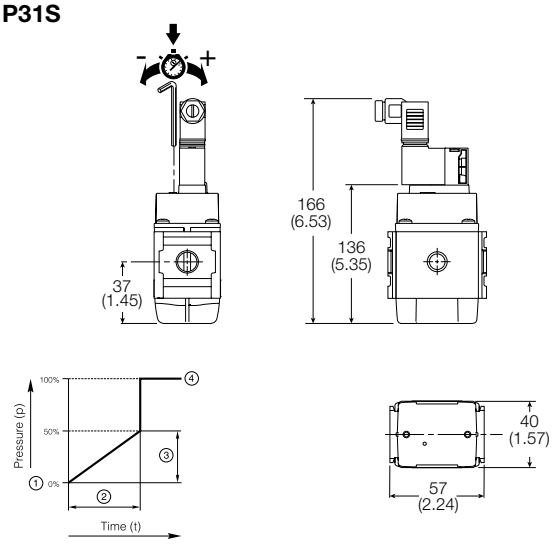
P31D



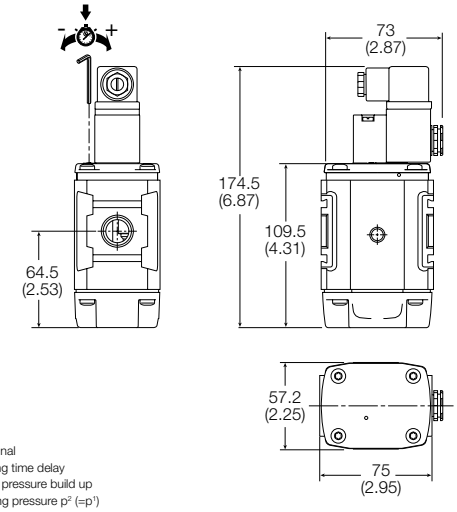
P32D



P31S



P32S



① Start signal
② Switching time delay
③ Gradual pressure build up
④ Operating pressure p^2 (=p^1)

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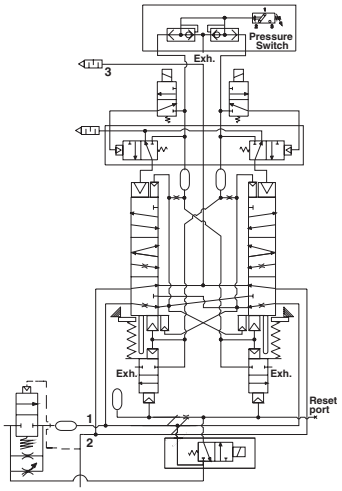
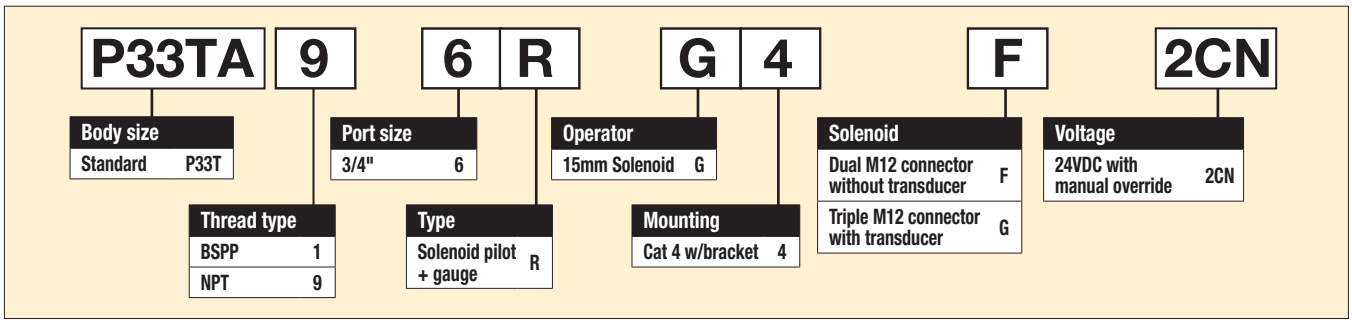
Redundant Safety Exhaust Valves

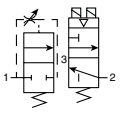
- Proven control reliable technology with integrated soft start
- Soft start application of air to the system when energized; can be adjusted for slower or faster buildup of system pressure
- Rapid exhaust of downstream air when de-energized to remove stored energy and allow safe access
- Memory, monitoring, and air flow control functions are integrated into two identical valve elements. Valves lock-out if asynchronous movement of valve elements occurs during actuation or de-actuation, resulting in a residual outlet pressure of less than 1% of supply.
- Reset can only be accomplished by the integrated electrical (solenoid) reset. Cannot be reset by removing and re-applying supply pressure.
- Basic 3/2 normally closed valve function: Dirt tolerant, wear compensating poppet design for quick response and high flow capacity.
- LED indicators of main solenoid operation, reset solenoid operation, and status indicator condition.
- Optional transducer for monitoring of downstream pressure in the system.
- Dual exhaust silencers included.
- Not for use with clutch / brake applications.
- For use in conjunction with a safety relay or safety PLC

P33T Schematic



Options:





Redundant Safety Exhaust Valves

Port size			Cv		Height	Width	Depth	Weight	
Inlet	Outlet	Transducer	1 to 2	2 to 3	mm (inches)	mm (inches)	mm (inches)	kg (lb)	Part number*
3/4	3/4	w/o transducer	3.7	8.5	273.8 (10.78)	136.0 (5.35)	147.6 (581)	7.3 (16.1)	**P33TA96RG4F2CN**
3/4	3/4	w/ transducer	3.7	8.5	273.8 (10.78)	136.0 (5.35)	147.6 (581)	7.4 (16.3)	**P33TA96RG4G2CN**

* NPT port threads. For BSPP threads , replace "9" in the part number with a "1".

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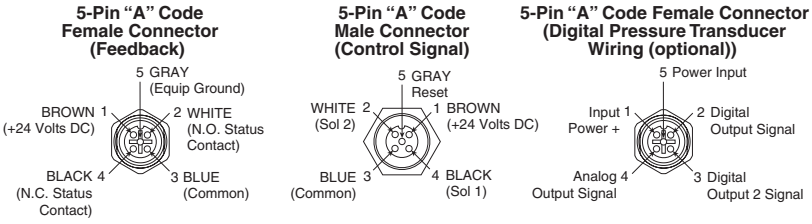
Technical data

Pilot solenoids ..... According to VDE 0580
Enclosure rating ..... According to DIN 400 50 IP 65
Connector socket ..... According to DIN 43650 Form A three solenoids, rated for continuous duty
Standard voltages 24VDC
Power consumption (each solenoid): for primary and reset solenoids ..... 1.2 watts on DC
Enclosure rating ..... IP65, IEC 60529
Electrical connection M12, 5-pin
Ambient temperature ..... 15°F to 122°F (-10°C to 50°C)
Media temperature ..... 40°F to 175°F (4°C to 80°C)
Flow media ..... Compressed air, filtered to minimum 40 micron
Inlet pressure ..... 30 to 150 psig (2 to 10 bar)
Pressure switch rating (Status indicator) ..... 5 amps at 30 volts DC.
Monitoring ..... Dynamically, cyclically, internally during each actuating and de-actuating movement. Monitoring function has memory and requires an overt act to reset unit after lockout.
Mounting orientation ..... Vertically with pilot solenoids on top
Port threads ..... 3/4 NPT, 3/4 BSPP
Control reliable ..... Category 4 (Cat 4); performance Level e (PLe) in accordance with Machine Directive - EN ISO 13849-1 (Certification pending)

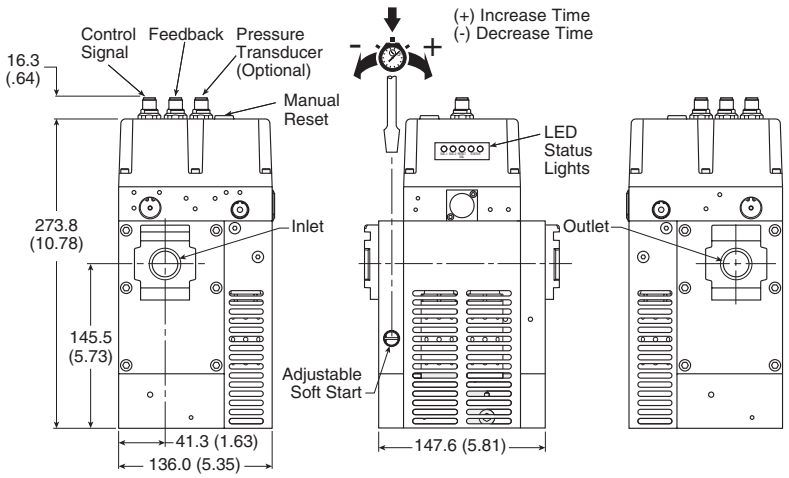
Service kits

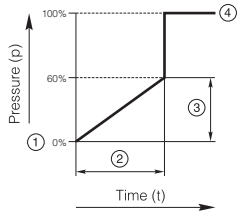
Description	P33T
Black grill	**1834C05-001**
Body connector	**P32KA00CB**
Cables M12, 5-pin female to flying lead cable, TPE; 2 m (6.6 ft)	**RKC 4.5-2/S1587**
M12, 5-pin male to flying lead cable, TPE; 2 m (6.6 ft)	**RSC 4.5-2/S1587**
Port block kit 1/2 NPT 3/4 NPT 1/2 BSPP 3/4 BSPP 1/2 BSPT 3/4 BSPT	**P32KA94CP** **P32KA96CP** **P32KA14CP** **P32KA16CP** **P32KA24CP** **P32KA26CP**
Pressure switch	**1227A30-001**
Pressure transducer (Optional)	**1232H30-001**
T-bracket w/ body connector	**P32KA00MT**
T-bracket (Fits to body connector or port block)	**P32KA00MB**
Silencer(s) 3/4"	**5500A5013**
Solenoid (Main & reset)	**1527B7916-001**
Square flush mounting gauge kit 0-160 psig	**K4511SCR160**

Valve wiring

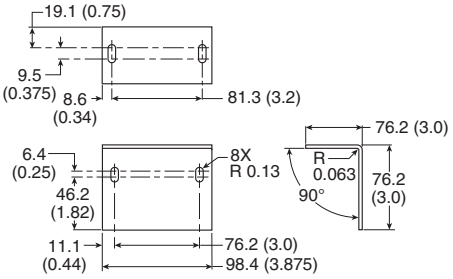


Dimensions mm (inches)





Angle Mounting Bracket



Note: Mounting bracket and installation screws included and required to install unit in the system.

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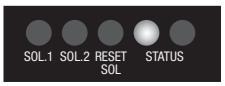
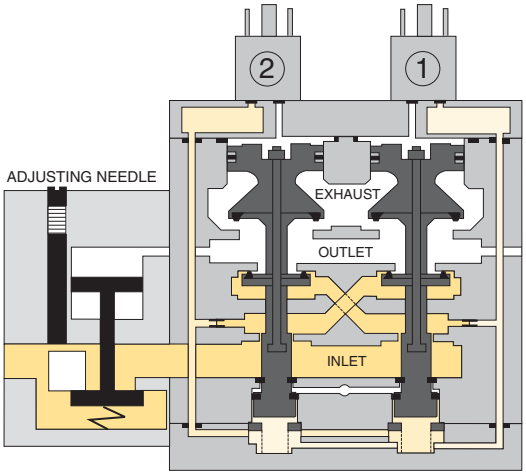
Valve de-actuated (ready-to-run):

The flow of inlet air pressure to the inlet chamber of the main valve internals is restricted by a fixed orifice and an adjustable flow control as well as an air piloted 2-way normally closed poppet valve. The flow of inlet air pressure into the crossover passages is restricted by the size of the passage between the stem and the valve body opening. Flow is sufficient to quickly pressurize pilot supply / timing chambers 1 and 2. The inlet poppets prevent air flow from crossover passages into the outlet chamber. Air pressure acting on the inlet poppets and return pistons securely hold the valve elements in the closed position. (Reset adapter omitted for clarity.)

The green “Status” LED will be illuminated indicating the valve is operational.



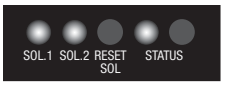


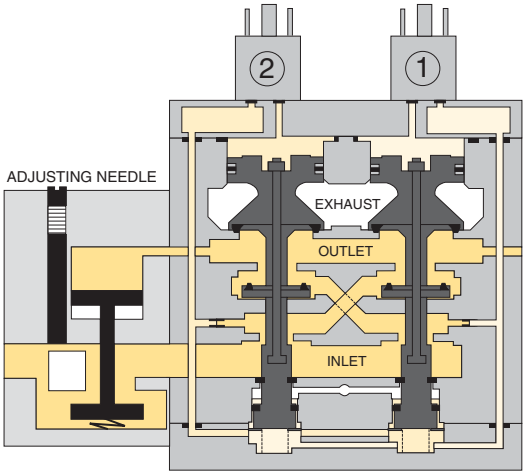
Valve actuated:

Energizing the pilot valves simultaneously applies pressure to both pistons, forcing the internal parts to move to their actuated (open) position, where inlet air flow to crossover passages is fully open, inlet poppets are fully open and exhaust poppets are fully closed. The outlet is then pressurized at a rate allowed by the fixed orifice and the adjusted flow control. Once the air pressure in the outlet chamber reaches approximately 60% of inlet pressure, the air piloted 2-way normally closed poppet valve opens fully and the pressure in the inlet, crossovers, outlet, and timing chambers are quickly equalized. The adjustable flow control will control the time it takes for the outlet air pressure to reach approximately 60% of inlet pressure.

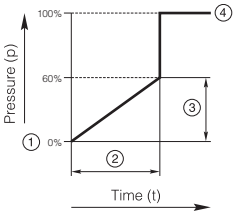
De-energizing the pilots quickly causes the valve elements to return to the ready-to-run position.

Solenoid 1, Solenoid 2 and the green “Status” LED's will be illuminated indicating the valve is operating properly.





Soft start function:



① Start signal
② Switching time delay
③ Gradual pressure build up
④ Operating pressure p^2 (=p^1)

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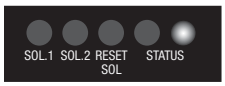
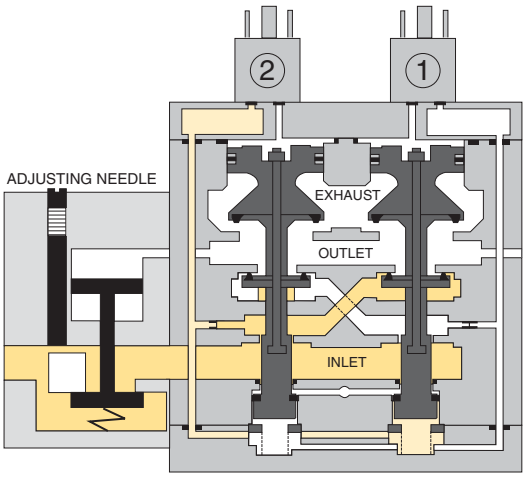
Valve fault and lock-out:

Whenever the valve elements operate in a sufficiently asynchronous manner, either on actuation or de-actuation, the valve will move to a locked-out position. In the locked-out position, one crossover and its related timing chamber will be exhausted, and the other crossover and its related timing chamber will be fully pressurized. The valve element (side 2) that is partially actuated has pilot air available to fully actuate it, but no air pressure on the return piston to fully de-actuate the valve element.

Air pressure in the crossover acts on the differential of side 2 stem diameters creating a latching force. Side 1 is in a fully closed position, and has no pilot air available to actuate, but has full pressure on the inlet poppet and return piston to hold the element in the fully closed position. Inlet air flow on side 1 into its crossover is restricted, and flows through the open inlet poppet on side 2, through the outlet into the exhaust port, and from the exhaust port to atmosphere. Residual pressure in the outlet is less than 1% of inlet pressure. The return springs are limited in travel, and can only return the valve elements to the intermediate (locked-out) position. Sufficient air pressure acting on the return pistons is needed to return the valve elements to a fully closed position.

The red “Status” LED will be illuminated indicating the valve in fault and lock-out must be reset





Valve reset (electrical or manual):

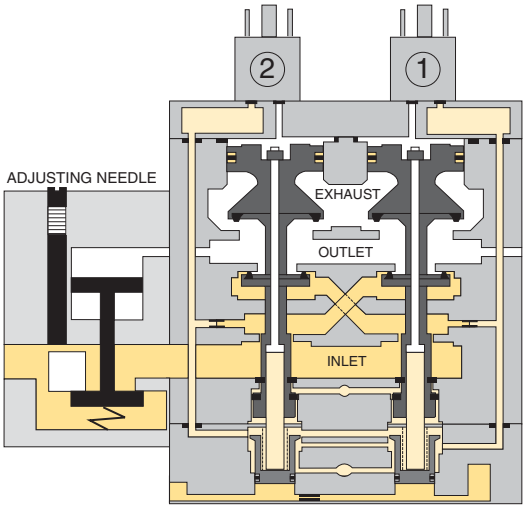
The reset procedure is as follows:

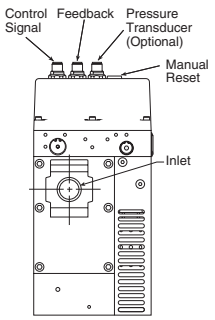
- Remove the electrical signals to the main coils
- Ensure there is air supplied to the valve
- Energize the reset solenoid for a minimum of 200 ms
- Allow a 200 ms delay after de-energizing the reset solenoid and re-energizing the main solenoids

The valve will remain in the locked-out position, even if the inlet air supply is removed and re-applied.

A remote reset signal must be applied to reset the valve. A momentary, remote electrical signal must be applied to the reset solenoid to apply pressure to the reset pistons in the valve. Actuation of the reset piston physically pushes the main valve elements to their closed position. Inlet air fully pressurizes the crossovers and holds the inlet poppets on seat. Actuation of the reset piston opens the reset poppet, thereby, immediately exhausting pilot supply air, thus, preventing valve operation during reset (Reset adapter added to illustration.). De-actuation of reset pistons causes the reset poppets to close and pilot supply to fully pressurize. Reset air pressure is applied by a 3/2 normally closed solenoid, or a manual push button mounted on the reset adapter in the top valve cover.

The green “Status” LED will be illuminated once the valve is reset.





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Global Modular Solenoid Operators

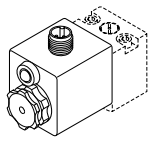
Solenoid Operators - CNOMO

Technical data - Solenoid operators, coil combinations

	NC Normal Operator with 22 x 30 standard coil	NC Normal Operator with 30 x 30 standard coil
Working pressure	0 to 10 bar	0 to 10 bar
Ambient temperature	-10°C to 60°C *	-10°C to 60°C *
Power (DC)	4.8W	2.7W
Power (AC)	8.5VA	4.9VA
Voltage tolerance	+/-10%	+/-10%
Duty cycle	100%	100%
Insulation class	F	F
Electric connection	B Industrial	DIN 43650A
Protection	IP65	IP65
Approval		UL/CSA
Working media	All neutral media such as compressed air	

* Limited to 50°C if use with 100% duty cycle

Solenoid Coils with M12 Connection



Voltage	Order code	Weight (Kg)
Direct current		
24VDC	**P2FC6449**	0.065

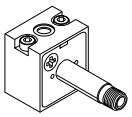
Transients

Interrupting the current through the solenoid coil produces momentary voltage peaks which, under unfavourable conditions, can amount to several hundred times the rated operating voltage. Normally, these transients do not cause problems, but to achieve the Maximum life of relays in the circuit (and particularly of transistors, thyristors and integrated circuits) it is desirable to provide protection by means of voltage-dependent resistors (varistors). All connectors/cable plugs EN175301-803 with LED's include this type of circuit protection.

Materials

Pilot Valve	
Body:	Polyamide
Armature tube:	Brass
Plunger & core:	Corrosion resistant Cr-Ni steel
Seals:	Fluorocarbon
Screws:	Stainless steel
Coil	
Encapsualtion material:	Thermoplastic as standard Duroplast for M12 connection

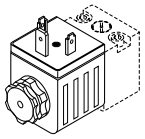
Spare Base Solenoid Pilot Operator CNOMO NC



Description	Order code non-lock manual override	Weight (Kg)
Standard Duty	**P2FP23N4B**	0.065
No Override	**P2FP23N4A**	0.065

Note: Solenoid pilot operators are fitted to the Global range. Order the above part numbers for spares. The operators are supplied with mounting screws and interface 'O' rings. Coils and connectors must be ordered separately.

Solenoid Coils with DIN A or Industrial B Connection



Voltage	22mm x 30mm Order code B industrial standard	Weight (Kg)	30mm x 30mm Order code DIN 43650A standard	Weight (Kg)
Direct current				
24VDC	**P2FCB449**	0.093	**P2FCA449**	0.105
Alternative current				
110V 50Hz, 120V 60Hz	**P2FCB453**	0.093	**P2FCA453**	0.105

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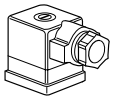
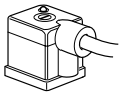
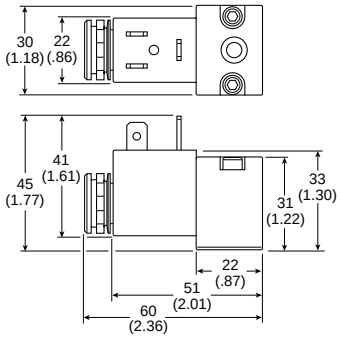
Solenoid Connectors / Cable Plugs EN175301-803

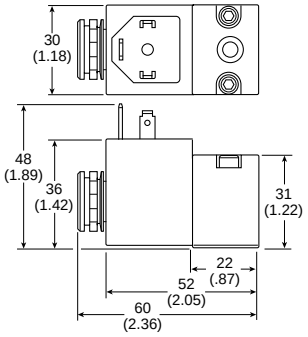
	Description	Order code 22mm Form B Industrial	Order code 30mm Form A DIN 43650A
With standard screw 	Standard IP65 without flying lead	**PS2429BP**	**PS2028BP**
	With LED and protection 24VAC/DC	**PS243079BP**	**PS203279BP**
	With LED and protection 110VAC	**PS243083BP**	**PS203283BP**
With cable 	Standard with 2m cable IP65	**PS2429JBP**	**PS2028JCP**
	24VAC/DC, 2m cable LED and protection IP65	**PS2430J79BP**	**PS2032J79CP**
	110VAC/DC, 2m cable LED and protection IP65	**PS2430J83BP**	**PS2032J83CP**

Solenoid coil dimensions mm (inches)

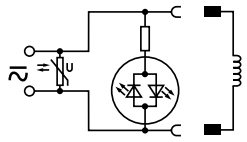
22 x 30mm



30 x 30mm



Electrical schematics

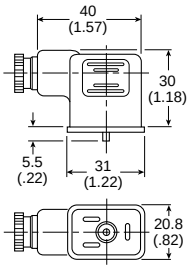


PS243079BP	**PS203279BP**
PS2430J79BP	**PS2032J79CP**
PS243083BP	**PS203283BP**
PS2430J83BP	**PS2032J83CP**
PS294679BP	**PS294683BP**
PS2946J79BP	**PS2946J83BP**

Cable plug dimensions mm (inches)

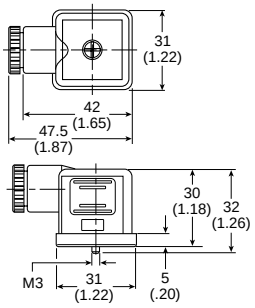
22mm Form B Industrial
Cable plugs

PS2429BP



30mm DIN 43650A
Cable plugs

PS2028BP



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Global Modular Accessories

Safety Lockout Valves

	Model type	Port size	Thread type	Flow dm^3/s (SCFM)	Part number Flow from *left to right*	Part number Flow from *right to left*
	P31	1/4"	NPT	47.2 (100)	**P31VA92LSAN**	
	P32	1/4"	NPT	66.5 (141)	**P32VA92LSAN**	**P32VA92LSBN**
		3/8"	NPT	101.9 (216)	**P32VA93LSAN**	**P32VA93LSBN**
		1/2"	NPT	128.4 (272)	**P32VA94LSAN**	**P32VA94LSBN**
	P33	1/2"	NPT	136.9 (290)	**P33VA94LSAN**	**P33VA94LSBN**
		3/4"	NPT	141.6 (300)	**P33VA96LSAN**	**P33VA96LSBN**

For thread type: BSPP 1, BSPT 2, NPT 9

Modular Ball Valve

	Model type	Port size	Exhaust port	Thread type	Flow dm^3/s (SCFM)	Part number Flow from *left to right*
	P31	1/4"	1/4"	NPT	20 (42.4)	**P31VB92LBNN**
	P32	3/8"	1/4"	NPT	90 (190.7)	**P32VB93LBNN**
		1/2"	1/4"	NPT	122 (258.5)	**P32VB94LBNN**
	P33	1/2"	1/2"	NPT	265 (561.5)	**P33VB94LBNN**
		3/4"	1/2"	NPT	320 (678)	**P33VB96LBNN**

For thread type: BSPP 1, BSPT 2, NPT 9

Manifold Blocks

	Model type	In / Out port size	Auxiliary port size top	Auxiliary port size bottom	Thread type	Part number
	P31	1/4"	1/4"	1/4"	NPT	**P31MA92022N**
	P32	1/2"	1/4"	1/2"	NPT	**P32MA94024N**
	P33	3/4"	1/4"	1/2"	NPT	**P33MA96024N**

For thread type: BSPP 1, BSPT 2, NPT 9

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P31 Series Accessories

	Description	Port size	Part number
	C-bracket (Fits to filter and lubricator body)	—	**P31KA00MW**
	T-bracket w/ body connector	—	**P31KA00MT**
	Body connector	—	**P31KA00CB**
	Port block kit	1/8 NPT	**P31KA91CP**
		1/4 NPT	**P31KA92CP**
		3/8 NPT	**P31KA93CP**
		1/8 BSPP	**P31KA11CP**
		1/4 BSPP	**P31KA12CP**
		3/8 BSPP	**P31KA13CP**
		1/8 BSPT	**P31KA21CP**
		1/4 BSPT	**P31KA22CP**
		3/8 BSPT	**P31KA23CP**
	Port block kit with T-bracket	1/8 NPT	**P31KA91CN**
		1/4 NPT	**P31KA92CN**
		3/8 NPT	**P31KA93CN**
		1/8 BSPP	**P31KA11CN**
		1/4 BSPP	**P31KA12CN**
		3/8 BSPP	**P31KA13CN**
		1/8 BSPT	**P31KA21CN**
		1/4 BSPT	**P31KA22CN**
		3/8 BSPT	**P31KA23CN**
	Angle bracket (Fits to regulator and filter / regulator body)	—	**P31KA00MR**

P32 Series Accessories

	Description	Part number
	Angle bracket (Fits to regulator and filter / regulator body)	**P32KA00MR**
	L-bracket (Fits to filter and lubricator body)	**P32KA00ML**

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P32 & P33 Series Accessories

	Description	Port size	Part number
	T-bracket with body connector	—	**P32KA00MT**
	Body connector	—	**P32KA00CB**
	Port block kit	1/4 NPT	**P32KA92CP**
		3/8 NPT	**P32KA93CP**
		1/2 NPT	**P32KA94CP**
		3/4 NPT	**P32KA96CP**
		1/4 BSPP	**P32KA12CP**
		3/8 BSPP	**P32KA13CP**
		1/2 BSPP	**P32KA14CP**
		3/4 BSPP	**P32KA16CP**
		1/4 BSPT	**P32KA22CP**
		3/8 BSPT	**P32KA23CP**
		1/2 BSPT	**P32KA24CP**
		3/4 BSPT	**P32KA26CP**
	T-bracket (fits to body connector or port block)	—	**P32KA00MB**

P33 Series Accessories

	Description	Part number
	Angle bracket (Fits to regulator and filter / regulator body)	**P33KA00MR**
	L-bracket (Fits to filter and lubricator body)	**P33KA00ML**

PPS1 Pressure Switch

Thread size	Part number
1/4 NPT	**PPS1-1C3-RHM**
1/8 NPT	**PPS1-2C3-RHM**
1/4" NPT	**PPS1-1C3-RWL**
1/8" NPT	**PPS1-2C3-RWL**

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Service Kits

	Description		P31	P32	P33
	Panel mount (plastic)		**P31KA00MP**	**P32KA00MP**	**P33KA00MP**
	Panel mount nut (aluminum)		**P31KA00MM**	**P32KA00MM**	**P33KA00MM**
	5µ element kit		**P31KA00ESE**	**P32KA00ESE**	**P33KA00ESE**
	1µ element kit		**P31KA00ES9**	**P32KA00ES9**	**P33KA00ES9**
	0.01µ element kit		**P31KA00ESC**	**P32KA00ESC**	**P33KA00ESC**
	Adsorber element kit		**P31KA00ESA**	**P32KA00ESA**	**P33KA00ESA**
	Auto drain kit			**P32KA00DA**	**P32KA00DA**
	Differential pressure indicator kit		**P31KA00RQ**		
				P32KA00RQ	**P32KA00RQ**
	Fill plug kit		**P31KA00PL**	**P32KA00PL**	**P32KA00PL**
	Drip control assembly kit		**P32KA00PG**	**P32KA00PG**	**P32KA00PG**
	Plastic bowl w/ bowl guard &	manual drain	**P31KA00BGM**	**P32KA00BGM**	**P33KA00BGM**
		pulse drain	**P31KA00BGB**		
		auto drain		**P32KA00BGA**	**P33KA00BGA**
	Lubricator	no drain	**P31KA00BGN**	**P32KA00BGN**	**P33KA00BGN**
	Metal bowl w/o sight gauge &	manual drain	**P31KA00BMM**	**P32KA00BMM**	**P33KA00BMM**
		pulse drain	**P31KA00BMB**		
		auto drain		**P32KA00BMA**	**P33KA00BMA**
	Lubricator	no drain	**P31KA00BMN**		
	Metal bowl w/ sight gauge &	manual drain		**P32KA00BSM**	**P33KA00BSM**
		auto drain		**P32KA00BSA**	**P33KA00BSA**
	Lubricator	no drain		**P32KA00BSN**	**P33KA00BSN**

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Service Kits

	Port size	Description		P31	P32	P33
		Regulator - relieving repair kit		**P31KA00RB**	**P32KA00RB**	**P33KA00RB**
		Regulator - non relieving repair kit		**P31KA00RC**	**P32KA00RC**	**P33KA00RC**
		Regulator - main adjusting spring 0-2 bar (0-30 PSIG) kit		**P31KA00PR**	**P32KA00PR**	**P33KA00PR**
		Regulator - main adjusting spring 0-4.1 bar (0-60 PSIG) kit		**P31KA00PS**	**P32KA00PS**	**P33KA00PS**
		Regulator - main adjusting spring 0-8.6 bar (0-125 PSIG) kit		**P31KA00PT**	**P32KA00PT**	**P33KA00PT**
		Regulator - main adjusting spring 0-17 bar (0-250 PSIG) kit			**P32KA00PV**	**P33KA00PV**
		Square flush mount gauge kit	0-4 bar	**K4511SCR04B**		
			0-11 bar	**K4511SCR11B**		
			0-60 PSIG	**K4511SCR060**		
			0-160 PSIG	**K4511SCR160**		
	1/8"	1.00" round gauge	0-60 PSIG / 0-4.1 bar	**K4510N18060**		
	1/8"		0-160 PSIG / 0-10 bar	**K4510N18160**		
	1/8"	40mm round gauge	0-30 PSIG / 0-2 bar	**K4515N18030**		
	1/8"	(Not for use with common port regulators)	0-60 PSIG / 0-4.1 bar	**K4515N18060**		
	1/8"		0-160 PSIG / 0-10 bar	**K4515N18160**		
	1/4	50mm round gauge	0-30 PSIG / 0-2 bar		**K4520N14030**	**K4520N14030**
	1/4"		0-60 PSIG / 0-4.1 bar		**K4520N14060**	**K4520N14060**
	1/4"		0-160 PSIG / 0-10 bar		**K4520N14160**	**K4520N14160**
	1/4"		0-300 PSIG / 0-20 bar		**K4520N14300**	**K4520N14300**
	1/4"	44mm (1-3/4") digital round	0-160 PSIG / 0-11 bar / 0-1.1 MPa		**K4517N14160D**	**K4517N14160D**
		Body connector o-ring (spares kit) (pack of 10)		**P31KA00CY**	**P32KA00CY**	**P32KA00CY**
		Tamperproof knob kit		**P31KB00AT**	**P32KB00AT**	

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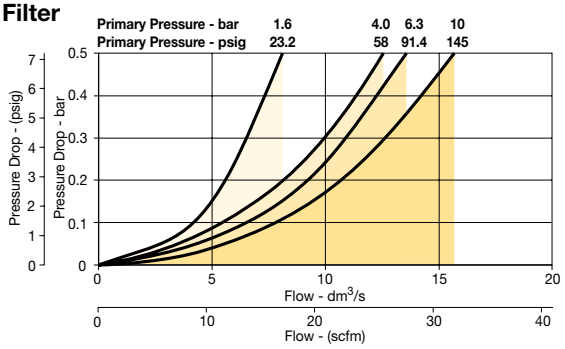
Global FRL Flow Charts

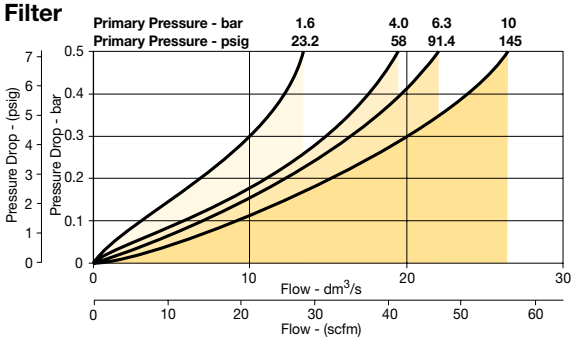
Mini Particulate Filter - P31

1/4 Filter

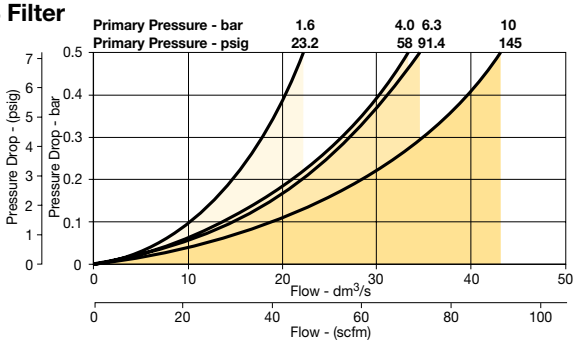


Compact Particulate Filter - P32

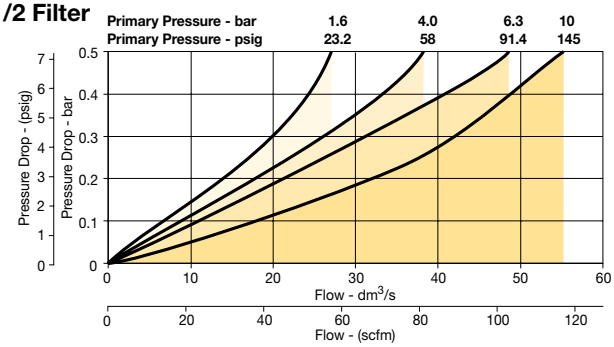
1/4 Filter



3/8 Filter

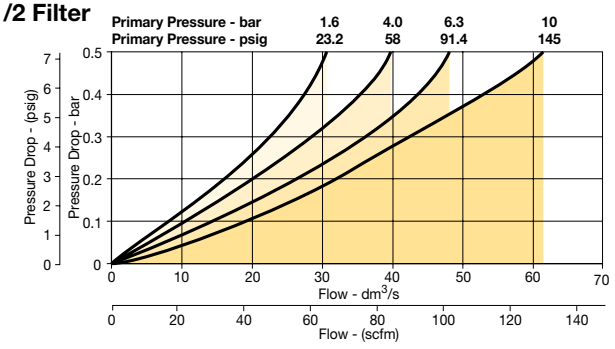


1/2 Filter

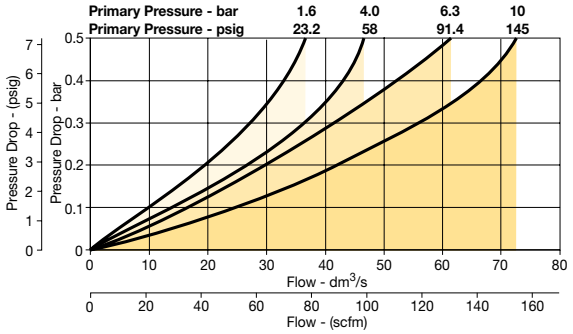


Standard Particulate Filter - P33

1/2 Filter



3/4 Filter



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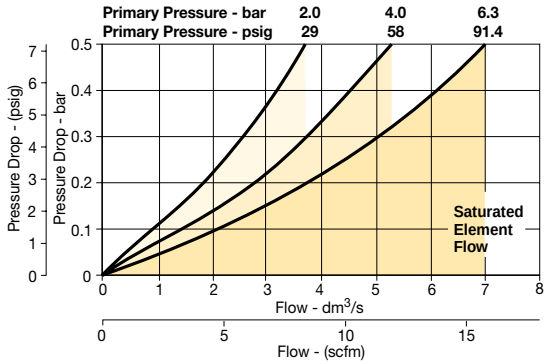
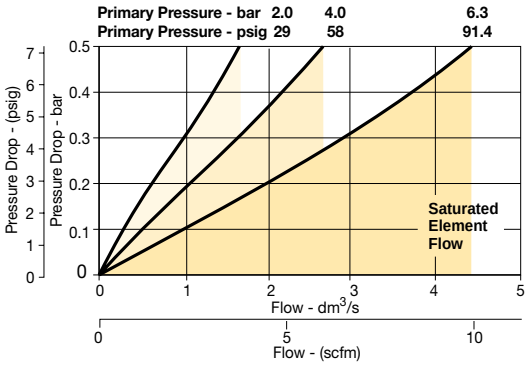
Mini Coalescing and Adsorber Filters - P31

P31 - 1.0 micron flow

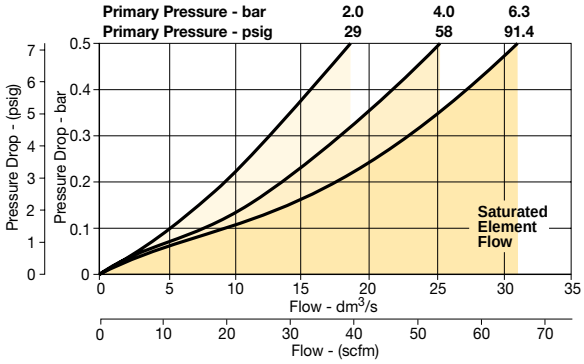


P31 - 0.01 micron flow

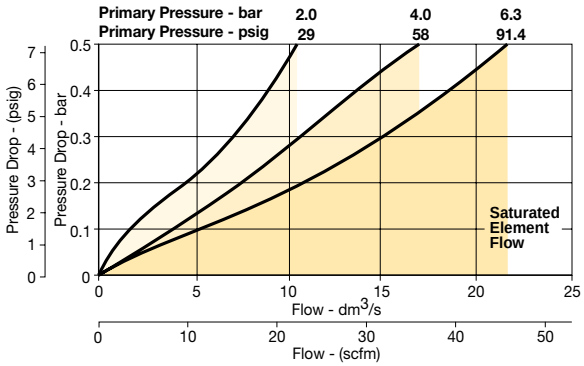


Compact Coalescing and Adsorber Filter - P32

P32 - 1.0 micron flow

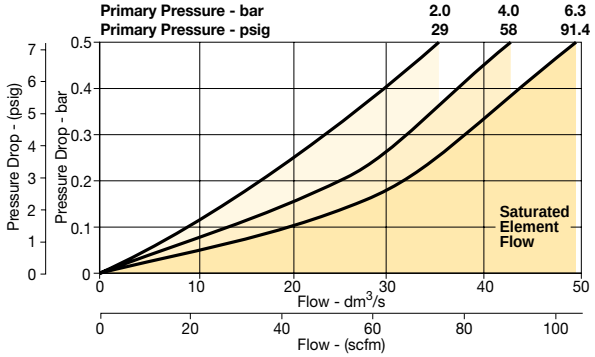


P32 - 0.01 micron flow

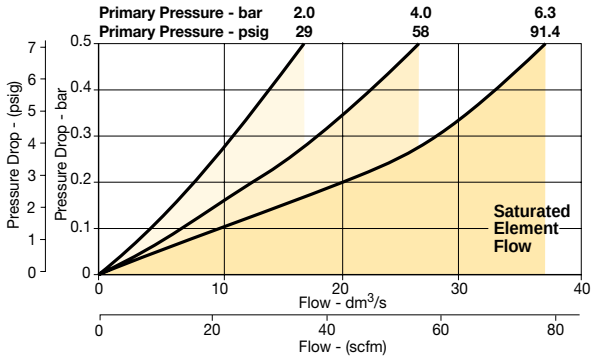


Standard Coalescing and Adsorber Filter - P33

P33 - 1.0 micron flow



P33 - 0.01 micron flow



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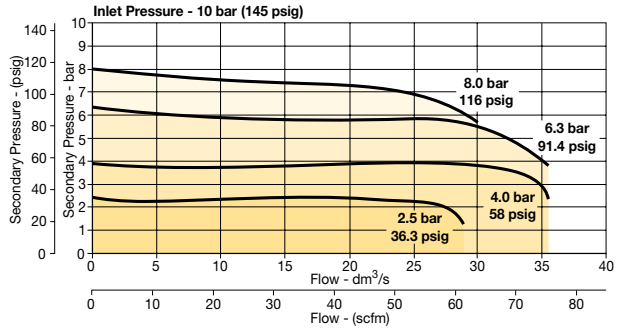
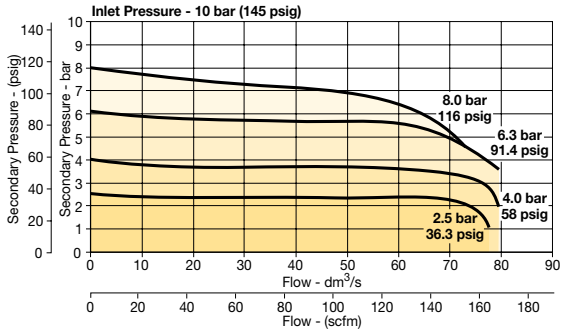
Mini Regulator - P31

1/4 Regulator



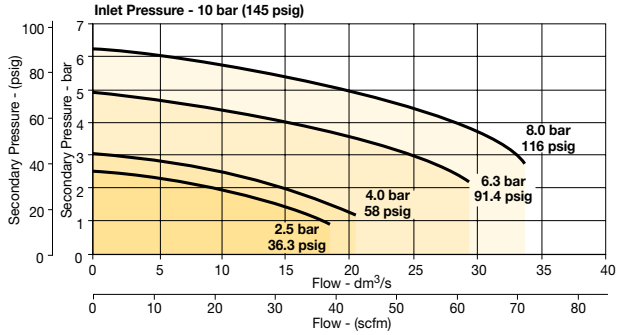
Compact Regulator - P32

1/2 Regulator



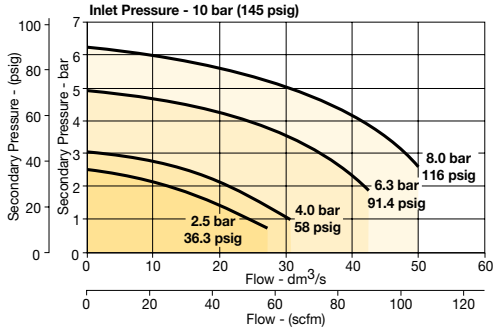
Mini Common - P1 Regulator - P31

1/4 Common Regulator



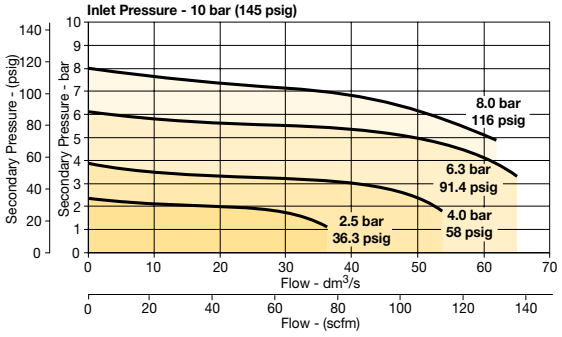
Compact Common - P1 Regulator - P32

1/4, 3/8 or 1/2 Common Regulator

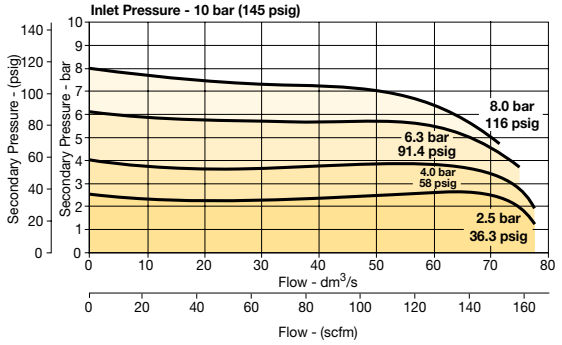


Compact Regulator - P32

1/4 Regulator

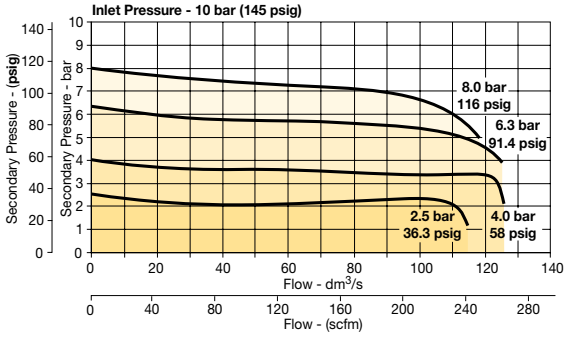


3/8 Regulator

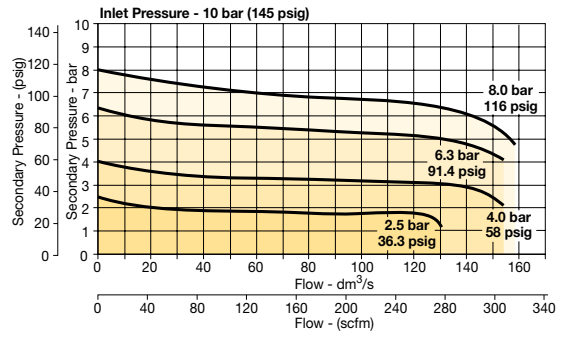


Standard Regulator - P33

1/2 Regulator



3/4 Regulator



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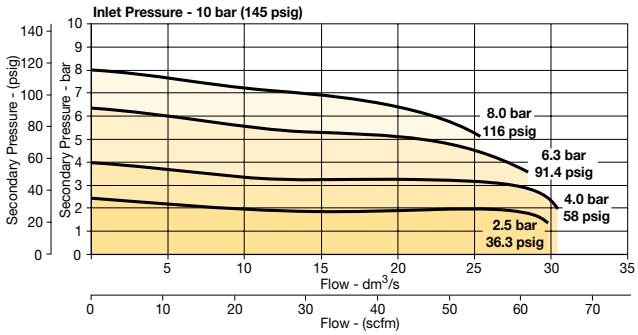
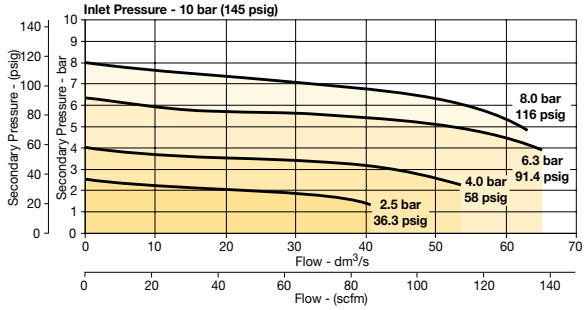
Mini Filter / Regulator - P31

1/4 Filter/Regulator

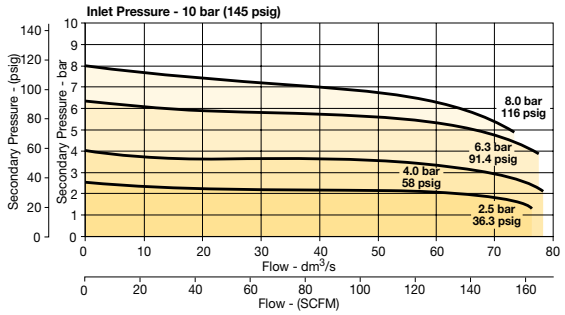


Compact Filter / Regulator - P32

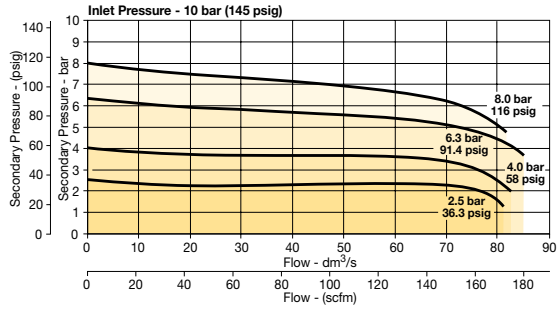
1/4 Filter/Regulator



3/8 Filter/Regulator

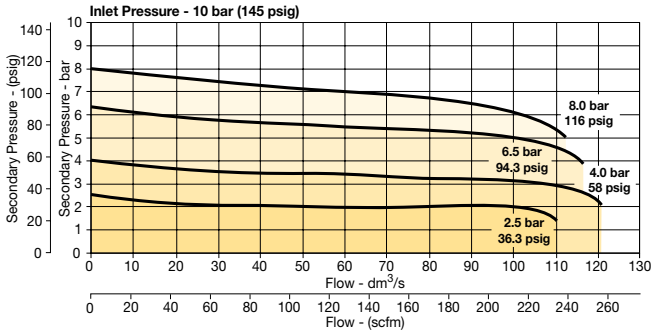


1/2 Filter/Regulator

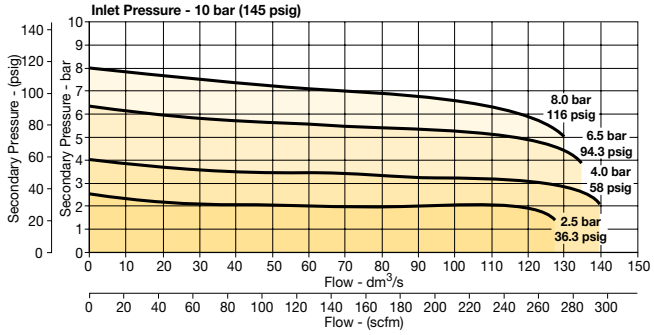


Standard Filter / Regulator - P33

1/2 Filter/Regulator



3/4 Filter/Regulator



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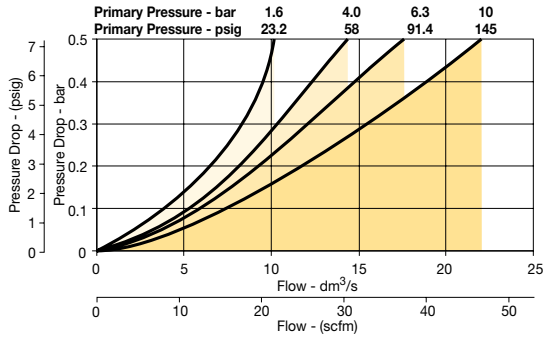
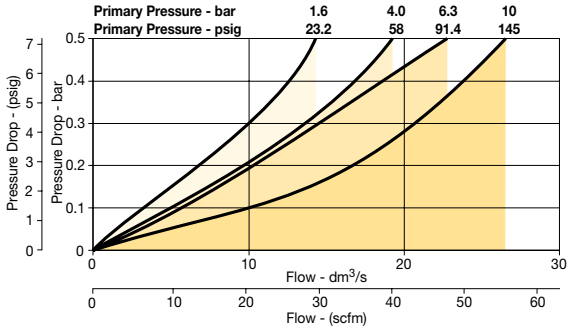
Mini Lubricator - P31

1/4 Lubricator

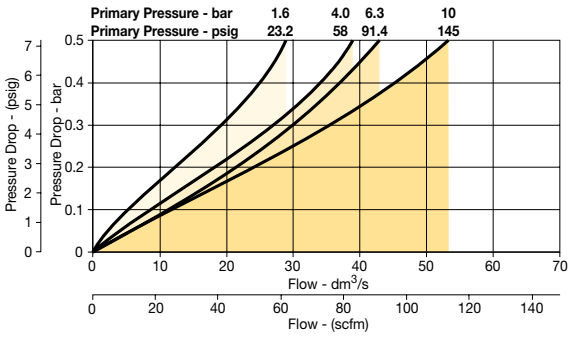


Compact Lubricator - P32

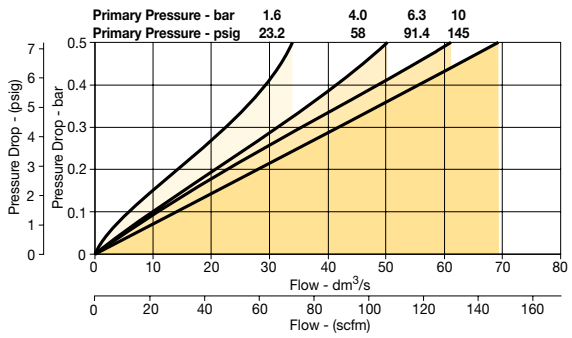
1/4 Lubricator



3/8 Lubricator

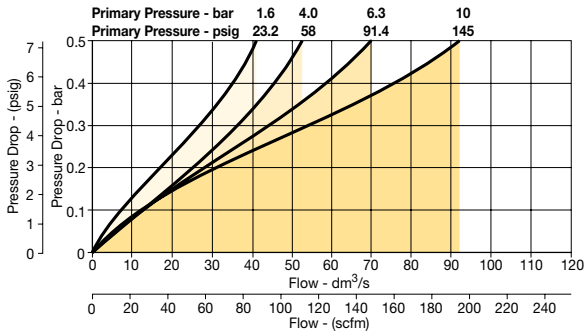


1/2 Lubricator

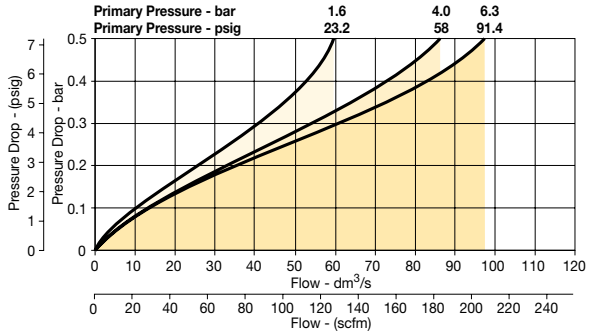


Standard Lubricator - P33

1/2 Lubricator



3/4 Lubricator



Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
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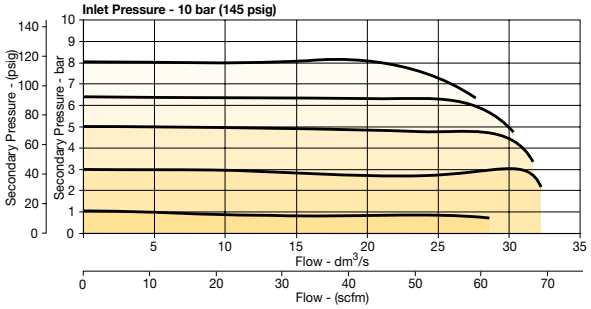
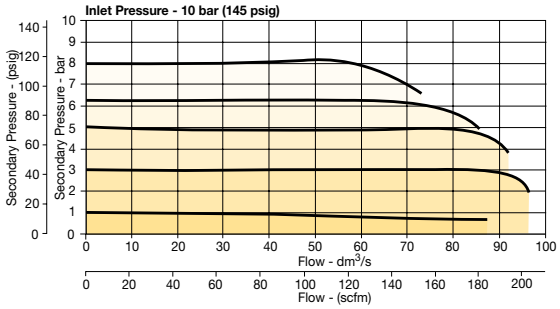
Proportional Regulators

P31P Regulator 1/4" Ports

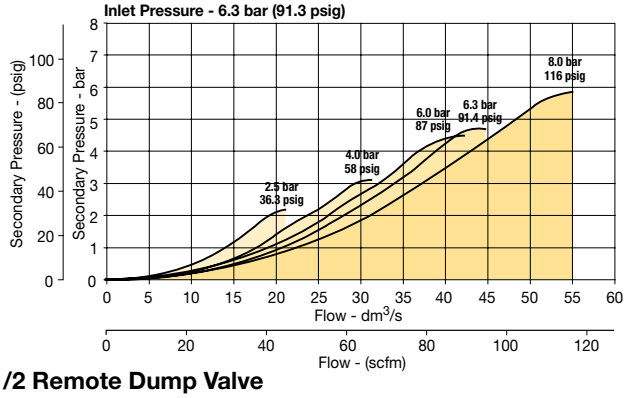


P32P Regulator 1/2" Ports

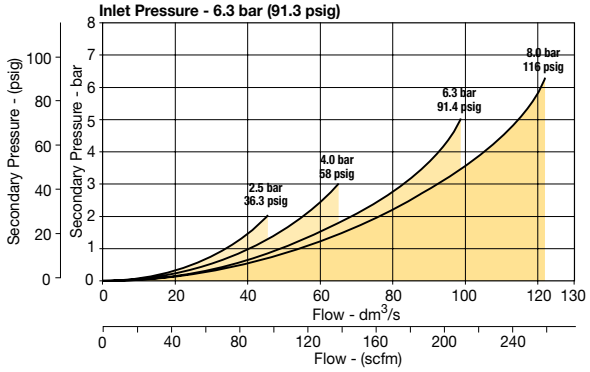


Dump Valve

1/4 Remote Dump Valve

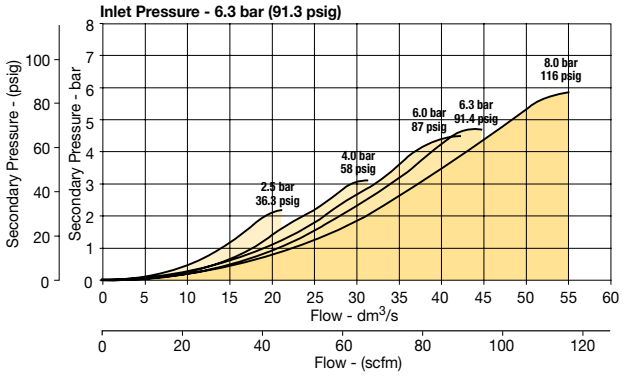


1/2 Remote Dump Valve

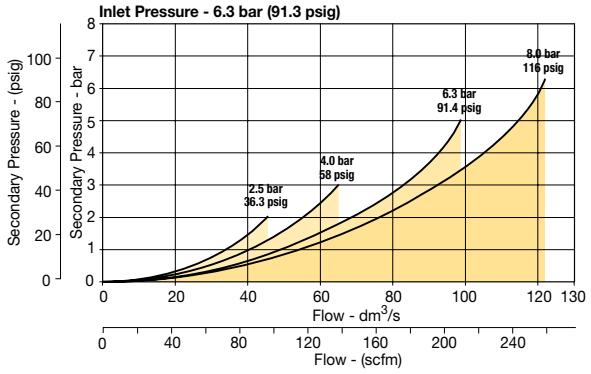


Combined Soft Start / Dump Valve

1/4 Soft Start & Dump Valve

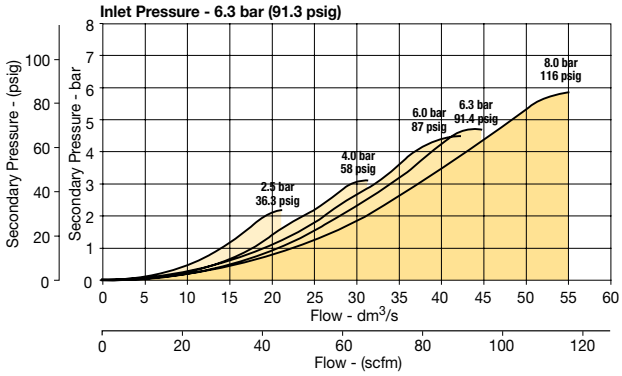


1/2 Soft Start & Dump Valve

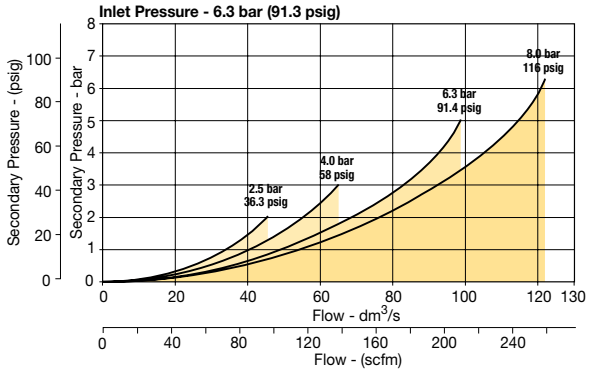


Soft Start Valve

1/4 Soft Start Valve



1/2 Soft Start Valve



Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

06F, 07F Prep-Air II Particulate Filters

- Excellent water removal efficiency
- Unique deflector plate and shroud creates a swirling of the air stream ensuring maximum water and dirt separation
- Large filter element surface guarantees low pressure drop and increased element life
- Optional automatic float drain available
- 06F: 1/4", 3/8" & 1/2" ports (NPT & BSPP)
- 07F: 1/2" & 3/4" ports (NPT & BSPP)

06F

07F

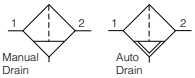
Material specifications

Body	Zinc
Bowls	Transparent polycarbonate or Metal (zinc) with or without sight gauge
Bowl guards	Steel
Collar	Plastic (06, 07) or metal (07)
Deflector, shroud & baffle	Plastic
Drain	Plastic
Automatic float drain –	
Housing, float	Plastic
Seals	Nitrile
Springs, push rod	Stainless steel
Filter elements –	
40 Micron (standard)	Plastic
5 Micron (optional)	Plastic
Seals	Nitrile
Sight gauge	Polyamide

Operating information

		06F & 07F
Operating pressure:	Poly bowl	0 to 150 PSIG (0 to 10.3 bar)
	Metal bowl	0 to 250 PSIG (0 to 17.2 bar)
Auto float drain:	Poly bowl	15 to 250 PSIG (1.0 to 17.2 bar)
	Metal bowl	
Operating temperature:	Poly bowl	32°F to 125°F (0°C to 52°C)
	Metal bowl	32°F to 175°F (0°C to 80°C)

06F, 07F Particulate Filters



	Port size	Bowl type	Flow SCFM	Element type	Part number (NPT) Twist drain	Part number (NPT) Automatic float drain
06F	1/4"	Poly bowl / Metal guard	53	40 micron	06F12AC	06F16AC
	1/4"	Metal bowl / Sight gauge	53	40 micron	06F14AC	06F18AC
	3/8"	Poly bowl / Metal guard	80	40 micron	06F22AC	06F26AC
	3/8"	Metal bowl / Sight gauge	80	40 micron	06F24AC	06F28AC
	1/2"	Poly bowl / Metal guard	85	40 micron	06F32AC	06F36AC
	1/2"	Metal bowl / Sight gauge	85	40 micron	06F34AC	06F38AC
07F	1/2"	Poly bowl / Metal guard	75	40 micron	07F32AC	07F36AC
	1/2"	Metal bowl / Sight gauge	75	40 micron	07F34AC	07F38AC
	3/4"	Poly bowl / Metal guard	80	40 micron	07F42AC	07F46AC
	3/4"	Metal bowl / Sight gauge	80	40 micron	07F44AC	07F48AC

☐ Most popular.

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Pneumatic Division
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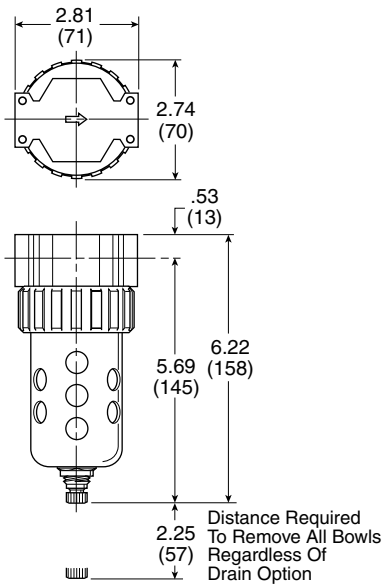
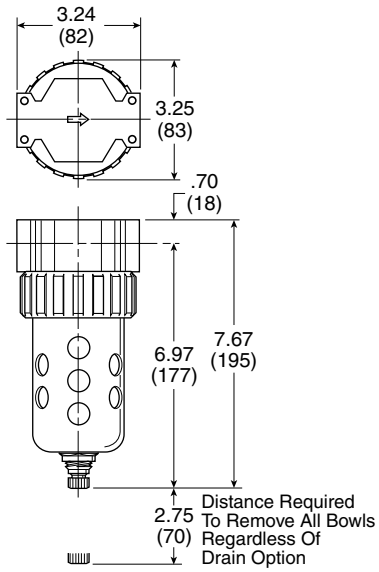
06F (Compact)



07F (Standard)



Service kits

Description		06F (Compact)	07F (Standard)
Bowl guard kit		**PS705P**	**PS805P**
Bowl Kits –			
Poly bowl –	Auto float drain	**PS722P**	**PS822P**
	Twist drain	**PS732P**	**PS832P**
Metal bowl –	Auto float drain	**PS726P**	**PS826P**
	Twist drain	**PS734P**	**PS834P**
	Sight gauge / automatic float drain	**PS723P**	**PS823P**
	Sight gauge / twist drain	**PS735P**	**PS835P**
DPI replacement kit		**PS781P**	**PS781P**
Drain kits –	Auto float drain	**PS506P**	**PS506P**
	Twist drain	**PS512P**	**PS512P**
Filter element kit –	40 micron	**PS701P**	**PS801P**
	5 micron	**PS702P**	**PS802P**
	Adsorber	**PS731P**	**PS831P**
Mounting bracket kit		**PS743P**	**PS843P**
Sight gauge kit		**PS914P**	**PS914P**

☐ Most popular.

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

11F, 12F Prep-Air II Coalescing Filters

- Removes liquid aerosols and sub-micron particles
- Liquids gravitate to the bottom of the element and will not re-enter the airstream
- Oil free air for critical applications, such as air gauging and pneumatic instrumentation and controls
- Interchangeable twist and automatic float drains
- Differential pressure indicator standard
- 11F: 1/4", 3/8" & 1/2" ports (NPT & BSPP)
- 12F: 1/2" & 3/4" ports (NPT & BSPP)

11F

12F

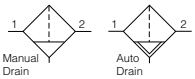
Material specifications

Body	Zinc
Bowls	Transparent polycarbonate or Metal (zinc) with or without sight gauge
Bowl guards	Steel
Collar	Plastic (06, 07) or metal (07)
Drain	Plastic
Automatic float drain –	
Housing, float	Plastic
Seals	Nitrile
Springs, push rod	Stainless steel
Filter element –	
Borosilicate & felt glass fibers 99.97% DOP efficiency Largest Aerosol Particle Passed (Grade 6)	0.01 Micron
Largest Solid Particle Passed (Grade 6)	0.30 Micron
Seals	Nitrile
Sight gauge	Polyamide

Operating information

		11F & 12F
Operating pressure:	Poly bowl	0 to 150 PSIG (0 to 10.3 bar)
	Metal bowl	0 to 250 PSIG (0 to 17.2 bar)
Auto float drain:	Poly bowl Metal bowl	15 to 250 PSIG (1.0 to 17.2 bar)
Operating temperature:	Poly bowl	32°F to 125°F (0°C to 52°C)
	Metal bowl	32°F to 175°F (0°C to 80°C)

Coalescing Filters



	Port size	Bowl type	Flow SCFM	Element type	Part number (NPT) Twist drain	Automatic float drain
11F	1/4"	Poly bowl / Metal guard	45	0.01 micron	**11F12EC**	**11F16EC**
	1/4"	Metal bowl / Sight gauge	60	1.0 micron	**11F14HC**	**11F18HC**
	1/4"	Metal bowl / Sight gauge	45	0.01 micron	**11F14EC**	**11F18EC**
	1/4"	Metal bowl / Sight gauge	60	1.0 micron	**11F14HC**	**11F18HC**
	3/8"	Poly bowl / Metal guard	48	0.01 micron	**11F22EC**	**11F26EC**
	3/8"	Poly bowl / Metal guard	72	1.0 micron	**11F22HC**	**11F26HC**
	3/8"	Metal bowl / Sight gauge	48	0.01 micron	**11F24EC**	**11F28EC**
	3/8"	Metal bowl / Sight gauge	72	1.0 micron	**11F24HC**	**11F28HC**
	1/2"	Poly bowl / Metal guard	65	0.01 micron	**11F32EC**	**11F36EC**
	1/2"	Poly bowl / Metal guard	95	1.0 micron	**11F32HC**	**11F36HC**
	1/2"	Metal bowl / Sight gauge	65	0.01 micron	**11F32EC**	**11F36EC**
	1/2"	Metal bowl / Sight gauge	95	1.0 micron	**11F34HC**	**11F38HC**
12F	1/2"	Poly bowl / Metal guard	75	0.01 micron	**12F32EC**	**12F36EC**
	1/2"	Poly bowl / Metal guard	125	1.0 micron	**12F32HC**	**12F36HC**
	1/2"	Metal bowl / Sight gauge	75	0.01 micron	**12F34EC**	**12F38EC**
	1/2"	Metal bowl / Sight gauge	125	1.0 micron	**12F34HC**	**12F38HC**
	3/4"	Poly bowl / Metal guard	80	0.01 micron	**12F42EC**	**12F46EC**
	3/4"	Poly bowl / Metal guard	160	1.0 micron	**12F42HC**	**12F46HC**
	3/4"	Metal bowl / Sight gauge	80	0.01 micron	**12F44EC**	**12F48EC**
	3/4"	Metal bowl / Sight gauge	160	1.0 micron	**12F44HC**	**12F48HC**

☐ Most popular.

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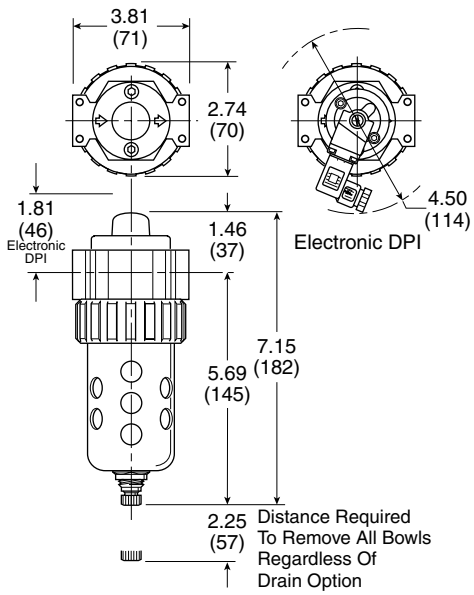
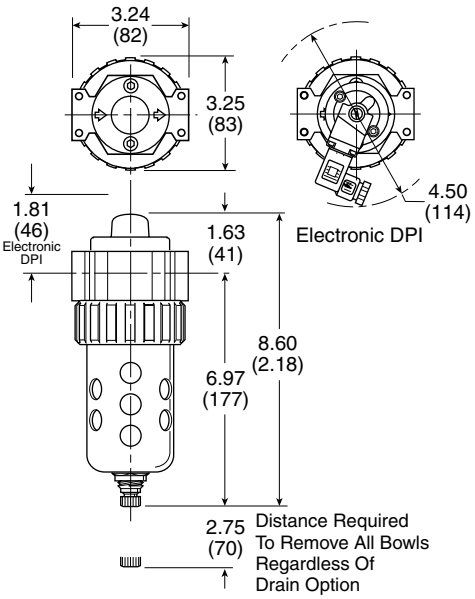
11F (Compact)



12F (Standard)



Service kits

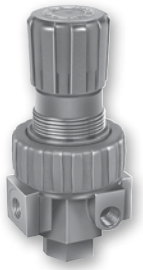
Description		11F (Compact)	12F (Standard)
Bowl guard kit		**PS705P**	**PS805P**
Bowl Kits –			
Poly bowl –	Auto float drain	**PS722P**	**PS822P**
	Twist drain	**PS732P**	**PS832P**
Metal bowl –	Auto float drain	**PS726P**	**PS826P**
	Twist drain	**PS734P**	**PS834P**
	Sight gauge / automatic float drain	**PS723P**	**PS823P**
	Sight gauge / twist drain	**PS735P**	**PS835P**
DPI replacement kit		**PS781P**	**PS781P**
Drain kits –	Auto float drain	**PS506P**	**PS506P**
	Twist drain	**PS512P**	**PS512P**
Electronic DPI replacement kit		**PS764**	**PS764**
Electrical connector -	15mm, 3-pin DIN, 6 Ft. Cord	**PS2932JBP**	**PS2932JBP**
Filter element kit –	Grade 6 (Standard)	**PS701P**	**PS824P**
	Grade 10 (Optional)	**PS702P**	**PS830P**
Mounting bracket kit		**PS743P**	**PS843P**
Sight gauge kit		**PS914P**	**PS914P**

☐ Most popular.

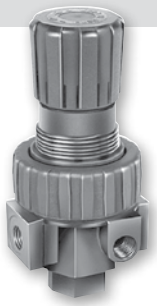
Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

06R, 07R Prep-Air II Regulators

- Secondary aspiration plus balanced poppet provides quick response and accurate pressure regulation
- Rolling diaphragm for extended life
- Two high flow 1/4" gauge ports can be used as additional outlets
- Easily serviced
- Removable non-rising knob for panel mounting and tamper resistance
- 06R: 1/4", 3/8" & 1/2" ports (NPT & BSPP)
- 07R: 1/2" & 3/4" ports (NPT & BSPP)



06R



07R

Material specifications

Adjusting Stem	Steel
Body	Zinc
Bonnet, piston stem, valve poppet & cap	Plastic
Collar, knob	Plastic
Diaphragm	Nitrile
Seals	Nitrile
Springs – Poppet Control	Stainless Steel Steel

Operating information

	06R (Compact), 07R (Standard)
Pressure rating:	250 PSIG (17.2 bar)
Temperature rating:	32°F to 175°F (0°C to 80°C)
Secondary pressure ranges –	
Standard pressure	2 to 125 PSIG (0 to 8.6 bar)
Medium pressure	1 to 60 PSIG (0 to 4.1 bar)
High pressure	5 to 250 PSIG (0.4 to 17.2 bar)

Regulators

		Port size	Pressure range	Flow SCFM	Part number (NPT)	
					Without gauge	With 160 PSI gauge
06R		1/4"	125 PSIG	53	**06R113AC**	**06R118AC**
		3/8"	125 PSIG	60	**06R213AC**	**06R218AC**
		1/2"	125 PSIG	75	**06R313AC**	**06R318AC**
07R		1/2"	125 PSIG	90	**07R313AC**	**07R318AC**
		3/4"	125 PSIG	90	**07R413AC**	**07R418AC**

⚠ WARNING
Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed maximum primary pressure rating.

CAUTION:
REGULATOR PRESSURE ADJUSTMENT –
The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design. For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

☐ Most popular.

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Pneumatic Division
Richland, Michigan
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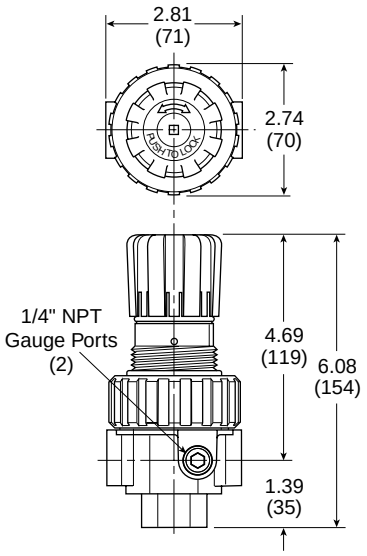
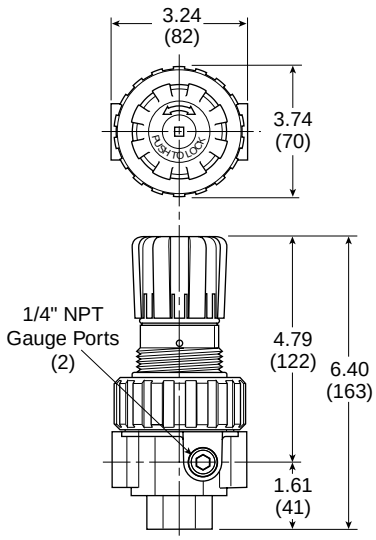
06R (Compact)



07R (Standard)



Service kits

Description			06R (Compact)	07R (Standard)
Bonnet assembly			**PS715P**	**PS715P**
Control knob			**P04069B**	**P04069B**
Gauges –	50mm (2") round 1/4" center back mount	60 PSIG (0 to 4.1 bar)	**K4520N14060**	**K4520N14060**
		160 PSIG (0 to 11.0 bar)	**K4520N14160**	**K4520N14160**
		300 PSIG (0 to 20.0 bar)	**K4520N14300**	**K4520N14300**
	44mm (1-3/4") digital round 1/4" center back mount	0-160 PSIG / 0-11 bar / 0-1.1 MPa	**K4517N14160D**	**K4517N14160D**
Mounting bracket kit (Includes panel mount nut)			**PS707P**	**PS807P**
Panel mount nut –		Plastic	**P04082**	**P04079B**
		Metal	**P04082**	**P04079B**
Reverse Flow Service Conversion Kit – Relieving			**PS708RP**	**PS808RP**
Springs –		1-30 PSIG range	**P01698**	**P01698**
		1-60 PSIG range	**P04062**	**P04062**
		2-125 PSIG range	**P04063**	**P04063**
		5-250 PSIG range	**P04064**	**P04064**
Tamperproof kit			**PS737P**	**PS737P**

Most popular.

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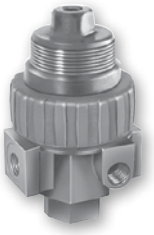
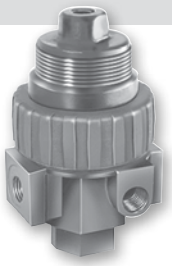
11R, 12R Prep-Air II Pilot Operated Regulators

- Balanced poppet provides quick response and accurate pressure regulation
- Pilot controlled regulators can be mounted "out of reach" with pilot regulator installed in a convenient location
- Solid control piston for extended life



11R



12R

Operating information

	11R	12R
Pressure rating:	0 to 250 PSIG (0 to 17.2 bar)	0 to 250 PSIG (0 to 17.2 bar)
Temperature rating:	32°F to 175°F (0°C to 80°C)	32°F to 175°F (0°C to 80°C)
Flow capacity SCFM:	1/4": 85 3/8": 95 1/2": 95	1/2": 140 3/4": 140

11R, 12R Pilot Controlled Regulators

Port size	Gauge	Part number (NPT), relieving 11R	12R
1/4"	No	**11R115PC**	
3/8"	No	**11R215PC**	
1/2"	No	**11R315PC**	**12R315PB**
3/4"	No		**12R415PB**
1/4"	160 PSI	**11R121PC**	
3/8"	160 PSI	**11R221PC**	
1/2"	160 PSI	**11R321PC**	**12R321PB**
3/4"	160 PSI		**12R421PB**

Material specifications

	11R	12R
Body	Zinc	Zinc
Bottom plug	–	–
Innervalve	–	–
Pilot cap	Zinc	Zinc
Piston & poppet	Plastic	Plastic
Seals	Nitrile	Nitrile
Springs – poppet	Steel	Steel

⚠ WARNING
Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed maximum primary pressure rating.

CAUTION:
REGULATOR PRESSURE ADJUSTMENT –
The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design. For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

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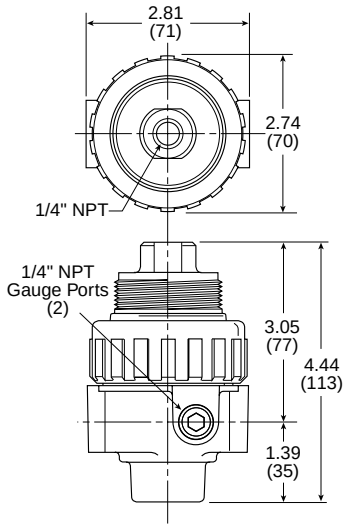
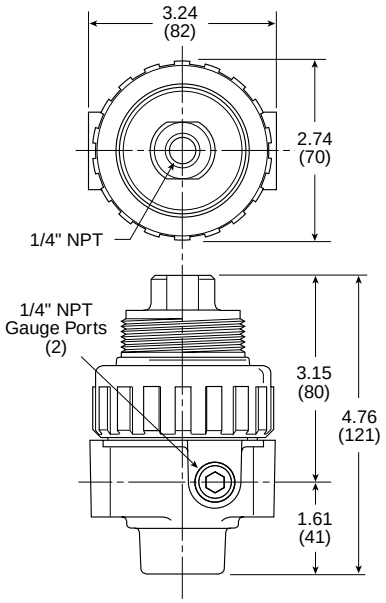
11R



12R



Service kits

		11R	12R
Body service kit		**PS713P**	**PS813P**
Gauges – 50mm (2") round 1/4" center back mount	60 PSIG (0 to 4.1 bar)	**K4520N14060**	**K4520N14060**
	160 PSIG (0 to 11.0 bar)	**K4520N14160**	**K4520N14160**
	300 PSIG (0 to 20.0 bar)	**K4520N14300**	**K4520N14300**
44mm (1-3/4") digital round 1/4" center back mount	0-160 PSIG / 0-11 bar / 0-1.1 MPa	**K4517N14160D**	**K4517N14160D**
Mounting bracket kit		**PS707P**	**PS807P**
Panel mount nut –	Metal	**P04079B**	**P04079B**
	Plastic	**P04082**	**P04082**
Pilot conversion kit		**PS745P**	**PS745P**
Repair kits –	Non-relieving	**PS747P**	**PS847P**
	Relieving	**PS749P**	**PS849P**

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06E Prep-Air II Filter / Regulators

- Space saving package offers both filter and regulator features for optimal performance
- Excellent water removal efficiency
- Rolling diaphragm for extended life
- Quick response, and accurate pressure regulation regardless of changing flow or inlet pressure
- Two high flow 1/4" gauge ports can be used as additional outlets

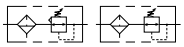
Material specifications

Adjusting stem			Steel
Body			Zinc
Bonnet, internal parts			Plastic
Bowls		Transparent	Polycarbonate
		Metal	Zinc
Bowl guard			Steel
Collar			Plastic
Diaphragm			Nitrile
Drains	Manual twist drain standard	Body & nut	Plastic
	Automatic float drain optional	Float housing	Plastic
		Seals	Nitrile
		Springs, push rod	Stainless steel
Filter elements		40 Micron (standard)	Plastic
		5 Micron (optional)	Plastic
Knob			Plastic
Seals			Nitrile
Sight gauge			Polyamide
Springs –		Poppet	Stainless
		Control	Steel

Operating information

Pressure rating –	
Polycarbonate bowl	0 to 150 PSIG (0 to 10.4 bar)
Metal bowl	0 to 250 PSIG (0 to 17.2 bar)
Automatic float drain	15 to 250 PSIG (1.0 to 17.2 bar)
Temperature rating –	
Polycarbonate bowl	32°F to 125°F (0°C to 52°C)
Metal bowl	32°F to 175°F (0°C to 80°C)
Secondary pressure ranges –	
Standard pressure	2 to 125 PSIG (0 to 8.6 bar)
Medium pressure	1 to 60 PSIG (0 to 4.1 bar)
High pressure	5 to 250 PSIG (0.4 to 17.2 bar)

06E Compact Filter / Regulators



	Port size	Bowl type	Drain type	Flow SCFM	Element type	Part number (NPT) Pressure range (Without gauge) 60 PSIG	125 PSIG
06E	1/4"	Poly / Metal guard	Twist	46	40 micron	**06E12A11AC**	**06E12A13AC**
	1/4"	Poly / Metal guard	Auto float	46	40 micron	**06E16A11AC**	**06E16A13AC**
	3/8"	Poly / Metal guard	Twist	55	40 micron	**06E22A11AC**	**06E22A13AC**
	3/8"	Poly / Metal guard	Auto float	55	40 micron	**06E26A11AC**	**06E26A13AC**
	1/2"	Poly / Metal guard	Twist	61	40 micron	**06E32A11AC**	**06E32A13AC**
	1/2"	Poly / Metal guard	Auto float	61	40 micron	**06E36A11AC**	**06E36A13AC**
	1/4"	Metal / Sight gauge	Twist	46	40 micron	**06E14A11AC**	**06E14A13AC**
	1/4"	Metal / Sight gauge	Auto float	46	40 micron	**06E18A11AC**	**06E18A13AC**
	3/8"	Metal / Sight gauge	Twist	55	40 micron	**06E24A11AC**	**06E24A13AC**
	3/8"	Metal / Sight gauge	Auto float	55	40 micron	**06E28A11AC**	**06E28A13AC**
	1/2"	Metal / Sight gauge	Twist	61	40 micron	**06E34A11AC**	**06E34A13AC**
	1/2"	Metal / Sight gauge	Auto float	61	40 micron	**06E38A11AC**	**06E38A13AC**

⚠ WARNING
Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed maximum primary pressure rating.

CAUTION:
REGULATOR PRESSURE ADJUSTMENT –
The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design. For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

☐ Most popular.

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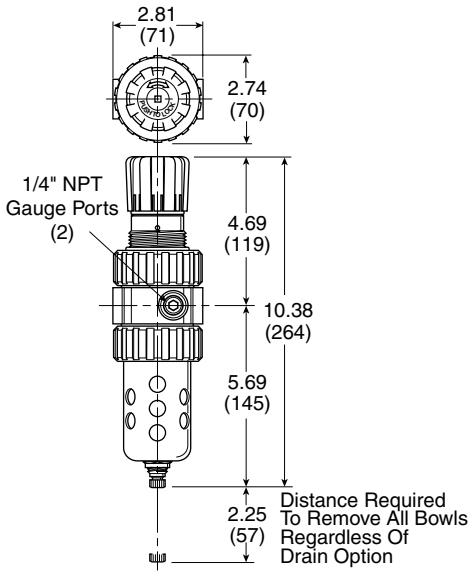
06E



Service kits

Description			06E
Bonnet assembly kit			**PS715P**
Bowl guard kit			**PS705P**
Bowl kits	Poly bowl –	Automatic float drain	**PS722P**
		Twist drain	**PS732P**
	Metal bowl –	Automatic float drain	**PS726P**
		Semi-auto drain	**PS794P**
		Twist drain	**PS734P**
		Sight gauge / Automatic drain	**PS723P**
		Sight gauge / Twist drain	**PS735P**
Control knob			**P04069B**
Drain kits –		Automatic float drain	**PS506P**
		Twist drain	**PS512P**
Filter element kits –		40 Micron	**PS701P**
		5 Micron	**PS702P**
		Adsorber	**PS731P**
Gauges –	50mm (2") round 1/4" center back mount	60 PSIG (0 to 4.1 bar)	**K4520N14060**
		160 PSIG (0 to 11.0 bar)	**K4520N14160**
		300 PSIG (0 to 20.0 bar)	**K4520N14300**
	44mm (1-3/4") digital round 1/4" center back mount	0-160 PSIG / 0-11 bar / 0-1.1 MPa	**K4517N14160D**
Mounting bracket kit (includes panel mount nut)			**PS707P**
Panel mount nut			**P04082**
Service kits –		Non-relieving (includes poppet)	**PS711P**
		Relieving (includes poppet	**PS710P**
Seat insert kit			**PS713P**
Springs –		1- 30 PSIG range	**P01698**
		1- 60 PSIG range	**P04062**
		2- 125 PSIG range	**P04063**
		5- 250 PSIG range	**P04064**
Tamperproof kit (key lock)			**PS737P**

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07E Prep-Air II Filter / Regulators

- Space saving package offers both filter and regulator features for optimal performance
- Excellent water removal efficiency
- Rolling diaphragm for extended life
- Quick response, and accurate pressure regulation regardless of changing flow or inlet pressure
- Two high flow 1/4" gauge ports can be used as additional outlets

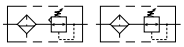
Material specifications

Adjusting stem			Steel
Body			Zinc
Bonnet, internal parts			Plastic
Bowls		Transparent	Polycarbonate
		Metal	Zinc
Bowl guard			Steel
Collar			Plastic or metal
Diaphragm			Nitrile
Drains	Manual twist drain standard	Body & nut	Plastic
	Automatic float drain optional	Float housing	Plastic
		Seals	Nitrile
		Springs, push rod	Stainless steel
Filter elements		40 Micron (standard)	Plastic
		5 Micron (optional)	Plastic
Knob			Plastic
Seals			Nitrile
Sight gauge			Polyamide
Springs –		Poppet	Stainless
		Control	Steel

Operating information

Pressure rating –	
Polycarbonate bowl	0 to 150 PSIG (0 to 10.4 bar)
Metal bowl	0 to 250 PSIG (0 to 17.2 bar)
Automatic float drain	15 to 250 PSIG (1.0 to 17.2 bar)
Temperature rating –	
Polycarbonate bowl	32°F to 125°F (0°C to 52°C)
Metal bowl	32°F to 175°F (0°C to 80°C)
Secondary pressure ranges –	
Standard pressure	2 to 125 PSIG (0 to 8.6 bar)
Medium pressure	1 to 60 PSIG (0 to 4.1 bar)
High pressure	5 to 250 PSIG (0.4 to 17.2 bar)

07E Standard Filter / Regulators



	Port size	Bowl type	Drain type	Flow SCFM	Element type	Part number (NPT) Pressure range (Without gauge) 60 PSIG	125 PSIG
07E	1/2"	Poly / Metal guard	Twist	90	40 micron	**07E32A11AC**	**07E32A13AC**
	1/2"	Poly / Metal guard	Auto float	90	40 micron	**07E36A11AC**	**07E36A13AC**
	3/4"	Poly / Metal guard	Twist	90	40 micron	**07E42A11AC**	**07E42A13AC**
	3/4"	Poly / Metal guard	Auto float	90	40 micron	**07E46A11AC**	**07E46A13AC**
	1/2"	Metal / Sight gauge	Twist	90	40 micron	**07E34A11AC**	**07E34A13AC**
	1/2"	Metal / Sight gauge	Auto float	90	40 micron	**07E38A11AC**	**07E38A13AC**
	3/4"	Metal / Sight gauge	Twist	90	40 micron	**07E44A11AC**	**07E44A13AC**
	3/4"	Metal / Sight gauge	Auto float	90	40 micron	**07E48A11AC**	**07E48A13AC**

⚠ WARNING
Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed maximum primary pressure rating.

CAUTION:
REGULATOR PRESSURE ADJUSTMENT –
The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design. For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

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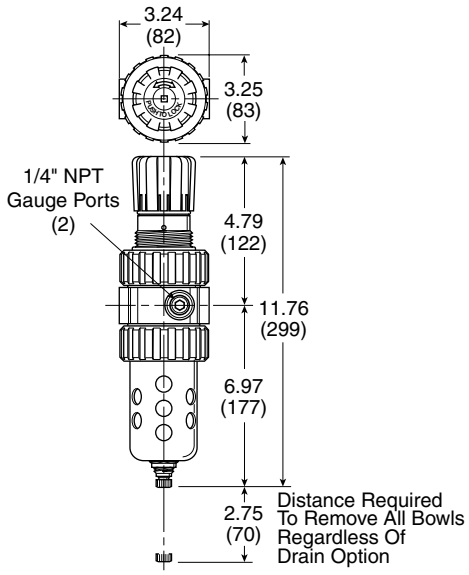
07E



Service kits

Description			07E
Bonnet assembly kit			**PS715P**
Bowl guard kit			**PS805P**
Bowl kits –	Poly bowl –	Automatic float drain	**PS822P**
		Twist drain	**PS832P**
	Metal bowl –	Automatic float drain	**PS826P**
		Semi-auto drain	**PS894P**
		Twist drain	**PS834P**
		Sight gauge / Automatic drain	**PS823P**
		Sight gauge / Twist drain	**PS835P**
Control knob			**P04069B**
Drain kits –		Automatic float drain	**PS506P**
		Twist drain	**PS512P**
Filter element kits –		40 Micron	**PS801P**
		5 Micron	**PS802P**
		Adsorber	**PS831P**
Gauges –	50mm (2") round 1/4" center back mount	60 PSIG (0 to 4.1 bar)	**K4520N14060**
		160 PSIG (0 to 11.0 bar)	**K4520N14160**
		300 PSIG (0 to 20.0 bar)	**K4520N14300**
	44mm (1-3/4") digital round 1/4" center back mount	0-160 PSIG / 0-11 bar / 0-1.1 MPa	**K4517N14160D**
Mounting bracket kit (includes panel mount nut)			**PS807P**
Panel mount nut			**P04082**
Service kits –		Non-relieving (includes poppet)	**PS811P**
		Relieving (includes poppet	**PS810P**
Seat insert kit			**PS813P**
Springs –		1- 30 PSIG range	**P01698**
		1- 60 PSIG range	**P04062**
		2- 125 PSIG range	**P04063**
		5- 250 PSIG range	**P04064**
Tamperproof kit (key lock)			**PS737P**

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16L, 17L Prep-Air II Micro-Mist Lubricators

- Proportional oil delivery over a wide range of air flows
- Generates oil particles of 5 micron or smaller downstream to lubricate systems having complex piping arrangements
- Precision needle valve assures repeatable oil delivery and provides simple adjustment of delivery rate
- Ideal for low and high flow applications with changing air flow
- Transparent sight dome for 360° visibility
- Yellow fill cap identifies Micro-Mist Lubricator
- 16L: 1/4", 3/8" & 1/2" ports (NPT & BSPP)
- 17L: 1/2" & 3/4" ports (NPT & BSPP)

16L

17L

Material specifications

Body	Zinc
Bowls –	
Transparent	Polycarbonate
Metal	Zinc
Bowl guards	Steel
Collar	Plastic (16, 17) or metal (17)
Drains, twist / body & nut	Plastic
Injector meter block & base assembly	Plastic
Seals	Nitrile
Sight dome	Polycarbonate
Sight gauge	Polyamide (Nylon)

Operating information

Pressure rating –	
Polycarbonate bowl	0 to 150 PSIG (0 to 10.4 bar)
Metal bowl	0 to 250 PSIG (0 to 17.2 bar)
Temperature rating –	
Polycarbonate bowl	32°F to 125°F (0°C to 52°C)
Metal bowl	32°F to 175°F (0°C to 80°C)
Minimum flow for lubrication:	1 SCFM at 100 PSIG
Suggested lubricant:	F442 oil

Petroleum based oil of 100 to 200 SSU viscosity at 100°F (38°C) and an aniline point greater than 200°F (93°C)

(DO NOT USE OILS WITH ADDITIVES, COMPOUNDED OILS CONTAINING SOLVENTS, GRAPHITE, DETERGENTS, OR SYNTHETIC OILS.)

Compact & Standard Lubricators

		Port size	Bowl type	Flow SCFM	Part number (NPT) Twist drain	Part number (NPT) No drain
16L		1/4"	Poly / Metal guard	40		**16L12BE**
		1/4"	Metal / Sight gauge	40	**16L14BE**	
		3/8"	Poly / Metal guard	60		**16L22BE**
		3/8"	Metal / Sight gauge	60	**16L24BE**	
		1/2"	Poly / Metal guard	90		**16L32BE**
		1/2"	Metal / Sight gauge	90	**16L34BE**	
17L		1/2"	Poly / Metal guard	90		**17L32BE**
		1/2"	Metal / Sight gauge	90	**17L34BE**	
		3/4"	Poly / Metal guard	90		**17L42BE**
		3/4"	Metal / Sight gauge	90	**17L44BE**	

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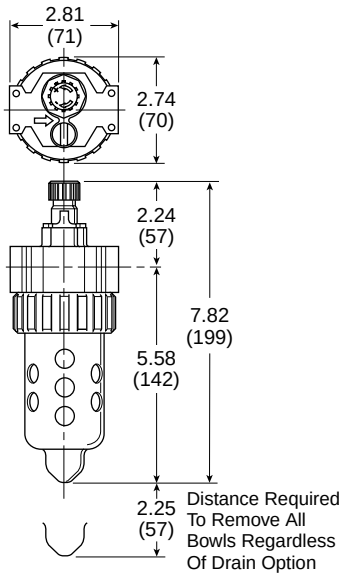
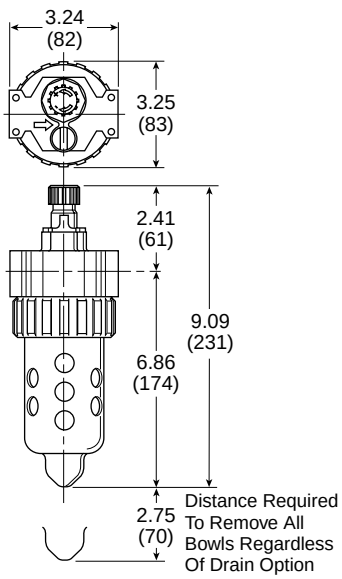
16L



17L



Service kits

Description			16L (Compact)	17L (Standard)
Adjustment knob			**P04121**	**P04121**
Bowl guard kit			**PS705P**	**PS805P**
Bowl Kits:	Poly bowl –	No drain	**PS746P**	**PS846P**
		Twist drain	**PS717P**	**PS817P**
		Pressure fill	**PS719P**	**PS819P**
		Remote fill	**PS728P**	**PS828P**
	Metal bowl –	Sight gauge / Twist drain	**PS729P**	**PS829P**
		Sight gauge / Pressure fill	**PS720P**	**PS820P**
Drain kit		Twist drain	**PS512P**	**PS512P**
Fill cap kit			**PS742P**	**PS742P**
Lubricator service kit			**PS748P**	**PS748P**
Mounting bracket kit			**PS743P**	**PS843P**
Oil –		1 Gal	**F442002**	**F442002**
		12 Quart case	**F442003**	**F442003**
		4 Gal case	**F442005**	**F442005**
Pressure fill adapter kit			**PS716P**	**PS716P**
Pressure fill button			**P11912**	**P11912**
Remote auto-fill device			**PS505CP**	**PS505CP**
Sight dome / Fill cap kit			**PS739P**	**PS739P**
Sight dome kit			**PS740P**	**PS740P**
Nylon sight dome kit			**PS740N**	**PS740N**

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06L, 07L Prep-Air II Mist Lubricators

- Proportional oil delivery over a wide range of air flows
- Precision needle valve assures repeatable oil delivery and provides simple adjustment of delivery rate
- Bowl can be filled while air line is under pressure
- Transparent sight dome for 360° visibility
- 06L: 1/4", 3/8" & 1/2" ports (NPT & BSPP)
- 07L: 1/2" & 3/4" ports (NPT & BSPP)

06L

07L

Material specifications

Body	Zinc
Bowls –	
Transparent	Polycarbonate
Metal	Zinc
Bowl guards	Steel
Collar	Plastic (06, 07) or metal (07)
Drain	Plastic
Injector meter block & base assembly	Plastic
Seals	Nitrile
Sight dome	Polycarbonate
Sight gauge	Polyamide (Nylon)

Operating information

Pressure rating –	
Polycarbonate bowl	0 to 150 PSIG (0 to 10.4 bar)
Metal bowl	0 to 250 PSIG (0 to 17.2 bar)
Temperature rating –	
Polycarbonate bowl	32°F to 125°F (0°C to 52°C)
Metal bowl	32°F to 175°F (0°C to 80°C)
Minimum flow for lubrication:	.5 SCFM at 100 PSIG
Suggested lubricant:	F442 oil

Petroleum based oil of 100 to 200 SSU viscosity at 100°F (38°C) and an aniline point greater than 200°F (93°C)

(DO NOT USE OILS WITH ADDITIVES, COMPOUNDED OILS CONTAINING SOLVENTS, GRAPHITE, DETERGENTS, OR SYNTHETIC OILS.)

Compact & Standard Lubricators

		Port size	Bowl type	Flow SCFM	Part number (NPT)	
					Twist drain	No drain
06L		1/4"	Poly / Metal guard	40		**06L12BE**
		1/4"	Metal / Sight gauge	40	**06L14BE**	
		3/8"	Poly / Metal guard	60		**06L22BE**
		3/8"	Metal / Sight gauge	60	**06L24BE**	
		1/2"	Poly / Metal guard	90		**06L32BE**
		1/2"	Metal / Sight gauge	90	**06L34BE**	
07L		1/2"	Poly / Metal guard	90		**07L32BE**
		1/2"	Metal / Sight gauge	90	**07L34BE**	
		3/4"	Poly / Metal guard	90		**07L42BE**
		3/4"	Metal / Sight gauge	90	**07L44BE**	

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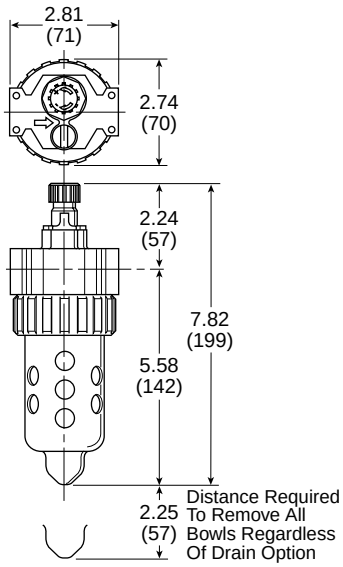
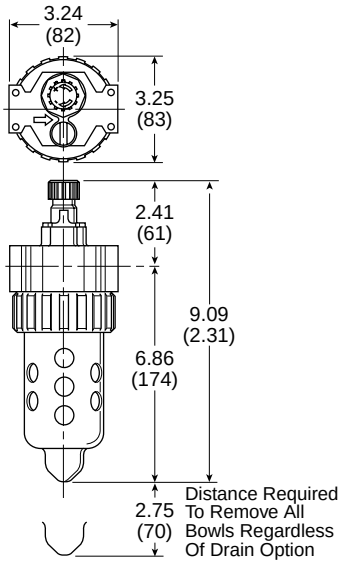
06L



07L



Service kits

Description			06L (Compact)	07L (Standard)
Adjustment knob			**P04121**	**P04121**
Bowl guard kit			**PS705P**	**PS805P**
Bowl Kits –	Poly bowl –	No drain	**PS746P**	**PS846P**
		Twist drain	**PS717P**	**PS817P**
		Pressure fill	**PS719P**	**PS819P**
		Remote fill	**PS728P**	**PS828P**
	Metal bowl –	Sight gauge / Twist drain	**PS729P**	**PS829P**
		Sight gauge / Pressure fill	**PS720P**	**PS820P**
Drain kit		Twist drain	**PS512P**	**PS512P**
Fill cap kit			**PS741P**	**PS741P**
Lubricator service kit			**PS718P**	**PS718P**
Mounting bracket kit			**PS743P**	**PS843P**
Oil –		1 Gal	**F442002**	**F442002**
		12 Quart case	**F442003**	**F442003**
		4 Gal case	**F442005**	**F442005**
Pressure fill adapter kit			**PS716P**	**PS716P**
Pressure fill button			**P11912**	**P11912**
Remote auto-fill device			**PS505CP**	**PS505CP**
Sight dome / fill cap kit			**PS738P**	**PS738P**
Sight dome kit			**PS740P**	**PS740P**
Nylon sight dome kit			**PS740N**	**PS740N**

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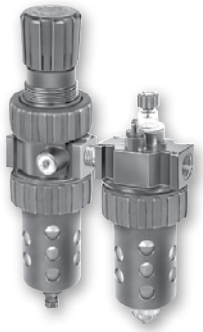
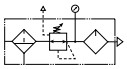
Compact & Standard Prep-Air II Combinations

Close Nippled Combinations – 06 Compact & 07 Standard Series

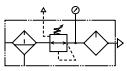
- Regulator can be mounted with knob in up or down position
- 40 micron filter element standard, 5 micron optional
- Manual twist drain
- Relieving regulator



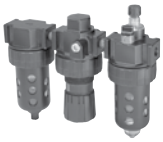


06G, 16G, 07G, 17G 2-Unit Close Nippled Combinations

	Port	Bowl type	Element type	Filter drain type	Relief type	Lubricator drain type	Series	Model numbers	Series	Model numbers
06G Shown	1/4"	Poly / Metal guard	40 micron	Twist	Relieving	None	06G	**06G12A13A2BC**	16G	**16G12A13A2BC**
	3/8"	Poly / Metal guard	40 micron	Twist	Relieving	None		**06G22A13A2BC**		**16G22A13A2BC**
	1/2"	Poly / Metal guard	40 micron	Twist	Relieving	None		**06G32A13A2BC**		**16G32A13A2BC**
	1/2"	Poly / Metal guard	40 micron	Twist	Relieving	None	07G	**07G32A13A2BD**	17G	**17G32A13A2BD**
	3/4"	Poly / Metal guard	40 micron	Twist	Relieving	None		**07G42A13A2BD**		**17G42A13A2BD**



06A, 16A, 07A, 17A 3-Unit Close Nippled Combinations

	Port	Bowl type	Element type	Filter drain type	Relief type	Lubricator drain type	Series	Model numbers	Series	Model numbers
06A Shown	1/4"	Poly / Metal guard	40 micron	Twist	Relieving	None	06A	**06A12A13A2BC**	16A	**16A12A13A2BC**
	3/8"	Poly / Metal guard	40 micron	Twist	Relieving	None		**06A22A13A2BC**		**16A22A13A2BC**
	1/2"	Poly / Metal guard	40 micron	Twist	Relieving	None		**06A32A13A2BC**		**16A32A13A2BC**
	1/2"	Poly / Metal guard	40 micron	Twist	Relieving	None	07A	**07A32A13A2BD**	17A	**17A32A13A2BD**
	3/4"	Poly / Metal guard	40 micron	Twist	Relieving	None		**07A42A13A2BD**		**17A42A13A2BD**

⚠ WARNING
Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed maximum primary pressure rating.

CAUTION:
REGULATOR PRESSURE ADJUSTMENT –
The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design. For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

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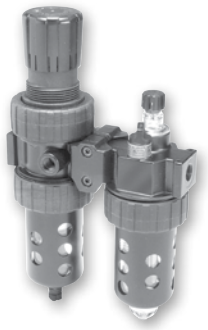
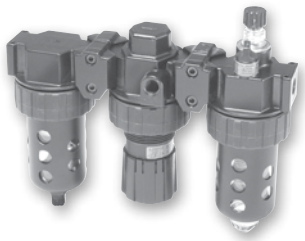
Compact & Standard Prep-Air II Combinations

Modular Combinations – 06 Compact & 07 Standard Series

- Regulator can be mounted with knob in up or down position
- 40 micron filter element standard, 5 micron optional
- Manual twist drain
- Relieving regulator





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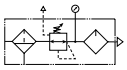
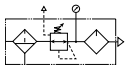
The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design. For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.



06H, 16H, 07H, 17H 2-Unit Modular Combinations

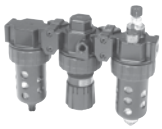
	Port	Bowl type	Element type	Filter drain type	Relief type	Lubricator drain type	Series	Model numbers	Series	Model numbers
06H Shown	1/4"	Poly / Metal guard	40 micron	Twist	Relieving	None	06H	**06H12A13A2BC**	16H	**16H12A13A2BC**
	3/8"	Poly / Metal guard	40 micron	Twist	Relieving	None		**06H22A13A2BC**		**16H22A13A2BC**
	1/2" *	Poly / Metal guard	40 micron	Twist	Relieving	None		**06H32A13A2BCG**		**16H32A13A2BCG**
	1/2"	Poly / Metal guard	40 micron	Twist	Relieving	None	07H	**07H32A13A2BD**	17H	**17H32A13A2BD**
	3/4"	Poly / Metal guard	40 micron	Twist	Relieving	None		**07H42A13A2BD**		**17H42A13A2BD**

* 06 / 16 Available with port blocks only.



06B, 16B, 07B, 17B 3-Unit Modular Combinations

	Port	Bowl type	Element type	Filter drain type	Relief type	Lubricator drain type	Series	Model numbers	Series	Model numbers
06B Shown	1/4"	Poly / Metal guard	40 micron	Twist	Relieving	None	06B	**06B12A13A2BC**	16B	**16B12A13A2BC**
	3/8"	Poly / Metal guard	40 micron	Twist	Relieving	None		**06B22A13A2BC**		**16B22A13A2BC**
	1/2" *	Poly / Metal guard	40 micron	Twist	Relieving	None		**06B32A13A2BCG**		**16B32A13A2BCG**
	1/2"	Poly / Metal guard	40 micron	Twist	Relieving	None	07B	**07B32A13A2BD**	17B	**17B32A13A2BD**
	3/4"	Poly / Metal guard	40 micron	Twist	Relieving	None		**07B42A13A2BD**		**17B42A13A2BD**



* 06 / 16 available with port blocks only.

Modular service kits

Description	06 Series	07 Series
Body connectors	**PS754P**	**PS854P**
Lockout valves	**PS756P**	**PS856P**
Modular manifold block	**PS757P**	**PS857P**
Wall mounting kit	**PS755P**	**PS755P**

⚠ WARNING
Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed maximum primary pressure rating.

Description	Series	Size	NPT	BSPP	BSPT
Port block connector kits	06 Series –	1/4"	**PS750P**	**PS765P†**	**PS761P**
		3/8"	**PS751P**	**PS766P†**	**PS762P**
		1/2"	**PS752P***	**PS767P*†**	**PS799P***
	07 Series –	1/4"	**PS850P**	**PS865P**	**PS861P**
		3/8"	**PS851P**	**PS866P**	**PS862P**
		1/2"	**PS852P**	**PS867P‡**	**PS863P**
		3/4"	**PS853P**	**PS860P**	**PS864P**

Use 1/4 or 3/8 ported bodies. † 1/4, 3/8 & 1/2 inch meet ISO 1179-1 Standard. ‡ 1/2 inch meets ISO 1179-1 Standard.

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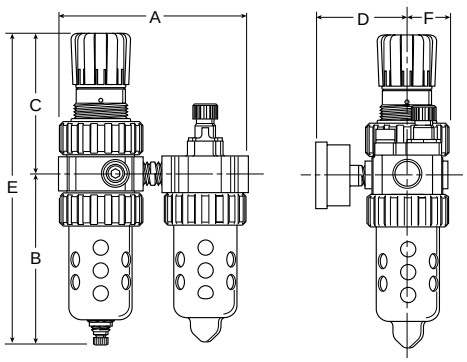
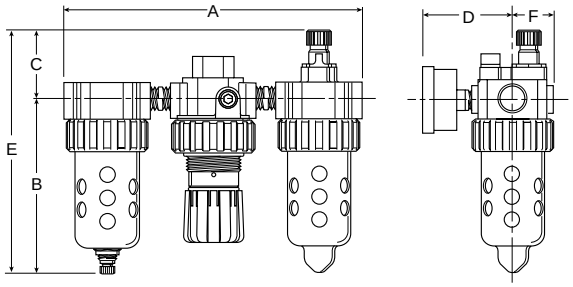
Combination Dimensions – 06 Compact & 07 Standard Series





06G, 16G Series

A	B	C	D	E	F
6.13 (156)	5.69 (145)	4.69 (119)	3.18 (81)	10.38 (264)	1.37 (35)

07G, 17G Series

A	B	C	D	E	F
6.99 (178)	6.97 (177)	4.79 (122)	3.44 (87)	11.76 (299)	1.63 (41)

Inches (mm)
• All dimensions nominal.

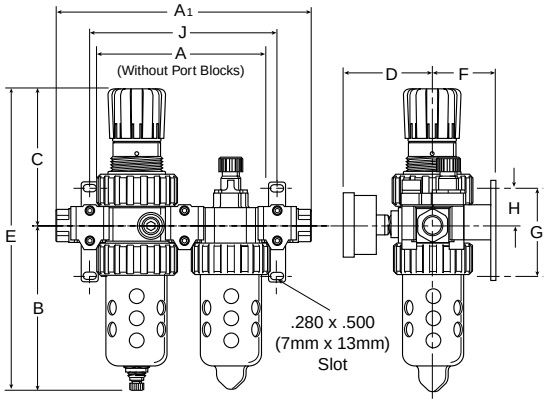
06A, 16A Series

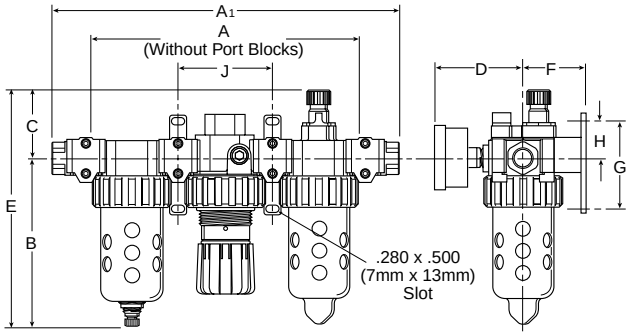
A	B	C	D	E	F
9.45 (240)	5.69 (145)	2.24 (57)	3.18 (81)	7.93 (201)	1.37 (35)

07A, 17A Series

A	B	C	D	E	F
10.74 (2738)	6.97 (177)	2.41 (61)	3.44 (87)	9.38 (238)	1.63 (41)

Inches (mm)
• All dimensions nominal.





06H, 16H Series

A	A1	B	C	D	E
6.10 (155)	9.04 (230)	5.69 (145)	4.69 (119)	3.18 (81)	10.38 (264)

F	G	H	J
2.00 (51)	3.58 (91)	1.40 (36)	6.65 (169)

07H, 17H Series

A	A1	B	C	D	E
7.00 (178)	10.28 (261)	6.97 (177)	4.79 (122)	3.44 (87)	11.76 (299)

F	G	H	J
2.09 (53)	3.58 (91)	1.40 (36)	7.51 (191)

Inches (mm)
• All dimensions nominal.

06B, 16B Series

A	A1	B	C	D	E
9.46 (240)	12.39 (315)	5.69 (145)	2.24 (57)	3.18 (81)	7.93 (202)

F	G	H	J
2.00 (51)	3.58 (91)	1.40 (36)	3.33 (85)

07B, 17B Series

A	A1	B	C	D	E
10.75 (273)	14.03 (356)	6.97 (177)	2.41 (61)	3.44 (87)	9.38 (238)

F	G	H	J
2.18 (55)	3.58 (91)	1.40 (36)	3.76 (95)

Inches (mm)
• All dimensions nominal.

Parker Hannifin Corporation
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Richland, Michigan
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14F Miniature Particulate Filters

- Excellent water removal efficiency
- 5 micron element standard on 14F
- Integral 1/8", 1/4" ports (NPT, BSPP & BSPT)

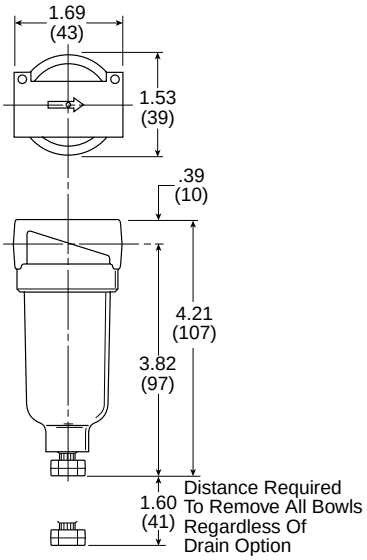
Material specifications

Description		14F (Mini)
Body		Zinc
Bowl		Polycarbonate
Deflector, element holder, baffle		Plastic
Drains – Twist	Body & stem	Plastic
	Seals	Nitrile
Drains – Auto pulse	Piston & seals	Nitrile
	Stem, seat, adapter & washers	Aluminum
Filter element –	5 micron (Standard)	Plastic
	40 micron (Optional)	Plastic
	Adsorber (Optional)	Activated charcoal
Seals		Nitrile

Operating information

		14F
Operating pressure:	Poly bowl Metal bowl	0 to 150 PSIG (0 to 10.3 bar) 0 to 250 PSIG (0 to 17.2 bar)
	Auto pulse drain	10 to 250 PSIG (0.7 to 17.2 bar)
Operating temperature:	Poly bowl Metal bowl Auto pulse drain	32°F to 125°F (0°C to 52°C) 32°F to 175°F (0°C to 80°C) 125°F (52°C) or less

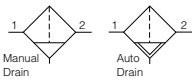
14F



Service kits

Description			14F (Mini)
Bowl Kits	Poly bowl –	Auto pulse drain	**PS408BP**
		Twist drain	**PS404P**
	Metal bowl –	Auto drain	**PS451BP**
		Twist drain	**PS447BP**
Filter element kit –		40 micron	**PS401P**
		5 micron	**PS403P**
		Adsorber	**PS452P**
Mounting bracket kit			**PS417BP**

14F Particulate Filters



	Port size	Bowl type	Sight gauge	Flow SCFM	Element type	Part number (NPT)	
						Twist drain	Automatic pulse drain
14F	1/8"	Poly	No	22	5 micron	**14F01BB**	**14F05BB**
	1/8"	Metal	No	22	5 micron	**14F03BB**	**14F07BB**
	1/4"	Poly	No	24	5 micron	**14F11BB**	**14F15BB**
	1/4"	Metal	No	24	5 micron	**14F13BB**	**14F17BB**

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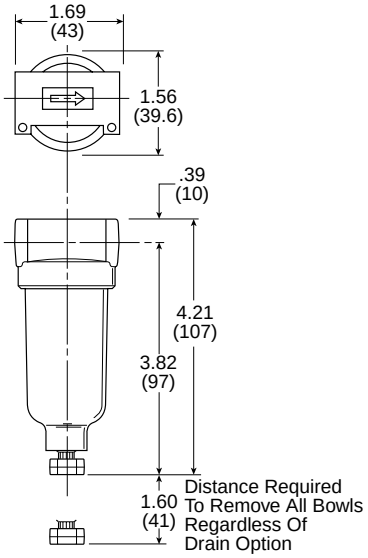
10F Miniature Coalescing Filters

- Removes liquid aerosols and sub-micron particles
- 0.01 micron element standard
- Integral 1/8", 1/4" ports (NPT, BSPP & BSPT)

Material specifications

Description		10F (Mini)
Body		Zinc
Bowl		Polycarbonate
Drains – Twist	Body & stem	Plastic
	Seals	Nitrile
Drains – Auto Pulse	Piston & seals	Nitrile
	Stem, seat, adapter & washers	Aluminum
Element holder		Plastic
Filter element	1.0 micron	Borosilicate & felt glass fibers
	0.01 micron	
Seals		Nitrile

10F



Operating information

		10F
Operating pressure:	Poly bowl Metal bowl	0 to 150 PSIG (0 to 10.3 bar) 0 to 250 PSIG (0 to 17.2 bar)
	Auto pulse drain	10 to 250 PSIG (0.7 to 17.2 bar)
Operating temperature:	Poly bowl Metal bowl Auto pulse drain	32°F to 125°F (0°C to 52°C) 32°F to 175°F (0°C to 80°C) 125°F (52°C) or less

Service kits

Description			10F (Mini)
Bowl Kits	Poly bowl –	Auto pulse drain	**PS408BP**
		Twist drain	**PS404P**
	Metal bowl	Auto drain	**PS451BP**
		Twist drain	**PS447BP**
Filter element kit –		Grade 6 (standard)	**PS446P**
		Grade 10 (optional	**PS456P**
Mounting bracket kit			**PS417BP**

Coalescing Filters

	Port size	Bowl type	Sight gauge	Flow SCFM	Element type	Part number (NPT) Twist drain	Part number (NPT) Automatic pulse drain
10F	1/8"	Poly	No	17	0.01 micron	**10F01ED**	**10F05ED**
	1/8"	Poly	No	19	1.0 micron	**10F01HD**	**10F05HD**
	1/8"	Metal	No	17	0.01 micron	**10F03ED**	**10F07ED**
	1/8"	Metal	No	19	1.0 micron	**10F03HD**	**10F07HD**
	1/4"	Poly	No	20	0.01 micron	**10F11ED**	**10F15ED**
	1/4"	Poly	No	24	1.0 micron	**10F11HD**	**10F15HD**
	1/4"	Metal	No	20	0.01 micron	**10F13ED**	**10F17ED**
	1/4"	Metal	No	24	1.0 micron	**10F13HD**	**10F17HD**

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14R, 15R Miniature Regulators

- Unbalanced poppet standard
- Solid control piston with lip seal for extended life
- Non-rising adjusting knob
- Compact, 2.88 inch (73.2mm) high by 1.65 inch (42mm) wide
- Easily serviced
- 14R: 1/8" & 1/4" ports (NPT, BSPP & BSPT)
- 15R: 1/4" & 3/8" ports (NPT, BSPP & BSPT)

14R

15R

Material specifications

Adjusting nut	Brass
Adjusting stem & spring	Steel
Body	Zinc
Bonnet, seat, piston & valve poppet	Plastic
Seals	Nitrile

Operating information

	14R (Mini), 15R (Economy)
Pressure rating:	0 to 300 PSIG (0 to 20.4 bar)
Temperature rating:	32°F to 125°F (0°C to 52°C)
Low temperature:	-4°F to 125°F (-20°C to 52°C)
Secondary pressure ranges –	
Standard pressure	2 to 125 PSIG (0 to 8.6 bar)
Medium pressure	1 to 60 PSIG (0 to 4.1 bar)
Medium pressure	1 to 30 PSIG (0 to 2.1 bar)
Low pressure	1 to 15 PSIG (0 to 1 bar)

Regulators

		Port size	Pressure range	Flow SCFM	Part number (NPT)	
					Without gauge	With gauge
14R		1/8"	30 PSIG	13	**14R010FC**	**14R015FC**
		1/8"	60 PSIG	13	**14R011FC**	**14R016FC**
		1/8"	125 PSIG	13	**14R013FC**	**14R018FC**
		1/4"	30 PSIG	15	**14R110FC**	**14R115FC**
		1/4"	60 PSIG	15	**14R111FC**	**14R116FC**
		1/4"	125 PSIG	15	**14R113FC**	**14R118FC**
15R		1/4"	30 PSIG	21	**15R110FB**	**15R115FB**
		1/4"	60 PSIG	21	**15R111FB**	**15R116FB**
		1/4"	125 PSIG	21	**15R113FB**	**15R118FB**
		3/8"	30 PSIG	28	**15R210FB**	**15R216FB**
		3/8"	60 PSIG	28	**15R211FB**	**15R215FB**
		3/8"	125 PSIG	28	**15R213FB**	**15R218FB**

⚠ WARNING
Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed maximum primary pressure rating.

Most popular.

CAUTION:
REGULATOR PRESSURE ADJUSTMENT –
The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design. For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

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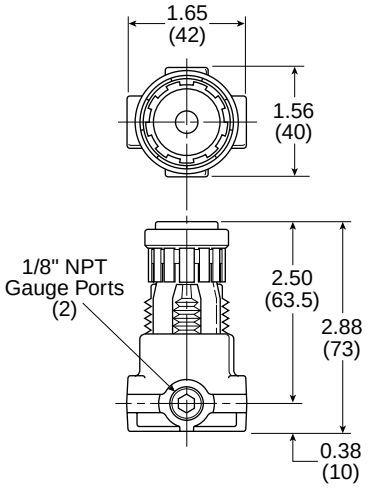
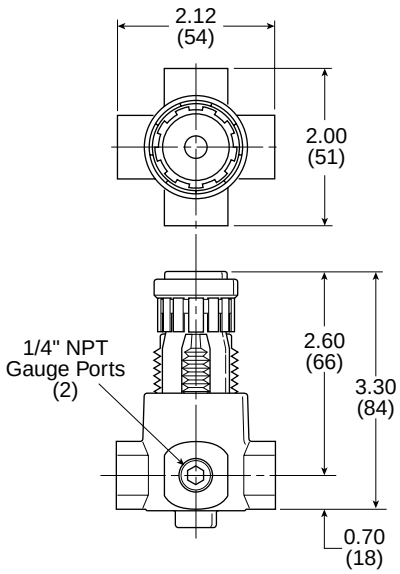
14R (Mini)



15R (Economy)



Service kits

Description		14R (Mini)	15R (Economy)
Body service kit – unbalanced			**PS424BP**
Bonnet assembly kit		**L01369**	**L01369**
Bonnet tamperproof kit		**P01265**	
Gauges – 40mm (1-1/2") round 1/8" center back mount	30 PSIG, 1/8" NPT (0 to 2.1 bar)	**K4515N18030**	**K4515N18030**
	60 PSIG, 1/8" NPT (0 to 4.1 bar)	**K4515N18060**	**K4515N18060**
	160 PSIG, 1/8" NPT (0 to 11.0 bar)	**K4515N18160**	**K4515N18160**
50mm (2") round 1/4" center back mount	60 PSIG, 1/4" NPT (0 to 4.1 bar)	**K4520N14060**	**K4520N14060**
	160 PSIG, 1/4" NPT (0 to 11.0 bar)	**K4520N14160**	**K4520N14160**
Mounting bracket kit (includes panel mount nut)		**PS417BP**	**PS417BP**
Panel mount nuts –	Plastic	**P78652**	**P78652**
	Metal	**P01531**	**P01531**
Poppet / piston kits –	Unbalanced, non-relieving	**PS428P**	**PS428P**
	Unbalanced, relieving	**PS426P**	**PS426P**
Seal kit	Unbalanced		**PS454B**
Springs –	1-15 PSIG range (Yellow)	**P01176**	**P01176**
	1-30 PSIG range (Black)	**P01175**	**P01175**
	1-60 PSIG range (White)	**P01174**	**P01174**
	2-125 PSIG range (Gold)	**P01173**	**P01173**

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R34 Miniature Regulators

- Diaphragm operated for fast operation
- Large Diaphragm to valve area ratio for precise regulation and high flow capacity
- Balanced valve design for precise regulation
- Available in 2 or 4 port design
- Available with a manifold mount to minimize plumbing
- Suitable for low temperature applications
- Non-rising adjusting knob
- 1/8" & 1/4" ports (NPT & BSPP)

R342 / R344

R342-0MC

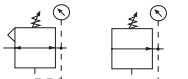
Material specifications

Description	R34 (Mini)
Body	Aluminum
Bonnet	Acetal
Diaphragm & seals	Nitrile
Springs	Steel
Panel nut	Acetal
Valve assembly	Brass

Operating information

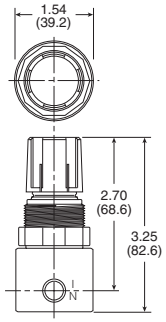
	R34 (Mini)
Supply pressure:	300 PSIG (20.4 bar) max
Temperature rating:	-40°F to 150°F (-40°C to 65.5°C)

R34 Regulator, relieving

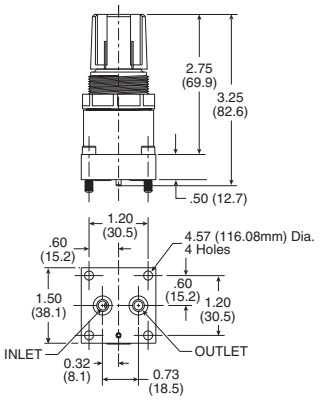


Port size	Pressure range	Flow SCFM	Part number Without gauge	With gauge
1/8"	0 to 30 PSIG (0 to 2.1 bar)	17	**R344-01A**	**R344-01AG**
1/8"	0 to 60 PSIG (0 to 4.1 bar)	17	**R344-01B**	**R344-01BG**
1/8"	0 to 125 PSIG (0 to 8.6 bar)	17	**R344-01C**	**R344-01CG**
1/4"	0 to 30 PSIG (0 to 2.1 bar)	19	**R344-02A**	**R344-02AG**
1/4"	0 to 60 PSIG (0 to 4.1 bar)	19	**R344-02B**	**R344-02BG**
1/4"	0 to 125 PSIG (0 to 8.6 bar)	19	**R344-02C**	**R344-02CG**
Manifold Mount			**R342-0MA**	
Manifold Mount			**R342-0MB**	
Manifold Mount			**R342-0MC**	

R342 / R344



R342-0MC



⚠ WARNING
Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed maximum primary pressure rating.

Most popular.

Service kits

Diagram assembly	Non-relieving	**GRP-96-726**
	Relieving	**GRP-96-725**
Gauges –	60 PSIG, 1/8" NPT (0 to 4.1 bar)	**K4515N18060**
	160 PSIG, 1/8" NPT (0 to 11.0 bar)	**K4515N18160**
Mounting bracket kit (includes panel mount nut)		**SA161X57**
Panel mount nuts	Plastic	**R05X51-P**
	Aluminum	**R05X51-A**
Springs –	0 to 30 PSIG (0 to 2.1 bar)	**GRP-95-111**
	0 to 60 PSIG (0 to 4.1 bar)	**GRP-96-718**
	0 to 125 PSIG (0 to 8.6 bar)	**GRP-96-717**
Tamperproof knob kit		**P31KB00AT**

CAUTION:
REGULATOR PRESSURE ADJUSTMENT –
The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design. For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

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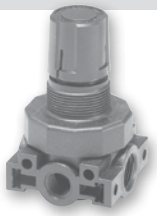
20R, R24 / R25, R45 / R46 Miniature Regulators

- 20R: Rugged brass body for water service
- R24 / R25, R45 / R46: Constructed with a combination of N.S.F. and F.D.A. approved materials
- Unbalanced poppet standard
- Non-rising, push-to-lock adjusting knob
- Diaphragm operated
- 20R: 1/8" & 1/4" ports (NPT & BSPP)
- R24 / R25: 1/8" & 1/4" ports (NPT & BSPP)
- R45 / R46: 1/4" & 3/8" ports (NPT & BSPP)

20R

R24 / R25



R45 / R46

Material specifications

	20R	R25 / R45	R24 / R46
Adjusting screw	Steel	Steel	Steel
Body		Acetal	Acetal
Body, bottom plug, diaphragm button	Brass		
Bonnet & seat	Plastic	Acetal	Acetal
Diaphragm		Buna N	EPDM
Seals	Buna N	Buna N	EPDM
Springs	Steel	Stainless	Stainless
Valve poppet	Brass	Buna N	EPDM

Operating information

	20R
Pressure rating:	0 to 300 PSIG (0 to 20.4 bar)
Secondary pressure ranges –	
Standard pressure	2 to 125 PSIG (0 to 8.6 bar)
Medium pressure	1 to 60 PSIG (0 to 4.1 bar)
Medium pressure	1 to 25 PSIG (0 to 2.1 bar)
Temperature rating:	32°F to 125°F (0°C to 52°C)
	R24 / R25, R45 / R46
Pressure rating:	0 to 150 PSIG (0 to 10 bar)
Temperature rating:	40°F to 125°F (4°C to 52°C)

Regulators

	Port size	Pressure range	Flow	Part number (NPT) Air service, relieving	Water service, non-relieving
R24 / R25	1/8"	25 PSIG		**R25-01A**	**R24-01AK**
	1/8"	60 PSIG		**R25-01B**	**R24-01BK**
	1/8"	125 PSIG		**R25-01C**	**R24-01CK**
	1/4"	25 PSIG		**R25-02A**	**R24-02AK**
	1/4"	60 PSIG		**R25-02B**	**R24-02BK**
	1/4"	125 PSIG		**R25-02C**	**R24-02CK**
R45 / R46	1/4"	25 PSIG	R45: 35 SCFM; R46: 3 GPM	**R45-02A**	**R46-02AK**
	1/4"	60 PSIG	R45: 35 SCFM; R46: 3 GPM	**R45-02B**	**R46-02BK**
	1/4"	125 PSIG	R45: 35 SCFM; R46: 3 GPM	**R45-02C**	**R46-02CK**
	3/8"	25 PSIG	R45: 35 SCFM; R46: 3 GPM	**R45-03A**	**R46-03AK**
	3/8"	60 PSIG	R45: 35 SCFM; R46: 3 GPM	**R45-03B**	**R46-03BK**
	3/8"	125 PSIG	R45: 35 SCFM; R46: 3 GPM	**R45-03C**	**R46-03CK**
				Water service, relieving	Water service, non-relieving
20R	1/8"	25 PSIG	1.25 GPM	**20R011FC**	**20R011GC**
	1/8"	60 PSIG	1.25 GPM	**20R061FC**	**20R061GC**
	1/8"	125 PSIG	1.25 GPM	**20R013FC**	**20R013GC**
	1/4"	25 PSIG	1.25 GPM	**20R111FC**	**20R111GC**
	1/4"	60 PSIG	1.25 GPM	**20R161FC**	**20R161GC**
	1/4"	125 PSIG	1.25 GPM	**20R113FC**	**20R113GC**

NOTE: 1.25 Dia. (32mm) hole required for panel mounting.

⚠ WARNING
Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed maximum primary pressure rating.

Most popular.

CAUTION:
REGULATOR PRESSURE ADJUSTMENT –
The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design. For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

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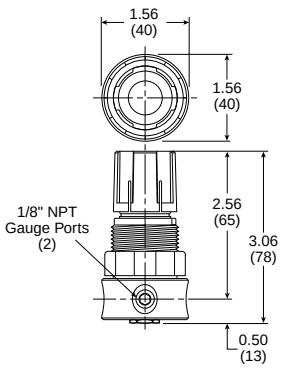
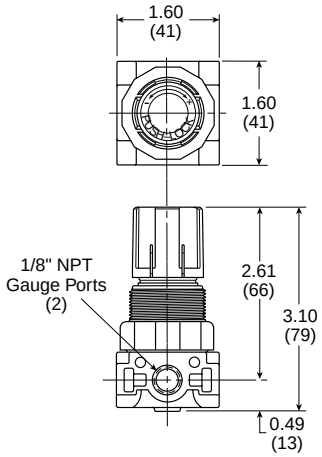
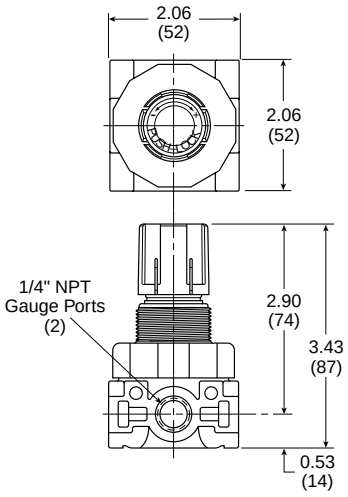
20R



R24/R25



R45/R46



Service kits

Description		20R	R24	R25	R45	R46
Bonnet kit		**PCKR364Y**				
Bonnet tamperproof kit		**PCKR364T**				
Mounting bracket kit (includes panel mount nut)		**SA161X57**	**SA161X57**	**SA161X57**	**SA161X57**	**SA161X57**
Panel mount nuts –	Plastic	**R05X51-P**	**R05X51-P**	**R05X51-P**	**R05X51-P**	**R05X51-P**
	Aluminum	**R05X51-A**	**R05X51-A**	**R05X51-A**	**R05X51-A**	**R05X51-A**
Repair kits –	Non-relieving	**PRKR163Y**	**RKR24KY**	**RKR25KY**	**RKR45KY**	**RKR45KY**
	Relieving	**PRKR164Y**	**RKR24Y**	**RKR25Y**	**RKR45Y**	**RKR45Y**
Springs –	0 to 25 PSIG (0 to 1.7 bar)		**SPR-375-1**	**SPR-375-1**	**SPR-46**	**SPR-46**
	0 to 60 PSIG (0 to 4.1 bar)		**SPR-376**	**SPR-376**	**SPR-47**	**SPR-47**
	0 to 125 PSIG (0 to 8.6 bar)		**SPR-377**	**SPR-377**	**SPR-48**	**SPR-48**

Most popular.

Parker Hannifin Corporation
Pneumatic Division
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14E, B34 Miniature Filter / Regulators

14E
- Excellent water removal efficiency
- Unbalanced poppet standard
- Solid control piston for extended life
- Space saving package offers both filter and regulator features in one integral unit
- Non-rising adjustment knob
- Two full flow 1/8" gauge ports

B34
- Excellent water removal efficiency diaphragm operated for fast operation
- Large diaphragm to valve area for precise regulation and high flow capacity
- Balanced valve design for precise regulation
- Space saving package offers both filter and regulator features in one integral unit
- Non-rising adjustment knob

14E

B34

Operating information

	14E	B34
Pressure rating –		
Polycarbonate bowl	0 to 150 PSIG (0 to 10.3 bar)	0 to 150 PSIG (0 to 10.3 bar)
Metal bowl	0 to 250 PSIG (0 to 17.2 bar)	0 to 300 PSIG (0 to 17.2 bar)
Secondary pressure ranges:	Standard pressure 2 to 125 PSIG (0 to 8.6 bar) Medium pressure 1 to 30 PSIG (0 to 2.1 bar) Medium pressure 1 to 60 PSIG (0 to 4.1 bar) Low pressure 1 to 15 PSIG (0 to 1 bar)	Reduced pressure ranges 0 to 25 PSIG (0 to 1.7 bar) 1 to 60 PSIG (0 to 4.1 bar) 2 to 125 PSIG (0.15 to 8.5 bar)
Temperature rating –		
Polycarbonate bowl	32°F to 125°F (0°C to 52°C)	40°F to 125°F (4.4°C to 52°C)
Metal bowl	32°F to 175°F (0°C to 80°C)	40°F to 125°F (4.4°C to 52°C)

Miniature Filter / Regulators

	Port size	Bowl type	Drain type	Flow SCFM	Element type	Part number (NPT) Pressure range 30 PSIG	60 PSIG	125 PSIG
14E	1/8"	Poly	Twist	16	5 micron	**14E01B10FC**	**14E01B11FC**	**14E01B13FC**
	1/8"	Poly	Auto pulse	16	5 micron	**14E05B10FC**	**14E05B11FC**	**14E05B13FC**
	1/8"	Metal	Twist	16	5 micron	**14E03B10FC**	**14E03B11FC**	**14E03B13FC**
	1/8"	Metal	Auto pulse	16	5 micron	**14E07B10FC**	**14E07B11FC**	**14E07B13FC**
	1/4"	Poly	Twist	18	5 micron	**14E11B10FC**	**14E11B11FC**	**14E11B13FC**
	1/4"	Poly	Auto pulse	18	5 micron	**14E15B10FC**	**14E15B11FC**	**14E15B13FC**
	1/4"	Metal	Twist	18	5 micron	**14E13B10FC**	**14E13B11FC**	**14E13B13FC**
	1/4"	Metal	Auto pulse	18	5 micron	**14E17B10FC**	**14E17B11FC**	**14E17B13FC**
B34	1/8"	Poly	Twist	17	5 micron			**B344-01AGC**
	1/8"	Metal	Twist	17	5 micron			**B344-01DGC**
	1/4"	Poly	Twist	19	5 micron			**B344-02AGC**
	1/4"	Metal	Twist	19	5 micron			**B344-02DGC**

⚠ WARNING
Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed maximum primary pressure rating.

☐ Most popular.

CAUTION:
REGULATOR PRESSURE ADJUSTMENT –
The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design. For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

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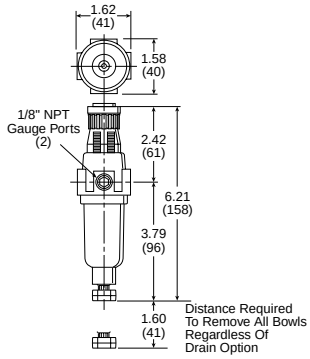
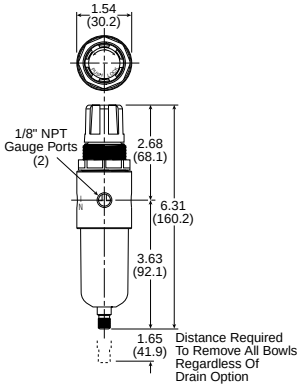
14E



B34



Material specifications

Description			14E (Mini)	B34
Adjusting nut			Brass	
Adjusting stem & spring			Steel	
Body			Zinc	Aluminum
Bonnet, knob, seat, piston, holder & deflector			Plastic	
Bowls		Transparent	Polycarbonate	Polycarbonate
		Metal	Zinc	Zinc
Drains	Manual – twist	Body & stem	Plastic	
		Seals	Nitrile	
	Automatic – pulse	Piston & seals	Nitrile	
		Stem, seat, adapter & washers	Aluminum	
Elastomers				Buna N
Filter elements		5 Micron (standard)	Plastic	Sintered polyethylene
		40 Micron (optional)	Plastic	
		Adsorber (optional)	Activated charcoal	
Filter retainer, vane plate				Acetal
Innervalve, diaphragm, button, drain				Brass
Seals			Nitrile	

Service kits

Adjusting knob				**RRP-16-005-000**
Bonnet tamperproof kit			**P01265**	
Bowl kits	Poly bowl –	Automatic pulse drain	**PS408BP**	**BK504SY**
		Twist drain	**PS404P**	**BK504Y**
	Metal bowl –	Automatic drain	**PS451BP**	**BK505SY**
		Twist drain	**PS447BP**	**BK505Y**
Drain kits		Automatic pulse drain		**RK504SY**
Filter element kits –		5 Micron	**PS403P**	**FRP-96-729**
		40 Micron	**PS401P**	
		Adsorber	**PS452P**	
Gauges –		30 PSIG (0 to 2.1 bar)	**K4515N18030**	
		60 PSIG (0 to 4.1 bar)	**K4515N18060**	**K4515N18060**
		160 PSIG (0 to 11.0 bar)	**K4515N18160**	**K4515N18160**
Mounting bracket kit* (includes panel mount nut)			**PS417BP**	**SA161X57**
Panel mount nuts –		Plastic	**P78652**	**R05X51-P**
		Aluminum		**R05X51-A**
Poppet / piston kits –		Unbalanced, non-relieving	**PS428P**	
		Unbalanced, relieving	**PS426P**	
Repair kits –		Non-relieving, diaphragm, valve assembly		**GRP-96-726**
		Relieving, diaphragm, valve assembly		**GRP-96-725**
Springs –		15 PSIG	**P01176** (yellow)	**GRP-95-111**
		30 PSIG	**P01175** (black)	
		60 PSIG	**P01174** (white)	**GRP-96-718 (black)**
		125 PSIG	**P01173** (gold)	**GRP-96-717**

☐ Most popular.

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04L Miniature Mist Lubricators

- Proportional oil delivery over a wide range of air flows
- Precision needle valve assures repeatable oil delivery and provides simple adjustment of delivery rate
- Ideal for low and high flow applications with changing air flow
- Transparent sight dome for 360° visibility

Material specifications

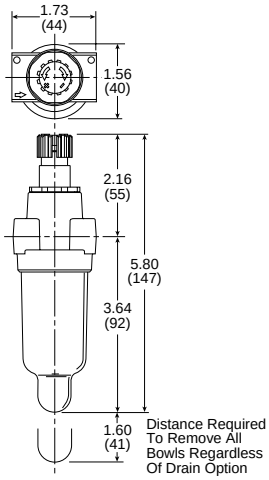
Body		Zinc
Bowls	Transparent	Polycarbonate
	Metal	Zinc
Drains		Plastic
Seals		Nitrile
Sight Dome		Polycarbonate

Operating information

Pressure ratings –	
Polycarbonate bowl	0 to 150 PSIG (0 to 10.3 bar)
Metal bowl	0 to 250 PSIG (0 to 17.2 bar)
Temperature rating –	
Polycarbonate bowl	32°F to 125°F (0°C to 52°C)
Metal bowl	32°F to 175°F (0°C to 80°C)
Minimum flow for lubrication:	0.5 SCFM at 100 PSIG

04L Miniature Lubricators

Port size	Bowl type	Drain type	Flow SCFM	Part number (NPT)
1/8"	Poly	None	20	**04L00GB**
1/8"	Metal without sight gauge	Twist	20	**04L03GB**
1/4"	Poly	None	20	**04L10GB**
1/4"	Metal without sight gauge	Twist	20	**04L13GB**



Service kits

			04L (Mini)
Bowl kits	Poly bowl	No drain	**PS421P**
		Twist drain	**PS420P**
	Metal bowl	Twist drain	**PS447BP**
Mounting bracket kit			**PS419**
Oil		1 Quart	**F442001**
		12 Quart case	**F442003**
		4 Gallon case	**F442005**

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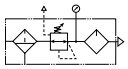
Miniature Close Nippled Combinations

Close Nippled Combinations – 14 Miniature Series

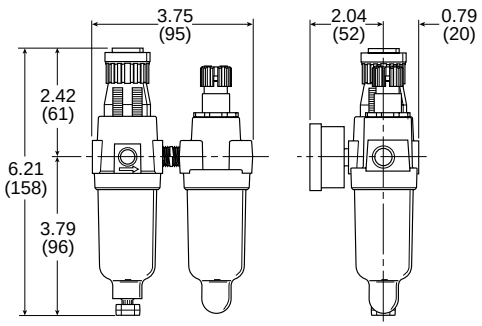
- Regulator can be mounted with knob in up or down position
- 5 micron filter element standard, 40 micron optional
- Manual twist drain
- Relieving regulator

Close Nippled Combinations

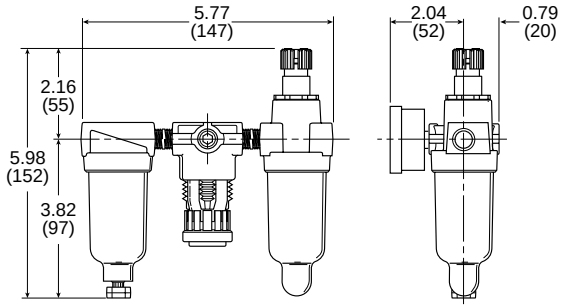


		Port size	Bowl type	Element type	Filter drain type	Relief type	Lubricator drain type	Part number (NPT)
14G		1/8"	Poly	5 micron	Twist	Relieving	None	**14G01B13F0GD**
		1/4"	Poly	5 micron	Twist	Relieving	None	**14G11B13F0GD**
14A		1/8"	Poly	5 micron	Twist	Relieving	None	**14A01B13F0GF**
		1/4"	Poly	5 micron	Twist	Relieving	None	**14A11B13F0GF**

14G (Close nippled 2-unit)



14A (Close nippled 3-unit)



Service kits

Mounting bracket kits –	14E, 14F, 14R	**PS417BP**
	04L	**PS419**

⚠ WARNING
Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed maximum primary pressure rating.

CAUTION:
REGULATOR PRESSURE ADJUSTMENT –
The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design. For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

☐ Most popular.

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

P3NF Hi-Flow Particulate Filters

- Excellent water removal efficiency
- Port blocks (PB) available to provide 1-1/2" port extension to 1" ported bodies
- 40 micron element standard
- Metal bowl with sight gauge standard
- 3/4", 1", & 1-1/2" ports (NPT & BSPP)

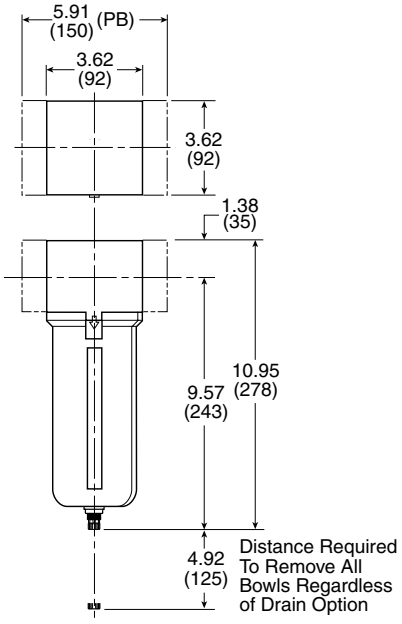
Material specifications

Description		P3NF (Hi-Flow)
Body		Aluminum
Bowl		Aluminum
Deflector		Plastic
Drain		Plastic
Filter element –	40 micron	Plastic
Seals		Nitrile
Sight gauge		Polyamide (Nylon)

Operating information

		P3NF (Hi-Flow)
Operating pressure:	Metal bowl	0 to 250 PSIG (0 to 17.2 bar)
	Auto float drain	15 to 250 PSIG (1.0 to 17.2 bar)
Operating temperature:	Metal bowl	32°F to 175°F (0°C to 80°C)

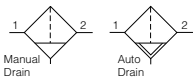
P3NF (Hi-Flow)



Service kits

Description		P3NF (Hi-Flow)
Bowl Kits –	Sight gauge / auto float	**P3NKA00BSA**
	Sight gauge / twist drain	**P3NKA00BSM**
Bowl latch kit		**C11A33**
DPI replacement kit		**PS781P**
Drain kit –	Auto drain	**PS506P**
	Twist drain	**PS512P**
Filter element kit –	40 micron	**P3NKA00ESG**
	5 micron	**P3NKA00ESE**
	Adsorber	**P3NKA00ESA**
Mounting bracket kit		**P3NKA00MW**
Sight gauge kit		**P3NKA00PE**

P3NF Particulate Filters



	Port size	Bowl type	Sight gauge	Flow SCFM	Element type	Part number (NPT) Twist drain	Part number (NPT) Automatic float drain
P3NF	3/4"	Metal	Yes	270	40 micron	**P3NFA96GSM**	**P3NFA96GSA**
	1"	Metal	Yes	300	40 micron	**P3NFA98GSM**	**P3NFA98GSA**
	1-1/2" #	Metal	Yes	310	40 micron	**P3NFA9PGSM**	**P3NFA9PGSA**

1" port body with 1-1/2" port block

Note: BSPP ported units supplied using NPT ported bodies and BSPP port block kits.

☐ Most popular.

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Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

P3NF Hi-Flow Coalescing Filters

- Removes liquid aerosols and sub-micron particles
- Port blocks (PB) available to provide 1-1/2" port extension to 1" ported bodies
- 0.01 micron element standard
- Metal bowl with sight gauge standard
- 3/4", 1", & 1-1/2" ports (NPT & BSPP)

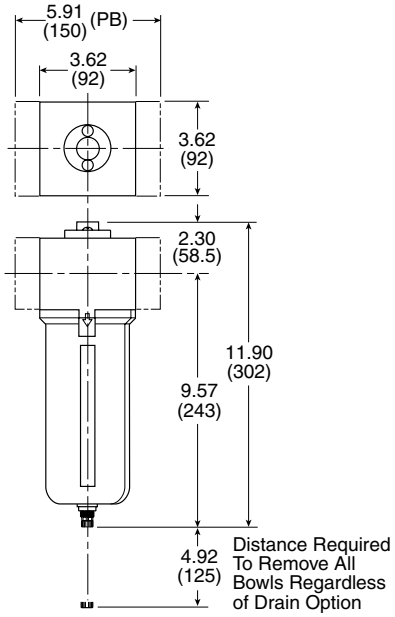
Material specifications

Description		P3NF (Hi-Flow)
Body		Aluminum
Bowl		Aluminum
Deflector		Plastic
Drain		Plastic
Filter elements –	1.0 micron	Borosilicate & felt glass fibers
Seals		Nitrile
Sight gauge		Polyamide (Nylon)

Operating information

		P3NF (Hi-Flow)
Operating pressure:	Metal bowl	0 to 250 PSIG (0 to 17.2 bar)
	Auto float drain	15 to 250 PSIG (1.0 to 17.2 bar)
Operating temperature:	Metal bowl	32°F to 175°F (0°C to 80°C)

P3NF (Hi-Flow)



Service kits

Description		P3NF (Hi-Flow)
Bowl Kits –	Sight gauge / auto float	**P3NKA00BSA**
	Sight gauge / twist drain	**P3NKA00BSM**
Bowl latch kit		**C11A33**
DPI replacement kit		**PS781P**
Drain kit –	Auto drain	**PS506P**
	Twist drain	**PS512P**
Filter element kit –	Grade 6 (standard)	**P3NKA00ESCB**
	Grade 10 (optional	**P3NKA00ES9**
Mounting bracket kit		**P3NKA00MW**
Sight gauge kit		**P3NKA00PE**

Coalescing Filters

	Port size	Bowl type	Sight gauge	Flow SCFM	Element type	Part number (NPT) Twist drain	Part number (NPT) Automatic float drain
P3NF	3/4"	Metal	Yes	130	0.01 micron	**P3NFA96DSM**	**P3NFA96DSA**
	1"	Metal	Yes	140	0.01 micron	**P3NFA98DSM**	**P3NFA98DSA**
	1-1/2"#	Metal	Yes	225	0.01 micron	**P3NFA9PDSM**	**P3NFA9PDSA**

1" port body with 1-1/2" port block

Note: BSPP ported units supplied using NPT ported bodies and BSPP port block kits.

Most popular.

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

P3NR Hi-Flow Regulators

- Port blocks (PB) available to provide 1-1/2" port extension to 1" ported bodies
- Self relieving feature plus balanced poppet provides quick response and accurate pressure regulation
- Solid control piston for extended life
- 3/4", 1", & 1-1/2" ports (NPT & BSPP)

P3NR Hi-Flow Regulators

	Port size	Gauge	Flow (SCFM)	Part number (NPT), Relieving
P3NR	3/4"	No	200	**P3NRA96BNN**
	1"	No	300	**P3NRA98BNN**
	1-1/2"	No	300	**P3NRA9PBNN**
	3/4"	125 PSI	200	**P3NRA96BNG**
	1"	125 PSI	300	**P3NRA98BNG**
	1-1/2"	125 PSI	300	**P3NRA9PBNG**

Note: BSPP ported units supplied using NPT ported bodies and BSPP port block kits.

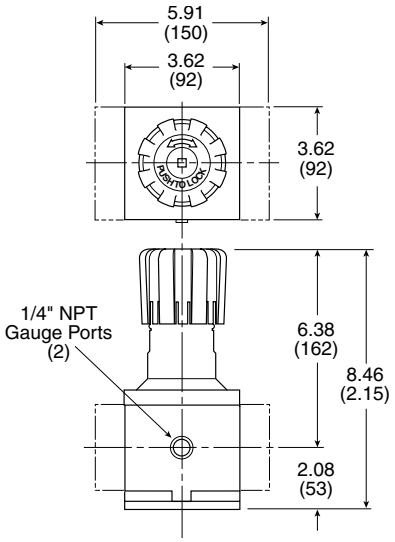
Material specifications

	P3NR
Adjusting screw	Steel
Body	Aluminum
Bonnet	Aluminum
Knob	Plastic
Piston	Plastic
Poppet assembly	Brass
Seals	Nitrile
Springs – poppet & control	Steel

Operating information

Pressure rating, maximum:	250 PSIG (17.2 bar)
Temperature rating:	32°F to 175°F (0°C to 80°C)

P3NR (Hi-Flow)



Service kits

Body service kit		
Control knob		**P3NKA00PN**
Gauges – 50mm (2") round 1/4" center back mount	60 PSIG (0 to 4.1 bar)	**K4520N14060**
	160 PSIG (0 to 11.0 bar)	**K4520N14160**
	300 PSIG (0 to 20.0 bar)	**K4520N14300**
44mm (1-3/4") digital round 1/4" center back mount	0-160 PSIG / 0-11 bar / 0-1.1 MPa	**K4517N14160D**
Mounting bracket kit		**P3NKA00MW**
Repair kits –	Non-relieving	**P3NKA00RN**
	Relieving	**P3NKA00RR**
Springs –	1-60 PSIG	**C10A1304**
	2 to 125 PSIG	**SPR-47**
	5 to 250 PSIG	**SPR-48**

⚠ WARNING
Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed maximum primary pressure rating.

CAUTION:
REGULATOR PRESSURE ADJUSTMENT –
The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design. For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

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Pneumatic Division
Richland, Michigan
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P3NR Hi-Flow Pilot Operated Regulators

- Port blocks (PB) available to provide 1-1/2" port extension to 1" ported bodies
- Self relieving feature plus balanced poppet provides quick response and accurate pressure regulation
- Solid control piston for extended life
- 3/4", 1", & 1-1/2" ports (NPT & BSPP)

Operating information

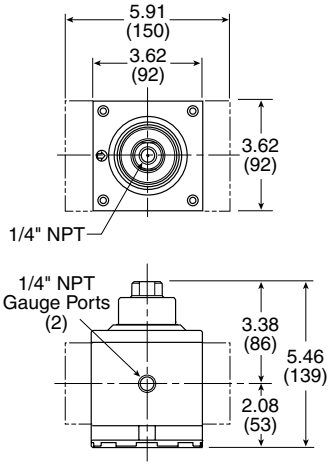
Pressure rating, maximum:	250 PSIG (17.2 bar)
Temperature rating:	32°F to 175°F (0°C to 80°C)
Flow capacity SCFM:	3/4"; 300 1"; 300 1-1/2"; 350

P3NR Hi-Flow Pilot Operated Regulators

	Port size	Gauge	Part number (NPT), relieving
P3NR	3/4"	No	**P3NRA96BPP**
	1"	No	**P3NRA98BPP**
	1-1/2"	No	**P3NRA9PBPP**
	3/4"	160 PSI	**P3NRA96BPG**
	1"	160 PSI	**P3NRA98BPG**
	1-1/2"	160 PSI	**P3NRA9PBPG**

Note: BSPP ported units supplied using NPT ported bodies and BSPP port block kits.

P3NR (Hi-Flow)



Material specifications

Adjusting stem	Steel
Body	Aluminum
Bonnet	Aluminum
Piston	Plastic
Poppet assembly	Brass
Seals	Nitrile
Springs – poppet	Steel

Service kits

Gauges – 50mm (2") round 1/4" center back mount	60 PSIG (0 to 4.1 bar)	**K4520N14060**
	160 PSIG (0 to 11.0 bar)	**K4520N14160**
	300 PSIG (0 to 20.0 bar)	**K4520N14300**
44mm (1-3/4") digital round 1/4" center back mount	0-160 PSIG / 0-11 bar / 0-1.1 MPa	**K4517N14160D**
Mounting bracket kit		**P3NKA00MW**
Repair kits	Relieving	**P3NKA00PD**

⚠ WARNING
Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed maximum primary pressure rating.

CAUTION:
REGULATOR PRESSURE ADJUSTMENT –
The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design. For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

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P3NE Hi-Flow Filter / Regulators

- Port blocks (PB) available to provide 1-1/2" port extension to 1" ported bodies
- Excellent water removal efficiency
- Metal bowl with sight gauge
- Large filter element surface guarantees low pressure drop and increased element life
- 40 micron element standard
- Twist drain as standard, optional auto drain
- Self relieving feature plus balanced poppet provides quick response and accurate pressure regulation
- Solid control piston for extended life
- 3/4", 1", & 1-1/2" ports (NPT & BSPP)

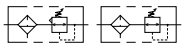
Material specifications

Adjusting stem		Steel
Body, bonnet, bowl		Aluminum
Drain		Plastic
Filter element –	40 micron	Plastic
Knob		Plastic
Piston		Plastic
Polyamide (Nylon)		Polyamide (nylon)
Springs – poppet & control		Steel

Operating information

Pressure ratings:	0 to 250 PSIG (0 to 17.2 bar)
Temperature rating:	32°F to 175°F (0°C to 80°C)

P3NE Hi-Flow Filter / Regulators



		Port size	Bowl type	Drain type	Flow SCFM	Element type	Part number (NPT)
P3NE		3/4"	Metal / Sight gauge	Twist	250	40 micron	**P3NEA96GSMBNN**
		3/4"	Metal / Sight gauge	Auto float	250	40 micron	**P3NEA96GSABNN**
		1"	Metal / Sight gauge	Twist	250	40 micron	**P3NEA98GSMBNN**
		1"	Metal / Sight gauge	Auto float	250	40 micron	**P3NEA98GSABNN**
		1-1/2" #	Metal / Sight gauge	Twist	250	40 micron	**P3NEA9PGSMBNN**
		1-1/2" #	Metal / Sight gauge	Auto float	250	40 micron	**P3NEA9PGSABNN**

1" port body with 1-1/2" port block

Note: BSPP ported units supplied using NPT ported bodies and BSPP port block kits.

⚠ WARNING
Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed maximum primary pressure rating.

CAUTION:
REGULATOR PRESSURE ADJUSTMENT –
The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design. For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

Most popular.

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Pneumatic Division
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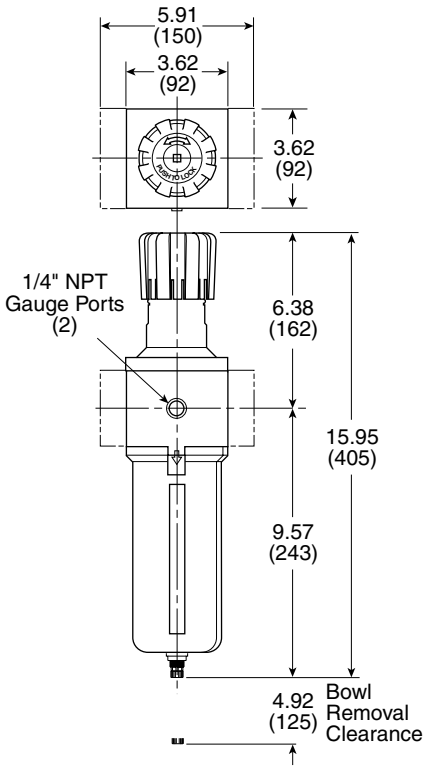
P3NE (Hi-Flow)



Service kits

Description		P3NE
Bowl kits: Metal bowl –	Automatic drain	**P3NKA00BSA**
	Twist drain	**P3NKA00BSM**
Bowl latch kit		**C11A33**
Control knob		**P3NKA00PN**
Drain kits –	Automatic float drain	**PS506P**
	Twist drain	**PS512P**
Filter element kits –	40 Micron	**P3NKA00ESG**
	5 Micron	**P3NKA00ESE**
	Adsorber	**P3NKA00ESA**
Gauges – 50mm (2") round 1/4" center back mount	60 PSIG (0 to 4.1 bar)	**K4520N14060**
	160 PSIG (0 to 11.0 bar)	**K4520N14160**
	300 PSIG (0 to 20.0 bar)	**K4520N14300**
44mm (1-3/4") digital round 1/4" center back mount	0-160 PSIG / 0-11 bar / 0-1.1 MPa	**K4517N14160D**
Mounting bracket kit* (includes panel mount nut)		**P3NKA00MW**
Service kits –	Non-relieving	**P3NKA00RN**
	Relieving	**P3NKA00RR**
Sight gauge kit		**P3NKA00PE**
Springs –	1- 60 PSIG rang)	**C10A1304**
	2- 125 PSIG range	**C10A1308**
	5-250 PSIG range (white)	**C10A1317**

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P3NL Hi-Flow Mist Lubricators

- Port blocks (PB) available to provide 1-1/2" port extension to 1" ported bodies
- Proportional oil delivery over a wide range of air flows
- Bowl can be filled while air line is under pressure
- Transparent sight dome for 360° visibility
- 3/4", 1" & 1-1/2" ports (NPT & BSPP)

Material specifications

Body	Aluminum
Bowls	Aluminum
Drains – twist (optional)	Plastic
Injector meter block & base assembly	Plastic
Seals	Nitrile
Sight dome	Polycarbonate
Sight gauge	Polyamide (Nylon)

Operating information

Pressure ratings:	0 to 250 PSIG (0 to 17.2 bar)
Temperature rating:	32°F to 175°F (0°C to 80°C)
Flow capacity:	3/4" — 240 SCFM 1" — 250 SCFM 1-1/2" — 260 SCFM
Minimum Flow for Lubrication:	6.6 SCFM at 100 PSIG
Suggested lubricant:	F442 oil

Petroleum based oil of 100 to 200 SSU viscosity at 100°F (38°C) and an aniline point greater than 200°F (93°C)

(DO NOT USE OILS WITH ADDITIVES, COMPOUNDED OILS CONTAINING SOLVENTS, GRAPHITE, DETERGENTS, OR SYNTHETIC OILS.)

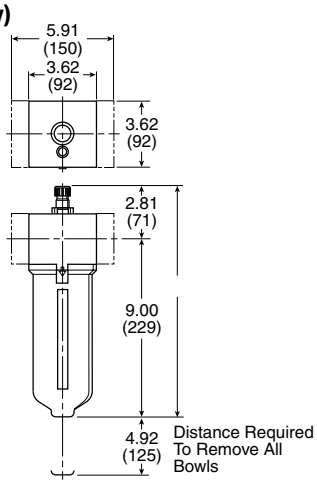
P3NL Hi-Flow Lubricators

	Port size	Bowl type	Drain type	Flow SCFM	Part number (NPT)
P3NL	3/4"	Metal / Sight gauge	None	240	**P3NLA96LSN**
	1"	Metal / Sight gauge	None	250	**P3NLA98LSN**
	1-1/2" #	Metal / Sight gauge	None	260	**P3NLA9PLSN**

1" port body with 1-1/2" port block

Note: BSPP ported units supplied using NPT ported bodies and BSPP port block kits.

P3NL (Hi-Flow)



Most popular.

Service kits

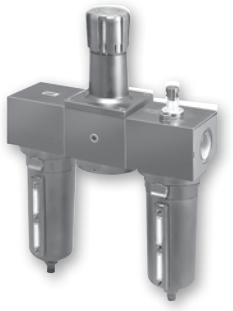
		P3NL
Adjustment knob		**P04121**
Bowl kits: Metal bowl –	No drain	**P3NKA00BSN**
	Twist drain	**P3NKA00BSM**
Bowl latch kit		**C11A33**
Drain kit	Twist drain	**PS512P**
Fill cap kit		**P3NKA00PL**
Mounting bracket kit		**P3NKA00MW**
Oil –	1 Quart	**F442001**
	12 Quart case	**F442003**
	4 Gallon case	**F442005**
Pressure fill adapter kit		**P3NKA00PK**
Service kit		**P3NKA00RL**
Sight dome kits –	Polycarbonate	**PS740P**
	Nylon	**PS740N**
Sight gauge kit		**P3NKA00PE**

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

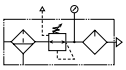
P3N Hi-Flow Combinations

Combinations – P3N Hi-Flow Series

- Regulator can be mounted with knob in up or down position
- 40 micron filter element standard
- Manual twist drain
- Relieving regulator
- 3/4", 1", & 1-1/2" ports (NPT & BSPP)



Modular Combinations



		Port size	Bowl type	Element type	Filter drain type	Pressure range	Relief type	Lubricator drain type	Part number (NPT)
P3NCA		3/4"	Metal	40 micron	Twist	0-125	Relieving	None	**P3NCA96SGMNNLNA**
		1"	Metal	40 micron	Twist	0-125	Relieving	None	**P3NCA98SGMNNLNA**
		1-1/2" #	Metal	40 micron	Twist	0-125	Relieving	None	**P3NCA9PSGMNNLNA**
P3NCB		3/4"	Metal	40 micron	Twist	0-125	Relieving	None	**P3NCB96SGMNNLNA**
		1"	Metal	40 micron	Twist	0-125	Relieving	None	**P3NCB98SGMNNLNA**
		1-1/2" #	Metal	40 micron	Twist	0-125	Relieving	None	**P3NCB9PSGMNNLNA**

Notes: All combo part numbers are with regulator knob in up position.
BSPP ported units supplied using NPT ported bodies and BSPP port block kits.

1" Port body with 1-1/2" port block.

⚠ WARNING
Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed maximum primary pressure rating.

CAUTION:
REGULATOR PRESSURE ADJUSTMENT –
The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design. For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

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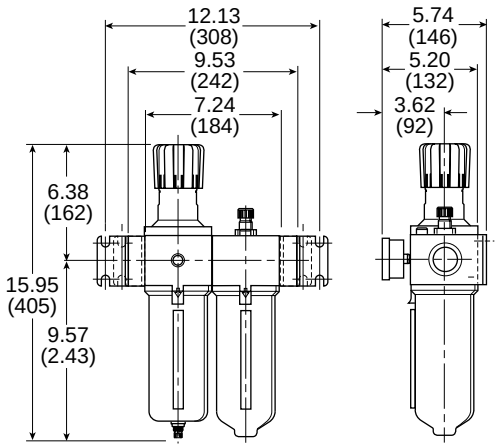
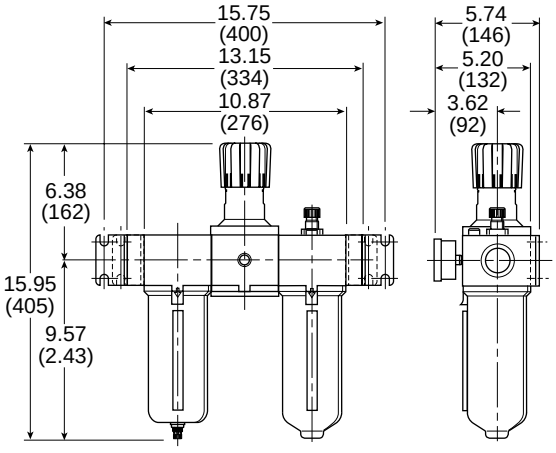
P3NCA (Modular 2-unit)



P3NCB (Modular 3-unit)



Service kits

Mounting bracket kit			**P3NKA00MW**
Replacement body cover			**P3NKA00PM**

Port block kits	**3/4"**	**1"**	**1-1/2"**
Individual filters, individual regulators and 2-piece filter and regulator assemblies:			
NPT	**P3NKB96CP**	**P3NKB98CP**	**P3NKB9BCP**
BSPP	**P3NKB16CP**	**P3NKB18CP**	**P3NKB1BCP**
2 and 3 piece combinations including a lubricator (FR/L & FRL), individual lubricators, individual coalescing filters and 2-piece filter and coalescer assemblies:			
NPT	**P3NKB96CL**	**P3NKB98CL**	**P3NKB9BCL**
BSPP	**P3NKB16CL**	**P3NKB18CL**	**P3NKB1BCL**

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

F602 General Industrial Particulate Filters

- Excellent water removal efficiency
- For heavy duty applications with minimum pressure drop requirement
- Unique deflector plate that creates swirling of the air stream ensuring maximum water and dirt separation
- Large filter element surface guarantees low pressure drop and increased element life
- 40 micron filter element standard, 5 micron available
- Metal bowl with sight gauge standard
- Twist drain as standard, optional auto drain
- Large bowl capacity
- Optional high capacity bowl(s) available

3/4" & 1"

1-1/4" & 1-1/2"

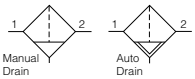
Material specifications

Description		(Hi-Flow) F602-06W F602-08W F602-06E F602-08E	(Hi-Flow) F602-10W F602-12W F602-10E F602-12E
Body		Zinc	Zinc
Bowl	(E) 32 oz	Aluminum	Aluminum
	(W) 16 oz	Zinc	Zinc
Drains	Housing R	Acetal	Acetal
	Housing Q	Bronze	Bronze
Drain - Twist	Body & stem	Brass	Brass
Filter element	5 micron	Polypropylene	Polypropylene
	40 micron	Polypropylene	Polypropylene
Seals		Nitrile	Nitrile
Sight gauge		Nylon	Nylon

Operating information

		F602 (Hi-Flow)
Operating pressure:	Aluminum bowl (E) 32 oz.	0 to 300 PSIG (0 to 20.4 bar)
	Zinc (W) 16 oz.	0 to 250 PSIG (0 to 17.2 bar)
	With internal auto drain (R)	20 to 175 PSIG (1.4 to 11.9 bar)
	With external auto drain (Q)	0 to 250 PSIG (0 to 17.2 bar)
Operating temperature:	Aluminum bowl (E) 32 oz.	40°F to 150°F (4.4°C to 65.6°C)
	Zinc (W) 16 oz.	40°F to 150°F (4.4°C to 65.6°C)
	With internal auto drain (R)	40°F to 125°F (4.4°C to 52°C)
	With external auto drain (Q)	40°F to 150°F (4.4°C to 65.6°C)

Particulate Filters



		Port size	Bowl type	Bowl size	Flow SCFM	Element type	Part number (NPT) Twist drain	Part number (NPT) Automatic float drain
F602		3/4"	Metal / Sight gauge	16 oz	270	40 micron	**F602-06WJ**	**F602-06WJR**
		3/4"	Metal / Without sight gauge	32 oz	270	40 micron	**F602-06EJ**	**F602-06EJR**
		1"	Metal / Sight gauge	16 oz	300	40 micron	**F602-08WJ**	**F602-08WJR**
		1"	Metal / Without sight gauge	32 oz	300	40 micron	**F602-08EJ**	**F602-08EJR**
F602		1-1/4"	Metal / Sight gauge	16 oz	380	40 micron	**F602-10WJ**	**F602-10WJR**
		1-1/4"	Metal / Without sight gauge	32 oz	380	40 micron	**F602-10EJ**	**F602-10EJR**
		1-1/2"	Metal / Sight gauge	16 oz	450	40 micron	**F602-12WJ**	**F602-12WJR**
		1-1/2"	Metal / Without sight gauge	32 oz	450		**F602-12EJ**	**F602-12EJR**

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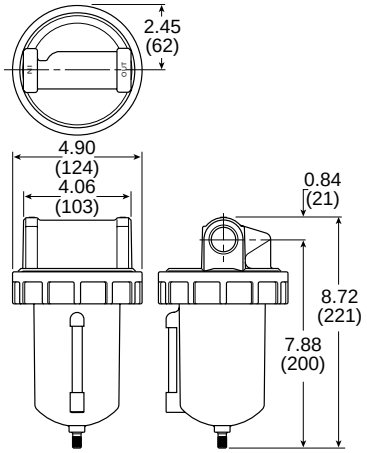
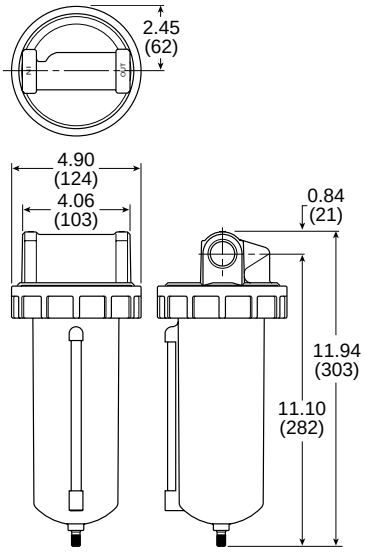
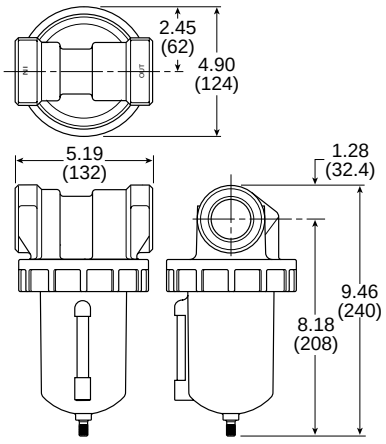
F602-06W, F602-08W (Hi-Flow)



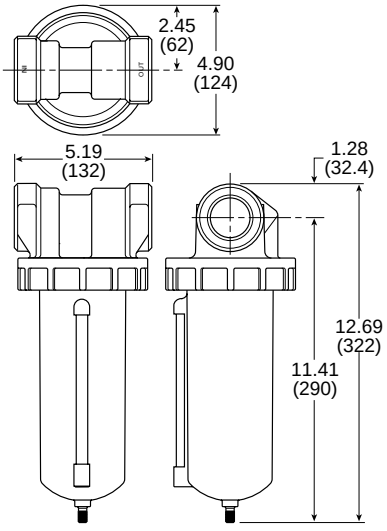
F602-06E, F602-08E (Hi-Flow)



F602-10W, F602-12W (Hi-Flow)



F602-10E, F602-12E (Hi-Flow)



Service kits

Description		(Hi-Flow) F602-06W, F602-08W, F602-06E, F602-08E	(Hi-Flow) F602-10W, F602-12W, F602-10E, F602-12E
Bowl kits –	Aluminum (E) 32 oz	**BK603B**	**BK603B**
	Zinc / sight gauge (W) 16 oz	**BK605WB**	**BK605WB**
Drain kits –	Internal auto	**SA602MD**	**SA602MD**
	Manual	**SA600Y7-1**	**SA600Y7-1**
Filter element kits –	40 micron	**EK602B**	**EK602B**
	5 micron	**EK602VB**	**EK602VB**
Mounting bracket kits –	3/4" unit	**SA200AW57**	
	1" unit	**SA200CW57**	
Repair kits –	Deflector, baffle assy, & retaining rod	**RK602B**	**RK602B**
	External auto drain	**RK602D**	**RK602D**
	Internal auto drain	**RK602MD**	**RK602MD**
	Metal bowl / sight gauge	**RKB605WB**	**RKB605WB**

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
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35F, 43F General Industrial Particulate Filters

- Heavy-duty cast aluminum housings to withstand operating pressures up to 250 PSIG
- Differential pressure indicator to eliminate the guesswork of element replacement
- Unique drain mounting plate design offers a trouble-free method for interchanging and installing external drains

35F

43F

Material specifications

Description	35F, 43F (Hi-Flow)
Baffle	Plated steel
Body	Aluminum
Bowl	Aluminum
Deflector	Plated steel
Filter element	Polyethylene
Seals	Fluorocarbon
Stud	Plated steel

Operating information

		35F (Hi-Flow)	43F (Hi-Flow)
Operating pressure:	With DP gauge & without DPI	250 PSIG (17.2 bar)	250 PSIG (17.2 bar)
	With DPI	150 PSIG (10.3 bar)	150 PSIG (10.3 bar)
Operating temperature:		32°F to 150°F (0°C to 65.5°C)	32°F to 150°F (0°C to 65.5°C)

Particulate Filters

	Port size	Bowl type	Flow SCFM	Element type	Part number (NPT) Automatic drain
35F	1-1/2	Metal	1280	5 micron	**35F77BAP**
	2	Metal	1400	5 micron	**35F87BAP**
43F	3	Metal	2900	5 micron	**43FN7BAP**

☐ Most popular.

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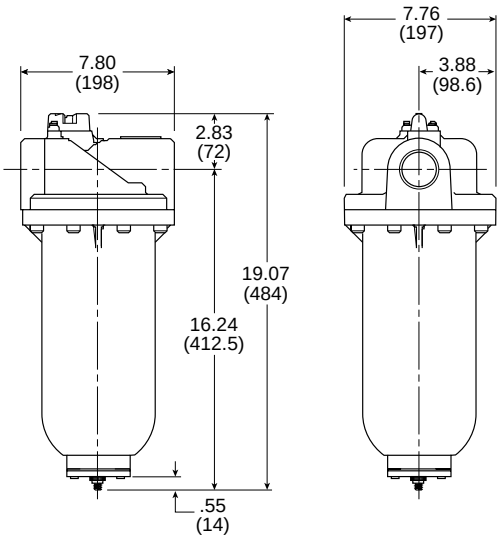
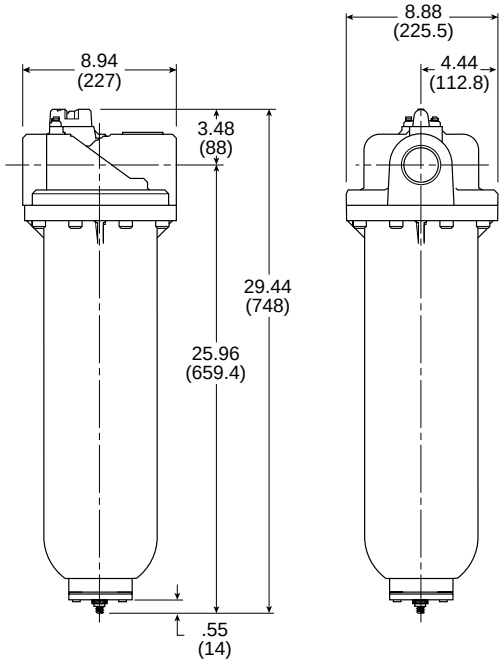
35F (Hi-Flow)



43F (Hi-Flow)



Service kits

Description		35F (Hi-Flow)	43F (Hi-Flow)
DPI replacement kit		**DP2-02-001**	**DP2-02-001**
DPI cap	Pressures over 150 PSIG	**GRP-95-022**	**GRP-95-022**
DP gauge		**DP3-01-000**	**DP3-01-000**
Automatic float drain kit	Auto internal drain 1/8"	**P32KA00DA**	**P32KA00DA**
Manual drain kit	with 1/2" drain plate	**GRP-95-392**	**GRP-95-392**
Drain plate kit	1/2 NPT tapped port	**GRP-95-393**	**GRP-95-393**
Filter element kit	5 micron	**FRP-95-505**	**FRP-95-508**

Parker Hannifin Corporation
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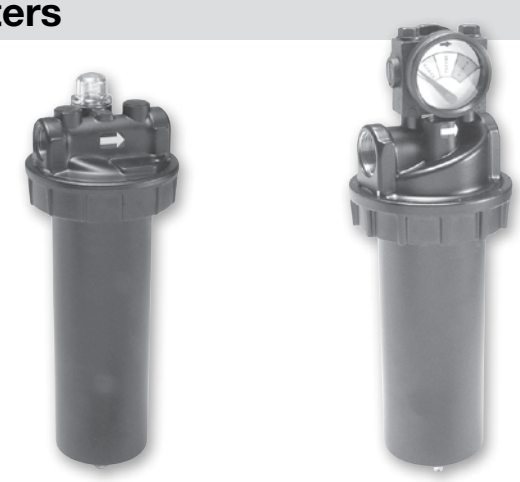
F701 General Industrial Coalescing Filters

- Removes liquid aerosols and sub-micron particles
- Protects pneumatic systems from contamination that standard particulate filters will not catch
- Two different grade elements available
- Differential pressure indicator (pop-up) standard
- Differential pressure gauge optional
- High flow design



Material specifications

Description		F701 (Hi-Flow)
Body & flange ring		Zinc
Bowl	(E) 32 oz	Aluminum
	(L) 100 oz	Aluminum
Drains	Housing R	Acetal
	Housing Q	Bronze
	Manual	Brass
Element end cap		Urethane
Filter element	0.01 micron	Borosilicate fibers & felt
	1.0 micron	
Seals & float		Buna N
Springs		Stainless steel

Operating information

	F701 (Hi-Flow)	
Maximum pressure:	"R" drain	175 PSIG (12.4 bar)
	"T" drain	250 PSIG (17.2 bar)
	"Q" drain	250 PSIG (17.2 bar)
Maximum temperature:		32°F to 150°F (0°C to 65.6°C)
Maximum temperature with "T", "R" or "Q" drains:		125°F (52°C)
Minimum rated flow:		20% or rated flow

Coalescing Filters

	Port size	Bowl type	Bowl size	Flow SCFM	Element type	Part number
F701	3/4"	Metal	32 oz	95	0.01 micron	**F701-06E3P**
	3/4"	Metal	32 oz	158	1.0 micron	**F701-06E7P**
	3/4"	Metal	100 oz	170	0.01 micron	**F701-06L3P**
	3/4"	Metal	100 oz	285	1.0 micron	**F701-06L7P**
	1"	Metal	32 oz	95	0.01 micron	**F701-08E3P**
	1"	Metal	32 oz	158	1.0 micron	**F701-08E7P**
	1"	Metal	100 oz	170	0.01 micron	**F701-08L3P**
	1"	Metal	100 oz	285	1.0 micron	**F701-08L7P**

☐ Most popular.

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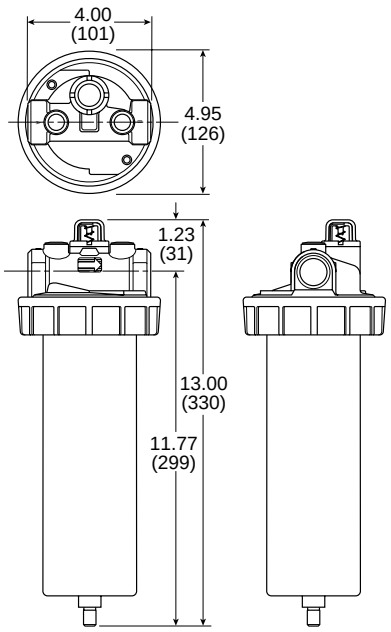
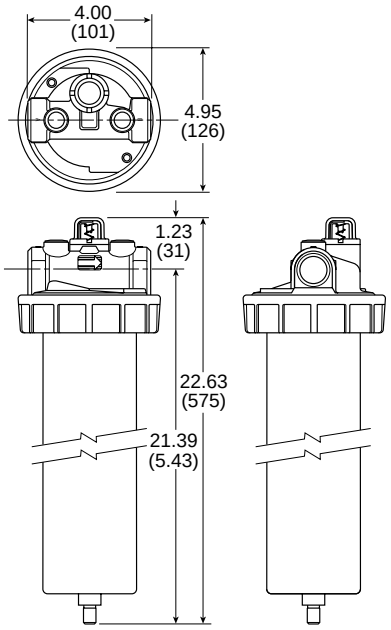
F701 - 32 oz. bowl (Hi-Flow)



F701 - 100 oz. bowl (Hi-Flow)



Service kits

Description		F701 (Hi-Flow)
Bowl kits	3/4, 1 inch (E) 32 oz	**BK603B**
	3/4, 1 inch (L) 100 oz	**BK603C**
DPI repair kit		**RK701P**
Drain kits –	Internal auto	**SA702MD**
	Manual	**SA600Y7-1**
Filter element kits –	0.01 micron, 3/4, 1 inch (E) 32 oz	**F701-C3-0773**
	0.01 micron, 3/4, 1 inch (E) 100 oz	**F701-C3-0774**
	1.0 micron, 3/4, 1 inch (E) 32 oz	**F701-C7-0773**
	1.0 micron, 3/4, 1 inch (E) 100 oz	**F701-C7-0773**
Mounting bracket kits –	3/4" unit	**SA200AW57**
	1" unit	**SA200CW57**

Parker Hannifin Corporation
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35F, 43F General Industrial Coalescing Filters

- Heavy-duty cast aluminum housings to withstand operating pressures up to 250 PSIG
- Differential pressure indicator to eliminate the guesswork of element replacement
- Unique drain mounting plate design offers a trouble-free method for interchanging and installing external drains
- 35F: 1-1/2" & 2" ports (NPT & BSPP)
- 43F: 3" ports (NPT & BSPP)

35F

43F

Material specifications

Description		35F, 43F (Hi-Flow)
Baffle		Plated steel
Body		Aluminum
Bowl		Aluminum
Deflector		Plated steel
Filter element	0.01 & 1.0 micron	Borosilicate cloth
	Adsorber	Activated carbon
Seals		Fluorocarbon
Stud		Plated steel

Operating information

		35F (Hi-Flow)	43F (Hi-Flow)
Operating pressure:	With DP gauge & without DPI	250 PSIG (17.2 bar)	250 PSIG (17.2 bar)
	With DPI	150 PSIG (10.3 bar)	150 PSIG (10.3 bar)
Operating temperature:		32°F to 150°F (0°C to 65.5°C)	32°F to 150°F (0°C to 65.5°C)

Coalescing Filters

		Port size	Bowl type	Flow SCFM	Element type	Part number (NPT) Automatic drain
35F		1-1/2	Metal	710	0.01 micron	**35F77EAP**
		1-1/2	Metal	710	1.0 micron	**35F77HAP**
		2	Metal	710	0.01 micron	**35F87EAP**
		2	Metal	710	1.0 micron	**35F87HAP**
43F		3	Metal	1770	0.01 micron	**43FN7EAP**
		3	Metal	1770	1.0 micron	**43FN7HAP**

☐ Most popular.

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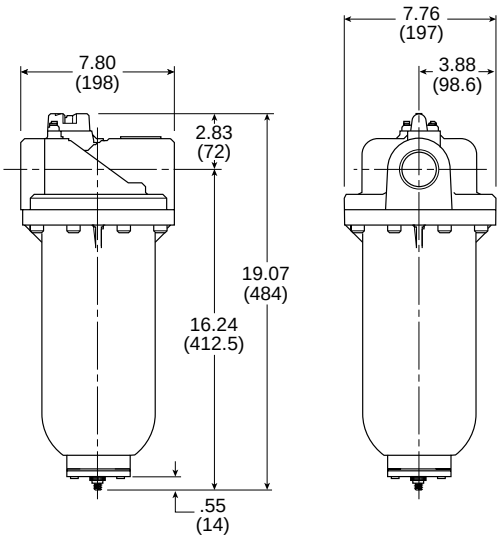
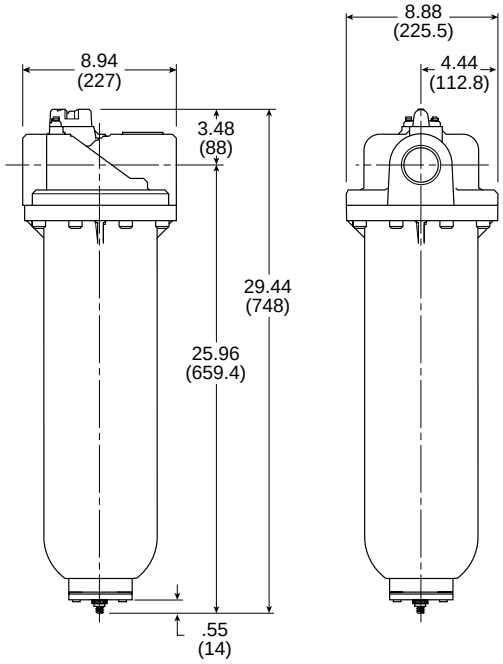
35F (Hi-Flow)



43F (Hi-Flow)



Service kits

Description		35F (Hi-Flow)	43F (Hi-Flow)
DPI replacement kit		**DP2-02-001**	**DP2-02-001**
DPI cap	Pressures over 150 PSIG	**GRP-95-022**	**GRP-95-022**
DP gauge		**DP3-01-000**	**DP3-01-000**
Automatic float drain kit	Auto internal drain 1/8"	**P32KA00DA**	**P32KA00DA**
Manual drain kit	with 1/2" drain plate	**GRP-95-392**	**GRP-95-392**
Drain plate kit	1/2 NPT tapped port	**GRP-95-393**	**GRP-95-393**
Filter element kit –	0.01 micron	**MTP-95-502**	**MTP-95-562**
	1.0 micron	**MSP-95-502**	**MSP-95-876**
	Adsorber	**MXP-95-502**	**MXP-95-565**

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P3TF Series Flanged Filters

- No tie rod element design
- Pleated element technology
- New high efficiency drainage layer
- Designed in accordance with ASME and CRN
- Connection sizes: 4 inch & 6 inch flange
- Acrylic polyurethane coating for corrosion protection

P3TF Series

Material specifications

Baffle		Plated steel
Body		Steel
Deflector		Plated steel
Filter element	0.01 & 1.0 micron	Borosilicate cloth
Seals		Fluorocarbon
Stud		Plated steel

Operating information

	P3TF Series
Operating Pressure:	232 PSIG (16 bar)
Operating Temperature:	35°F to 212°F (1.5°C to 100°C)

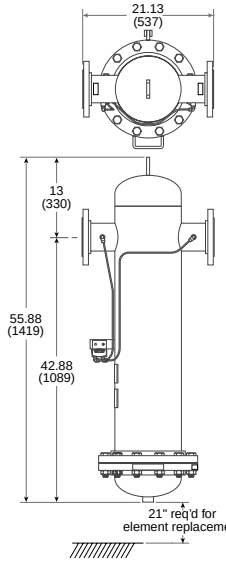
Inlet air pressure correction

For pressures above 232 PSIG (16 bar), use manual drain.

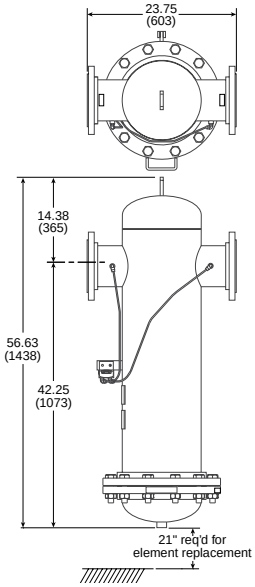
PSI	15	29	44	58	73	87	100	116	131	145	160	174	189	203	218	232	247	261	275	290
bar	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Factor	0.38	0.53	0.65	0.76	0.85	0.93	1.00	1.07	1.13	1.19	1.25	1.31	1.36	1.41	1.46	1.51	1.56	1.60	1.65	1.70

Flanged filters

		Port size	Flow SCFM	Number of elements	Part number
P3TF		4" Flange	2755	4	**P3TFAFFD2AN**
		4" Flange	2755	4	**P3TFAFFQ2AN**
		6" Flange	4132	6	**P3TFAFGD3AN**
		6" Flange	4132	6	**P3TFAFGQ3AN**



P3TFAFFD2AN & P3TFAFFQ2AN

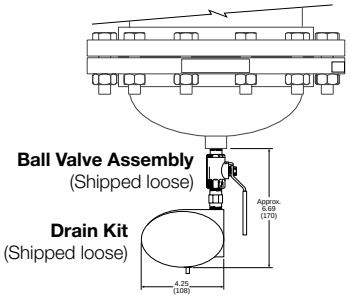


P3TFAFGD3AN & P3TFAFGQ3AN

Most popular.

Service kits

Description		Number required	P3TF Series
DP gauge replacement kit			**DPG-Kit**
Drain kit - 1/2" NPT			**HDF-120-NPT-A**
Filter element kit –	0.01 micron	4 or 6	**PSY1035002**
	1.0 micron	4 or 6	**PSY1035001**



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R119 General Industrial Regulators

- Rugged design for the most demanding applications
- Ideal for those installations calling for constant pressure with wide variation in flow
- Diaphragm operated design with balanced poppet design for quick and accurate regulation
- Secondary aspiration plus balanced poppet provides quick response and accurate pressure regulation
- Heavy duty tee handle adjustment
- Reverse flow version available
- Panel mount version available

R119

Operating information

Supply pressure rating:	300 PSIG (20.4 bar)
Reduced pressure range:	2 to 125 PSIG (0.15 to 8.5 bar)
Temperature rating:	40°F to 125°F (4.4°C to 52°C)

R119 Standard Regulators

Port size	Flow (SCFM)	Part number (NPT), Relieving	
		Without gauge	With 125 PSI gauge
1/4"	100	**R119-02C/M2**	**R119-02CG/M2**
3/8"	110	**R119-03C/M2**	**R119-03CG/M2**
1/2"	150	**R119-04C/M2**	**R119-04CG/M2**

Material specifications

Description	R119
Adjusting screw, springs	Steel
Body, spring cage	Zinc
Bottom plug	Brass
Seals	Buna N

⚠ WARNING
Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed maximum primary pressure rating.

CAUTION:
REGULATOR PRESSURE ADJUSTMENT –
The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design. For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

☐ Most popular.

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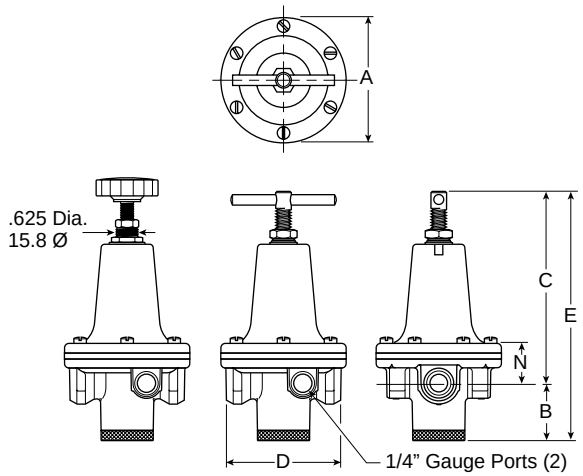
Dimensions

R119 Regulator - Standard

A	B	C	D	E	N
R119-02C, R119-03C					
3.00 (76)	1.38 (35)	5.29 (134)	2.74 (70.5)	6.67 (169)	.90 (24)
R119-04C					
3.56 (90)	1.56 (40)	5.34 (136)	3.25 (83)	6.90 (175)	1.45 (37)

inches (mm)



Service kits

Description			Part number
Gauges –	50mm (2") round 1/4" center back mount	2" dial size, 1/4" back connection, 0 to 60 PSIG (0 to 400 kPa)	**K4520N14060**
		2" dial size, 1/4" back connection, 0 to 160 PSIG (0 to 1100 kPa)	**K4520N14160**
		2" dial size, 1/4" back connection, 0 to 300 PSIG (0 to 2068 kPa)	**K4520N14300**
	44mm (1-3/4") digital round 1/4" center back mount	0-160 PSIG / 0-11 bar / 0-1.1 MPa	**K4517N14160D**
Mounting bracket kits –		1/4", 3/8"	**SA15Y57**
		1/2"	**18A57**
Panel mount conversion kits –		1/4", 3/8"	**4202**
		1/2"	**4204**
Repair kits –		Non-relieving diaphragm, valve assembly (1/4", 3/8"; All PSIG)	**RK118Y**
		Relieving diaphragm, valve assembly (1/4", 3/8"; All PSIG)	**RK119Y**
		Non-relieving diaphragm, valve assembly (1/2"; 25, 60, 125 PSIG)	**RK118A**
		Non-relieving diaphragm, valve assembly (1/2"; 250 PSIG)	**RK118A250**
		Relieving diaphragm, valve assembly (1/2"; 25, 60, 125 PSIG)	**RK119A**
		Relieving diaphragm, valve assembly (1/2"; 250 PSIG)	**RK119A250**
Spring cage & t-handle kit		1/4", 3/8"	**RKC119Y**
Spring cage & insert only kit		1/2"	**SAC18A3/BK**

For fluorocarbon repair kits, add X64 to kit number suffix.

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Pneumatic Division
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R119 General Industrial Regulators

R119

R119

- High flow performance featuring rugged design for the most demanding applications
- Diaphragm operated design with balanced poppet design for quick and accurate regulation
- Heavy duty tee handle adjustment
- Reverse flow version available

R119 Hi-Flow Regulators

Port size	Gauge	Flow (SCFM) R119	Part number (NPT), Relieving R119
3/4"	No	300	**R119-06C/M2**
1"	No	400	**R119-08C/M2**
1-1/4"	No	500	**R119-10C/M2**
1-1/2"	No	500	**R119-12C/M2**
3/4"	125 PSI	300	**R119-06CG/M2**
1"	125 PSI	400	**R119-08CG/M2**
1-1/4"	125 PSI	500	**R119-10CG/M2**
1-1/2"	125 PSI	500	**R119-12CG/M2**

Operating information

Pressure rating, maximum:	300 PSIG (20.4 bar)
Reduced pressure range:	2 to 125 PSIG 0.15 to 8.5 bar)
Temperature rating:	40°F to 125°F (4.4°C to 52°C)

Material specifications

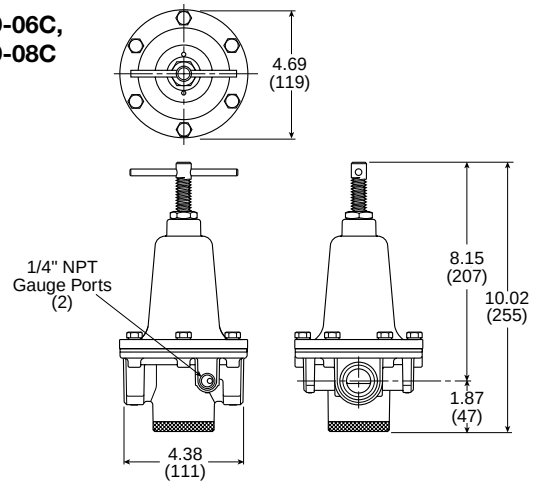
Description	R119
Adjusting screw	Steel
Body	Zinc
Bottom plug, inner valve	Brass
Seals	Buna N
Springs – poppet & control	Steels

Service kits

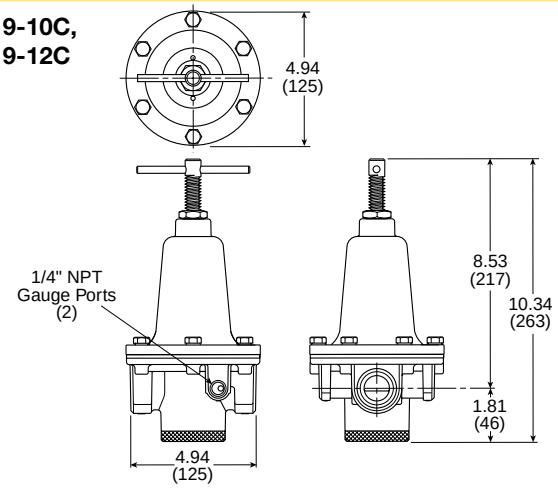
Gauges –	60 PSIG (0 to 4.1 bar)	**K4520N14060**
50mm (2") round 1/4" center back mount	160 PSIG (0 to 11.0 bar)	**K4520N14160**
	300 PSIG (0 to 20.0 bar)	**K4520N14300**
44mm (1-3/4") digital round 1/4" center back mount	0-160 PSIG / 0-11 bar / 0-1.1 MPa	**K4517N14160D**
Mounting bracket kit		**18B57**
Repair kits –	Non-relieving (1-1/4", 1-1/2")	**RK118B**
	Relieving (3/4", 1")	**RK119B**
	Relieving (1-1/4", 1-1/2")	**RK119D**

Dimensions

R119-06C, R119-08C



R119-10C, R119-12C



⚠ WARNING
Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed maximum primary pressure rating.

Most popular.

CAUTION:
REGULATOR PRESSURE ADJUSTMENT –
The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design. For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

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09R General Industrial Regulators

09R

- Piston design for reduced downtime
- High flow
- Balanced poppet for quick and accurate regulation
- Self relieving piston standard

09R

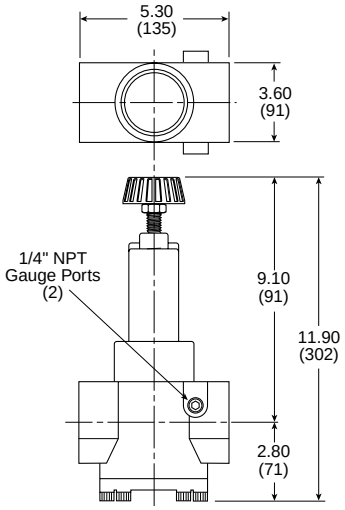
09R Hi-Flow Regulators

Port size	Gauge	Flow (SCFM) 09R	Part number (NPT), Relieving 09R
2"	No	1000	**09R813BA**

Operating information

Pressure rating, maximum:	300 PSIG (20.4 bar)
Secondary pressure range:	10 to 125 PSIG (0.7 to 8.6 bar) 10 to 180 PSIG (0.7 to 12.4 bar)
Temperature rating:	32°F to 150°F (0°C to 66°C)

Dimensions



Material specifications

Description	09R
Adjusting screw	Steel
Body	Zinc
Bonnet	Aluminum
Piston	Plastic
Piston stem	Aluminum
Poppet assembly	Aluminum
Seals	Nitrile
Springs – poppet & control	Stainless

Service kits

Body service kit			**PS603P**
Gauges –	50mm (2") round 1/4" center back mount	160 PSIG (0 to 11.0 bar)	**K4520N14160**
		300 PSIG (0 to 20.0 bar)	**K4520N14300**
	44mm (1-3/4") digital round 1/4" center back mount	0-160 PSIG / 0-11 bar / 0-1.1 MPa	**K4517N14160D**
Mounting bracket kit			**PS605P**
Repair kits –		Non-relieving	**PS604P**
		Relieving	**PS626P**
Springs –		0 to 125 PSIG	**PS602P**
		0 to 180 PSIG	**PS627**

⚠ WARNING
Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed maximum primary pressure rating.

Most popular.

CAUTION:
REGULATOR PRESSURE ADJUSTMENT –
The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design. For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

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R119 General Industrial Pilot Operated Regulators

- Adapted for control by a remote or distant small pilot regulator. Ideal for maximum capacity requirements in applications where units are not readily accessible
- High flow performance featuring rugged design for the most demanding applications
- Ideal for those installations calling for constant pressure with wide variation in flow
- Diaphragm operated design with balanced poppet and constant bleed pilot for quick and accurate regulation.
- Secondary aspiration plus balanced poppet provides quick response and accurate pressure regulation
- Reverse flow available

R119

Operating information

Supply pressure rating:	300 PSIG (20.4 bar)
Reduced pressure range:	Adjustable to within 5 to 7 PSIG of Supply Pressure
Air Consumption:	Constant bleed from air pilot chamber: approx. 0.17 SCFM (10 SCFH)
Temperature rating:	40°F to 125°F (4.4°C to 52°C)

R119 Standard Regulators

Port size	Gauge	Flow (SCFM)	Part number (NPT), Relieving
1/4"	No	100	**R119-02J/M2**
3/8"	No	110	**R119-03J/M2**
1/2"	No	150	**R119-04J/M2**

Material specifications

Description	R119
Body, ring, top plate	Zinc
Bottom plug	Nylon
Innervalve	Brass
Seals	Buna N

⚠ WARNING
Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed maximum primary pressure rating.

CAUTION:
REGULATOR PRESSURE ADJUSTMENT –
The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design. For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

☐ Most popular.

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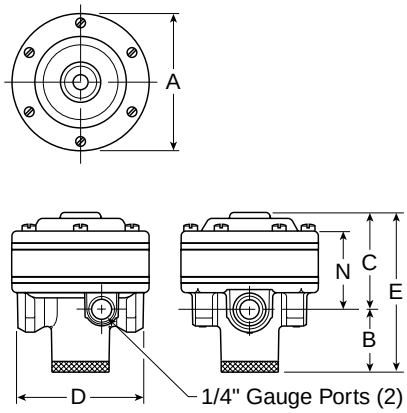
Dimensions



R119 Regulator - Pilot Operated

A	B	C	D	E	N
R119-02J, R119-03J					
3.00 (76)	1.38 (35)	1.98 (50)	2.74 (70)	3.55 (90)	1.57 (40)
R119-04J					
3.56 (90)	1.56 (40)	2.33 (59)	3.25 (83)	3.90 (99)	1.91 (49)

inches (mm)

Service kits

Description			Part number
Gauges –	50mm (2") round 1/4" center back mount	0 to 60 PSIG (0 to 400 kPa)	**K4520N14060**
		0 to 160 PSIG (0 to 1100 kPa)	**K4520N14160**
		0 to 300 PSIG (0 to 2068 kPa)	**K4520N14300**
	44mm (1-3/4") digital round 1/4" center back mount	0-160 PSIG / 0-11 bar / 0-1.1 MPa	**K4517N14160D**
Repair kits –		Non-relieving diaphragm, valve assembly (1/2")	**RK118X20A**
		Non-relieving diaphragm, valve assembly (1/4", 3/8")	**RK118X20Y**
		Relieving diaphragm, valve assembly (1/2")	**RK119X20A**
		Relieving diaphragm, valve assembly (1/4," 3/8")	**RK119X20Y**

For fluorocarbon repair kits, add X64 to kit number suffix.
For Non-Bleed Pilot Repair Kits, add X71 to Kit Number suffix.Specifications

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R119 General Industrial Pilot Operated Regulators

- Adapted for control by a remote or distant small pilot regulator. Ideal for maximum capacity requirements in applications where units are not readily accessible
- High flow performance featuring rugged design for the most demanding applications
- Ideal for those installations calling for constant pressure with wide variation in flow

R119 (06-12)

R119 (16-20)

Operating information

	R119-06J R119-08J R119-10J R119-12J	R119-16J R119-20J
Pressure rating, maximum:	300 PSIG (17.2 bar)	300 PSIG (17.2 bar)
Temperature rating:	40°F to 125°F (4.4°C to 52°C)	40°F to 120°F (4.4°C to 48.9°C)
Flow capacity SCFM:	3/4"; 300 1"; 300 1-1/4"; 500 1-1/2"; 500	2"; 1800 2-1/2"; 1800

R119 Pilot Operated Regulators

Port size	Gauge	Part number (NPT), relieving R119-06J, R119-08J, R119-10J, R119-12J 0-125 PSIG reduced pressure	 R119-16J, R119-20J
3/4"	No	**R119-06J/M2**	
1"	No	**R119-08J/M2**	
1-1/4"	No	**R119-10J/M2**	
1-1/2"	No	**R119-12J/M2**	
2"	No		**R119-16J**
2-1/2"	No		**R119-20J**

Material specifications

Description	R119-06J, R119-08J, R119-10J, R119-12J	R119-16J, R119-20J
Body		Aluminum
Body, ring, top plate	Zinc	
Bottom plug, inner valve	Brass	Brass & Stainless
Piston		Aluminum
Seals	Buna N	Buna N

⚠ WARNING
Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed maximum primary pressure rating.

CAUTION:
REGULATOR PRESSURE ADJUSTMENT –
The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design. For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

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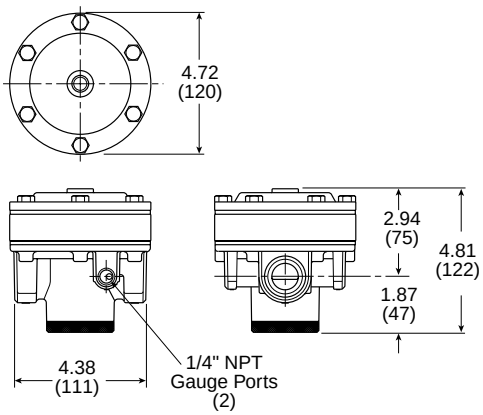
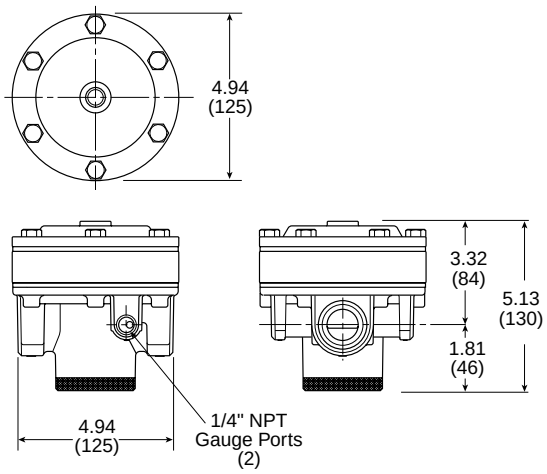
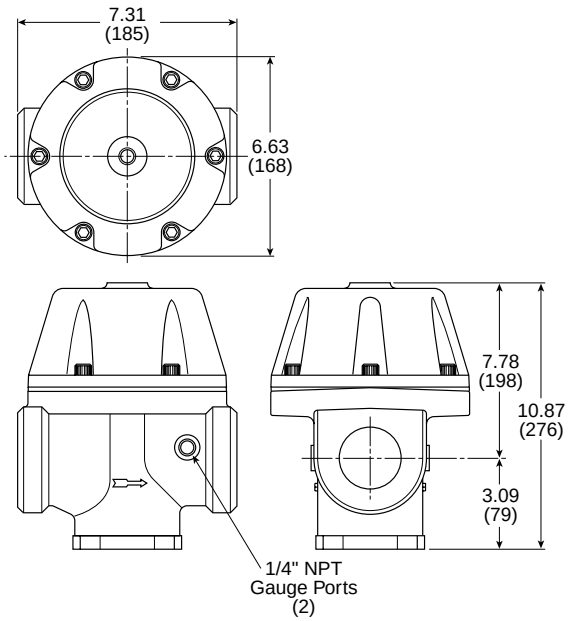
R119-06J, R119-08J



R119-10J, R119-12J



R119-16J, R119-20J



Service kits

		R119-06J, R119-08J, R119-10J, R119-12J	R119-16J, R119-20J
Gauges – 50mm (2") round 1/4" center back mount	60 PSIG (0 to 4.1 bar)	**K4520N14060**	**K4520N14060**
	160 PSIG (0 to 11.0 bar)	**K4520N14160**	**K4520N14160**
	300 PSIG (0 to 20.0 bar)	**K4520N14300**	**K4520N14300**
44mm (1-3/4") digital round 1/4" center back mount	0-160 PSIG / 0-11 bar / 0-1.1 MPa	**K4517N14160D**	**K4517N14160D**
Mounting bracket kit			
Repair kits	Piston type regulation (2", 2-1/2")		**RK119G**
Non-relieving diaphragm –	Valve assembly (3/4", 1")	**RK118X20B**	
	Valve assembly (1-1/4", 1-1/2")	**RK118X20D**	
Relieving diaphragm –	Valve assembly (3/4", 1")	**RK119X20B**	
	Valve assembly (1-1/4", 1-1/2")	**RK119X20D**	
Repair kits	Relieving		

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L606 General Industrial Mist Lubricators

- Metal bowl with sight gauge - standard
- Polycarbonate sight dome
- Bowl can be filled while air line is under pressure
- Proportional oil delivery over a wide range of air flows
- Large capacity bowl
- Optional high capacity bowl(s) available
- Precision needle valve assures repeatable oil delivery and provides simple adjustment of delivery rate
- 3/4", 1", 1-1/4" & 1-1/2" ports (NPT & BSPP)

L606 3/4" & 1"

L606 1-1/4" & 1-1/2"

Material specifications

Body		Zinc
Bowl	(E) 32 oz	Aluminum
	(G) 64 oz.	Aluminum with polycarbonate sight gauge
	(W) 16 oz	Zinc with nylon sight gauge
Seals		Buna N

Operating information

Operating pressure:	Aluminum bowl (E) 32 oz.	0 to 300 PSIG (0 to 20.4 bar)
	Aluminum (G) 64 oz.	0 to 150 PSIG (0 to 10.2 bar)
	Zinc (W) 16 oz.	0 to 250 PSIG (0 to 17.2 bar)
Operating temperature:	Aluminum bowl (E) 32 oz.	40°F to 150°F (4.4°C to 65.6°C)
	Aluminum (G) 64 oz.	40°F to 125°F (4.4°C to 52°C)
	Zinc (W) 16 oz.	40°F to 150°F (4.4°C to 65.6°C)
Suggested lubricant:		F442 oil

Petroleum based oil of 100 to 200 SSU viscosity at 100°F (38°C) and an aniline point greater than 200°F (93°C)

(DO NOT USE OILS WITH ADDITIVES, COMPOUNDED OILS CONTAINING SOLVENTS, GRAPHITE, DETERGENTS, OR SYNTHETIC OILS.)

L606 Lubricators

Port size	Bowl type	Bowl capacity	Drain	Flow SCFM	Part number NPT	Part number BSPP
3/4"	Zinc / Sight gauge	16 oz	Yes	325	**L606-06W**	**L606G06W**
3/4"	Aluminum	32 oz	Yes	325	**L606-06E**	**L606G06E**
3/4"	Aluminum / Sight gauge	64 oz	None	325	**L606-06G**	**L606G06G**
1"	Zinc / Sight gauge	16 oz	Yes	350	**L606-08W**	**L606G08W**
1"	Aluminum	32 oz	Yes	350	**L606-08E**	**L606G08E**
1"	Aluminum / Sight gauge	64 oz	None	350	**L606-08G**	**L606G08G**
1-1/4"	Zinc / Sight gauge	16 oz	Yes	325	**L606-10W**	**L606G10W**
1-1/4"	Aluminum	32 oz	Yes	325	**L606-10E**	**L606G10E**
1-1/4"	Aluminum / Sight gauge	64 oz	None	325	**L606-10G**	**L606G10G**
1-1/2"	Zinc / Sight gauge	16 oz	Yes	400	**L606-12W**	**L606G12W**
1-1/2"	Aluminum	32 oz	Yes	400	**L606-12E**	**L606G12E**
1-1/2"	Aluminum / Sight gauge	64 oz	None	400	**L606-12G**	**L606G12G**

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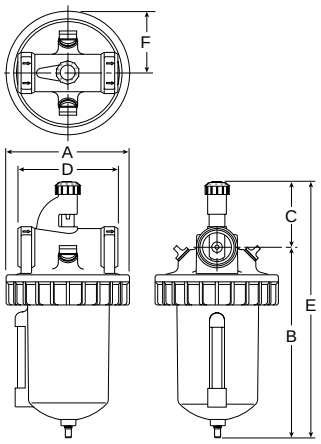
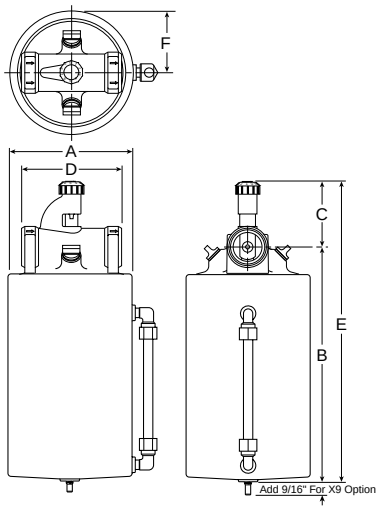
L606 - 3/4" and 1"



W & E size bowl

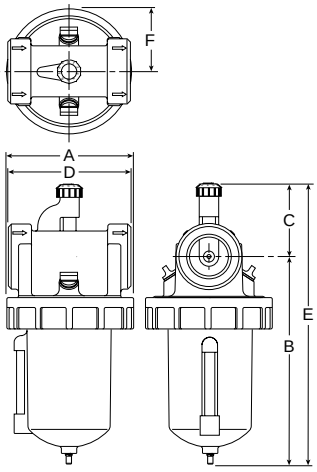


G size bowl

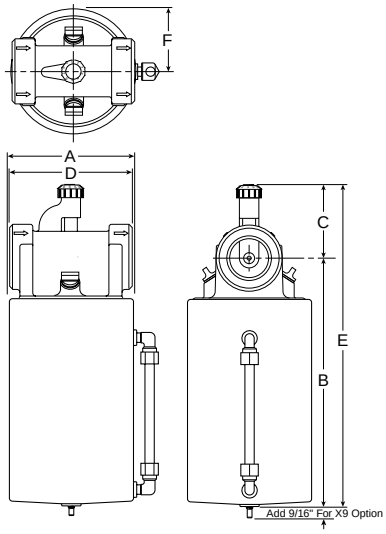
A	B	C	D	E	F
L606-06W, L606-08W					
4.97 (126)	7.25 (184)	2.63 (66.7)	4.06 (103)	9.88 (251)	2.48 (63.1)
L606-06E, L606-08E					
4.97 (126)	10.75 (273)	2.63 (66.7)	4.06 (103)	13.38 (340)	2.48 (63.1)
L606-06G, L606-08G					
5.00 (127)	9.40 (239)	2.62 (66)	4.06 (103)	12.02 (305)	2.50 (64)

inches (mm)

L606 - 1-1/4" and 1-1/2"



W & E size bowl



G size bowl

A	B	C	D	E	F
L606-10W, L606-12W					
4.97 (126)	7.63 (194)	2.84 (72.2)	4.81 (122)	10.47 (266)	2.48 (63.1)
L606-10E, L606-12E					
4.97 (126)	11.13 (283)	2.84 (72.2)	4.81 (122)	13.97 (255)	2.48 (63.1)
L606-10G, L606-12G					
5.00 (127)	7.99 (203)	2.84 (72.2)	4.81 (122)	12.80 (325)	2.50 (64)

inches (mm)

Service kits

Description		L606
Adjusting knob		**606Y72**
Bowl kits –	Aluminum (e) 32 oz	**BK603B**
	Aluminum (g) 64 oz	**BK606X30B**
	Zinc / sight gauge (w) 16 oz	**BK609WB**
Button head fill fitting (m14 male thread)		**L606C14**
Dip tube kit		**DTK606**
Drip spout kit		**RK606SY**
Mounting brackets –	3/4 Inch units (2 required per unit)	**SA200AW57**
	1 Inch units (2 required per unit)	**SA200CW57**
Oil –	1 Quart	**F442001**
	2 Quart case	**F442003**
	4 Gallon case	**F442005**
Repair kits –	Needle valve assembly (all)	**RK606Y**
	Sight gauge bowl repair kit (w)	**RKB605WB**
	Sight gauge bowl repair kit (g)	**RKB606X30B**

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09L General Industrial Mist Lubricators

- Metal bowl with sight gauge and manual drain – standard
- Transparent sight dome for 360° visibility
- Bowl can be filled while air line is under pressure
- Proportional oil delivery over a wide range of air flows

Material specifications

Body	Zinc alloy, die cast

Operating information

Pressure rating:	0 to 150 PSIG (0 to 10.3 bar)
Temperature rating:	32°F to 150°F (0°C to 66°C)
Suggested lubricant:	F442 oil

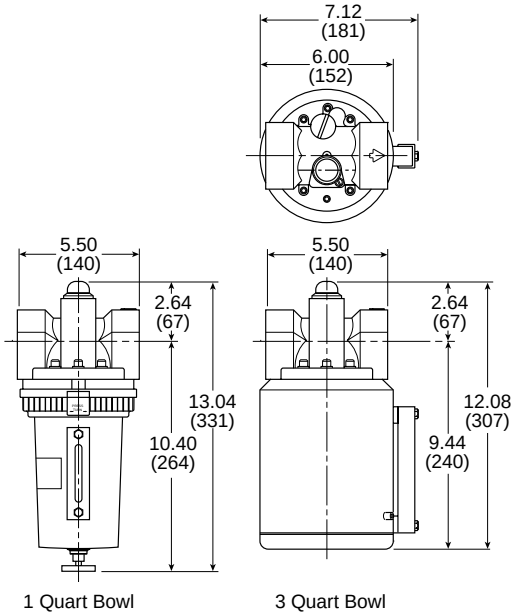
Petroleum based oil of 100 to 200 SSU viscosity at 100°F (38°C) and an aniline point greater than 200°F (93°C)

(DO NOT USE OILS WITH ADDITIVES, COMPOUNDED OILS CONTAINING SOLVENTS, GRAPHITE, DETERGENTS, OR SYNTHETIC OILS.)

09L Lubricator

Port size	Bowl type	Bowl capacity	Flow SCFM	Part number (NPT)
2"	Metal / Sight gauge	1 quart	1000	**09L84BA**
2"	Metal / Sight gauge	3 quart	1000	**09L8PBA**

* Engineering level will be added at factory.



Service kits

Bowl kit	Metal bowl, sight gauge / twist drain	**PS612P***
Fill cap kit		**PS610P**
Lubricator service kit		**PS607P**
Oil	1 Quart	**F442001**
	12 Quart case	**F442003**
	4 Gallon case	**F442005**
Sight dome kit		**PS613P**

* 1 quart bowl.

Most popular.

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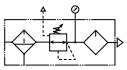
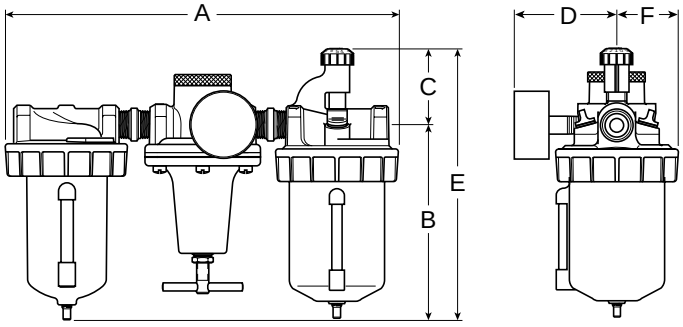
C628 Standard General Industrial Combinations

- Regulator can be mounted with knob in up or down position
- 40 micron filter element
- Gauges included on combinations
- Manual twist drain
- Relieving regulator

C628 Standard Combinations



Port size	Bowl type	Bowl capacity	Element type	Part number
3/4"	Metal / Sight gauge	16 oz	40 micron	**C628-06FRLWJCW**
3/4"	Metal / Without sight gauge	32 oz	40 micron	**C628-06FRLEJCE**
1"	Metal / Sight gauge	16 oz	40 micron	**C628-08FRLWJCW**
1"	Metal / Without sight gauge	32 oz	40 micron	**C628-08FRLEJCE**
1-1/4"	Metal / Sight gauge	16 oz	40 micron	**C628-10FRLWJCW**
1-1/4"	Metal / Without sight gauge	32 oz	40 micron	**C628-10FRLEJCE**
1-1/2"	Metal / Sight gauge	16 oz	40 micron	**C628-12FRLWJCW**
1-1/2"	Metal / Without sight gauge	32 oz	40 micron	**C628-12FRLEJCE**



A	B	C	D	E	F
C628-06FRL, C628-08FRL					
15.75 (400)	7.75 (197)	2.63 (67)	3.52 (89)	13.00 (330)	2.48 (63)
C628-10FRL, C628-12FRL					
16.50 (419)	8.13 (206)	2.84 (72)	3.86 (98)	14.13 (359)	2.64 (67)

Inches (mm)
• All dimensions nominal.

⚠ WARNING
Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed maximum primary pressure rating.

CAUTION:
REGULATOR PRESSURE ADJUSTMENT –
The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design. For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

Most popular.

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Pneumatic Division
Richland, Michigan
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Stainless Steel Filters

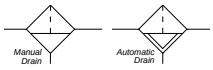
The range of Stainless Steel FRLs are ideal for use in the food industry, the petrochemical or process industries or any application in a particularly harsh or aggressive environment.

- Stainless steel construction handles most corrosive environments
- Fluorocarbon seals standard
- Meets NACE specifications MR-01-75/ISO 15156
- 1/8" female threaded drain

Operating information

		PF504	PF10	PF501	PF11
Operating pressure:	Twist drain	0 to 300 PSIG (0 to 20.7 bar)	0 to 300 PSIG (0 to 20.7 bar)	0 to 300 PSIG (0 to 20.7 bar)	0 to 300 PSIG (0 to 20.7 bar)
	Auto drain	10 to 175 PSIG (0 to 12 bar)	10 to 175 PSIG (0 to 12 bar)	10 to 175 PSIG (0 to 12 bar)	10 to 175 PSIG (0 to 12 bar)
Operating temperature:	Twist drain	0°F to 180°F (-18°C to 82°C)	0°F to 180°F (-18°C to 82°C)	0°F to 180°F (-18°C to 82°C)	0°F to 180°F (-18°C to 82°C)
	Auto drain	32°F to 150°F (0°C to 66°C)	32°F to 150°F (0°C to 66°C)	32°F to 150°F (0°C to 66°C)	32°F to 150°F (0°C to 66°C)
Flow / SCFM (dm^3/s):		23 (10.85)	70 (33.04)	16 (7.55)	45 (21.24)

Particulate Filters



Port Size	Flow SCFM (dm^3/s)	Standard filtration	Part number manual drain	Part number auto drain
1/4	23 (10.85)	20 µ	**PF504-02DHSS**	**PF504-02DHRSS**
1/2	70 (33.04)	40 µ	**PF10-04WJSS**	**PF10-04WJRSS**

Coalescing Filters

1/4	16 (7.55)	.3 µ	**PF501-02DHSS**	**PF501-02DHRSS**
1/2	45 (21.24)	.01 µ	**PF11-04WJSS**	**PF11-04WJRSS**

Service kits

Description		PF504	PF10	PF501	PF11
Drain kit -	automatic pulse	**RK504SY-SS**		**RK504SY-SS**	
	automatic float		**SA10MDSS**		**SA10MDSS**
	manual twist, small (old)	**SA600Y7-1SS**	**SA600Y7-1SS**	**SA600Y7-1SS**	
	manual twist, large (new)	**SAP05481**	**SAP05481**	**SAP05481**	
Filter element -	5 micron (particulate)	**EK504VY**	**EK55J**		
	20 micron (particulate)	**EK504Y**			
	40 micron (particulate)		**EK55G**		
	0.3 micron (coalescing)			**EK501H**	
	0.01 micron (coalescing)				**EKF71**
Pipe nipple		**616Y28-SS**	**616A28-SS**	**616Y28-SS**	**616A28-SS**

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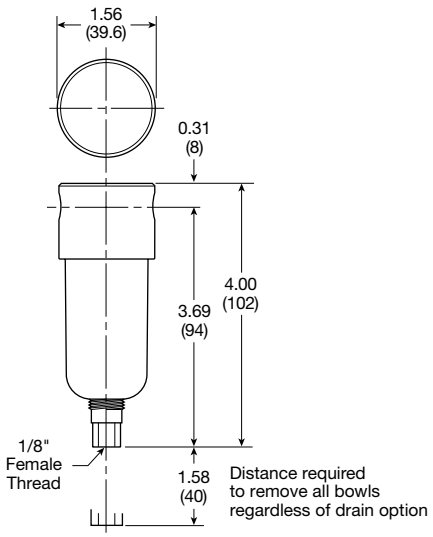
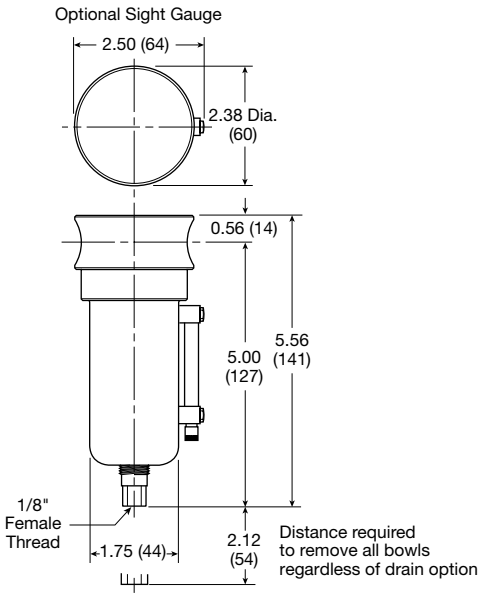
PF504 / PF501



PF10 / PF11



Specifications

Description	PF504	PF10	PF501	PF11
Filter rating	20 micron	40 micron	0.3 micron	0.01 micron
Port threads	1/4	1/2	1/4	1/2
Weight	0.6 lb. (0.27 kg)	1.9 lb. (0.85 kg)	0.6 lb. (0.27 kg)	1.9 lb. (0.85 kg)

Material specifications

Description	PF504	PF10	PF501	PF11
Body	316 stainless steel	316 stainless steel	316 stainless steel	316 stainless steel
Bowls	316 stainless steel	316 stainless steel	316 stainless steel	316 stainless steel
Deflector	Acetal	Acetal		
Drain	316 stainless steel	316 stainless steel	316 stainless steel	316 stainless steel
Element holder	Acetal	Acetal	Acetal	Acetal
Filter element	Polyethylene	Polyethylene	Borosilicate fiber	Borosilicate fiber
Seals	Fluorocarbon	Fluorocarbon	Fluorocarbon	Fluorocarbon
Sight gauge		Isoplast		Isoplast

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Stainless Steel Regulators

The range of Stainless Steel FRLs are ideal for use in the food industry, the petrochemical or process industries or any application in a particularly harsh or aggressive environment.

- Stainless steel construction handles most corrosive environments
- Large diaphragm to valve area ratio for precise regulation and high flow capacity
- Meets NACE specifications MR-01-75/ISO 15156

⚠ WARNING
Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed maximum primary pressure rating.

CAUTION:
REGULATOR PRESSURE ADJUSTMENT –
The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design. For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

Operating information

	PR354 & PR11	PR364 & PR10
Operating pressure:	300 PSIG Max (20.7 bar)	300 PSIG Max (20.7 bar)
Operating temperature:	0°F to 180°F (-18°C to 82°C)	0°F to 150°F (-18°C to 66°C)
Flow / SCFM (dm^3/s):	12 (5.66)	80 (37.76)

Regulators

Port size	Adjustment type	Flow SCFM (dm^3/s)	Part number 0 to 125 PSIG
1/4	Knob version	12 (5.66)	**PR364-02CSS**
1/4	All metal version	12 (5.66)	**PR354-02CSS**
1/2	Knob version	80 (37.76)	**PR10-04CSS**
1/2	T-handle version	80 (37.76)	**PR11-04CSS**

Service kits

Description		PR354	PR364	PR10	PR11
Bonnet Kit		**CKR354YSS**	**CKR364Y-1SS**	**CKR10YSS**	**CKR11YSS**
Gauge, stainless – 160 PSIG (0 to 1100 kPa)	1-1/2" Face	**K4515N14160SS**	**K4515N14160SS**		
	2" Face			**K4520N14160SS**	**K4520N14160SS**
Panel mount bracket (stainless)		**161X57-SS**	**161X57-SS**	**R10Y57-SS**	**R10Y57-SS**
Panel mount nut –	stainless	**R05X51-SS**	**R05X51-SS**	**R10X51-SS**	**R10X51-SS**
	plastic	**R05X51-P**	**R05X51-P**	**R10X51-P**	**R10X51-P**
Pipe nipple, 316 stainless steel		**616Y28-SS**	**616Y28-SS**	**616A28-SS**	**616A28-SS**
Service Kit –	relieving	**RKR364YSS**	**RKR364YSS**	**RKR10YSS**	**RKR10YSS**
	non-relieving	**RKR364KYSS**	**RKR364KYSS**	**RKR10KYSS**	**RKR10KYSS**
Springs –	0-25 PSIG range	**SPR-375-2-SS**	**SPR-375-2-SS**	**SPR-388-1-SS**	**SPR-388-1-SS**
	0-60 PSIG range	**SPR-376-1-SS**	**SPR-376-1-SS**	**SPR-389-1-SS**	**SPR-389-1-SS**
	0-125 PSIG range	**SPR-377-1-SS**	**SPR-377-1-SS**	**SPR-390-1-SS**	**SPR-390-1-SS**

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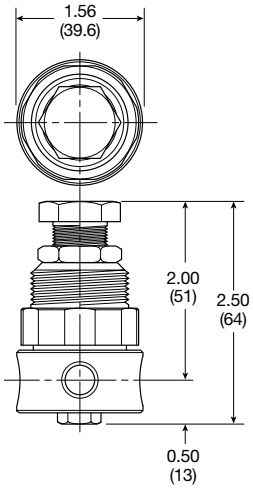
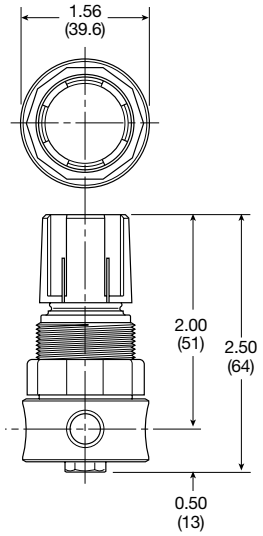
PR354



PR364



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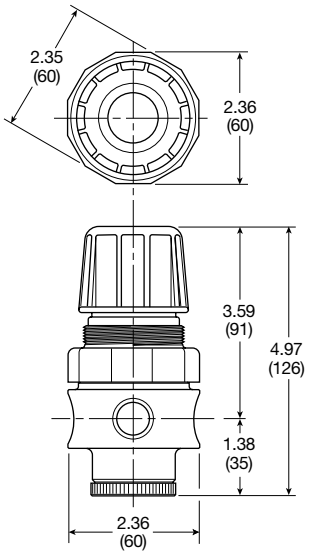
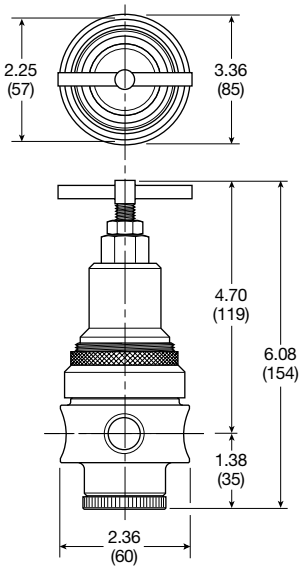


PR11



Specifications

Description	PR354	PR364	PR10	PR11
Gauge port	1/4	1/4	1/4	1/4
Operation	Fluorocarbon diaphragm	Fluorocarbon diaphragm	Fluorocarbon diaphragm	Fluorocarbon diaphragm
Port threads	1/4	1/4	1/2	1/2
Weight	0.5 lb. (0.23 kg)	0.5 lb. (0.23 kg)	1.79 lb. (0.81 kg)	1.79 lb. (0.81 kg)

Material specifications

Description	PR354	PR364	PR10	PR11
Adjustment mechanism / springs:	316 stainless steel	316 stainless steel	316 stainless steel	316 stainless steel
Adjusting knob	316 stainless steel	Polypropylene		
Body / poppet	316 stainless steel	316 stainless steel	316 stainless steel	316 stainless steel
Bonnet	316 stainless steel	Acetal	Acetal	316 stainless steel
Bottom plug	316 stainless steel	316 stainless steel	316 stainless steel	316 stainless steel
Seals	Fluorocarbon	Fluorocarbon	Fluorocarbon	Fluorocarbon

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Stainless Steel Filter / Regulators

The range of Stainless Steel FRLs are ideal for use in the food industry, the petrochemical or process industries or any application in a particularly harsh or aggressive environment.

- Stainless steel construction handles most corrosive environments
- Large diaphragm to valve area ratio for precise regulation and high flow capacity
- Meets NACE specifications MR-01-75/ISO 15156

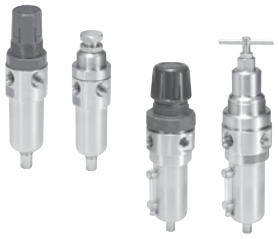
⚠ WARNING
Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed maximum primary pressure rating.

CAUTION:
REGULATOR PRESSURE ADJUSTMENT –
The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design. For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

Operating information

	PB548 & PB558	PB11 & PB12
Operating pressure:	300 PSIG max (20.7 bar)	300 PSIG max (20.7 bar)
Operating temperature:	**PB548:** 0°F to 150°F (-18°C to 66°C) **PB558:** 0°F to 180°F (-18°C to 82°C)	**PB11:** 0°F to 150°F (-18°C to 66°C) **PB12:** 0°F to 180°F (-18°C to 82°C)
Flow / SCFM (dm^3/s):	12 (5.66)	72 (33.98)

Filter / Regulators



Port size	Adjustment type	Drain type	Flow SCFM (dm^3/s) ft/min@100 PSI	Part number 0 to 125 PSIG
1/4	Knob version	Manual twist	12 (5.66)	**PB548-02DHCSS**
1/4	All metal version	Manual twist	12 (5.66)	**PB558-02DHCSS**
1/2	Knob version	Manual twist	72 (33.98)	**PB11-04WJCSS**
1/2	Knob version	Auto float	72 (33.98)	**PB11-04WJCRSS**
1/2	T-handle version	Manual twist	72 (33.98)	**PB12-04WJCSS**
1/2	T-handle version	Auto float	72 (33.98)	**PB12-04WJCRSS**

Service kits

Description		PB548	PB558	PB11	PB12
Bonnet kit		**CKR364Y-1SS**	**CKR354YSS**	**CKR10YSS**	**CKR11YSS**
Drain kit -	automatic pulse	**RK504SY-SS**	**RK504SY-SS**		
	automatic float			**SA10MDSS**	**SA10MDSS**
	manual twist, small (old)	**SA600Y7-1SS**	**SA600Y7-1SS**	**SA600Y7-1SS**	**SA600Y7-1SS**
	manual twist, large (new)	**SAP05481**	**SAP05481**	**SAP05481**	**SAP05481**
Filter element kits particulate	5 micron	**EK504VY**	**EK504VY**	**EKF10VY**	**EKF10VY**
	20 micron	**EK504Y**	**EK504Y**		
	40 micron			**EKF10Y**	**EKF10Y**
Gauge, stainless 160 PSIG (0 to 1100 kPa)	1-1/2" Face	**K4515N14160SS**	**K4515N14160SS**		
	2" Face			**K4520N14160SS**	**K4520N14160SS**
Panel mount bracket (stainless)		**161X57-SS**	**161X57-SS**	**R10Y57-SS**	**R10Y57-SS**
Panel mount nut –	stainless	**R05X51-SS**	**R05X51-SS**	**R10X51-SS**	**R10X51-SS**
	plastic	**R05X51-P**	**R05X51-P**	**R10X51-P**	**R10X51-P**
Pipe nipple, 316 stainless steel		**616Y28-SS**	**616Y28-SS**	**616A28-SS**	**616A28-SS**
Service kit –	relieving	**RK549YSS**	**RK549YSS**	**RKR10YSS**	**RKR10YSS**
	non-relieving	**RK548YSS**	**RK548YSS**	**RKR10KYSS**	**RKR10KYSS**
Springs –	0-25 PSIG range	**SPR-375-2-SS**	**SPR-375-2-SS**		
	0-60 PSIG range	**SPR-376-1-SS**	**SPR-376-1-SS**	**SPR-388-1-SS**	**SPR-388-1-SS**
	0-125 PSIG range	**SPR-377-1-SS**	**SPR-377-1-SS**	**SPR-389-1-SS**	**SPR-389-1-SS**
	0-250 PSIG range			**SPR-390-1-SS**	**SPR-390-1-SS**

☐ Most popular.

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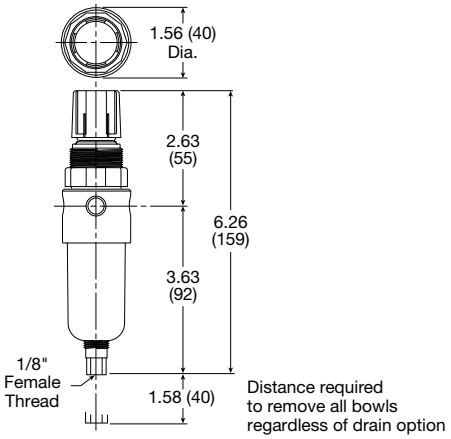
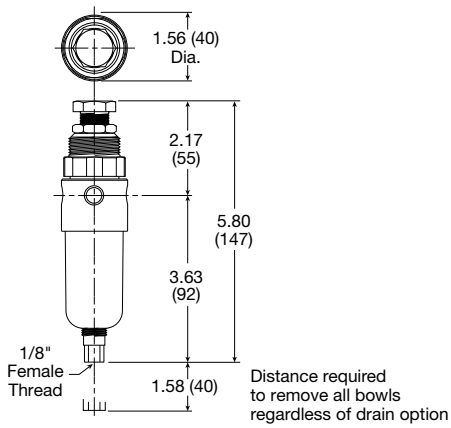
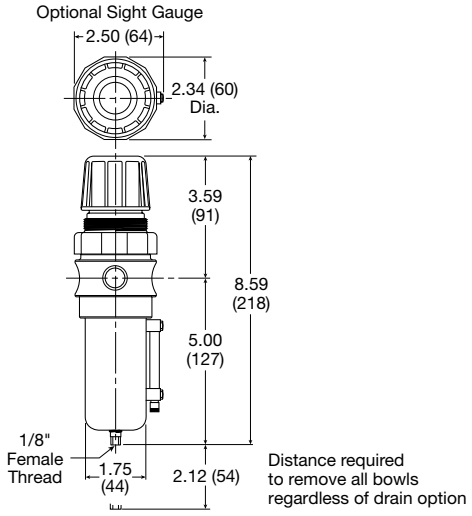
PB548



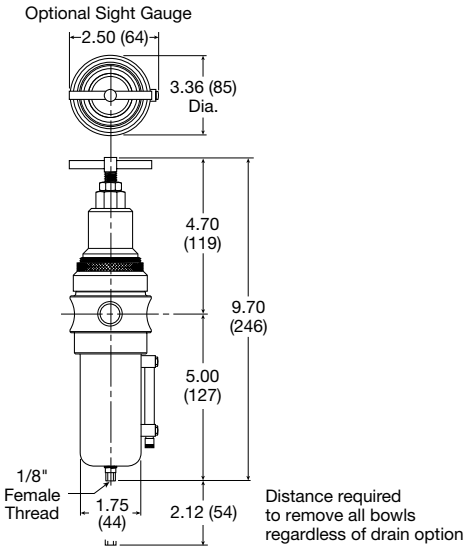
PB588



PB11



PB12



Specifications

Description	PB548	PB558	PB11	PB12
Filter rating	20 micron	20 micron	40 micron	40 micron
Gauge port	1/4	1/4	1/4	1/4
Operation	Fluorocarbon diaphragm	Fluorocarbon diaphragm	Fluorocarbon diaphragm	Fluorocarbon diaphragm
Port threads	1/4	1/4	1/2	1/2
Weight	0.6 lb. (0.27 kg)	0.6 lb. (0.27 kg)	2.42 lb. (1.09 kg)	2.42 lb. (1.09 kg)

Material specifications

Description	PB548	PB558	PB11	PB12
Adjustment mechanism / springs	316 stainless steel	316 stainless steel	316 stainless steel	316 stainless steel
Adjusting knob	Polypropylene	316 stainless steel	Acetal	316 stainless steel
Body / poppet	316 stainless steel	316 stainless steel	316 stainless steel	316 stainless steel
Bonnet	Acetal	316 stainless steel	Acetal	316 stainless steel
Bottom plug	316 stainless steel	316 stainless steel	316 stainless steel	316 stainless steel
Seals	Fluorocarbon	Fluorocarbon	Fluorocarbon	Fluorocarbon
Sight gauge			Isoplast	Isoplast

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Stainless Steel Lubricators

The range of Stainless Steel FRLs are ideal for use in the food industry, the petrochemical or process industries or any application in a particularly harsh or aggressive environment.

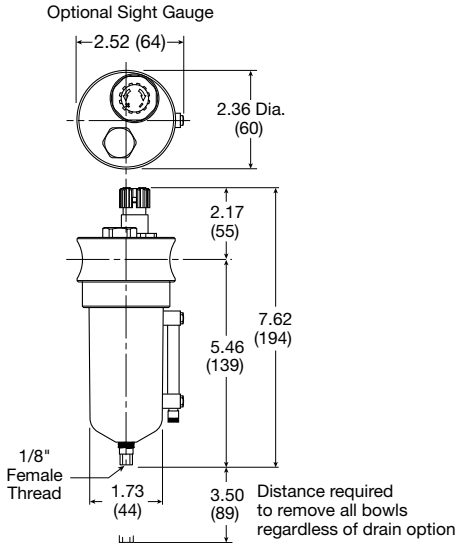
- Stainless steel construction handles most corrosive environments
- Fluorocarbon seals standard
- Meets NACE specifications MR-01-75/ISO 15156
- 1/8" female threaded drain
- Fillable under pressure

Operating information

Operating pressure –	
no sight gauge	0 to 300 PSIG (0 to 20.7 bar)
with sight gauge	0 to 250 PSIG (0 to 17.2 bar)
Operating temperature:	0°F to 150°F (-18°C to 66°C)
Flow / SCFM (dm^3/s):	100 (47.19)

Lubricators

Port size	Flow SCFM (dm^3/s)	Part number metal bowl with sight gauge
1/2	100 (47.19)	**PL10-04WSS**



Service kits

Description	Part number
Drain kit - manual twist drain, small (old)	**SA600Y7-1SS**
large (new)	**SAP05481**
Pipe nipple, 316 Stainless Steel	**616A28-SS**
Sight dome kit - old	**RKL10SS**
new	**PS740N**

Specifications

Description	PL10
Bowl capacity	4.0 ounces
Port threads	1/2
Weight	1.9 lb. (0.85 kg)

Material specifications

Description	PL10
Body	316 stainless steel
Bowls	316 stainless steel
Dip tube / drain / fill plug	316 stainless steel
Seals	Fluorocarbon
Sight dome	Nylon
Sight gauge	Isoplast

Most popular.

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Semi-Precision Dial Regulators

51R
- Pressure reference indicating dial face
- Non-rising, pressure-adjustment dial
- Self-relieving
- Full pressure adjustment in less than one full turn
- Recommended for pilot-air applications

52R, 53R, 54R
- Balanced poppet design
- Non-rising, pressure-adjusting dial
- High-relief flow (3/16" relief orifice)
- Two 1/4" gauge ports
- Piston operated

Operating information

Adjusting range pressure:	2 to 40 PSIG (0 to 2.8 bar) 5 to 160 PSIG (0 to 11.0 bar)
Max supply pressure:	300 PSIG (20.7 bar)
Max operating temperature:	150°F (65.5°C)

Dial Regulators, relieving

Port size	Flow capacity* SCFM (dm^3/s)	Part number Low pressure 2 to 40 PSIG (0.14 to 3 bar)	Part number Standard pressure 5 to 160 PSIG (0.34 to 11 bar)
1/4	0.7 (.3)	**51R125RA**	**51R126RA**
1/4	117 (55)	**52R125RA**	**52R126RA**
3/8	180 (85)	**52R225RA**	**52R226RA**
1/2	195 (92)	**52R325RA**	**52R326RA**
3/4	220 (104)	**52R425RA**	**52R426RA**
3/4	400 (189)	**53R425RA**	**53R426RA**
1	650 (307)	**53R525RA**	**53R526RA**
1-1/4	700 (330)	**53R625RA**	**53R626RA**
1-1/2	1,600 (755)	**54R725RA**	**54R726RA**
2	1,600 (755)	**54R825RA**	**54R826RA**

* SCFM = Standard cubic feet per minute at 100 PSIG (6.9 bar) inlet, 90 PSIG (6.2 bar) no-flow secondary setting and 25 PSIG pressure drop.

Service kits

Description		51R	52R	53R	54R
Adjustment dial knob		**RRP-16-024**	**RRP-16-024**	**RRP-16-024**	**RRP-16-024**
O-ring, repair kit		**GRP-95-260**	**GRP-95-260**	**GRP-95-261**	**GRP-95-262**
Piston and bonnet repair kit		**RRP-95-765**	**RRP-95-766**	**RRP-95-766**	**RRP-95-766**
Piston bottom and o-ring seal			**RRP-95-192**	**RRP-95-192**	**RRP-95-192**
Spring, regulation, belleville washer –					
	2 to 40 PSIG (2.8 bar)	**RRP-95-906**	**RRP-95-906**	**RRP-95-906**	**RRP-95-906**
	5 to 160 PSIG (11.0 bar)	**RRP-95-905**	**RRP-95-905**	**RRP-95-905**	**RRP-95-905**
Spring, main valve					**RRP-95-024**
Tamper resistant kit		**RRP-95-585**	**RRP-95-585**	**RRP-95-585**	**RRP-95-585**
Valve, main with u-cup seal & bottom plug			**RRP-95-914**		
Valve, main with u-cup seal			**RRP-95-151**		
Valve, main with o-ring seal				**RRP-95-152**	**RRP-95-153**
Valve, pilot with o-ring and valve spring		**RRP-96-934**	**RRP-96-934**	**RRP-96-935**	**RRP-96-935**

☐ Most popular.

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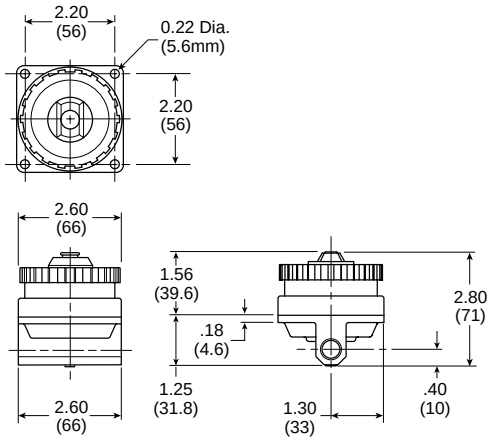
51R



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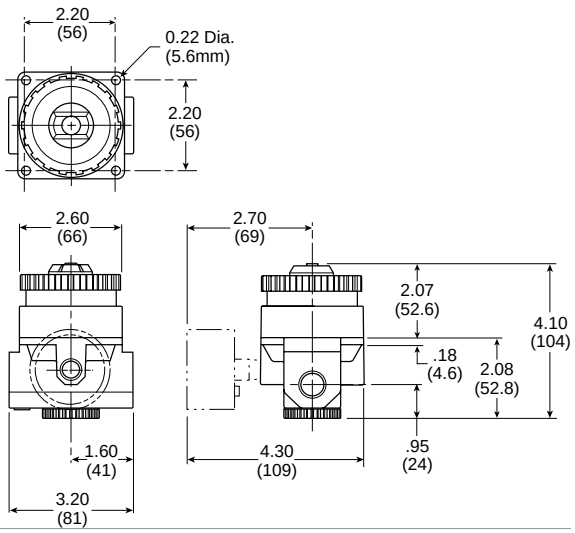

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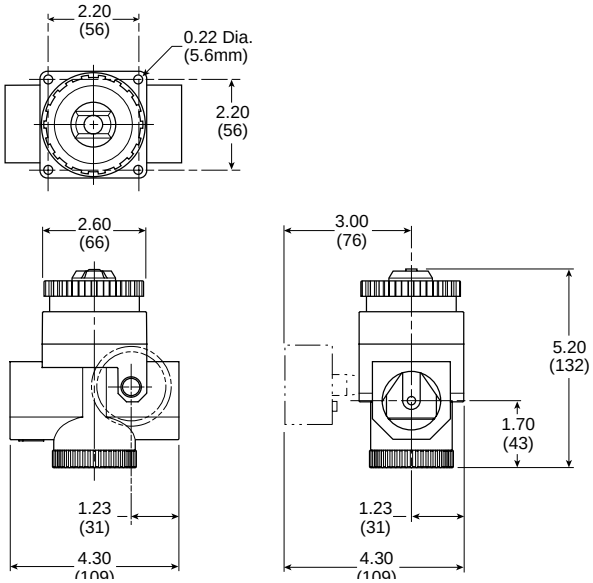
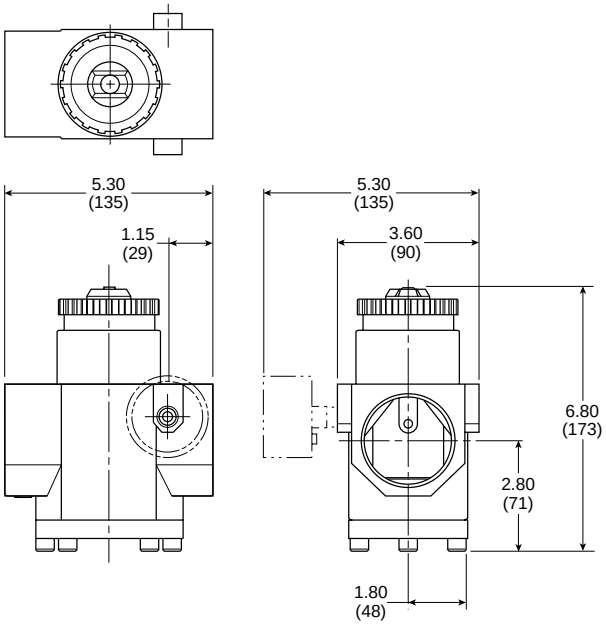


54R



Specifications

Description	51R	52R	53R	54R
Bleed rate	0.05 SCFM	0.05 SCFM	0.05 SCFM	0.05 SCFM
Gauge port	—	Two ports 1/4	Two ports 1/4	Two ports 1/4
Port threads	1/4	1/4, 3/8, 1/2, 3/4	3/4, 1, 1-1/4	1-1/2, 2
Weight	1.3 lb. (0.5 kg)	2.3 lb. (1.04 kg)	4.0 lb. (1.8 kg)	9 lb. (4.1 kg)

Material specifications

Description	
Body	Zinc
Bonnet	Zinc / brass
Piston	Acetal
Seals	Nitrile
Springs	Steel
Valve assembly	Brass / nitrile / acetal

⚠ WARNING
Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed maximum primary pressure rating.

CAUTION:
REGULATOR PRESSURE ADJUSTMENT –
The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design. For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

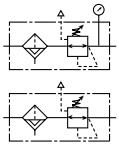
Precision Filter / Regulators

- The no-brass construction is well suited to harsh environments
- Internal and external epoxy finish for superior corrosion resistance
- Non-bleed design to reduce consumption
- Integral relief valve
- A gauge port provides convenient pressure gauge mounting
- The standard 5-micron filter minimizes internal contamination
- The filter dripwell contains a drain plug to easily drain trapped liquids
- Standard tapped exhaust
- Soft relief seat minimizes air loss

P3EA632 Series

Operating information

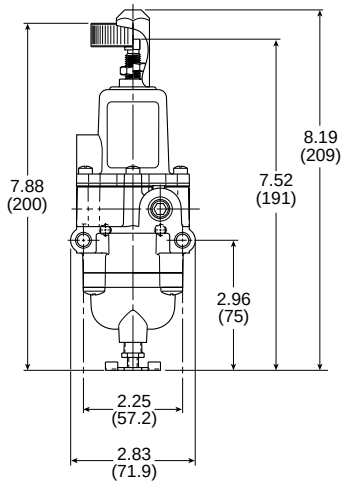
Supply pressure:	250 PSIG (17.2 bar), (1700 kPa) max
Temperature range:	-10°F to 160°F (-23°C to 71°C)
Sensitivity:	1.0" (.036 PSIG) (2.54 cm) water column
Flow capacity:	25 SCFM (42.5 m^3/HR) @ 100 PSIG, (7 bar), (700 kPa) supply and 20 PSIG, (1.5 bar), (150 kPa) setpoint
Exhaust capacity:	0.8 (1.36 m^3/HR) where downstream pressure is 5 PSIG, (.35 bar) (35 kPa) above 20 PSIG (1.5 bar), (150 kPa) setpoint (0.8 SCFM for 120 # unit)
Consumption:	Undetectable
Supply pressure effect:	Less than 1.25 PSIG, (.09 bar), (9 kPa) change for 100 PSIG, (7.0 bar), (700 kPa) change in supply pressure (1.90 PSIG for 120 # unit)



P3EA632
Precision Filter / Regulator

Port size	Spring	Part number
1/4"	1 to 60 PSIG	**P3EA63242NS**
1/4"	2 to 120 PSIG	**P3EA63252NS**

Note: Other spring ranges, port sizes, and options available. Please consult factory.



Service kits

Service kit	1 to 60, 2 to 120 PSIG	**PS19968-NR**
Tamper resistant kit		**PS12165**

Material specifications

Body and housing	Epoxy coated aluminum
Elastomers	Nitrile
Trim	Stainless steel, nickel plated steel

⚠ WARNING
Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed maximum primary pressure rating.

CAUTION:
REGULATOR PRESSURE ADJUSTMENT –
The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design. For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

☐ Most popular.

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Precision Pneumatic Input Signal Amplifier - 1/4"

- The P3BA208 uses a pneumatic input signal to accurately control output pressure based on a predetermined ratio
- A balanced supply valve minimizes the effects of supply pressure variation
- An aspirator tube compensates downstream pressure droop under flowing conditions
- A separate control chamber isolates the diaphragm from the main flow to eliminate hunting and buzzing
- Unit construction allows servicing without removal

P3BA208 Series
1/4" port size

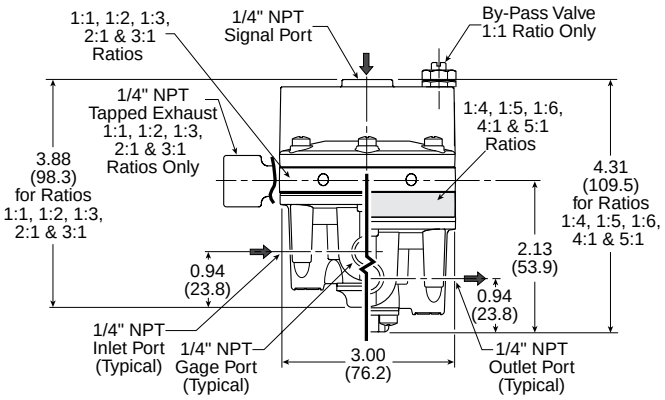
Operating information

Signal : Output	1:1	1:2	1:3
Output pressure, maximum:	150 PSIG (10 bar)	150 PSIG (10 bar)	150 PSIG (10 bar)
Supply pressure, maximum:	250 PSIG (17 bar)	250 PSIG (17 bar)	250 PSIG (17 bar)
Flow capacity – 100 PSIG, (7 bar), supply 20 PSIG, (1.5 bar) output	45 SCFM (76.5 m^3/HR)	45 SCFM (76.5 m^3/HR)	45 SCFM (76.5 m^3/HR)
Exhaust capacity – Downstream pressure 5 PSIG (.35 bar) above 20 PSIG (1.5 bar) setpoint	11 SCFM (18.7 m^3/HR)	11 SCFM (18.7 m^3/HR)	11 SCFM (18.7 m^3/HR)
Sensitivity, water column:	.250" (.64 cm)	.500" (1.27 cm)	.750" (1.9 cm)
Ratio accuracy – % of 100 PSIG (7 bar) output span % of output span with 100 PSIG (7 bar) input span	1.0 —	1.0 —	1.0 —
Supply pressure effect – for change of 100 PSIG (7 bar)	0.10 PSIG (.007 bar)	0.20 PSIG (.014 bar)	0.30 PSIG (.021 bar)
Ambient temperature:	-40°F to 200°F (-40°C to 93°C)	-40°F to 200°F (-40°C to 93°C)	-40°F to 200°F (-40°C to 93°C)

P3BA208
Precision Pneumatic Input Signal Amplifier

Port size	Pilot ratio	Part number
1/4"	1:1	**P3BA20812**
1/4"	1:2	**P3BA20822**
1/4"	1:3	**P3BA20823**

Note: Other spring ranges, port sizes, and options available. Please consult factory.



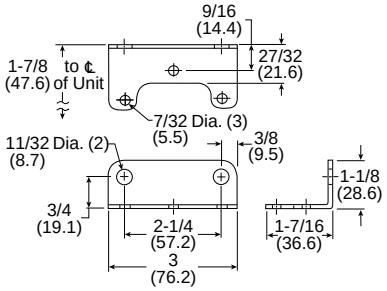
Service kits

1:1 ratio	**PS19513-11**
1:1 ratio w/ by-pass valve	**PS19513-11**
1:2 ratio	**PS19513-12**
1:3 ration	**PS19513-13**
Mounting bracket	**PS09921**

Material specifications

Body and housing	Aluminum
Elastomers	Nitrile on dacron fabric
Trim	Zinc plated steel, brass

Mounting bracket



☐ Most popular.

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Precision Pneumatic Input Signal Amplifier - 1/2" & 3/4"

- Five signal to output ratios meet most control element requirements
- Control sensitivity of water column allows use in precision applications
- Large supply and exhaust Valves provide high forward and exhaust flows
- Soft supply and exhaust Valve seats minimize air consumption
- A balanced supply valve minimizes the effect of supply pressure variation
- An aspirator tube compensates downstream pressure droop under flow conditions
- A separate control chamber isolates the diaphragm from the main flow to eliminate hunting and buzzing
- Unit construction lets you service the P3BA45 without removing it from the line

P3BA45 Series
1/2" & 3/4" port size

Operating information

Signal : Output	1:1	1:2	1:3
Output pressure, maximum:	150 PSIG (10 bar)	150 PSIG (10 bar)	150 PSIG (10 bar)
Supply pressure, maximum:	250 PSIG (17 bar)	250 PSIG (17 bar)	250 PSIG (17 bar)
Flow capacity – 100 PSIG, (7 bar), supply 20 PSIG, (1.5 bar) output	150 SCFM (255 m^3/HR)	150 SCFM (255 m^3/HR)	150 SCFM (255 m^3/HR)
Exhaust capacity – Downstream pressure 5 PSIG (.35 bar) above 20 PSIG (1.5 bar) setpoint	40 SCFM (62.5 m^3/HR)	40 SCFM (62.5 m^3/HR)	40 SCFM (62.5 m^3/HR)
Sensitivity, water column:	1.0" (2.54 cm)	2.0" (5.08 cm)	3.0" (7.62 cm)
Ratio Accuracy – % of 100 PSIG (7 bar) output span % of output span with 100 PSIG (7 bar) input span	3.0 —	3.0 —	3.0 —
Supply pressure effect – for change of 100 PSIG (7 bar)	0.10 PSIG (.007 bar)	0.20 PSIG (.014 bar)	0.30 PSIG (.021 bar)
Ambient temperature:	-40°F to 200°F (-40°C to 93°C)	-40°F to 200°F (-40°C to 93°C)	-40°F to 200°F (-40°C to 93°C)
Hazardous locations:	Acceptable for use in zones 1 and 2 for gas atmospheres; Groups IIA and IIB and zones 21 and 22 for dust atmospheres.		

P3BA45
Precision Pneumatic Input Signal Amplifier

Port size	Pilot ratio	Part number
1/2"	1:1	**P3BA4514A**
1/2"	1:2	**P3BA4524A**
1/2"	1:3	**P3BA4534A**
3/4"	1:1	**P3BA4516A**
3/4"	1:2	**P3BA4526A**
3/4"	1:3	**P3BA4536A**

Note: Other spring ranges, port sizes, and options available. Please consult factory.

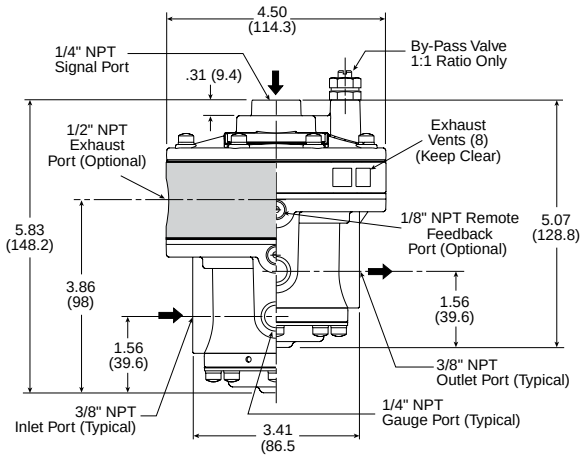
Service kits

1:1 ratio	**PS19549-1**
1:1 ratio w/ tapped exhaust	**PS19549-1E**
1:2 ratio	**PS19549-2**
1:3 ratio	**PS19549-3**
1:1 w/ tapped exhaust, I option	**PS19549-20E**

☐ Most popular.

Material specificationS

Body and housing	Aluminum
Diaphragm	Nitrile on dacron fabric
Trim	Zinc plated steel, brass



Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

High Precision Regulators

- Control sensitivity of .250" (.010 PSIG) (.64 cm) water column variation allows use in precision applications
- A compensating diaphragm lets the regulator remain unaffected by supply pressure changes
- Flow of up to 40 SCFM with 100 PSIG supply allows use in applications with high flow requirements
- An aspirator tube compensates downstream pressure droop under flow conditions
- A separate control chamber isolates the diaphragm from the main flow to eliminate hunting and buzzing
- Unit construction lets you service the regulator without removing it from the line

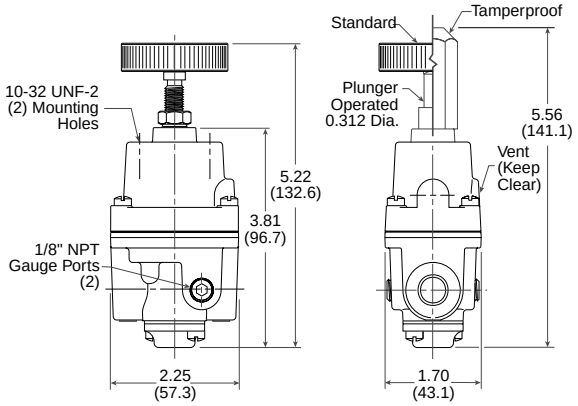
P3RA302 Series

Operating information

Supply pressure:	250 PSIG (17.2 bar), (1700 kPa) max
Ambient temperature:	-40°F to 200°F (-40°C to 93°C)
Sensitivity:	.250" (.010 PSIG) (.64 cm) water column
Flow capacity:	40 SCFM (68 m^3/HR) @ 100 PSIG, (7.0 bar), (700 kPa) supply and 20 PSIG, (1.5 bar), (150 kPa) setpoint
Exhaust capacity:	2.0 SCFM (3.4 m3/HR) where downstream pressure is 5 PSIG, (.35 bar), (35 kPa) above 20 PSIG, (1.5 bar), (150 kPa) setpoint
Supply pressure effect:	Less than 0.2 PSIG, (.014 bar), (.14 kPa) for 100 PSIG, (7.0 bar), (700 kPa) change in supply pressure
Hazardous locations:	Acceptable for use in zones 1 and 2 for gas atmosphere: Groups IIA and IIB and zones 21 and 22 for dust atmospheres

P3RA302
Compact High Precision Regulator

Port size	Spring	Part number
1/4"	0.5 to 30 PSIG	**P3RA30232**
1/4"	1 to 60 PSIG	**P3RA30242**
1/4"	2 to 100 PSIG	**P3RA30252**



⚠ WARNING
Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed maximum primary pressure rating.

☐ Most popular.

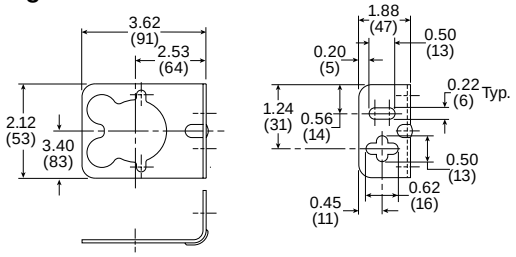
Service kits

Service kit	Nitrile, standard	**PS16116-13**
	Nitrile, non-relieving	**PS16116-14**
Tamper resistant kit		**PS12163**
Mounting bracket kit		**PS417BP**

Material specifications

Body and housing	Aluminum
Diaphragms	Nitrile on dacron
Trim	Brass

Mounting bracket



CAUTION:
REGULATOR PRESSURE ADJUSTMENT –
The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design. For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

High Precision Regulators

- Control sensitivity of .125" (.005 PSIG) (.32 cm) water column allows use in precision processes
- Pressure balanced supply valve prevents supply pressure changes from affecting the setpoint
- Optional check valve permits dumping of downstream pressure when supply is opened to atmosphere
- Separate control chamber isolates the diaphragm from the main flow to eliminate hunting and buzzing
- An aspirator tube compensates downstream pressure droop under flow conditions

P3RA102 Series

Operating information

Supply pressure:	500 PSIG (35 bar), (3500 kPa) max
Ambient temperature:	-40°F to 200°F (-40°C to 93°C)
Sensitivity:	.125" (.005 PSIG) (.32 cm) water column
Flow capacity:	40 SCFM (68 m^3/HR) @ 100 PSIG, (7.0 bar), (700 kPa) supply and 20 PSIG, (1.5 bar), (150 kPa) setpoint
Exhaust capacity:	5.5 SCFM (9.35 m3/HR) where downstream pressure is 5 PSIG, (.35 bar), (35 kPa) above 20 PSIG, (1.5 bar), (150 kPa) setpoint
Supply pressure effect:	Less than 0.1 PSIG, (.007 bar), (.7 kPa) for 100 PSIG, (7.0 bar), (700 kPa) change in supply pressure
Hazardous locations:	Acceptable for use in zones 1 and 2 for gas atmosphere: Groups IIA and IIB and zones 21 and 22 for dust atmospheres

P3RA102
Standard High Precision Regulator

Port size	Spring	Part number
1/4"	0.5 to 30 PSIG	**P3RA10232**
1/4"	1 to 60 PSIG	**P3RA10242**
1/4"	2 to 150 PSIG	**P3RA10262**

Service kits

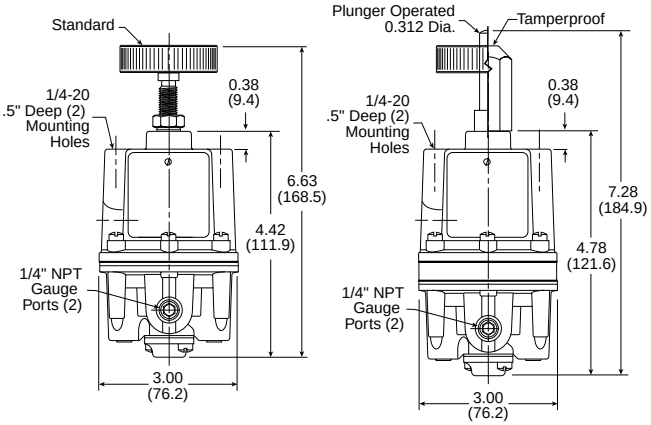
Service kit	0 to 200 PSIG, relieving	**PS12125-1**
	0 to 200 PSIG, non-relieving	**PS12125-4**
Tamper resistant kit		**PS12165**
Mounting bracket kit, zinc plated steel		**PS09921**

Material specifications

Body and housing		Aluminum
Diaphragms	(standard unit only)	Buna N on dacron
Trim		Brass, zinc plated steel

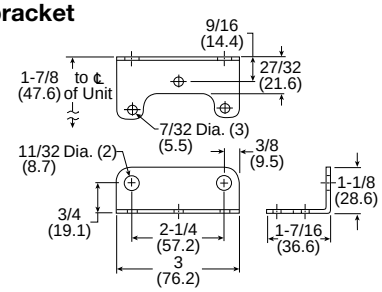
⚠ WARNING
Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed maximum primary pressure rating.

☐ Most popular.



2 thru 200 PSIG Range **300 & 400 PSIG Range**

Mounting bracket



CAUTION:
REGULATOR PRESSURE ADJUSTMENT –
The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design. For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

High Precision Relief Valves

- Control sensitivity of .125" (.005 PSIG) (.32 cm) water column allows use in precision applications
- A separate control chamber and Aspirator Tube isolate the diaphragm from the main flow to eliminate hunting and buzzing
- Unit construction lets you service without removing it from the line
- Mounting bracket is available

P3RA102BP Series

Operating information

Setpoint range – 2 to 200 PSIG (0.15 to 14 bar) (15 to 1400 kPa) 300 to 400 PSIG (21 to 28 bar) (2100 to 2800 kPa)	System pressure (maximum) 300 PSIG (21 bar), (2100 kPa) max 500 PSIG (35 bar), (3500 kPa) max
Ambient temperature:	-40°F to 200°F (-40°C to 93°C)
Sensitivity:	.125" (.005 PSIG) (.32 cm) water column
Flow capacity:	40 SCFM (68 m3/HR) @ 100 PSIG, (7.0 bar), (700 kPa) system pressure

P3RA102BP
High Precision Relief Valve

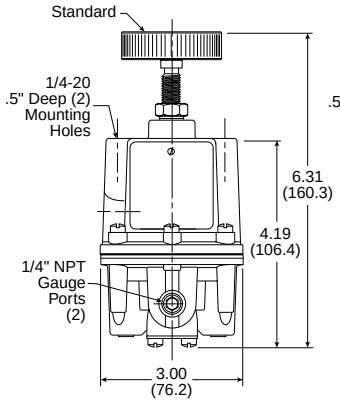
Port size	Spring	Part number
1/4"	0.5 to 30 PSIG	**P3RA10232BP**
1/4"	1 to 60 PSIG	**P3RA10242BP**
1/4"	2 to 150 PSIG	**P3RA10262BP**

Service kits

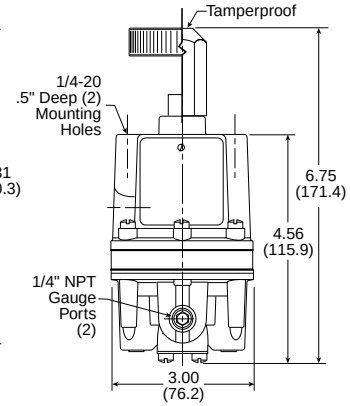
Service kit	0 to 200 PSIG, standard	**PS12127-1**
Tamper resistant kit		**PS12165**
Mounting bracket kit, zinc plated steel		**PS09921**

Material specifications

Body and housing	Aluminum
Nozzle	Nitrile on dacron
Trim	Zinc plated steel, brass

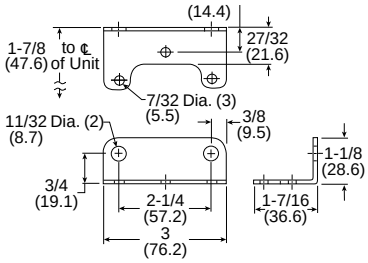


2 thru 200 PSIG Range



300 & 400 PSIG Range

Mounting bracket



⚠ WARNING
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Do not connect regulator to bottled gas.
Do not exceed maximum primary pressure rating.

CAUTION:
REGULATOR PRESSURE ADJUSTMENT –
The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design. For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

☐ Most popular.

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

High Precision Vacuum Regulator

- Control sensitivity of .125" (.005 PSIG) (.32 cm) water column allows use in precision applications
- Balanced supply valve minimizes effects of vacuum variation
- Aspirator tube compensates for downstream pressure droop under flow conditions
- Separate control chamber isolates the diaphragm from the main flow to eliminate hunting and buzzing
- Construction allows servicing without removing from the line

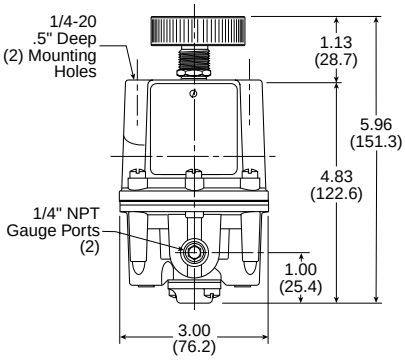
P3RA171 Series

Operating information

Vacuum supply:	29.92 Hg (760 torr) max
Ambient temperature:	-40°F to 200°F (-40°C to 93°C)
Sensitivity:	.125" (.005 PSIG) (.32 cm) water column
Flow capacity:	3 SCFM @ 650 torr supply, 250 torr setpoint
Vacuum supply effect:	Less than 1 torr for 100 torr (.04 Hg for 3.94 Hg) change in vacuum supply

P3RA171
High Precision Vacuum Regulator

Port size	Spring	Part number
1/4"	0 to 30 Hg	**P3RA17132NNKN**



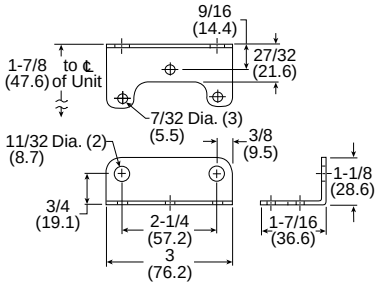
Service kits

Service kit	Includes diaphragm, valve, seat assemblies and gasket	**PS20966-9**
Tamper resistant kit		**PS20967-1**
Mounting bracket kit, zinc plated steel		**PS09921**
Vacuum gauge		**266298A**

Material specifications

Body and housing	Aluminum
Elastomers	Nitrile
Trim	Zinc plated steel, brass

Mounting bracket



⚠ WARNING
Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed maximum primary pressure rating.

CAUTION:
REGULATOR PRESSURE ADJUSTMENT –
The working range of knob adjustment is designed to permit outlet pressures within their full range. Pressure adjustment beyond this range is also possible because the knob is not a limiting device. This is a common characteristic of most industrial regulators, and limiting devices may be obtained only by special design. For best performance, regulated pressure should always be set by increasing the pressure up to the desired setting.

☐ Most popular.

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Electronic Proportional Regulators

- Very fast response times
- Accurate output pressure
- Micro parameter settings
- Selectable I/O parameters
- Quick, full flow exhaust
- LED display indicates output pressure
- No air consumption in steady state
- Multiple mounting options
- Protection to IP65
- P31P flows to 19 dm3/s (40 SCFM)
- P32P flows to 57 dm3/s (120 SCFM)

P31P Series
Bottom exhaust

P32P Series
Bottom exhaust

Ordering information

P31PA	9	2	A	Z	2		V	D	1	

Body size

Global modular mini (1/4")	P31PA
Global modular compact (1/2")	P32PA

Thread type

BSPP	**1**
BSPT	2
NPT	**9**

Port size

Global modular mini (1/4")	2
Global modular compact (1/2")	4

Version

Bottom ported exhaust (NC)	A
Bottom ported forced exhaust (NO)†	E

† When the supply voltage is lost the unit will automatically exhaust the regulated pressure to 0 bar (atmospheric pressure)

Pressure range

Z	0 - 2 bar (0-29 PSIG)
D	0 - 10 bar (0-145 PSIG)

Power supply

2	24 volts

Control signal

V	0-10V‡

‡ Factory setting is 0-10 V control signal. 4-20 mA control signal available via parameter 4 on keypad.

Input Connector

1	M12 (4-pin)

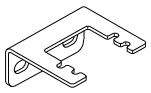
Output signal

D	Digital, PNP
P	PNP or 0-10V
N	NPN or 0-10V
M	4-20mA fixed

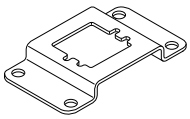
D) Digital PNP output only, no analog output selectable
P) Digital PNP and analogue 0-10V outputs selectable, by means of parameter 6. (Factory default 0-10V)
N) Digital NPN and analog 0-10 V outputs selectable by means of parameter 6. Factory default 0-10V)
M) Analog 4-20mA output only.
Note: On all analog outputs the F.S. value can be adjusted by means of parameter 8.

Bold items are most common.

P31P mounting brackets



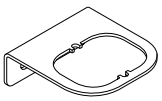
L-bracket



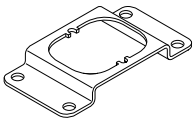
Foot bracket

Part number	Description
P3HKA00ML	L-bracket mounting kit
P3HKA00MC	Foot bracket mounting kit

P32P mounting brackets



L-bracket



Foot bracket

Part number	Description
P3KKA00ML	L-bracket mounting kit
P3KKA00MC	Foot bracket mounting kit

Cables

Part number	Description
CB-M12-4P-2M	2 mtr. cable with moulded straight M12x1 connector

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Technical information

Working medium
Compressed air or inert gasses, filtered to 40µ.

Supply pressure
Max. operating pressure:
2 bar unit.....3 bar (43.5 PSIG)
10 bar unit.....10.5 bar (152 PSIG)

Min. Operating Pressure ..... P2 pressure + 0.5 bar (7.3 PSIG)

Pressure control range
Available in three pressure ranges, 0-2 bar (0-29 PSIG), 0-7 bar (0-101.5 PSIG) or 0-10 bar (0-145 PSIG). Pressure range can be changed through the software at all times. (parameter 19)

Temperature range
0°C up to +50°C (32°F up to 122°F)

Weights:
P31P = 0.291 kg (0.64 lbs)
P32P = 0.645 kg (1.42 lbs)

Air consumption
No consumption in stable regulated situation.

Display
The regulator is provided with a digital display, indicating the output pressure, either in bar or PSIG.
The factory setting is as indicated on the label, can be changed through to software at all times (parameter 14)

⚠ WARNING

Product rupture can cause serious injury.
Do not connect regulator to bottled gas.
Do not exceed maximum primary pressure rating.

Supply voltage
24 VDC +/- 10%

Power consumption
Max. 1.1W with unloaded signal outputs

Control signals
The electronic pressure regulator can be externally controlled through an analogue control signal of either 0-10V or 4-20mA. (parameter 4).

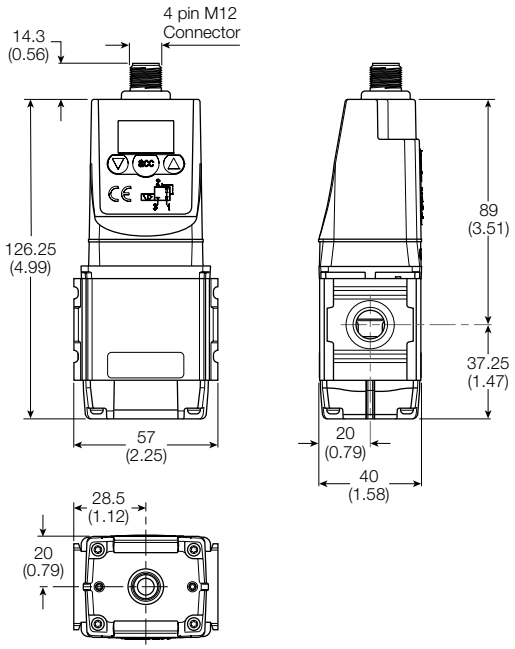
Output signals
As soon as the output pressure is within the signal band a signal is given of 24VDC, PNP Ri = 1 kOhm
Outside the signal band this connection is 0V.

Connections
(In case of output signal (Option D)
Central M12 connector 4-pole

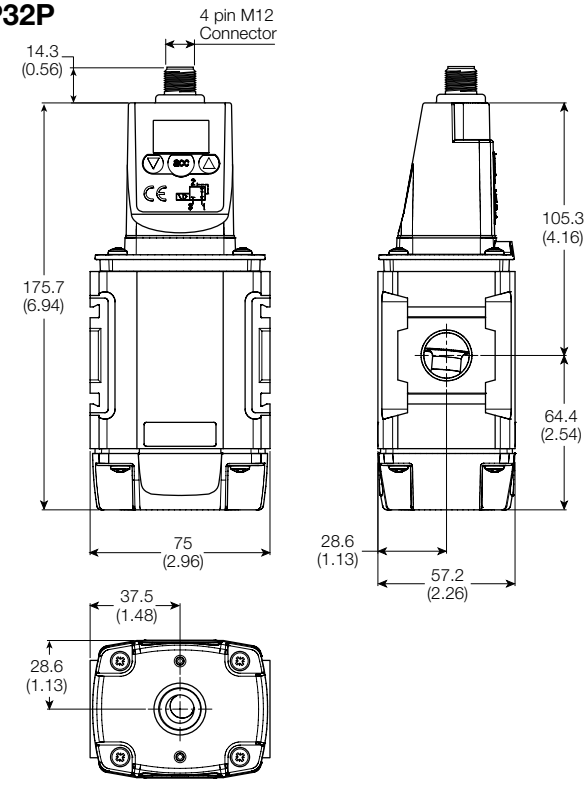
The electrical connections are as follows:

Pin number		Function	Color
1	24 V	Supply	Brown
2	0 to 10 V	Control Signal Ri = 100k Ω	White
	4 to 20mA	Control Signal Ri = 500k Ω	
3	0 V (GND)	Supply	Blue
4	24 V	Alarm Output Signal	Black

P31P



P32P



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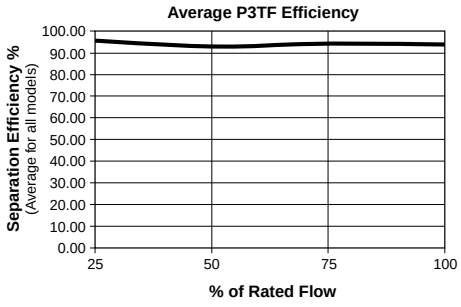
P3TF Bulk Liquid Separators

- Tested in accordance with ISO 8573.9
- High liquid removal efficiencies at all flow conditions
- Low pressure losses for low operational costs
- Multiple port sizes for a given flow rate provides increased flexibility during installation
- Suitable for variable flow compressors
- Works with all types of compressor and compressor condensate
- Low maintenance
- Lightweight cast aluminum housing with 1/4" to 3" ports
- External surface epoxy painted for maximum corrosion resistance

Applications

- Bulk liquid removal at any point in a compressed air system
- Protection of refrigeration and heatless regenerative desiccant dryers
- Liquid removal from compressor Inter-coolers / after-coolers
- Liquid separation within refrigeration dryers
- Pre-filtration



Operating information

	P3TF (Bulk Liquid Separator)
Operating pressure:	232 PSIG (16 bar) Max
Operating temperature:	35°F to 176°F (1.5°C to 80°C)

Material specifications

Description	P3TF (Bulk Liquid Separator)
Auto float drain	Plastic
Housing / bowl	Aluminum
Seals	Fluorocarbon

Service kits

Drain	**EF1**

P3TF Bulk Liquid Separator

	Pipe size	Flow SCFM (L/s)	Weight lb. (kg)	Part number (NPT)
P3TF	1/4"	21 (10)	0.9 (0.4)	**P3TFA92WAAN**
	3/8"	85 (40)	2.2 (1.0)	**P3TFA93WBAN**
	1/2"	85 (40)	2.2 (1.0)	**P3TFA94WCAN**
	3/4"	233 (110)	4.8 (2.2)	**P3TFA96WDAN**
	1"	233 (110)	2.6 (5.7)	**P3TFA98WEAN**
	1-1/2"	742 (350)	5.3 (11.6)	**P3TFA9BWGAN**
	2"	742 (350)	5.3 (11.6)	**P3TFA9CWHAN**
	3"	1695 (800)	12.0 (26.4)	**P3TFA9EWKAN**

Pressure differential at rated flow ... 1.0 PSID (0.07 bar)
Stated flows are for operation at 102 PSIG (7 bar) with reference to 20°C, 1 bar (a), 0% relative water vapor pressure.

Note: BSPT threads available upon request.

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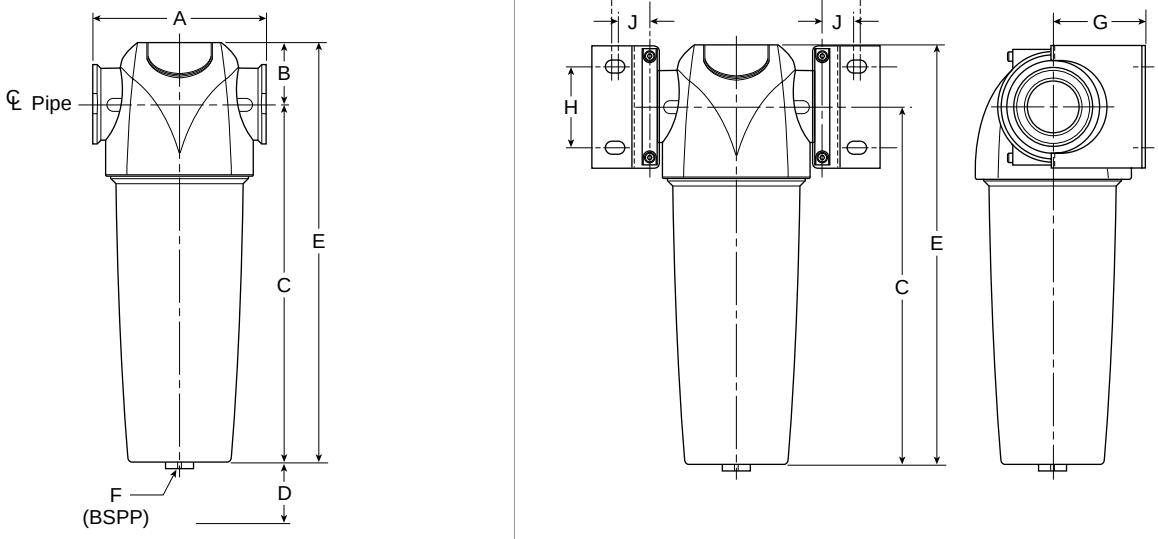
P3TF (Bulk Liquid Separator)



Dimensions

Part number	Pipe size	A	B	C	D	E	BSPP F	G	H	J	K	Wall mounting bracket kit
P3TFA92WAAN	1/4"	3.00 (76)	1.12 (28.5)	6.02 (153)	1.58 (40)	7.15 (181.5)	1/2	2.05 (50)	1.18 (30)	0.71 (18)	0.96 (24.5)	**P3TKA00MWA**
P3TFA93WBAN	3/8"	3.83 (97.5)	1.34 (34)	7.91 (201)	1.97 (50)	9.25 (235)	1/2	2.36 (60)	1.57 (40)	0.81 (20.5)	1.00 (25.5)	**P3TKA00MWB**
P3TFA94WCAN	1/2"	3.83 (97.5)	1.34 (34)	7.91 (201)	1.97 (50)	9.25 (235)	1/2	2.36 (60)	1.57 (40)	0.81 (20.5)	1.00 (25.5)	**P3TKA00MWB**
P3TFA96WDAN	3/4"	5.07 (129)	1.67 (42.5)	13.09 (232.5)	2.76 (70)	10.80 (275)	1/2	2.68 (68)	2.36 (60)	0.91 (23)	1.10 (28)	**P3TKA00MWD**
P3TFA98WEAN	1	5.07 (129)	1.67 (42.5)	12.68 (322)	2.76 (70)	14.35 (364.5)	1/2	2.68 (68)	2.36 (60)	0.91 (23)	1.10 (28)	**P3TKA00MWD**
P3TFA9BWGAN	1-1/2"	6.70 (170)	1.97 (50)	18.68 (474.5)	3.94 (100)	20.64 (524.5)	1/2	3.62 (92)	3.31 (84)	1.26 (32)	1.54 (39)	**P3TKA00MWF**
P3TFA9CWHAN	2"	6.70 (170)	1.97 (50)	18.68 (474.5)	3.94 (100)	20.64 (524.5)	1/2	3.62 (92)	3.31 (84)	1.26 (32)	1.54 (39)	**P3TKA00MWF**
P3TFA9EWKAN	3"	8.07 (205)	2.36 (60)	30.39 (772)	4.72 (120)	32.76 (832)	1/2	5.31 (135)	3.94 (100)	1.40 (35.5)	1.67 (42.5)	**P3TKA00MWJ**

Inches (mm)

Wall Mounting Bracket Kit
Mounting brackets provide additional support to filters installed in flexible piping systems or OEM equipment.

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P3TF Series Bulk Liquid Separators

- Designed in accordance with ASME and CRN
- Connection sizes: 4 inch & 6 inch
- High liquid removal efficiencies at all flow conditions
- Suitable for variable flow compressors
- Works with all types of compressor and compressor condensate
- External surface epoxy painted for maximum corrosion resistance

P3TF Series

Material specifications

Baffle	Plated steel
Body	Steel
Deflector	Plated steel
Seals	Fluorocarbon
Stud	Plated steel

Operating information

	P3TF Series
Operating Pressure:	232 PSIG (16 bar)
Operating Temperature:	35°F to 150°F (1.5°C to 66°C)

Inlet air pressure correction

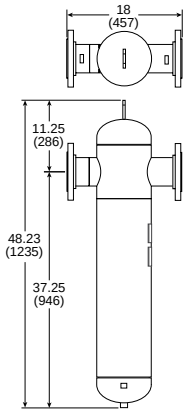
For pressures above 232 PSIG (16 bar), use manual drain.

PSI	15	29	44	58	73	87	100	116	131	145	160	174	189	203	218	232	247	261	275	290
bar	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Factor	2.65	1.87	1.53	1.32	1.18	1.08	1.00	0.94	0.88	0.84	0.80	0.76	0.73	0.71	0.68	0.66	0.64	0.62	0.61	0.59

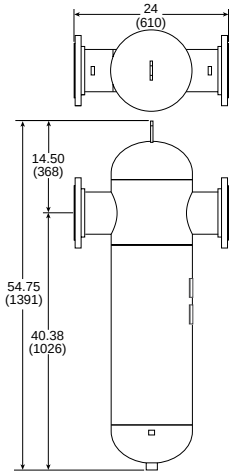
Bulk Liquid Separators

		Port size	Flow SCFM	Part number
P3TF		4" Flange	2119	**P3TFAFFW2AN**
		6" Flange	3814	**P3TFAFGW3AN**

P3TF (Bulk Liquid Separator)



P3TFAFFW2AN

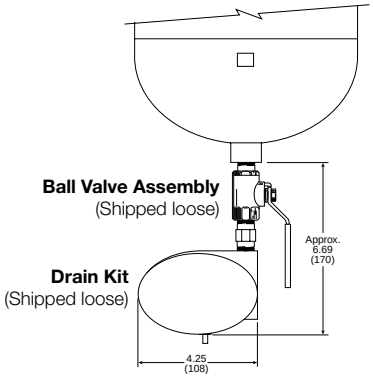


P3TFAFGW3AN

Most popular.

Service kits

Description	P3TF Series
DP gauge replacement kit	**DPG-Kit**
Drain kit - 1/2" NPT	**HDF-120-NPT-A**



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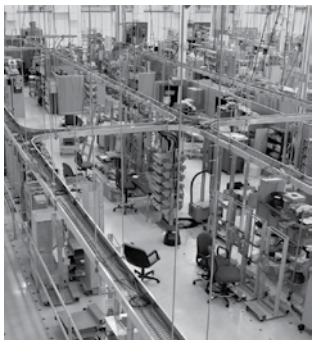

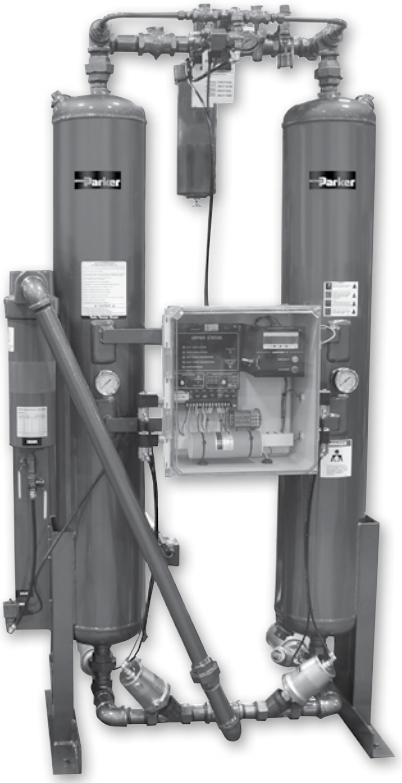

F

Dryer Products

Dryers

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Dryers

Dryer Products

F3

- **Refrigeration (10-2400 SCFM)**
- **Inline desiccant (15-60 SCFM)**
- **Regenerative desiccant (3-800 SCFM)**
- **Heatless desiccant dryers**
- **Zero loss & timer drains**
- **Auto electrical drain valves**

Product	Page
PRD Refrigeration Dryers	F3-F4
DD Inline Desiccant Dryers	F5
P3TJA Regenerative Desiccant Dryers	F6
PTW Heatless Desiccant Dryers	F7-F8
ED Zero Air Loss Condensate Drains	F9
WDV3-G Auto Electrical Drain Valves	F10

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PRD Refrigeration Dryer Series

PRD10 - PRD250

- "Plug & Play" design for easy installation and operation (PRD10 - PRD125)
- Small space saving design
- Oversized demister separator resulting in excellent liquid removal over all operating conditions
- Low pressure differential across the dryer (1.45 PSIG average)
- Oversized condenser to operate in ambients to 122°F (50°C)
- All models incorporate a dewpoint indicator

PRD325 - PRD2400

- Optimum dewpoint levels for highest system performance
- Advanced patented design solutions
- High reliability, easy to use and maintain
- Unique 4-in-1 SmartPack heat exchanger
- Integral drain
- Extremely low pressure drop design
- SmartControl energy saving function
- Excellent dewpoint performances
- Advanced compliant scroll compressor

PRD Series

Capacity CFM @ 100 PSIG (m^3/min @ 6.9 bar)	Primary voltage	Part number	Pipe size	Recommended filtration		
				Bulk separator	Pre-filter (5µ particulate)*	Post-filter (.01µ coalescing)
10 (17)	115V/1ph/60Hz	**PRD10-115160**	1/2" NPT-F	**P3TFA94WCAN**	**P32FA94ESAN**	**P32FA94DSAN**
15 (26)	115V/1ph/60Hz	**PRD15-115160**	1/2" NPT-F	**P3TFA94WCAN**	**P32FA94ESAN**	**P32FA94DSAN**
25 (43)	115V/1ph/60Hz	**PRD25-115160**	1/2" NPT-F	**P3TFA94WCAN**	**P32FA94ESAN**	**P32FA94DSAN**
35 (60)	115V/1ph/60Hz	**PRD35-115160**	1/2" NPT-F	**P3TFA94WCAN**	**P32FA94ESAN**	**P32FA94DSAN**
50 (85)	115V/1ph/60Hz	**PRD50-115160**	3/4" NPT-F	**P3TFA96WDAN**	**P33FA96ESAN**	**P33FA96DSAN**
75 (127)	115V/1ph/60Hz	**PRD75-115160**	3/4" NPT-F	**P3TFA96WDAN**	**P33FA96ESAN**	**P33FA96DSAN**
100 (170)	115V/1ph/60Hz	**PRD100-115160**	3/4" NPT-F	**P3TFA96WDAN**	**P3NFA96ESA**	**P3NFA96DSA**
125 (212)	115V/1ph/60Hz& 230V/1ph/60Hz	**PRD125-115160 PRD125-230160**	1-1/2" NPT-F	**P3TFA9BWGAN**	**P3NFA9PESA**	**P3NFA9PDSA**
150 (255)	115V/1ph/60Hz & 230V/1ph/60Hz	**PRD150-115160 PRD150-230160**	1-1/2" NPT-F	**P3TFA9BWGAN**	**P3NFA9PESA**	**P3NFA9PDSA**
175 (297)	115V/1ph/60Hz	**PRD175-230160**	1-1/2" NPT-F	**P3TFA9BWGAN**	**35F77BAP**	**35F77EAP**
200 (425)	230V/1ph/60Hz	**PRD200-230160**	1-1/2" NPT-F	**P3TFA9BWGAN**	**35F77BAP**	**35F77EAP**
250 (425)	230V/3ph/60Hz & 460V/3ph/60Hz	**PRD250-230360 PRD250-460360**	1-1/2" NPT-F	**P3TFA9BWGAN**	**35F77BAP**	**35F77EAP**
325 (552)	230V/3ph/60Hz & 460V/3ph/60Hz	**PRD325-230360 PRD325-460360**	2" NPT-F	**P3TFA9CWHAN**	**35F87BAP**	**35F87EAP**
400 (680)	230V/3ph/60Hz & 460V/3ph/60Hz	**PRD400-230360 PRD400-460360**	2" NPT-F	**P3TFA9CWHAN**	**35F87BAP**	**35F87EAP**
500 (849)	230V/3ph/60Hz & 460V/3ph/60Hz	**PRD500-230360 PRD500-460360**	2" NPT-F	**P3TFA9CWHAN**	**35F87BAP**	**35F87EAP**
700 (1189)	230V/3ph/60Hz & 460V/3ph/60Hz	**PRD700-230360 PRD700-460360**	3" NPT-M	**P3TFA9EWKAN**	**43FN7BAP**	**43FN7EAP**
800 (1359)	230V/3ph/60Hz & 460V/3ph/60Hz	**PRD800-230360 PRD800-460360**	3" NPT-M	**P3TFA9EWKAN**	**43FN7BAP**	**43FN7EAP**
1000 (1700)	460V/3ph/60Hz	**PRD1000-460360**	3" NPT-M	**P3TFA9EWKAN**	**43FN7BAP**	**43FN7EAP**
1200 (2039)	460V/3ph/60Hz	**PRD1200-460360**	3" NPT-M	**P3TFA9EWKAN**	**43FN7BAP**	**43FN7EAP**
1600 (2718)	460V/3ph/60Hz	**PRD1600-460360**	4" Flg.	**P3TFAFFW2AN**	**P3TFAFFQ2AN***	**P3TFAFFD2AN**
2000 (3400)	460V/3ph/60Hz	**PRD2000-460360**	6" Flg.	**P3TFAFGW3AN**	**P3TFAFGQ3AN***	**P3TFAFGD3AN**
2400 (4078)	460V/3ph/60Hz	**PRD2400-460360**	6" Flg.	**P3TFAFGW3AN**	**P3TFAFGQ3AN***	**P3TFAFGD3AN**

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* 1µ coalescing

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Operating information

		PRD10-PRD175	PRD200-PRD250	PRD325-PRD2400
Temperature:	Ambient (maximum) Ambient (minimum)	122°F (50°C) 41°F (5°C)	122°F (50°C) 41°F (5°C)	122°F (50°C) 41°F (5°C)
	Inlet (maximum)	149°F (65°C)	140°F (60°C)	140°F (60°C)
Pressure (maximum):		232 PSIG (16 bar)	203 PSIG (14 bar)	203 PSIG (14 bar)
Refrigerant:		R134a	R407C	R407C

Flow correction factors

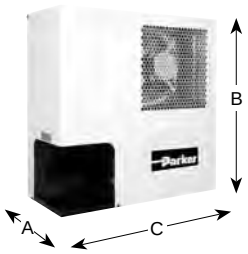
Capacities are based upon:
Ambient temperature - 100°F (38°C); inlet temperature - 100°F (38°C);
and working pressure - 100 PSIG (7 bar g).

To obtain dryer capacity at new conditions, multiply nominal capacity x C1 x C2 x C3

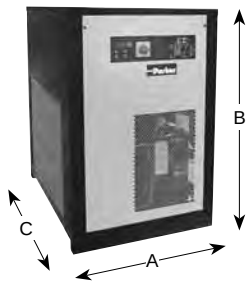
	PRD10 - PRD175								PRD200 - PRD250							PRD325 - PRD2400						
Ambient temperature (C1)																						
°F	60	70	80	89	100	110	120		70	80	90	100	110	120	122	90	100	110	120	122		
°C	16	21	27	32	38	43	49		21	27	32	38	43	49	50	32	38	43	49	50		
Factor	1.34	1.26	1.17	1.09	1.00	0.91	0.82		1.22	1.15	1.05	1.00	0.94	0.79	0.71	1.05	1.00	0.94	0.79	0.71		
Inlet temperature (C2)																						
°F	90	100	110	120	140	149			90	100	110	120	130	140		90	100	110	120	130	140	
°C	32	38	43	49	60	65			32	38	43	49	54	60		32	38	43	49	54	60	
Factor	1.24	1.00	0.81	0.67	0.45	0.43			1.24	1.00	0.82	0.68	0.56	0.40		1.22	1.00	0.82	0.68	0.56	0.46	
Inlet pressure (C3)																						
PSIG	60	80	100	125	150	175	200	230	50	80	100	125	150	174	203	50	80	100	125	150	174	203
bar	4	6	7	9	10	12	14	16	3	6	7	9	10	12	14	3	6	7	9	10	12	14
Factor	0.83	0.93	1.00	1.07	1.12	1.16	1.19	1.22	0.77	0.93	1.00	1.07	1.12	1.15	1.18	0.77	0.93	1.00	1.07	1.12	1.15	1.18

Dimensions

PRD10-PRD250



PRD325-PRD2400



	A	B	C	Weight (kg)	Part number
	8.3 (210)	17 (430)	17.7 (450)	42 (19)	**PRD10**
	8.3 (210)	17 (430)	17.7 (450)	42 (19)	**PRD15**
	8.3 (210)	19.9 (505)	19.7 (500)	52 (24)	**PRD25**
	8.3 (210)	19.9 (505)	19.7 (500)	52 (24)	**PRD35**
	8.9 (225)	22.3 (565)	20.5 (520)	58 (27)	**PRD50**
	8.9 (225)	22.3 (565)	20.5 (520)	68 (31)	**PRD75**
	8.9 (225)	22.3 (565)	20.5 (520)	77 (35)	**PRD100**
	16.7 (425)	23.8 (605)	21.8 (555)	115 (52)	**PRD125**
	16.7 (425)	23.8 (605)	21.8 (555)	128 (58)	**PRD150**
	16.7 (425)	23.8 (605)	21.8 (555)	132 (60)	**PRD175**
	28.0 (711)	37.0 (940)	22.0 (559)	183 (83)	**PRD200**
	28.0 (711)	42.0 (1067)	41.0 (1041)	287 (130)	**PRD250**
	28.0 (711)	42.0 (1067)	41.0 (1041)	320 (145)	**PRD325**
	28.0 (711)	42.0 (1067)	41.0 (1041)	320 (145)	**PRD400**
	28.0 (711)	42.0 (1067)	41.0 (1041)	342 (155)	**PRD500**
	32.0 (813)	52.0 (1321)	46.0 (1168)	529 (240)	**PRD700**
	32.0 (813)	52.0 (1321)	46.0 (1168)	529 (240)	**PRD800**
	32.0 (813)	52.0 (1321)	46.0 (1168)	551 (250)	**PRD1000**
	40.0 (1016)	67.0 (1702)	43.0 (1092)	816 (370)	**PRD1200**
	40.0 (1016)	68.0 (1727)	71.0 (1803)	1279 (580)	**PRD1600**
	40.0 (1016)	68.0 (1727)	71.0 (1803)	1477 (670)	**PRD2000**
	40.0 (1016)	68.0 (1727)	71.0 (1803)	1521 (690)	**PRD2400**

Inches (mm)

Parker Hannifin Corporation
Pneumatic Division
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www.parker.com/pneumatics

DD Inline Desiccant Dryers

- Inline desiccant dryers are a convenient and cost effective means of ensuring your sensitive intermittent pneumatic applications are never exposed to damaging moisture
- Compact size for point-of-use applications
- Drying efficiency down to -40°F pressure dew point
- Easily and quickly serviced
- Sightglass in bowl to monitor desiccant
- Built-in particulate after filter prevents downstream dust
- No electricity needed
- Low pressure drop
- No purge air lost as with other dryer types
- Check valve required on inlet
- Desiccant must be ordered separately

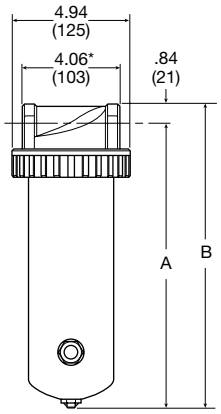
Operating information

Optimum working temperature:	Below 100°F
Operating temperature:	32°F to 180°F (0°C to 82°C)
Operating pressure:	0 to 300 PSIG Max (21 bar)

Inline Desiccant Dryers

	Part number SCFM / desiccant capacity[1]		
Port size	**15 SCFM / 2.5 lb.**	**30 SCFM / 5 lbs.**	**60 SCFM / 10 lbs.**
1/4[2]	**DD15-02**		
3/8[2]	**DD15-03**		
1/2[2]	**DD15-04**	**DD30-04**	**DD60-04**
3/4	**DD15-06**	**DD30-06**	**DD60-06**
1		**DD30-08**	**DD60-08**

Notes:
1. Desiccant must be ordered separately.
2. These units supplied with reducer bushings.



	A	B
DD15	12.69 (322)	13.5 (343)
DD30	22.44 (570)	23.25 (591)
DD60	29.44 (748)	30.25 (768)

* Dimension does not include reducer bushings for 1/4", 3/8", 1/2" versions.

Inches (mm)

Service kits

Description		Part number
Desiccant - silica gel		
	DD15	**DRP-14-447/003**
	DD30	**DRP-14-447/006**
	DD60	**DRP-14-447/012**
Mounting brackets (pair of pipe mounted brackets)		
	1 inch Pipe Size	**SA200CW57**

Material specifications

Bowl	DD15	Aluminum
	DD30	Aluminum
	DD60	Steel
Flow tube		CPVC
Filter element		Sintered bronze
Head & flange ring		Zinc
Other hardware		Brass
Seals		Buna-N
Sight glass		Glass & steel

Specifications

Desiccant Capacity (Desiccant must be ordered separately)	
DD15	2.5 lb. (1.1 kg)
DD30	5 lb. (2.3 kg)
DD60	10 lb. (4.5 kg)

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Pneumatic Division
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Regenerative Desiccant Dryer – P3TJA

- Point of use application bringing clean dry air just where you need it
- Approved to international standards designed in accordance with ASME VIII Div.1, approved to CSA/UL/CRN and fully CE Marked (PED, EMC, LVD) as standard
- Simple to install - flexible installation utilising the multiple in-line inlet & outlet connection ports
- Compact and lightweight - can be floor, bench or wall / canopy mounted
- Very quiet operation - noise level less than 70dB(A)
- Can be installed almost anywhere, IP66 / NEMA 4 protection as standard
- Audible alarm - indicating service interval for optimal performance
- Simple & easy to maintain - due to the quick release top cap arrangement, which does NOT require the inlet / outlet ports to be disconnected as with traditional systems, maintenance can be achieved in under 15 minutes

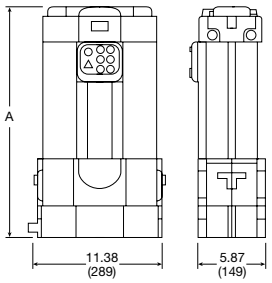
The P3TJA is the reliable, cost effective and flexible way to provide clean dry air exactly where needed.

Operating information

Operating temperature:	35°F (1.5°C) max.
Inlet temperature:	122°F (50°C) max.
Operating pressure:	58 to 175 PSIG (4 to 21 bar)
Flow range:	3 SCFM to 20 SCFM @ 100 PSIG (85 L/min to 567 L/min @ 7 bar)
Noise level (Average):	70dB(A)
Pressure dewpoint – Standard	-40°F (-40°C) pdp
Standard electrical supply:	115/1ph/60Hz (Tolerance +/- 10%)
Controls:	Electronic control timer
Connections:	3/8 NPT

Regenerative Desiccant Dryer

P3TJA



	A	Weight (kg)	SCFM	Part number	Maintenance kit
	16.6 (422)	24.2 (11)	3	**P3TJA93A1JN**	**P3TKA00JA1**
	19.7 (500)	28.7 (13)	5	**P3TJA93A2JN**	**P3TKA00JA2**
	24.2 (616)	35.3 (16)	8	**P3TJA93A3JN**	**P3TKA00JA3**
	27.2 (692)	39.7 (18)	10	**P3TJA93A4JN**	**P3TKA00JA4**
	33.3 (847)	44.1 (20)	13	**P3TJA93A5JN**	**P3TKA00JA5**
	35.7 (906)	50.7 (23)	15	**P3TJA93A6JN**	**P3TKA00JA6**
	43.2 (1098)	61.7 (28)	20	**P3TJA93A7JN**	**P3TKA00JA7**

Inches (mm)

Service kits

Description	Part number
Mounting Bracket	
Fixed wall	**P3TKA00MJ**
45° tilt wall	**P3TKA00MK**

Flow correction factors

Capacities are based upon:
Ambient temperature - 100°F (38°C); inlet temperature - 100°F (38°C); and working pressure - 100 PSIG (7 bar g).
To obtain dryer capacity at new conditions, multiply nominal capacity x C1 x C2 x C3

Minimum inlet pressure									
PSIG	58	73	87	100	116	135	145	160	175
bar g	4	5	6	7	8	9	10	11	12
Maximum inlet temperature									
95°F (35°C)	0.63	0.75	0.88	1.00	0.97	1.08	1.18	1.29	1.40
104°F (40°C)	0.61	0.73	0.85	0.97	0.94	1.05	1.14	1.25	1.36
113°F (45°C)	0.55	0.66	0.77	0.88	0.85	0.95	1.04	1.14	1.23
122°F (50°C)	0.46	0.55	0.64	0.73	0.71	0.79	0.86	0.94	1.02

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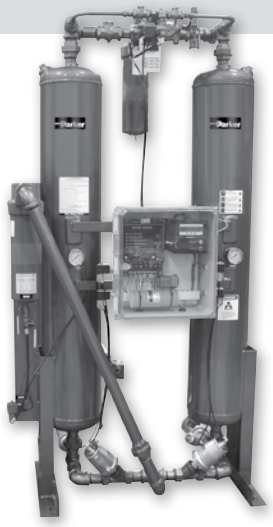
Heatless Desiccant Air Dryer – PTW Series



Parker PTW Series Heatless Desiccant Air Dryers remove water vapor from compresses air through a process known as pressure swing adsorption. Pressure dewpoints ranging from -40°F (-40°C) standard to -100°F (-70°C) optional are attained by directing the flow of saturated compressed air over a bed of desiccant.

Features
- Pre-filter and after filters included with dryers
- Solid state controller
- CycleLoc™ demand control
- Variable cyle control (models PTW75 - PTW800 SCFM)
- Purge Flow indicator
- Purge flow regulator (models PTW75 - PTW800 SCFM)
- Repressurization circuit (models PTW75 - PTW800 SCFM)
- Control air filter (models PTW75 - PTW800 SCFM)
- Safety valves
- Pressure equalization
- 150 PSIG design standard
- Moisture indicator (models PTW75 - PTW800 SCFM)

Options
- DDS Light / DDS (dewpoint dependent switching)

Operating information

Inlet or ambient air temperature:	120°F (49°C) maximum
Operating pressure:	50 PSIG (3.5 bar) minimum
Working pressure:	150 PSIG (10.5 bar) maximum
Pressure drop at rated flow:	less than 5 PSI (0.34 bar)

Heatless Desiccant Air Dryers

Capacity CFM @ 100 PSIG (m^3/min @ 6.9 bar)	Approximate purge SCFM (Nm^3/min)	Primary voltage	Part number	Port size	Filtration package included with dryer		
					Pre-filter (5µ)	Pre-filter (.01µ)	After-filter (1µ)
25 (.70)	4 (.11)	120V/1ph/60Hz	**PTW25***	1/2	**P32FA94FSAN**	**P32FA94DSAN**	**P32FA94QSAN**
42 (1.19)	6 (.19)	120V/1ph/60Hz	**PTW40***	1/2	**P33FA94FSAN**	**P33FA94DSAN**	**P33FA94QSAN**
60 (1.70)	9 (.25)	120V/1ph/60Hz	**PTW55***	3/4	**P33FA94FSAN**	**P33FA94DSAN**	**P33FA94QSAN**
75 (2.13)	11 (.31)	120V/1ph/60Hz	**PTW75***	3/4	**P3NFA96FSA**	**P3NFA96DSA**	**P3NFA96QSA**
107 (3.03)	16 (.45)	120V/1ph/60Hz	**PTW100***	1	**P3NFA98FSA**	**P3NFA98DSA**	**P3NFA98QSA**
135 (3.82)	20 (.56)	120V/1ph/60Hz	**PTW130***	1	**P3NFA98FSA**	**P3NFA98DSA**	**P3NFA98QSA**
200 (5.66)	30 (.84)	120V/1ph/60Hz	**PTW200***	1-1/2	**35F77BAP**	**35F77EAP**	**35F77HAP**
250 (7.07)	38 (1.07)	120V/1ph/60Hz	**PTW250***	1/1/2	**35F77BAP**	**35F77EAP**	**35F77HAP**
300 (8.49)	45 (1.27)	120V/1ph/60Hz	**PTW300***	1-1/2	**35F77BAP**	**35F77EAP**	**35F77HAP**
400 (11.32)	60 (1.69)	120V/1ph/60Hz	**PTW400***	2	**35F87BAP**	**35F87EAP**	**35F87HAP**
500 (14.44)	77 (2.18)	120V/1ph/60Hz	**PTW500***	2	**35F87BAP**	**35F87EAP**	**35F87HAP**
600 (18.40)	98 (2.77)	120V/1ph/60Hz	**PTW600***	2	**35F87BAP**	**35F87EAP**	**35F87HAP**
800 (22.65)	120 (3.39)	120V/1ph/60Hz	**PTW800***	2	**35F87BAP**	**35F87EAP**	**35F87HAP**

* Options: Dewpoint dependent switching (DDS).
DDS Light includes: energy saving purge cycle control with high humidity alarm and indicator light. When ordering use -DL as suffix.
DDS includes: energy saving purge cycle control with high humidity alarm and digital dewpoint display. When ordering use -DS as suffix

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Flow correction factors

Capacities are based upon:

- Pressure drop at rated flow less than 5 PSI (0.34 bar)
- Maxium inlet air or ambient air temperature 120°F (49°C)
- Maximum working pressure: 150 PSIG (10.5 bar g) standard units for high maximum working pressure are available
- Minimum operating pressure: 50 PSIG (3.5 bar g)

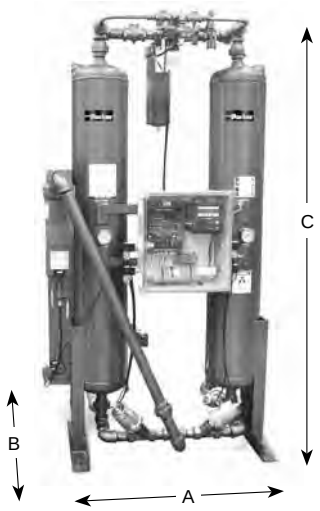
Inlet air pressure correction

PSI	50	60	70	80	90	100	110	120	130	140	150
bar	3.5	4.1	4.9	5.5	6.2	6.9	7.6	8.3	9.0	9.7	10.3
Factor	.56	.65	.74	.83	.91	1.00	1.09	1.18	1.27	1.37	1.43

Inlet air temperature correction

°F	90	95	100	105	110	115	120
°C	32	35	38	41	43	46	49
Factor	1.35	1.16	1.00	.85	.74	.64	.56

Heatless Desiccant Air Dryers



	A (length)	B (width)	C (height)	Weight lbs. (kg)	Part number
PTW series	19 (483)	16 (406)	64 (1626)	156 (71)	**PTW25***
	21 (533)	17 (432)	48 (1219)	190 (86)	**PTW40***
	21 (533)	20 (508)	67 (1702)	230 (104)	**PTW55***
	35 (889)	27 (686)	80 (2032)	384 (174)	**PTW75***
	35 (889)	27 (686)	80 (2032)	468 (212)	**PTW100***
	35 (899)	21 (533)	70 (1778)	496 (225)	**PTW130***
	44 (1118)	28 (711)	78 (1981)	692 (314)	**PTW200***
	44 (1118)	30 (762)	78 (1981)	776 (352)	**PTW250***
	44 (1118)	30 (762)	78 (1981)	796 (361)	**PTW300***
	74 (1880)	41 (1041)	84 (2134)	1626 (738)	**PTW400***
	74 (1880)	41 (1041)	85 (2159)	1735 (787)	**PTW500***
	74 (1880)	41 (1041)	86 (2184)	1740 (789)	**PTW600***
	74 (1880)	41 (1041)	91 (2311)	2120 (962)	**PTW800***

Inch (mm)

* Options: Dewpoint dependent switching (DDS).
DDS Light includes: energy saving purge cycle control with high humidity alarm and indicator light. When ordering use -DL as suffix.
DDS includes: energy saving purge cycle control with high humidity alarm and digital dewpoint display. When ordering use -DS as suffix.

Service kits

Element kits

	5µ	0.01µ	1.0µ
P32	**P32KA00ESE**	**P32KA00ESC**	**P32KA00ES9**
P33	**P33KA00ESE**	**P33KA00ESC**	**P33KA00ES9**
P3NF	**P3NKA00ESE**	**P3NKA00ESCB**	**P3KNA00ES9**
35F	**FRP-95-505**	**MTP-95-502**	**MSP-95-502**

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Zero Air Loss Condensate Drains – ED Series

Zero air loss condensate drains are designed for economical removal of unwanted water, oil emulsions, and other liquids. These drains will only open when liquid is present and will not allow any compressed air to escape from the system.

Operating information

Maximum pressure:	232 PSIG (16 bar)
Ambient operating temperature:	35°F to 140°F (1.6°C to 60°C)
Voltages optional – NPT	115/50-60Hz, standard
BSPP ports	230/50-60Hz & 24VDC

Zero Air Loss Condensate Drains

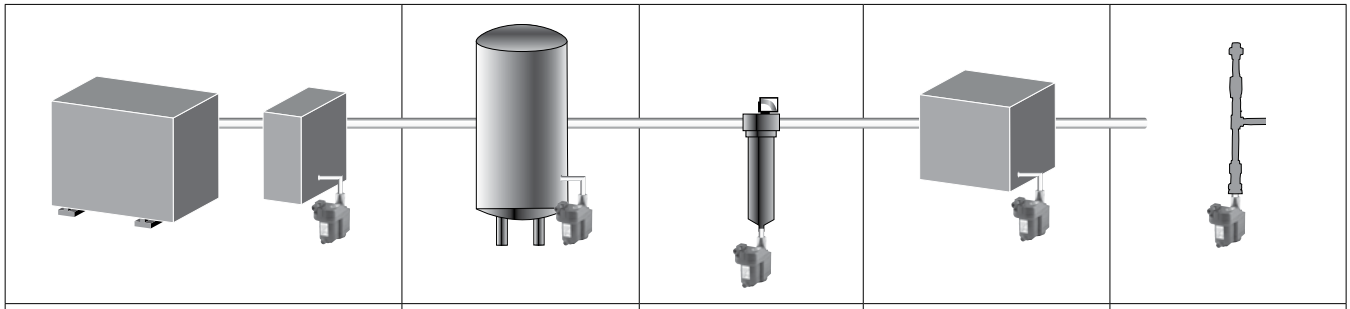
Port size (NPT)	Compressor aftercooler (SCFM)*	Capacity refrigeration dryer (SCFM)**	Filter (SCFM)	Drain capacity per day (gal/liter)	Model number	Service kit
1 @ 3/8 (in), 1 @ 3/8 (out)	—	—	424	6 (22.7)	**ED3002N115-K**	**SKED3000N115**
1 @ 1/2 (in), 1 @ 3/8 (out)	141	282	1,413	13 (49.2)	**ED3004N115-K**	**SKED3000N115**
2 @ 1/2 (in), 1 @ 3/8 (out)	247	494	2,472	23 (87.1)	**ED3007N115-K**	**SKED3000N115**
2 @ 1/2 (in), 1 @ 3/8 (out)	1,059	2,119	10,594	100 (378.5)	**ED3030N115-K**	**SKED3000N115**
2 @ 1/2 (in), 1 @ 3/8 (out)	3,532	7,063	35,315	330 (1,249.2)	**ED3100N115-K**	**SKED3000N115**

* Based on 100 PSI working pressure, air compressor inlet at 77°F (25°C) at 60% RH, air discharge temperature od 95°F (35°C) following the aftercooler, pressure dewpoint of 37°F (2.8°C) after the refrigerated dryer.

** Condensate from aftercooler or refrigerated dryer to be drained upstream – only for residual oil content or small quantities of condensate.

Note: A 6 ft. line cord will be included with each drain.

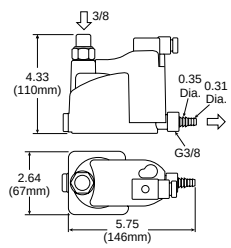
Where Are Condensate Drains Used?



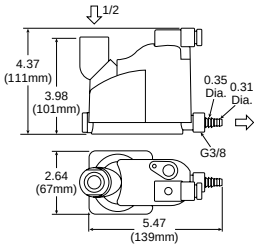
Compressor with Aftercooler	Receiver Tank	Filter	Air Dryer	Drip Leg
Removes the condensate that is collected after the air cools in the aftercooler	Removes the condensate that is collected when the air cools inside of the receiver tank	Removes the condensate that is collected in the filter bowl	Removes the condensate that is collected in the air dryer	Point-of-use applications: removes the condensate from compressed air pipes in a plant

Dimensions

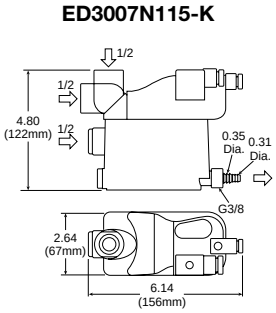
ED3002N115-K



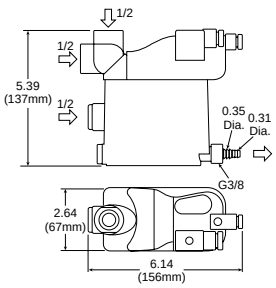
ED3004N115-K



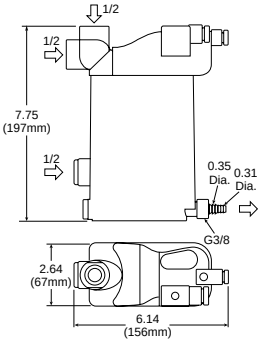
ED3007N115-K



ED3030N115-K



ED3100N115-K



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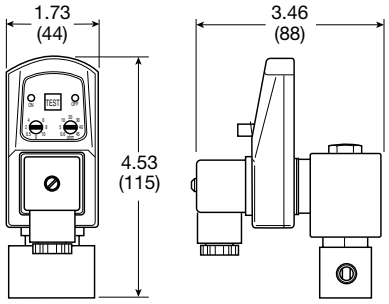
Automatic Electrical Drain Valve – WDV3-G

The WDV3 Electrical Drain is designed to remove condensate from compressors, compressed air dryers and receivers up to any size, type or manufacturer.

Benefits

- Does not air-lock during operation
- Compressed air systems up to any size
- The direct acting valve is serviceable
- Suitable for all types of compressors
- Test (micro-switch) feature
- High time cycle accuracy
- Large (4.5mm) valve orifice



Operating information

Operating pressure:	230 PSIG (16 bar)
Ambient operating temperature:	34°F to 130°F (1.1°C to 54°C)
Voltages:	115VAC, 230/50-60Hz, 24VDC
Coil insulation:	Class H, 340°F (171.1°C)
Current rating:	4mA maximum
Timer –	
Open time	.5 to 10 sec., adjustable
Cycle time	.5 to 45 min., adjustable

Material specifications

Description	
Valve body	Brass / stainless steel
Enclosure (IP65 / NEMA 4)	ABS plastic
Internal parts	Brass / stainless steel
Valve seals	FPM (Fluorocarbon)

Automatic Electrical Drain Valve

Port size	Primary voltage	Weight (kg)	Model number
1/4	120VAC	1.8 (0.8 kg)	**WDV3-G12BL**
1/4	230VAC	1.8 (0.8 kg)	**WDV3-G22BL**
3/8	120VAC	1.8 (0.8 kg)	**WDV3-G13BL**
3/8	230VAC	1.8 (0.8 kg)	**WDV3-G23BL**
1/2	120VAC	1.8 (0.8 kg)	**WDV3-G14BL**
1/2	230VAC	1.8 (0.8 kg)	**WDV3-G24BL**
1/2	24VDC	1.8 (0.8 kg)	**WDV3-G34BL**

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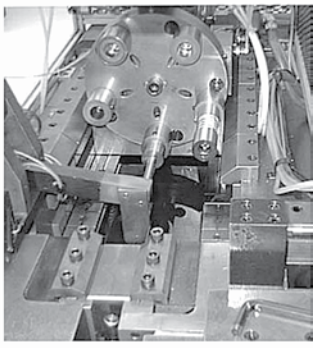

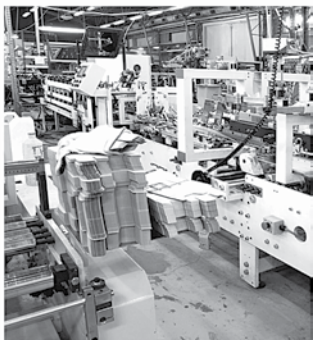

Accessories

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Accessories

Ball Valves / Plug Valves

- Forged brass, general purpose, industrial ball valves
- Stainless steel, general purpose, industrial ball valves
- One piece extruded brass body plug valves

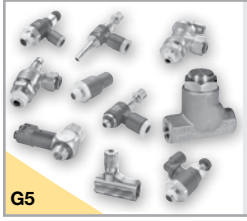
G3

Hose & Fittings

- 801 General purpose hose
- Push-on hose barb fittings

G4

Integrated Fittings



- Flow control regulators
- Inline check valves
- Blocking valves
- Threshold sensors

G5

Accessories – continued

Miscellaneous Accessories

- Tank valves & air chucks
- Mufflers & silencers
- Relief valves
- Quick exhaust / shuttle valves
- Pressure switches
- Blow guns
- Ports from M5 through 3/4 inch

G10

Quick Couplings

- SensoControl® (Product Highlight Only)
- Industrial interchange nipples –1/4" to 3/4" body size
- Sleevematic couplers –1/4" to 1/2" body size
- Saflomatic couplers –1/4" to 3/4" body size
- Economatic quick connect couplings –1/4" body size

G14

Tubing & Fittings

- Polyethylene tubing
- Nylon tubing
- Polyurethane tubing
- Push-to-connect, Prestolok composite fittings
- Push-to-connect, Prestolok metal fittings
- Pipe fittings

G18

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Female-Female Pipe Ends XV500P

Pipe thread	Flow dia.	Part number
1/4	.375	**XV500P-4**
3/8	.375	**XV500P-6**
1/2*	.500	**XV500P-8**
3/4**	.685	**XV500P-12**
1**	.875	**XV500P-16**

Female Pipe Ends, Lever Handle, Mini Ball Valve MV200

Pipe thread	Flow dia.	Part number
1/8	.31	**MV200-2**
1/4	.31	**MV200-4**
3/8	.31	**MV200-6**
1/2	.39	**MV200-8**

Male-Female Pipe Ends, Compact Handle, Mini Ball Valve MV608

Pipe thread	Flow dia.	Part number
1/8	.20	**MV608-2**
1/4	.31	**MV608-4**
3/8	.31	**MV608-6**
1/2	.39	**MV608-8**

Female Pipe Ends, Compact Handle, Mini Ball Valve MV609

Pipe thread	Flow dia.	Part number
1/8	.24	**MV609-2**
1/4	.31	**MV609-4**
3/8	.31	**MV609-6**
1/2	.39	**MV609-8**
3/8x1/4	.31	**MV609-6-4**

Female Pipe Ends, Panel Mount XV502SS

Pipe thread	Flow dia.	Part number
1/4	.380	**XV502SS-4**
3/8	.380	**XV502SS-6**
1/2	.500	**XV502SS-8**
3/4	.790	**XV502SS-12**
1	1.000	**XV502SS-16**
1-1/4	1.250	**XV502SS-20**
1-1/2	1.500	**XV502SS-24**
2	2.000	**XV502SS-32**

Male Pipe to Male Pipe Plug Valve PV607

Pipe thread	Flow dia.	Part number
1/8	.200	**PV607-2**
1/4	.200	**PV607-4**

Female Pipe to Male Pipe Plug Valve PV608

Pipe thread	Flow dia.	Part number
1/8	.200	**PV608-2**
1/4	.200	**PV608-4**

Female Pipe to Female Pipe Plug Valve PV609

Pipe thread	Flow dia.	Part number
1/8	.200	**PV609-2**
1/4	.200	**PV609-4**

Internal Seal Drain Cock DC602

Temperature Range: -65° to 250°F

Pipe thread	Part number
1/8	**DC602-2**
1/4	**DC602-4**

External Seal Drain Cock DC604

Temperature Range: -25° to 250°F

Pipe thread	Part number
1/8	**DC604-2***
1/4	**DC604-4**
3/8	**DC604-6***

* When assembled handle wings are down facing

Most popular.

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Hose & Fittings

801 Push-Lok Plus General Purpose Hose

Hose I.D. Inch	Hose O.D. Inch	Reel length	General part number*	Continuous part number
1/4	0.50	600 feet	**801-4-***-RL**	**801-4-***-7200**
3/8	0.63	450 feet	**801-6-***-RL**	**801-6-***-5400**
1/2	0.78	300 feet	**801-8-***-RL**	**801-8-***-3600**
5/8	0.91	250 feet	**801-10-***-RL**	**801-10-***-3000**
3/4	1.03	200 feet	**801-12-***-RL**	**801-12-***-2400**
1	1.28	200 feet	**801-16-***-RL**	**801-16-***-2400**

*** Available Colors**
GRA = gray
BLU = blue
RED = red
GRN = green
YEL = yellow
BLK = black

* General reels have no more than 3 lengths per reel, each no less than 20 feet.

30182 Push-on Hose Barb to Male Pipe

Thread (in)	Hose size (in)	Part number
1/8 x 27	1/4	**30182-2-4B**
1/4 x 18	1/4	**30182-4-4B**
1/4 x 18	3/8	**30182-4-6B**
3/8 x 18	3/8	**30182-6-6B**
1/2 x 14	3/8	**30182-8-6B**
3/8 x 18	1/2	**30182-6-8B**
1/2 x 14	1/2	**30182-8-8B**
1/2 x 14	5/8	**30182-8-10B**
3/4 x 14	1/2	**30182-12-8B**
3/4 x 14	3/4	**30182-12-12B**

30282 Push-on Hose Barb to Female Pipe

Thread (in)	Hose lize (in)	Part number
1/4 x 18	1/4	**30282-4-4B**
3/8 x 18	3/8	**30282-6-6B**
1/2 x 14	1/2	**30282-8-8B**

31382 Push-on Hose Barb to Male Pipe Swivel

Thread (in)	Hose size (in)	Part number
1/4 x 18	1/4	**31382-4-4**
3/8 x 18	3/8	**31382-6-6**
1/2 x 14	1/2	**31382-8-8***

* Steel

38282 Push-on Hose Barb Union

Hose size (in)	Part number
1/4	**38282-4-4B**
3/8	**38282-6-6B**
1/2	**38282-8-8B**

☐ Most popular.

30482 Push-on Hose Barb to Male SAE 45°

Thread (in)	Hose size (in)	Part number
7/16 x 20	1/4	**30482-4-4B**
1/2 x 20	1/4	**30482-5-4B**
5/8 x 18	3/8	**30482-6-6B**
3/4 x 16	1/2	**30482-8-8B**

30682 Push-on Hose Barb to Female SAE JIC 37° Swivel

Thread (in)	Hose size (in)	Part number
7/16 x 20	1/4	**30682-4-4B**
1/2 x 12	1/4	**30682-5-4B**
9/16 x 18	1/4	**30682-6-6B**
3/4 x 16	3/8	**30682-8-6B***
3/4 x 16	1/2	**30682-8-8B**
7/8 x 14	1/2	**30682-10-8B***
7/8 x 14	5/8	**30682-10-10B**
1-1/16 x 12	3/4	**30682-12-12B**

* 30682-8-6B & 30682-10-8B are dual 37/45 degree.

30882 Push-on Hose Barb to Female SAE 45° Swivel

Thread (in)	Hose lize (in)	Part number
7/16 x 20	1/4	**30882-4-4B**
1/2 x 20	1/4	**30882-5-4B**
5/8 x 18	3/8	**30882-6-6B**
3/4 x 16	3/8	**30682-8-6B***
3/4 x 16	1/2	**30882-8-8B**
7/8 x 14	1/2	**30682-10-8B***
7/8 x 14	5/8	**30882-10-8B**
1-1/16 x 14	3/4	**30882-12-12B**

* 30682-8-6B & 30682-10-8B are dual 37/45 degree.

37G82 Push-on Hose Barb to Female Pipe (NPSM) Swivel with Gasket

Thread (in)	Hose size (in)	Gasket	Part number
1/4- 18	1/4	07G-4	**37G82-4-4**
1/4- 18	3/8	07G-4	**37G82-4-6**
3/8- 18	3/8	07G-6	**37G82-6-6**
1/2- 14	1/2	07G-8	**37G82-8-8**
1/2- 14	5/8	07G-8	**37G82-8-10**
3/4- 14	3/4	07G-12	**37G82-12-12**

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FCC731 Compact Meter Out

Tube size (in)	NPT	Part number
5/32	1/8	**FCC731-5/32-2**
5/32	1/4	**FCC731-5/32-4**
1/4	1/8	**FCC731-4-2**
1/4	1/4	**FCC731-4-4**
3/8	1/4	**FCC731-6-4**
3/8	3/8	**FCC731-6-6**

FCC731 Compact Meter Out - BSPP

Tube size (mm)	BSPP	Part number
4	1/8	**FCC731-4M-2G**
6	1/8	**FCC731-6M-2G**
6	1/4	**FCC731-6M-4G**
8	1/8	**FCC731-8M-2G**
8	1/4	**FCC731-8M-4G**
8	3/8	**FCC731-8M-6G**
10	1/4	**FCC731-10M-4G**
10	3/8	**FCC731-10M-6G**
12	3/8	**FCC731-12M-6G**
12	1/2	**FCC731-12M-8G**

FCCB731 Compact Bi-Directional Flow Control

Tube size (in)	NPT	Part number
5/32	1/8	**FCCB731-5/32-2**
1/4	1/8	**FCCB731-4-2**
1/4	1/4	**FCCB731-4-4**

FCCB731 Compact Bi-directional Flow Control - BSPP

Tube size (mm)	BSPP	Part number
4	1/8	**FCCB731-4M-2G**
6	1/8	**FCCB731-6M-2G**
6	1/4	**FCCB731-6M-4G**
8	1/8	**FCCB731-8M-2G**
8	1/4	**FCCB731-8M-4G**
8	3/8	**FCCB731-8M-6G**

FCKC731 Knobless Meter Out Flow Control

Tube size (in)	NPT / UNF	Part number
1/8	10-32	**FCKC731-2-0**
1/8	1/8	**FCKC731-2-2**
5/32	10-32	**FCKC731-5/32-0**
5/32	1/8	**FCKC731-5/32-2**
1/4	10-32	**FCKC731-4-0**
1/4	1/8	**FCKC731-4-2**
1/4	1/4	**FCKC731-4-4**
5/16	1/8	**FCKC731-5-2**
5/16	1/4	**FCKC731-5-4**
3/8	1/4	**FCKC731-6-4**
3/8	3/8	**FCKC731-6-6**

FCKC731 Knobless Compact Flow Control - BSPP

Tube size (mm)	BSPP	Part number
4	M5x0.8	**FCKC731-4M-M5**
4	1/8	**FCKC731-4M-2G**
6	M5x0.8	**FCKC731-6M-M5**
6	1/8	**FCKC731-6M-2G**
6	1/4	**FCKC731-6M-4G**
8	1/8	**FCKC731-8M-2G**
8	1/4	**FCKC731-8M-4G**
8	3/8	**FCKC731-8M-6G**
10	1/4	**FCKC731-10M-4G**
10	3/8	**FCKC731-10M-6G**
10	1/2	**FCKC731-10M-8G**
12	3/8	**FCKC731-12M-6G**
12	1/2	**FCKC731-12M-8G**

FCKCB731 Knobless Bi-directional Flow Control - BSPP

Tube size (mm)	BSPP / M5	Part number
4	M5x0.8	**FCKCB731-4M-M5**
4	1/8	**FCKCB731-4M-2G**
6	M5x0.8	**FCKCB731-6M-M5**
6	1/8	**FCKCB731-6M-2G**
6	1/4	**FCKCB731-6M-4G**
8	1/8	**FCKCB731-8M-2G**
8	1/4	**FCKCB731-8M-4G**
8	3/8	**FCKCB731-8M-6G**

FCM731 Miniature Meter Out Flow Control

Tube size (in)	NPT	Part number
1/8	10-32	**FCM731-2-0**
1/8	1/8	**FCM731-2-2**
5/32	10-32	**FCM731-5/32-0**
5/32	1/8	**FCM731-5/32-2**
1/4	10-32	**FCM731-4-0**
1/4	1/8	**FCM731-4-2**
1/4	1/4	**FCM731-4-4**

FCM731 Miniature Flow Control - BSPP

Tube size (mm)	BSPP	Part number
3	M3x0.5	**FCM731-3M-M3**
3	M5x0.8	**FCM731-3M-M5**
4	M3x0.5	**FCM731-4M-M3**
4	M5x0.8	**FCM731-4M-M5**
4	1/8	**FCM731-4M-2G**
6	M5x0.8	**FCM731-6M-M5**
6	1/8	**FCM731-6M-2G**
6	1/4	**FCM731-6M-4G**
8	1/8	**FCM731-8M-2G**
8	1/4	**FCM731-8M-4G**
8	3/8	**FCM731-8M-6G**

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FCMB731 Miniature Bi-directional Flow Control - BSPP

Tube size (mm)	BSPP	Part number
4	M5x0.8	**FCMB731-4M-M5**
4	1/8	**FCMB731-4M-2G**
6	M5x0.8	**FCMB731-6M-M5**
6	1/8	**FCMB731-6M-2G**
6	1/4	**FCMB731-6M-4G**

FCMK731 Knobless Mini Meter Out Flow Control

Tube size (in)	NPT	Part number
1/8	10-32	**FCMK731-2-0**
1/8	1/8	**FCMK731-2-2**
5/32	10-32	**FCMK731-5/32-0**
5/32	1/8	**FCMK731-5/32-2**
1/4	10-32	**FCMK731-4-0**
1/4	1/8	**FCMK731-4-2**
1/4	1/4	**FCMK731-4-4**

FCCS731 Compact Swivel Outlet Flow Control

Tube size (in)	NPT	Part number
1/4	1/8	**FCCS731-4-2**
1/4	1/4	**FCCS731-4-4**
3/8	1/4	**FCCS731-6-4**
3/8	3/8	**FCCS731-6-6**

FCMS731 Mini Swivel Outlet Flow Control

Tube size (in)	NPT	Part number
5/32	10-32	**FCMS731-5/32-0**
5/32	1/8	**FCMS731-5/32-2**

FCMS731 Miniature Swivel Outlet - BSPP

Tube size (mm)	NPT	Part number
4	M5x0.8	**FCMS731-4M-M5**
4	1/8	**FCMS731-4M-2G**
6	M5x0.8	**FCMS731-6M-M5**
6	1/8	**FCMS731-6M-2G**

FCCS731 Compact Swivel Outlet - BSPP

Tube size (mm)	BSPP	Part number
6	1/8	**FCCS731-6M-2G**
6	1/4	**FCCS731-6M-4G**
8	1/8	**FCCS731-8M-2G**
8	1/4	**FCCS731-8M-4G**
10	3/8	**FCCS731-8M-6G**
10	1/4	**FCCS731-10M-4G**
10	3/8	**FCCS731-10M-6G**
12	3/8	**FCCS731-12M-6G**
12	1/2	**FCCS731-12M-8G**

☐ Most popular.

FCMSP731 Plug-In Mini Flow Control

Tube size (in)	Part number
1/8	**FCMSP731-2**
5/32	**FCMSP731-5/32**
1/4	**FCMSP731-4**

FCMSP701 Plug-In Miniature Flow Control

Tube size (mm)	Part number
4	**FCMSP701-4M**
6	**FCMSP701-6M**

FCCSP731 Plug-In Compact Flow Control

Tube size (mm)	Part number
6	**FCCSP731-6M**
8	**FCCSP731-8M**
10	**FCCSP731-10M**
12	**FCCSP731-12M**

FC832 In-Line Flow Control

Tube size (in)	Part number
5/32	**FC832-5/32**
1/4	**FC832-4**
5/16	**FC832-5**
3/8	**FC832-6**
1/2	**FC832-8**

FC832 In-Line Flow Control

Tube size (mm)	Part number
4	**FC832-4M**
6	**FC832-6M**
8	**FC832-8M**
10	**FC832-10M**
12	**FC832-12M**

FCB832 In-Line Bi-directional Flow Control

Tube size (in)	Part number
5/32	**FCB832-5/32**
1/4	**FCB832-4**
5/16	**FCB832-5**

FCB832 In-Line Bi-directional Flow Control

Tube size (mm)	Part number
4	**FCB832-4M**
6	**FCB832-6M**
8	**FCB832-8M**

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FCPM832 In-Line Panel Mountable Flow Control

Tube size (mm)	Part number
4	**FCPM832-4M**
6	**FCPM832-6M**
8	**FCPM832-8M**
10	**FCPM832-10M**
12	**FCPM832-12M**

FC836 Threaded In-Line Flow Control

Port size (in)	Part number
1/8	**FC836-2**
1/4	**FC836-4**
3/8	**FC836-6**
1/2	**FC836-8**

FC836 Threaded In-Line Flow Control - BSPP

Port size BSPP	Part number
1/8	**FC836-2G**
1/4	**FC836-4G**
3/8	**FC836-6G**
1/2	**FC836-8G**

337 Micrometer Flow Control Valves

Port size (in)	Part number.
1/8	**00337 1000**
1/4	**00337 1001**
3/8	**00337 1002**
1/2	**00337 1003**
3/4	**00337 1004**

337 Micrometer Flow Control Valves - BSPP

Port size (in)	Part number
1/8	**00337G1000**
1/4	**00337G1001**

338 Bi-directional Flow Control Valves

Port size (in)	Part number
1/8	**00338 1100**
1/4	**00338 1101**
3/8	**00338 1102**
1/2	**00338 1103**
3/4	**00338 1104**

338 Bi-directional Flow Control Valves - BSPP

Port size (in)	Part number
1/8	**00338G1100**
1/4	**00338G1101**

3250 Flow Control Valves

Port size (in)	Part number
1/8	**03250 0119**
1/4	**03250 0219**
3/8	**03250 0319**
1/2	**03250 0419**
3/4	**03250 0519**

3250 Flow Control Valves - BSPP

Port size (in)	Part number
1/8	**3250G0119**
1/4	**3250G0219**
3/8	**3250G0319**
1/2	**3250G0419**
3/4	**3250G0519**

3250 Flow Control Valves

Port size (in)	Part number
1	**3250 1000**
1-1/4	**3250 1250**
1-1/2	**3250 1500**

3250 Flow Control Valves - BSPP

Port size (in)	Part number
1	**3250G1000**
1-1/4	**3250G1250**
1-1/2	**3250G1500**

Most popular.

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3251 Series Flow Control Valves

Thread (NPT) Male	Thread (NPT) Female	Right angle flow control valves
1/8	1/8	**03251 0125**
1/4	1/4	**03251 0250**
3/8	3/8	**03251 0375**
1/2	1/2	**03251 0500**

		With Prestolok fittings
1/8	5/32	**03251 1215**
1/8	1/4	**03251 1225**
1/4	1/4	**03251 2525**
1/4	3/8	**03251 2538**
3/8	3/8	**03251 3838**

CAUTION: If it is possible that the ambient temperature may fall below freezing, the medium must be moisture-free to prevent internal damage or unpredictable behavior.

FC705 Push-to-Connect Metal Flow Control

Tube size (in)	NPT	Part number
5/32	1/8	**FC705-5/32-2**
1/4	1/8	**FC705-4-2**
1/4	1/4	**FC705-4-4**
3/8	1/4	**FC705-6-4**
3/8	3/8	**FC705-6-6**

FC701 Push-to-Connect Metal Flow Control - BSPP

Tube Size (mm)	BSPP	Part number
4	1/8	**FC701-4M-2G**
6	1/8	**FC701-6M-2G**
6	1/4	**FC701-6M-4G**
8	1/8	**FC701-8M-2G**
8	1/4	**FC701-8M-4G**
8	3/8	**FC701-8M-6G**
10	1/4	**FC701-10M-4G**
10	3/8	**FC701-10M-6G**
12	3/8	**FC701-12M-6G**
12	1/2	**FC701-12M-8G**
14	1/2	**FC701-14M-8G**

FC708 Threaded Port Meter Out Flow Control

Port size (in)	Part number
1/8	**FC708-2**
1/4	**FC708-4**
3/8	**FC708-6**
1/2	**FC708-8**

Most popular.

FC702 Threaded Port Metal Flow Control - BSPP

Port size BSPP	Part number
1/8	**FC702-2G**
1/4	**FC702-4G**
3/8	**FC702-6G**
1/2	**FC702-8G**

32PLCK In-Line Check Valve

Tube size (in)	Part number
5/32	**32PLCK-5/32**
1/4	**32PLCK-4**
5/16	**32PLCK-5**
3/8	**32PLCK-6**

32PLCK In-Line Check Valve

Tube size (mm)	Part number
4	**32PLCK-4M**
6	**32PLCK-6M**
8	**32PLCK-8M**
10	**32PLCK-10M**
12	**32PLCK-12M**

W68PLCK Male Check Valve

Tube size (in)	NPT / UNF	Part number
5/32	10-32	**68PLCK-5/32-0**
5/32	1/8	**W68PLCK-5/32-2**
1/4	1/8	**W68PLCK-4-2**
1/4	1/4	**W68PLCK-4-4**
3/8	1/4	**W68PLCK-6-4**
3/8	3/8	**W68PLCK-6-6**

W68PLCKI Male Check Valve - Meter In

Tube size (in)	NPT / UNF	Part number
5/32	10-32	**68PLCKI-5/32-0**
5/32	1/8	**W68PLCKI-5/32-2**
1/4	1/8	**W68PLCKI-4-2**
1/4	1/4	**W68PLCKI-4-4**
3/8	1/4	**W68PLCKI-6-4**
3/8	3/8	**W68PLCKI-6-6**

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68PLCK Male Check Valve Meter Out - BSPP

Tube size (mm)	BSPP	Part number
4	M5x0.8	**68PLCK-4M-M5**
4	1/8	**68PLCK-4M-2G**
6	1/8	**68PLCK-6M-2G**
6	1/4	**68PLCK-6M-4G**
8	1/8	**68PLCK-8M-2G**
8	1/4	**68PLCK-8M-4G**

68PLCKI Male Check Valve Meter In - BSPP

Tube size (mm)	BSPP	Part number
4	M5x0.8	**68PLCKI-4M-M5**
6	1/8	**68PLCKI-6M-2G**
8	1/8	**68PLCKI-8M-2G**
8	1/4	**68PLCKI-8M-4G**
10	3/8	**68PLCKI-10M-6G**
12	3/8	**68PLCKI-12M-6G**
12	1/2	**68PLCKI-12M-8G**

VC – Check Valve

Tube size (in)	O.D.	Part number
1/4	.66	**A4VC4-MG**
5/16	.70	**A5VC5-MG**
3/8	.80	**A6VC6-MG**

339 Check Valve

Port size	Part number
1/8"	**00339 3000**
1/4"	**00339 3001**
3/8"	**00339 3002**
1/2"	**00339 3003**
3/4"	**00339 3004**

339 Check Valve - BSPP

Port size	Part number
1/8"	**00339G3000**
1/4"	**00339G3001**

3047 Check Valve

Pipe thread	Part number
1/4"	**03047 0099**

FC601 Push-to-Connect Lock Out Valves

Tube size (in)	NPT	Part number
1/4	1/8	**FC601-4-2**
1/4	1/4	**FC601-4-4**
3/8	3/8	**FC601-6-6**
1/2	1/2	**FC601-8-8**

FC601 Push-to-Connect Lock-Out Valve - BSPP

Tube size (mm)	BSPP	Part number
6	1/8	**FC601-6M-2G**
6	1/4	**FC601-6M-4G**
8	1/4	**FC601-8M-4G**
8	3/8	**FC601-8M-6G**
10	3/8	**FC601-10M-6G**
12	1/2	**FC601-12M-8G**

FC602 Threaded Port Lock Out Valves

NPT 1	NPT 2	Part number
1/4	1/8	**FC602-2**
1/4	1/4	**FC602-4**
3/8	3/8	**FC602-6**
1/2	1/2	**FC602-8**

FC608 Threaded Port Lock-Out Valve - BSPP

BSPP 1	BSPP 2	Part number
1/8	1/4	**FC608-4G-2G**
1/4	1/4	**FC608-4G-4G**
3/8	3/8	**FC608-6G-6G**
1/2	1/2	**FC608-8G-8G**

PSBJ731 Pneumatic Threshold Sensor - 5/32 Pilot

NPT / UNF	Part number
10-32	**PSBJ731-0**
1/8	**PSBJ731-2**
1/4	**PSBJ731-4**
3/8	**PSBJ731-6**
1/2	**PSBJ731-8**

PSBJ731 Pneumatic Threshold Sensor - 4mm Pilot

BSPP	Part number
M5x0.8	**PSBJ731-M5**
1/8	**PSBJ731-2G**
1/4	**PSBJ731-4G**
3/8	**PSBJ731-6G**
1/2	**PSBJ731-8G**

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PSPJ731 Pneumatic Threshold Sensor - 10-32 Pilot

NPT	Part number
1/8	**PSPJ731-2**
1/4	**PSPJ731-4**
3/8	**PSPJ731-6**

PSBJ708 Pneumatic Threshold Sensor - M5 Pilot

BSPP	Part number
1/8	**PSBJ708-2G**
1/4	**PSBJ708-4G**

PSPE731 Pneumatic / Electric Threshold Sensor - BSPP

BSPP	Part number
M5x0.8	**PSPE731-M5**
1/8	**PSPE731-2G**
1/4	**PSPE731-4G**
3/8	**PSPE731-6G**
1/2	**PSPE731-8G**

Tank Valves & Air Chucks

09166 0060
1/8" pipe thread, dome shaped cap

Thread size	Part number
1/8	**09166 0060**

00645 0060
1/8" pipe thread at bottom, screwdriver type cap

Thread size	Part number
1/8	**00645 0060**

01468 0006
1/8" pipe thread part way up the stem, screwdriver type cap

Thread size	Part number
1/8	**01468 0006**

05499 0000
1/4" female port, ball-foot air chuck

Thread size	Part number
1/4	**05499 0000**

06739 0000
1/4" port, ball-foot air chuck with clip

Thread size	Part number
1/4	**06739 0000**

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Mufflers / Silencers

EM Sintered Bronze Muffler / Filters

Thread size	Part number
M5	**EMM5**
1/8	**EM12**
1/4	**EM25**
3/8	**EM37**
1/2	**EM50**
3/4	**EM75**
1	**EM100**
1-1/4	**EM125**
1-1/2	**EM150**

Muffler / Flow Controls

Thread size	Part number
1/8	**04502 0002**
1/4	**04504 0004**
3/8	**04506 0060**
1/2	**04508 0080**
3/4	**04512 0012**
1	**04516 0016**

Breather Vents

NOTE: Breather vents should not be used as exhaust mufflers.

Thread size	Part number
1/8	**04702 0002**
1/4	**04704 0004**
3/8	**04706 0006**
1/2	**04708 0008**
3/4	**04712 0012**
1	**04716 0016**
1-1/4	**04720 0020**
1-1/2	**04724 0024**

ES Silencer

Thread size	Part number
1/8	**ES12MC**
1/4	**ES25MC**
3/8	**ES37MC**
1/2	**ES50MC**
3/4	**ES75MC**
1	**ES100MC**
1-1/4	**ES125MC**
1-1/2	**ES150MC**

ASN Air Line Silencer, Plastic

Thread size	Part number
M5	**AS-5**
1/8	**ASN-6**
1/4	**ASN-8**
3/8	**ASN-10**
1/2	**ASN-15**

P6M G Thread, Air Line Silencer, Plastic

Thread size	Part number
M5	**P6M-PAC5**
G1/8	**P6M-PAB1**
G1/4	**P6M-PAB2**
G3/8	**P6M-PAB3**
G1/2	**P6M-PAB4**
G3/4	**P6M-PAB6**
G1	**P6M-PAB8**

ECS Reclassifier, Air Line Muffler

Thread size	Part number
1/2	**ECS3**
1	**ECS5**

Stainless Steel Mufflers

Pipe size	Part number NPT
1/4	**5500A2004**
1/2	**5500A4004**
1	**5500A6004**
2	**5500A9004 ****

** Nickel Plated

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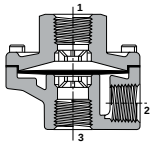
0R Quick Exhaust



Port 1	Port 2	Port 3	Flow (SCFM)	Part number with panel nut
Standard version				
1/4	1/4	3/8	150	**0R25NB**
1/4	3/8	3/8	240	**0R25PB**
3/8	3/8	3/8	240	**0R37B**
1/2	1/2	1/2	450	**0R50B**
3/4	3/4	3/4	550	**0R75B**
Nitrile diaphragms				
1/8	1/8	1/8	70	**0R12B**
1/8	1/8	1/4	70	**0R12NB**
1/4	1/4	1/4	90	**0R25B**
1/4	1/4	3/8	90	**0R25NFB**
3/8	3/8	3/8	240	**0R37FB**
3/4	3/4	3/4	550	**0R75FB**
Fluorocarbon diaphragms				
1/8	1/8	1/8	70	**0R12VB**
1/8	1/8	1/4	70	**0R12NVB**
1/4	1/4	1/4	90	**0R25VB**
3/8	3/8	3/8	240	**0R37VB**
1/2	1/2	1/2	450	**0R50VB**
3/4	3/4	3/4	550	**0R75VB**
PTFE diaphragms				
3/8	3/8	3/8	240	**0R37TB**

N164 Shuttle Valve

Thread size	Part number
1/8	**N164 1001**
1/4	**N164 2003**
3/8	**N164 3003**

RV Relief Valve

Pressure (PSI)	Part number
***	**RV01AN*** **

*** 010 through 200 psi

130 Relief Valve

Spring range	Part number no panel nut	Part number with panel nut
0-15 PSIG	**130-02AA**	**130-02AAP**
0-25 PSIG	**130-02A**	**130-02AP**
0-50 PSIG	**130-02B**	**130-02BP**
0-100 PSIG	**130-02C**	**130-02CP**

134 Relief Valve

Spring range	Part number no panel nut	Part number with panel nut
0-15 PSIG	**134-02AA**	**134-02AAP**
0-25 PSIG	**134-02A**	**134-02AP**
0-50 PSIG	**134-02B**	**134-02BP**
0-100 PSIG	**134-02C**	**134-02CP**

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Brass Nozzle Blow Gun

Inlet port	Part number
Lever operated	
1/4	**00475 0010**
Button operated	
1/4	**00470 0010**

Brass Nozzle Blow Gun

Inlet port	Part number
Lever operated	
1/4	**00475 0900**
Button operated	
1/4	**00470 0900**

Self-Regulating Blow Gun

Inlet port	Part number
Lever operated	
1/4	**00475 2900**

Pistol Grip Blow Gun

Inlet port	Part number
1/4	**BG441-NBL**

Brass Nozzle

Part number
00470 7020

Automatic Drip Leg Drain

Thread size	Part number
1/4	**06D1NA**
1/2	**06D3NA**

PPS1 Pressure Switch

Thread size	Part number
1/4 NPT	**PPS1-1C3-RHM**
1/8 NPT	**PPS1-2C3-RHM**
1/4" NPT	**PPS1-1C3-RWL**
1/8" NPT	**PPS1-2C3-RWL**

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Industrial Interchange Nipples

Hardened wear points and solid barstock construction provide long service life. Precision machined surfaces and hardened load-bearing areas resist the effects of mechanical shock in the most rugged applications. Industrial interchange nipples conform to MIL-C4109 and are for use with either Sleevmatic or Saflomatic couplers.

Female Pipe Thread

Body size (inches)	Thread size	Part number Steel
1/4	1/8-27	**H1C**
1/4	1/4-18	**H3C**
1/4	3/8-18	**H3C-E**
3/8	1/4-18	**H1E**
3/8	3/8-18	**H3E**
3/8	1/2-14	**H3E-F**
1/2	3/8-18	**H1F**
1/2	1/2-14	**H3F**
1/2	3/4-14	**H3F-G**
3/4	1/2-14	**H3G-F**
3/4	3/4-14	**H3G**
3/4	1-11½	**H3G-J**

Male Pipe Thread

Body size (inches)	Thread size	Part number Steel
1/4	1/8-27	**H0C**
1/4	1/4-18	**H2C**
1/4	3/8-18	**H2C-E**
3/8	1/8-27	**H00E**
3/8	1/4-18	**H0E**
3/8	3/8-18	**H2E**
3/8	1/2-14	**H2E-F**
1/2	3/8-18	**H0F**
1/2	1/2-14	**H2F**
1/2	3/4-14	**H2F-G**
3/4	1/2-14	**H2G-F**
3/4	3/4-14	**H2G**
3/4	1-11½	**H2G-J**

Standard Hose Barb

Body size (inches)	Hose I.D.	Part number Steel
1/4	1/4	**H8C**
1/4	5/16	**H8C-D**
1/4	3/8	**H9C**
3/8	3/8	**H5E**
3/8	1/2	**H6E**
1/2	3/8	**H4F**
1/2	1/2	**H5F**
1/2	3/4	**H5F-G**
3/4	1/2	**H5G-F**
3/4	3/4	**H5G**
3/4	1	**H5G-J**

Push-Lok Hose Barb*

Body size (inches)	Hose I.D.	Part number Steel
1/4	1/4	**H8CP**
1/4	3/8	**H9CP**
3/8	1/4	**H4EP**
3/8	3/8	**H5EP**
3/8	1/2	**H6EP**
1/2	3/8	**H4FP**
1/2	1/2	**H5FP**
1/2	1/2	**H6FP**

* Push-Lok hose barbs are designed for use with a push-lok hose and do not require clamps.

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Sleevmatic Couplers

Female Pipe Thread

Body size (inches)	Thread size	Part number Brass	Part number Steel
1/4	1/8-27	**B23A**	—
1/4	1/4-18	**B23**	—
1/4	3/8-18	**B23E**	—
3/8	1/4-18	—	**25C**
3/8	3/8-18	—	**25**
3/8	1/2-14	—	**25F**
1/2	3/8-18	—	**17E**
1/2	1/2-14	—	**17**
1/2	3/4-14	—	**17G**

Male Pipe Thread

Body size (inches)	Thread size	Part number Brass	Part number Steel
1/4	1/4-18	**B22**	—
1/4	3/8-18	**B22E**	—
3/8	1/4-18	—	**24C**
3/8	3/8-18	—	**24**
3/8	1/2-14	—	**24F**
1/2	3/8-18	—	**16E**
1/2	1/2-14	—	**16**
1/2	3/4-14	—	**16G**

Standard Hose Barb

Body size (inches)	Hose I.D.	Part number Brass	Part number Steel
1/4	1/4	**B20-3B**	—
1/4	5/16	**B20-4B**	—
1/4	3/8	**B20-5B**	—
3/8	3/8	—	**24-5B**
3/8	1/2	—	**24-6B**
1/2	3/8	—	**16-5B**
1/2	1/2	—	**16-6B**
1/2	3/4	—	**16-7B**

Push-Lok Hose Barb*

Body size (inches)	Hose I.D.	Part number Brass	Part number Steel
1/4	3/8	**B20-5BP**	—
3/8	3/8	—	**24-5BP**
1/2	3/8	—	**16-5BP**
1/2	1/2	—	**16-6BP**

* Push-Lok hose barbs are designed for use with push-lok hose and do not require clamps.

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Saflomatic Couplers

Female Pipe Thread

Body size (inches)	Thread size	Part number Brass
1/4	1/8-27	**B33A**
1/4	1/4-18	**B33**
1/4	3/8-18	**B33E**
3/8	1/4-18	**B35C**
3/8	3/8-18	**B35**
3/8	1/2-14	**B35F**
1/2	3/8-18	**B37E**
1/2	1/2-14	**B37**
1/2	3/4-14	**B37G**
3/4	1/2-14	**B39F**
3/4	3/4-14	**B39**
3/4	1-11½	**B39J**

Male Pipe Thread

Body size (inches)	Thread size	Part number Brass
1/4	1/8-27	**B32A**
1/4	1/4-18	**B32**
1/4	3/8-18	**B32E**
3/8	1/4-18	**B34C**
3/8	3/8-18	**B34**
3/8	1/2-14	**B34F**
1/2	3/8-18	**B36E**
1/2	1/2-14	**B36**
1/2	3/4-14	**B36G**
3/4	3/4-14	**B38**
3/4	1-11½	**B38J**

Standard Hose Barb

Body size (inches)	Hose I.D.	Part number Brass
1/4	1/4	**B30-3B**
1/4	5/16	**B30-4B**
1/4	3/8	**B30-5B**
3/8	3/8	**B34-5B**
3/8	1/2	**B34-6B**
1/2	1/2	**B36-6B**
1/2	3/4	**B36-7B**
3/4	3/4	**B38-7B**
3/4	1	**B38-8B**

Push-Lok Hose Barb*

Body size (inches)	Thread size	Part number Brass
1/4	1/4	**B30-3BP**
1/4	3/8	**B30-5BP**
3/8	3/8	**B34-5BP**
1/2	1/2	**B36-6BP**

* Push-Lok hose barbs are designed for use with push-lok hose and do not require clamps.

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Couplers Female Pipe Thread

Body size (inches)	Thread size	Part number Brass
1/4	1/4-18 NPTF	**B53**
1/4	3/8-18 NPTF	**B53E**

Couplers Male Pipe Thread

Body size (inches)	Thread size	Part number Brass
1/4	1/4-18	**B52**
1/4	3/8-18	**B52E**

Couplers Push-Lok Hose Barb*

Body size (inches)	Hose I.D.	Part number Brass
1/4	1/4	**B50-03BP**
1/4	3/8	**B50-05BP**

* Push-Lok hose barbs are designed for use with push-lok hose and do not require clamps.

Nipples Female Pipe Thread

Body size (inches)	Thread size	Part number Steel
1/4	1/4-18	**A3C**

Nipples Male Pipe Thread

Body size (inches)	Thread size	Part number Steel
1/4	1/4-18	**A2C**

Nipples Standard Hose Barb

Body size (inches)	Hose I.D.	Part number Steel
1/4	1/4	**A8C**

Nipples Push-Lok Hose Barb*

Body size (inches)	Thread size	Part number Steel
1/4	1/4	**A8CP**

* Push-Lok barbs are designed for use with push-lok hose and do not require clamps.

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Polyethylene Tubing

O.D.	I.D.	Reel length (feet)	Color	Part number
1/4	.170	100	Natural	**E-43-0100**
1/4	.170	500	Natural	**E-43-0500**
1/4	.170	1000	Natural	**E-43-1000**
1/4	.170	100	Black	**EB-43-0100**
1/4	.170	500	Black	**EB-43-0500**
1/4	.170	1000	Black	**EB-43-1000**
1/4	.170	100	Red	**E-43-R-0100**
1/4	.170	500	Red	**E-43-R-0500**
1/4	.170	100	Blue	**E-43-B-0100**
1/4	.170	500	Blue	**E-43-B-0500**
1/4	.170	500	Orange	**E-43-O-0500**
1/4	.170	500	Yellow	**E-43-Y-0500**
1/4	.170	500	Purple	**E-43-P-0500**
1/4	.170	500	Green	**E-43-G-0500**
5/16	.187	500	Natural	**E-53-0500**
5/16	.187	500	Black	**EB-53-0500**
3/8	.250	100	Natural	**E-64-0100**
3/8	.250	500	Natural	**E-64-0500**
3/8	.250	100	Black	**EB-64-0100**
3/8	.250	500	Black	**EB-64-0500**
3/8	.250	500	Red	**E-64-R-0500**
3/8	.250	500	Blue	**E-64-B-0500**
3/8	.250	500	Orange	**E-64-O-0500**
3/8	.250	500	Yellow	**E-64-Y-0500**
3/8	.250	500	Purple	**E-64-P-0500**
3/8	.250	500	Green	**E-64-G-0500**
1/2	.375	100	Natural	**E-86-0100**
1/2	.375	100	Black	**EB-86-0100**
5/8	.500	100	Natural	**E-108-0100**
5/8	.500	Coil	Black	**EB-108-0100**

☐ Most popular. For technical information see CD

Polyethelene Tubing

O.D.	I.D.	Reel length (feet)	Part number
5/32	.096	500	**PEFR-2.5-0500**
1/4	.170	500	**PEFR-4-0500**
1/4	.170	1000	**PEFR-4-1000**
3/8	.250	500	**PEFR-6-0500**
1/2	.375	250	**PEFR-8-0250**

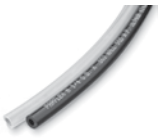
☐ Most popular.

Polyurethane Tubing

O.D.	I.D.	Reel length (feet)	Part number*
1/8	1/16	500	**U-21-xxx-0500**
		250	**U-21-xxx-0250**
1/4	1/8	500	**U-42-xxx-0500**
		250	**U-42-xxx-0250**
3/8	1/4	250	**U-64-xxx-0250**
		100 (coil)	**U-64-xxx-0100**
1/2	3/8	250	**U-86-xxx-0250**
		100 (coil)	**U-86-xxx-0100**

* xxx = Colors: Clear-Blank, Black-BLK, Green-GRN, Red-RED, Yellow-YEL, Blue-BLU, Orange-ORG, Gray-GRA (**Example: U-21-BLK-0250**)

Nylon Tubing



O.D.	I.D.	Reel length (feet)	Color	Part number
1/8	.093	250	Natural	**NN-2-016**
1/8	.093	250	Black	**NB-2-016**
1/8	.064	250	Natural	**NN-2-031**
1/8	.064	250	Black	**NB-2-031**
5/32	.106	250	Natural	**NN-2.5-025**
5/32	.106	250	Black	**NB-2.5-025**
3/16	.138	250	Natural	**NN-3-025**
3/16	.138	250	Black	**NB-3-025**
3/16	.096	250	Natural	**NN-3-046**
3/16	.096	250	Black	**NB-3-046**
1/4	.180	250	Natural	**NN-4-035**
1/4	.180	250	Black	**NB-4-035**
1/4	.170	250	Natural	**NN-4-040**
1/4	.170	250	Black	**NB-4-040**
1/4	.127	250	Natural	**NN-4-062**
1/4	.127	250	Black	**NB-4-062**
5/16	.233	250	Natural	**NN-5-040**
5/16	.233	250	Black	**NB-5-040**
3/8	.275	250	Natural	**NN-6-050**
3/8	.275	250	Black	**NB-6-050**
3/8	.190	250	Natural	**NN-6-093**
3/8	.190	250	Black	**NB-6-093**
1/2	.375	250	Natural	**NN-8-062**
1/2	.375	250	Black	**NB-8-062**
1/2	.253	250	Natural	**NN-8-124**
1/2	.253	250	Black	**NB-8-124**

*Suggested working pressure is 1/4 of burst pressure.

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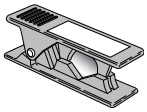
Nylon Tubing

O.D.	I.D.	Reel length (feet)	Color	Part number
1/8	.091	500	Natural	**NNR-2-017**
1/8	.091	500	Black	**NBR-2-017**
1/8	.073	500	Natural	**NNR-2-026**
1/8	.073	500	Black	**NBR-2-026**
3/16	.140	500	Natural	**NNR-3-024**
3/16	.140	500	Black	**NBR-3-024**
3/16	.110	500	Natural	**NNR-3-039**
3/16	.110	500	Black	**NBR-3-039**
1/4	.180	250	Natural	**NNR-4-035**
1/4	.180	250	Black	**NBR-4-035**
1/4	.150	250	Natural	**NNR-4-050**
1/4	.150	250	Black	**NBR-4-050**
5/16	.233	250	Natural	**NNR-5-040**
5/16	.233	250	Black	**NBR-5-040**
3/8	.279	250	Natural	**NNR-6-048**
3/8	.279	250	Black	**NBR-6-048**
3/8	.225	250	Natural	**NNR-6-075**
3/8	.225	250	Black	**NBR-6-075**
1/2	.376	250	Natural	**NNR-8-062**
1/2	.376	250	Black	**NBR-8-062**
1/2	.350	250	Natural	**NNR-8-075**
1/2	.350	250	Black	**NBR-8-075**

*Suggested working pressure is 1/4 of burst pressure.

Plastic Tube Cutter



Part number
PTC-001

Replacement Blades

Part number
PTC-001RB

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W369PLP Male Elbow Swivel 90°

Tube size (in.)	Thread NPT / UNF	Part number
1/8	10-32	**369PLP-2-0**
1/8	1/16	**W369PLP-2-1**
1/8	1/8	**W369PLP-2-2**
1/8	1/4	**W369PLP-2-4**
5/32	10-32	**369PLP-5/32-0**
5/32	1/8	**W369PLP-5/32-2**
5/32	1/4	**W369PLP-5/32-4**
3/16	1/8	**W369PLP-3-2**
1/4	10-32	**369PLP-4-0**
1/4	1/8	**W369PLP-4-2**
1/4	1/4	**W369PLP-4-4**
1/4	3/8	**W369PLP-4-6**
5/16	1/8	**W369PLP-5-2**
5/16	1/4	**W369PLP-5-4**
5/16	3/8	**W369PLP-5-6**
3/8	1/8	**W369PLP-6-2**
3/8	1/4	**W369PLP-6-4**
3/8	3/8	**W369PLP-6-6**
3/8	1/2	**W369PLP-6-8**
1/2	1/4	**W369PLP-8-4**
1/2	3/8	**W369PLP-8-6**
1/2	1/2	**W369PLP-8-8**

W369PLPX Extended Male Elbow

Tube size (in.)	Thread NPT / UNF	Part number
1/8	10-32	**369PLPX-2-0**
1/8	1/8	**W369PLPX-2-2**
1/8	1/4	**W369PLPX-2-4**
5/32	10-32	**369PLPX-5/32-0**
5/32	1/8	**W369PLPX-5/32-2**
5/32	1/4	**W369PLPX-5/32-4**
1/4	10-32	**369PLPX-4-0**
1/4	M7	**369PLPX-4-M7**
1/4	1/8	**W369PLPX-4-2**
1/4	1/4	**W369PLPX-4-4**
1/4	3/8	**W369PLPX-4-6**
5/16	1/8	**W369PLPX-5-2**
5/16	1/4	**W369PLPX-5-4**
3/8	1/8	**W369PLPX-6-2**
3/8	1/4	**W369PLPX-6-4**
3/8	3/8	**W369PLPX-6-6**

W379PLP Male Elbow 45°

Tube size (in.)	Thread NPT / UNF	Part number
1/8	10-32	**379PLP-2-0**
1/8	1/8	**W379PLP-2-2**
1/4	1/8	**W379PLP-4-2**
1/4	1/4	**W379PLP-4-4**
1/4	M7	**W379PLP-4-M7**
3/8	1/4	**W379PLP-6-4**
3/8	3/8	**W379PLP-6-6**

W372PLP Male Branch Tee Swivel

Tube size (in.)	Thread NPT / UNF	Part number
1/8	10-32	**372PLP-2-0**
1/8	1/16	**W372PLP-2-1**
1/8	1/8	**W372PLP-2-2**
1/8	1/4	**W372PLP-2-4**
5/32	10-32	**372PLP-5/32-0**
5/32	1/8	**W372PLP-5/32-2**
5/32	1/4	**W372PLP-5/32-4**
3/16	1/8	**W372PLP-3-2**
1/4	1/8	**W372PLP-4-2**
1/4	1/4	**W372PLP-4-4**
1/4	3/8	**W372PLP-4-6**
5/16	1/8	**W372PLP-5-2**
5/16	1/4	**W372PLP-5-4**
5/16	3/8	**W372PLP-5-6**
3/8	1/8	**W372PLP-6-2**
3/8	1/4	**W372PLP-6-4**
3/8	3/8	**W372PLP-6-6**
3/8	1/2	**W372PLP-6-8**
1/2	1/4	**W372PLP-8-4**
1/2	3/8	**W372PLP-8-6**
1/2	1/2	**W372PLP-8-8**

☐ Most popular.

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W371PLP Male Run Tee Swivel

Tube size (in.)	Thread NPT / UNF	Part number
1/8	10-32	**371PLP-2-0**
1/8	1/16	**W371PLP-2-1**
1/8	1/8	**W371PLP-2-2**
5/32	10-32	**371PLP-5/32-0**
5/32	1/8	**W371PLP-5/32-2**
5/32	1/4	**W371PLP-5/32-4**
3/16	1/8	**W371PLP-3-2**
1/4	1/8	**W371PLP-4-2**
1/4	1/4	**W371PLP-4-4**
1/4	3/8	**W371PLP-4-6**
5/16	1/8	**W371PLP-5-2**
5/16	1/4	**W371PLP-5-4**
5/16	3/8	**W371PLP-5-6**
3/8	1/8	**W371PLP-6-2**
3/8	1/4	**W371PLP-6-4**
3/8	3/8	**W371PLP-6-6**
3/8	1/2	**W371PLP-6-8**
1/2	1/4	**W371PLP-8-4**
1/2	3/8	**W371PLP-8-6**
1/2	1/2	**W371PLP-8-8**

W68PLPSP Male Standpipe

Tube size (in.)	Thread NPT / UNF	Part number
5/32	10-32	**68PLPSP-5/32-0**
5/32	1/8	**W68PLPSP-5/32-2**
5/32	1/4	**W68PLPSP-5/32-4**
1/4	1/8	**W68PLPSP-4-2**
1/4	1/4	**W68PLPSP-4-4**
5/16	1/8	**W68PLPSP-5-2**
5/16	1/4	**W68PLPSP-5-4**
3/8	1/8	**W68PLPSP-6-2**
3/8	1/4	**W68PLPSP-6-4**
3/8	3/8	**W68PLPSP-6-6**
1/2	3/8	**W68PLPSP-8-6**
1/2	1/2	**W68PLPSP-8-8**

W368PLP Male Y Connector

Tube size (in.)	Thread NPT / UNF	Part number
5/32	**1/8**	**W368PLP-5/32-2**
5/32	**1/4**	**W368PLP-5/32-4**
1/4	**1/8**	**W368PLP-4-2**
1/4	**1/4**	**W368PLP-4-4**
3/8	**1/4**	**W368PLP-6-4**
3/8	**3/8**	**W368PLP-6-6**

☐ Most popular.

32PLP Equal Union

Tube Size (in.)	Part number
1/8	**32PLP-2**
5/32	**32PLP-5/32**
3/16	**32PLP-3**
1/4	**32PLP-4**
5/16	**32PLP-5**
3/8	**32PLP-6**
1/2	**32PLP-8**

365PLP Union Elbow

Tube Size (in.)	Part number
1/8	**365PLP-2**
5/32	**365PLP-5/32**
3/16	**365PLP-3**
1/4	**365PLP-4**
5/16	**365PLP-5**
3/8	**365PLP-6**
1/2	**365PLP-8**

364PLP Union Tee

Tube Size (in.)	Part number
1/8	**364PLP-2**
5/32	**364PLP-5/32**
3/16	**364PLP-3**
1/4	**364PLP-4**
5/16	**364PLP-5**
3/8	**364PLP-6**
1/2	**364PLP-8**

362PLP Union Y Connector

1 Tube size (in.)	2 Tube size (in.)	Part number
1/8	1/8	**362PLP-2**
1/8	1/4	**362PLP-2-4**
5/32	5/32	**362PLP-5/32**
5/32	1/4	**362PLP-5/32-4**
1/4	1/4	**362PLP-4**
1/4	3/8	**362PLP-4-6**
5/16	5/16	**362PLP-5**
3/8	3/8	**362PLP-6**

362PLPD Double Y Connector

1 Tube size (in.)	2 Tube size (in.)	Part number
5/32	5/32	**362PLPD-5/32**
5/32	1/4	**362PLPD-5/32-4**

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24PLP Multiple Tee

1 Tube size (in.)	2 Tube size (in.)	Part number
1/4	5/32	**24PLP-4-5/32**
1/4	1/4	**24PLP-4-4**
5/16	5/32	**24PLP-5-5/32**
3/8	1/4	**24PLP-6-4**

24PLPD Double Multiple Tee

1 Tube size (in.)	2 Tube size (in.)	Part number
1/4	5/32	**24PLPD-4-5/32**
1/4	1/4	**24PLPD-4-4**
5/16	5/32	**24PLPD-5-5/32**
3/8	1/4	**24PLPD-6-4**

347PLP Equal Cross

Tube Size (in.)	Part number
5/32	**347PLP-5/32**
1/4	**347PLP-4**
5/16	**347PLP-5**

32PLPRC Connector for 2 Tubes

Tube Size (in.)	Part number
5/32	**32PLPRC-5/32**
1/4	**32PLPRC-4**
5/16	**32PLPRC-5**

32PLPDRC Connector for 3 Tubes

Tube Size (in.)	Part number
5/32	**32PLPDRC-5/32**
5/16	**32PLPDRC-5**

377PLP Female Branch Tee Swivel

Tube size (in.)	Thread NPT / UNF	Part number
1/8	1/8	**377PLP-2-2**
5/32	1/8	**377PLP-5/32-2**
5/32	1/4	**377PLP-5/32-4**
1/4	1/8	**377PLP-4-2**
1/4	1/4	**377PLP-4-4**
5/16	1/8	**377PLP-5-2**
5/16	1/4	**377PLP-5-4**
3/8	1/4	**377PLP-6-4**
1/2	3/8	**377PLP-8-6**

☐ Most popular.

370PLP Female Elbow Swivel

Tube size (in.)	Thread NPT	Part number
1/8	1/8	**370PLP-2-2**
5/32	1/8	**370PLP-5/32-2**
5/32	1/4	**370PLP-5/32-4**
1/4	1/8	**370PLP-4-2**
1/4	1/4	**370PLP-4-4**
5/16	1/8	**370PLP-5-2**
5/16	1/4	**370PLP-5-4**
3/8	1/4	**370PLP-6-4**
1/2	3/8	**370PLP-8-6**

32PLPBH Bulkhead Union

Tube Size (in.)	Part number
1/8	**32PLPBH-2**
5/32	**32PLPBH-5/32**
1/4	**32PLPBH-4**
5/16	**32PLPBH-5**
3/8	**32PLPBH-6**
1/2	**32PLPBH-8**

365PLPBH Equal Bulkhead Elbow

Tube size (in.)	Thread NPT / UNF	Part number
1/8	13	**365PLPBH-2**
5/32		**365PLPBH-5/32**
1/4	18	**365PLPBH-4**
5/16		**365PLPBH-5**
3/8	22	**365PLPBH-6**
1/2	29	**365PLPBH-8**

369PLPSP Plug-In Elbow

1 Tube size (in.)	2 Tube size (in.)	Part number
1/8	1/8	**369PLPSP-2**
5/32	5/32	**369PLPSP-5/32**
5/32	1/4	**369PLPSP-5/32-4**
1/4	1/4	**369PLPSP-4**
1/4	3/8	**369PLPSP-4-6**
5/16	5/16	**369PLPSP-5**
3/8	3/8	**369PLPSP-6**
1/2	1/2	**369PLPSP-8**

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369PLPSPX Extended Plug-In Elbow

1 Tube size (in.)	2 Tube size (in.)	Part number
1/8	1/8	**369PLPSPX-2**
5/32	5/32	**369PLPSPX-5/32**
1/4	1/4	**369PLPSPX-4**
5/16	5/16	**369PLPSPX-5**
3/8	3/8	**369PLPSPX-6**

379PLPSP 45° Plug-In Elbow

1 Tube size (in.)	2 Tube size (in.)	Part number
1/8	1/8	**379PLPSP-2**
5/32	5/32	**379PLPSP-5/32**
1/4	1/4	**379PLPSP-4**
5/16	5/16	**379PLPSP-5**
3/8	3/8	**379PLPSP-6**

372PLPSP Plug-In Branch Tee

1 Tube size (in.)	2 Tube size (in.)	Part number
1/8	1/8	**372PLPSP-2**
5/32	5/32	**372PLPSP-5/32**
1/4	1/4	**372PLPSP-4**
5/16	5/16	**372PLPSP-5**
3/8	3/8	**372PLPSP-6**
1/2	1/2	**372PLPSP-8**

371PLPSP Plug-In Run Tee

1 Tube size (in.)	2 Tube size (in.)	Part number
5/32	5/32	**371PLPSP-5/32**
1/4	1/4	**371PLPSP-4**
5/16	5/16	**371PLPSP-5**
3/8	3/8	**371PLPSP-6**
1/2	1/2	**371PLPSP-8**

362PLPSP Plug-In Y

1 Tube size (in.)	2 Tube size (in.)	Part number
1/8	1/8	**362PLPSP-2**
5/32	5/32	**362PLPSP-5/32**
1/4	1/4	**362PLPSP-4**
5/16	5/16	**362PLPSP-5**
3/8	3/8	**362PLPSP-6**

☐ Most popular.

67PLP Tube End Reducer

1 Tube size (in.)	2 Tube size (in.)	Part number
1/8	5/32	**67PLP-2-5/32**
1/8	3/16	**67PLP-2-3**
1/8	1/4	**67PLP-2-4**
5/32	3/16	**67PLP-5/32-3**
5/32	1/4	**67PLP-5/32-4**
5/32	5/16	**67PLP-5/32-5**
5/32	3/8	**67PLP-5/32-6**
3/16	5/16	**67PLP-3-5**
3/16	1/4	**67PLP-3-4**
1/4	5/16	**67PLP-4-5**
1/4	3/8	**67PLP-4-6**
1/4	1/2	**67PLP-4-8**
5/16	3/8	**67PLP-5-6**
5/16	1/2	**67PLP-5-8**
3/8	1/2	**67PLP-6-8**

32PLPSP Tube Expander

1 Tube size (in.)	2 Tube size (in.)	Part number
1/4	1/8	**32PLPSP-4-2**
1/4	6M	**32PLPSP-4-6M**
1/4	5/32	**32PLPSP-4-5/32**
1/4	3/16	**32PLPSP-4-3**
3/8	1/4	**32PLPSP-6-4**

322PLPSP Barbed Connector

OD 1	OD 2	OD 3	Part number
5/32	0.12	0.20	**322PLPSP-2-5/32**
5/32	0.20	0.28	**322PLPSP-5M-5/32**
1/4	3/16		**322PLPSP-3-4**
5/16	0.25	0.34	**322PLPSP-4-5**
3/8	0.32	0.39	**322PLPSP-5-5**
3/8	0.32	0.39	**322PLPSP-5-6**

63PLP Double Male Union

Tube size (in.)	Part number
5/32	**63PLP-5/32**
1/4	**63PLP-4**
5/16	**63PLP-5**
3/8	**63PLP-6**
1/2	**63PLP-8**

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639PLP Plug

Tube size (in.)	Part number
1/8	**639PLP-2**
5/32	**639PLP-5/32**
3/16	**639PLP-3**
1/4	**639PLP-4**
5/16	**639PLP-5**
3/8	**639PLP-6**
1/2	**639PLP-8**

W369PLP Male Elbow

Tube size (mm)	Thread NPT	Part number
4	1/8	**W369PLP-4M-2**
4	1/4	**W369PLP-4M-4**
6	1/8	**W369PLP-6M-2**
6	1/4	**W369PLP-6M-4**
8	1/8	**W369PLP-8M-2**
8	1/4	**W369PLP-8M-4**
8	3/8	**W369PLP-8M-6**
10	1/4	**W369PLP-10M-4**
10	3/8	**W369PLP-10M-6**
10	1/2	**W369PLP-10M-8**
12	3/8	**W369PLP-12M-6**
12	1/2	**W369PLP-12M-8**

W372PLP Male Branch Tee Swivel

Tube size (in.)	Thread NPT / UNF	Part number
1/8	10-32	**372PLP-2-0**
1/8	1/16	**W372PLP-2-1**
1/8	1/8	**W372PLP-2-2**
1/8	1/4	**W372PLP-2-4**
5/32	10-32	**372PLP-5/32-0**
5/32	1/8	**W372PLP-5/32-2**
5/32	1/4	**W372PLP-5/32-4**
3/16	1/8	**W372PLP-3-2**
1/4	1/8	**W372PLP-4-2**
1/4	1/4	**W372PLP-4-4**
1/4	3/8	**W372PLP-4-6**
5/16	1/8	**W372PLP-5-2**
5/16	1/4	**W372PLP-5-4**
5/16	3/8	**W372PLP-5-6**
3/8	1/8	**W372PLP-6-2**
3/8	1/4	**W372PLP-6-4**
3/8	3/8	**W372PLP-6-6**
3/8	1/2	**W372PLP-6-8**
1/2	1/4	**W372PLP-8-4**
1/2	3/8	**W372PLP-8-6**
1/2	1/2	**W372PLP-8-8**

☐ Most popular.

32PLP Union

Tube size (mm)	Part number
3	**32PLP-3M**
4	**32PLP-4M**
6	**32PLP-6M**
8	**32PLP-8M**
10	**32PLP-10M**
12	**32PLP-12M**
14	**32PLP-14M**

365PLP Union Elbow

Tube size (mm)	Part number
4	**365PLP-4M**
6	**365PLP-6M**
8	**365PLP-8M**
10	**365PLP-10M**
12	**365PLP-12M**
14	**365PLP-14M**

364PLP Union Tee

Tube size (mm)	Part number
3	**364PLP-3M**
4	**364PLP-4M**
6	**364PLP-6M**
8	**364PLP-8M**
10	**364PLP-10M**
12	**364PLP-12M**
14	**364PLP-14M**

362PLP Union Y Connector

1 Tube size (mm)	2 Tube size (mm)	Part number
4	4	**362PLP-4M**
6	6	**362PLP-6M**
8	8	**362PLP-8M**
10	10	**362PLP-10M**
12	12	**362PLP-12M**
4	6	**362PLP-4M-6M**
6	8	**362PLP-6M-8M**
8	10	**362PLP-8M-10M**
10	12	**362PLP-10M-12M**

362PLPD Double Y Connector

1 Tube size (mm)	2 Tube size (mm)	Part number
4	4	**362PLPD-4M**
6	6	**362PLPD-6M**
4	6	**362PLPD-4M-6M**
6	8	**362PLPD-6M-8M**

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24PLP Multiple Tee

1 Tube size (mm)	2 Tube size (mm)	Part number
6	4	**24PLP-6M-4M**
8	4	**24PLP-8M-4M**
8	6	**24PLP-8M-6M**
10	6	**24PLP-10M-6M**
10	8	**24PLP-10M-8M**

24PLPD Double Multiple Tee

1 Tube size (mm)	2 Tube size (mm)	Part number
6	4	**24PLPD-6M-4M**
8	4	**24PLPD-8M-4M**
8	6	**24PLPD-8M-6M**
10	6	**24PLPD-10M-6M**
10	8	**24PLPD-10M-8M**

347PLP Equal Cross

Tube size (mm)	Part number
4	**347PLP-4M**
6	**347PLP-6M**
8	**347PLP-8M**

32PLPRC Connector for 2 Tubes

Tube size (mm)	Part number
4	**32PLPRC-4M**
6	**32PLPRC-6M**
8	**32PLPRC-8M**

32PLPDRC Connector for 3 Tubes

Tube size (mm)	Part number
4	**32PLPDRC-4M**
6	**32PLPDRC-6M**
8	**32PLPDRC-8M**

32PLPBH Bulkhead Union

Tube size (mm)	Part number
4	**32PLPBH-4M**
6	**32PLPBH-6M**
8	**32PLPBH-8M**
10	**32PLPBH-10M**
12	**32PLPBH-12M**
14	**32PLPBH-14M**

☐ Most popular.

365PLPBH Equal Bulkhead Elbow

Tube size (mm)	Part number
4	**365PLPBH-4M**
6	**365PLPBH-6M**
8	**365PLPBH-8M**
10	**365PLPBH-10M**
12	**365PLPBH-12M**

370PLP Female Elbow - BSPP

Tube size (mm)	BSPP	Part number
4	1/8	**370PLP-4M-2G**
4	1/4	**370PLP-4M-4G**
6	1/8	**370PLP-6M-2G**
6	1/4	**370PLP-6M-4G**
8	1/8	**370PLP-8M-2G**
8	1/4	**370PLP-8M-4G**
8	3/8	**370PLP-8M-6G**
10	1/4	**370PLP-10M-4G**
10	3/8	**370PLP-10M-6G**
10	1/2	**370PLP-10M-8G**
12	1/4	**370PLP-12M-4G**
12	3/8	**370PLP-12M-6G**
12	1/2	**370PLP-12M-8G**

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369PLP Male Elbow - BSPP

Tube size (mm)	BSPP	Part number
3	M3x0.5	**369PLP-3M-M3**
3	M5x0.8	**369PLP-3M-M5**
4	M3x0.5	**369PLP-4M-M3**
4	M5x0.8	**369PLP-4M-M5**
4	M7x1	**369PLP-4M-M7**
4	1/8	**369PLP-4M-2G**
4	1/4	**369PLP-4M-4G**
6	M5x0.8	**369PLP-6M-M5**
6	M7x1	**369PLP-6M-M7**
6	M10x1	**369PLP-6M-M10**
6	M12x1.5	**369PLP-6M-M12**
6	1/8	**369PLP-6M-2G**
6	1/4	**369PLP-6M-4G**
6	3/8	**369PLP-6M-6G**
6	1/2	**369PLP-6M-8G**
8	M10x1	**369PLP-8M-M10**
8	M12x1.5	**369PLP-8M-M12**
8	1/8	**369PLP-8M-2G**
8	1/4	**369PLP-8M-4G**
8	3/8	**369PLP-8M-6G**
8	1/2	**369PLP-8M-8G**
10	1/4	**369PLP-10M-4G**
10	3/8	**369PLP-10M-6G**
10	1/2	**369PLP-10M-8G**
12	1/4	**369PLP-12M-4G**
12	3/8	**369PLP-12M-6G**
12	1/2	**369PLP-12M-8G**
14	3/8	**369PLP-14M-6G**
14	1/2	**369PLP-14M-8G**

379PLP 45° Male Elbow - BSPP

Tube size (mm)	BSPP / M5	Part number
4	M5x0.8	**379PLP-4M-M5**
4	1/8	**379PLP-4M-2G**
6	M5x0.8	**379PLP-6M-M5**
6	1/8	**379PLP-6M-2G**
6	1/4	**379PLP-6M-4G**
8	1/8	**379PLP-8M-2G**
8	1/4	**379PLP-8M-4G**
8	3/8	**379PLP-8M-6G**
10	1/4	**379PLP-10M-4G**
10	3/8	**379PLP-10M-6G**
10	1/2	**379PLP-10M-8G**
12	1/4	**379PLP-12M-4G**
12	3/8	**379PLP-12M-6G**
12	1/2	**379PLP-12M-8G**

☐ Most popular.

369PLPX Male Elbow - BSPP

Tube size (mm)	BSPP	Part number
4	M5x0.8	**369PLPX-4M-M5**
4	M7x1	**369PLPX-4M-M7**
4	1/8	**369PLPX-4M-2G**
4	1/4	**369PLPX-4M-4G**
6	M5x0.8	**369PLPX-6M-M5**
6	M7x1	**369PLPX-6M-M7**
6	1/8	**369PLPX-6M-2G**
6	1/4	**369PLPX-6M-4G**
8	1/8	**369PLPX-8M-2G**
8	1/4	**369PLPX-8M-4G**
8	3/8	**369PLPX-8M-6G**
10	1/4	**369PLPX-10M-4G**
10	3/8	**369PLPX-10M-6G**
10	1/2	**369PLPX-10M-8G**
12	1/4	**369PLPX-12M-4G**
12	3/8	**369PLPX-12M-6G**
12	1/2	**369PLPX-12M-8G**
14	3/8	**369PLPX-14M-6G**
14	1/2	**369PLPX-14M-8G**

372PLP Male Branch Tee - BSPP

Tube size (mm)	BSPP / M5	Part number
4	M5x0.8	**372PLP-4M-M5**
4	1/8	**372PLP-4M-2G**
4	1/4	**372PLP-4M-4G**
6	M5x0.8	**372PLP-6M-M5**
6	1/8	**372PLP-6M-2G**
6	1/4	**372PLP-6M-4G**
8	1/8	**372PLP-8M-2G**
8	1/4	**372PLP-8M-4G**
8	3/8	**372PLP-8M-6G**
10	1/4	**372PLP-10M-4G**
10	3/8	**372PLP-10M-6G**
10	1/2	**372PLP-10M-8G**
12	1/4	**372PLP-12M-4G**
12	3/8	**372PLP-12M-6G**
12	1/2	**372PLP-12M-8G**
14	3/8	**372PLP-14M-6G**
14	1/2	**372PLP-14M-8G**

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371PLP Male Run Tee - BSPP

Tube size (mm)	BSPP	Part number
4	M5x0.8	**371PLP-4M-M5**
4	1/8	**371PLP-4M-2G**
4	1/4	**371PLP-4M-4G**
6	M5x0.8	**371PLP-6M-M5**
6	1/8	**371PLP-6M-2G**
6	1/4	**371PLP-6M-4G**
8	1/8	**371PLP-8M-2G**
8	1/4	**371PLP-8M-4G**
8	3/8	**371PLP-8M-6G**
10	1/4	**371PLP-10M-4G**
10	3/8	**371PLP-10M-6G**
10	1/2	**371PLP-10M-8G**
12	1/4	**371PLP-12M-4G**
12	3/8	**371PLP-12M-6G**
12	1/2	**371PLP-12M-8G**
14	3/8	**371PLP-14M-6G**
14	1/2	**371PLP-14M-8G**

68PLPSP Male Standpipe - BSPP

Tube size (mm)	BSPT	Part number
4	M5x0.8	**68PLPSP-4M-M5**
4	1/8	**68PLPSP-4M-2G**
4	1/4	**68PLPSP-4M-4G**
6	1/8	**68PLPSP-6M-2G**
6	1/4	**68PLPSP-6M-4G**
8	1/8	**68PLPSP-8M-2G**
8	1/4	**68PLPSP-8M-4G**
8	3/8	**68PLPSP-8M-6G**
10	1/4	**68PLPSP-10M-4G**
10	3/8	**68PLPSP-10M-6G**
10	1/2	**68PLPSP-10M-8G**
12	3/8	**68PLPSP-12M-6G**
12	1/2	**68PLPSP-12M-8G**
14	3/8	**68PLPSP-14M-6G**
14	1/2	**68PLPSP-14M-8G**

368PLP Male Y Connector - BSPP

Tube size (mm)	BSPP / M5	Part number
4	M5x0.8	**368PLP-4M-M5**
4	1/8	**368PLP-4M-2G**
4	1/4	**368PLP-4M-4G**
6	M5x0.8	**368PLP-6M-M5**
6	1/8	**368PLP-6M-2G**
6	1/4	**368PLP-6M-4G**
8	1/8	**368PLP-8M-2G**
8	1/4	**368PLP-8M-4G**
8	3/8	**368PLP-8M-6G**
10	1/4	**368PLP-10M-4G**
10	3/8	**368PLP-10M-6G**
10	1/2	**368PLP-10M-8G**
12	3/8	**368PLP-12M-6G**
12	1/2	**368PLP-12M-8G**

368PLPD Double Y Male Connector - BSPP

Tube size (mm)	BSPP	Part number
4	1/8	**368PLPD-4M-2G**
4	1/4	**368PLPD-4M-4G**
6	1/8	**368PLPD-6M-2G**
6	1/4	**368PLPD-6M-4G**

369PLPSP Plug-In Elbow

1 Tube size (mm)	2 Tube size (mm)	Part number
4	4	**369PLPSP-4M**
6	6	**369PLPSP-6M**
8	8	**369PLPSP-8M**
10	10	**369PLPSP-10M**
12	12	**369PLPSP-12M**
4	6	**369PLPSP-4M-6M**
6	4	**369PLPSP-6M-4M**
6	8	**369PLPSP-6M-8M**
8	10	**369PLPSP-8M-10M**
10	12	**369PLPSP-10M-12M**

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369PLPXSP Extended Plug-In Elbow

1 Tube size (mm)	2 Tube size (mm)	Part number
4	4	**369PLPXSP-4M**
6	6	**369PLPXSP-6M**
8	8	**369PLPXSP-8M**
10	10	**369PLPXSP-10M**
12	12	**369PLPXSP-12M**
4	6	**369PLPXSP-4M-6M**
6	8	**369PLPXSP-6M-8M**
8	10	**369PLPXSP-8M-10M**
10	12	**369PLPXSP-10M-12M**

379PLPSP 45° Plug-In Elbow

1 Tube size (mm)	2 Tube size (mm)	Part number
4	4	**379PLPSP-4M**
6	6	**379PLPSP-6M**
8	8	**379PLPSP-8M**
10	10	**379PLPSP-10M**
12	12	**379PLPSP-12M**

372PLPSP Plug-In Branch Tee

1 Tube size (mm)	2 Tube size (mm)	Part number
4	4	**372PLPSP-4M**
6	6	**372PLPSP-6M**
8	8	**372PLPSP-8M**
10	10	**372PLPSP-10M**
12	12	**372PLPSP-12M**
4	6	**372PLPSP-4M-6M**
6	8	**372PLPSP-6M-8M**
8	10	**372PLPSP-8M-10M**
10	12	**372PLPSP-10M-12M**

371PLPSP Plug-In Run Tee

1 Tube size (mm)	2 Tube size (mm)	Part number
4	4	**371PLPSP-4M**
6	6	**371PLPSP-6M**
8	8	**371PLPSP-8M**
10	10	**371PLPSP-10M**
12	12	**371PLPSP-12M**
4	6	**371PLPSP-4M-6M**
6	8	**371PLPSP-6M-8M**
8	10	**371PLPSP-8M-10M**
10	12	**371PLPSP-10M-12M**

☐ Most popular.

362PLPSP Plug-In Y

1 Tube size (mm)	2 Tube size (mm)	Part number
4	4	**362PLPSP-4M**
6	6	**362PLPSP-6M**
8	8	**362PLPSP-8M**
10	10	**362PLPSP-10M**
12	12	**362PLPSP-12M**
4	6	**362PLPSP-4M-6M**
6	8	**362PLPSP-6M-8M**
8	10	**362PLPSP-8M-10M**
10	12	**362PLPSP-10M-12M**

362PLPDSP Plug-In Multiple Y

1 Tube size (mm)	2 Tube size (mm)	Part number
6	4	**362PLPDSP-6M-4M**
8	4	**362PLPDSP-8M-4M**
8	6	**362PLPDSP-8M-6M**

67PLP Tube Reducer

1 Tube size (mm)	2 Tube size (mm)	Part number
6	4	**67PLP-6M-4M**
8	4	**67PLP-8M-4M**
8	6	**67PLP-8M-6M**
10	4	**67PLP-10M-4M**
10	6	**67PLP-10M-6M**
10	8	**67PLP-10M-8M**
12	10	**67PLP-12M-10M**
12	6	**67PLP-12M-6M**
12	8	**67PLP-12M-8M**
14	10	**67PLP-14M-10M**
14	12	**67PLP-14M-12M**
14	6	**67PLP-14M-6M**
14	8	**67PLP-14M-8M**

32PLPSP Tube Expander

1 Tube size (mm)	2 Tube size (mm)	Part number
6	4	**32PLPSP-6M-4M**
8	6	**32PLPSP-8M-6M**
10	8	**32PLPSP-10M-8M**
12	10	**32PLPSP-12M-10M**

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322PLPSP Barbed Connector

OD 1	OD 2	OD 3	Part number
4	3.2	5.0	**322PLPSP-3M-4M**
4	5.0	7.0	**322PLPSP-5M-4M**
6	5.0	7.0	**322PLPSP-5M-6M**
8	6.3	8.5	**322PLPSP-6M-8M**
8	8.0	10.0	**322PLPSP-8M-8M**
10	6.3	8.0	**322PLPSP-6M-10M**
10	8.0	10.0	**322PLPSP-8M-10M**
12	8.0	10.0	**322PLPSP-8M-12M**
12	10.0	12.0	**322PLPSP-1012M**
12	12.5	14.5	**322PLPSP-1212M**
14	12.5	14.5	**322PLPSP-1214M**
14	14.0	16.0	**322PLPSP-1414M**

Push-to-Connect, Prestolok Metal

W68PLP Male Connector

Tube size (in.)	Pipe thd (NPTF)	Part number
1/8	1/16	**W68PLP-2-1**
1/8	1/8	**W68PLP-2-2**
1/8	1/4	**W68PLP-2-4**
3/16	1/8	**W68PLP-3-2**
3/16	1/4	**W68PLP-3-4**
5/32	1/16	**W68PLP-5/32-1**
5/32	1/8	**W68PLP-5/32-2**
5/32	1/4	**W68PLP-5/32-4**
1/4	1/16	**W68PLP-4-1**
1/4	1/8	**W68PLP-4-2**
1/4	1/4	**W68PLP-4-4**
1/4	3/8	**W68PLP-4-6**
5/16	1/8	**W68PLP-5-2**
5/16	1/4	**W68PLP-5-4**
5/16	3/8	**W68PLP-5-6**
3/8	1/8	**W68PLP-6-2**
3/8	1/4	**W68PLP-6-4**
3/8	3/8	**W68PLP-6-6**
3/8	1/2	**W68PLP-6-8**
1/2	1/4	**W68PLP-8-4**
1/2	3/8	**W68PLP-8-6**
1/2	1/2	**W68PLP-8-8**
5/32	1/4-28	**68PLP-5/32-4LT***

*SAE-LT Threads

☐ Most popular.

W68PLPR Round Body Male Connector

Tube size (in.)	Thread size NPTF	Part number
5/32	1/16	**W68PLPR-5/32-1**
5/32	1/8	**W68PLPR-5/32-2**
1/4	1/16	**W68PLPR-4-1**
1/4	1/8	**W68PLPR-4-2**
1/4	1/4	**W68PLPR-4-4**

*10-32 seal is neoprene

W68PW Male Connector (Nickel Plated)

Tube size (in.)	Thread size NPTF	Part number
1/4	1/8	**W68PW-4-2**
1/4	1/4	**W68PW-4-4**
1/4	3/8	**W68PW-4-6**
5/16	1/8	**W68PW-5-2**
5/16	1/4	**W68PW-5-4**
5/16	3/8	**W68PW-5-6**
3/8	1/8	**W68PW-6-2**
3/8	1/4	**W68PW-6-4**
3/8	3/8	**W68PW-6-6**
3/8	1/2	**W68PW-6-8**
1/2	1/4	**W68PW-8-4**
1/2	3/8	**W68PW-8-6**
1/2	1/2	**W68PW-8-8**

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W169PLP Male Elbow Swivel 90°

Tube size (in.)	Pipe thread (NPTF)	Part number
1/8	1/16	**W169PLP-2-1**
1/8	1/8	**W169PLP-2-2**
1/8	10-32	**169PLP-2-0***
1/8	1/4	**W169PLP-2-4**
3/16	1/8	**W169PLP-3-2**
5/32	1/16	**W169PLP-5/32-1**
5/32	1/8	**W169PLP-5/32-2**
5/32	1/4	**W169PLP-5/32-4**
5/32	10-32	**169PLP-5/32-0***
1/4	1/16	**W169PLP-4-1**
1/4	1/8	**W169PLP-4-2**
1/4	1/4	**W169PLP-4-4**
1/4	3/8	**W169PLP-4-6**
1/4	10-32	**169PLP-4-0***
5/16	1/8	**W169PLP-5-2**
5/16	1/4	**W169PLP-5-4**
3/8	1/8	**W169PLP-6-2**
3/8	1/4	**W169PLP-6-4**
3/8	3/8	**W169PLP-6-6**
3/8	1/2	**W169PLP-6-8**
1/2	1/4	**W169PLP-8-4**
1/2	3/8	**W169PLP-8-6**
1/2	1/2	**W169PLP-8-8**

*10-32 seal is neoprene

W169PLPNS Male Elbow 90°

Tube size (in.)	Pipe thread (NPTF)	Part number
1/8	1/8	**W169PLPNS-2-2**
5/32	1/8	**W169PLPNS5/32-2**
5/32	1/4	**W169PLPNS5/32-4**
1/4	1/8	**W169PLPNS-4-2**
1/4	1/4	**W169PLPNS-4-4**
5/16	1/8	**W169PLPNS-5-2**
5/16	1/4	**W169PLPNS-5-4**
3/8	1/4	**W169PLPNS-6-4**
3/8	3/8	**W169PLPNS-6-6**
3/8	1/2	**W169PLPNS-6-8**
1/2	3/8	**W169PLPNS-8-6**
1/2	1/2	**W169PLPNS-8-8**
5/32	1/4-28	**169PLPNS532-4LT***

* SAE-LT Threads

W169PW Male Elbow Swivel 90° (Nickel Plated)

Tube size (in.)	Thread (NPTF)	Part number
1/4	1/8	**W169PW-4-2**
1/4	1/4	**W169PW-4-4**
1/4	3/8	**W169PW-4-6**
5/16	1/8	**W169PW-5-2**
5/16	1/4	**W169PW-5-4**
3/8	1/8	**W169PW-6-2**
3/8	1/4	**W169PW-6-4**
3/8	3/8	**W169PW-6-6**
3/8	1/2	**W169PW-6-8**
1/2	1/4	**W169PW-8-4**
1/2	3/8	**W169PW-8-6**
1/2	1/2	**W169PW-8-8**

W171PLP Male Run Tee Swivel

Tube size (in.)	Pipe thread (NPTF)	Part number
1/8	1/8	**W171PLP-2-2**
5/32	1/8	**W171PLP-5/32-2**
1/4	1/8	**W171PLP-4-2**
1/4	1/4	**W171PLP-4-4**
1/4	3/8	**W171PLP-4-6**
5/16	1/8	**W171PLP-5-2**
5/16	1/4	**W171PLP-5-4**
3/8	1/4	**W171PLP-6-4**
3/8	3/8	**W171PLP-6-6**
1/2	3/8	**W171PLP-8-6**
1/2	1/2	**W171PLP-8-8**

W171PW Male Run Tee Swivel (Nickel Plated)

Tube size (in.)	Pipe thread (NPTF)	Part number
1/4	1/8	**W171PW-4-2**
1/4	1/4	**W171PW-4-4**
1/4	3/8	**W171PW-4-6**
5/16	1/8	**W171PW-5-2**
5/16	1/4	**W171PW-5-4**
3/8	1/4	**W171PW-6-4**
3/8	3/8	**W171PW-6-6**
1/2	3/8	**W171PW-8-6**
1/2	1/2	**W171PW-8-8**

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W172PLP Male Branch Tee Swivel

Tube size (in.)	Pipe thread (NPTF)	Part number
1/8	1/8	**W172PLP-2-2**
3/16	1/8	**W172PLP-3-2**
5/32	1/8	**W172PLP-5/32-2**
1/4	1/8	**W172PLP-4-2**
1/4	1/4	**W172PLP-4-4**
1/4	3/8	**W172PLP-4-6**
5/16	1/8	**W172PLP-5-2**
5/16	1/4	**W172PLP-5-4**
3/8	1/4	**W172PLP-6-4**
3/8	3/8	**W172PLP-6-6**
1/2	1/4	**W172PLP-8-4**
1/2	3/8	**W172PLP-8-6**
1/2	1/2	**W172PLP-8-8**

W172PW Male Branch Tee Swivel (Nickel Plated)

Tube size (in.)	Thread (NPTF)	Part number
1/4	1/8	**W172PW-4-2**
1/4	1/4	**W172PW-4-4**
1/4	3/8	**W172PW-4-6**
5/16	1/8	**W172PW-5-2**
5/16	1/4	**W172PW-5-4**
3/8	1/4	**W172PW-6-4**
3/8	3/8	**W172PW-6-6**
1/2	1/4	**W172PW-8-4**
1/2	3/8	**W172PW-8-6**
1/2	1/2	**W172PW-8-8**

62PLP Union

Tube size (in.)	Part number
1/8	**62PLP-2**
3/16	**62PLP-3**
5/32	**62PLP-5/32**
1/4	**62PLP-4**
5/16	**62PLP-5**
3/8	**62PLP-6**
1/2	**62PLP-8**

62PW Union (Nickel Plated)

Tube size (in.)	Part number
1/4	**62PW-4**
5/16	**62PW-5**
3/8	**62PW-6**
1/2	**62PW-8**

164PLP Union Tee

Tube size (in.)	Part number
1/8	**164PLP-2**
3/16	**164PLP-3**
5/32	**164PLP-5/32**
1/4	**164PLP-4**
5/16	**164PLP-5**
3/8	**164PLP-6**
1/2	**164PLP-8**

164PW Union Tee (Nickel Plated)

Tube size (in.)	Part number
1/4	**164PW-4**
5/16	**164PW-5**
3/8	**164PW-6**
1/2	**164PW-8**

165PLP Union Elbow

Tube size (in.)	Part number
1/8	**165PLP-2**
5/32	**165PLP-5/32**
3/16	**165PLP-3**
1/4	**165PLP-4**
5/16	**165PLP-5**
3/8	**165PLP-6**
1/2	**165PLP-8**

165PW Union Elbow (Nickel Plated)

Tube size (in.)	Part number
1/4	**165PW-4**
5/16	**165PW-5**
3/8	**165PW-6**
1/2	**165PW-8**

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66PLP Female Connector

Tube size (in.)	Pipe thread (NPTF)	Part number
1/8	1/8	**66PLP-2-2**
1/8	1/4	**66PLP-2-4**
3/16	1/8	**66PLP-3-2**
5/32	1/8	**66PLP-5/32-2**
5/32	1/4	**66PLP-5/32-4**
1/4	1/8	**66PLP-4-2**
1/4	1/4	**66PLP-4-4**
5/16	1/8	**66PLP-5-2**
5/16	1/4	**66PLP-5-4**
3/8	1/4	**66PLP-6-4**
3/8	3/8	**66PLP-6-6**

66PW Female Connector (Nickel Plated)

Tube size (in.)	Pipe thread (NPTF)	Part number
1/4	1/8	**66PW-4-2**
1/4	1/4	**66PW-4-4**
5/16	1/8	**66PW-5-2**
5/16	1/4	**66PW-5-4**
3/8	1/4	**66PW-6-4**
3/8	3/8	**66PW-6-6**

62PLPBH Bulkhead Union

Tube size (in.)	Part number
1/8	**62PLPBH-2**
5/32	**62PLPBH-5/32**
1/4	**62PLPBH-4**
5/16	**62PLPBH-5**
3/8	**62PLPBH-6**
1/2	**62PLPBH-8**

66PLPBH Female Bulkhead

Tube size (in.)	Pipe thd (NPTF)	Part number
5/32	1/4	**66PLPBH-5/32-4**
1/4	1/4	**66PLPBH-4-4**
3/8	3/8	**66PLPBH-6-6**
1/2	3/8	**66PLPBH-8-6**

62PWBH Bulkhead Union (Nickel Plated)

Tube Size (in.)	Bulkhead Hole Dia. B	Part number
1/4	9/16	**62PWBH-4**
5/16	5/8	**62PWBH-5**
3/8	3/4	**62PWBH-6**
1/2	7/8	**62PWBH-8**

66PWBH Female Bulkhead (Nickel Plated)

Tube size (in.)	Thread (NPTF)	Bulkhead hole dia.	Part number
1/4	1/4	9/16	**66PWBH-4-4**
3/8	3/8	7/8	**66PWBH-6-6**
1/2	3/8	1	**66PWBH-8-6**

PLPHBF4-B Male Connector BSPP

Tube size (in.)	Pipe thd BSPP	Part number
3/16	1/8-28	**3-1/8PLPHBF4-B**
3/16	1/4-19	**3-1/4PLPHBF4-B**
1/4	1/8-28	**4-1/8PLPHBF4-B**
1/4	1/4-19	**4-1/4PLPHBF4-B**
1/4	3/8-19	**4-3/8PLPHBF4-B**
3/8	1/4-19	**6-1/4PLPHBF4-B**
3/8	3/8-19	**6-3/8PLPHBF4-B**
3/8	1/2-14	**6-1/2PLPHBF4-B**
1/2	3/8-19	**8-3/8PLPHBF4-B**
1/2	1/2-14	**8-1/2PLPHBF4-B**

DB Dust / Weld Spatter Boot

Tube size (in.)	Part number
1/4	**DB-4**
3/8	**DB-6**
1/2	**DB-8**

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FPB Male Connector NPT

Tube size (mm)	NPT	Part number
4	1/8-27	**W68PLP-5/32-2**
4	1/4-18	**W68PLP-5/32-4**
6	1/8-27	**FPB6-1/8**
6	1/4-18	**FPB6-1/4**
10	1/4-18	**FPB10-1/4**
10	3/8-18	**FPB10-3/8**
12	3/8-18	**FPB12-3/8**

C6PB Adjustable Male Elbow NPT

Tube size (mm)	NPT	Part number
6	1/4-18	**C6PB6-1/4**
6	3/8-18	**C6PB6-3/8**
10	1/4-18	**C6PB10-1/4**
10	3/8-18	**C6PB10-3/8**
12	1/2-14	**C6PB12-1/2**

HPB Equal Union

Tube size (mm)	Part number
4	**HPB4**
5	**HPB5**
6	**HPB6**
8	**HPB8**
10	**HPB10**
12	**HPB12**
14	**HPB14**

JPB Union Tee

Tube size (mm)	Part number
4	**JPB4**
5	**JPB5**
6	**JPB6**
8	**JPB8**
10	**JPB10**
12	**JPB12**
14	**JPB14**

EPB 90° Union Elbow

Tube size (mm)	Part number
4	**EPB4**
5	**EPB5**
6	**EPB6**
8	**EPB8**
10	**EPB10**
12	**EPB12**
14	**EPB14**

☐ Most popular.

WBMPB Mixed Bulkhead Union

Tube 1 size (mm)	Tube 2 size (mm)	Bulkhead hole dia.	Part number
4	4	8mm	**WBMPB4**
6	6	10mm	**WBMPB6**
8	8	12mm	**WBMPB8**
10	10	14mm	**WBMPB10**
12	12	16mm	**WBMPB12**
14	14	18mm	**WBMPB14**

WPB Bulkhead Union

Tube Size (mm)	Bulkhead hole dia.	Part number
4	11mm	**WPB4**
6	13mm	**WPB6**
8	16mm	**WPB8**
10	18mm	**WPB10**
12	23mm	**WPB12**
14	24mm	**WPB14**

Jam nut is supplied loose in box

WE6PB Adjustable Bulkhead Union Elbow

Tube Size (mm)	Bulkhead hole dia.	Part number
4	11mm	**WE6PB4**
6	13mm	**WE6PB6**
8	15mm	**WE6PB8**
10	18mm	**WE6PB10**
12	23mm	**WE6PB12**

G4PB Female Connector BSPP

Tube size (mm)	BSPP	Part number
4	1/8	**G4PB4-1/8**
6	1/8	**G4PB6-1/8**
6	1/4	**G4PB6-1/4**
8	1/8	**G4PB8-1/8**
8	1/4	**G4PB8-1/4**

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WG4PB Bulkhead Union Female BSPP

Tube size (mm)	BSPP	Part number
4	G1/8	**WG4PB4-1/8**
6	G1/8	**WG4PB6-1/8**
6	G1/4	**WG4PB6-1/4**
8	G1/8	**WG4PB8-1/8**
8	G1/4	**WG4PB8-1/4**
10	G3/8	**WG4PB10-3/8**
12	G3/8	**WG4PB12-3/8**
12	G1/2	**WG4PB12-1/2**

C64PB Adjustable Male Elbow BSPP

Tube size (mm)	BSPP	Part number
4	1/8	**C64PB4-1/8**
4	1/4	**C64PB4-1/4**
6	1/8	**C64PB6-1/8**
6	1/4	**C64PB6-1/4**
8	1/8	**C64PB8-1/8**
8	1/4	**C64PB8-1/4**
8	3/8	**C64PB8-3/8**
10	1/4	**C64PB10-1/4**
10	3/8	**C64PB10-3/8**
12	1/4	**C64PB12-1/4**
12	3/8	**C64PB12-3/8**
12	1/2	**C64PB12-1/2**
14	3/8	**C64PB14-3/8**
14	1/2	**C64PB14-1/2**

C64SPB Compact Adjustable Male Elbow BSPP

Tube size (mm)	BSPP	Part number
4	1/8	**C64SPB4-1/8**
6	1/8	**C64SPB6-1/8**
6	1/4	**C64SPB6-1/4**
8	1/8	**C64SPB8-1/8**
8	1/4	**C64SPB8-1/4**
8	3/8	**C64SPB8-3/8**
10	1/4	**C64SPB10-1/4**
10	3/8	**C64SPB10-3/8**
12	1/8	**C64SPB12-1/4**
12	3/8	**C64SPB12-3/8**
12	1/2	**C64SPB12-1/2**

☐ Most popular.

F4PB Compact Male Connector BSPP

Tube size (mm)	BSPP	Part number
4	1/8	**F4PB4-1/8**
4	1/4	**F4PB4-1/4**
6	1/8	**F4PB6-1/8**
6	1/4	**F4PB6-1/4**
8	1/4	**F4PB8-1/4**
8	1/8	**F4PB8-1/8**
8	3/8	**F4PB8-3/8**
10	1/4	**F4PB10-1/4**
10	3/8	**F4PB10-3/8**
10	1/2	**F4PB10-1/2**
12	1/4	**F4PB12-1/4**
12	3/8	**F4PB12-3/8**
12	1/2	**F4PB12-1/2**
14	3/8	**F4PB14-3/8**
14	1/2	**F4PB14-1/2**

R64PB Swivel Male Branch Run Tee BSPP

Tube size (mm)	BSPP	Part number
4	1/8	**R64PB4-1/8**
4	1/4	**R64PB4-1/4**
6	1/8	**R64PB6-1/8**
6	1/4	**R64PB6-1/4**
8	1/8	**R64PB8-1/8**
8	1/4	**R64PB8-1/4**
8	3/8	**R64PB8-3/8**
10	1/4	**R64PB10-1/4**
10	3/8	**R64PB10-3/8**
12	1/4	**R64PB12-1/4**
12	3/8	**R64PB12-3/8**
14	3/8	**R64PB14-3/8**
14	1/2	**R64PB14-1/2**

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S64PB Swivel Male Branch Tee BSPP

Tube size (mm)	BSPP	Part number
4	1/8	**S64PB4-1/8**
4	1/4	**S64PB4-1/4**
6	1/8	**S64PB6-1/8**
6	1/4	**S64PB6-1/4**
8	1/8	**S64PB8-1/8**
8	1/4	**S64PB8-1/4**
8	3/8	**S64PB8-3/8**
10	1/4	**S64PB10-1/4**
10	3/8	**S64PB10-3/8**
12	1/4	**S64PB12-1/4**
12	3/8	**S64PB12-3/8**
14	3/8	**S64PB14-3/8**
14	1/2	**S64PB14-1/2**

C68PB Adjustable Male Elbow Metric Straight Thread

Tube size (mm)	Thread (mm)	Part number
4	M5x0.8	**C68PB4M5**
6	M5x0.8	**C68PB6M5**

C68SPB Compact Adjustable Male Elbow Metric Straight Thread

Tube size (mm)	Thread (mm)	Part number
4	M5x0.8	**C68SPB4M5**
6	M5x0.8	**C68SPB6M5**

F28PB Male Connector Metric Straight Thread

Tube size (mm)	Thread (mm)	Part number
4	M3x0.5	**F28PB4M3**
4	M5x0.8	**F28PB4M5**
6	M5x0.8	**F28PB6M5**

This fitting has been designed for use where space is at a premium. It is assembled using the internal hexagon and an allen key.

F8PB Male Connector Metric Straight Thread

Tube size (mm)	Thread (mm)	Part number
4	M5x0.8	**F8PB4M5**
4	M10x1	**F8PB4M10**
6	M5x0.8	**F8PB6M5**
6	M10x1	**F8PB6M10**
6	M12x1.5	**F8PB6M12**
8	M12x1.5	**F8PB8M12**
8	M16x1.5	**F8PB8M16**
8	M22x1.5	**F8PB8M22**

☐ Most popular.

R68PB Adjustable Male Run Tee Metric Straight Thread

Tube size (mm)	Thread (mm)	Part number
4	M3x0.5	**R68PB4M3**
4	M5x0.8	**R68PB4M5**
6	M5x0.8	**R68PB6M5**

S68PB Adjustable Male Branch Tee Metric Straight Thread

Tube size (mm)	Thread (mm)	Part number
4	M3x0.5	**S68PB4M3**
4	M5x0.8	**S68PB4M5**
6	M5x0.8	**S68PB6M5**

FNPB Plug

Tube size (mm)	Part number
4	**FNPB4**
6	**FNPB6**
8	**FNPB8**
10	**FNPB10**
12	**FNPB12**
14	**FNPB14**

TEPB Tube End Expander

Tube 1 Size (mm)	Tube 2 Size (mm)	Part number
4	6	TEPB4-6

TRPB Tube End Reducer

Tube 1 size (mm)	Tube 2 size (mm)	Part number
6	4	**TRPB6-4**
8	4	**TRPB8-4**
8	6	**TRPB8-6**
10	4	**TRPB10-4**
10	6	**TRPB10-6**
10	8	**TRPB10-8**
12	6	**TRPB12-6**
12	8	**TRPB12-8**
12	10	**TRPB12-10**
14	8	**TRPB14-8**
14	10	**TRPB14-10**
14	12	**TRPB14-12**

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207ACBH Anchor Coupling

Female pipe thread	Straight thread	Max. bulkhead	Part number
1/8	5/8-18	.89	**207ACBH-2**
1/8	5/8-18	.35	**207ACBHS-2**
1/4	3/4-16	.81	**207ACBH-4**
1/4	3/4-16	.26	**207ACBHS-4**
3/8	1-14	.62	**207ACBH-6**
1/2	1-1/8-14	.75	**207ACBH-8**
3/4	1-5/16-12	.65	**207ACBH-12**
1	1-5/8-14	1.00	**207ACBH-16***

*Lock washer not available

207P Coupling

Pipe thread	C Hex	Part number
1/8	9/16	**207P-2**
1/4	3/4	**207P-4**
3/8	7/8	**207P-6**
1/2	1-1/16	**207P-8**
3/4	1-3/8	**207P-12**

208P Reducer Coupling

1 Pipe thread	2 Pipe thread	C Hex	Part number
1/4	1/8	3/4	**208P-4-2**
3/8	1/4	7/8	**208P-6-4**
1/2	1/4	1-1/16	**208P-8-4**
1/2	3/8	1-1/16	**208P-8-6**
3/4	3/8	1-3/8	**208P-12-6**
3/4	1/2	1-3/8	**208P-12-8**

209P Bushing

1 Pipe thread	2 Pipe thread	C Hex	Part number
1/8	1/4	9/16	**209P-4-2**
1/8	3/8	11/16	**209P-6-2**
1/4	3/8	3/4	**209P-6-4**
1/8	1/2	7/8	**209P-8-2**
1/4	1/2	7/8	**209P-8-4**
3/8	1/2	7/8	**209P-8-6**
1/8	3/4	1-1/8	**209P-12-2**
1/4	3/4	1-1/8	**209P-12-4**
3/8	3/4	1-1/8	**209P-12-6**
1/2	3/4	1-1/8	**209P-12-8**
1/2	1	1-3/8	**209P-16-8**
3/4	1	1-3/8	**209P-16-12**

210P Lock Nut

Pipe thread	C Hex	Part number
1/8 NPSL	11/16	**210P-2**
1/4 NPSL	7/8	**210P-4**
3/8 NPSL	1	**210P-6**
1/2 NPSL	1-1/8	**210P-8**

211P Square-Head Plug

Pipe thread	Part number
1/8	**211P-2**
1/4	**211P-4**
3/8	**211P-6**
1/2	**211P-8**
3/4	**211P-12**

212P Union

Pipe thread	C Hex	Part number
1/4	1-3/16	**212P-4**
3/8	1-1/4	**212P-6**

213P Cap

Pipe thread	C Hex	Part number
1/8	9/16	**213P-2**
1/4	11/16	**213P-4**
3/8	13/16	**213P-6**
1/2	1-1/16	**213P-8**
3/4	1-1/4	**213P-12**

215PN Close Nipple

Pipe thread	Part number
1/8	**215PN-2**
1/4	**215PN-4**
3/8	**215PN-6**
1/2	**215PN-8**
3/4	**215PN-12**

☐ Most popular.

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215PNL Long Nipple

Pipe thread	Part number
1/8	**215PNL-2-15**
1/4	**215PNL-4-15**
3/8	**215PNL-6-15**
1/2	**215PNL-8-15**
1/8	**215PNL-2-20**
1/4	**215PNL-4-20**
3/8	**215PNL-6-20**
1/2	**215PNL-8-20**
1/8	**215PNL-2-25**
1/4	**215PNL-4-25**
3/8	**215PNL-6-25**
1/2	**215PNL-8-25**
1/8	**215PNL-2-30**
1/4	**215PNL-4-30**
3/8	**215PNL-6-30**
1/2	**215PNL-8-30**
1/8	**215PNL-2-35**
1/4	**215PNL-4-35**
3/8	**215PNL-6-35**
1/2	**215PNL-8-35**

216P Hex Nipple

Pipe thread	C Hex	Part number
1/8	7/16	**216P-2**
1/4	9/16	**216P-4**
3/8	11/16	**216P-6**
1/2	7/8	**216P-8**
3/4	1-1/16	**216P-12**

218P Hex-Head Plug

Pipe thread	C Hex	Part number
1/8	7/16	**218P-2**
1/4	9/16	**218P-4**
3/8	11/16	**218P-6**
1/2	7/8	**218P-8**
3/4	1-1/16	**218P-12**

219P Countersunk Hex-Head Plug

Pipe thread	C Hex	Part number
1/8	3/16	**219P-2**
1/4	1/4	**219P-4**
3/8	5/16	**219P-6**
1/2	3/8	**219P-8**
3/4	9/16	**219P-12**

☐ Most popular.

220P Slotted-Head Plug

Pipe thread	Part number
1/8	**220P-2**
1/4	**220P-4**
3/8	**220P-6**

222P Adapter

1 Pipe thread	2 Pipe thread	C Hex	Part number
1/8	1/8	9/16	**222P-2-2**
1/4	1/8	3/4	**222P-4-2**
1/4	1/4	3/4	**222P-4-4**
3/8	1/8	7/8	**222P-6-2**
3/8	1/4	7/8	**222P-6-4**
3/8	3/8	7/8	**222P-6-6**
1/2	1/4	1	**222P-8-4**
1/2	3/8	1-1/16	**222P-8-6**
1/2	1/2	1-1/16	**222P-8-8**
3/4	3/8	1-3/8	**222P-12-6**
3/4	1/2	1-3/8	**222P-12-8**
3/4	3/4	1-3/8	**222P-12-12**

1200P-2200P 90° Union Elbow

Pipe thread	Part number
1/8	**1200P-2-2**
1/8	**2200P-2-2**
1/4	**1200P-4-4**
1/4	**2200P-4-4**
3/8	**1200P-6-6**
3/8	**2200P-6-6**
1/2	**2200P-8-8**

1202P-2202P 90° Street Elbow

1 Pipe thread	2 Pipe thread	Part number
1/8	1/8	**1202P-2-2**
1/8	1/8	**2202P-2-2**
1/8	1/8	**2202PA-2-2***
1/4	1/8	**2202P-4-2**
1/4	1/4	**1202P-4-4**
1/4	1/4	**2202P-4-4**
1/4	1/4	**2202PA-4-4***
1/4	3/8	**2202P-4-6**
3/8	1/4	**1202P-6-4**
3/8	3/8	**1202P-6-6**
3/8	3/8	**2202P-6-6**
3/8	3/8	**2202PA-6-6***

*Meets SAE Dimensions

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1203P-2203P Union Tee

Pipe thread	Part number
1/8	**1203P-2**
1/8	**2203P-2**
1/4	**1203P-4**
1/4	**2203P-4**
3/8	**2203P-6**
1/2	**1203P-8**
1/2	**2203P-8**
3/4	**2203P-12**

1204P Male Elbow

Pipe thread	Part number
1/8	**1204P-2**
1/4	**1204P-4**
3/8	**1204P-6**
1/2	**1204P-8**

2224P Male Branch Tee

Pipe thread	Part number
1/8	**2224P-2**
1/4	**2224P-4**
3/8	**2224P-6**
1/2	**2224P-8**
3/4	**2224P-12**

2225P Street Tee

Pipe thread	Part number
1/8	**2225P-2**
1/4	**2225P-4**
3/8	**2225P-6**
1/2	**2225P-8**
3/4	**2225P-12**

1201P-2201P 45° Female Elbow

1201P

2201P

Pipe thread	Part number
1/8	**2201P-2-2**
1/2	**1201P-8-8**

2205P Cross

Pipe thread	Part number
1/8	**2205P-2**
1/4	**2205P-4**
3/8	**2205P-6**
1/2	**2205P-8**
3/4	**2205P-12**

2214P 45° Street Elbow

Pipe thread	Part number
1/8	**2214P-2-2**
1/4	**2214P-4-4**
3/8	**2214P-6-6**
1/2	**2214P-8-8**

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DD44 Pipe 90° Elbow BSPP

BSPP	C Hex	Part number
1/8	14	**1/8DD44B**
1/4	17	**1/4DD44B**
3/8	22	**3/8DD44B**
1/2	27	**1/2DD44B**

FF44 Pipe Nipples BSPP

BSPP	C Hex	Part number
1/8	14	**1/8FF44B**
1/4	17	**1/4FF44B**
3/8	22	**3/8FF44B**
1/2	27	**1/2FF44B**

FHG4 Adapter Male NPTF BSPP

BSPP 1	NPTF 2	C Hex	Part number
1/8	1/8	0.562	**1/8FHG4-B**
1/4	1/4	0.750	**1/4FHG4-B**
3/8	3/8	0.875	**3/8FHG4-B**
1/2	1/2	1.062	**1/2FHG4-B**

GG44 Pipe Connector BSPP

BSPP	C Hex	Part number
1/8	14	**1/8GG44B**
1/4	17	**1/4GG44B**
3/8	22	**3/8GG44B**
1/2	27	**1/2GG44B**
3/4	32	**3/4GG44B**
1	41	**1GG44B**

KMMOO4 Pipe Cross BSPP

BSPP	C Hex	Part number
1/8	14	**1/8KMMOO4B**
1/4	17	**1/4KMMOO4B**
3/8	22	**3/8KMMOO4B**
1/2	27	**1/2KMMOO4B**

MMO444 Pipe Tee BSPP

BSPP	C Hex	Part number
1/8	14	**1/8MMO444B**
1/4	17	**1/4MMO444B**
3/8	22	**3/8MMO444B**
1/2	27	**1/2MMO444B**
3/4	32	**3/4MMO444B**
1	40	**1MMO444B**

WGG44 Bulkhead Female Union BSPP

BSPP	Straight thread	C Hex	Part number
1/8	M16x1.5	19	**1/8WGG44B**
1/4	M20x1.5	24	**1/4WGG44B**
3/8	M23x1.5	27	**3/8WGG44B**
1/2	M27x1.5	32	**1/2WGG44B**
3/4	M34x1.5	41	**3/4WGG44B**
1	M45x2	55	**1WGG44B**

☐ Most popular.

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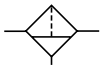
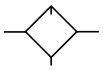
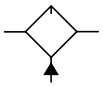
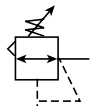
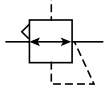
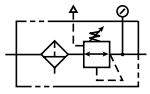
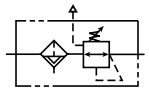
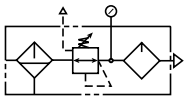
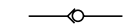
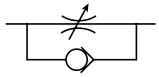
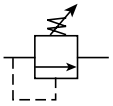
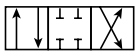
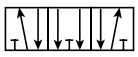
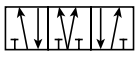
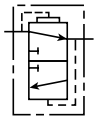
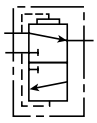
Air Preparation Units

Symbol	Description
	**Filter / Separator** with manual drain
	Filter / Separator with automatic drain
	Oil Removal Filter
	Automatic Drain
	Lubricator less drain
	**Lubricator** with manual drain
	**Lubricator** with automatic filling
	**Air Line Pressure Regulator** adjustable, relieving
	**Air Line Pressure Regulator** pilot controlled, relieving
	**Filter / Regulator** (piggyback) manual drain relieving (with gauge)
	**Filter / Regulator** (piggyback) auto drain relieving
	**Air Line Combo F-R-L** simplified

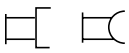
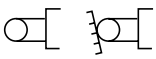
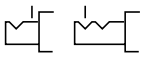
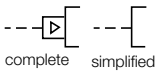
Pneumatic Valves

Symbol	Description
	**Check**
	**Flow Control**
	**Relief Valve**
	2-Position, 2-Way
	2-Position, 3-Way
	2-Position, 4-Way
	2-Position, 4-Way 5-Ported

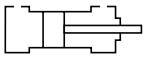
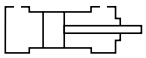
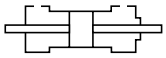
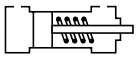
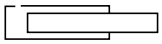
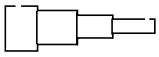
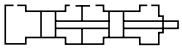
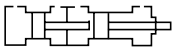
Pneumatic Valves

Symbol	Description
	**3-Position, 4-Way, APB** ports closed, center pos.
	**3-Position, 4-Way, CE 5-Ported** cylinder ports open to exhaust in center position
	**3-Position, 4-Way, PC 5-Ported** pressure ports open to exhaust in center position
	**Quick Exhaust**
	**Shuttle**

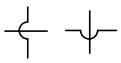
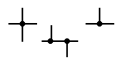
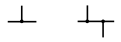
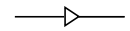
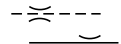
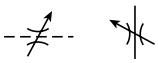
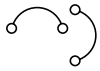
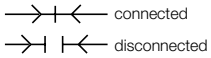
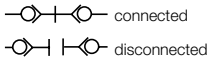
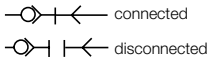
Valve Actuators

Symbol	Description
	**Manual** general symbol
	Push Button
	Lever
	Pedal or Treadle
	**Mechanical** cam, toggle, etc.
	Spring
	**Detent** line indicates which detent is in use
	Piezo
	Solenoid
	Internal Pilot Supply
 complete simplified	**Remote Pilot Supply**
	And / Or Composite solenoid and pilot or manual override
	And / Or Composite solenoid and pilot or manual override and pilot

Cylinders

Symbol	Description
	**Standard** double acting
	**Single Acting**
	**Double Rod**
	**Spring Return**
	**Ram Type**
	**Telescope**
	**Tandum**
	**Duplex**

Lines and Functions

Symbol	Description
	Solid Line – Main Line
	Dashed Line – Pilot Line
	Dotted Line – Exhaust or Drain Line
	Center Line – Enclosure Outline
	**Lines Crossing** (90° intersection not necessary)
	**Lines Joining** (90° intersection not necessary)
	**Lines Joining**
	Flow Direction hydraulic medium
	**Flow Direction** gaseous medium
	Energy Source
	**Line with Fixed Restriction**
	**Line with Adjustable Restriction**
	**Flexible Line**
	Plugged Port, Test Station, Power Take-off
 connected / disconnected	**Quick Disconnect Without Checks**
 connected / disconnected	**Quick Disconnect With Checks**
 connected / disconnected	**Quick Disconnect With One Check**

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Design Torque

Design torque represents the maximum torque that an actuator must supply in an application. This maximum is the greater of the Demand Torque or the Cushion Torque. If the demand torque exceeds what the actuator can supply, the actuator will either move too slowly or stall. If the cushion torque is too high, the actuator may be damaged by excessive pressure. Demand torque and cushion torque are defined below in terms of load, friction, and acceleration torque.

Equations for calculating demand torque and cushion torque for some general applications are provided on the following pages.

T - Torque

The amount of turning effort exerted by a rotary actuator.

TD - Demand Torque

This is the torque required from the actuator to do the job and is the sum of the load torque, friction torque, and acceleration torque, multiplied by an appropriate design factor. Design factors vary with the applications and the designers' knowledge.

Equation 4-3) **TD = Ta + Tf + TL**

TL - Load torque

This is the torque required to equal the weight or force of the load. For example, in Fig. 4-8a, the load torque is 563 Nm (5000 lb-in.); in Fig. 4-8b the load torque is zero; in Fig. 4-8c the load torque is 563 Nm (5000 lb-in.). The load torque term is intended to encompass all torque components that aren't included in the friction or acceleration terms.

Tf - Friction torque

This is the torque required to overcome friction between any moving parts, especially bearing surfaces. In Fig. 4-8a, the friction torque is zero for the hanging load; in Fig. 4-8b the friction torque is 775 Nm (6880 lb-in) for the sliding load; in Fig. 4-8c the friction torque is zero for the clamp.

Equation 4-4) **Tf = mWr**

Ta - Acceleration Torque

This is the torque required to overcome the inertia of the load in order to provide a required acceleration or deceleration. In Fig. 4-8a the load is suspended motionless so there is no acceleration. In Fig. 4-8b, the load is accelerated from 0 to some specified angular velocity. If the mass moment of inertia about the axis of rotation is I and the angular acceleration is a, the acceleration torque is equal to Ia. In Fig. 4-8c there is no acceleration.

Some values for mass moment of inertia are given in Table 4. Some useful equations for determining a are listed in Table 5. Equation 5 below shows the general equation for acceleration torque.

Equation 4-5) **Ta = Ia**

TC - Cushion Torque

This is the torque that the actuator must apply to provide a required deceleration. This torque is generated by restricting the flow out of the actuator (meter-out) so as to create a back pressure which decelerates the load. This back pressure (deceleration) often must overcome both the inertia of the load and the driving pressure (system pressure) from the pump. See applications.

Equation 4-6) $$Tc = Ta + \frac{PrV}{\theta} - Tf \pm TL$$

The friction torque Tf reduces the torque the actuator must apply to stop the load. The load torque TL may add to, or subtract from the torque required from the actuator, depending upon the orientation of the load torque. For example, a weight being swung upward would result in a load torque that is subtracted.

Warning: Rapid deceleration can cause high pressure intensification at the outlet of the actuator. Always insure that cushion pressure does not exceed the manufacturer's pressure rating for the actuator.

KE – Kinetic Energy (1/2 Jmω^2)

This is the amount of energy that a rotating load has. The rotator must be able to stop the load. All products have kinetic energy rating tables. Choose the appropriate deceleration option (i.e., bumper, cushions, shock absorbers, etc.) that meets or exceeds the kinetic energy of the load.

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Rotary Actuator Torque Requirements
Demand Torque Examples

A) Example of load torque
The load is held motionless as shown.

$T_D = T_\alpha + T_f + T_L$

$T_\alpha = 0$

$T_f = 0$

$T_L = (500\ lb)(10\ in) = 5{,}000\ lb\text{-}in$

$T_D = 5{,}000\ lb\text{-}in$

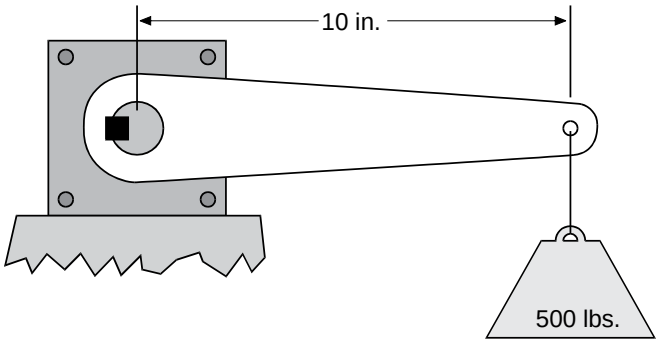

Figure 4-8a

B) Due to friction and acceleration
The 500 lb rotating index table is supported by bearings with a coefficient of friction of 0.25. The table's acceleration a is 2 rad/sec^2. The table's mass moment of inertia I is 2,330 lb-in-sec^2.

$T_D = T_\alpha + T_f + T_L$

$T_\alpha = I_\alpha = (2{,}330\ lb\text{-}in\text{-}sec2)(2/sec2) = 4{,}660\ lb\text{-}in$

$T_f = \mu W r_b = 0.25\ (500\ lb)(55\ in) = 6{,}880\ lb\text{-}in$

$T_L = 0$

$T_D = 4{,}660\ lb\text{-}in + 6{,}880\ lb\text{-}in = 11{,}540\ lb\text{-}in$

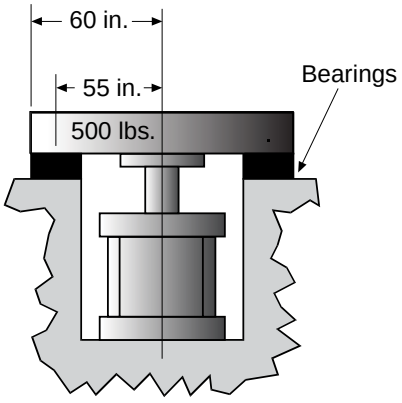

Figure 4-8b

C) Load torque example

$T_D = T_\alpha + T_f + T_L$

$T_\alpha = 0$

$T_f = 0$

$T_L = (500\ lb)(10\ in) = 5{,}000\ lb\text{-}in$

$T_D = 5{,}000\ lb\text{-}in$

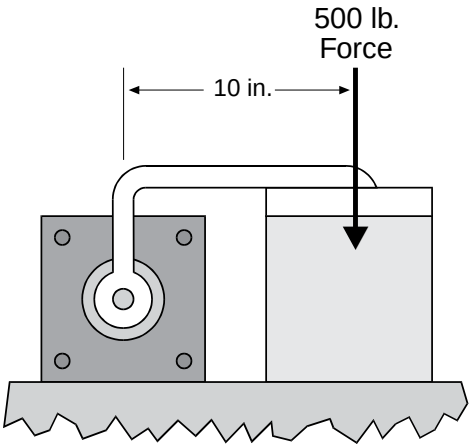

Figure 4-8c

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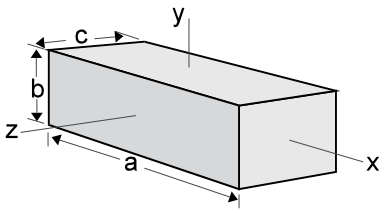
Rotary Actuator Moments of Inertia
Table 4: Mass Moments of Inertia

Rectangular prism

$I_x = \frac{1}{12} m(b^2 + c^2)$

$I_y = \frac{1}{12} m(c^2 + a^2)$

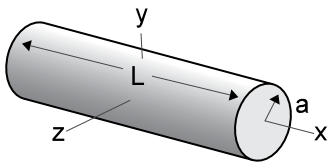
$I_z = \frac{1}{12} m(a^2 + b^2)$



Circular cylinder

$I_x = \frac{1}{2} ma^2$

$I_y = I_z = \frac{1}{12} m(3a^2 + L^2)$

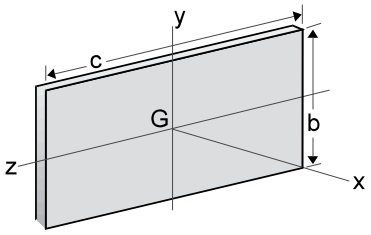


Thin rectangular plate

$I_x = \frac{1}{12} m(b^2 + c^2)$

$I_y = \frac{1}{12} mc^2$

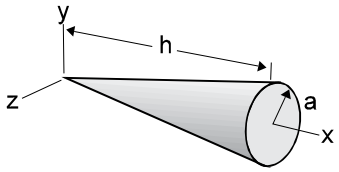
$I_z = \frac{1}{12} mb^2$



Circular cone

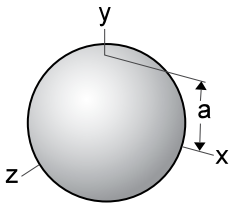
$I_x = \frac{3}{10} ma^2$

$I_y = I_z = \frac{3}{5} m(\frac{1}{4} a^2 + h^2)$



Sphere

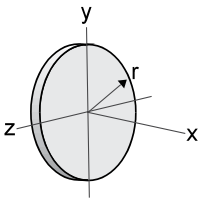
$I_x = I_y = I_z = \frac{2}{5} ma^2$



Thin disk

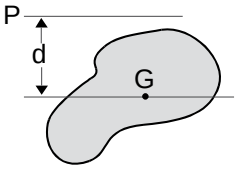
$I_x = \frac{1}{2} mr^2$

$I_y = I_z = \frac{1}{4} mr^2$



Parallel Axis Theorem:

$I_p = I + md^2$



I_p = Mass moment of inertia about an axis parallel to a centroidal axis
I = Mass moment of inertia about a centroidal axis
m = Mass
d = Distance between axes

When acceleration is constant:

$\theta = \omega_0 t + \frac{1}{2} \alpha t^2$

$\theta = \omega_0 t + \frac{1}{2} \omega_t t$

$\omega = \omega_0 + \alpha t$

$\omega = (\omega_0^2 + 2\alpha\theta)^{1/2}$

$\alpha = \frac{2\theta}{t^2}$

$\alpha = \frac{(\omega_t - \omega_0)^2}{2\theta}$

$\alpha = \frac{(\omega_t - \omega_0)}{t}$

When velocity is constant:

$\theta = \omega t$

t = time
θ = angular position
ω_t = angular velocity at time = t
ω_0 = angular velocity at time = 0
α = angular acceleration

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Rotary Actuator Basic Equations
Basic Velocity, Acceleration, Kinetic Energy And Torque Equations

Equations below are based on triangular velocity profile.

$$\omega_{max} = .035 \times \frac{\Theta}{t}$$

$$\alpha = \frac{\omega_{max}^2}{\left(\frac{\Theta}{57.3}\right)}$$

$$\alpha = \frac{\omega_{max}}{(t/2)}$$

$$K.E. = 1/2\ J_m\ \omega^2$$

$$T_a = \alpha \times J_m$$

$$T_f = W \times U_s \times \left(\text{Distance from pivot point to center of external bearings}\right)$$

$$T_L = \left(\text{Torque arm length to C.G. of load}\right) \times WL \times \cos(\phi)$$

Where ϕ = Angle between torque arm and horizontal plane

Where:

- Θ = Angle of Rotation (Degrees)
- t = Time to rotate through Θ (sec)
- ω = Angular velocity, radians/sec
- α = Angular accelerations (radians/sec^2)
- W_L = Weight of load (lbf)
- T_a = Torque to accelerate load (lb-in)
- U_s = Coefficient of static friction
- J_m* = Rotational mass moment of inertia (lb-in-sec2)
- T_f = Torque to overcome friction (lb-in)
- T_L = Torque to overcome effects of gravity

*Use "I" values from Table 4.

Coefficients of Friction

Material*	μ_s	μ_k
Steel on Steel	0.80	0.40
Steel on Steel (lubricated)	0.16	0.03
Aluminum on Steel	0.45	0.30
Copper on Steel	0.22	0.22
Brass on Steel	0.35	0.19
Teflon on Steel	0.04	0.04

*dry contact unless noted

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Selecting the proper vacuum cup

⚠ CAUTION:
Selecting the type of vacuum cup, material, and size suitable for an application is important to the overall vacuum system. Calculating the forces involved for each application is recommended to determine the vacuum cup size. It should be noted that these calculations are basic theoretical guidelines and each application must be tested for actual results. With all vacuum applications, certain practical assumptions concerning cup materials, environmental conditions, and product characteristics to name a few, may not be consistent with the performance. Again, the user should determine the efficiency, performance, and safety factor of the cup selection.

Calculating pad diameter and forces

Mass

The term mass is a quantity of matter and its ability to resist motion when acted on by an external force. The magnitude of an object is represented as a certain number of kilograms (kg) and is symbolized as "m". The easiest way to determine the mass of an object is to measure the weight with a scale within the earth's gravitational field (ag = 9.81m/sec^2). Likewise, outside of any gravitational field, a mass could potentially be weightless.

Forces

For vacuum applications, force is a vector quantity in a defined direction either horizontal or vertical. The standard international unit of force is measured in Newtons (N) which is the equivalent of (kgm/sec^2). The force can be calculated by measuring the effect of a change in acceleration on a mass.

Newtons Law: F(N) = mass(kg) x a_g(m/sec^2)

Consider an object with a mass of 10kg. The gravitational force on this object would be:

F(N) = 10kg x 9.81m/sec^2 = 98.1 N

Acceleration

Acceleration is the change in velocity of a moving object. Acceleration is a vector, a directional quantity expressed in units of meters per second squared (m/sec^2) and symbolized as "*a*". To explain the magnitude of acceleration consider an object with a change in velocity of 2 meters per second (m/sec) over a 4 second time frame. The acceleration can be calculated with:

$a = \frac{\triangle \text{ velocity}}{\text{time}}$ $\quad a = \frac{6\text{m/sec}}{2\text{ sec}}$ $\quad a = 3\text{m/sec}^2$

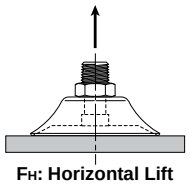
This is considered an average acceleration.

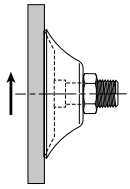
Coefficient of friction

Certain values for coefficient of friction should be taken into consideration when calculating the combined forces in motion. Actual values between suction cups and surfaces are difficult to determine. Therefore, coefficient of friction values from published charts, should be used as a reference to adjust the safety factors accordingly.

Lifting forces

When calculating lifting forces, safety factors of 2 for horizontal lifts and 4 for vertical lifts are minimum values. Applications with irregular shapes, difficult surfaces, and backward motions will require increased safety factors.


F_H: Horizontal Lift


F_V: Vertical Lift

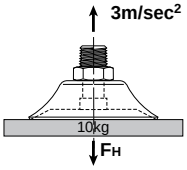
Horizontal lifting force

Apply Newtons Law to calculate the force on a 10kg mass with a change in acceleration of 3m/sec^2 and a safety factor of 2.

FH(N) = mass(kg) x (a_g+ a) x SH

FH(N) = 10kg x (9.81m/sec^2 +3m/sec^2) x 2

FH = 256.2 N



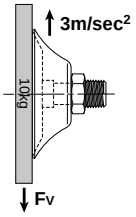
Vertical lifting force

Apply Newtons Law to calculate the force on a 10kg mass with a dry surface, a change in acceleration of 3m/sec^2 and a safety factor of 4.

FV(N) = mass(kg) x (a_g+ a) x Sv

FV(N) = 10kg x (9.81m/sec^2 +3m/sec^2) x 4

FV = 512.4 N



Combined vertical lift and horizontal motion

Calculate the force on a 10kg mass with a dry surface, a change in acceleration of 3m/sec^2, and a change in travel acceleration of 2m/sec^2.

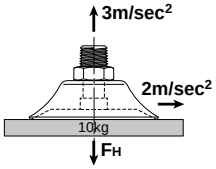
$FM(N) = \sqrt{FV^2 + FH^2}$

$FM(N) = \sqrt{[(10\text{kg} \times 2\text{m/sec}^2) \times 4]^2 + [10\text{kg} \times (9.81\text{m/sec}^2 + 3\text{m/sec}^2) \times 2]^2}$

$FM(N) = \sqrt{(80\text{kgm/sec}^2)^2 + [256\text{kgm/sec}^2]^2}$

$FM(N) = \sqrt{6400\text{kgm/sec}^2 + 65{,}536\text{kgm/sec}^2}$

FM = 268.2 N



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Analyze the forces

Using the previous examples, consider an application where 4 cups have been selected to transfer the product.

Take the Horizontal Lifting Force (FH) of 256.2 N and divide by the number of cups (4) to obtain the individual force for each cup.

$$\frac{256.2\ (N)}{4} = 64.05\ N / Cup$$

Referring to the chart below, at 60% vacuum, select a force greater than 64.05 N. The appropriate selection is a 40mm diameter cup which has a theoretical lifting force of 76.9 N.

The same calculation can be applied to the Vertical Lifting Force and the Forces in Motion examples to determine the cup diameter.

To convert Pounds (lbf) to Newton (N), multiply lbf x 4.4.

Calculate the diameter of the cup

Calculate the cup diameter for horizontal lift at 60% of full vacuum using the information from the previous page.

$$D = 35.7\sqrt{\frac{m\ (a_g + a) \times S}{Pv \times n}}$$

$$D = 35.7\sqrt{\frac{10\ (9.81 + 3) \times 2}{61 \times 4}}$$

D (mm) = Diameter of Cup
m (kg) = Mass
a_g = 9.81m/sec^2
a = Motion Acceleration
S = Safety Factor
Pv (kPa) = Operating Vacuum Pressure
n = number of Cups

D = 36.58 mm

Referring to the chart below, at 60% vacuum, select a cup diameter equal to or greater than 37mm. The appropriate selection is a 40mm diameter cup which has a theoretical lifting force of 76.9 N.

Theoretical lifting force per cup lbf (N)

Cup		Vacuum level								
		3 inHg	6 inHg	9 inHg	12 inHg	15 inHg	18 inHg	21 inHg	24 inHg	27 inHg
		-1.5 PSIG	-3 PSIG	-4.5 PSIG	-6 PSIG	-7.5 PSIG	-9 PSIG	-10.5 PSIG	-12 PSIG	-13.5 PSIG
Diameter mm	Area cm²	10.2 kPa	20.3 kPa	30.5 kPa	40.6 kPa	50.8 kPa	61 kPa	71.1 kPa	81.3 kPa	91.4 kPa
		10%	20%	30%	40%	50%	60%	70%	80%	90%
1.5	0.01	0.004 (0.02)	0.008 (0.04)	0.008 (0.04)	0.014 (0.06)	0.018 (0.08)	0.022 (0.10)	0.026 (0.12)	0.032 (0.14)	0.032 (0.14)
2	0.03	0.007 (0.03)	0.013 (0.06)	0.022 (0.10)	0.029 (0.13)	0.036 (0.16)	0.043 (0.19)	0.049 (0.22)	0.056 (0.25)	0.063 (0.28)
3.5	0.10	0.022 (0.10)	0.045 (0.20)	0.065 (0.29)	0.088 (0.39)	0.110 (0.49)	0.133 (0.59)	0.155 (0.69)	0.175 (0.78)	0.198 (0.88)
5	0.20	0.045 (0.20)	0.090 (0.40)	0.135 (0.60)	0.180 (0.80)	0.225 (1.00)	0.270 (1.20)	0.315 (1.40)	0.360 (1.60)	0.405 (1.80)
6	0.28	0.065 (0.29)	0.130 (0.58)	0.196 (0.87)	0.270 (1.20)	0.315 (1.40)	0.382 (1.70)	0.450 (2.00)	0.517 (2.30)	0.585 (2.60)
7	0.39	0.088 (0.39)	0.175 (0.78)	0.265 (1.18)	0.360 (1.60)	0.450 (2.00)	0.540 (2.40)	0.607 (2.70)	0.697 (3.10)	0.787 (3.50)
8	0.50	0.117 (0.52)	0.229 (1.02)	0.346 (1.54)	0.450 (2.00)	0.585 (2.60)	0.697 (3.10)	0.809 (3.60)	0.922 (4.10)	1.034 (4.60)
10	0.79	0.180 (0.80)	0.360 (1.60)	0.540 (2.40)	0.719 (3.20)	0.899 (4.00)	1.079 (4.80)	1.259 (5.60)	1.439 (6.40)	1.619 (7.20)
15	1.77	0.404 (1.80)	0.809 (3.60)	1.216 (5.41)	1.619 (7.20)	2.023 (9.00)	2.428 (10.8)	2.833 (12.6)	2.237 (14.4)	3.642 (16.2)
18	2.55	0.585 (2.60)	1.169 (5.20)	1.751 (7.79)	2.338 (10.4)	2.923 (13.0)	3.507 (15.6)	4.069 (18.1)	4.676 (20.8)	5.238 (23.3)
20	3.14	0.719 (3.20)	1.439 (6.40)	2.158 (9.60)	2.878 (12.8)	3.597 (16.0)	4.316 (19.2)	5.036 (22.4)	5.755 (25.6)	6.474 (28.8)
25	4.91	1.124 (5.00)	2.248 (10.0)	3.372 (15.0)	4.496 (20.0)	5.620 (25.0)	6.744 (30.0)	7.868 (35.0)	8.992 (40.0)	10.116 (45.0)
30	7.07	1.619 (7.20)	3.237 (14.4)	4.856 (21.6)	6.474 (28.8)	8.093 (36.0)	9.712 (43.2)	11.330 (50.4)	12.949 (57.6)	14.568 (64.8)
35	9.62	2.203 (9.80)	4.406 (19.6)	5.598 (29.4)	8.813 (39.2)	11.016 (49.0)	13.241 (58.9)	15.422 (68.6)	17.648 (78.5)	19.828 (88.2)
40	12.6	2.900 (12.9)	5.755 (25.6)	8.655 (38.5)	11.510 (51.2)	14.388 (64.0)	17.288 (76.9)	20.143 (89.6)	23.155 (103)	25.853 (115)
50	19.6	4.519 (20.1)	8.992 (40.0)	13.511 (60.1)	17.985 (80.0)	22.481 (100)	26.977 (120)	31.473 (140)	35.969 (160)	40.466 (180)
60	28.3	6.497 (28.9)	12.949 (57.6)	19.446 (86.5)	25.853 (115)	32.372 (144)	38.892 (173)	45.411 (202)	51.931 (231)	58.226 (259)
75	44.2	10.161 (45.2)	20.233 (90.0)	30.349 (135)	40.466 (180)	50.582 (225)	60.698 (270)	70.815 (315)	80.931 (360)	91.048 (405)
80	50.3	11.555 (51.4)	22.931 (102)	34.621 (154)	46.086 (205)	57.551 (256)	69.241 (308)	80.706 (359)	92.172 (410)	103.637 (461)
90	63.6	14.635 (65.1)	29.225 (130)	43.838 (195)	58.226 (259)	72.838 (324)	87.451 (389)	102.063 (454)	116.676 (519)	131.064 (583)
95	70.9	16.299 (72.5)	32.372 (144)	48.784 (217)	64.970 (289)	81.156 (361)	97.567 (434)	113.753 (506)	129.940 (578)	146.126 (650)
110	95.0	21.851 (97.2)	43.613 (194)	65.419 (291)	87.001 (387)	108.808 (484)	130.614 (581)	152.421 (678)	174.227 (775)	195.809 (871)
120	113.1	26.078 (116)	51.706 (230)	77.784 (346)	103.637 (461)	129.490 (576)	155.568 (692)	181.421 (807)	207.274 (922)	233.127 (1037)
150	176.7	40.690 (181)	80.931 (360)	121.622 (541)	161.862 (720)	202.328 (900)	243.019 (1081)	283.259 (1260)	323.950 (1441)	364.191 (1620)
200	314.2	72.164 (321)	143.878 (640)	216.041 (961)	287.531 (1279)	359.919 (1601)	432.083 (1922)	503.797 (2241)	575.961 (2562)	647.449 (2880

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Selecting a generator size

The choice of Generator Series depends on the system requirements for components and overall performance for the application. Inline Generators offer the basic function for creating vacuum flow. Adding integrated components such as automatic blow off Controls, Vacuum and Blow-off Solenoids, Pressure Sensors, Check Valves and Filters are options that can reduce overall mounting space, reduce cycle time and can offer air conservation functions as well as emergency stop modes. For guidelines on selecting Vacuum Generators by features, consult the highlight features in the Generator Index section for each Series Section.

A vacuum source can only achieve and hold a degree of vacuum that sustains the amount of leakage into the vacuum system. In most cases, it is the leakage through the product and by of the cup seal that limits the system degree of vacuum. Products with high product leakage are Porous Applications. The degree of vacuum that can be obtained with this type of product can vary and tends to be below 10 inHg. Products with low or no leakage are called Non-Porous Applications. It can be assumed that the maximum degree of vacuum of the system is the maximum degree of the vacuum generator. Due to design cycle time and safety requirements, a lower degree of vacuum is generally chosen other than the maximum obtainable degree of vacuum. Chart 1 lists different units of measure for vacuum with typical application levels The system degree of vacuum must be determined by product testing.

Chart 1: Basic vacuum pressure measurements units

Negative gauge pressure PSIG	Absolute pressure PSIA	Inches of mercury inHg
0	14.7	0
Atmospheric pressure at sea level		
-1.5	13.2	3
-3.0	11.7	6
-4.5	10.2	9
Typical porous vacuum level		
-6.0	8.7	12
-7.5	7.2	15
-9.0	5.7	18
-10.5	4.2	21
Typical non-porous vacuum level		
-12.0	2.7	24
-13.5	1.2	27
-14.7	0	29.92
Perfect vacuum (zero reference pressure)		

Evacuation time

The size of the generator generally refers to either the Evacuation Time or the Vacuum Flow Rates of the generator and varies by the size of the nozzle / diffuser.

Evacuation Time is the time required to evacuate the air out of a vacuum system to specific degree of vacuum. Typically, this degree of vacuum is a value where it is safe to move a product in a pick and place application and is determined by the design engineer. Evacuation Time can also be considered response time of the system.

A typical Evacuation Time chart for a generator series is shown in Chart 2. The time to achieve a given degree of vacuum in a 1 cubic foot volume is listed in seconds for each Generator.

Example: A pick and place application requires a 0.25 secs for creation of 18 inHg of vacuum in the vacuum system. The vacuum system volume, which includes tubing and cups, is 0.002 ft^3.

The evacuation time charts are given for a 1 cubic foot (ft^3) volume. To use these charts, convert the time requirement of the system to an equivalent time for a 1 cubic foot (ft^3) volume. In this example, 1 cubic foot (ft^3) is 500 times the system volume of 0.002 ft^3. Multiply the system time requirement by 500 (500 x 0.25 secs = 125 seconds). Any generator with a evacuation time of less than 125 seconds to attain 18 inHg can be chosen for this application. A CV-15-HS will meet the requirements for this application. A (-) listed means the generator will not obtain a higher degree of vacuum than the level of the first (-).

Chart 2: evacuation time

Series / nozzle diameter	Air supply pressure	Air consumption	Evacuation time in sec / ft3 * to reach different vacuum levels (inHg)								
	PSI	SCFM	3	6	9	12	15	18	21	24	27
CV-05HS	70	0.46	24.3	57.3	101.0	160.5	231.1	305.1	433.1	597.7	—
CV-05LS	70	0.46	11.0	23.4	40.0	64.4	110.2	—	—	—	—
CV-10HS	70	1.55	4.8	9.9	16.0	24.9	35.9	51.4	77.4	117.5	226.0
CV-10LS	70	1.55	3.7	7.6	13.0	20.3	33.1	—	—	—	—
CV-15HS	70	3.53	2.5	4.8	7.0	11.0	15.5	22.0	31.9	46.6	112.1
CV-15LS	70	3.53	2.0	3.1	5.0	7.6	12.1	—	—	—	—
CV-20HS	70	6.36	1.7	2.8	5.0	6.5	9.0	13.0	18.9	27.4	60.7
CV-20LS	70	6.36	1.3	2.5	4.0	5.9	11.3	—	—	—	—

* 1 ft^3 = 28.31 liters

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Vacuum flow

A typical Vacuum Flow chart for a generator series is listed in Chart 3. The vacuum flow rate at given degree of vacuum is listed in SCFM for each Generator. This chart is generally used to determine the change of degree of vacuum given a change in vacuum flow rate of a generator.

Example. A CV-15HS can only obtain 9 inHg. The vacuum flow rate at 9 inHg is 1.50 SCFM. This means that the cup seal and product leaks 1.50 SCFM of air. This generator can maintain the leak rate of 1.50 SCFM. Choosing a generator with more flow at 9 inHg will increase the degree of vacuum in the system because the generator can overcome more leakage. In this case,the vacuum flow rates are linear since this CV generator is a single stage venturi generator. Replacing a CV-15HS with CV-20HS will increase the degree of vacuum in the system to approximately 16.2 inHg. The CV-20HS now maintains 16.2 inHg at a flow rate of 1.50 SCFM.

Chart 3: Vacuum flow (SCFM)

Nozzle diameter	inHg 0	3	6	9	12	15	18	21	24	27	30
CV-05HS	.21	.19	.17	.15	.13	.11	.09	.07	.05	.03	—
CV-05LS	.32	.27	.22	.17	.12	.06	—	—	—	—	—
CV-10HS	.95	.85	.75	.65	.55	.45	.35	.25	.15	.05	—
CV-10LS	1.27	1.05	.83	.59	.38	.17	—	—	—	—	—
CV-15HS	2.22	1.98	1.74	1.5	1.26	1.01	.76	.51	.25	.10	—
CV-15LS	3.35	2.79	2.23	1.67	1.10	.53	—	—	—	—	—
CV-20HS	3.88	3.45	3.02	2.59	2.16	1.73	1.30	.87	.44	.25	—
CV-20LS	5.85	5.09	4.03	2.97	1.91	.85	—	—	—	—	—

Tubing reference

Tubing ID SAE	mm
5/64	2
3/32	2.38
1/8	3.17
5/32	4
3/16	4.76
1/4	6.35
5/16	8
3/8	9.52
7/16	11.1

SAE x 25.4 = mm

Tubing length (L) In.	M
18	.457
24	.610
30	.762
36	.914
42	1.07
48	1.22
54	1.37
60	1.52
66	1.67

In. x 254 = M

Pad volume reference (p_V)

PFG Ø	Cu in.	L
2	.00004	.0000006
3.5	.0001	.000002
5	.0003	.000005
6	.00048	.000008
8	.002	.00003
10	.004	.00007
15	.012	.0002
20	.03	.0005
25	.067	.0011
30	.067	.0011
35	.14	.0023
40	.18	.003
50	.25	.0042
60	.57	.0094
80	1.28	.021
95	1.95	.032
110	5.00	.082
150	10.80	.177
200	23.24	.381

PBG Ø	Cu in.	L
10	.013	.0002
15	.045	.0007
20	.070	.001
30	.28	.004
40	.56	.009
50	1.60	.026
75	4.63	.076
110	6.77	.111
150	15.86	.26

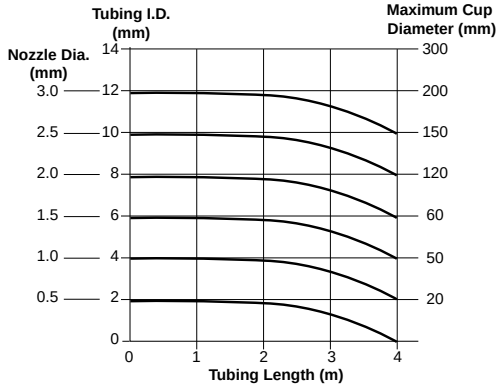
PCG Ø	Cu in.	L
5	.002	.00003
7	.003	.00004
10	.010	.0001
15	.060	.0009
18	.082	.001
20	.123	.002
30	.595	.009
40	1.15	.018
60	4.40	.072
90	10.00	.1639

1 ft^3 = 28.31 liters
1 ft^3 = 1728 in^3

Nozzle diameter to tubing diameter to cup diameter reference

For each application, the size of the nozzle diameter, vacuum tubing I.D., and maximum cup diameter must be practical in relationship to each other. The chart to the right is a quick reference to aid in selecting the vacuum tubing I.D. and nozzle diameter given the maximum cup diameter.

As an example, one 60mm cup with 2 meters in tubing length would require a minimum 6mm I.D. vacuum tube and a 1.5mm nozzle. The same 60mm cup with 3.5 meters in tubing length would require a minimum 8mm I.D. vacuum tube and a 2.0mm nozzle to achieve an equivalent performance.



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Saving Money and Space by Sizing Your Valves Properly
This catalog gives you a flow rating (Cv) for each valve in the Parker Hannifin line. You can "plug" your requirements into the following simple formula, and determine the Cv needed to do the job. By not oversizing, you'll save space and money, and you'll ensure the valve you select will do the job.

Converting the Job Requirements Into Cv
(Capacity Co-efficient).

$$\mathbf{Cv} = \frac{\text{Cylinder Area (Sq. In.) (See Table 1)} \times \text{Cylinder Stroke (In.)} \times \text{Compression Factor (Table 2)} \times \text{"A" (Table 2)}}{\text{Stroke Time (sec.)} \times 28.8}$$

Let's work through an example:

We want to extend a 3-1/4" bore cylinder which has a 12" stroke in one second, and we have a supply pressure of 80 PSI to do the work. Here's what we know:

Cylinder Area for a 3-1/4" Bore, from Table 1 .....8.30 sq. in.
Cylinder Stroke ..... 12 in.
Stroke Time Required in Seconds.....1 sec.
Compression Factor at 80 PSI, from Table 2 ..... 6.4
"A" Constant for 80 PSI, from Table 2 ..... .048

Substituting in the formula, we have:

$$\mathbf{Cv} = \frac{8.30 \times 12 \times 6.4 \times .048}{1 \times 28.8} = \mathbf{1.06}$$

Any valve, therefore, which has a Cv of at least 1.06, will extend our cylinder the specified distance in the required time.

Choosing the Valve "Series"
Your next step is to choose a basic valve design to do the job. For a quick guide to valve designs, see Table 3.

Having selected the basic valve design, consult the Capacity Co-efficient (Cv) tables which describe the individual valve capacities.

Selecting the Valve Model, Options and Accessories
Having determined Cv, series, port size, flow-path configuration (pre-determined by circuit design), and actuation method, you're ready to choose the exact valve model number.

Read the pertinent catalog pages; note the exact model numbers, options and accessories you want. Then phone or write your Parker Hannifin air valve distributor. They will give you prompt, accurate service.

Note: Need circuit design help? Contact your local Parker Hannifin distributor. They are backed up by our regional Sales Engineers and offices. Between them, you'll find answers to all of your questions.

Table 1

Effective Square-Inch Areas for Standard-Bore-Size Cylinders

Bore Size	Cylinder Area (Sq. In.)	Bore Size	Cylinder Area (Sq. In.)
3/4"	.44	4"	12.57
1"	.79	4-1/2"	15.90
1-1/8"	.99	5"	19.64
1-1/4"	1.23	6"	28.27
1-1/2"	1.77	7"	38.48
1-3/4"	2.41	8"	50.27
2"	3.14	10"	78.54
2-1/2"	4.91	12"	113.10
3-1/4"	8.30	14"	153.94
3-5/8"	10.32		

Table 2

Compression Factors and "A" Constants

Inlet Pressure (PSIG)	Compression Factor	"A" Constants for Various Pressure Drop*		
		2 PSI △P	5 PSI △P	10 PSI △P
10	1.6	.152	.103	
20	2.3	.126	.084	.065
30	3.0	.111	.073	.055
40	3.7	.100	.065	.048
50	4.4	.091	.059	.044
60	5.1	.085	.055	.040
70	5.7	.079	.051	.037
80	6.4	.075	.048	.035
90	7.1	.071	.046	.033
100	7.8	.068	.044	.032
110	8.5	.065	.042	.030
120	9.2	.063	.040	.029
130	9.9	.061	.039	.028
140	10.6	.058	.037	.027
150	11.2	.057	.036	.026
160	11.9	.055	.035	.025
170	12.6	.053	.034	.024
180	13.3	.052	.033	.024
190	14.0	.051	.032	.023
200	14.7	.050	.032	.023

Note: Use "A" constant at 5 PSI rP for most applications. On very critical applications, use "A" at 2 PSI rP. You will find in many cases, a 10 PSI rP is not detrimental, and can save money and mounting space.

* Tabulated values are the solution of $\frac{1}{22.48}\sqrt{\frac{GT}{(P_1 - P_2)\,P_2}}$ where T is for 68°F and G =1 for Air.

Table 3

Characteristics of the Major Valve Designs

A. Poppet 3-Way and 4-Way	1. High flow capacities 2. Minimum lubrication requirements 3. Fast response 4. Self-cleaning poppet seats 5. Pressures of 15 to 150 PSIG (modifications for vacuum to 250 PSIG)
B. Spool Valves (WCS) 3-Way and 4-Way	1. Low friction 2. Lower operating pressures 3. Fast response 4. Less wear 5. Long Cycle Life - Under pressure, radial expansion of the seal occurs to maintain sealing contact with the valve bore 6. Non-Lube Service - No lubrication required for continuous valve shifting 7. Bi-Directional Spool Seals - Common spool used for any pressure, including vacuum
C. Packed Bore 4-Way	1. Wide range of flow capacities 2. Wide range of flow-path configurations 3. Pilot-operated models available 4. Pressures of vacuum to 150 PSIG
D. Rotary Or Reciprocating Disc 4-Way, manually operated	1. Inexpensive 2. Versatility in manual actuation

Cv – Capacity Co-efficients (sometimes called Flow Factors). Each flow path through the valve has its own Cv value. All Cv ratings for each valve cataloged on this page are listed on the front side of this sheet.

$$Cv = \frac{Q}{22.48}\sqrt{\frac{GT}{(P_1 - P_2)\,P_2}}$$

Q = Flow in Standard Cubic Feet per minute (14.7 PSIA at 60°F)
P_1 = Inlet Absolute Pressure (gauge pressure + 14.7)
P_2 = Outlet Absolute Pressure (gauge pressure + 14.7)
Note: P_2 must be greater than .53 x P_1
G = Specific Gravity of flowing medium (Air, G =1)
T = Absolute Temperature of Air (460 + °F.)

Cv = Q x "A" (Table 2)

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Part No.	Section/Page No.
00337 1000	G7
00337 1001	G7
00337 1002	G7
00337 1003	G7
00337 1004	G7
00337G1000	G7
00337G1001	G7
00338 1100	G7
00338 1101	G7
00338 1102	G7
00338 1103	G7
00338 1104	G7
00338G1100	G7
00338G1101	G7
00339 3000	G9
00339 3001	G9
00339 3002	G9
00339 3003	G9
00339 3004	G9
00339G3000	G9
00339G3001	G9
00470 0010	G13
00470 0900	G13
00470 7020	G13
00475 0010	G13
00475 0900	G13
00475 2900	G13
00645 0060	G10
008230109	D235
008230299	D235
008240109	D235
01468 0006	G10
0240	B229
0261109910	B81
0261109911	B81
0261109912	B81
0261109916	B81
0261109917	B81
0261109918	B81
0261109919	B81
0261109920	B81
0261109921	B81
0261109922	B81
0261110600	B135
0261210800	B135
0261211000	B135
03047 0099	G9
032130599	D235
032130899	D235
032140299	D235
03250 0119	G7
03250 0219	G7
03250 0319	G7
03250 0419	G7
03250 0519	G7
03251 0125	G8
03251 0250	G8
03251 0375	G8
03251 0500	G8
03251 1215	G8
03251 1225	G8
03251 2525	G8
03251 2538	G8
03251 3838	G8
04502 0002	G11
04504 0004	G11
04506 0060	G11
04508 0080	G11
04512 0012	G11
04516 0016	G11
04702 0002	G11
04704 0004	G11
04706 0006	G11
04708 0008	G11
04712 0012	G11
04716 0016	G11
04720 0020	G11
04724 0024	G11
04L00GB	E72
04L03GB	E72
04L10GB	E72
04L13GB	E72
05499 0000	G10
06739 0000	G10
06A12A13A2BC	E60
06A22A13A2BC	E60
06A32A13A2BC	E60
06B12A13A2BC	E61
06B22A13A2BC	E61
06B32A13A2BCG	E61
06D1NA	G13
06D3NA	G13
06E12A11AC	E52
06E12A13AC	E52
06E14A11AC	E52
06E14A13AC	E52
06E16A11AC	E52
06E16A13AC	E52
06E18A11AC	E52
06E18A13AC	E52
06E22A11AC	E52
06E22A13AC	E52
06E24A11AC	E52
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06E26A11AC	E52
06E26A13AC	E52
06E28A11AC	E52
06E28A13AC	E52
06E32A11AC	E52
06E32A13AC	E52
06E34A11AC	E52
06E34A13AC	E52
06E36A11AC	E52
06E36A13AC	E52
06E38A11AC	E52
06E38A13AC	E52
06F12AC	E44
06F14AC	E44
06F16AC	E44
06F18AC	E44
06F22AC	E44
06F24AC	E44
06F26AC	E44
06F28AC	E44
06F32AC	E44
06F34AC	E44
06F36AC	E44
06F38AC	E44
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06G22A13A2BC	E60
06G32A13A2BC	E60
06H12A13A2BC	E61
06H22A13A2BC	E61
06H32A13A2BCG	E61
06L12BE	E58
06L14BE	E58
06L22BE	E58
06L24BE	E58
06L32BE	E58
06L34BE	E58
06R113AC	E48
06R118AC	E48
06R213AC	E48
06R218AC	E48
06R313AC	E48
06R318AC	E48
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07B42A13A2BD	E61
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07E34A13AC	E54
07E36A11AC	E54
07E36A13AC	E54
07E38A11AC	E54
07E38A13AC	E54
07E42A11AC	E54
07E42A13AC	E54
07E44A11AC	E54
07E44A13AC	E54
07E46A11AC	E54
07E46A13AC	E54
07E48A11AC	E54
07E48A13AC	E54
07F32AC	E44
07F34AC	E44
07F36AC	E44
07F38AC	E44
07F42AC	E44
07F44AC	E44
07F46AC	E44
07F48AC	E44
07G32A13A2BD	E60
07G42A13A2BD	E60
07H32A13A2BD	E61
07H42A13A2BD	E61
07L32BE	E58
07L34BE	E58
07L42BE	E58
07L44BE	E58
07R313AC	E48
07R318AC	E48
07R413AC	E48
07R418AC	E48
0831830000	B141
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0833010100	B141
0833010124	B141
0853550003	B359
0853550006	B356, B359
0853550012	B356, B359
085356003	B359
085356006	B359
085356009	B359
0853560012	B359
0856640050	B38
0856640075	B38
0856640100	B38
0856640138	B38
0856640175	B38
0859170003	B359
0859170006	B356, B359
0859170012	B356, B359
0875470006	B356
0886600000	B354
0886620000	B354
086620S002	B355
086620S005	B355
086620T002	B355
086620T005	B355
09166 0060	G10
09L8PBA	E102
09L84BA	E102
09R813BA	E95
0R12B	G12
0R12NB	G12
0R12NVB	G12
0R12VB	G12
0R25B	G12
0R25NB	G12
0R25NFB	G12
0R25PB	G12
0R25VB	G12
0R37B	G12
0R37FB	G12
0R37TB	G12
0R37VB	G12
0R50B	G12
0R50VB	G12
0R75B	G12
0R75FB	G12
0R75VB	G12
1/2DD44B	G39
1/2FF44B	G39
1/2FHG4-B	G39
1/2GG44B	G39
1/2KMM004B	G39
1/2MM0444B	G39
1/2WGG44B	G39
1/4DD44B	G39
1/4FF44B	G39
1/4FHG4-B	G39
1/4GG44B	G39
1/4KMM004B	G39
1/4MM0444B	G39
1/4WGG44B	G39
1/8DD44B	G39
1/8FF44B	G39
1/8FHG4-B	G39
1/8GG44B	G39
1/8KMM004B	G39
1/8MM0444B	G39
1/8WGG44B	G39
1-1/2x2	B370
1-1/2x3-1/2	B370
1-1/2x5	B370
1-1/2x6-1/2	B370
10F01ED	E64
10F01HD	E64
10F03ED	E64
10F03HD	E64
10F05ED	E64
10F05HD	E64
10F07ED	E64
10F07HD	E64
10F11ED	E64
10F11HD	E64
10F13ED	E64
10F13HD	E64
10F15ED	E64
10F15HD	E64
10F17ED	E64
10F17HD	E64
11052	B233
11053	B233
11054	B233
11055	B233
11056	B233
11057	B233
11058	B233
11059	B233
11060	B233
11061	B233
11062	B233
11063	B233
11064	B233
11065	B233
11066	B233
11067	B233
11068	B233
11069	B233
11070	B233
11116	B233
11089FIL	B233
11090FIL	B233
11091FIL	B233
11092FIL	B233
11093FIL	B233
11111x	B233
11112x	B233
11113x	B233
11114x	B233
11115x	B233
11118x	B233
11121x	B233
11122x	B233
11123x	B233
11124x	B233
11125x	B233
11126x	B233
11128x	B233
11131x	B233
11132x	B233
11133x	B233
11134x	B233
11135x	B233
11136x	B233
11138x	B233
11141x	B233
11142x	B233
11143x	B233
11144x	B233
11145x	B233
11146x	B233
11148x	B233
11822FIL	B233
11823FIL	B233
11824FIL	B233
11825FIL	B233
11826FIL	B233
11827FIL	B233
11F12EC	E46
11F14EC	E46
11F16EC	E46
11F18EC	E46
11F22EC	E46
11F24EC	E46
11F26EC	E46
11F28EC	E46
11F32EC	E46
11F34EC	E46
11F36EC	E46
11F38EC	E46
11R115PC	E50
11R121PC	E50
11R215PC	E50
11R221PC	E50
11R315PC	E50
11R321PC	E50
1200P-2-2	G37
1200P-4-4	G37
1200P-6-6	G37
1201P-8-8	G38
1202P-2-2	G37
1202P-4-4	G37
1202P-6-4	G37
1202P-6-6	G37
1203P-2	G38
1203P-4	G38
1203P-8	G38
1204P-2	G38
1204P-4	G38
1204P-6	G38
1204P-8	G38
1227A30-001	E29
1232H30-001	E29
12F32EC	E46
12F34EC	E46
12F36EC	E46
12F38EC	E46
12F42EC	E46
12F44EC	E46
12F46EC	E46

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Part No.	Section/Page No.
12F48EC	E46
12PRL	B337
12R315PB	E50
12R321PB	E50
12R415PB	E50
12R421PB	E50
130-02AAP	G12
130-02AP	G12
130-02BP	G12
130-02CP	G12
1337390125	B335
1337390150	B335
1337390175	B335
1337390188	B335
134-02AAP	G12
134-02AP	G12
134-02BP	G12
134-02CP	G12
1347570031	B335
1347570038	B335
1347570044	B335
1347570050	B335
1347570063	B335
1347570075	B335
1347570088	B335
1347570100	B335
1347570125	B335
1458030044	B38
1458030050	B38
1458030075	B38
1458030088	B38
1458030100	B38
1458030125	B38
1458030150	B38
1458040044	B38
1458040050	B38
1458040075	B38
1458040088	B38
1458040100	B38
1458040125	B38
1458040150	B38
1458050050	B38
1458050075	B38
1458050100	B38
1458050138	B38
1458050175	B38
1458060050	B38
1458060075	B38
1458060100	B38
1458060138	B38
1458060175	B38
146617****	B356
148275****	B356
148896****	B356
148897****	B356
149109****	B356
1493440002	B110
1493440003	B110
1493440004	B110
1493440005	B110
14A01B13F0GF	E73
14A11B13F0GF	E73
14E01B10FC	E70
14E01B11FC	E70
14E01B13FC	E70
14E03B10FC	E70
14E03B11FC	E70
14E03B13FC	E70
14E05B10FC	E70
14E05B11FC	E70
14E05B13FC	E70
14E07B10FC	E70
14E07B11FC	E70
14E07B13FC	E70
14E11B10FC	E70
14E11B11FC	E70
14E11B13FC	E70
14E13B10FC	E70
14E13B11FC	E70
14E13B13FC	E70
14E15B10FC	E70
14E15B11FC	E70
14E15B13FC	E70
14E17B10FC	E70
14E17B11FC	E70
14E17B13FC	E70
14F01BB	E63
14F03BB	E63
14F05BB	E63
14F07BB	E63
14F11BB	E63
14F13BB	E63
14F15BB	E63
14F17BB	E63
14G01B13F0GD	E73
14G11B13F0GD	E73
14R010FC	E65
14R011FC	E65
14R013FC	E65
14R015FC	E65
14R016FC	E65
14R018FC	E65
14R110FC	E65
14R111FC	E65
14R113FC	E65
14R115FC	E65
14R116FC	E65
14R118FC	E65
1527B7916-001	E29
15R110FB	E65
15R111FB	E65
15R113FB	E65
15R115FB	E65
15R116FB	E65
15R118FB	E65
15R210FB	E65
15R211FB	E65
15R213FB	E65
15R215FB	E65
15R216FB	E65
15R218FB	E65
16	G16
16-5B	G16
16-5BP	G16
16-6B	G16
16-6BP	G16
16-7B	G16
161X57-SS	E106, E108
164PLP-2	G31
164PLP-3	G31
164PLP-4	G31
164PLP-5	G31
164PLP-5/32	G31
164PLP-6	G31
164PLP-8	G31
164PW-4	G31
164PW-5	G31
164PW-6	G31
164PW-8	G31
165PLP-2	G31
165PLP-3	G31
165PLP-4	G31
165PLP-5	G31
165PLP-5/32	G31
165PLP-6	G31
165PLP-8	G31
165PW-4	G31
165PW-5	G31
165PW-6	G31
165PW-8	G31
169PLP-2-0	G30
169PLP-4-0	G30
169PLP-5/32-0	G30
169PLPNS532-4LT	G30
16A12A13A2BC	E60
16A22A13A2BC	E60
16A32A13A2BC	E60
16B12A13A2BC	E61
16B22A13A2BC	E61
16B32A13A2BCG	E61
16E	G16
16G	G16
16G12A13A2BC	E60
16G22A13A2BC	E60
16G32A13A2BC	E60
16H12A13A2BC	E61
16H22A13A2BC	E61
16H32A13A2BCG	E61
16L12BE	E56
16L14BE	E56
16L22BE	E56
16L24BE	E56
16L32BE	E56
16L34BE	E56
16PRL	B337
17	G16
17A32A13A2BD	E60
17A42A13A2BD	E60
17B32A13A2BD	E61
17B42A13A2BD	E61
17E	G16
17G	G16
17G32A13A2BD	E60
17G42A13A2BD	E60
17H32A13A2BD	E61
17H42A13A2BD	E61
17L32BE	E56
17L34BE	E56
17L42BE	E56
17L44BE	E56
1834C05-001	E29
18A57	E93
18B57	E94
1GG44B	G39
1MMO444B	G39
1WGG44B	G39
20005	B227
20006FIL	B231
20007FIL	B231
20008FIL	B229
20009FIL	B229
20024-	B227
20025FIL	B231
20026FIL	B231
20035-	B227
20036-	B227
20037-	B227
20039	B227
20092	B227
20093	B227
20094	B227
20095	B227
20096	B227
20097	B227
2010	B229
20153-	B227
20156-	B227
20157FIL	B229
20158FIL	B229
20161	B227
20162FIL	B229
20163FIL	B229
20166-	B227
20167-	B227
20168-	B227
20186FIL	B231
20187FIL	B231
20267FIL	B231
20268FIL	B231
20290-	B227
20292-	B227
20311FIL	B229
20313FIL	B229
20408FIL	B229
20432FIL	B231
20433FIL	B231
20434FIL	B229
20435FIL	B229
20438FIL	B231
20439FIL	B231
20446	B227
20451FIL	B229
20452FIL	B229
20459	B227
20462	B227
20463	B227
20466	B227
20467	B227
20477	B227
20478	B227
20480FIL	B229
20482FIL	B229
20490	B227
207ACBH-2	G36
207ACBH-4	G36
207ACBH-6	G36
207ACBH-8	G36
207ACBH-12	G36
207ACBH-16	G36
207ACBHS-2	G36
207ACBHS-4	G36
207P-2	G36
207P-4	G36
207P-6	G36
207P-8	G36
207P-12	G36
20806	B228
20807	B228
20808	B228
20809	B228
20810	B228
20811	B228
20849FIL	B231
20850FIL	B231
20851FIL	B231
208P-4-2	G36
208P-6-4	G36
208P-8-4	G36
208P-8-6	G36
208P-12-6	G36
208P-12-8	G36
209P-12-2	G36
209P-12-4	G36
209P-12-6	G36
209P-12-8	G36
209P-16-8	G36
209P-16-12	G36
209P-4-2	G36
209P-6-2	G36
209P-6-4	G36
209P-8-2	G36
209P-8-4	G36
209P-8-6	G36
20PRL	B337
20R011FC	E68
20R011GC	E68
20R013FC	E68
20R013GC	E68
20R061FC	E68
20R061GC	E68
20R111FC	E68
20R111GC	E68
20R113FC	E68
20R113GC	E68
20R161FC	E68
20R161GC	E68
210P-2	G36
210P-4	G36
210P-6	G36
210P-8	G36
211P-12	G36
211P-2	G36
211P-4	G36
211P-6	G36
211P-8	G36
212P-4	G36
212P-6	G36
213P-12	G36
213P-2	G36
213P-4	G36
213P-6	G36
213P-8	G36
215PN-12	G36
215PN-2	G36
215PN-4	G36
215PN-6	G36
215PN-8	G36
215PNL-2-15	G37
215PNL-2-20	G37
215PNL-2-25	G37
215PNL-2-30	G37
215PNL-2-35	G37
215PNL-4-15	G37
215PNL-4-20	G37
215PNL-4-25	G37
215PNL-4-30	G37
215PNL-4-35	G37
215PNL-6-15	G37
215PNL-6-20	G37
215PNL-6-25	G37
215PNL-6-30	G37
215PNL-6-35	G37
215PNL-8-15	G37
215PNL-8-20	G37
215PNL-8-25	G37
215PNL-8-30	G37
215PNL-8-35	G37
216P-2	G37
216P-4	G37
216P-6	G37
216P-8	G37
216P-12	G37
218P-2	G37
218P-4	G37
218P-6	G37
218P-8	G37
218P-12	G37
219P-2	G37
219P-4	G37
219P-6	G37
219P-8	G37
219P-12	G37
2200P-2-2	G37
2200P-4-4	G37
2200P-6-6	G37
2200P-8-8	G37
2201P-2-2	G38
2202P-2-2	G37
2202P-4-2	G37
2202P-4-4	G37
2202P-4-6	G37
2202P-6-6	G37
2202PA-2-2	G37
2202PA-4-4	G37
2202PA-6-6	G37

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Part No.	Section/Page No.
2203P-2	G38
2203P-4	G38
2203P-6	G38
2203P-8	G38
2205P-12	G38
2203P-12	G38
2205P-2	G38
2205P-4	G38
2205P-6	G38
2205P-8	G38
220P-2	G37
220P-4	G37
220P-6	G37
2214P-2-2	G38
2214P-4-4	G38
2214P-6-6	G38
2214P-8-8	G38
2224P-2	G38
2224P-4	G38
2224P-6	G38
2224P-8	G38
2224P-12	G38
2225P-2	G38
2225P-4	G38
2225P-6	G38
2225P-8	G38
2225P-12	G38
222P-12-6	G37
222P-12-8	G37
222P-12-12	G37
222P-2-2	G37
222P-4-2	G37
222P-4-4	G37
222P-6-2	G37
222P-6-4	G37
222P-6-6	G37
222P-8-4	G37
222P-8-6	G37
222P-8-8	G37
24	G16
24-5B	G16
24-5BP	G16
24-6B	G16
24C	G16
24F	G16
24PLP-10M-6M	G25
24PLP-10M-8M	G25
24PLP-4-4	G22
24PLP-4-5/32	G22
24PLP-5-5/32	G22
24PLP-6-4	G22
24PLP-6M-4M	G25
24PLP-8M-4M	G25
24PLP-8M-6M	G25
24PLPD-10M-6M	G25
24PLPD-10M-8M	G25
24PLPD-4-4	G22
24PLPD-4-5/32	G22
24PLPD-5-5/32	G22
24PLPD-6-4	G22
24PLPD-6M-4M	G25
24PLPD-8M-4M	G25
24PLPD-8M-6M	G25
25	G16
25C	G16
25F	G16
25PRL	B337
266298A	C56, E119
3-1/4PLPHBF4-B	G32
3-1/8PLPHBF4-B	G32
3/4GG44B	G39
3/4MM0444B	G39
3/4WGG44B	G39
3/8DD44B	G39
3/8FF44B	G39
3/8FHG4-B	G39
3/8GG44B	G39
3/8KMM004B	G39
3/8MM0444B	G39
3/8WGG44B	G39
3010	B229
30182-12-12B	G4
30182-12-8B	G4
30182-2-4B	G4
30182-4-4B	G4
30182-4-6B	G4
30182-6-6B	G4
30182-6-8B	G4
30182-8-10B	G4
30182-8-6B	G4
30182-8-8B	G4
30282-4-4B	G4
30282-6-6B	G4
30282-8-8B	G4
30482-4-4B	G4
30482-5-4B	G4
30482-6-6B	G4
30482-8-8B	G4
30682-10-10B	G4
30682-10-8B	G4
30682-12-12B	G4
30682-4-4B	G4
30682-5-4B	G4
30682-6-6B	G4
30682-8-6B	G4
30682-8-8B	G4
30882-10-8B	G4
30882-12-12B	G4
30882-4-4B	G4
30882-5-4B	G4
30882-6-6B	G4
30882-8-8B	G4
31382-4-4	G4
31382-6-6	G4
31382-8-8	G4
322PLPSP-1012M	G29
322PLPSP-1212M	G29
322PLPSP-1214M	G29
322PLPSP-1414M	G29
322PLPSP-2-5/32	G23
322PLPSP-3-4	G23
322PLPSP-3M-4M	G29
322PLPSP-4-5	G23
322PLPSP-5-5	G23
322PLPSP-5-6	G23
322PLPSP-5M-4M	G29
322PLPSP-5M-5/32	G23
322PLPSP-5M-6M	G29
322PLPSP-6M-10M	G29
322PLPSP-6M-8M	G29
322PLPSP-8M-10M	G29
322PLPSP-8M-12M	G29
322PLPSP-8M-8M	G29
3250 1000	G7
3250 1250	G7
3250 1500	G7
3250G0119	G7
3250G0219	G7
3250G0319	G7
3250G0419	G7
3250G0519	G7
3250G1000	G7
3250G1250	G7
3250G1500	G7
32PLCK-10M	G8
32PLCK-12M	G8
32PLCK-4	G8
32PLCK-4M	G8
32PLCK-5	G8
32PLCK-5/32	G8
32PLCK-6	G8
32PLCK-6M	G8
32PLCK-8M	G8
32PLP-10M	G24
32PLP-12M	G24
32PLP-14M	G24
32PLP-2	G21
32PLP-3	G21
32PLP-3M	G24
32PLP-4	G21
32PLP-4M	G24
32PLP-5	G21
32PLP-5/32	G21
32PLP-6	G21
32PLP-6M	G24
32PLP-8	G21
32PLP-8M	G24
32PLPBH-10M	G25
32PLPBH-12M	G25
32PLPBH-14M	G25
32PLPBH-2	G22
32PLPBH-4	G22
32PLPBH-4M	G25
32PLPBH-5	G22
32PLPBH-5/32	G22
32PLPBH-6	G22
32PLPBH-6M	G25
32PLPBH-8	G22
32PLPBH-8M	G25
32PLPDRC-4M	G25
32PLPDRC-5	G22
32PLPDRC-5/32	G22
32PLPDRC-6M	G25
32PLPDRC-8M	G25
32PLPRC-4	G22
32PLPRC-4M	G25
32PLPRC-5	G22
32PLPRC-5/32	G22
32PLPRC-6M	G25
32PLPRC-8M	G25
32PLPSP-10M-8M	G28
32PLPSP-12M-10M	G28
32PLPSP-4-2	G23
32PLPSP-4-3	G23
32PLPSP-4-5/32	G23
32PLPSP-4-6M	G23
32PLPSP-6-4	G23
32PLPSP-6M-4M	G28
32PLPSP-8M-6M	G28
32PRL	B337
347PLP-4	G22
347PLP-4M	G25
347PLP-5	G22
347PLP-5/32	G22
347PLP-6M	G25
347PLP-8M	G25
35F77BAP	E85, F3, F7
35F77EAP	E89, F3, F7
35F77HAP	E89, F7
35F87BAP	E85, F3, F7
35F87EAP	E8, F3, F7
35F87HAP	E89, F7
362PLP-10M	G24
362PLP-10M-12M	G24
362PLP-12M	G24
362PLP-2	G21
362PLP-2-4	G21
362PLP-4	G21
362PLP-4-6	G21
362PLP-4M	G24
362PLP-4M-6M	G24
362PLP-5	G21
362PLP-5/32	G21
362PLP-5/32-4	G21
362PLP-6	G21
362PLP-6M	G24
362PLP-6M-8M	G24
362PLP-8M	G24
362PLP-8M-10M	G24
362PLPD-4M	G24
362PLPD-4M-6M	G24
362PLPD-5/32	G21
362PLPD-5/32-4	G21
362PLPD-6M	G24
362PLPD-6M-8M	G24
362PLPDSP-6M-4M	G28
362PLPDSP-8M-4M	G28
362PLPDSP-8M-6M	G28
362PLPSP-10M	G28
362PLPSP-10M-12M	G28
362PLPSP-12M	G28
362PLPSP-2	G23
362PLPSP-4	G23
362PLPSP-4M	G28
362PLPSP-4M-6M	G28
362PLPSP-5	G23
362PLPSP-5/32	G23
362PLPSP-6	G23
362PLPSP-6M	G28
362PLPSP-6M-8M	G28
362PLPSP-8M	G28
362PLPSP-8M-10M	G28
364PLP-10M	G24
364PLP-12M	G24
364PLP-14M	G24
364PLP-2	G21
364PLP-3	G21
364PLP-3M	G24
364PLP-4	G21
364PLP-4M	G24
364PLP-5	G21
364PLP-5/32	G21
364PLP-6	G21
364PLP-6M	G24
364PLP-8	G21
364PLP-8M	G24
365PLP-10M	G24
365PLP-12M	G24
365PLP-14M	G24
365PLP-2	G21
365PLP-3	G21
365PLP-4	G21
365PLP-4M	G24
365PLP-5	G21
365PLP-5/32	G21
365PLP-6	G21
365PLP-6M	G24
365PLP-8	G21
365PLP-8M	G24
365PLPBH-10M	G25
365PLPBH-12M	G25
365PLPBH-2	G22
365PLPBH-4	G22
365PLPBH-4M	G25
365PLPBH-5	G22
365PLPBH-5/32	G22
365PLPBH-6	G22
365PLPBH-6M	G25
365PLPBH-8	G22
365PLPBH-8M	G25
368PLP-10M-4G	G27
368PLP-10M-6G	G27
368PLP-10M-8G	G27
368PLP-12M-6G	G27
368PLP-12M-8G	G27
368PLP-4M-2G	G27
368PLP-4M-4G	G27
368PLP-4M-M5	G27
368PLP-6M-M5	G27
368PLP-8M-2G	G27
368PLP-8M-4G	G27
368PLP-8M-6G	G27
368PLPD-4M-2G	G27
368PLPD-4M-4G	G27
368PLPD-6M-2G	G27
368PLPD-6M-4G	G27
369PLP-10M-4G	B334
369PLP-10M-4G	G26
369PLP-10M-6G	B334
369PLP-10M-6G	G26
369PLP-10M-8G	B334
369PLP-10M-8G	G26
369PLP-12M-4G	B334
369PLP-12M-4G	G26
369PLP-12M-6G	B334
369PLP-12M-6G	G26
369PLP-12M-8G	B334
369PLP-12M-8G	G26
369PLP-14M-6G	G26
369PLP-14M-8G	G26
369PLP-2-0	G20
369PLP-3M-M3	B334
369PLP-3M-M3	G26
369PLP-3M-M5	B334
369PLP-3M-M5	G26
369PLP-4-0	G20
369PLP-4M-2G	B334
369PLP-4M-2G	G26
369PLP-4M-4G	B334
369PLP-4M-4G	G26
369PLP-4M-M3	B334
369PLP-4M-M3	G26
369PLP-4M-M5	B334
369PLP-4M-M5	G26
369PLP-4M-M7	G26
369PLP-5/32-0	G20
369PLP-6M-2G	B334
369PLP-6M-2G	G26
369PLP-6M-4G	B334
369PLP-6M-4G	G26
369PLP-6M-6G	B334
369PLP-6M-6G	G26
369PLP-6M-8G	B334
369PLP-6M-8G	G26
369PLP-6M-M10	G26
369PLP-6M-M12	G26
369PLP-6M-M5	B334
369PLP-6M-M5	G26
369PLP-6M-M7	G26
369PLP-8M-2G	B334
369PLP-8M-2G	G26
369PLP-8M-4G	B334
369PLP-8M-4G	G26
369PLP-8M-6G	B334
369PLP-8M-6G	G26
369PLP-8M-8G	B334
369PLP-8M-8G	G26
369PLP-8M-M10	G26
369PLP-8M-M12	G26
369PLPSP-10M	G27
369PLPSP-10M-12M	G27
369PLPSP-12M	G27
369PLPSP-2	G22
369PLPSP-4	G22
369PLPSP-4-6	G22
369PLPSP-4M	G27
369PLPSP-4M-6M	G27
369PLPSP-5	G22
369PLPSP-5/32	G22
369PLPSP-5/32-4	G22
369PLPSP-6	G22
369PLPSP-6M	G27
369PLPSP-6M-4M	G27

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Part No.	Section/Page No.
369PLPSP-6M-8M	G27
369PLPSP-8	G22
369PLPSP-8M	G27
369PLPSP-8M-10M	G27
369PLPSPX-2	G23
369PLPSPX-4	G23
369PLPSPX-5	G23
369PLPSPX-5/32	G23
369PLPSPX-6	G23
369PLPX-10M-4G	G26
369PLPX-10M-6G	G26
369PLPX-10M-8G	G26
369PLPX-12M-4G	G26
369PLPX-12M-6G	G26
369PLPX-12M-8G	G26
369PLPX-14M-6G	G26
369PLPX-14M-8G	G26
369PLPX-2-0	G20
369PLPX-4-0	G20
369PLPX-4M-2G	G26
369PLPX-4M-4G	G26
369PLPX-4-M7	G20
369PLPX-4M-M5	G26
369PLPX-4M-M7	G26
369PLPX-5/32-0	G20
369PLPX-6M-2G	G26
369PLPX-6M-4G	G26
369PLPX-6M-M5	G26
369PLPX-6M-M7	G26
369PLPX-8M-2G	G26
369PLPX-8M-4G	G26
369PLPX-8M-6G	G26
369PLPXSP-10M	G28
369PLPXSP-10M-12M	G28
369PLPXSP-12M	G28
369PLPXSP-4M	G28
369PLPXSP-4M-6M	G28
369PLPXSP-6M	G28
369PLPXSP-6M-8M	G28
369PLPXSP-8M	G28
369PLPXSP-8M-10M	G28
370PLP-10M-4G	G25
370PLP-10M-6G	G25
370PLP-10M-8G	G25
370PLP-12M-4G	G25
370PLP-12M-6G	G25
370PLP-12M-8G	G25
370PLP-2-2	G22
370PLP-4-2	G22
370PLP-4-4	G22
370PLP-4M-2G	G25
370PLP-4M-4G	G25
370PLP-5/32-2	G22
370PLP-5/32-4	G22
370PLP-5-2	G22
370PLP-5-4	G22
370PLP-6-4	G22
370PLP-6M-2G	G25
370PLP-6M-4G	G25
370PLP-8-6	G22
370PLP-8M-2G	G25
370PLP-8M-4G	G25
370PLP-8M-6G	G25
371PLP-10M-4G	G27
371PLP-10M-6G	G27
371PLP-10M-8G	G27
371PLP-12M-4G	G27
371PLP-12M-6G	G27
371PLP-12M-8G	G27
371PLP-14M-6G	G27
371PLP-14M-8G	G27
371PLP-2-0	G21
371PLP-4M-2G	G27
371PLP-4M-4G	G27
371PLP-4M-M5	G27

Part No.	Section/Page No.
371PLP-5/32-0	G21
371PLP-6M-2G	G27
371PLP-6M-4G	G27
371PLP-6M-M5	G27
371PLP-8M-2G	G27
371PLP-8M-4G	G27
371PLP-8M-6G	G27
371PLPSP-10M	G28
371PLPSP-10M-12M	G28
371PLPSP-12M	G28
371PLPSP-4	G23
371PLPSP-4M	G28
371PLPSP-4M-6M	G28
371PLPSP-5	G23
371PLPSP-5/32	G23
371PLPSP-6	G23
371PLPSP-6M	G28
371PLPSP-6M-8M	G28
371PLPSP-8	G23
371PLPSP-8M	G28
371PLPSP-8M-10M	G28
372PLP-10M-4G	G26
372PLP-10M-6G	G26
372PLP-10M-8G	G26
372PLP-12M-4G	G26
372PLP-12M-6G	G26
372PLP-12M-8G	G26
372PLP-14M-6G	G26
372PLP-14M-8G	G26
372PLP-2-0	G20, G24
372PLP-4M-2G	G26
372PLP-4M-4G	G26
372PLP-4M-M5	G26
372PLP-5/32-0	G20, G24
372PLP-6M-2G	G26
372PLP-6M-4G	G26
372PLP-6M-M5	G26
372PLP-8M-2G	G26
372PLP-8M-4G	G26
372PLP-8M-6G	G26
372PLPSP-10M	G28
372PLPSP-10M-12M	G28
372PLPSP-12M	G28
372PLPSP-2	G23
372PLPSP-4	G23
372PLPSP-4M	G28
372PLPSP-4M-6M	G28
372PLPSP-5	G23
372PLPSP-5/32	G23
372PLPSP-6	G23
372PLPSP-6M	G28
372PLPSP-6M-8M	G28
372PLPSP-8	G23
372PLPSP-8M	G28
372PLPSP-8M-10M	G28
377PLP-2-2	G22
377PLP-4-2	G22
377PLP-4-4	G22
377PLP-5/32-2	G22
377PLP-5/32-4	G22
377PLP-5-2	G22
377PLP-5-4	G22
377PLP-6-4	G22
377PLP-8-6	G22
379PLP-10M-4G	G26
379PLP-10M-6G	G26
379PLP-10M-8G	G26
379PLP-12M-4G	G26
379PLP-12M-6G	G26
379PLP-12M-8G	G26
379PLP-2-0	G20
379PLP-4M-2G	G26
379PLP-4M-M5	G26
379PLP-6M-2G	G26
379PLP-6M-4G	G26

Part No.	Section/Page No.
379PLP-6M-M5	G26
379PLP-8M-2G	G26
379PLP-8M-4G	G26
379PLP-8M-6G	G26
379PLPSP-10M	G28
379PLPSP-12M	G28
379PLPSP-2	G23
379PLPSP-4	G23
379PLPSP-4M	G28
379PLPSP-5	G23
379PLPSP-5/32	G23
379PLPSP-6	G23
379PLPSP-6M	G28
379PLPSP-8M	G28
37G82-12-12	G4
37G82-4-4	G4
37G82-4-6	G4
37G82-6-6	G4
37G82-8-10	G4
37G82-8-8	G4
38282-4-4B	G4
38282-6-6B	G4
38282-8-8B	G4
3MA	B6
3MAJ	B40
4-1/4PLPHBF4-B	G32
4-1/8PLPHBF4-B	G32
4-3/8PLPHBF4-B	G32
404111000	D211
404118000	D212
404211000	D210
404311000	D211
404411000	D209
404711000	D211
404811000	D209
410008000	D212
410008005	D212
410111000	D211
410121000	D211
410151000	D211
410211000	D210
410221000	D210
410251000	D210
410411000	D209
410421000	D209
410451000	D209
410711000	D211
410721000	D211
410751000	D211
410811000	D209
410821000	D209
410931000	D209
410941000	D209
410951000	D209
414111000	D211
414121000	D211
414151000	D211
414211000	D210
414221000	D210
414251000	D210
414311000	D211
414321000	D211
414351000	D211
414411000	D209
414421000	D209
414451000	D209
414711000	D211
414721000	D211
414751000	D211
414811000	D209
414821000	D209
414931000	D209
414941000	D209
414951000	D209
4202	E93

Part No.	Section/Page No.
4204	E93
422CR011K	D225
422CR011W	D225
422CR013W	D225
422CR014W	D225
422CR021K	D225
422CR021W	D225
422CR023W	D225
422CR024W	D225
422CS011K	D225
422CS011W	D225
422CS013W	D225
422CS014W	D225
422CS021K	D225
422CS021W	D225
422CS023W	D225
422CS024W	D225
422CT011K	D225
422CT021K	D225
43FN7BAP	E85, F3
43FN7EAP	E89, F3
43FN7HAP	E89
4MA, 1-1/2" thru 5"	B16
4MA, 6" thru 8"	B26
4MAJ	B40
4ML, 1-1/2" thru 5"	B16
4ML, 6" thru 8"	B26
4MNR	B58
4TK	B336
5010FIL	B229
51R125RA	E111
51R126RA	E111
520008050	D212
520008500	D212
520018005	D212
520211000	D210
520251000	D210
520411000	D209
520431000	D209
520451000	D209
520711000	D211
520718001	D212
520751000	D211
520811000	D210
520831000	D210
520838004	D212
520931000	D211
520A11000	D210
520A51000	D210
521811000	D210
521831000	D210
522811000	D210
522831000	D210
523831000	D210
524211000	D210
524251000	D210
524411000	D209
524431000	D209
524451000	D209
524711000	D211
524751000	D211
524811000	D210
524831000	D210
524931000	D211
524A11000	D210
524A51000	D210
52R125RA	E111
52R126RA	E111
52R225RA	E111
52R226RA	E111
52R325RA	E111
52R326RA	E111
52R425RA	E111
52R426RA	E111
529811000	D210

Part No.	Section/Page No.
529831000	D210
53R425RA	E111
53R426RA	E111
53R525RA	E111
53R526RA	E111
53R625RA	E111
53R626RA	E111
54R725RA	E111
54R726RA	E111
54R825RA	E111
54R826RA	E111
5500A2004	D232
5500A2004	G11
5500A4004	D232
5500A4004	G11
5500A5013	E29
5500A6004	D232
5500A6004	G11
5500A9004	D232
5500A9004	G11
6010FIL	B229
606Y72	E101
6-1/2PLPHBF4-B	G32
6-1/4PLPHBF4-B	G32
6-3/8PLPHBF4-B	G32
616A28-SS	E104, E106, E108, E110
616Y28-SS	E104, E106, E108
62PLP-2	G31
62PLP-3	G31
62PLP-4	G31
62PLP-5	G31
62PLP-5/32	G31
62PLP-6	G31
62PLP-8	G31
62PLPBH-2	G32
62PLPBH-4	G32
62PLPBH-5	G32
62PLPBH-5/32	G32
62PLPBH-6	G32
62PLPBH-8	G32
62PW-4	G31
62PW-5	G31
62PW-6	G31
62PW-8	G31
62PWBH-4	G32
62PWBH-5	G32
62PWBH-6	G32
62PWBH-8	G32
63504A	B260
63505A	B260
63506A	B260
63507A	B260
639PLP-2	G24
639PLP-3	G24
639PLP-4	G24
639PLP-5	G24
639PLP-5/32	G24
639PLP-6	G24
639PLP-8	G24
63PLP-4	G23
63PLP-5	G23
63PLP-5/32	G23
63PLP-6	G23
63PLP-8	G23
66PLP-2-2	G32
66PLP-2-4	G32
66PLP-3-2	G32
66PLP-4-2	G32
66PLP-4-4	G32
66PLP-5/32-2	G32
66PLP-5/32-4	G32
66PLP-5-2	G32
66PLP-5-4	G32
66PLP-6-4	G32

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Part No.	Section/Page No.
66PLP-6-6	G32
66PLPBH-4-4	G32
66PLPBH-5/32-4	G32
66PLPBH-6-6	G32
66PLPBH-8-6	G32
66PW-4-2	G32
66PW-4-4	G32
66PW-5-2	G32
66PW-5-4	G32
66PW-6-4	G32
66PW-6-6	G32
66PWBH-4-4	G32
66PWBH-6-6	G32
66PWBH-8-6	G32
67PLP-10M-4M	G28
67PLP-10M-6M	G28
67PLP-10M-8M	G28
67PLP-12M-10M	G28
67PLP-12M-6M	G28
67PLP-12M-8M	G28
67PLP-14M-6M	G28
67PLP-14M-8M	G28
67PLP-14M-10M	G28
67PLP-14M-12M	G28
67PLP-2-3	G23
67PLP-2-4	G23
67PLP-2-5/32	G23
67PLP-3-4	G23
67PLP-3-5	G23
67PLP-4-5	G23
67PLP-4-6	G23
67PLP-4-8	G23
67PLP-5/32-3	G23
67PLP-5/32-4	G23
67PLP-5/32-5	G23
67PLP-5/32-6	G23
67PLP-5-6	G23
67PLP-5-8	G23
67PLP-6-8	G23
67PLP-6M-4M	G28
67PLP-8M-4M	G28
67PLP-8M-6M	G28
68LF-10M-4G	B334
68LF-10M-6G	B334
68LF-10M-8G	B334
68LF-12M-4G	B334
68LF-12M-6G	B334
68LF-12M-8G	B334
68LF-3M-M3	B334
68LF-3M-M5	B334
68LF-4M-2G	B334
68LF-4M-4G	B334
68LF-4M-M5	B334
68LF-6M-2G	B334
68LF-6M-4G	B334
68LF-6M-6G	B334
68LF-6M-8G	B334
68LF-6M-M5	B334
68LF-8M-2G	B334
68LF-8M-4G	B334
68LF-8M-6G	B334
68LF-8M-8G	B334
68PLCK-4M-2G	G9
68PLCK-4M-M5	G9
68PLCK-5/32-0	G8
68PLCK-6M-2G	G9
68PLCK-6M-4G	G9
68PLCK-8M-2G	G9
68PLCK-8M-4G	G9
68PLCKI-10M-6G	G9
68PLCKI-12M-6G	G9
68PLCKI-12M-8G	G9
68PLCKI-4M-M5	G9
68PLCKI-5/32-0	G8
68PLCKI-6M-2G	G9
68PLCKI-8M-2G	G9
68PLCKI-8M-4G	G9
68PLP-5/32-4LT	G29
68PLPSP-10M-4G	G27
68PLPSP-10M-6G	G27
68PLPSP-10M-8G	G27
68PLPSP-12M-6G	G27
68PLPSP-12M-8G	G27
68PLPSP-14M-6G	G27
68PLPSP-14M-8G	G27
68PLPSP-4M-2G	G27
68PLPSP-4M-4G	G27
68PLPSP-4M-M5	G27
68PLPSP-5/32-0	G21
68PLPSP-6M-2G	G27
68PLPSP-6M-4G	G27
68PLPSP-8M-2G	G27
68PLPSP-8M-4G	G27
68PLPSP-8M-6G	G27
8-1/2PLPHBF4-B	G32
8-3/8PLPHBF4-B	G32
8010FIL	B229
801-10-***-3000	G4
801-10-***-RL	G4
801-12-***-2400	G4
801-12-***-RL	G4
801-16-***-2400	G4
801-16-***-RL	G4
801-4-***-7200	G4
801-4-***-RL	G4
801-6-***-5400	G4
801-6-***-RL	G4
801-8-***-3600	G4
801-8-***-RL	G4
84457B	B261
84480B	B261
84481B	B261
84482B	B261
84483B	B261
84484B	B261
87752A	B260
87753A	B260
87754A	B260
87755A	B260
87756A	B260
87757A	B260
91213202SXZ	D14
91213202SXZN	D14
91213204SXZ	D14
91213204SXZN	D14
91213206SXZ	D14
91213206SXZN	D14
91213208SXZ	D14
91213208SXZN	D14
91213210SXZ	D14
91213210SXZN	D14
912132BPSXZ	D14, D27
9121594805X	D14
9121594805XN	D14
9121594806X	D14
9121594806XN	D14
9121594807X	D14
9121594807XN	D14
9121594808X	D14
9121594808XN	D14
9121594809X	D14, D27
9121594812X	D14
9121594812XN	D14
9121658068N	D14
9121658075N	D14
9121658076N	D14
9121658077N	D14
9121658078N	D14
913090000	B360
913090100	B360
9121658063	D14, D27
9121658068	D14
9121658075	D14
9121658076	D14
9121658077	D14
9121658078	D14
9126344341	B349
9126344342	B349
9126487202	B355
9126487205	B355
9126725404	B81
9126725405	B81
9126725406	B81
9127385101	B134
9127385102	B134
9127385103	B134
9128985601	B135
9128985601	B81
9128985603	B81
9301054261	B78
9301054262	B78
9301054264	B78
9301054266	B78
A 2x2	B373
A 2x4	B373
A 2x6	B373
A 2x8	B373
A 2x10	B373
A 3x5	B373
A 3x8	B373
A 3x12	B373
A00SBM3	D70
A00SBP	D72
A00SC231P	D69
A00SG	D73
A00SS	D73
A05PACCL10	D71
A05PACCL5	D71
A05PAIEM5	D72
A05PAISM5	D72
A05PAXIEM5	D72
A05PAXISM5	D72
A05PBG1	D70
A05PBN1	D70
A05PD251P	D69
A05PD252P	D69
A05PD351P	D69
A05PD352P	D69
A05PDCC	D71
A05PDCCB10	D71
A05PDCCL10	D71
A05PDCCL30	D71
A05PDCCL5	D71
A05PDCCM	D71
A05PG	D73
A05PGBP	D72
A05PLA	D72
A05PLB	D72
A05PN	D72
A05PS	D73
A05PS251P	D69
A05PS252P	D69
A05PSCC	D71
A05PSCCM	D71
A05PXG	D73
A05RABM5	D73
A05RAIEM5	D72
A05RAISM5	D72
A05RAXIEM5	D72
A05RAXISM5	D72
A05RBF	D72
A05RBS	D72
A05RD251PM5MF	D69
A05RD252PM5MF	D69
A05RD351PM5MF	D69
A05RD352PM5MF	D69
A05RG	D73
A05RGBP	D72
A05RS	D73
A05RS251PM5MF	D69
A05RS252PM5MF	D69
A12PAIEN1	D72
A12PAISN1	D72
A12PAXIEN1	D72
A12PAXISN1	D72
A12PBG2	D70
A12PBN2	D70
A12PD251P	D69
A12PD252P	D69
A12PD351P	D69
A12PD352P	D69
A12PG	D73
A12PGBP	D72
A12PS	D73
A12PS251P	D69
A12PS252P	D69
A12PXG	D73
A12RABG1	D73
A12RABN1	D73
A12RAIEN1	D72
A12RAISN1	D72
A12RAXIEN1	D72
A12RAXISN1	D72
A12RBF	D72
A12RBS	D72
A12RD251PN1MF	D69
A12RD252PN1MF	D69
A12RD351PN1MF	D69
A12RD352PN1MF	D69
A12RG	D73
A12RGBP	D72
A12RS	D73
A12RS251PN1MF	D69
A12RS252PN1MF	D69
A2C	G17
A3C	G17
A4VC4-MG	G9
A5VC5-MG	G9
A6VC6-MG	G9
A8C	G17
A8CP	G17
AAHMD5249M0M	D117
AAP2LAXMAXG##GP	D27
AAP2LAXMAXG##NP	D27
AAP2LAXMAXN##GP	D27
AAP2LAXMAXN##NP	D27
AAP2LBXMAXG##GP	D27
AAP2LBXMAXG##NP	D27
AAP2LBXMAXN##GP	D27
AAP2LBXMAXN##NP	D27
AAP2LCXMAXN##GP	D27
AAP2LCXMAXN##NP	D27
AAPSG3BXG##NP	D47
AAPSG3BXN##NP	D47
AAPSG5BXG##NP	D47
AAPSG5BXN##NP	D47
AAPSG6BXG##NP	D47
AAPSG6BXN##NP	D47
AAPSJ3B1G##GP	D47
AAPSJ3B1N##NP	D47
AAPSM3BXG##NP	D47
AAPSM3BXN##NP	D47
AAPSM5BXG##NP	D47
AAPSM5BXN##NP	D47
AAPSM6BXG##NP	D47
AAPSM6BXN##NP	D47
AAPSM7BXG##NP	D47
AAPSM7BXN##NP	D47
AM1DE200	D73
AS-5	D32, D72, D221, G11
AS-6	D32, D72, D221
AS-8	D32, D72, D221
AS-10	D32, D221
AS-15	D32, D221
ASN-6	D32, D72, D221, G11
ASN-8	D32, D72, D221, G11
ASN-10	D32, D221, G11
ASN-15	D32, D221, G11
B20-3B	G16
B20-4B	G16
B20-5B	G16
B20-5BP	G16
B22	G16
B22E	G16
B23	G16
B23A	G16
B23E	G16
B30-3B	G16
B30-3BP	G16
B30-4B	G16
B30-5B	G16
B30-5BP	G16
B310BB549C	D44
B310BB553C	D44
B31VBB549C	D44
B31VBB553C	D44
B32	G16
B320BB549C	D44
B320BB553C	D44
B32A	G16
B32E	G16
B32VBB549C	D44
B32VBB553C	D44
B33	G16
B330000XXC	D46
B33A	G16
B33E	G16
B33V000XXC	D46
B34	G16
B340000XXC	D46
B344-01AGC	E70
B344-01DGC	E70
B344-02AGC	E70
B344-02DGC	E70
B34-5B	G16
B34-5BP	G16
B34-6B	G16
B34C	G16
B34F	G16
B34V000XXC	D46
B35	G16
B350BB549C	D45
B350BB553C	D45
B35C	G16
B35F	G16
B35VBB549C	D45
B35VBB553C	D45
B36-6B	G16
B36-6BP	G16
B36-7B	G16
B36	G16
B360BB549C	D45
B360BB553C	D45
B36E	G16
B36G	G16
B36VBB549C	D45
B36VBB553C	D45
B37	G16
B370BB549C	D45
B370BB553C	D45
B37E	G16
B37G	G16
B37VBB549C	D45
B37VBB553C	D45
B38-7B	G16

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Part No.	Section/Page No.
B38-8B	G16
B38	G16
B380000XXC	D46
B38J	G16
B38V000XXC	D46
B39	G16
B39F	G16
B39J	G16
B3G0BB549C	D44
B3G0BB553C	D44
B3K0000XXC	D46
B50-03BP	G17
B50-05BP	G17
B511BB549C	D44
B511BB553C	D44
B512BB549C	D44
B512BB553C	D44
B52	G17
B521BB549C	D44
B521BB553C	D44
B522BB549C	D44
B522BB553C	D44
B52E	G17
B53	G17
B531000XXC	D46
B532000XXC	D46
B53E	G17
B541000XXC	D46
B542000XXC	D46
B551BB549C	D45
B551BB553C	D45
B552BB549C	D45
B552BB553C	D45
B561BB549C	D45
B561BB553C	D45
B562BB549C	D45
B562BB553C	D45
B571BB549C	D45
B571BB553C	D45
B572BB549C	D45
B572BB553C	D45
B581000XXC	D46
B582000XXC	D46
B5G1BB549C	D44
B5G1BB553C	D44
B5G2BB549C	D44
B5G2BB553C	D44
B5K1000XXC	D46
B5K2000XXC	D46
B612BB549A	D44
B612BB553A	D44
B622BB549A	D44
B622BB553A	D44
B632000XXA	D46
B642000XXA	D46
B652BB549A	D45
B652BB553A	D45
B662BB549A	D45
B662BB553A	D45
B672BB549A	D45
B672BB553A	D45
B682000XXA	D46
B6V2BB549A	D44
B6V2BB553A	D44
B6X2000XXA	D46
B713BB549A	D44
B713BB553A	D44
B723BB549A	D44
B723BB553A	D44
B733000XXA	D46
B743000XXA	D46
B753BB549A	D45
B753BB553A	D45
B763BB549A	D45
B763BB553A	D45
B773BB549A	D45
B773BB553A	D45
B783000XXA	D46
B7V3BB549A	D44
B7V3BB553A	D44
B7X3000XXA	D46
B814BB549A	D44
B814BB553A	D44
B824BB549A	D44
B824BB553A	D44
B834000XXA	D46
B844000XXA	D46
B854BB549A	D45
B854BB553A	D45
B864BB549A	D45
B864BB553A	D45
B874BB549A	D45
B874BB553A	D45
B8830-N	B360
B8830-P	B360
B884000XXA	D46
B8V4BB549A	D44
B8V4BB553A	D44
B8X4000XXA	D46
BC03M3	D73
BC03M5	D73
BC04M3	D73
BG441-NBL	G13
BK504SY	E71
BK504Y	E71
BK505SY	E71
BK505Y	E71
BK603B	E84, E88, E101
BK603C	E88
BK605WB	E84
BK606X30B	E101
BK609WB	E101
BL67-16DO-0.1A-P	D175
BL67-1CNT/ENC	D176
BL67-1CVI	D176
BL67-1RS232	D176
BL67-1RS485/422	D176
BL67-1SSI	D176
BL67-2AI2AO-V/I	D176
BL67-2AI-I	D175
BL67-2AI-PT	D175
BL67-2AI-TC	D175
BL67-2AI-V	D175
BL67-2AO-I	D175
BL67-2AO-V	D175
BL67-4AI4AO-V/I	D176
BL67-4AI-V/I	D175
BL67-4AO-V	D175
BL67-4DI4DO-PD	D175
BL67-4DI-N	D174
BL67-4DI-P	D174
BL67-4DI-PD	D174
BL67-4DO-0.5A-P	D174
BL67-4DO-2A-N	D174
BL67-4DO-2A-P	D174
BL67-4DO-4A-P	D174
BL67-8DI-N	D174
BL67-8DI-P	D174
BL67-8DI-PD	D174
BL67-8DO-0.5A-N	D174
BL67-8DO-0.5A-P	D174
BL67-8DO-R-NO	D175
BL67-8XSG-PD	D175
BL67-B-1M12	D176
BL67-B-1M12-8	D176
BL67-B-1M23	D174, D176
BL67-B-1M23-19	D175
BL67-B-1RSM	D176
BL67-B-1RSM-4	D176
BL67-B-1RSM-V0	D176
BL67-B-2M12	D174, D175
BL67-B-2M12-P	D174
BL67-B-4M12	D174, D175, D176
BL67-B-4M12P	D175
BL67-B-4M12-P	D174, D175
BL67-B-4M8	D174
BL67-B-8M8	D174, D175, D176
BL67-GW-CO	D173
BL67-GW-CO-T	D173
BL67-GW-DN	D173
BL67-GW-DPV1	D173
BL67-GW-EN	D173
BL67-GW-EN-DN	D173
BL67-GW-EN-IP	D173
BL67-GW-EN-IP-DN	D173
BL67-GW-EN-PN	D173
BL67-PF-24VDC	D176
BL67-PG-DP	D173
BL67-PG-EN	D173
BL67-PG-EN-DN	D173
BL67-PG-EN-IP	D173
BL67-PG-EN-IP-DN	D173
C10A1304	E76, E79
C10A1308	E79
C10A1317	E79
C11A33	E74, E75, E79, E80
C628-06FRLEJCE	E103
C628-06FRLWJCW	E103
C628-08FRLEJCE	E103
C628-08FRLWJCW	E103
C628-10FRLEJCE	E103
C628-10FRLWJCW	E103
C628-12FRLEJCE	E103
C628-12FRLWJCW	E103
C64PB10-1/4	G34
C64PB10-3/8	G34
C64PB12-1/2	G34
C64PB12-1/4	G34
C64PB12-3/8	G34
C64PB14-1/2	G34
C64PB14-3/8	G34
C64PB4-1/4	G34
C64PB4-1/8	G34
C64PB6-1/4	G34
C64PB6-1/8	G34
C64PB8-1/4	G34
C64PB8-1/8	G34
C64PB8-3/8	G34
C64SPB10-1/4	G34
C64SPB10-3/8	G34
C64SPB12-1/2	G34
C64SPB12-1/4	G34
C64SPB12-3/8	G34
C64SPB4-1/8	G34
C64SPB6-1/4	G34
C64SPB6-1/8	G34
C64SPB8-1/4	G34
C64SPB8-1/8	G34
C64SPB8-3/8	G34
C68PB4M5	G35
C68PB6M5	G35
C68SPB4M5	G35
C68SPB6M5	G35
C6PB10-1/4	G33
C6PB10-3/8	G33
C6PB12-1/2	G33
C6PB6-1/4	G33
C6PB6-3/8	G33
CA 2x10-1	B371
CA 2x10-2	B371
CA 2x10-3	B371
CA 2x10-4	B371
CA 2x2-1	B371
CA 2x2-2	B371
CA 2x2-3	B371
CA 2x2-4	B371
CA 2x4-1	B371
CA 2x4-2	B371
CA 2x4-3	B371
CA 2x4-4	B371
CA 2x6-1	B371
CA 2x6-2	B371
CA 2x6-3	B371
CA 2x6-4	B371
CA 2x8-1	B371
CA 2x8-2	B371
CA 2x8-3	B371
CA 2x8-4	B371
CA 3x12-1	B371
CA 3x12-2	B371
CA 3x12-3	B371
CA 3x12-4	B371
CA 3x5-1	B371
CA 3x5-2	B371
CA 3x5-3	B371
CA 3x5-4	B371
CA 3x8-1	B371
CA 3x8-2	B371
CA 3x8-3	B371
CA 3x8-4	B371
CA 4x16-3	B372
CA 4x16-5	B372
CA 4x16-7	B372
CA 4x6-3	B372
CA 4x6-5	B372
CA 4x6-7	B372
CA 4x8-3	B372
CA 4x8-5	B372
CA 4x8-7	B372
CB032P1D01	B82
CB032P1D05	B82
CB040P1D01	B82
CB040P1D05	B82
CB050P1D01	B82
CB050P1D05	B82
CB063P1D01	B82
CB063P1D05	B82
CB080P1D01	B82
CB080P1D05	B82
CB100P1D01	B82
CB100P1D05	B82
CB125P1D01	B82
CB125P1D05	B82
CB-M12-4P-2M	C80, E23, E120
CB-M12-4P-M12-2M	C80
CB-M12-5P-2M	C80
CB-M12-5P-M12-2M	C80
CB-M8-4P-2M-PUR	C69, C75, C80
CB-M8-4P-5M-90-PUR	C80
CB-M8-4P-5M-PUR	C69, C75, C80
CB-M8-4P-M12-2M	C80
CEK15HS41C24NBLN	C64
CEK15HS42C24PBLN	C64
CEK15HSZC24PBLN	C64
CEK20HS41C24NBLN	C64
CEK20HS42C24PBLN	C64
CEK20HSZC24PBLN	C64
CEK27HS41C24NBLN	C64
CEK27HS42C24PBLN	C64
CEK27HSZC24PBLN	C64
CH-01G1	C82
CH-01N1	C82
CHF-20ZNE	C56
CHF-30ZNE	C56
CHF-40ZNE	C56
CKR10YSS	E106, E108
CKR11YSS	E106, E108
CKR354YSS	E106, E108
CKR364Y-1SS	E106, E108
CMD04-1	D90, D93, D96, D101
CMD06-1	D90, D93, D96, D101
CMD06-2	D91, D94, D98, D102
CMD07-1B	D90, D93, D96, D101
CMD07-2B	D91, D94, D98, D102
CMD08-2	D91, D94, D98, D102
CMD09-2B	D91, D94, D98, D102
CMD10-2	D91, D94, D98, D102
CMD12-2	D91, D94, D98, D102
CSCM CKCM 12-11-x/S90	D179
CSM CKM 19-19-x/S90	D179
CSWM CKWM 19-19-x/CS12852	D179
CTF-10-G1	C44
CTF-30-G1	C44
CTF-30-N1	C44
CTF-90-G2	C44
CTF-90-N2	C44
CTK-10	C45
CTK-30	C45
CTK-90-G1	C45
CTK-90-N1	C45
CTM-10-G1H	C43
CTM-10-M5H	C43
CTM-30-G1H	C43
CTM-30-G2	C43
CTM-30-N1	C43
CTM-90-G2	C43
CTM-90-N2	C43
CV05HSG	C54
CV05HSN	C54
CV05LSG	C54
CV05LSN	C54
CV10HSCKG	C54
CV10HSCKN	C54
CV10HSG	C54
CV10HSN	C54
CV10LSG	C54
CV10LSN	C54
CV15HSCKG	C54
CV15HSCKN	C54
CV15HSG	C54
CV15HSN	C54
CV15LSG	C54
CV15LSN	C54
CV20HSCKG	C54
CV20HSCKN	C54
CV20HSG	C54
CV20HSN	C54
CV20LSG	C54
CV20LSN	C54
CV25HSG	C54
CV25HSN	C54
CV25LSG	C54
CV25LSN	C54
CV30AHSG	C54
CV30AHSN	C54
CV30ALSG	C54
CV30ALSN	C54
CVK-D201G	C71
D01BD0	D187
D01P-02-80	D129, D144, D187
D02BD0	D186

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Part No.	Section/Page No.
D02P-01-80	D127, D143, D186
DB-4	G32
DB-6	G32
DB-8	G32
DC602-2	G3
DC602-4	G3
DC604-2	G3
DC604-4	G3
DC604-6	G3
DD15-02	F5
DD15-03	F5
DD15-04	F5
DD15-06	F5
DD30-04	F5
DD30-06	F5
DD30-08	F5
DD60-04	F5
DD60-06	F5
DD60-08	F5
DP2-02-001	E86, E90
DP3-01-000	E86, E90
DPG-Kit	E91, E124
DRP-14-447/003	F5
DRP-14-447/006	F5
DRP-14-447/012	F5
DSS25FB1	D71
DTK606	E101
DX01-406-60	D187, D188
DX01-411-60	D187, D188
DX01-416-60	D187, D188
DX01-421-60	D187, D188
DX01-451-60	D187, D188
DX01-606-951J	D187
DX01-606-951M	D187
DX01-611-951J	D187
DX01-611-951M	D187
DX01-616-951J	D187
DX01-616-951M	D187
DX01-621-951J	D187
DX01-621-951M	D187
DX01-651-951J	D187
DX01-651-951M	D187
DX01M2MGSKT	D187, D193
DX02-406-60	D186, D189
DX02-411-60	D186, D189
DX02-416-60	D186, D189
DX02-421-60	D186, D189
DX02-451-60	D186, D189
DX02-606-951J	D186
DX02-606-951M	D186
DX02-611-951J	D186
DX02-611-951M	D186
DX02-616-951J	D186
DX02-616-951M	D186
DX02-621-951J	D186
DX02-621-951M	D186
DX02-651-951J	D186
DX02-651-951M	D186
DX02M2MB	D186, D187
DX02M2MGSKT	D186, D193
DX1-606-BL49	D188
DX1-606-BL53	D188
DX1-606-CL49	D188
DX1-606-CL53	D188
DX1-611-BL49	D188
DX1-611-BL53	D188
DX1-611-CL49	D188
DX1-611-CL53	D188
DX1-616-BL49	D188
DX1-616-BL53	D188
DX1-616-CL49	D188
DX1-616-CL53	D188
DX1-621-BL49	D188
DX1-621-BL53	D188
DX1-621-CL49	D188
DX1-621-CL53	D188
DX1-651-BL49	D188
DX1-651-BL53	D188
DX1-651-CL49	D188
DX1-651-CL53	D188
DX2-606-BL49	D189
DX2-606-BL53	D189
DX2-606-CL49	D189
DX2-606-CL53	D189
DX2-611-BL49	D189
DX2-611-BL53	D189
DX2-611-CL49	D189
DX2-611-CL53	D189
DX2-616-BL49	D189
DX2-616-BL53	D189
DX2-616-CL49	D189
DX2-616-CL53	D189
DX2-621-BL49	D189
DX2-621-BL53	D189
DX2-621-CL49	D189
DX2-621-CL53	D189
DX2-651-BL49	D189
DX2-651-BL53	D189
DX2-651-CL49	D189
DX2-651-CL53	D189
DX3-406-60	D191
DX3-411-60	D191
DX3-416-60	D191
DX3-421-60	D191
DX3-451-60	D191
DX3-606-BL49	D191
DX3-606-BL53	D191
DX3-606-CL49	D191
DX3-606-CL53	D191
DX3-611-BL49	D191
DX3-611-BL53	D191
DX3-611-CL49	D191
DX3-611-CL53	D191
DX3-616-BL49	D191
DX3-616-BL53	D191
DX3-616-CL49	D191
DX3-616-CL53	D191
DX3-621-BL49	D191
DX3-621-BL53	D191
DX3-621-CL49	D191
DX3-621-CL53	D191
DX3-651-BL49	D191
DX3-651-BL53	D191
DX3-651-CL49	D191
DX3-651-CL53	D191
E-108-0100	G18
E-43-0100	G18
E-43-0500	G18
E-43-1000	G18
E-43-B-0100	G18
E-43-B-0500	G18
E-43-G-0500	G18
E-43-O-0500	G18
E-43-P-0500	G18
E-43-R-0100	G18
E-43-R-0500	G18
E-43-Y-0500	G18
E-53-0500	G18
E-64-0100	G18
E-64-0500	G18
E-64-B-0500	G18
E-64-G-0500	G18
E-64-O-0500	G18
E-64-P-0500	G18
E-64-R-0500	G18
E-64-Y-0500	G18
E-86-0100	G18
E90016	D33, D221
E90017	D33, D221
EB-108-0100	G18
EB-43-0100	G18
EB-43-0500	G18
EB-43-1000	G18
EB-53-0500	G18
EB-64-0100	G18
EB-64-0500	G18
EB-86-0100	G18
ECS3	G11
ECS5	G11
ED3002N115-K	F9
ED3004N115-K	F9
ED3007N115-K	F9
ED3030N115-K	F9
ED3100N115-K	F9
EK501H	E104
EK504VY	E104, E108
EK504Y	E104, E108
EK55G	E104
EK55J	E104
EK602B	E84
EK602VB	E84
EKF10VY	E108
EKF10Y	E108
EKF71	E104
EM12	D32, D72, D221, G11
EM125	G11
EM100	G11
EM150	G11
EM25	D32, D72, D221, G11
EM37	D32, D221, G11
EM50	D32, D221, G11
EM75	G11
EMM5	G11
EPB4	G33
EPB5	G33
EPB6	G33
EPB8	G33
EPB10	G33
EPB12	G33
EPB14	G33
ES12MC	G11
ES25MC	G11
ES37MC	D232, G11
ES50MC	G11
ES75MC	D232, G11
ES100MC	G11
ES125MC	D232, G11
ES150MC	G11
ES200MC	D232
ESB37MC	D232
ESB75MC	D232
ESB125MC	D232
ESB200MC	D232
EZ03NB6	D232
EZ04NB6	D232
EZ06NB6	D232
EZ06NBA	D232
EZ08NBA	D232
EZ0ANBA	D232
F28PB4M3	G35
F28PB4M5	G35
F28PB6M5	G35
F442001	E18, E72, E80, E101, E102
F442002	E57, E59
F442003	E57, E59, E72, E80, E101, E102
F442005	E57, E59, E72, E80, E101, E102
F4PB10-1/2	G34
F4PB10-1/4	G34
F4PB10-3/8	G34
F4PB12-1/2	G34
F4PB12-1/4	G34
F4PB12-3/8	G34
F4PB14-1/2	G34
F4PB14-3/8	G34
F4PB4-1/4	G34
F4PB4-1/8	G34
F4PB6-1/4	G34
F4PB6-1/8	G34
F4PB8-1/4	G34
F4PB8-1/8	G34
F4PB8-3/8	G34
F602-06EJ	E83
F602-06EJR	E83
F602-06WJ	E83
F602-06WJR	E83
F602-08EJ	E83
F602-08EJR	E83
F602-08WJ	E83
F602-08WJR	E83
F602-10EJ	E83
F602-10EJR	E83
F602-10WJ	E83
F602-10WJR	E83
F602-12EJ	E83
F602-12EJR	E83
F602-12WJ	E83
F602-12WJR	E83
F701-06E3P	E87
F701-06E7P	E87
F701-06L3P	E87
F701-06L7P	E87
F701-08E3P	E87
F701-08E7P	E87
F701-08L3P	E87
F701-08L7P	E87
F701-C3-0773	E88
F701-C3-0774	E88
F701-C7-0773	E88
F8PB4M10	G35
F8PB4M5	G35
F8PB6M10	G35
F8PB6M12	G35
F8PB6M5	G35
F8PB8M12	G35
F8PB8M16	G35
F8PB8M22	G35
FC601-10M-6G	G9
FC601-12M-8G	G9
FC601-4-2	G9
FC601-4-4	G9
FC601-6-6	G9
FC601-6M-2G	G9
FC601-6M-4G	G9
FC601-8-8	G9
FC601-8M-4G	G9
FC601-8M-6G	G9
FC602-2	G9
FC602-4	G9
FC602-6	G9
FC602-8	G9
FC608-4G-2G	G9
FC608-4G-4G	G9
FC608-6G-6G	G9
FC608-8G-8G	G9
FC701-10M-4G	G8
FC701-10M-6G	G8
FC701-12M-6G	G8
FC701-12M-8G	G8
FC701-14M-8G	G8
FC701-4M-2G	G8
FC701-6M-2G	G8
FC701-6M-4G	G8
FC701-8M-2G	G8
FC701-8M-4G	G8
FC701-8M-6G	G8
FC702-2G	G8
FC702-4G	G8
FC702-6G	G8
FC702-8G	G8
FC705-4-2	G8
FC705-4-4	G8
FC705-5/32-2	G8
FC705-6-4	G8
FC705-6-6	G8
FC708-2	G8
FC708-4	G8
FC708-6	G8
FC708-8	G8
FC800-4	D117
FC800-5/32	D117
FC832-4	G6
FC832-4M	G6
FC832-5	G6
FC832-5/32	G6
FC832-6	G6
FC832-6M	G6
FC832-8	G6
FC832-8M	G6
FC832-10M	G6
FC832-12M	G6
FC836-2	G7
FC836-2G	G7
FC836-4	G7
FC836-4G	G7
FC836-6	G7
FC836-6G	G7
FC836-8	G7
FC836-8G	G7
FCB832-4	G6
FCB832-4M	G6
FCB832-5	G6
FCB832-5/32	G6
FCB832-6M	G6
FCB832-8M	G6
FCC731-10M-4G	B334
FCC731-10M-4G	G5
FCC731-10M-6G	B334
FCC731-10M-6G	G5
FCC731-12M-6G	B334
FCC731-12M-6G	G5
FCC731-12M-8G	B334
FCC731-12M-8G	G5
FCC731-4-2	G5
FCC731-4-4	G5
FCC731-4M-2G	G5
FCC731-5/32-2	G5
FCC731-5/32-4	G5
FCC731-6-4	G5
FCC731-6-6	G5
FCC731-6M-2G	G5
FCC731-6M-4G	B334, G5
FCC731-8M-2G	G5
FCC731-8M-4G	B334, G5
FCC731-8M-6G	B334, G5
FCCB731-4-2	G5
FCCB731-4-4	G5
FCCB731-4M-2G	G5
FCCB731-5/32-2	G5
FCCB731-6M-2G	G5
FCCB731-6M-4G	G5
FCCB731-8M-2G	G5
FCCB731-8M-4G	G5
FCCB731-8M-6G	G5
FCCS731-10M-4G	G6
FCCS731-10M-6G	G6
FCCS731-12M-6G	G6
FCCS731-12M-8G	G6
FCCS731-4-2	G6
FCCS731-4-4	G6
FCCS731-6-4	G6
FCCS731-6-6	G6
FCCS731-6M-2G	G6

Parker Hannifin Corporation
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Part No.	Section/Page No.
FCCS731-6M-4G	G6
FCCS731-8M-2G	G6
FCCS731-8M-4G	G6
FCCS731-8M-6G	G6
FCCSP731-10M	G6
FCCSP731-12M	G6
FCCSP731-6M	G6
FCCSP731-8M	G6
FCKC731-10M-4G	G5
FCKC731-10M-6G	G5
FCKC731-10M-8G	G5
FCKC731-12M-6G	G5
FCKC731-12M-8G	G5
FCKC731-2-0	G5
FCKC731-2-2	G5
FCKC731-4-0	G5
FCKC731-4-2	G5
FCKC731-4-4	G5
FCKC731-4M-2G	G5
FCKC731-4M-M5	G5
FCKC731-5/32-0	G5
FCKC731-5/32-2	G5
FCKC731-5-2	G5
FCKC731-5-4	G5
FCKC731-6-4	G5
FCKC731-6-6	G5
FCKC731-6M-2G	G5
FCKC731-6M-4G	G5
FCKC731-6M-M5	G5
FCKC731-8M-2G	G5
FCKC731-8M-4G	G5
FCKC731-8M-6G	G5
FCKCB731-4M-2G	G5
FCKCB731-4M-M5	G5
FCKCB731-6M-2G	G5
FCKCB731-6M-4G	G5
FCKCB731-6M-M5	G5
FCKCB731-8M-2G	G5
FCKCB731-8M-4G	G5
FCKCB731-8M-6G	G5
FCM731-2-0	G5
FCM731-2-2	G5
FCM731-3M-M3	B334
FCM731-3M-M3	G5
FCM731-3M-M5	B334
FCM731-3M-M5	G5
FCM731-4-0	G5
FCM731-4-2	G5
FCM731-4-4	G5
FCM731-4M-2G	B334
FCM731-4M-2G	G5
FCM731-4M-M3	B334
FCM731-4M-M3	G5
FCM731-4M-M5	B334
FCM731-4M-M5	G5
FCM731-5/32-0	G5
FCM731-5/32-2	G5
FCM731-6M-2G	B334
FCM731-6M-2G	G5
FCM731-6M-4G	G5
FCM731-6M-M5	B334
FCM731-6M-M5	G5
FCM731-8M-2G	B334
FCM731-8M-2G	G5
FCM731-8M-4G	G5
FCM731-8M-6G	G5
FCMB731-4M-2G	G6
FCMB731-4M-M5	G6
FCMB731-6M-2G	G6
FCMB731-6M-4G	G6
FCMB731-6M-M5	G6
FCMK731-2-0	G6
FCMK731-2-2	G6
FCMK731-4-0	G6
FCMK731-4-2	G6
FCMK731-4-4	G6
FCMK731-5/32-0	G6
FCMK731-5/32-2	G6
FCMS731-4M-2G	G6
FCMS731-4M-M5	G6
FCMS731-5/32-0	G6
FCMS731-5/32-2	G6
FCMS731-6M-2G	G6
FCMS731-6M-M5	G6
FCMSP701-4M	G6
FCMSP701-6M	G6
FCMSP731-2	G6
FCMSP731-4	G6
FCMSP731-5/32	G6
FCPM832-4M	G7
FCPM832-6M	G7
FCPM832-8M	G7
FCPM832-10M	G7
FCPM832-12M	G7
FDC15HP-00010000	B260
FDC15HP-00020000	B260
FDC20HP-00010000	B260
FDC20HP-00020000	B260
FDC25HP-00010000	B260
FDC25HP-00020000	B260
FDC35HP-00010000	B260
FDC35HP-00020000	B260
FDC45HP-00010000	B260
FDC45HP-00020000	B260
FMD04-1	D90, D93, D96, D101
FMD06-1	D90, D93, D96, D101
FMD06-2	D91, D94, D98, D102
FMD07-1B	D90, D93, D96, D101
FMD07-2B	D91, D94, D98, D102
FMD08-2	D91, D94, D98, D102
FMD09-2B	D91, D94, D98, D102
FMD10-2	D91, D94, D98, D102
FMD12-2	D91, D94, D98, D102
FMD13-2B	D91, D94, D98, D102
FNPB4	G35
FNPB6	G35
FNPB8	G35
FNPB10	G35
FNPB12	G35
FNPB14	G35
FPB10-1/4	G33
FPB10-3/8	G33
FPB12-3/8	G33
FPB6-1/4	G33
FPB6-1/8	G33
FR-10PRN	B351
FR-1PRN	B351
FR-20PRN	B351
FR-30PRN	B351
FR-3PRN	B351
FRP-95-505	E86, F8
FRP-95-508	E86
FRP-96-729	E71
FSV-G1	C81
FSV-G2	C81
FSV-G3	C81
FTF-120-G4	C6, C19
FTF-120-N4	C6, C19
FTF-20B-G1	C6, C19, C32
FTF-20B-G2	C6, C19, C32
FTF-50-G1	C6, C19, C32
FTF-50-G2	C6, C19, C32
FTF-5A-G1	C6, C19, C32
FTF-5A-M5	C6, C19, C32, C44
FTF-60-G2	C6, C19, C32
FTF-60-N2	C6, C19, C32
FTK-15	C7, C33
FTK-20	C7, C20, C33
FTK-25	C7, C20, C33
FTK-50	C7, C20, C33
FTK-5A	C7, C20, C33, C45
FTK-60-G1	C7, C20, C33
FTK-60-N1	C7, C20, C33
FTM-20B-G1H	C5, C18, C31
FTM-20B-G2	C5, C18, C31
FTM-20B-M10	C5, C18, C31
FTM-20B-N1	C5, C18, C31
FTM-50-G1H	C5, C18, C31
FTM-50-G2	C5, C18, C31
FTM-50-N1	C5, C18, C31
FTM-5A-G1	C5, C18, C31
FTM-5A-M5H	C5, C18, C31, C43
FTM-60-G2	C5, C18, C31
FTM-60-M10	C5, C18, C31
FTM-60-N2	C5, C18, C31
FYK-120-G1	C8, C21
FYK-120-N1	C8, C21
FYK-15	C8, C21, C34
FYK-20	C8, C21, C34
FYK-25	C8, C21, C34
FYK-50	C8, C21, C34
FYK-5A	C8, C21, C34
FYK-60-G1	C8, C21, C34
FYK-60-N1	C8, C21, C34
G4PB4-1/8	G33
G4PB6-1/4	G33
G4PB6-1/8	G33
G4PB8-1/4	G33
G4PB8-1/8	G33
GDL	B258
GRP-95-022	E86, E90
GRP-95-111	E67, E71
GRP-95-260	E111
GRP-95-261	E111
GRP-95-262	E111
GRP-95-392	E86, E90
GRP-95-393	E86, E90
GRP-96-717	E67, E71
GRP-96-718	E67, E71
GRP-96-725	E67, E71
GRP-96-726	E67, E71
H02713	D203
H02722	D203
H02723	D203
H02789	D203
H06326	D82, D83, D86, D87
H06332	D82, D83, D86, D87
H06338	D84, D85, D86, D87
H0C	G15
H0E	G15
H0F	G15
H11VXBG023D	D133
H11VXBG0B9D	D133
H11VXBH023D	D133
H11VXBH0B9D	D133
H11VXXG023D	D133
H11VXXG0B9D	D133
H11VXXH023D	D133
H11VXXH0B9D	D133
H11WXBBL49D	D147
H11WXBBL53D	D147
H11WXBDL49D	D147
H11WXBDL53D	D147
H11WXBG2B9000FD	D146
H11WXBG323000FD	D146
H11WXBH2B9000FD	D146
H11WXBH323000FD	D146
H11WXXBL49D	D147
H11WXXBL53D	D147
H11WXXDL49D	D147
H11WXXDL53D	D147
H11WXXG2B9000FD	D146
H11WXXG323000FD	D146
H11WXXH2B9000FD	D146
H11WXXH323000FD	D146
H12VXBG023D	D133
H12VXBG0B9D	D133
H12VXBH023D	D133
H12VXBH0B9D	D133
H12VXXG023D	D133
H12VXXG0B9D	D133
H12VXXH023D	D133
H12VXXH0B9D	D133
H12WXBBL49D	D147
H12WXBBL53D	D147
H12WXBDL49D	D147
H12WXBDL53D	D147
H12WXBG2B9000FD	D146
H12WXBG323000FD	D146
H12WXBH2B9000FD	D146
H12WXBH323000FD	D146
H12WXXBL49D	D147
H12WXXBL53D	D147
H12WXXDL49D	D147
H12WXXDL53D	D147
H12WXXG2B9000FD	D146
H12WXXG323000FD	D146
H12WXXH2B9000FD	D146
H12WXXH323000FD	D146
H13499	D86, D87
H13529	D87
H13648	D82, D83, D86, D87
H13676	D82, D83, D86, D87
H13728	D82, D83, D84, D85, D86, D87
H13752	D84, D85, D86, D87
H14509	D82
H14510	D82, D86
H15VXBG023D	D133
H15VXBG0B9D	D133
H15VXBH023D	D133
H15VXBH0B9D	D133
H15VXXG023D	D133
H15VXXG0B9D	D133
H15VXXH023D	D133
H15VXXH0B9D	D133
H15WXBBL49D	D147
H15WXBBL53D	D147
H15WXBDL49D	D147
H15WXBDL53D	D147
H15WXBG2B9000FD	D146
H15WXBG323000FD	D146
H15WXBH2B9000FD	D146
H15WXBH323000FD	D146
H15WXXBL49D	D147
H15WXXBL53D	D147
H15WXXDL49D	D147
H15WXXDL53D	D147
H15WXXG2B9000FD	D146
H15WXXG323000FD	D146
H15WXXH2B9000FD	D146
H15WXXH323000FD	D146
H16VXBG023D	D133
H16VXBG0B9D	D133
H16VXBH023D	D133
H16VXBH0B9D	D133
H16VXXG023D	D133
H16VXXG0B9D	D133
H16VXXH023D	D133
H16VXXH0B9D	D133
H16WXBBL49D	D147
H16WXBBL53D	D147
H16WXBDL49D	D147
H16WXBDL53D	D147
H16WXBG2B9000FD	D146
H16WXBG323000FD	D146
H16WXBH2B9000FD	D146
H16WXBH323000FD	D146
H16WXXBL49D	D147
H16WXXBL53D	D147
H16WXXDL49D	D147
H16WXXDL53D	D147
H16WXXG2B9000FD	D146
H16WXXG323000FD	D146
H16WXXH2B9000FD	D146
H16WXXH323000FD	D146
H17811	D82, D83, D86, D87
H17813	D82, D83, D86, D87
H17817	D84, D85, D86, D87
H17VXBG023D	D133
H17VXBG0B9D	D133
H17VXBH023D	D133
H17VXBH0B9D	D133
H17VXXG023D	D133
H17VXXG0B9D	D133
H17VXXH023D	D133
H17VXXH0B9D	D133
H17WXBBL49D	D147
H17WXBBL53D	D147
H17WXBDL49D	D147
H17WXBDL53D	D147
H17WXBG2B9000FD	D146
H17WXBG323000FD	D146
H17WXBH2B9000FD	D146
H17WXBH323000FD	D146
H17WXXBL49D	D147
H17WXXBL53D	D147
H17WXXDL49D	D147
H17WXXDL53D	D147
H17WXXG2B9000FD	D146
H17WXXG323000FD	D146
H17WXXH2B9000FD	D146
H17WXXH323000FD	D146
H1C	G15
H1E	G15
H1EVXBG023D	D133
H1EVXBG0B9D	D133
H1EVXBH023D	D133
H1EVXBH0B9D	D133
H1EVXXG023D	D133
H1EVXXG0B9D	D133
H1EVXXH023D	D133
H1EVXXH0B9D	D133
H1EWXBBL49D	D147
H1EWXBBL53D	D147
H1EWXBDL49D	D147
H1EWXBDL53D	D147
H1EWXBG2B9000FD	D146
H1EWXBG323000FD	D146
H1EWXBH2B9000FD	D146
H1EWXBH323000FD	D146
H1EWXXBL49D	D147
H1EWXXBL53D	D147
H1EWXXDL49D	D147
H1EWXXDL53D	D147
H1EWXXG2B9000FD	D146
H1EWXXG323000FD	D146
H1EWXXH2B9000FD	D146
H1EWXXH323000FD	D146
H1F	G15
H21VXBG023D	D136
H21VXBG0B9D	D136
H21VXBH023D	D136
H21VXBH0B9D	D136
H21VXXG023D	D136

Parker Hannifin Corporation
Pneumatic Division
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Part No.	Section/Page No.
H21VXXG0B9D	D136
H21VXXH023D	D136
H21VXXH0B9D	D136
H21WXBBL49D	D150
H21WXBBL53D	D151
H21WXBCL49D	D150
H21WXBCL53D	D151
H21WXBG2B9000FD	D150
H21WXBG323000FD	D150
H21WXBH2B9000FD	D150
H21WXBH323000FD	D150
H21WXXBL49D	D150
H21WXXBL53D	D151
H21WXXCL49D	D150
H21WXXCL53D	D151
H21WXXG2B9000FD	D150
H21WXXG323000FD	D150
H21WXXH2B9000FD	D150
H21WXXH323000FD	D150
H22VXBG023D	D136
H22VXBG0B9D	D136
H22VXBH023D	D136
H22VXBH0B9D	D136
H22VXXG023D	D136
H22VXXG0B9D	D136
H22VXXH023D	D136
H22VXXH0B9D	D136
H22WXBBL49D	D150
H22WXBBL53D	D151
H22WXBCL49D	D150
H22WXBCL53D	D151
H22WXBG2B9000FD	D150
H22WXBG323000FD	D150
H22WXBH2B9000FD	D150
H22WXBH323000FD	D150
H22WXXBL49D	D150
H22WXXBL53D	D151
H22WXXCL49D	D150
H22WXXCL53D	D151
H22WXXG2B9000FD	D150
H22WXXG323000FD	D150
H22WXXH2B9000FD	D150
H22WXXH323000FD	D150
H25VXBG023D	D136
H25VXBG0B9D	D136
H25VXBH023D	D136
H25VXBH0B9D	D136
H25VXXG023D	D136
H25VXXG0B9D	D136
H25VXXH023D	D136
H25VXXH0B9D	D136
H25WXBBL49D	D150
H25WXBBL53D	D151
H25WXBCL49D	D150
H25WXBCL53D	D151
H25WXBG2B9000FD	D150
H25WXBG323000FD	D150
H25WXBH2B9000FD	D150
H25WXBH323000FD	D150
H25WXXBL49D	D150
H25WXXBL53D	D151
H25WXXCL49D	D150
H25WXXCL53D	D151
H25WXXG2B9000FD	D150
H25WXXG323000FD	D150
H25WXXH2B9000FD	D150
H25WXXH323000FD	D150
H26VXBG023D	D136
H26VXBG0B9D	D136
H26VXBH023D	D136
H26VXBH0B9D	D136
H26VXXG023D	D136
H26VXXG0B9D	D136
H26VXXH023D	D136
H26VXXH0B9D	D136
H26WXBBL49D	D150
H26WXBBL53D	D151
H26WXBCL49D	D150
H26WXBCL53D	D151
H26WXBG2B9000FD	D150
H26WXBG323000FD	D150
H26WXBH2B9000FD	D150
H26WXBH323000FD	D150
H26WXXBL49D	D150
H26WXXBL53D	D151
H26WXXCL49D	D150
H26WXXCL53D	D151
H26WXXG2B9000FD	D150
H26WXXG323000FD	D150
H26WXXH2B9000FD	D150
H26WXXH323000FD	D150
H27VXBG023D	D136
H27VXBG0B9D	D136
H27VXBH023D	D136
H27VXBH0B9D	D136
H27VXXG023D	D136
H27VXXG0B9D	D136
H27VXXH023D	D136
H27VXXH0B9D	D136
H27WXBBL49D	D150
H27WXBBL53D	D151
H27WXBCL49D	D150
H27WXBCL53D	D151
H27WXBG2B9000FD	D150
H27WXBG323000FD	D150
H27WXBH2B9000FD	D150
H27WXBH323000FD	D150
H27WXXBL49D	D150
H27WXXBL53D	D151
H27WXXCL49D	D150
H27WXXCL53D	D151
H27WXXG2B9000FD	D150
H27WXXG323000FD	D150
H27WXXH2B9000FD	D150
H27WXXH323000FD	D150
H2C	G15
H2C-E	G15
H2E	G15
H2E-F	G15
H2EVXBG023D	D136
H2EVXBG0B9D	D136
H2EVXBH023D	D136
H2EVXBH0B9D	D136
H2EVXXG023D	D136
H2EVXXG0B9D	D136
H2EVXXH023D	D136
H2EVXXH0B9D	D136
H2EWXBBL49D	D150
H2EWXBBL53D	D151
H2EWXBCL49D	D150
H2EWXBCL53D	D151
H2EWXBG2B9000FD	D150
H2EWXBG323000FD	D150
H2EWXBH2B9000FD	D150
H2EWXBH323000FD	D150
H2EWXXBL49D	D150
H2EWXXBL53D	D151
H2EWXXCL49D	D150
H2EWXXCL53D	D151
H2EWXXG2B9000FD	D150
H2EWXXG323000FD	D150
H2EWXXH2B9000FD	D150
H2EWXXH323000FD	D150
H2F	G15
H2F-G	G15
H2G	G15
H2G-F	G15
H2G-J	G15
H31VXBG023D	D139
H31VXBG0B9D	D139
H31VXBH023D	D139
H31VXBH0B9D	D139
H31VXXG023D	D139
H31VXXG0B9D	D139
H31VXXH023D	D139
H31VXXH0B9D	D139
H31WXBBL49D	D153
H31WXBBL53D	D154
H31WXBCL49D	D153
H31WXBCL53D	D154
H31WXBG2B9000FD	D153
H31WXBG323000FD	D153
H31WXBH2B9000FD	D153
H31WXBH323000FD	D153
H31WXXBL49D	D153
H31WXXBL53D	D154
H31WXXCL49D	D153
H31WXXCL53D	D154
H31WXXG2B9000FD	D153
H31WXXG323000FD	D153
H31WXXH2B9000FD	D153
H31WXXH323000FD	D153
H32VXBG023D	D139
H32VXBG0B9D	D139
H32VXBH023D	D139
H32VXBH0B9D	D139
H32VXXG023D	D139
H32VXXG0B9D	D139
H32VXXH023D	D139
H32VXXH0B9D	D139
H32WXBBL49D	D153
H32WXBBL53D	D154
H32WXBCL49D	D153
H32WXBCL53D	D154
H32WXBG2B9000FD	D153
H32WXBG323000FD	D153
H32WXBH2B9000FD	D153
H32WXBH323000FD	D153
H32WXXBL49D	D153
H32WXXBL53D	D154
H32WXXCL49D	D153
H32WXXCL53D	D154
H32WXXG2B9000FD	D153
H32WXXG323000FD	D153
H32WXXH2B9000FD	D153
H32WXXH323000FD	D153
H35VXBG023D	D139
H35VXBG0B9D	D139
H35VXBH023D	D139
H35VXBH0B9D	D139
H35VXXG023D	D139
H35VXXG0B9D	D139
H35VXXH023D	D139
H35VXXH0B9D	D139
H35WXBBL49D	D153
H35WXBBL53D	D154
H35WXBCL49D	D153
H35WXBCL53D	D154
H35WXBG2B9000FD	D153
H35WXBG323000FD	D153
H35WXBH2B9000FD	D153
H35WXBH323000FD	D153
H35WXXBL49D	D153
H35WXXBL53D	D154
H35WXXCL49D	D153
H35WXXCL53D	D154
H35WXXG2B9000FD	D153
H35WXXG323000FD	D153
H35WXXH2B9000FD	D153
H35WXXH323000FD	D153
H36VXBG023D	D139
H36VXBG0B9D	D139
H36VXBH023D	D139
H36VXBH0B9D	D139
H36VXXG023D	D139
H36VXXG0B9D	D139
H36VXXH023D	D139
H36VXXH0B9D	D139
H36WXBBL49D	D153
H36WXBBL53D	D154
H36WXBCL49D	D153
H36WXBCL53D	D154
H36WXBG2B9000FD	D153
H36WXBG323000FD	D153
H36WXBH2B9000FD	D153
H36WXBH323000FD	D153
H36WXXBL49D	D153
H36WXXBL53D	D154
H36WXXCL49D	D153
H36WXXCL53D	D154
H36WXXG2B9000FD	D153
H36WXXG323000FD	D153
H36WXXH2B9000FD	D153
H36WXXH323000FD	D153
H37VXBG023D	D139
H37VXBG0B9D	D139
H37VXBH023D	D139
H37VXBH0B9D	D139
H37VXXG023D	D139
H37VXXG0B9D	D139
H37VXXH023D	D139
H37VXXH0B9D	D139
H37WXBBL49D	D153
H37WXBBL53D	D154
H37WXBCL49D	D153
H37WXBCL53D	D154
H37WXBG2B9000FD	D153
H37WXBG323000FD	D153
H37WXBH2B9000FD	D153
H37WXBH323000FD	D153
H37WXXBL49D	D153
H37WXXBL53D	D154
H37WXXCL49D	D153
H37WXXCL53D	D154
H37WXXG2B9000FD	D153
H37WXXG323000FD	D153
H37WXXH2B9000FD	D153
H37WXXH323000FD	D153
H3C	G15
H3C-E	G15
H3E	G15
H3E-F	G15
H3EVXBG023D	D139
H3EVXBG0B9D	D139
H3EVXBH023D	D139
H3EVXBH0B9D	D139
H3EVXXG023D	D139
H3EVXXG0B9D	D139
H3EVXXH023D	D139
H3EVXXH0B9D	D139
H3EWXBBL49D	D153
H3EWXBBL53D	D154
H3EWXBCL49D	D153
H3EWXBCL53D	D154
H3EWXBG2B9000FD	D153
H3EWXBG323000FD	D153
H3EWXBH2B9000FD	D153
H3EWXBH323000FD	D153
H3EWXXBL49D	D153
H3EWXXBL53D	D154
H3EWXXCL49D	D153
H3EWXXCL53D	D154
H3EWXXG2B9000FD	D153
H3EWXXG323000FD	D153
H3EWXXH2B9000FD	D153
H3EWXXH323000FD	D153
H3F	G15
H3F-G	G15
H3G	G15
H3G-F	G15
H3G-J	G15
H4EP	G15
H4F	G15
H4FP	G15
H5E	G15
H5EP	G15
H5F	G15
H5F-G	G15
H5FP	G15
H5G	G15
H5G-F	G15
H5G-J	G15
H6E	G15
H6EP	G15
H6FP	G15
H8C	G15
H8C-D	G15
H8CP	G15
H9C	G15
H9CP	G15
HA1VXBG023A	D128
HA1VXBG0G9A	D128
HA1VXBH023A	D128
HA1VXBH0G9A	D128
HA1VXLG023A	D128
HA1VXLG0G9A	D128
HA1VXLH023A	D128
HA1VXLH0G9A	D128
HA1WXBG2G9000FA	D144
HA1WXBH2G9000FA	D144
HA1WXLG2G9000FA	D144
HA1WXLH2G9000FA	D144
HA2VXBG023A	D128
HA2VXBG0G9A	D128
HA2VXBH023A	D128
HA2VXBH0G9A	D128
HA2VXLG023A	D128
HA2VXLG0G9A	D128
HA2VXLH023A	D128
HA2VXLH0G9A	D128
HA2WXBG2G9000FA	D144
HA2WXBH2G9000FA	D144
HA2WXLG2G9000FA	D144
HA2WXLH2G9000FA	D144
HA5VXBG023A	D128
HA5VXBG0G9A	D128
HA5VXBH023A	D128
HA5VXBH0G9A	D128
HA5VXLG023A	D128
HA5VXLG0G9A	D128
HA5VXLH023A	D128
HA5VXLH0G9A	D128
HA5WXBG2G9000FA	D144
HA5WXBH2G9000FA	D144
HA5WXLG2G9000FA	D144
HA5WXLH2G9000FA	D144
HA6VXBG023A	D128
HA6VXBG0G9A	D128
HA6VXBH023A	D128
HA6VXBH0G9A	D128
HA6VXLG023A	D128
HA6VXLG0G9A	D128
HA6VXLH023A	D128
HA6VXLH0G9A	D128
HA6WXBG2G9000FA	D144
HA6WXBH2G9000FA	D144
HA6WXLG2G9000FA	D144
HA6WXLH2G9000FA	D144
HA7VXBG023A	D128
HA7VXBG0G9A	D128
HA7VXBH023A	D128
HA7VXBH0G9A	D128
HA7VXLG023A	D128
HA7VXLG0G9A	D128
HA7VXLH023A	D128

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Part No.	Section/Page No.
HA7VXLH0G9A	D128
HA7WXBG2G9000FA	D144
HA7WXBH2G9000FA	D144
HA7WXLG2G9000FA	D144
HA7WXLH2G9000FA	D144
HAEVXBG023A	D128
HAEVXBG0G9A	D128
HAEVXBH023A	D128
HAEVXBH0G9A	D128
HAEVXLG023A	D128
HAEVXLG0G9A	D128
HAEVXLH023A	D128
HAEVXLH0G9A	D128
HAEWXBG2G9000FA	D144
HAEWXBH2G9000FA	D144
HAEWXLG2G9000FA	D144
HAEWXLH2G9000FA	D144
HB B202	
HB1VXBG023A	D126
HB1VXBG0G9A	D126
HB1VXBH023A	D126
HB1VXBH0G9A	D126
HB1VXLG023A	D126
HB1VXLG0G9A	D126
HB1VXLH023A	D126
HB1VXLH0G9A	D126
HB1WXBG2G9000FA	D143
HB1WXBH2G9000FA	D143
HB1WXLG2G9000FA	D143
HB1WXLH2G9000FA	D143
HB2VXBG023A	D126
HB2VXBG0G9A	D126
HB2VXBH023A	D126
HB2VXBH0G9A	D126
HB2VXLG023A	D126
HB2VXLG0G9A	D126
HB2VXLH023A	D126
HB2VXLH0G9A	D126
HB2WXBG2G9000FA	D143
HB2WXBH2G9000FA	D143
HB2WXLG2G9000FA	D143
HB2WXLH2G9000FA	D143
HB5VXBG023A	D126
HB5VXBG0G9A	D126
HB5VXBH023A	D126
HB5VXBH0G9A	D126
HB5VXLG023A	D126
HB5VXLG0G9A	D126
HB5VXLH023A	D126
HB5VXLH0G9A	D126
HB5WXBG2G9000FA	D143
HB5WXBH2G9000FA	D143
HB5WXLG2G9000FA	D143
HB5WXLH2G9000FA	D143
HB6VXBG023A	D126
HB6VXBG0G9A	D126
HB6VXBH023A	D126
HB6VXBH0G9A	D126
HB6VXLG023A	D126
HB6VXLG0G9A	D126
HB6VXLH023A	D126
HB6VXLH0G9A	D126
HB6WXBG2G9000FA	D143
HB6WXBH2G9000FA	D143
HB6WXLG2G9000FA	D143
HB6WXLH2G9000FA	D143
HB7VXBG023A	D126
HB7VXBG0G9A	D126
HB7VXBH023A	D126
HB7VXBH0G9A	D126
HB7VXLG023A	D126
HB7VXLG0G9A	D126
HB7VXLH023A	D126
HB7VXLH0G9A	D126
HB7WXBG2G9000FA	D143
HB7WXBH2G9000FA	D143
HB7WXLG2G9000FA	D143
HB7WXLH2G9000FA	D143
HBEVXBG023A	D126
HBEVXBG0G9A	D126
HBEVXBH023A	D126
HBEVXBH0G9A	D126
HBEVXLG023A	D126
HBEVXLG0G9A	D126
HBEVXLH023A	D126
HBEVXLH0G9A	D126
HBEWXBG2G9000FA	D143
HBEWXBH2G9000FA	D143
HBEWXLG2G9000FA	D143
HBEWXLH2G9000FA	D143
HBNVXBG023A	D126
HBNVXBG0G9A	D126
HBNVXBH023A	D126
HBNVXBH0G9A	D126
HBNWXBG2G9000FA	D143
HBNWXBH2G9000FA	D143
HBPVXBG023A	D126
HBPVXBG0G9A	D126
HBPVXBH023A	D126
HBPVXBH0G9A	D126
HBPWXBG2G9000FA	D143
HBPWXBH2G9000FA	D143
HDF-120-NPT-A	E91, E124
HM2VX2049A	D113, D114
HM5VX2049A	D113, D114
HMBVX00XXA	D114
HMCVX00XXA	D114
HMDXX1	D90, D93, D96, D101
HMDXX2	D91, D94, D98, D102
HMEVX2049A	D113, D114, D117
HMNVX2049A	D113, D114
HMPVX2049A	D113, D114
HMQVX2049A	D113, D114
HP	B275
HPB10	G33
HPB12	G33
HPB14	G33
HPB4	G33
HPB5	G33
HPB6	G33
HPB8	G33
HVN4200-8	D234
HVN4400-10	D234
HVN4400-15	D234
HVRK420001	D234
HVRK440001	D234
JPB10	G33
JPB12	G33
JPB14	G33
JPB4	G33
JPB5	G33
JPB6	G33
JPB8	G33
JTYS-10-10	C35
JTYS-10-15	C35
K012003	D84, D85
K0251035**	D202
K0252035**	D202
K0253035**	D202
K0451025**	D81
K0452025**	D81, D202
K0453025**	D81, D202
K053010	D87
K053011	D87
K053018	D83
K053019	D83
K053022	D82, D86
K053023	D82, D86
K053025	D82, D86
K053026	D82, D86
K053064	D83, D87
K053065	D83, D87
K053067	D83, D87
K053069	D83, D87
K053070	D83, D87
K053075	D82, D86
K053076	D82, D86
K053077	D82, D86
K053078	D82, D86
K053110	D87
K053111	D84, D85, D86
K053112	D84, D85, D86
K053113	D84, D85, D86
K053114	D84, D85, D86
K053115	D84, D85, D86
K053116	D84, D85, D86
K053143	D87
K053144	D87
K053145	D87
K053146	D87
K053157	D83, D87
K053159	D87
K053218	D82, D86
K053219	D83, D87
K053220	D82, D86
K053221	D83, D87
K06020003	D203
K0652035**	D81
K0653035**	D81, D202
K0655035**	D81, D202
K0656035**	D81, D202
K0658035**	D81, D202
K0659035**	D81, D202
K0852025**	D81
K0853025**	D81, D202
K0855025**	D81, D202
K0856025**	D81, D202
K0858025**	D81, D202
K0859025**	D81, D202
K092020	D82, D83, D86, D87
K092034	D82, D83, D86, D87
K092046	D84, D85, D86, D87
K103035	D82, D83, D86, D87
K103053	D82, D83, D86, D87
K103061	D84, D85, D86, D87
K123018	D86
K123021	D86
K123024	D86
K1351045**	D81
K1355045**	D81
K1356045**	D81
K135804553	D81
K135904553	D81
K142230	D207
K142231	D207
K142270	D207
K152003	D203
K162001	D203
K1753035**	D202
K175803553	D202
K175903553	D202
K183049	D82, D83, D86, D87
K183057	D82, D83, D86, D87
K183058	D84, D85, D86, D87
K1853025**	D202
K185802553	D202
K185902553	D202
K202001	D82, D83, D86, D87
K202002	D82, D83, D86, D87
K212001	D82, D83, D86, D87
K212002	D82, D83, D86, D87
K21R02012L	D203
K21R02025L	D203
K21R02037L	D203
K21R02050L	D203
K21R02075L	D203
K2351035**	D202
K2352035**	D202
K2353035**	D202
K255202549	D81
K2553025**	D81
K313028	D84, D85, D86, D87
K313029	D84, D85, D86, D87
K322012	D203
K322013	D203
K323027	D87
K352031	D87
K352056	D87
K352073	D86
K352074	D86
K352075	D86
K352076	D82, D83
K352077	D82, D83
K352078	D84
K352080	D85
K352083	D87
K352124	D202
K352125	D202
K352126	D202
K352127	D202
K352128	D202
K352129	D202
K352130	D202
K352131	D202
K352276	D82, D83
K352277	D82, D83
K352355	D202
K352359	D202
K352360	D202
K352362	D202
K41RB72121	D82, D83, D86, D87
K41RB72143	D84, D85, D86, D87
K41RB72210	D83
K41RB72211	D83
K41RB72221	D82, D83, D86, D87
K4510N18060	E10, E13, E37
K4510N18160	E10, E13, E37
K4511SCR04B	E10, E13, E15, E37
K4511SCR060	E10, E13, E15, E37
K4511SCR11B	E10, E13, E15, E37
K4511SCR160	E10, E13, E15, E29, E37
K4515N14160SS	E106, E108
K4515N18030	E10, E37, E66, E71
K4515N18060	E10, E37, E66, E67, E71
K4515N18160	E10, E37, E66, E67, E71
K4517N14160D	E10, E13, E15, E37, E49, E51, E53, E55, E76, E77, E79, E93, E94, E95, E97, E99
K4520N14030	E10, E13, E15, E37
K4520N14060	E10, E13, E15, E37, E49, E51, E53, E55, E66, E76, E77, E79, E93, E94, E97, E99
K4520N14160	E10, E13, E15, E37, E49, E51, E53, E55, E66, E76, E77, E79, E93, E94, E95, E97, E99
K4520N14160SS	E106, E108
K4520N14300	E10, E13, E15, E37, E49, E51, E53, E55, E76, E77, E79, E93, E94, E95, E97, E99
K473014	D82, D83, D86, D87
K473015	D82, D83, D86, D87
K473016	D84, D85, D86, D87
K493002	D82, D83, D86, D87
K493009	D82, D83, D86, D87
K493016	D84, D85, D86, D87
K563015	D82
K563016	D83, D87
K563017	D82
K563021	D83, D87
K563027	D87
K593003	D81
K593007	D81
K593010	D81
K593014	D81, D203
K593025	D81, D203
K593035	D81, D203
K593041	D81
K593060	D203
K593071	D203
K593081	D203
K593094	D81
K593097	D81
K593098	D81
K593099	D81
K593108	D81
K593111	D81
K593125	D203
K593185	D81
K593254	D81
K593271	D81
K593274	D203
KC3102	B348
KC3104	B348
KL3300	B342, B348
KL3302	B342, B348
KL3303	B348
KL3305	B348
KL3306	B348
KL3308	B340, B348
KL3309	B340, B348
KL3312	B340, B348
KL3333	B348
KS05LPL251	B168
KS05LPL255	B168
KS07LPL311	B168
KS07LPL315	B168
KS12LPL501	B168
KS12LPL505	B168
KS15LPL621	B168
KS15LPL625	B168
KS20LPL751	B168
KS20LPL755	B168
KS25LPL751	B168
KS25LPL755	B168
KS30LPL871	B168
KS30LPL875	B168
KS40LPL101	B168
KS40LPL105	B168
KY3140	B348
KY3240	B348
KY3241	B348
KZ 2364	B354
KZ 8255	B354
L01369	E66
L067300000	B141

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Part No.	Section/Page No.
L067310000	B141
L067320000	B141
L067330000	B141
L067340000	B141
L067350000	B141
L067360000	B141
L067370000	B141
L067380000	B141
L067680000	B142
L067690000	B142
L067700000	B142
L067710000	B142
L067720000	B142
L067730000	B142
L067740000	B142
L067750000	B142
L067760000	B142
L067770000	B142
L067780000	B142
L067790000	B142
L067800000	B142
L067810000	B142
L067820000	B142
L067830000	B142
L067840000	B142
L067850000	B142
L067860000	B142
L067870000	B142
L067880000	B142
L067890000	B142
L067900000	B142
L067910000	B142
L067920000	B142
L067930000	B142
L067940000	B142
L067950000	B142
L067960000	B142
L067970000	B142
L067980000	B142
L067990000	B142
L069190000	B141
L069200000	B141
L069210000	B141
L069220000	B141
L069230000	B141
L069240000	B141
L069250000	B141
L069260000	B141
L071300025	B107
L071300100	B107
L071300200	B107
L071300300	B107
L071300350	B116
L071300400	B107, B116
L071300500	B107
L071300550	B116
L071300600	B107, B116
L071310100	B107
L071310200	B107
L071310300	B107
L071310400	B116
L071310500	B116
L071310600	B116
L071310700	B116
L071320025	B107
L071320100	B107
L071320200	B107
L071320250	B116
L071320300	B107
L071320350	B116
L071320400	B107
L071320450	B116
L071320500	B107
L071320550	B116
L071320600	B107
L073790016	B108
L073790023	B108
L073790024	B108
L073790028	B108
L073790032	B108
L073790040	B108
L073790048	B108
L073790056	B116
L073790102	B108
L073790108	B116
L073790116	B116
L073790124	B108
L073790125	B116
L073790132	B108
L073790140	B108, B116
L073800080	B161
L073800100	B161
L073800200	B108
L073800200	B161
L073800300	B161
L073800400	B108
L073800400	B161
L073800500	B108
L073800600	B108
L073800600	B161
L073800800	B108
L073800800	B161
L073800900	B108
L073800900	B161
L073801000	B116
L073801100	B108
L073801200	B108, B116
L073801300	B116
L073801400	B108, B116
L073801500	B108, B116
L073810008	B168
L073810010	B168
L073810020	B168
L073810024	B168
L073810032	B168
L073810040	B168
L073810048	B168
L073820012	B168
L073820024	B168
L073820040	B168
L073830012	B168
L073830024	B168
L073830040	B168
L073840016	B168
L073840020	B168
L073840024	B168
L075370032	B338
L075370040	B338
L075370063	B338
L075370100	B338
L075370125	B338
L075370160	B74
L075370200	B74
L075380160	B74
L075380200	B74
L075390160	B76
L075390200	B76
L075400032	B77
L075400040	B77
L075400050	B77
L075400063	B77
L075400080	B77
L075400100	B77
L075400125	B77
L075400160	B77
L075400200	B77
L075410160	B76
L075410200	B76
L075420160	B75
L075420200	B75
L075470036	B80
L075480160	B75
L075480200	B75
L075490036	B80
L075510160	B77
L075510200	B77
L075530036	B81
L075540005	B149, B161
L075540006	B149, B161
L075540008	B130
L075540008	B149, B161
L075540010	B130
L075540010	B149, B161
L075540012	B161
L075540014	B130
L075540014	B149, B161
L075540018	B130
L075540018	B149, B161
L075540022	B130
L075540022	B149, B161
L075540026	B130
L075540026	B149
L075540036	B81
L076600100	B107
L076600200	B107
L076950000	B341, B350
L07695000C	B341
L076960000	B341, B350
L07696000C	B341
L076970000	B341, B350
L07697000C	B341
L076980000	B341, B350
L07698000C	B341
L076990000	B340, B350
L07699000C	B340
L077000000	B340, B350
L07700000C	B340
L077010000	B340, B350
L07701000C	B340
L077020000	B340, B350
L07702000C	B340
L077030000	B342, B350
L07703000C	B342
L077040000	B342, B350
L07704000C	B342
L077050000	B342, B350
L07705000C	B342
L077060000	B342, B350
L07706000C	B342
L077130100	B107
L077130200	B107
L077130300	B107
L077130400	B107
L077130500	B107
L077150100	B107
L077150200	B107
L077150400	B107
L077150500	B107
L077160028	B108
L077160040	B108
L077160048	B108
L077160124	B108
L077170500	B108
L077170800	B108
L077170900	B108
L077171200	B108
L077440075	B131
L077440100	B131
L077440125	B131
L077440150	B131
L077440200	B131
L077440250	B131
L077440312	B131
L077440400	B131
L077450075	B131
L077450100	B131
L077450125	B131
L077450150	B131
L077450200	B131
L077450250	B131
L077450312	B131
L077450400	B131
L077470075	B131
L077470100	B131
L077470125	B131
L077470150	B131
L077470200	B131
L077470250	B131
L077470312	B131
L077470400	B131
L077480075	B131
L077480100	B131
L077480125	B131
L077480150	B131
L077480200	B131
L077480250	B131
L077480312	B131
L077480400	B131
L077490075	B131
L077490125	B131
L077490150	B131
L077490200	B131
L077490312	B131
L077490400	B131
L077500020	B131
L077500025	B131
L077500032	B131
L077500040	B131
L077500050	B131
L077500063	B131
L077500080	B131
L077500100	B131
L077510020	B131
L077510025	B131
L077510032	B131
L077510040	B131
L077510050	B131
L077510063	B131
L077510080	B131
L077510100	B131
L077520075	B131
L077520125	B131
L077520150	B131
L077520200	B131
L077520250	B131
L077520312	B131
L077520400	B131
L077550020	B131
L077550025	B131
L077550032	B131
L077550040	B131
L077550050	B131
L077550063	B131
L077550080	B131
L077550100	B131
L077560020	B131
L077560025	B131
L077560032	B131
L077560040	B131
L077560050	B131
L077560063	B131
L077560080	B131
L077560100	B131
L077570020	B131
L077570025	B131
L077570032	B131
L077570040	B131
L077570050	B131
L077570063	B131
L077570080	B131
L077570100	B131
L077580020	B131
L077580025	B131
L077580032	B131
L077580040	B131
L077580050	B131
L077580063	B131
L077580080	B131
L077580100	B131
L077590020	B130
L077590025	B130
L077590032	B130
L077590040	B130
L077590050	B130
L077590100	B130
L077960025	B130
L077960031	B130
L077960044	B130
L077960050	B130
L077960075	B130
L077960100	B130
L077970025	B130
L077970031	B130
L077970044	B130
L077970050	B130
L077970075	B130
L077970100	B130
L078930016	B241
L079700150	B37
L079700200	B37
L079700250	B37
L079700325	B37
L079700400	B37
L079700500	B37
L079710150	B37
L079710200	B37
L079710250	B37
L079710325	B37
L079710400	B37
L079710500	B37
L079720150	B37
L079720200	B37
L079720250	B37
L079720325	B37
L079720400	B37
L079730150	B37
L079730200	B37
L079730250	B37
L079730325	B37
L079730400	B37
L079730500	B37
L079740150	B37
L079740200	B37
L079740250	B37
L079740325	B37
L079740400	B37
L079740500	B37
L079750150	B37
L079750200	B37
L079750250	B37
L079750325	B37
L079750400	B37
L079830150	B37
L079830200	B37
L079830250	B37
L079830325	B37
L079830400	B37
L079830500	B37
L080160020	B241
L080160025	B241
L080160032	B241
L080160040	B241
L080160050	B241
L080160063	B241
L08016M020	B241

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Part No.	Section/Page No.
L08016M025	B241
L08016M032	B241
L08016M040	B241
L08016M050	B241
L08016M063	B241
L080170016	B242
L080170020	B242
L080170025	B242
L080170032	B242
L080170040	B242
L080170050	B242
L080170063	B242
L08017M016	B242
L08017M020	B242
L08017M025	B242
L08017M032	B242
L08017M040	B242
L08017M050	B242
L08017M063	B242
L080180016	B240
L080180020	B240
L080180025	B240
L080180032	B240
L080180040	B240
L080180050	B240
L080180063	B240
L080190016	B240
L080190020	B240
L080190025	B240
L080190032	B240
L55402308C	D203
L55403308C	D203
L55405305C	D203
L55405307C	D203
L55406307C	D203
L55407305C	D203
L55407306C	D203
L55407314C	D203
L55408302C	D203
L55408303C	D203
L55408311C	D203
L55411308C	D203
L55414307C	D203
L55414314C	D203
L606-06E	E100
L606-06G	E100
L606-06W	E100
L606-08E	E100
L606-08G	E100
L606-08W	E100
L606-10E	E100
L606-10G	E100
L606-10W	E100
L606-12E	E100
L606-12G	E100
L606-12W	E100
L606C14	E101
L606G06E	E100
L606G06G	E100
L606G06W	E100
L606G08E	E100
L606G08G	E100
L606G08W	E100
L606G10E	E100
L606G10G	E100
L606G10W	E100
L606G12E	E100
L606G12G	E100
L606G12W	E100
L6553310249	D199
L6553910253	D199
L6558310249	D199
L6558910253	D199
L6653321149	D199
L6653921153	D199
L6658321149	D199
L6658921153	D199
L6753310249	D199
L6753910253	D199
L6758310249	D199
L6758910253	D199
L6853310253	D199
L6853610249	D199
L6853910253	D199
L6854310253	D199
L6854610249	D199
L6854910253	D199
L6858610249	D199
L6858910253	D199
L6859610249	D199
L6859910253	D199
L6953921153	D199
L6954921153	D199
L6958921153	D199
L6959921153	D199
L7053310253	D199
L7053610249	D199
L7053910253	D199
L7054310253	D199
L7054610249	D199
L7054910253	D199
L7058610249	D199
L7058910253	D199
L7059610249	D199
L7059910253	D199
LP/LPM	B163
LV2N2BSS	D231
LV2N3B	D231
LV3N3B	D231
LV3N4BSS	D231
LV3N6B	D231
LV4N4BSS	D231
LV4N6B	D231
LV6N6B	D231
LV6N8BSS	D231
LV6NAB	D231
LV8N8BSS	D231
LV8NAB	D231
LVANAB	D231
LVBNCB	D231
LVBNCBSS	D231
LVCNCB	D231
LVCNCBSS	D231
M01921819	D229
M01924619	D229
M01931819	D229
M01934619	D229
M01941819	D229
M01944619	D229
M01961819	D229
M01964619	D229
M03321833	D229
M03324633	D229
M03331833	D229
M03334633	D229
M03341833	D229
M03344633	D229
M05422443	D228
M05422448	D228
M05422488	D229
M05425443	D228
M05425448	D228
M05425488	D229
M05432443	D228
M05432448	D228
M05432488	D229
M05435443	D228
M05435448	D228
M05435488	D229
M05442443	D228
M05442448	D228
M05442488	D229
M05445443	D228
M05445448	D228
M05445488	D229
M05462443	D228
M05462448	D228
M05465443	D228
M05465448	D228
M05822451	D228
M05825451	D228
M05832451	D228
M05835451	D228
M05842451	D228
M05845451	D228
M05862451	D228
M05865451	D228
M06221840	D229
M06224640	D229
M06231840	D229
M06234640	D229
M06241840	D229
M06244640	D229
M06421851	D228
M06421859	D228
M06424651	D228
M06424659	D228
M06431851	D228
M06431859	D228
M06434651	D228
M06434659	D228
M06441851	D228
M06441859	D228
M06444651	D228
M06444659	D228
M06461851	D228
M06461859	D228
M06464651	D228
M06464659	D228
M06521851	D228
M06521859	D228
M06524651	D228
M06524659	D228
M06531851	D228
M06531859	D228
M06534651	D228
M06534659	D228
M06541851	D228
M06541859	D228
M06544651	D228
M06544659	D228
M06561851	D228
M06561859	D228
M06564651	D228
M06564659	D228
M08421830	D229
M08424630	D229
M08431830	D229
M08434630	D229
M08441830	D229
M08444630	D229
M08521805	D229
M08521826	D229
M08521843	D228
M08521848	D228
M08521851	D228
M08521888	D229
M08524605	D229
M08524626	D229
M08524643	D228
M08524648	D228
M08524651	D228
M08524688	D229
M08531805	D229
M08531826	D229
M08531843	D228
M08531848	D228
M08531851	D228
M08531888	D229
M08534605	D229
M08534626	D229
M08534643	D228
M08534648	D228
M08534651	D228
M08534688	D229
M08541805	D229
M08541826	D229
M08541843	D228
M08541848	D228
M08541851	D228
M08541888	D229
M08544605	D229
M08544626	D229
M08544643	D228
M08544648	D228
M08544651	D228
M08544688	D229
M08561805	D229
M08561826	D229
M08561843	D228
M08561848	D228
M08561851	D228
M08564605	D229
M08564626	D229
M08564643	D228
M08564648	D228
M08564651	D228
M09521803	D229
M09521805	D229
M09521843	D228
M09524603	D229
M09524605	D229
M09524643	D228
M09531803	D229
M09531805	D229
M09531843	D228
M09534603	D229
M09534605	D229
M09534643	D228
M09541803	D229
M09541805	D229
M09541843	D228
M09544603	D229
M09544605	D229
M09544643	D228
M09561803	D229
M09561805	D229
M09561843	D228
M09564603	D229
M09564605	D229
M09564643	D228
M09621805	D229
M09621843	D228
M09624605	D229
M09624643	D228
M09631805	D229
M09631843	D228
M09634605	D229
M09634643	D228
M09641805	D229
M09641843	D228
M09644605	D229
M09644643	D228
M09661805	D229
M09661843	D228
M09664605	D229
M09664643	D228
M09721848	D228
M09724648	D228
M09731848	D228
M09734648	D228
M09741848	D228
M09744648	D228
M09761848	D228
M09764648	D228
M09821848	D228
M09824648	D228
M09831848	D228
M09834648	D228
M09841848	D228
M09844648	D228
M09861848	D228
M09864648	D228
M232001	D230
M232002	D230
M232003	D230
M232004	D230
M232005	D230
M232006	D230
M242001	D230
M242002	D230
M242003	D230
M242004	D230
M242006	D230
M242007	D230
M242008	D230
M242009	D230
M242011	D230
M242012	D230
M242013	D230
M242014	D230
M4x50 SCHS	D18
MA 150	B367
MA 225	B367
MA 3325	B369
MA 3350	B369
MA 35	B367
MA 3625	B369
MA 3650	B369
MA 4525	B369
MA 4550	B369
MA 4575	B369
MA 600	B367
MA 64100	B369
MA 64150	B369
MA 6450	B369
MA 900	B367
MB-SL 25	B228
MB-SL 32	B228
MB-SL 40	B228
MB-SL 50	B228
MB-SL 63	B228
MB-SL 80	B228
MC 10H	B363
MC 10L	B363
MC 150	B364
MC 150H	B364
MC 150H2	B364
MC 225	B364
MC 225H	B364
MC 225H2	B364
MC 25	B363
MC 25H	B363
MC 25L	B363
MC 3325-1	B368
MC 3325-2	B368
MC 3325-3	B368
MC 3325-4	B368
MC 3350-1	B368
MC 3350-2	B368
MC 3350-3	B368
MC 3350-4	B368
MC 3625-1	B368
MC 3625-2	B368
MC 3625-3	B368

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Part No.	Section/Page No.
MC 3625-4	B368
MC 3650-1	B368
MC 3650-2	B368
MC 3650-3	B368
MC 3650-4	B368
MC 4525-1	B368
MC 4525-2	B368
MC 4525-3	B368
MC 4525-4	B368
MC 4550-1	B368
MC 4550-2	B368
MC 4550-3	B368
MC 4550-4	B368
MC 4575-1	B368
MC 4575-2	B368
MC 4575-3	B368
MC 4575-4	B368
MC 600	B364
MC 600H	B364
MC 600H2	B364
MC 64100-1	B368
MC 64100-2	B368
MC 64100-3	B368
MC 64100-4	B368
MC 64150-1	B368
MC 64150-2	B368
MC 64150-3	B368
MC 64150-4	B368
MC 6450-1	B368
MC 6450-2	B368
MC 6450-3	B368
MC 6450-4	B368
MC 75-1	B363
MC 75-2	B363
MC 75-3	B363
MC 9-1	B363
MC 9-2	B363
MC22-C201G	C71
MC22S10HS01L4BLG	C59
MC22S10HS01L4BLN	C59
MC22S10HS01LC4BLG	C59
MC22S10HS01LC4BLN	C59
MC22S10HS06L4BLG	C59
MC22S10HS06L4BLN	C59
MC22S10HS06LC4BLG	C59
MC22S10HS06LC4BLN	C59
MC22S10HS41L4ALG	C59
MC22S10HS41L4ALN	C59
MC22S10HS41L4BLG	C59
MC22S10HS41L4BLN	C59
MC22S10HS41LC4BLG	C59
MC22S10HS41LC4BLN	C59
MC22S10HS42L4ALG	C59
MC22S10HS42L4ALN	C59
MC22S10HS42L4BLG	C59
MC22S10HS42L4BLN	C59
MC22S10HS42LC4BLG	C59
MC22S10HS42LC4BLN	C59
MC22S10HSZL4ALG	C59
MC22S10HSZL4ALN	C59
MC22S10HSZL4BLG	C59
MC22S10HSZL4BLN	C59
MC22S10HSZLC4BLG	C59
MC22S10HSZLC4BLN	C59
MC72S15HS01C4BPG	C62
MC72S15HS01C4BPN	C62
MC72S15HS06C4BPG	C62
MC72S15HS06C4BPN	C62
MC72S15HS41C4APG	C62
MC72S15HS41C4APN	C62
MC72S15HS41C4BPG	C62
MC72S15HS41C4BPN	C62
MC72S15HS42C4APG	C62
MC72S15HS42C4APN	C62
MC72S15HS42C4BPG	C62
MC72S15HS42C4BPN	C62
MC72S15HSZSC4APG	C62
MC72S15HSZSC4APN	C62
MC72S15HSZSC4BPG	C62
MC72S15HSZSC4BPN	C62
MC72S20HS01C4BPG	C62
MC72S20HS01C4BPN	C62
MC72S20HS06C4BPG	C62
MC72S20HS06C4BPN	C62
MC72S20HS41C4APG	C62
MC72S20HS41C4APN	C62
MC72S20HS41C4BPG	C62
MC72S20HS41C4BPN	C62
MC72S20HS42C4APG	C62
MC72S20HS42C4APN	C62
MC72S20HS42C4BPG	C62
MC72S20HS42C4BPN	C62
MC72S20HSZSC4APG	C62
MC72S20HSZSC4APN	C62
MC72S20HSZSC4BPG	C62
MC72S20HSZSC4BPN	C62
MC72S25HS01C4BPG	C62
MC72S25HS01C4BPN	C62
MC72S25HS06C4BPG	C62
MC72S25HS06C4BPN	C62
MC72S25HS41C4APG	C62
MC72S25HS41C4APN	C62
MC72S25HS41C4BPG	C62
MC72S25HS41C4BPN	C62
MC72S25HS42C4APG	C62
MC72S25HS42C4APN	C62
MC72S25HS42C4BPG	C62
MC72S25HS42C4BPN	C62
MC72S25HSZSC4APG	C62
MC72S25HSZSC4APN	C62
MC72S25HSZSC4BPG	C62
MC72S25HSZSC4BPN	C62
MCA10HSG1G1N2	C54
MCA10HSN1N1N2	C54
MCA13HSG1G1G2	C54
MCA13HSN1N1N2	C54
MCS10A05PDL	D71
MFSA05DB	D73
MFSA12DB	D73
MFUA05DB	D73
MFUA12DB	D73
ML 3325	B369
ML 3350	B369
ML 3625	B369
ML 3650	B369
ML 4525	B369
ML 4550	B369
ML 6425	B369
ML 645	B369
MMCS‡‡A05FM5	D70
MMCS‡‡A12FF1	D70
MMCU‡‡A05F	D70
MMCU‡‡A12F	D70
MMDVA1.....	D90, D93, D96, D101
MMDVA2.....	D91, D94, D98, D102
MMFS##A05FM5	D70
MMFS##A12FF1	D70
MMFS6A00M3	D70
MMFU##A05F	D70
MMFU##A12F	D70
MMFU**A**F	D70
MPS-ACCH8	C73
MPS-ACCH9	C75
MPS-ACCK10	C75
MPS-ACCK8	C73
MPS-P33G-NGAT	C73
MPS-P33G-PGAT	C73
MPS-P33N-NGAT	C73
MPS-P33N-PGAT	C73
MPS-P34G-PCI	C75
MPS-P34N-PCI	C75
MPS-R33G-NGAT	C73
MPS-R33G-PGAT	C73
MPS-R33N-NGAT	C73
MPS-R33N-PGAT	C73
MPS-V23C-NC	C69
MPS-V23C-PC	C69
MPS-V33G-NGAT	C73
MPS-V33G-PGAT	C73
MPS-V33N-NGAT	C73
MPS-V33N-PGAT	C73
MPS-V34G-PCI	C75
MPS-V34N-PCI	C75
MS6-01	C85
MSL-02	C85
MSM-01	C85
MSP-95-502	E90, F8
MSP-95-876	E90
MSS-01	C85
MSS-02	C85
MTP-95-502	E90, F8
MTP-95-562	E90
MV200-2	G3
MV200-4	G3
MV200-6	G3
MV200-8	G3
MV608-2	G3
MV608-4	G3
MV608-6	G3
MV608-8	G3
MV609-2	G3
MV609-4	G3
MV609-6	G3
MV609-6-4	G3
MV609-8	G3
MVS-201-NC	C71
MVS-201-PCP	C71
MXP-95-502	E90
MXP-95-565	E90
N164 1001	G12
N164 2003	G12
N164 3003	G12
N220-1900J	D73
N31431091	D79
N31441091	D79
N31451091	D79
N31461091	D79
N31471091	D79
N3153904549	D79
N3153904553	D79
N3154904549	D79
N3154904553	D79
N3155904549	D79
N3155904553	D79
N3156904549	D79
N3156904553	D79
N3157904549	D79
N3157904553	D79
N32471091	D79
N32481091	D79
N32491091	D79
N3257904753	D79
N3258904753	D79
N3259904753	D79
N35431091	D79
N35441091	D79
N35451091	D79
N35461091	D79
N35471091	D79
N3553904549	D79
N3553904553	D79
N3554904549	D79
N3554904553	D79
N3555904549	D79
N3555904553	D79
N3556904549	D79
N3556904553	D79
N3557904549	D79
N3557904553	D79
N36471091	D79
N36481091	D79
N36491091	D79
N3657904753	D79
N3658904753	D79
N3659904753	D79
N37431091	D79
N37441091	D79
N37451091	D79
N37461091	D79
N37471091	D79
N3753904549	D79
N3753904553	D79
N3754904549	D79
N3754904553	D79
N3755904549	D79
N3755904553	D79
N3756904549	D79
N3756904553	D79
N3757904549	D79
N3757904553	D79
N38471091	D79
N38481091	D79
N38491091	D79
N3857904753	D79
N3858904753	D79
N3859904753	D79
NB-2.5-025	G18
NB-2-016	G18
NB-2-031	G18
NB-3-025	G18
NB-3-046	G18
NB-4-035	G18
NB-4-040	G18
NB-4-062	G18
NB-5-040	G18
NB-6-050	G18
NB-6-093	G18
NB-8-062	G18
NB-8-124	G18
NBR-2-017	G19
NBR-2-026	G19
NBR-3-024	G19
NBR-3-039	G19
NBR-4-035	G19
NBR-4-050	G19
NBR-5-040	G19
NBR-6-048	G19
NBR-6-075	G19
NBR-8-062	G19
NBR-8-075	G19
NN-2.5-025	G18
NN-2-016	G18
NN-2-031	G18
NN-3-025	G18
NN-3-046	G18
NN-4-035	G18
NN-4-040	G18
NN-4-062	G18
NN-5-040	G18
NN-6-050	G18
NN-6-093	G18
NN-8-062	G18
NN-8-124	G18
NNR-2-017	G19
NNR-2-026	G19
NNR-3-024	G19
NNR-3-039	G19
NNR-4-035	G19
NNR-4-050	G19
NNR-5-040	G19
NNR-6-048	G19
NNR-6-075	G19
NNR-8-062	G19
NNR-8-075	G19
OSP-P	B216
P	B136
P01173	E66, E71
P01174	E66, E71
P01175	E66, E71
P01176	E66, E71
P01265	E66, E71
P01531	E66
P01698	E49, E53, E55
P04062	E49, E53, E55
P04063	E49, E53, E55
P04064	E49, E53, E55
P04069B	E49, E53, E55
P04079B	E49, E51
P04082	E49, E51, E53, E55
P04121	E57, E59, E80
P0566202	D119
P11912	E57, E59
P1A	B132
P1A-2CCB	B342, B349
P1A-2CCC	B340, B341, B349
P1A-2DCB	B342, B349
P1A-2DCC	B340, B341, B349
P1A-2FCB	B342, B349
P1A-2FCC	B340, B341, B349
P1A-2HCB	B342, B349
P1A-2HCC	B340, B341, B349
P1A-2JCB	B342, B349
P1A-2JCC	B340, B341, B349
P1A-2XEK	B349
P1A-2XFH	B349
P1A-2XHK	B349
P1A-2XJH	B349
P1A-2XLK	B341, B349
P1A-2XMK	B340, B349
P1A-2XRL	B342, B349
P1A-2XSH	B342, B349
P1A-4CMB	B134
P1A-4CMF	B134
P1A-4CMJ	B134
P1A-4CMT	B135
P1A-4CRC	B135
P1A-4CRS	B135
P1A-4DMB	B134
P1A-4DMF	B134
P1A-4DMJ	B134
P1A-4DMT	B135
P1A-4DRC	B135
P1A-4DRS	B135
P1A-4HMB	B134
P1A-4HMF	B134
P1A-4HMJ	B134
P1A-4HMT	B135
P1A-4HRC	B135
P1A-4HRS	B135
P1A-4JRC	B135
P1A-4JRS	B135
P1C-4KMA	B78
P1C-4KMBA	B74
P1C-4KMCA	B77
P1C-4KMD	B75
P1C-4KME	B76
P1C-4KMF	B74
P1C-4KMSA	B75
P1C-4KMT	B76
P1C-4KRC	B80
P1C-4KRF	B81
P1C-4KRS	B80
P1C-4LMA	B78
P1C-4LMBA	B74
P1C-4LMCA	B77

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Part No.	Section/Page No.
P1C-4LMD	B75
P1C-4LME	B76
P1C-4LMF	B74
P1C-4LMSA	B75
P1C-4LMT	B76
P1C-4LRC	B80
P1C-4LRF	B81
P1C-4LRS	B80
P1C-4MMA	B78
P1C-4MMBA	B74
P1C-4MMCA	B77
P1C-4MMD	B75
P1C-4MME	B76
P1C-4MMF	B74
P1C-4MMSA	B75
P1C-4MMT	B76
P1C-4MRC	B80
P1C-4MRF	B81
P1C-4MRS	B80
P1C-4NMA	B78
P1C-4NMBA	B74
P1C-4NMCA	B77
P1C-4NMD	B75
P1C-4NME	B76
P1C-4NMF	B74
P1C-4NMSA	B75
P1C-4NMT	B76
P1C-4PMA	B78
P1C-4PMBA	B74
P1C-4PMCA	B77
P1C-4PMD	B75
P1C-4PME	B76
P1C-4PMF	B74
P1C-4PMSA	B75
P1C-4PMT	B76
P1C-4PRC	B80
P1C-4PRF	B81
P1C-4PRS	B80
P1C-4QMA	B78
P1C-4QMBA	B74
P1C-4QMCA	B77
P1C-4QMD	B75
P1C-4QME	B76
P1C-4QMF	B74
P1C-4QMSA	B75
P1C-4QMT	B76
P1C-4RMA	B78
P1C-4RMB	B74
P1C-4RMCA	B77
P1C-4RMD	B75
P1C-4RME	B76
P1C-4RMF	B74
P1C-4RMSA	B75
P1C-4RMT	B76
P1C-4RRC	B80
P1C-4RRF	B81
P1C-4RRS	B80
P1D-4KMYF	B79
P1D-4LMYF	B79
P1D-4MMYF	B79
P1D-4NMYF	B79
P1D-4PMYF	B79
P1D-4QMYF	B79
P1D-S032MC-0025NNNNN	B65
P1D-S032MC-0040NNNNN	B65
P1D-S032MC-0050NNNNN	B65
P1D-S032MC-0080NNNNN	B65
P1D-S032MC-0100NNNNN	B65
P1D-S032MC-0125NNNNN	B65
P1D-S032MC-0160NNNNN	B65
P1D-S032MC-0200NNNNN	B65
P1D-S032MC-0250NNNNN	B65
P1D-S032MC-0320NNNNN	B65
P1D-S032MC-0400NNNNN	B65
P1D-S032MC-0500NNNNN	B65
P1D-S040MC-0025NNNNN	B65
P1D-S040MC-0040NNNNN	B65
P1D-S040MC-0050NNNNN	B65
P1D-S040MC-0080NNNNN	B65
P1D-S040MC-0100NNNNN	B65
P1D-S040MC-0125NNNNN	B65
P1D-S040MC-0160NNNNN	B65
P1D-S040MC-0200NNNNN	B65
P1D-S040MC-0250NNNNN	B65
P1D-S040MC-0320NNNNN	B65
P1D-S040MC-0400NNNNN	B65
P1D-S040MC-0500NNNNN	B65
P1D-S050MC-0025NNNNN	B65
P1D-S050MC-0040NNNNN	B65
P1D-S050MC-0050NNNNN	B65
P1D-S050MC-0080NNNNN	B65
P1D-S050MC-0100NNNNN	B65
P1D-S050MC-0125NNNNN	B65
P1D-S050MC-0160NNNNN	B65
P1D-S050MC-0200NNNNN	B65
P1D-S050MC-0250NNNNN	B65
P1D-S050MC-0320NNNNN	B65
P1D-S050MC-0400NNNNN	B65
P1D-S050MC-0500NNNNN	B65
P1D-S063MC-0025NNNNN	B65
P1D-S063MC-0040NNNNN	B65
P1D-S063MC-0050NNNNN	B65
P1D-S063MC-0080NNNNN	B65
P1D-S063MC-0100NNNNN	B65
P1D-S063MC-0125NNNNN	B65
P1D-S063MC-0160NNNNN	B65
P1D-S063MC-0200NNNNN	B65
P1D-S063MC-0250NNNNN	B65
P1D-S063MC-0320NNNNN	B65
P1D-S063MC-0400NNNNN	B65
P1D-S063MC-0500NNNNN	B65
P1D-S080MC-0025NNNNN	B65
P1D-S080MC-0040NNNNN	B65
P1D-S080MC-0050NNNNN	B65
P1D-S080MC-0080NNNNN	B65
P1D-S080MC-0100NNNNN	B65
P1D-S080MC-0125NNNNN	B65
P1D-S080MC-0160NNNNN	B65
P1D-S080MC-0200NNNNN	B65
P1D-S080MC-0250NNNNN	B65
P1D-S080MC-0320NNNNN	B65
P1D-S080MC-0400NNNNN	B65
P1D-S080MC-0500NNNNN	B65
P1D-S100MC-0025NNNNN	B65
P1D-S100MC-0040NNNNN	B65
P1D-S100MC-0050NNNNN	B65
P1D-S100MC-0080NNNNN	B65
P1D-S100MC-0100NNNNN	B65
P1D-S100MC-0125NNNNN	B65
P1D-S100MC-0160NNNNN	B65
P1D-S100MC-0200NNNNN	B65
P1D-S100MC-0250NNNNN	B65
P1D-S100MC-0320NNNNN	B65
P1D-S100MC-0400NNNNN	B65
P1D-S100MC-0500NNNNN	B65
P1D-S125MC-0025NNNNN	B65
P1D-S125MC-0040NNNNN	B65
P1D-S125MC-0050NNNNN	B65
P1D-S125MC-0080NNNNN	B65
P1D-S125MC-0100NNNNN	B65
P1D-S125MC-0125NNNNN	B65
P1D-S125MC-0160NNNNN	B65
P1D-S125MC-0200NNNNN	B65
P1D-S125MC-0250NNNNN	B65
P1D-S125MC-0320NNNNN	B65
P1D-S125MC-0400NNNNN	B65
P1D-S125MC-0500NNNNN	B65
P1E-6KB0	B78
P1E-6LB0	B78
P1E-6MB0	B78
P1E-6NB0	B78
P1E-6PB0	B78
P1E-6QB0	B78
P1L	B117
P1L020D001	B131
P1L020D005	B131
P1L020K001	B131
P1L020K005	B131
P1L025D001	B131
P1L025D005	B131
P1L025K001	B131
P1L025K005	B131
P1L032D001	B131
P1L032D005	B131
P1L032K001	B131
P1L032K005	B131
P1L040D001	B131
P1L040D005	B131
P1L040K001	B131
P1L040K005	B131
P1L050D001	B131
P1L050D005	B131
P1L050K001	B131
P1L050K005	B131
P1L063D001	B131
P1L063D005	B131
P1L063K001	B131
P1L063K005	B131
P1L080D001	B131
P1L080D005	B131
P1L080K001	B131
P1L080K005	B131
P1L100D001	B131
P1L100D005	B131
P1L100K001	B131
P1L100K005	B131
P1M	B151
P1M-4DMB	B158, B159
P1M-4DME	B160
P1M-4DMF	B157
P1M-4DMT	B160
P1M-4DRC	B150, B161
P1M-4DRC-T	B161
P1M-4DRE	B150, B162
P1M-4DRE-T	B162
P1M-4FMB	B158, B159
P1M-4FME	B160
P1M-4FMF	B157
P1M-4FMT	B160
P1M-4FRC	B150, B161
P1M-4FRC-T	B161
P1M-4FRE	B150, B162
P1M-4FRE-T	B162
P1M-4HMB	B158, B159
P1M-4HME	B160
P1M-4HMF	B157
P1M-4HMT	B160
P1M-4HRC	B150, B161
P1M-4HRC-T	B161
P1M-4HRE	B150, B162
P1M-4HRE-T	B162
P1M-4JMB	B158, B159
P1M-4JME	B160
P1M-4JMF	B157
P1M-4JMT	B160
P1M-4JRC	B150, B161
P1M-4JRC-T	B161
P1M-4JRE	B150, B162
P1M-4JRE-T	B162
P1M-4KMB	B158, B159
P1M-4KME	B160
P1M-4KMF	B157
P1M-4KMT	B160
P1M-4KRC	B161
P1M-4KRC-T	B161
P1M-4KRE	B162
P1M-4KRE-T	B162
P1M-4LMB	B158, B159
P1M-4LME	B160
P1M-4LMF	B157
P1M-4LMT	B160
P1M-4LRC	B150, B161
P1M-4LRC-T	B161
P1M-4LRE	B150, B162
P1M-4LRE-T	B162
P1M-4MMB	B158, B159
P1M-4MME	B160
P1M-4MMF	B157
P1M-4MMT	B160
P1M-4MRC	B150, B161
P1M-4MRC-T	B161
P1M-4MRE	B150, B162
P1M-4MRE-T	B162
P1M-4NMB	B158, B159
P1M-4NME	B160
P1M-4NMF	B157
P1M-4NMT	B160
P1M-4PMB	B158, B159
P1M-4PME	B160
P1M-4PMF	B157
P1M-4PMT	B160
P1M-4PRC	B150, B161
P1M-4PRC-T	B161
P1M-4PRE	B150, B162
P1M-4PRE-T	B162
P1M-4QMB	B158, B159
P1M-4QME	B160
P1M-4QMF	B157
P1M-4QMT	B160
P1M-4QRC	B161
P1M-4QRC-T	B161
P1M-4QRE	B162
P1M-4QRE-T	B162
P1Q-4DMB	B148
P1Q-4DMF	B148
P1Q-4DMT	B149
P1Q-4FMB	B148
P1Q-4FMF	B148
P1Q-4FMT	B149
P1Q-4HMB	B148
P1Q-4HMF	B148
P1Q-4HMT	B149
P1Q-4JMB	B148
P1Q-4JMF	B148
P1Q-4JMT	B149
P1Q-4KMB	B148
P1Q-4KMF	B148
P1Q-4KMT	B149
P1Q-4LMB	B148
P1Q-4LMF	B148
P1Q-4LMT	B149
P1Q-4MMB	B148
P1Q-4MMF	B148
P1Q-4MMT	B149
P1Q-4NMB	B148
P1Q-4NMF	B148
P1Q-4NMT	B149
P1Q-4PMB	B148
P1Q-4PMF	B148
P1Q-4PMT	B149
P1Q-4QMB	B148
P1Q-4QMF	B148
P1Q-4QMT	B149
P1QS012DC7G0005	B143
P1QS012DC7G0010	B143
P1QS012DC7G0015	B143
P1QS012DC7G0025	B143
P1QS012DC7G0030	B143
P1QS016DC7G0005	B143
P1QS016DC7G0010	B143
P1QS016DC7G0015	B143
P1QS016DC7G0025	B143
P1QS016DC7G0030	B143
P1QS020DC7G0010	B143
P1QS020DC7G0015	B143
P1QS020DC7G0025	B143
P1QS020DC7G0030	B143
P1QS020DC7G0040	B143
P1QS020DC7G0050	B143
P1QS025DC7G0010	B143
P1QS025DC7G0015	B143
P1QS025DC7G0025	B143
P1QS025DC7G0030	B143
P1QS025DC7G0040	B143
P1QS025DC7G0050	B143
P1QS032DC7N0010	B143
P1QS032DC7N0015	B143
P1QS032DC7N0025	B143
P1QS032DC7N0030	B143
P1QS032DC7N0040	B143
P1QS032DC7N0050	B143
P1QS032DC7N0075	B143
P1QS032DC7N0100	B143
P1QS040DC7N0015	B143
P1QS040DC7N0025	B143
P1QS040DC7N0030	B143
P1QS040DC7N0040	B143
P1QS040DC7N0050	B143
P1QS040DC7N0075	B143
P1QS040DC7N0100	B143
P1QS050DC7N0015	B143
P1QS050DC7N0025	B143
P1QS050DC7N0030	B143
P1QS050DC7N0040	B143
P1QS050DC7N0050	B143
P1QS050DC7N0075	B143
P1QS050DC7N0100	B143
P1QS063DC7N0015	B143
P1QS063DC7N0025	B143
P1QS063DC7N0030	B143
P1QS063DC7N0040	B143
P1QS063DC7N0050	B143
P1QS063DC7N0075	B143
P1QS080DC7N0015	B143
P1QS080DC7N0025	B143
P1QS080DC7N0030	B143
P1QS080DC7N0040	B143
P1QS080DC7N0050	B143
P1QS080DC7N0075	B143
P1QS100DC7N0015	B143
P1QS100DC7N0025	B143
P1QS100DC7N0030	B143
P1QS100DC7N0040	B143
P1QS100DC7N0050	B143
P1QS100DC7N0075	B143
P1S-4JRD	B80
P1S-4JRT	B80
P1S-4LRD	B80
P1S-4LRT	B80
P1S-4MRD	B80
P1S-4MRT	B80
P1S-4PRD	B80
P1S-4PRT	B80
P1S-4RRD	B80
P1S-4RRT	B80
P1V-S002A0095	B279
P1V-S002A0130	B279
P1V-S008A0130	B279
P1V-S008A0190	B279
P1V-S008A0700	B279
P1V-S008A0Q00	B279
P1V-S012A0010	B279
P1V-S012A0060	B279
P1V-S012A0090	B279
P1V-S012A0140	B279

Parker Hannifin Corporation
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Part No.	Section/Page No.
P1V-S012A0360	B279
P1V-S012A0550	B279
P1V-S012A0N00	B279
P1V-S012D0010	B279
P1V-S012D0060	B279
P1V-S012D0090	B279
P1V-S012D0360	B279
P1V-S012D0550	B279
P1V-S012D0N00	B279
P1V-S012D1400	B279
P1V-S020A0001	B279
P1V-S020A0002	B279
P1V-S020A0005	B279
P1V-S020A0006	B279
P1V-S020A0011	B279
P1V-S020A0018	B279
P1V-S020A0035	B279
P1V-S020A0070	B279
P1V-S020A0140	B279
P1V-S020A0240	B279
P1V-S020A0460	B279
P1V-S020A0E50	B279
P1V-S020D0005	B279
P1V-S020D0018	B279
P1V-S020D0035	B279
P1V-S020D0070	B279
P1V-S020D0140	B279
P1V-S020D0240	B279
P1V-S020D0460	B279
P1V-S020D0E50	B279
P1V-S030A0005	B279
P1V-S030A0010	B279
P1V-S030A0018	B279
P1V-S030A0023	B279
P1V-S030A0028	B279
P1V-S030A0060	B279
P1V-S030A0140	B279
P1V-S030A0240	B279
P1V-S030A0460	B279
P1V-S030A0E50	B279
P1V-S030D0005	B279
P1V-S030D0018	B279
P1V-S030D0028	B279
P1V-S030D0060	B279
P1V-S030D0140	B279
P1V-S030D0240	B279
P1V-S030D0460	B279
P1V-S030D0E50	B279
P1V-S060A0010	B279
P1V-S060A0030	B279
P1V-S060A0048	B279
P1V-S060A0072	B279
P1V-S060A0170	B279
P1V-S060A0270	B279
P1V-S060A0400	B279
P1V-S060A0E00	B279
P1V-S120A0012	B279
P1V-S120A0032	B279
P1V-S120A0078	B279
P1V-S120A0110	B279
P1V-S120A0270	B279
P1V-S120A0800	B279
P1X	B234
P1Z	B246
P1ZM016GNN-R	B257
P1ZM016SAN-R	B257
P1ZM016SNN-R	B257
P1ZM020GNN-R	B257
P1ZM020SAN-R	B257
P1ZM032GNN-R	B257
P1ZM032SAN-R	B257
P2D8V32C5	D106
P2FC6449	E32
P2FCA442	D157
P2FCA445	D157
P2FCA449	D157, E32
P2FCA453	D157, E32
P2FCA457	D157
P2FCB449	D14, E32
P2FCB453	D14, E32
P2FP23N4A	E32
P2FP23N4B	E32
P2FS13N1AE49	D30, D54
P2LAX311VS	D219
P2LAX311VV	D219
P2LAX391ESHDDB47	D22
P2LAX391ESHDDB48	D22
P2LAX391ESHDDG47	D22
P2LAX391ESHDDG48	D22
P2LAX391ESNDDB49	D20
P2LAX391ESNDDB53	D20
P2LAX391ESNDDG49	D20
P2LAX391ESNDDG53	D20
P2LAX391PS	D25
P2LAX391VS	D219
P2LAX391VV	D219
P2LAX511VS	D219
P2LAX511VV	D219
P2LAX591EEHDDB47	D23
P2LAX591EEHDDB48	D23
P2LAX591EEHDDG47	D23
P2LAX591EEHDDG48	D23
P2LAX591EENDDB49	D21
P2LAX591EENDDB53	D21
P2LAX591EENDDG49	D21
P2LAX591EENDDG53	D21
P2LAX591ESHDDB47	D22
P2LAX591ESHDDB48	D22
P2LAX591ESHDDG47	D22
P2LAX591ESHDDG48	D22
P2LAX591ESNDDB49	D20
P2LAX591ESNDDB53	D20
P2LAX591ESNDDG49	D20
P2LAX591ESNDDG53	D20
P2LAX591PP	D25
P2LAX591PS	D25
P2LAX591VS	D219
P2LAX591VV	D219
P2LAX61111	D219
P2LAX61122	D219
P2LAX69111	D219
P2LAX69122	D219
P2LAX691EEHDDB47	D23
P2LAX691EEHDDB48	D23
P2LAX691EEHDDG47	D23
P2LAX691EEHDDG48	D23
P2LAX691EENDDB49	D21
P2LAX691EENDDB53	D21
P2LAX691EENDDG49	D21
P2LAX691EENDDG53	D21
P2LAX691PP	D25
P2LAX71111	D219
P2LAX71122	D219
P2LAX79111	D219
P2LAX79122	D219
P2LAX81111	D220
P2LAX81122	D220
P2LAX89111	D220
P2LAX89122	D220
P2LAX891EEHDDB47	D23
P2LAX891EEHDDB48	D23
P2LAX891EEHDDG47	D23
P2LAX891EEHDDG48	D23
P2LAX891EENDDB49	D21
P2LAX891EENDDB53	D21
P2LAX891EENDDG49	D21
P2LAX891EENDDG53	D21
P2LAX891PP	D25
P2LAXK20P	D27
P2LAXK84P	D27
P2LAXK87P	D27
P2LAXMAXG##GP	D27
P2LAXMAXG##NP	D27
P2LAXMAXN##GP	D27
P2LAXMAXN##NP	D27
P2LAXSK1	D33
P2LAXSK2	D33
P2LAXSK3	D33
P2LAXSK4	D33
P2LAZ311EENDBB49	D12
P2LAZ311EENDBB53	D12
P2LAZ311ESNDBB49	D12
P2LAZ311ESNDBB53	D12
P2LAZ391EENDBB49	D12
P2LAZ391EENDBB53	D12
P2LAZ391ESNDBB49	D12
P2LAZ391ESNDBB53	D12
P2LAZ511EENDBB49	D12
P2LAZ511EENDBB53	D12
P2LAZ511ESNDBB49	D12
P2LAZ511ESNDBB53	D12
P2LAZ591EENDBB49	D12
P2LAZ591EENDBB53	D12
P2LAZ591ESNDBB49	D12
P2LAZ591ESNDBB53	D12
P2LAZ611EENDBB49	D12
P2LAZ611EENDBB53	D12
P2LAZ691EENDBB49	D12
P2LAZ691EENDBB53	D12
P2LAZ711EENDBB49	D13
P2LAZ711EENDBB53	D13
P2LAZ791EENDBB49	D13
P2LAZ791EENDBB53	D13
P2LAZ811EENDBB49	D13
P2LAZ811EENDBB53	D13
P2LAZ891EENDBB49	D13
P2LAZ891EENDBB53	D13
P2LBX312JJ	D220
P2LBX312VS	D219
P2LBX312VV	D219
P2LBX392ESHDDB47	D22
P2LBX392ESHDDB48	D22
P2LBX392ESHDDG47	D22
P2LBX392ESHDDG48	D22
P2LBX392ESNDDB49	D20
P2LBX392ESNDDB53	D20
P2LBX392ESNDDG49	D20
P2LBX392ESNDDG53	D20
P2LBX392JJ	D220
P2LBX392PS	D25
P2LBX392VS	D219
P2LBX392VV	D219
P2LBX512JJ	D220
P2LBX512VS	D219
P2LBX512VV	D219
P2LBX592EEHDDB47	D23
P2LBX592EEHDDB48	D23
P2LBX592EEHDDG47	D23
P2LBX592EEHDDG48	D23
P2LBX592EENDDB49	D21
P2LBX592EENDDB53	D21
P2LBX592EENDDG49	D21
P2LBX592EENDDG53	D21
P2LBX592ESHDDB47	D22
P2LBX592ESHDDB48	D22
P2LBX592ESHDDG47	D22
P2LBX592ESHDDG48	D22
P2LBX592ESNDDB49	D20
P2LBX592ESNDDB53	D20
P2LBX592ESNDDG49	D20
P2LBX592ESNDDG53	D20
P2LBX592JJ	D220
P2LBX592PP	D25
P2LBX592PS	D25
P2LBX592VS	D219
P2LBX592VV	D219
P2LBX61211	D219
P2LBX61222	D219
P2LBX69211	D219
P2LBX69222	D219
P2LBX692EEHDDB47	D23
P2LBX692EEHDDB48	D23
P2LBX692EEHDDG47	D23
P2LBX692EEHDDG48	D23
P2LBX692EENDDB49	D21
P2LBX692EENDDB53	D21
P2LBX692EENDDG49	D21
P2LBX692EENDDG53	D21
P2LBX692PP	D25
P2LBX71211	D219
P2LBX71222	D219
P2LBX79211	D219
P2LBX79222	D219
P2LBX81211	D220
P2LBX81222	D220
P2LBX89211	D220
P2LBX89222	D220
P2LBX892EEHDDB47	D23
P2LBX892EEHDDB48	D23
P2LBX892EEHDDG47	D23
P2LBX892EEHDDG48	D23
P2LBX892EENDDB49	D21
P2LBX892EENDDB53	D21
P2LBX892EENDDG49	D21
P2LBX892EENDDG53	D21
P2LBX892PP	D25
P2LBXK20P	D27
P2LBXK84P	D27
P2LBXK87P	D27
P2LBXMAXG##GP	D27
P2LBXMAXG##NP	D27
P2LBXMAXN##GP	D27
P2LBXMAXN##NP	D27
P2LBXSK1	D33
P2LBZ312EENDBB49	D12
P2LBZ312EENDBB53	D12
P2LBZ312ESNDBB49	D12
P2LBZ312ESNDBB53	D12
P2LBZ392EENDBB49	D12
P2LBZ392EENDBB53	D12
P2LBZ392ESNDBB49	D12
P2LBZ392ESNDBB53	D12
P2LBZ512EENDBB49	D12
P2LBZ512EENDBB53	D12
P2LBZ512ESNDBB49	D12
P2LBZ512ESNDBB53	D12
P2LBZ592EENDBB49	D12
P2LBZ592EENDBB53	D12
P2LBZ592ESNDBB49	D12
P2LBZ592ESNDBB53	D12
P2LBZ592ESNDBBB49	D14
P2LBZ592ESNDBN	D14
P2LBZ612EENDBB49	D12
P2LBZ612EENDBB53	D12
P2LBZ692EENDBB49	D12
P2LBZ692EENDBB53	D12
P2LBZ712EENDBB49	D13
P2LBZ712EENDBB53	D13
P2LBZ792EENDBB49	D13
P2LBZ792EENDBB53	D13
P2LBZ812EENDBB49	D13
P2LBZ812EENDBB53	D13
P2LBZ892EENDBB49	D13
P2LBZ892EENDBB53	D13
P2LCX313VS	D219
P2LCX313VV	D219
P2LCX393ESHDDB47	D22
P2LCX393ESHDDB48	D22
P2LCX393ESHDDG47	D22
P2LCX393ESHDDG48	D22
P2LCX393ESNDDB49	D20
P2LCX393ESNDDB53	D20
P2LCX393ESNDDG49	D20
P2LCX393ESNDDG53	D20
P2LCX393PS	D25
P2LCX393VS	D219
P2LCX393VV	D219
P2LCX513VS	D219
P2LCX513VV	D219
P2LCX593EEHDDB47	D23
P2LCX593EEHDDB48	D23
P2LCX593EEHDDG47	D23
P2LCX593EEHDDG48	D23
P2LCX593EENDDB49	D21
P2LCX593EENDDB53	D21
P2LCX593EENDDG49	D21
P2LCX593EENDDG53	D21
P2LCX593ESHDDB47	D22
P2LCX593ESHDDB48	D22
P2LCX593ESHDDG47	D22
P2LCX593ESHDDG48	D22
P2LCX593ESNDDB49	D20
P2LCX593ESNDDB53	D20
P2LCX593ESNDDG49	D20
P2LCX593ESNDDG53	D20
P2LCX593PP	D25
P2LCX593PS	D25
P2LCX593VS	D219
P2LCX593VV	D219
P2LCX61311	D219
P2LCX61322	D219
P2LCX69311	D219
P2LCX69322	D219
P2LCX693EEHDDB47	D23
P2LCX693EEHDDB48	D23
P2LCX693EEHDDG47	D23
P2LCX693EEHDDG48	D23
P2LCX693EENDDB49	D21
P2LCX693EENDDB53	D21
P2LCX693EENDDG49	D21
P2LCX693EENDDG53	D21
P2LCX693PP	D25
P2LCX71311	D219
P2LCX71322	D219
P2LCX79311	D219
P2LCX79322	D219
P2LCX81311	D220
P2LCX81322	D220
P2LCX89311	D220
P2LCX89322	D220
P2LCX893EEHDDB47	D23
P2LCX893EEHDDB48	D23
P2LCX893EEHDDG47	D23
P2LCX893EEHDDG48	D23
P2LCX893EENDDB49	D21
P2LCX893EENDDB53	D21
P2LCX893EENDDG49	D21
P2LCX893EENDDG53	D21
P2LCX893PP	D25
P2LCXDXSK1	D33
P2LCXK20P	D27
P2LCXK84P	D27
P2LCXK87P	D27
P2LCXMAXN##GP	D27
P2LCXMAXN##NP	D27
P2LCZ313EENDBB49	D12
P2LCZ313EENDBB53	D12
P2LCZ313ESNDBB49	D12
P2LCZ313ESNDBB53	D12
P2LCZ393EENDBB49	D12
P2LCZ393EENDBB53	D12
P2LCZ393ESNDBB49	D12
P2LCZ393ESNDBB53	D12
P2LCZ513EENDBB49	D12
P2LCZ513EENDBB53	D12

Parker Hannifin Corporation
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Part No.	Section/Page No.
P2LCZ513ESNDBB49	D12
P2LCZ513ESNDBB53	D12
P2LCZ593EENDBB49	D12
P2LCZ593EENDBB53	D12
P2LCZ593ESNDBB49	D12
P2LCZ593ESNDBB53	D12
P2LCZ613EENDBB49	D12
P2LCZ613EENDBB53	D12
P2LCZ693EENDBB49	D12
P2LCZ693EENDBB53	D12
P2LCZ713EENDBB49	D13
P2LCZ713EENDBB53	D13
P2LCZ793EENDBB49	D13
P2LCZ793EENDCB53	D13
P2LCZ813EENDBB49	D13
P2LCZ813EENDBB53	D13
P2LCZ893EENDBB49	D13
P2LCZ893EENDBB53	D13
P2LDX314VS	D219
P2LDX314VV	D219
P2LDX394ESHDDB47	D22
P2LDX394ESHDDB48	D22
P2LDX394ESHDDG47	D22
P2LDX394ESHDDG48	D22
P2LDX394ESNDDB49	D20
P2LDX394ESNDDB53	D20
P2LDX394ESNDDG49	D20
P2LDX394ESNDDG53	D20
P2LDX394PS	D25
P2LDX394VS	D219
P2LDX394VV	D219
P2LDX514VS	D219
P2LDX514VV	D219
P2LDX594EEHDDB47	D23
P2LDX594EEHDDB48	D23
P2LDX594EEHDDG47	D23
P2LDX594EEHDDG48	D23
P2LDX594EENDDB49	D21
P2LDX594EENDDB53	D21
P2LDX594EENDDG49	D21
P2LDX594EENDDG53	D21
P2LDX594ESHDDB47	D22
P2LDX594ESHDDB48	D22
P2LDX594ESHDDG4	D22
P2LDX594ESHDDG47	D22
P2LDX594ESNDDB49	D20
P2LDX594ESNDDB53	D20
P2LDX594ESNDDG49	D20
P2LDX594ESNDDG53	D20
P2LDX594PP	D25
P2LDX594PS	D25
P2LDX594VS	D219
P2LDX594VV	D219
P2LDX61411	D219
P2LDX61422	D219
P2LDX69411	D219
P2LDX69422	D219
P2LDX694EEHDDB47	D23
P2LDX694EEHDDB48	D23
P2LDX694EEHDDG47	D23
P2LDX694EEHDDG48	D23
P2LDX694EENDDB49	D21
P2LDX694EENDDB53	D21
P2LDX694EENDDG49	D21
P2LDX694EENDDG53	D21
P2LDX694PP	D25
P2LDX71411	D219
P2LDX71422	D219
P2LDX79411	D219
P2LDX79422	D219
P2LDX81411	D220
P2LDX81422	D220
P2LDX89411	D220
P2LDX89422	D220
P2LDX894EEHDDB47	D23
P2LDX894EEHDDB48	D23
P2LDX894EEHDDG47	D23
P2LDX894EEHDDG48	D23
P2LDX894EENDDB49	D21
P2LDX894EENDDB53	D21
P2LDX894EENDDG49	D21
P2LDX894EENDDG53	D21
P2LDX894PP	D25
P2M1K0GL	D101, D102
P2M1K0GN	D101, D102
P2M1K0GT	D101, D102
P2M1K0TASD	D93, D94, D96, D98
P2M1PXCA	D101
P2M1PXFA	D101
P2M1PXSG	D101
P2M1PXSL	D101
P2M1PXSM	D101
P2M1PXSN	D101
P2M1PXSR	D101
P2M1PXST	D101
P2M1PXVA	D101
P2M1S3ES2C	D90
P2M1S3PS	D90
P2M1S4EE2C	D90
P2M1S4ES2C	D90
P2M1S4PP	D90
P2M1S4PS	D90
P2M1SCEE2C	D90
P2M1SCPP	D90
P2M1SDEE2C	D90
P2M1SDPP	D90
P2M1SEEE2C	D90
P2M1SGEE2C	D90
P2M1T3ES2C	D93
P2M1T3PS	D93
P2M1T4EE2C	D93
P2M1T4ES2C	D93
P2M1T4PP	D93
P2M1T4PS	D93
P2M1TCEE2C	D93
P2M1TCPP	D93
P2M1TDEE2C	D93
P2M1TDPP	D93
P2M1TEEE2C	D93
P2M1TGEE2C	D93
P2M1TJEE2C	D93
P2M1TJPP	D93
P2M1V3ES2CV	D96
P2M1V4EE2CV	D96
P2M1V4ES2CV	D96
P2M1VCEE2CV	D96
P2M1VDEE2CV	D96
P2M1VEEE2CV	D96
P2M1VGEE2CV	D96
P2M1VJEE2CV	D96
P2M1X*EE	D106
P2M1X3ES	D106
P2M1X4EE	D106
P2M1X4ES	D106
P2M1XCEE	D106
P2M1XDEE	D106
P2M1XEEE	D106
P2M1XJEE	D106
P2M2BXT0A	D93, D94
P2M2BXV0A	D97, D99
P2M2HBVA10800	D97, D99, D167
P2M2HBVA10808A	D97, D99, D167
P2M2HBVA10808B	D97, D99, D167
P2M2HBVA20600	D97, D99, D167
P2M2HBVA20608A	D97, D99, D167
P2M2HBVA20608B	D97, D99, D167
P2M2HBVC21600	D97, D99, D167
P2M2HBVD21600	D97, D99, D167
P2M2HBVP21600	D97, D99, D167
P2M2HBVS11600	D97, D99, D167
P2M2HEV0A	D97, D99
P2M2HEV0D	D97, D99
P2M2HXT01	D93, D94, D97, D99
P2M2HXT0T	D93, D94, D97, D99
P2M2K0CA	D106
P2M2K0FA	D106
P2M2K0JA	D106
P2M2K0PA	D106
P2M2PXCA	D102
P2M2PXFA	D102
P2M2PXSG	D102
P2M2PXSL	D102
P2M2PXSM	D102
P2M2PXSN	D102
P2M2PXSR	D102
P2M2PXST	D102
P2M2S3ES2C	D91
P2M2S3PS	D91
P2M2S4EE2C	D91
P2M2S4ES2C	D91
P2M2S4PP	D91
P2M2S4PS	D91
P2M2SCEE2C	D91
P2M2SCPP	D91
P2M2SDEE2C	D91
P2M2SDPP	D91
P2M2SEEE2C	D91
P2M2SGEE2C	D91
P2M2T3ES2C	D94
P2M2T3PS	D94
P2M2T4EE2C	D94
P2M2T4ES2C	D94
P2M2T4PP	D94
P2M2T4PS	D94
P2M2TCEE2C	D94
P2M2TCPP	D94
P2M2TDEE2C	D94
P2M2TDPP	D94
P2M2TEEE2C	D94
P2M2TGEE2C	D94
P2M2V3ES2CV	D98
P2M2V4EE2CV	D98
P2M2V4ES2CV	D98
P2M2VCEE2CV	D98
P2M2VDEE2CV	D98
P2M2VEEE2CV	D98
P2M2VGEE2CV	D98
P2M2X*EE	D106
P2M2X3ES	D106
P2M2X4EE	D106
P2M2X4ES	D106
P2M2XCEE	D106
P2M2XDEE	D106
P2M2XEEE	D106
P31CA92GEBN5LNW	E20
P31CA92GEMN5LNW	E20
P31CB92GEBN5LNW	E20
P31CB92GEMN5LNW	E20
P31DA92PPN	E26
P31DA92SGNC1FN	E26
P31DA92SGNC2CN	E26
P31EA92EGBBN5P	E15
P31EA92EGMBN5P	E15
P31EA92EMBBN5P	E15
P31EA92EMMBN5P	E15
P31FA92CGBN	E7
P31FA92CGMN	E7
P31FA92CMBN	E7
P31FA92CMMN	E7
P31FA92EGBN	E4
P31FA92EGMN	E4
P31FA92EMBN	E4
P31FA92EMMN	E4
P31HA92BNNP	E12
P31KA00BGB	E4, E7, E15, E36
P31KA00BGM	E4, E7, E15, E36
P31KA00BGN	E18, E36
P31KA00BMB	E4, E7, E15, E36
P31KA00BMM	E4, E7, E15, E36
P31KA00BMN	E36
P31KA00CB	E4, E7, E10, E13, E15, E18, E35
P31KA00CY	E37
P31KA00ES9	E7, E36
P31KA00ESA	E7, E36
P31KA00ESC	E7, E36
P31KA00ESE	E4, E15, E36
P31KA00MB	E13
P31KA00MM	E10, E13, E15, E36
P31KA00MP	E10, E13, E15, E36
P31KA00MR	E10, E13, E15
P31KA00MT	E4, E7, E10, E13, E15, E18, E35
P31KA00MW	E4, E7, E15, E18, E35
P31KA00BGB	E4, E7, E15, E32
P31KA00BGM	E4, E7, E15, E32
P31KA00BGN	E18, E32
P31KA00BMB	E4, E7, E15, E32
P31KA00BMM	E4, E7, E15, E32
P31KA00BMN	E32
P31KA00CB	E4, E7, E10, E13, E15, E18, E31
P31KA00CY	E33
P31KA00ES9	E7, E32
P31KA00ESA	E7, E32
P31KA00ESC	E7, E32
P31KA00ESE	E4, E15, E32
P31KA00MB	E13
P31KA00MM	E10, E13, E15, E32
P31KA00MP	E10, E13, E15, E32
P31KA00MR	E10, E13, E15
P31KA00MT	E4, E7, E10, E13, E15, E18, E31
P31KA00MW	E4, E7, E15, E18, E31
P31KA00PL	E18, E36
P31KA00PR	E37
P31KA00PS	E37
P31KA00PT	E37
P31KA00RB	E10, E13, E37
P31KA00RC	E10, E13, E37
P31KA00RQ	E4, E7, E36
P31KA11CN	E35
P31KA11CP	E35
P31KA12CN	E35
P31KA12CP	E35
P31KA13CN	E35
P31KA13CP	E35
P31KA21CN	E35
P31KA21CP	E35
P31KA22CN	E35
P31KA22CP	E35
P31KA23CN	E35
P31KA23CP	E35
P31KA91CN	E35
P31KA91CP	E35
P31KA92CN	E35
P31KA92CP	E35
P31KA93CN	E35
P31KA93CP	E35
P31KB00AT	E37, E67
P31KB00MR	E35
P31KB00RB	E15
P31KB00RC	E15
P31LA92LGNN	E18
P31LA92LMNN	E18
P31MA92022N	E34
P31RA92BN5P	E10
P31RA92BNNP	E10
P31SA92PPN	E26
P31SA92SGNC1FN	E26
P31SA92SGNC2CN	E26
P31SA92Y0N	E26
P31TA92PPN	E26
P31TA92SGNC1FN	E26
P31TA92SGNC2CN	E26
P31VA92LSAN	E34
P31VB92LBNN	E34
P32CA92GEANGLNW	E20
P32CA92GEMNGLNW	E20
P32CA93GEANGLNW	E20
P32CA93GEMNGLNW	E20
P32CA94GEANGLNW	E20
P32CA94GEMNGLNW	E20
P32CB92GEANGLNW	E20
P32CB92GEMNGLNW	E20
P32CB93GEANGLNW	E20
P32CB93GEMNGLNW	E20
P32CB94GEANGLNW	E20
P32CB94GEMNGLNW	E20
P32DA94PPN	E26
P32DA94SCNA2CN	E26
P32DA94SCNA3GN	E26
P32EA93EGMBNGP	E15
P32EA93ESABNGP	E15
P32EA93ESMBNGP	E15
P32EA94EGABNGP	E15
P32EA92EGMBNGP	E15
P32EA92ESABNGP	E15
P32EA92ESMBNGP	E15
P32EA93EGABNGP	E15
P32EA94EGMBNGP	E15
P32EA94ESABNGP	E15
P32EA94ESMBNGP	E15
P32FA92DGAN	E7
P32FA92DGMN	E7
P32FA92DSAN	E7
P32FA92DSMN	E7
P32FA92EGAN	E4
P32FA92EGMN	E4
P32FA92ESAN	E4
P32FA92ESMN	E4
P32FA93DGAN	E7
P32FA93DGMN	E7
P32FA93DSAN	E7
P32FA93DSMN	E7
P32FA93EGAN	E4
P32FA93EGMN	E4
P32FA93ESAN	E4
P32FA93ESMN	E4
P32FA94DGAN	E7
P32FA94DGMN	E7
P32FA94DSAN	E7
P32FA94DSAN	E7
P32FA94DSAN	F3, F7
P32FA94DSMN	E7
P32FA94EGAN	E4
P32FA94EGMN	E4
P32FA94ESAN	E4, F3
P32FA94ESMN	E4

Parker Hannifin Corporation
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Part No.	Section/Page No.
P32FA94FSAN	F7
P32FA94QSAN	F7
P32HA92BNNP	E12
P32HA93BNNP	E12
P32HA94BNNP	E12
P32KA00BGA	E36
P32KA00BGM	E4, E7, E15, E36
P32KA00BGN	E18, E36
P32KA00BMA	E36
P32KA00BMM	E36
P32KA00BSA	E36
P32KA00BSM	E4, E7, E15, E36
P32KA00BSN	E36
P32KA00CB	E4, E7, E10, E13, E15, E18, E29, E35
P32KA00CY	E37
P32KA00DA	E4, E7, E15, E36, E86, E90
P32KA00ES9	E7, E36, F8
P32KA00ESA	E7, E36
P32KA00ESC	E7, E3, F8
P32KA00ESE	E4, E15, E36, F8
P32KA00MB	E4, E7, E10, E13, E15, E18, E29, E35
P32KA00ML	E4, E7, E18, E35
P32KA00MM	E10, E13, E15, E36
P32KA00MP	E10, E13, E15, E36
P32KA00MR	E10, E13, E15
P32KA00MT	E4, E7, E10, E13, E15, E18, E29, E35
P32KA00PG	E18, E36
P32KA00PL	E18, E36
P32KA00PR	E37
P32KA00PS	E37
P32KA00PT	E37
P32KA00PV	E37
P32KA00RB	E10, E13, E37
P32KA00RC	E10, E13, E37
P32KA00RQ	E4, E7, E36
P32KA12CP	E35
P32KA13CP	E35
P32KA14CP	E29, E35
P32KA16CP	E29, E35
P32KA22CP	E35
P32KA23CP	E35
P32KA24CP	E29, E35
P32KA26CP	E29, E35
P32KA92CP	E35
P32KA93CP	E35
P32KA94CP	E29, E35
P32KA96CP	E29, E35
P32KB00AT	E37
P32KB00MR	E35
P32KB00RB	E15
P32KB00RC	E15
P32LA92LGNN	E18
P32LA92LSNN	E18
P32LA93LGNN	E18
P32LA93LSNN	E18
P32LA94LGNN	E18
P32LA94LSNN	E18
P32MA94024N	E34
P32RA92BNGP	E10
P32RA92BNNP	E10
P32RA93BNGP	E10
P32RA93BNNP	E10
P32RA94BNGP	E10
P32RA94BNNP	E10
P32SA92Y0N	E26
P32SA94PPN	E26
P32SA94SCNA2CN	E26
P32SA94SCNA3GN	E26
P32TA94PPN	E26
P32TA94SCNA2CN	E26
P32TA94SCNA3GN	E26
P32VA92LSAN	E34
P32VA92LSBN	E34
P32VA93LSAN	E34
P32VA93LSBN	E34
P32VA94LSAN	E34
P32VA94LSBN	E34
P32VB93LBNN	E34
P32VB94LBNN	E34
P331KA00MM	E15
P33CA94GEANGLNW	E20
P33CA94GEMNGLNW	E20
P33CA96GEANGLNW	E20
P33CA96GEMNGLNW	E20
P33CB94GEANGLNW	E20
P33CB94GEMNGLNW	E20
P33CB96GEANGLNW	E20
P33CB96GEMNGLNW	E20
P33EA94EGABNGP	E15
P33EA94EGMBNGP	E15
P33EA94ESABNGP	E15
P33EA94ESMBNGP	E15
P33EA96EGABNGP	E15
P33EA96EGMBNGP	E15
P33EA96ESABNGP	E15
P33EA96ESMBNGP	E15
P33FA94DGAN	E7
P33FA94DGMN	E7
P33FA94DSAN	E7, F7
P33FA94DSMN	E7
P33FA94EGAN	E4
P33FA94EGMN	E4
P33FA94ESAN	E4
P33FA94ESMN	E4
P33FA94FSAN	F7
P33FA94QSAN	F7
P33FA96DGAN	E7
P33FA96DGMN	E7
P33FA96DSAN	E7, F3
P33FA96DSMN	E7
P33FA96EGAN	E4
P33FA96EGMN	E4
P33FA96ESAN	E4, F3
P33FA96ESMN	E4
P33KA00BGA	E36
P33KA00BGM	E4, E7, E15, E36
P33KA00BGN	E18, E36
P33KA00BMA	E36
P33KA00BMM	E36
P33KA00BSA	E36
P33KA00BSM	E4, E7, E15, E36
P33KA00BSN	E36
P33KA00ES9	E7, E36, F8
P33KA00ESA	E7, E36
P33KA00ESC	E7, E36, F8
P33KA00ESE	E4, E15, E36, F8
P33KA00ML	E4, E7, E18, E35
P33KA00MM	E10, E36
P33KA00MP	E10, E15, E36
P33KA00MR	E10, E15, E35
P33KA00MT	E4
P33KA00PR	E37
P33KA00PS	E37
P33KA00PT	E37
P33KA00PV	E37
P33KA00RB	E10, E15, E37
P33KA00RC	E10, E15, E37
P33LA94LGNN	E18
P33LA94LSNN	E18
P33LA96LGNN	E18
P33LA96LSNN	E18
P33MA96024N	E34
P33RA94BNGP	E10
P33RA94BNNP	E10
P33RA96BNGP	E10
P33RA96BNNP	E10
P33TA96RG4F2CN	E28
P33TA96RG4G2CN	E28
P33VA94LSAN	E34
P33VA94LSBN	E34
P33VA96LSAN	E34
P33VA96LSBN	E34
P33VB94LBNN	E34
P33VB96LBNN	E34
P3BA20812	E114
P3BA20822	E114
P3BA20823	E114
P3BA4514A	E115
P3BA4516A	E115
P3BA4524A	E115
P3BA4526A	E115
P3BA4534A	E115
P3BA4536A	E115
P3EA63242NS	E113
P3EA63252NS	E113
P3HKA00MC	E23, E26, E120
P3HKA00ML	E23, E26, E120
P3KKA00MC	E23, E120
P3KKA00ML	E23, E120
P3KNA00ES9	F8
P3NCA9PSGMNNLNA	E81
P3NCA96SGMNNLNA	E81
P3NCA98SGMNNLNA	E81
P3NCB9PSGMNNLNA	E81
P3NCB96SGMNNLNA	E81
P3NCB98SGMNNLNA	E81
P3NEA9PGSABNN	E78
P3NEA9PGSMBNN	E78
P3NEA96GSABNN	E78
P3NEA96GSMBNN	E78
P3NEA98GSABNN	E78
P3NEA98GSMBNN	E78
P3NFA96DSA	E75, F3, F7
P3NFA96DSM	E75
P3NFA96ESA	F3
P3NFA96FSA	F7
P3NFA96GSA	E74
P3NFA96GSM	E74
P3NFA96QSA	E75, F7
P3NFA96QSM	E75
P3NFA98DSA	E75, F7
P3NFA98DSM	E75
P3NFA98FSA	F7
P3NFA98GSA	E74
P3NFA98GSM	E74
P3NFA98QSA	E75, F7
P3NFA98QSM	E75
P3NFA9PDSA	E75, F3
P3NFA9PDSM	E75
P3NFA9PESA	F3
P3NFA9PGSA	E74
P3NFA9PGSM	E74
P3NFA9PQSA	E75
P3NFA9PQSM	E75
P3NKA00BSA	E74, E75, E79
P3NKA00BSM	E74, E75, E79, E80
P3NKA00BSN	E80
P3NKA00BSP	E74, E75, E79
P3NKA00ES9	E75
P3NKA00ESA	E74, E79
P3NKA00ESCB	E75, F8
P3NKA00ESE	E74, E79, F8
P3NKA00ESG	E74, E79
P3NKA00MW	E74, E75, E76, E77, E79, E80, E82
P3NKA00PD	E77
P3NKA00PE	E74, E75, E79, E80
P3NKA00PK	E80
P3NKA00PL	E80
P3NKA00PM	E82
P3NKA00PN	E76, E79
P3NKA00RL	E80
P3NKA00RN	E76, E79
P3NKA00RR	E76, E79
P3NKB16CL	E82
P3NKB16CP	E82
P3NKB18CL	E82
P3NKB18CP	E82
P3NKB1BCL	E82
P3NKB1BCP	E82
P3NKB96CL	E82
P3NKB96CP	E82
P3NKB98CL	E82
P3NKB98CP	E82
P3NKB9BCL	E82
P3NKB9BCP	E82
P3NLA9PLSN	E80
P3NLA96LSN	E80
P3NLA98LSN	E80
P3NRA9PBNG	E76
P3NRA9PBNN	E76
P3NRA9PBPG	E77
P3NRA9PBPP	E77
P3NRA96BNG	E76
P3NRA96BNN	E76
P3NRA96BPG	E77
P3NRA96BPP	E77
P3NRA98BNG	E76
P3NRA98BNN	E76
P3NRA98BPG	E77
P3NRA98BPP	E77
P3RA10232	E117
P3RA10232BP	E118
P3RA10242	E117
P3RA10242BP	E118
P3RA10262	E117
P3RA10262BP	E118
P3RA17132NNKN	E119
P3RA30232	E116
P3RA30242	E116
P3RA30252	E116
P3TFA92WAAN	E122
P3TFA93WBAN	E122
P3TFA94WCAN	E122, F3
P3TFA96WDAN	E122, F3
P3TFA98WEAN	E122
P3TFA9BWGAN	E122, F3
P3TFA9CWHAN	E122, F3
P3TFA9EWKAN	E122, F3
P3TFAFFD2AN	E91, F3
P3TFAFFQ2AN	E91, F3
P3TFAFFW2AN	E124, F3
P3TFAFGD3AN	E91, F3
P3TFAFGQ3AN	E91, F3
P3TFAFGW3AN	E124, F3
P3TJA93A1JN	F6
P3TJA93A2JN	F6
P3TJA93A3JN	F6
P3TJA93A4JN	F6
P3TJA93A5JN	F6
P3TJA93A6JN	F6
P3TJA93A7JN	F6
P3TKA00JA1	F6
P3TKA00JA2	F6
P3TKA00JA3	F6
P3TKA00JA4	F6
P3TKA00JA5	F6
P3TKA00JA6	F6
P3TKA00JA7	F6
P3TKA00MJ	F6
P3TKA00MK	F6
P3TKA00MWA	E123
P3TKA00MWB	E123
P3TKA00MWD	E123
P3TKA00MWF	E123
P3TKA00MWJ	E123
P5E	B210
P5GA-012MSG030B	B282
P5GA-016MSG030B	B282
P5GA-020MSG030B	B282
P5GA-025MSG030B	B282
P5GA-032MSG030B	B282
P5GB-012MSG006B	B284
P5GB-016MSG008B	B284
P5GB-020MSG012B	B284
P5GB-025MSG014B	B284
P5GB-032MSG016B	B284
P5GM-010MSG005B	B297
P5GM-010MSG006B	B297
P5GM-010MSG010B	B297
P5GM-014MSG006B	B297
P5GM-014MSG010B	B297
P5GM-014MSG013B	B297
P5GM-022MSG010B	B297
P5GM-022MSG013B	B297
P5GM-022MSG019B	B297
P5GM-032MSG013B	B297
P5GM-032MSG019B	B297
P5GM-032MSG032B	B297
P5GN-012MSG001B	B294
P5GN-012MSG002B	B294
P5GN-012MSG003B	B294
P5GN-014MSG002B	B294
P5GN-014MSG003B	B294
P5GN-014MSG005B	B294
P5GN-022MSG003B	B294
P5GN-022MSG005B	B294
P5GN-022MSG006B	B294
P5GN-032MSG005B	B294
P5GN-032MSG006B	B294
P5GN-032MSG010B	B294
P5GP-000ESX025B	B306
P5GQ-000QSX010B	B308
P5GQ-000QSX020B	B308
P5GQ-000RSX010B	B308
P5GQ-000RSX020B	B308
P5GR-010DSG006B	B288
P5GR-010DSG013B	B288
P5GR-010MSG006B	B288
P5GR-010MSG013B	B288
P5GR-014DSG016B	B288
P5GR-014DSG025B	B288
P5GR-014MSG016B	B288
P5GR-014MSG025B	B288
P5GR-021DSG025B	B288
P5GR-021DSG038B	B288
P5GR-021MSG025B	B288
P5GR-021MSG038B	B288
P5GS-016MSG019B	B300
P5GS-016MSG032B	B300
P5GS-024MSG025B	B300
P5GS-024MSG051B	B300
P5GS-032MSG038B	B300
P5GS-032MSG074B	B300
P5GT-025MFG006B	B303
P5GT-025MFG010B	B303
P5GT-025MSG006B	B303
P5GT-025MSG010B	B303
P5GT-032MFG013B	B303
P5GT-032MSG013B	B303
P5GT-046MFG019B	B303
P5GT-046MSG019B	B303
P5GT-064MFG032B	B303
P5GT-064MSG032B	B303
P5GT-089MFG051B	B303
P5GT-089MSG051B	B303
P5GU-011MFG006B	B291
P5GU-011MFG013B	B291
P5GU-011MSG006B	B291

Parker Hannifin Corporation
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Part No.	Section/Page No.
P5GU-011MSG013B	B291
P5GU-013MFG019B	B291
P5GU-013MFG025B	B291
P5GU-013MSG019B	B291
P5GU-013MSG025B	B291
P5GV-010MFG003B	B286
P5GV-010MFG005B	B286
P5GV-010MFG006B	B286
P5GV-010MSG003B	B286
P5GV-010MSG005B	B286
P5GV-010MSG006B	B286
P5GW-032DSG004B	B310
P5GW-032MFG004B	B310
P5GW-032MSG004B	B310
P5GW-043DSG006B	B310
P5GW-043MFG006B	B310
P5GW-043MSG006B	B310
P5GW-055DSG008B	B310
P5GW-055MFG008B	B310
P5GW-055MSG008B	B310
P5GW-072DSG010B	B310
P5GW-072MFG010B	B310
P5GW-072MSG010B	B310
P5GW-095DSG013B	B310
P5GW-095MFG013B	B310
P5GW-095MSG013B	B310
P5GW-120DSG016B	B310
P5GW-120MFG016B	B310
P5GW-120MSG016B	B310
P5GW-156DSG025B	B310
P5GW-156MFG025B	B310
P5GW-156MSG025B	B310
P5GW-225DSG035B	B310
P5GW-225MFG035B	B310
P5GW-225MSG035B	B310
P5L	B176
P5MD-014SSG016B	B328
P5MD-014TSG016B	B328
P5MD-020SSG025B	B328
P5MD-020TSG025B	B328
P5MD-027SSG032B	B328
P5MD-027TSG032B	B328
P5RS-016DSG190B	B326
P5RS-020DSG190B	B326
P5RS-020DSG190WNSNNN	B326
P5RS-025DSG190B	B326
P5RS-025DSG190WNSNNN	B326
P5RS-032DSG190B	B326
P5RS-032DSG190WNSNNN	B326
P5SS	B314, B326
P5SS-006-EA-05	B324
P5SS-006-EA-15	B324
P5SS-006-RA-05	B324
P5SS-006-RA-15	B324
P5SS-008-EA-05	B324
P5SS-008-EA-15	B324
P5SS-008-EA-25	B324
P5SS-008-ESK	B325
P5SS-008-RA-05	B324
P5SS-008-RA-15	B324
P5SS-008-RA-25	B324
P5SS-008-RSK	B325
P5SS-012-EA-05	B324
P5SS-012-EA-15	B324
P5SS-012-EA-25	B324
P5SS-012-ESK	B325
P5SS-012-RA-05	B324
P5SS-012-RA-15	B324
P5SS-012-RA-25	B324
P5SS-012-RSK	B325
P5SS-016-EA-05	B324
P5SS-016-EA-10	B324
P5SS-016-EA-25	B324
P5SS-016-ESK	B325
P5SS-016-RA-05	B324
P5SS-016-RA-15	B324
P5SS-016-RA-25	B324
P5SS-016-RSK	B325
P5SS-020-EA-05	B324
P5SS-020-EA-15	B324
P5SS-020-EA-25	B324
P5SS-020-ESK	B325
P5SS-020-RA-05	B324
P5SS-020-RA-15	B324
P5SS-020-RA-25	B324
P5SS-020-RSK	B325
P5SS-025-EA-05	B324
P5SS-025-EA-15	B324
P5SS-025-EA-25	B324
P5SS-025-ESK	B325
P5SS-025-RA-05	B324
P5SS-025-RA-15	B324
P5SS-025-RA-25	B324
P5SS-025-RSK	B325
P5T	B169
P5V-CFS05011N	C29
P5V-CFS10013N	C29
P5V-CFS15014N	C29
P66829	D233
P66837	D233
P6G-PR11040	E13
P6G-PR11100	E13
P6G-PR11P06	E13
P6G-PR11P16	E13
P6M-PAB1	D117
P6M-PAB1	G11
P6M-PAB2	G11
P6M-PAB3	D117
P6M-PAB3	G11
P6M-PAB4	G11
P6M-PAB6	G11
P6M-PAB8	G11
P6M-PAC5	D221
P6M-PAC5	D32, D72
P6M-PAC5	G11
P78652	E66, E71
P8BPA00MA	D96, D167, D179
P8BPA00MB	D96, D167, D179
P8CS0803J...	D90, D91, D93, D94
P8CS1204J...	D90, D91, D93, D94
P8CS1205AA	D96, D167
P8LMH20M2A	D96, D98
P8LMH20M5A	D96, D98
P8LMH20M9A	D96, D98
P8LMH25M3A	D96, D98, D117
P8LS08L226C	D90, D91, D93, D94
P8LS08L526C	D90, D91, D93, D94
P8LS08L926C	D90, D91, D93, D94
P8LS12JACK	D96
P8S-CABL-013	B330
P8S-CABL-014	B330
P8S-CABL-018	B330
P8S-ENFXS	B330, B331
P8S-ENFXS	B341
P8S-ENSUS	B330
P8S-ENSUS	B341
P8S-ENSUS (M8)	B331
P8S-EPFXS	B330, B331
P8S-EPFXS	B340
P8S-EPSUS	B330
P8S-EPSUS	B340
P8S-EPSUS (M8)	B331
P8S-ERFX	B342
P8S-ERFXS	B330, B331
P8S-ERSUS	B330
P8S-ERSUS	B342
P8S-ERSUS (M8)	B331
P8S-FNFXS	B330, B331
P8S-FNSUS	B330
P8S-FPFXS	B330, B331
P8S-FPSUS	B330
P8S-FRFXS	B330, B331
P8S-FRSUS	B330
P8S-FRSUS (M8)	B331
P8S-GNFLX	B341, B343
P8S-GNFTX	B341, B343
P8S-GNMHX	B341, B343
P8S-GNSCX	B341, B343
P8S-GNSHX	B341, B343
P8S-GPFLX	B340, B343
P8S-GPFLX/EX	B343
P8S-GPFTX	B340, B343
P8S-GPMHX	B340, B343
P8S-GPNFTX	B341
P8S-GPNSCX	B341
P8S-GPSCX	B340, B343
P8S-GPSHX	B340, B343
P8S-GRFLX	B342, B344
P8S-GRFTX	B342, B344
P8S-GRMHX	B342, B344
P8S-GRSCX	B342, B344
P8S-GRSHX	B342, B344
P8S-HHSN-017	B330, B332
P8S-HHSP-011	B330, B332
P8S-HHSP-017	B330, B332
P8S-HISN-011	B330, B332
P8S-HISN-014	B330, B333
P8S-HISN-017	B330, B333
P8S-HISN-019	B330
P8S-HISP-011	B330, B332
P8S-HISP-014	B330, B333
P8S-HISP-017	B330, B333
P8S-HISP-019	B330
P8S-HSMK-003	B330
P8S-HSMK-072	B330
P8S-HSMK-073	B330
P8S-HSMK-116	B330
P8S-HSMK-117	B330
P8S-HSMK-118	B330
P8S-HSMK-119	B330
P8S-HSMK-120	B330
P8S-SNETX	B341, B346
P8S-SNTHX	B341, B346
P8S-SPETXD	B340, B346
P8S-SPTHXD	B340, B346
P8S-SRETX	B342, B346
P8S-SRTHX	B342, B346
P8S-TMA0X	B340, B341, B342
P8S-TMA0Y	B236
P8S-TMA0Y	B340, B341, B342
P8S-TMC01	B340, B341, B342, B345
P8S-TMC02	B340, B341, B342, B345
P8S-TMC03	B340, B341, B342, B345
PB11-04WJCRSS	E108
PB11-04WJCSS	E108
PB12-04WJCRSS	E108
PB12-04WJCSS	E108
PB548-02DHCSS	E108
PB558-02DHCSS	E108
PBG-10A-NBR	C18, C19, C20, C21, C22
PBG-10A-SI	C18, C19, C20, C21, C22
PBG-110-NBR	C19, C21, C22
PBG-110-SI	C19, C21, C22
PBG-150-NBR	C19, C21, C22
PBG-150-SI	C19, C21, C22
PBG-15A-NBR	C18, C19, C20, C21, C22
PBG-15A-SI	C18, C19, C21, C22
PBG-15-SI	C20
PBG-20B-NBR	C18, C19, C22
PBG-20B-SI	C18, C19, C22
PBG-20-NBR	C20, C21
PBG-20-SI	C20, C21
PBG-30-NBR	C18, C19, C20, C21, C22
PBG-30-SI	C18, C19, C20, C21, C22
PBG-40-NBR	C18, C19, C20, C21, C22
PBG-40-SI	C18, C19, C20, C21, C22
PBG-50-NBR	C18, C19, C20, C21, C22
PBG-50-SI	C18, C19, C20, C21, C22
PBG-75-NBR	C18, C19, C20, C21, C22
PBG-75-SI	C18, C19, C20, C21, C22
PBTF-10A-NBR-G1	C19
PBTF-10A-NBR-M5	C19
PBTF-10A-SI-G1	C19
PBTF-10A-SI-M5	C19
PBTF-110-NBR-G4	C19
PBTF-110-NBR-N4	C19
PBTF-110-SI-G4	C19
PBTF-110-SI-N4	C19
PBTF-150-NBR-G4	C19
PBTF-150-NBR-N4	C19
PBTF-150-SI-G4	C19
PBTF-150-SI-N4	C19
PBTF-15A-NBR-G1	C19
PBTF-15A-NBR-M5	C19
PBTF-15A-SI-G1	C19
PBTF-15A-SI-M5	C19
PBTF-20B-NBR-G1	C19
PBTF-20B-SI-G1	C19
PBTF-30-NBR-G1	C19
PBTF-30-NBR-G2	C19
PBTF-30-SI-G1	C19
PBTF-30-SI-G2	C19
PBTF-40-NBR-G1	C19
PBTF-40-NBR-G2	C19
PBTF-40-SI-G1	C19
PBTF-40-SI-G2	C19
PBTF-50-NBR-G1	C19
PBTF-50-NBR-G2	C19
PBTF-50-SI-G1	C19
PBTF-50-SI-G2	C19
PBTF-75-NBR-G2	C19
PBTF-75-NBR-N2	C19
PBTF-75-SI-G2	C19
PBTF-75-SI-N2	C19
PBTK-10A-NBR	C20
PBTK-10A-SI	C20
PBTK-15A-NBR	C20
PBTK-15A-SI	C20
PBTK-20-NBR	C20
PBTK-20-SI	C20
PBTK-30-NBR	C20
PBTK-30-SI	C20
PBTK-40-NBR	C20
PBTK-40-SI	C20
PBTK-50-NBR	C20
PBTK-50-SI	C20
PBTK-75-NBR-G1	C20
PBTK-75-NBR-N1	C20
PBTK-75-SI-G1	C20
PBTK-75-SI-N1	C20
PBTM-10A-NBR-G1	C18
PBTM-10A-NBR-M5	C18
PBTM-10A-SI-G1	C18
PBTM-10A-SI-M5	C18
PBTM-15A-NBR-G1	C18
PBTM-15A-NBR-M5	C18
PBTM-15A-SI-G1	C18
PBTM-15A-SI-M5	C18
PBTM-20B-NBR-G1	C18
PBTM-20B-NBR-G2	C18
PBTM-20B-NBR-M10	C18
PBTM-20B-NBR-N1	C18
PBTM-20B-SI-G1	C18
PBTM-20B-SI-G2	C18
PBTM-20B-SI-M10	C18
PBTM-20B-SI-N1	C18
PBTM-30-NBR-G1	C18
PBTM-30-NBR-G2	C18
PBTM-30-NBR-M10	C18
PBTM-30-NBR-N1	C18
PBTM-30-SI-G1	C18
PBTM-30-SI-G2	C18
PBTM-30-SI-M10	C18
PBTM-30-SI-N1	C18
PBTM-40-NBR-G1	C18
PBTM-40-NBR-G2	C18
PBTM-40-NBR-M10	C18
PBTM-40-NBR-N1	C18
PBTM-40-SI-G1	C18
PBTM-40-SI-G2	C18
PBTM-40-SI-M10	C18
PBTM-40-SI-N1	C18
PBTM-50-NBR-G1	C18
PBTM-50-NBR-G2	C18
PBTM-50-NBR-N1	C18
PBTM-50-SI-G1	C18
PBTM-50-SI-G2	C18
PBTM-50-SI-N1	C18
PBTM-75-NBR-G2	C18
PBTM-75-NBR-M10	C18
PBTM-75-NBR-N2	C18
PBTM-75-SI-G2	C18
PBTM-75-SI-M10	C18
PBTM-75-SI-N2	C18
PBTYS10A10NBRM5	C22
PBTYS10A10SIM5	C22
PBTYS10A15NBRM5	C22
PBTYS10A15SIM5	C22
PBTYS11020SIN2	C22
PBTYS11070SIN2	C22
PBTYS12020NBRN2	C22
PBTYS12070NBRN2	C22
PBTYS15020NBRN2	C22
PBTYS15020SIN2	C22
PBTYS15070NBRN2	C22
PBTYS15070SIN2	C22
PBTYS15A10NBRM5	C22
PBTYS15A10SIM5	C22
PBTYS15A15NBRM5	C22
PBTYS15A15SIM5	C22
PBTYS20B15NBRM5	C22
PBTYS20B15SIM5	C22
PBTYS20B30NBRM5	C22
PBTYS20B30SIM5	C22
PBTYS3015NBRM5	C22
PBTYS3015SIM5	C22
PBTYS3030NBRM5	C22
PBTYS3030SIM5	C22
PBTYS4015NBRM5	C22
PBTYS4015SIM5	C22
PBTYS4030NBRM5	C22
PBTYS4030SIM5	C22
PBTYS5015NBRM5	C22
PBTYS5015SIM5	C22
PBTYS5030NBRM5	C22
PBTYS5030SIM5	C22

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Part No.	Section/Page No.
PBTYS7530NBRN1	C22
PBTYS7530SIN1	C22
PBTYS7550NBRN1	C22
PBTYS7550SIN1	C22
PBYK-10A-NBR	C21
PBYK-10A-SI	C21
PBYK-110-NBR-G1	C21
PBYK-110-NBR-N1	C21
PBYK-110-SI-G1	C21
PBYK-110-SI-N1	C21
PBYK-150-NBR-G1	C21
PBYK-150-NBR-N1	C21
PBYK-150-SI-G1	C21
PBYK-150-SI-N1	C21
PBYK-15A-NBR	C21
PBYK-15A-SI	C21
PBYK-20-NBR	C21
PBYK-20-SI	C21
PBYK-30-NBR	C21
PBYK-30-SI	C21
PBYK-40-NBR	C21
PBYK-40-SI	C21
PBYK-50-NBR	C21
PBYK-50-SI	C21
PBYK-75-NBR-G1	C21
PBYK-75-NBR-N1	C21
PBYK-75-SI-G1	C21
PBYK-75-SI-N1	C21
PCG-10-NBR	C43, C44, C45
PCG-10-SI	C43, C44, C45
PCG-15-NBR	C43, C44, C45
PCG-15-SI	C43, C44, C45
PCG-20-NBR	C43, C44, C45
PCG-20-SI	C43, C44, C45
PCG-30-NBR	C43, C44, C45
PCG-30-SI	C43, C44, C45
PCG-40-NBR	C43, C44, C45
PCG-40-SI	C43, C44, C45
PCG-5-NBR	C43, C44, C45
PCG-5-SI	C43, C44, C45
PCG-60-NBR	C43, C44, C45
PCG-60-SI	C43, C44, C45
PCG-7-NBR	C43, C44, C45
PCG-7-SI	C43, C44, C45
PCG-90-NBR	C43, C44, C45
PCG-90-SI	C43, C44, C45
PCKR364T	E69
PCKR364Y	E69
PCTF-10-NBR-G1	C44
PCTF-10-SI-G1	C44
PCTF-15-NBR-G1	C44
PCTF-15-SI-G1	C44
PCTF-20-NBR-G1	C44
PCTF-20-SI-G1	C44
PCTF-30-NBR-G1	C44
PCTF-30-NBR-N1	C44
PCTF-30-SI-G1	C44
PCTF-30-SI-N1	C44
PCTF-40-NBR-G1	C44
PCTF-40-NBR-N1	C44
PCTF-40-SI-G1	C44
PCTF-40-SI-N1	C44
PCTF-5-NBR-M5	C44
PCTF-5-SI-M5	C44
PCTF-60-NBR-N1	C44
PCTF-60-SI-N1	C44
PCTF-7-NBR-M5	C44
PCTF-7-SI-M5	C44
PCTF-90-NBR-G2	C44
PCTF-90-NBR-N2	C44
PCTF-90-SI-G2	C44
PCTF-90-SI-N2	C44
PCTK-10-NBR	C45
PCTK-10-SI	C45
PCTK-15-NBR	C45
PCTK-15-SI	C45
PCTK-20-NBR	C45
PCTK-20-SI	C45
PCTK-30-NBR	C45
PCTK-30-SI	C45
PCTK-40-NBR	C45
PCTK-40-SI	C45
PCTK-5-NBR	C45
PCTK-5-SI	C45
PCTK-60-NBR	C45
PCTK-60-SI	C45
PCTK-7-NBR	C45
PCTK-7-SI	C45
PCTK-90-NBR-G1	C45
PCTK-90-NBR-N1	C45
PCTK-90-SI-G1	C45
PCTK-90-SI-N1	C45
PCTM-10-NBR-G1	C43
PCTM-10-NBR-M5	C43
PCTM-10-SI-G1	C43
PCTM-10-SI-M5	C43
PCTM-15-NBR-G1	C43
PCTM-15-NBR-M5	C43
PCTM-15-SI-G1	C43
PCTM-15-SI-M5	C43
PCTM-20-NBR-G1	C43
PCTM-20-NBR-M5	C43
PCTM-20-SI-G1	C43
PCTM-20-SI-M5	C43
PCTM-30-NBR-G1	C43
PCTM-30-NBR-G2	C43
PCTM-30-NBR-N1	C43
PCTM-30-SI-G1	C43
PCTM-30-SI-G2	C43
PCTM-30-SI-N1	C43
PCTM-40-NBR-G1	C43
PCTM-40-NBR-G2	C43
PCTM-40-NBR-N1	C43
PCTM-40-SI-G1	C43
PCTM-40-SI-G2	C43
PCTM-40-SI-N1	C43
PCTM-5-NBR-M5	C43
PCTM-5-SI-M5	C43
PCTM-60-NBR-G1	C43
PCTM-60-NBR-N1	C43
PCTM-60-SI-G1	C43
PCTM-60-SI-N1	C43
PCTM-7-NBR-M5	C43
PCTM-7-SI-M5	C43
PCTM-90-NBR-G2	C43
PCTM-90-NBR-N2	C43
PCTM-90-SI-G2	C43
PCTM-90-SI-N2	C43
PDC15-FH	B250
PDC15-LB	B250
PEFR-2.5-0500	G18
PEFR-4-0500	G18
PEFR-4-1000	G18
PEFR-6-0500	G18
PEFR-8-0250	G18
PEJ01-03-70	D187
PEJ01-03-80	D187
PEJ02-02-70	D186
PEJ02-02-80	D186
PESC10	D6
PESC12	D6
PESC2001F	D6
PESC2020B	D6
PESC2201F	D6
PESC2220B	D6
PF10-04WJRSS	E104
PF10-04WJSS	E104
PF11-04WJRSS	E104
PF11-04WJSS	E104
PF501-02DHRSS	E104
PF501-02DHSS	E104
PF504-02DHRSS	E104
PF504-02DHSS	E104
PFG-10A-NBR	C5, C6, C7, C8, C9
PFG-10A-SI	C5, C6, C7, C8, C9
PFG-120-NBR	C6, C8, C9
PFG-120-SI	C6, C8, C9
PFG-150-NBR	C6, C8, C9
PFG-150-SI	C6, C8, C9
PFG-15A-NBR	C5, C6, C9
PFG-15A-SI	C5, C6, C9
PFG-15-NBR	C7, C8
PFG-15-SI	C7, C8
PFG-200-NBR	C6, C8, C9
PFG-200-SI	C6, C8, C9
PFG-20B-NBR	C5, C6, C9
PFG-20B-SI	C5, C6, C9
PFG-20-NBR	C7, C8
PFG-20-SI	C7, C8
PFG-30-NBR	C5, C6, C7, C8, C9
PFG-30-SI	C5, C6, C7, C8, C9
PFG-40-NBR	C5, C6, C7, C8, C9
PFG-40-SI	C5, C6, C7, C8, C9
PFG-50-NBR	C5, C6, C7, C8, C9
PFG-50-SI	C5, C6, C7, C8, C9
PFG-5A-NBR	C5, C6, C7, C8, C9
PFG-5A-SI	C5, C6, C7, C8, C9
PFG-60-NBR	C5, C6, C7, C8, C9
PFG-60-SI	C5, C6, C7, C8, C9
PFG-6A-NBR	C5, C6, C7, C8, C9
PFG-6A-SI	C5, C6, C7, C8, C9
PFG-80-NBR	C5, C6, C7, C8, C9
PFG-80-SI	C5, C6, C7, C8, C9
PFG-8A-NBR	C5, C6, C7, C8, C9
PFG-8A-SI	C5, C6, C7, C8, C9
PFG-95-NBR	C5, C6, C7, C8, C9
PFG-95-SI	C5, C6, C7, C8, C9
PFTF-10A-NBR-G1	C6
PFTF-10A-NBR-M5	C6
PFTF-10A-SI-G1	C6
PFTF-10A-SI-M5	C6
PFTF-120-NBR-G4	C6
PFTF-120-NBR-N4	C6
PFTF-120-SI-G4	C6
PFTF-120-SI-N4	C6
PFTF-150-NBR-G4	C6
PFTF-150-NBR-N4	C6
PFTF-150-SI-G4	C6
PFTF-150-SI-N4	C6
PFTF-15A-NBR-G1	C6
PFTF-15A-NBR-M5	C6
PFTF-15A-SI-G1	C6
PFTF-15A-SI-M5	C6
PFTF-200-NBR-G4	C6
PFTF-200-NBR-N4	C6
PFTF-200-SI-G4	C6
PFTF-200-SI-N4	C6
PFTF-20B-NBR-G1	C6
PFTF-20B-SI-G1	C6
PFTF-30-NBR-G1	C6
PFTF-30-NBR-G2	C6
PFTF-30-SI-G1	C6
PFTF-30-SI-G2	C6
PFTF-40-NBR-G1	C6
PFTF-40-NBR-G2	C6
PFTF-40-SI-G1	C6
PFTF-40-SI-G2	C6
PFTF-50-NBR-G1	C6
PFTF-50-NBR-G2	C6
PFTF-50-SI-G1	C6
PFTF-50-SI-G2	C6
PFTF-5A-NBR-G1	C6
PFTF-5A-NBR-M5	C6
PFTF-5A-SI-G1	C6
PFTF-5A-SI-M5	C6
PFTF-60-NBR-G2	C6
PFTF-60-NBR-N2	C6
PFTF-60-SI-G2	C6
PFTF-60-SI-N2	C6
PFTF-6A-NBR-G1	C6
PFTF-6A-NBR-M5	C6
PFTF-6A-SI-G1	C6
PFTF-6A-SI-M5	C6
PFTF-80-NBR-G2	C6
PFTF-80-NBR-N2	C6
PFTF-80-SI-G2	C6
PFTF-80-SI-N2	C6
PFTF-8A-NBR-G1	C6
PFTF-8A-NBR-M5	C6
PFTF-8A-SI-G1	C6
PFTF-8A-SI-M5	C6
PFTF-95-NBR-G2	C6
PFTF-95-NBR-N2	C6
PFTF-95-SI-G2	C6
PFTF-95-SI-N2	C6
PFTK-10A-NBR	C7
PFTK-10A-SI	C7
PFTK-15-NBR	C7
PFTK-15-SI	C7
PFTK-20-NBR	C7
PFTK-20-SI	C7
PFTK-30-NBR	C7
PFTK-30-SI	C7
PFTK-40-NBR	C7
PFTK-40-SI	C7
PFTK-50-NBR	C7
PFTK-50-SI	C7
PFTK-5A-NBR	C7
PFTK-5A-SI	C7
PFTK-60-NBR-G1	C7
PFTK-60-NBR-N1	C7
PFTK-60-SI-G1	C7
PFTK-60-SI-N1	C7
PFTK-6A-NBR	C7
PFTK-6A-SI	C7
PFTK-80-NBR-G1	C7
PFTK-80-NBR-N1	C7
PFTK-80-SI-G1	C7
PFTK-80-SI-N1	C7
PFTK-8A-NBR	C7
PFTK-8A-SI	C7
PFTK-95-NBR-G1	C7
PFTK-95-NBR-N1	C7
PFTK-95-SI-G1	C7
PFTK-95-SI-N1	C7
PFTM-10A-NBR-G1	C5
PFTM-10A-NBR-M5	C5
PFTM-10A-SI-G1	C5
PFTM-10A-SI-M5	C5
PFTM-15A-NBR-G1	C5
PFTM-15A-NBR-M5	C5
PFTM-15A-SI-G1	C5
PFTM-15A-SI-M5	C5
PFTM-20B-NBR-G1	C5
PFTM-20B-NBR-G2	C5
PFTM-20B-NBR-M10	C5
PFTM-20B-NBR-N1	C5
PFTM-20B-SI-G1	C5
PFTM-20B-SI-G2	C5
PFTM-20B-SI-M10	C5
PFTM-20B-SI-N1	C5
PFTM-30-NBR-G1	C5
PFTM-30-NBR-G2	C5
PFTM-30-NBR-M10	C5
PFTM-30-NBR-N1	C5
PFTM-30-SI-G1	C5
PFTM-30-SI-G2	C5
PFTM-30-SI-M10	C5
PFTM-30-SI-N1	C5
PFTM-40-NBR-G1	C5
PFTM-40-NBR-G2	C5
PFTM-40-NBR-M10	C5
PFTM-40-NBR-N1	C5
PFTM-40-SI-G1	C5
PFTM-40-SI-G2	C5
PFTM-40-SI-M10	C5
PFTM-40-SI-N1	C5
PFTM-50-NBR-G1	C5
PFTM-50-NBR-G2	C5
PFTM-50-NBR-N1	C5
PFTM-50-SI-G1	C5
PFTM-50-SI-G2	C5
PFTM-50-SI-N1	C5
PFTM-5A-NBR-G1	C5
PFTM-5A-NBR-M5	C5
PFTM-5A-SI-G1	C5
PFTM-5A-SI-M5	C5
PFTM-60-NBR-G2	C5
PFTM-60-NBR-M10	C5
PFTM-60-NBR-N2	C5
PFTM-60-SI-G2	C5
PFTM-60-SI-M10	C5
PFTM-60-SI-N2	C5
PFTM-6A-NBR-G1	C5
PFTM-6A-NBR-M5	C5
PFTM-6A-SI-G1	C5
PFTM-6A-SI-M5	C5
PFTM-80-NBR-G2	C5
PFTM-80-NBR-M10	C5
PFTM-80-NBR-N2	C5
PFTM-80-SI-G2	C5
PFTM-80-SI-M10	C5
PFTM-80-SI-N2	C5
PFTM-8A-NBR-G1	C5
PFTM-8A-NBR-M5	C5
PFTM-8A-SI-G1	C5
PFTM-8A-SI-M5	C5
PFTM-95-NBR-G2	C5
PFTM-95-NBR-M10	C5
PFTM-95-NBR-N2	C5
PFTM-95-SI-G2	C5
PFTM-95-SI-M10	C5
PFTM-95-SI-N2	C5
PFTYS10A10NBRM5	C9
PFTYS10A10SIM5	C9
PFTYS10A15NBRM5	C9
PFTYS10A15SIM5	C9
PFTYS12020NBRN2	C9
PFTYS12020SIN2	C9
PFTYS12070NBRN2	C9
PFTYS12070SIN2	C9
PFTYS15020NBRN2	C9
PFTYS15020SIN2	C9
PFTYS15070NBRN2	C9
PFTYS15070SIN2	C9
PFTYS15A10NBRM5	C9
PFTYS15A10SIM5	C9
PFTYS15A15NBRM5	C9
PFTYS15A15SIM5	C9
PFTYS20020NBRN2	C9
PFTYS20020SIN2	C9
PFTYS20070NBRN2	C9
PFTYS20070SIN2	C9
PFTYS20B15NBRM5	C9
PFTYS20B15SIM5	C9
PFTYS20B30NBRM5	C9
PFTYS20B30SIM5	C9
PFTYS3015NBRM5	C9
PFTYS3015SIM5	C9
PFTYS3030NBRM5	C9
PFTYS3030SIM5	C9
PFTYS4015NBRM5	C9
PFTYS4015SIM5	C9
PFTYS4030NBRM5	C9
PFTYS4030SIM5	C9

Parker Hannifin Corporation
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Part No.	Section/Page No.
PFTYS5015NBRM5	C9
PFTYS5015SIM5	C9
PFTYS5030NBRM5	C9
PFTYS5030SIM5	C9
PFTYS5A10NBRM5	C9
PFTYS5A10SIM5	C9
PFTYS5A15NBRM5	C9
PFTYS5A15SIM5	C9
PFTYS6030NBRN1	C9
PFTYS6030SIN1	C9
PFTYS6050NBRN1	C9
PFTYS6050SIN1	C9
PFTYS6A10NBRM5	C9
PFTYS6A10SIM5	C9
PFTYS6A15NBRM5	C9
PFTYS6A15SIM5	C9
PFTYS8030NBRN1	C9
PFTYS8030SIN1	C9
PFTYS8050NBRN1	C9
PFTYS8050SIN1	C9
PFTYS8A10NBRM5	C9
PFTYS8A10SIM5	C9
PFTYS8A15NBRM5	C9
PFTYS8A15SIM5	C9
PFTYS9530NBRN1	C9
PFTYS9530SIN1	C9
PFTYS9550NBRN1	C9
PFTYS9550SIN1	C9
PFYK-10A-NBR	C8
PFYK-10A-SI	C8
PFYK-120-NBR-G1	C8
PFYK-120-NBR-N1	C8
PFYK-120-SI-G1	C8
PFYK-120-SI-N1	C8
PFYK-150-NBR-G1	C8
PFYK-150-NBR-N1	C8
PFYK-150-SI-G1	C8
PFYK-150-SI-N1	C8
PFYK-15-NBR	C8
PFYK-15-SI	C8
PFYK-200-NBR-G1	C8
PFYK-200-NBR-N1	C8
PFYK-200-SI-G1	C8
PFYK-200-SI-N1	C8
PFYK-20-NBR	C8
PFYK-20-SI	C8
PFYK-30-NBR	C8
PFYK-30-SI	C8
PFYK-40-NBR	C8
PFYK-40-SI	C8
PFYK-50-NBR	C8
PFYK-50-SI	C8
PFYK-5A-NBR	C8
PFYK-5A-SI	C8
PFYK-60-NBR-G1	C8
PFYK-60-NBR-N1	C8
PFYK-60-SI-G1	C8
PFYK-60-SI-N1	C8
PFYK-6A-NBR	C8
PFYK-6A-SI	C8
PFYK-80-NBR-G1	C8
PFYK-80-NBR-N1	C8
PFYK-80-SI-G1	C8
PFYK-80-SI-N1	C8
PFYK-8A-NBR	C8
PFYK-8A-SI-M5	C8
PFYK-95-NBR-G1	C8
PFYK-95-NBR-N1	C8
PFYK-95-SI-G1	C8
PFYK-95-SI-N1	C8
PIM-4PRC	B130
PJG-10-NBR	C31, C32, C33, C34, C35
PJG-10-SI	C31, C32, C33, C34, C35
PJG-15A-NBR	C35
PJG-15A-SI	C35
PJG-15-NBR	C31, C32, C33, C34
PJG-15-SI	C31, C32, C33, C34
PJG-20-NBR	C31, C33, C34
PJG-20-SI	C31, C33, C34
PJG-30-NBR	C31, C32, C33, C34, C35
PJG-30-SI	C31, C32, C33, C34, C35
PJG-40-NBR	C31, C32, C33, C34, C35
PJG-40-SI	C31, C32, C33, C34, C35
PJG-50-NBR	C31, C32, C33, C34, C35
PJG-50-SI	C31, C32, C33, C34, C35
PJG-60-NBR	C31, C32, C33, C34, C35
PJG-60-SI	C31, C32, C33, C34, C35
PJG-6-NBR	C31, C32, C33, C34
PJG-6-SI	C31, C32, C33, C34
PJG-80-NBR	C31, C32, C33, C34, C35
PJG-80-SI	C31, C32, C33, C34, C35
PJG-8-NBR	C31, C32, C33, C34
PJG-8-SI	C31, C32, C33, C34
PJLP01-202-70	D187
PJLP01-202-80	D187
PJLP02-201-70	D186
PJLP02-201-80	D186
PJTF-10-NBR-G1	C32
PJTF-10-NBR-M5	C32
PJTF-10-SI-G1	C32
PJTF-10-SI-M5	C32
PJTF-15-NBR-G1	C32
PJTF-15-NBR-M5	C32
PJTF-15-SI-G1	C32
PJTF-15-SI-M5	C32
PJTF-30-NBR-G1	C32
PJTF-30-NBR-G2	C32
PJTF-30-SI-G1	C32
PJTF-30-SI-G2	C32
PJTF-40-NBR-G1	C32
PJTF-40-NBR-G2	C32
PJTF-40-SI-G1	C32
PJTF-40-SI-G2	C32
PJTF-50-NBR-G1	C32
PJTF-50-NBR-G2	C32
PJTF-50-SI-G1	C32
PJTF-50-SI-G2	C32
PJTF-60-NBR-G2	C32
PJTF-60-NBR-N2	C32
PJTF-60-SI-G2	C32
PJTF-60-SI-N2	C32
PJTF-6-NBR-G1	C32
PJTF-6-NBR-M5	C32
PJTF-6-SI-G1	C32
PJTF-6-SI-M5	C32
PJTF-80-NBR-G2	C32
PJTF-80-NBR-N2	C32
PJTF-80-SI-G2	C32
PJTF-80-SI-N2	C32
PJTF-8-NBR-G1	C32
PJTF-8-NBR-M5	C32
PJTF-8-SI-G1	C32
PJTF-8-SI-M5	C32
PJTK-10-NBR	C33
PJTK-10-SI	C33
PJTK-15-NBR	C33
PJTK-15-SI	C33
PJTK-20-NBR	C33
PJTK-20-SI	C33
PJTK-30-NBR	C33
PJTK-30-SI	C33
PJTK-40-NBR	C33
PJTK-40-SI	C33
PJTK-50-NBR	C33
PJTK-50-SI	C33
PJTK-60-NBR-G1	C33
PJTK-60-NBR-N1	C33
PJTK-60-SI-G1	C33
PJTK-60-SI-N1	C33
PJTK-6-NBR	C33
PJTK-6-SI	C33
PJTK-80-NBR-G1	C33
PJTK-80-NBR-N1	C33
PJTK-80-SI-G1	C33
PJTK-80-SI-N1	C33
PJTK-8-NBR	C33
PJTK-8-SI	C33
PJTM-10-NBR-M5	C31
PJTM-10-SI-M5	C31
PJTM-15-NBR-M5	C31
PJTM-15-SI-M5	C31
PJTM-20-NBR-M5	C31
PJTM-20-SI-M5	C31
PJTM-30-NBR-G1	C31
PJTM-30-NBR-G2	C31
PJTM-30-NBR-M10	C31
PJTM-30-NBR-N1	C31
PJTM-30-SI-G1	C31
PJTM-30-SI-G2	C31
PJTM-30-SI-M10	C31
PJTM-30-SI-N1	C31
PJTM-40-NBR-G1	C31
PJTM-40-NBR-G2	C31
PJTM-40-NBR-M10	C31
PJTM-40-NBR-N1	C31
PJTM-40-SI-G1	C31
PJTM-40-SI-G2	C31
PJTM-40-SI-M10	C31
PJTM-40-SI-N1	C31
PJTM-50-NBR-G1	C31
PJTM-50-NBR-G2	C31
PJTM-50-NBR-N1	C31
PJTM-50-SI-G1	C31
PJTM-50-SI-G2	C31
PJTM-50-SI-N1	C31
PJTM-60-NBR-G2	C31
PJTM-60-NBR-M10	C31
PJTM-60-NBR-N2	C31
PJTM-60-SI-G2	C31
PJTM-60-SI-M10	C31
PJTM-60-SI-N2	C31
PJTM-6-NBR-G1	C31
PJTM-6-NBR-M5	C31
PJTM-6-SI-G1	C31
PJTM-6-SI-M5	C31
PJTM-80-NBR-G2	C31
PJTM-80-NBR-M10	C31
PJTM-80-NBR-N2	C31
PJTM-80-SI-G2	C31
PJTM-80-SI-M10	C31
PJTM-80-SI-N2	C31
PJTM-8-NBR-G1	C31
PJTM-8-NBR-M5	C31
PJTM-8-SI-G1	C31
PJTM-8-SI-M5	C31
PJTYS1010NBRM5	C35
PJTYS1010SIM5	C35
PJTYS1015NBRM5	C35
PJTYS1015SIM5	C35
PJTYS15A10NBRM5	C35
PJTYS15A10SIM5	C35
PJTYS15A15NBRM5	C35
PJTYS15A15SIM5	C35
PJTYS3015NBRM5	C35
PJTYS3015SIM5	C35
PJTYS3030NBRM5	C35
PJTYS3030SIM5	C35
PJTYS4015NBRM5	C35
PJTYS4015SIM5	C35
PJTYS4030NBRM5	C35
PJTYS4030SIM5	C35
PJTYS5015NBRM5	C35
PJTYS5015SIM5	C35
PJTYS5030NBRM5	C35
PJTYS5030SIM5	C35
PJTYS6030NBRN1	C35
PJTYS6030SIN1	C35
PJTYS6050NBRN1	C35
PJTYS6050SIN1	C35
PJTYS8030NBRN1	C35
PJTYS8030SIN1	C35
PJTYS8050NBRN1	C35
PJTYS8050SIN1	C35
PJYK-10-NBR	C34
PJYK-10-SI	C34
PJYK-15-NBR	C34
PJYK-15-SI	C34
PJYK-20-NBR	C34
PJYK-20-SI	C34
PJYK-30-NBR	C34
PJYK-30-SI	C34
PJYK-40-NBR	C34
PJYK-40-SI	C34
PJYK-50-NBR	C34
PJYK-50-SI	C34
PJYK-60-NBR-G1	C34
PJYK-60-NBR-N1	C34
PJYK-60-SI-G1	C34
PJYK-60-SI-N1	C34
PJYK-6-NBR	C34
PJYK-6-SI	C34
PJYK-80-NBR-G1	C34
PJYK-80-NBR-N1	C34
PJYK-80-SI-G1	C34
PJYK-80-SI-N1	C34
PJYK-8-NBR	C34
PJYK-8-SI	C34
PK032P1D01	B82
PK032P1D05	B82
PK040P1D01	B82
PK040P1D05	B82
PK050P1D01	B82
PK050P1D05	B82
PK063P1D01	B82
PK063P1D05	B82
PK080P1D01	B82
PK080P1D05	B82
PK100P1D01	B82
PK100P1D05	B82
PK125P1D01	B82
PK125P1D05	B82
PK1503MA01	B15
PK1504MA01	B39
PK1504MA05	B39
PK1A20-FH	B250
PK1A20-LB	B250
PK1A25-FH	B250
PK1A25-LB	B250
PK2003MA01	B15
PK2004MA01	B39
PK2004MA05	B39
PK2503MA01	B15
PK2504MA01	B39
PK2504MA05	B39
PK3253MA01	B15
PK3254MA01	B39
PK3254MA05	B39
PK4003MA01	B15
PK4004MA01	B39
PK4004MA05	B39
PK5003MA01	B15
PK5004MA01	B39
PK5004MA05	B39
PK6004MA01	B39
PK6004MA05	B39
PK8004MA01	B39
PK8004MA05	B39
PKG 3M-*M/S90	D179
PKG 3M-*M-PSG 3M/S90	D179
PL01-02-70	D144, D187
PL01-02-80	D144, D187
PL02-01-70	D143, D186
PL02-01-80	D143, D186
PL10-04WSS	E110
PL2424BP	D233
PL2425BP	D233
PL25	D233
PL37	D233
PL50	D233
PMDYY1	D90, D93, D96, D101
PMDYY2	D91, D94, D98, D102
PPRL15	D239
PPS1-1C3-RHM	E35, G13
PPS1-1C3-RWL	E35, G13
PPS1-2C3-RH	D232
PPS1-2C3-RHM	E35, G13
PPS1-2C3-RWL	D232, E35, G13
PR10-04CSS	E106
PR11-04CSS	E106
PR354-02CSS	E106
PR364-02CSS	E106
PRD1000-460360	F3
PRD100-115160	F3
PRD10-115160	F3
PRD1200-460360	F3
PRD125-115160	F3
PRD125-230160	F3
PRD150-115160	F3
PRD150-230160	F3
PRD15-115160	F3
PRD1600-460360	F3
PRD175-230160	F3
PRD2000-460360	F3
PRD200-230160	F3
PRD2400-460360	F3
PRD250-230360	F3
PRD250-460360	F3
PRD25-115160	F3
PRD325-230360	F3
PRD325-460360	F3
PRD35-115160	F3
PRD400-230360	F3
PRD400-460360	F3
PRD500-230360	F3
PRD500-460360	F3
PRD50-115160	F3
PRD700-230360	F3
PRD700-460360	F3
PRD75-115160	F3
PRD800-230360	F3
PRD800-460360	F3
PRKR163Y	E65
PRKR164Y	E65
PRKR163Y	E69
PRKR164Y	E69
PS09921	E114, E117, E118, E119
PS12125-1	E117
PS12125-4	E117
PS12127-1	E118
PS12163	E116
PS12165	E113, E117, E118
PS1556	D14, D29

Parker Hannifin Corporation
Pneumatic Division
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Part No.	Section/Page No.
PS16116-13	E116
PS16116-14	E116
PS19513-11	E114
PS19513-12	E114
PS19513-13	E114
PS19549-1	E115
PS19549-1E	E115
PS19549-2	E115
PS19549-3	E115
PS19549-20E	E115
PS19968-NR	E113
PS2028BP	D32, D53, D157, D193, E33
PS2028JCP	D32, D53, D157, D193, E33
PS203279BP	D32, D53, D157, D193, E33
PS203283BP	D32, D53, D157, E33
PS2032J79CP	D32, D157, D193, E29
PS2032J83CP	D32, D157, D193, E29
PS2038P	D225
PS2041P	D225
PS2043P	D225
PS20966-9	E119
PS20967-1	E119
PS2429BP	D14, D32, D53, E33
PS2429JBP	D14, D32, D53, E33
PS243079BP	D14, D32, D53, E33
PS243083BP	D14, D32, D53, E33
PS243087BP	D32, D53
PS2430J79BP	D14, D32, D53, E33
PS2430J83BP	D14, D32, D53, E33
PS2520P	D48
PS2569P	D48
PS2620P	D48
PS2815P	D48
PS2817P	D48
PS2818P	D48
PS2819P	D48
PS2820P	D48
PS2828619P	D157, D193
PS2834P	D48
PS2855P	D193
PS2866P	D48
PS2867P	D48
PS2868P	D48
PS2869P	D48
PS2892P	D14, D29
PS2893C##P	D53
PS2893CP	D53
PS2893D##P	D53
PS2893DP	D53
PS2915P	D48
PS2917P	D48
PS2918P	D48
PS2919P	D48
PS2920P	D48
PS2921P	D48
PS2930166P	D53
PS2930233P	D53
PS2932BP	D10, D53
PS2932BP	D193
PS2932HBP	D10, D53
PS2932JBP	D10, D53, D193, E47
PS2934P	D48
PS294675BP	D10, D53
PS294679BP	D10, D53, D193, E33
PS294683BP	D10, D53, D193, E33
PS294687BP	D10, D53
PS2946J75BP	D10, D53
PS2946J79BP	D10, D53, D193, E33
PS2946J83BP	D10, D53, D193, E33
PS2966P	D48
PS2967P	D48
PS2968P	D48
PS2969P	D48
PS2982*##P	D9, D54
PS2982B49P	D193
PS2982B53P	D193
PS2982C49P	D193
PS2982C53P	D193
PS2991P	D48
PS2994P	D48
PS2998P	D53
PS3202*##P	D9
PS3441*##P	D9
PS3541*##P	D9, D54
PS4001CP	D158
PS4002CP	D158
PS4003CP	D158
PS4004CP	D158
PS4005DP	D158
PS4006DP	D158
PS4007P	D158
PS401110CCP	D139
PS4011150CP	D147, D188
PS4011158FDP	D133
PS401115ADP	D133
PS401115CDP	D133
PS4011160CP	D147, D188
PS4011168FDP	D133
PS401116ADP	D133
PS401116CDP	D133
PS4011550CP	D188
PS4011560CP	D188
PS4011650CP	D147, D188
PS4011658FCP	D133
PS401165ACP	D133
PS401165CCP	D133
PS401165JCP	D133
PS401165MCP	D133
PS4011660CP	D147, D188
PS4011668FCP	D133
PS401166ACP	D133
PS401166CCP	D133
PS401166JCP	D133
PS401166MCP	D133
PS4012P	D158
PS4013P	D134, D148, D188
PS401500CP	D188
PS401501CP	D188
PS401P	E63, E71
PS4020L20CP	D134
PS4020L21CP	D134
PS4020L30CP	D134
PS4020L31CP	D134
PS4020L40CP	D134
PS4020L41CP	D134
PS4020L60CP	D134
PS4020L61CP	D134
PS4020M20CP	D134
PS4020M21CP	D134
PS4020M40CP	D134
PS4020M41CP	D134
PS4020T10CP	D134
PS4020T11CP	D134
PS4020T20CP	D134
PS4020T21CP	D134
PS403000CP	D134, D148, D188
PS403001CP	D134, D148, D188
PS4031010CP	D134, D147, D188
PS4031011CP	D134, D147, D188
PS4032CP	D134, D148, D188
PS4033CP	D134, D137, D140, D148, D151, D154, D188, D190, D191
PS4034CP	D134, D148, D188
PS4035CP	D134
PS4037166CP	D148, D188
PS4037266CP	D148, D188
PS4038166CP	D134
PS4038266CP	D134
PS403P	E63, E71
PS404123P	D157
PS404142P	D157
PS404145P	D157
PS404157P	D157
PS4041B9P	D157
PS4042CP	D148, D188
PS404P	E63, E64, E71
PS4052CP	D158, D193
PS4053CP	D158, D193
PS4087DP	D158
PS408BP	E63, E64, E71
PS40D3DP	D158
PS4101CP	D158
PS4102CP	D158
PS4103CP	D158
PS4104CP	D158
PS4105DP	D158
PS4106DP	D158
PS4111170CP	D151, D190
PS411117ACP	D136
PS411117CCP	D136
PS4111180CP	D151, D190
PS411118ACP	D136
PS411118CCP	D136
PS4111670CP	D151, D190
PS411167ACP	D136
PS411167CCP	D136
PS411167JCP	D136
PS411167MCP	D136
PS4111680CP	D151, D190
PS411168ACP	D136
PS411168CCP	D136
PS411168JCP	D136
PS411168MCP	D136
PS4112P	D158
PS4113P	D137, D151, D190
PS411500CP	D190
PS411501CP	D190
PS4120L20CP	D137
PS4120L21CP	D137
PS4120L30CP	D137
PS4120L31CP	D137
PS4120L40CP	D137
PS4120L41CP	D137
PS4120L60CP	D137
PS4120L61CP	D137
PS4120M20CP	D137
PS4120M21CP	D137
PS4120M40CP	D137
PS4120M41CP	D137
PS4120T10CP	D137
PS4120T11CP	D137
PS4120T20CP	D137
PS4120T21CP	D137
PS4131010CP	D137, D151, D190
PS4131011CP	D137, D151, D190
PS4132CP	D137, D151, D190
PS4134CP	D137, D151, D190, D191
PS4135CP	D137
PS4137166CP	D151, D190
PS4137266CP	D151, D190
PS4138166CP	D137
PS4138266CP	D137
PS4142CP	D151, D190
PS417BP	E63, E64, E66, E71, E73, E116
PS4187DP	D158
PS419	E72, E73
PS41D3DP	D158
PS41D5DP	D158
PS4201CP	D158
PS4202CP	D158
PS4203CP	D158
PS4204CP	D158
PS4205DP	D158
PS4206DP	D158
PS420P	E72
PS421110ACP	D139
PS4211170CP	D191
PS4211180CP	D154, D191
PS4211190CP	D154
PS421119ACP	D139
PS421119CCP	D139
PS4211600CP	D154, D191
PS421160ACP	D139
PS421160CCP	D139
PS421160JCP	D139
PS421160MCP	D139
PS4211690CP	D154, D191
PS421169ACP	D139
PS421169CCP	D139
PS421169JCP	D139
PS421169MCP	D139
PS4212P	D158
PS4213P	D140, D154, D191
PS421500CP	D191
PS421501CP	D191
PS421P	E72
PS4220L20CP	D140
PS4220L21CP	D140
PS4220L30CP	D140
PS4220L31CP	D140
PS4220L40CP	D140
PS4220L41CP	D140
PS4220L60CP	D140
PS4220L61CP	D140
PS4220M20CP	D140
PS4220M21CP	D140
PS4220M40CP	D140
PS4220M41CP	D140
PS4220T10CP	D140
PS4220T11CP	D140
PS4220T20CP	D140
PS4220T21CP	D140
PS4231010CP	D140, D154, D191
PS4231011CP	D140, D154, D191
PS4232CP	D140, D154, D191
PS4234CP	D140, D154
PS4235CP	D140
PS4237166CP	D154, D191
PS4237266CP	D154, D191
PS4238166CP	D140
PS4238266CP	D140
PS4242CP	D154, D191
PS424BP	E66
PS426P	E66, E71
PS4287DP	D158
PS428P	E66, E71
PS42D3DP	D158
PS42D5DP	D158
PS446P	E64
PS447BP	E63, E64, E71, E72
PS451BP	E63, E64, E71
PS452P	E63, E71
PS454B	E66
PS456P	E64
PS505CP	E57, E59
PS506P	E45, E47, E53, E55, E74, E75, E79
PS511P	E45, E47, E53, E55, E79
PS512P	E45, E47, E53,E55, E57, E59, E74, E75, E79, E80
PS513P	E45, E47, E53, E55, E79
PS5501P	D158
PS5502P	D158
PS5503P	D158
PS5504P	D158
PS5505P	D158
PS551113CP	D128
PS551114CP	D128
PS5511530P	D144
PS551153CP	D128
PS551153JP	D128
PS551153MP	D128
PS551153NP	D128
PS551153PP	D128
PS5511540P	D144
PS551154CP	D128
PS551154JP	D128
PS551154MP	D128
PS551154NP	D128
PS551154PP	D128
PS551163CP	D128
PS551163JP	D128
PS551163MP	D128
PS551163NP	D128
PS551163PP	D128
PS551164CP	D128
PS551164JP	D128
PS551164MP	D128
PS551164NP	D128
PS551164PP	D128
PS5512P	D158
PS551500P	D187
PS551501P	D187
PS551600P	D129
PS551601P	D129
PS551700P	D129
PS551701P	D129
PS552600P	D187
PS552601P	D187
PS552700P	D187
PS552701P	D187
PS5534P	D129, D187
PS5535P	D129
PS5537155P	D144, D187
PS5537166P	D144, D187
PS5537255P	D144, D187
PS5537266P	D144, D187
PS5538155P	D129
PS5538166P	D129
PS5538255P	D129
PS5538266P	D129
PS5542P	D144, D187
PS5587P	D158
PS5601P	D158
PS5602P	D158
PS5603P	D158
PS5604P	D158
PS5605P	D158
PS5611510P	D143
PS561151JP	D126
PS561151MP	D126
PS561151NP	D126
PS561151PP	D126

Parker Hannifin Corporation
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Part No.	Section/Page No.
PS5611520P	D143
PS561152JP	D126
PS561152MP	D126
PS561152NP	D126
PS561152PP	D126
PS561161JP	D126
PS561161MP	D126
PS561161NP	D126
PS561161PP	D126
PS561162JP	D126
PS561162MP	D126
PS561162NP	D126
PS561162PP	D126
PS5612P	D158
PS561600P	D127
PS561601P	D127
PS561700P	D127
PS561701P	D127
PS561AP	D127, D129, D143, D144
PS561BP	D127, D129, D143, D144
PS561CP	D127, D129, D143, D144
PS561DP	D127, D129, D143, D144
PS5620L20P	D130
PS5620L21P	D130
PS5620L30P	D130
PS5620L31P	D130
PS5620L40P	D130
PS5620L41P	D130
PS5620L50P	D130
PS5620L51P	D130
PS5620L60P	D130
PS5620L61P	D130
PS5620M20P	D130
PS5620M21P	D130
PS5620M40P	D130
PS5620M41P	D130
PS5620T10P	D130
PS5620T11P	D130
PS5620T20P	D130
PS5620T21P	D130
PS5624L20P	D130
PS5624L21P	D130
PS5624L30P	D130
PS5624L31P	D130
PS5624L40P	D130
PS5624L41P	D130
PS5624L50P	D130
PS5624L51P	D130
PS5624L60P	D130
PS5624L61P	D130
PS5624M20P	D130
PS5624M21P	D130
PS5624M40P	D130
PS5624M41P	D130
PS5624T10P	D130
PS5624T11P	D130
PS5624T20P	D130
PS5624T21P	D130
PS562600P	D143, D144, D186
PS562601P	D143, D144, D186
PS562700P	D143, D144, D186
PS562701P	D143, D144, D186
PS5631010P	D130, D143, D144
PS5631011P	D130, D143, D144
PS5634P	D127, D143, D144, D186
PS5635P	D127
PS5637155P	D143, D186
PS5637166P	D143, D186
PS5637255P	D143, D186
PS5637266P	D143, D186
PS5638155P	D127
PS5638166P	D127
PS5638255P	D127
PS5638266P	D127
PS5642P	D143, D186
PS5651160P	D127, D129, D143, D144, D186, D187
PS567904	D117
PS567906	D117
PS567925	D117
PS568204	D117
PS568206	D117
PS568215	D117
PS568225	D117
PS568308	D117
PS568310	D117
PS568325	D117
PS568338	D117
PS5687P	D158
PS568800	D117
PS5706	D119
PS577601	C84
PS577602	C84
PS577603	C84
PS577701	C84
PS577702	C84
PS577703	C84
PS577801	C84
PS577802	C84
PS577803	C84
PS577804	C84
PS602P	E95
PS603P	E95
PS604P	E95
PS605P	E95
PS607P	E102
PS610P	E102
PS612P	E102
PS613P	E102
PS626P	E95
PS627	E95
PS701P	E45, E47, E53
PS702P	E45, E47, E53
PS705P	E45, E47, E53, E57, E59
PS707P	E49, E51, E53
PS708RP	E49
PS710P	E53
PS711P	E53
PS713P	E51, E53
PS715P	E49, E53, E55
PS716P	E57, E59
PS717P	E57, E59
PS718P	E59
PS719P	E57, E59
PS720P	E57, E59
PS722P	E45, E47, E53
PS723P	E45, E47, E53
PS726P	E45, E47, E53
PS728P	E57, E59
PS729P	E57, E59
PS731P	E45, E53
PS732P	E45, E47, E53
PS734P	E45, E47, E53
PS735P	E45, E47, E53
PS737P	E49, E53, E55
PS738P	E59
PS739P	E57
PS740N	E57, E59, E80, E110
PS740P	E57, E59, E80
PS741P	E59
PS742P	E57
PS743P	E45, E47, E57, E59
PS745P	E51
PS746P	E57, E59
PS747P	E51
PS748P	E57
PS749P	E51
PS750P	E61
PS751P	E61
PS752P	E61
PS754P	E61
PS755P	E61
PS756P	E61
PS757P	E61
PS761P	E61
PS762P	E61
PS764	E47
PS765P	E61
PS766P	E61
PS767P	E61
PS781P	E45, E47, E74, E75
PS794P	E53
PS799P	E61
PS801P	E45, E55
PS802P	E45, E55
PS805P	E45, E47, E55, E57, E59
PS807P	E49, E51, E55
PS808RP	E49
PS810P	E55
PS811P	E55
PS813P	E51, E55
PS817P	E57, E59
PS819P	E57, E59
PS820P	E57, E59
PS822P	E45, E47, E55
PS823P	E45, E47, E55
PS824P	E47
PS826P	E45, E47, E55
PS828P	E57, E59
PS829P	E57, E59
PS830P	E47
PS831P	E45, E55
PS832P	E45, E47, E55
PS834P	E45, E47, E55
PS835P	E45, E47, E55
PS843P	E45, E47, E57, E59
PS846P	E57, E59
PS847P	E51
PS849P	E51
PS850P	E61
PS851P	E61
PS852P	E61
PS853P	E61
PS854P	E61
PS856P	E61
PS857P	E61
PS860P	E61
PS861P	E61
PS862P	E61
PS863P	E61
PS864P	E61
PS865P	E61
PS866P	E61
PS867P	E61
PS894P	E55
PS914P	E45, E47
PSBJ708-2G	G10
PSBJ708-4G	G10
PSBJ731-0	G9
PSBJ731-2	G9
PSBJ731-2G	G9
PSBJ731-4	G9
PSBJ731-4G	G9
PSBJ731-6	G9
PSBJ731-6G	G9
PSBJ731-8	G9
PSBJ731-8G	G9
PSBJ731-M5	G9
PSG 3M-*M/S90	D179
PSG3BXG##NP	D47
PSG3BXN##NP	D47
PSG5BXG##NP	D47
PSG5BXN##NP	D47
PSG6BXG##NP	D47
PSG6BXN##NP	D47
PSJ3B1G##NP	D47
PSJ3B1N##NP	D47
PSK-P5T100	B175
PSK-P5T100-F	B175
PSK-P5T16	B175
PSK-P5T16-F	B175
PSK-P5T20	B175
PSK-P5T20-F	B175
PSK-P5T25	B175
PSK-P5T25-F	B175
PSK-P5T32	B175
PSK-P5T32-F	B175
PSK-P5T40	B175
PSK-P5T40-F	B175
PSK-P5T50	B175
PSK-P5T50-F	B175
PSK-P5T63	B175
PSK-P5T63-F	B175
PSK-P5T80	B175
PSK-P5T80-F	B175
PSM0001	D119
PSM0002	D119
PSM0003	D119
PSM0004	D119
PSM0010	D119
PSM0011	D119
PSM0012	D119
PSM0013	D119
PSM0014	D119
PSM0022	D119
PSM0025	D119
PSM002E	D119
PSM002N	D119
PSM002P	D119
PSM002Q	D119
PSM21JAP	D114, D117
PSM21MAP	D114
PSM22JAP	D114
PSM22MAP	D114
PSM31JAPE7E7E7E7	D117
PSM3BXG##NP	D47
PSM3BXN##NP	D47
PSM5BXG##NP	D47
PSM5BXN##NP	D47
PSM6BXG##NP	D47
PSM6BXN##NP	D47
PSM7BXG##NP	D47
PSM7BXN##NP	D47
PSML21AP	D114
PSML22AP	D114
PSML25AP	D114, D117
PSML26AP	D114
PSML61AP	D114
PSML62AP	D114
PSML65AP	D114
PSML66AP	D114
PSMM41AP	D114
PSMM42AP	D114
PSMM45AP	D114
PSMM46AP	D114
PSMM51AP	D114
PSMM52AP	D114
PSMM55AP	D114
PSMM56AP	D114
PSMM61AP	D114
PSMM62AP	D114
PSMM65AP	D114
PSMM66AP	D114
PSMM71AP	D114
PSMM72AP	D114
PSMM75AP	D114
PSMM76AP	D114
PSMRAX6AP	D117
PSMT11AP	D114
PSMT12AP	D114
PSMT15AP	D114
PSMT16AP	D114
PSMT21AP	D114
PSMT22AP	D114
PSMT25AP	D114
PSMT26AP	D114
PSMXN##NP	D6
PSPE731-2G	G10
PSPE731-4G	G10
PSPE731-6G	G10
PSPE731-8G	G10
PSPE731-M5	G10
PSPJ731-2	G10
PSPJ731-4	G10
PSPJ731-6	G10
PSSCCNA	D168
PSSCDM12A	D168
PSSCDM18PA	D168
PSSCENA	D168
PSSCPBA	D168
PSSEXT1	D170
PSSEXT3	D170
PSSN16M12	D168
PSSN8M12A	D168
PSSN8M23A	D168
PSSN8M8A	D168
PSSNACM12A	D169
PSSNAVM12A	D169
PSSP8M12A	D168
PSSP8M23A	D168
PSSP8M8A	D168
PSSSE24A	D169
PSST16D25A	D169
PSST16M12A	D169
PSST16M23A	D169
PSST8M12A	D169
PSST8M23A	D169
PSST8M8A	D169
PSSTACM12A	D169
PSSTAVM12A	D169
PSSTERM	D169
PSSTR4M12A	D169
PSSVEXT1	D170
PSXM1010P	D6
PSXM2186P	D6
PSXM40900P	D6
PSXM530CP	D6
PSXM8100P	D6
PSXM8288P	D6
PSXM8310P	D6
PSY1035001	E91
PSY1035002	E91
PTC-001	G19
PTC-001RB	G19
PTR	B272
PTW25	F7
PTW40	F7
PTW55	F7
PTW75	F7
PTW100	F7
PTW130	F7
PTW200	F7
PTW250	F7
PTW300	F7
PTW400	F7
PTW500	F7
PTW600	F7
PTW800	F7
PUG-60-NBR	C51

Parker Hannifin Corporation
Pneumatic Division
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Part No.	Section/Page No.
PUG-80-NBR	C51
PUG-100-NBR	C51
PUGB-60-NBR	C51
PUGB-80-NBR	C51
PUGB-100-NBR	C51
PUTK-60-NBR-N1	C51
PUTK-80-NBR-N1	C51
PUTK-100-NBR-N1	C51
PUTYS6030NBRN1	C51
PUTYS6050NBRN1	C51
PUTYS8030NBRN1	C51
PUTYS8050NBRN1	C51
PUTYS10030NBRN1	C51
PUTYS10050NBRN1	C51
PV	B263
PV607-2	G3
PV607-4	G3
PV608-2	G3
PV608-4	G3
PV609-2	G3
PV609-4	G3
PWBA1412	D243
PWBA1412/3412	D248
PWBA1468	D243
PWBA1468/3468	D248
PWBA1469	D243
PWBA1469/3469	D248
PWBA1483	D243, D248
PWBA1489	D243, D248
PWBA1493	D243
PWBA1493/3493	D248
PWBA1822	D243
PWBA1822/3822	D248
PWBA1833	D243
PWBA1833/3833	D248
PWBA1898	D243
PWBA1898/3888	D248
PWBA1899	D243
PWBA1899/3899	D248
PWBA3412	D243
PWBA3468	D243
PWBA3469	D243
PWBA3493	D243
PWBA3822	D243
PWBA3833	D243
PWBA3888	D243
PWBA3899	D243
PWBA38227	D243, D248
PWBA38337	D243, D248
PWBA38887	D243, D248
PWBA38997	D243, D248
PWSB1**7	D244
PWSB1227	D244, D248
PWSB1337	D244, D248
PWSB1557	D244, D248
PWSB1887	D244, D248
PWSB1997	D244, D248
PWSM1012	D244, D248
PWSP111	D244, D248
PXBB3111B	D238
PXBB3111BA2	D236
PXBB3111BA3	D236
PXBB3111BA4	D236
PXBB3111BC2	D236
PXBB3111BD2	D236
PXBB3111BT4	D236
PXBB3121B	D238
PXBB3121BT4	D236
PXBB3211BD2	D236
PXBB3211BD3	D236
PXBB3211BJ5	D236
PXBB3251BA2	D236
PXBB3251BD2	D236
PXBB3251BD3	D236
PXBB3911	D238
PXBB3912	D238
PXBB3921	D238
PXBB3922	D238
PXBB4131B	D238
PXBB4131BA2	D236
PXBB4131BA3	D236
PXBB4131BA4	D236
PXBB4131BC2	D236
PXBB4131BD2	D236
PXBB4131BT4	D236
PXBB4231BA2	D236
PXBB4231BD2	D236
PXBB4231BD3	D236
PXBB4231BJ5	D236
PXBB4931	D238
PXBB4932	D238
PXCJ117	D242
PXCJ11701	D242
PXCJ11705	D242
PXCJ127	D242
PXCJ12701	D242
PXCJ12705	D242
PXCK211	D241
PXCK21100	D241
PXCK2110031	D241
PXCK2110041	D241
PXCK21101	D241
PXCK21102	D241
PXCK21106	D241
PXCK21121	D241
PXCK221	D241
PXCK22100	D241
PXCK2210031	D241
PXCK2210041	D241
PXCK22101	D241
PXCK22102	D241
PXCK22106	D241
PXCK22121	D241
PXCM111	D240
PXCM115	D240
PXCM121	D240
PXCM125	D240
PXCM521	D240
PXCM601A102	D240
PXCM601A103	D240
PXCM601A110	D240
PXCZ11	D240
PXCZ12	D240
PXPA11	D239
PXPC111	D239
PXVF111	D239
PXVF1211	D239
PXVF1213	D239
PXVF1214	D239
PXVF1215	D239
PXVF1216	D239
PXVF131	D239
PXVF141	D239
PXVF151	D239
PXVF161	D239
R05X51-A	E67, E69, E71
R05X51-P	E67, E69, E71, E106, E108
R05X51-SS	E106, E108
R10X51-P	E106, E108
R10X51-SS	E106, E108
R10Y57-SS	E106, E108
R119-02C/M2	E92
R119-02CG/M2	E92
R119-02J/M2	E96
R119-03C/M2	E92
R119-03CG/M2	E92
R119-03J/M2	E96
R119-04C/M2	E92
R119-04CG/M2	E92
R119-04J/M2	E96
R119-06C/M2	E94
R119-06CG/M2	E94
R119-06J/M2	E98
R119-08C/M2	E94
R119-08CG/M2	E94
R119-08J/M2	E98
R119-10C/M2	E94
R119-10CG/M2	E94
R119-10J/M2	E98
R119-12C/M2	E94
R119-12CG/M2	E94
R119-12J/M2	E98
R119-16J	E98
R119-20J	E98
R24-01AK	E68
R24-01BK	E68
R24-01CK	E68
R24-02AK	E68
R24-02BK	E68
R24-02CK	E68
R25-01A	E68
R25-01B	E68
R25-01C	E68
R25-02A	E68
R25-02B	E68
R25-02C	E68
R342-0MA	E67
R342-0MB	E67
R342-0MC	E67
R344-01A	E67
R344-01AG	E67
R344-01B	E67
R344-01BG	E67
R344-01C	E67
R344-01CG	E67
R344-02A	E67
R344-02AG	E67
R344-02B	E67
R344-02BG	E67
R344-02C	E67
R344-02CG	E67
R45-02A	E68
R45-02B	E68
R45-02C	E68
R45-03A	E68
R45-03B	E68
R45-03C	E68
R46-02AK	E68
R46-02BK	E68
R46-02CK	E68
R46-03AK	E68
R46-03BK	E68
R46-03CK	E68
R64PB10-1/4	G34
R64PB10-3/8	G34
R64PB12-1/4	G34
R64PB12-3/8	G34
R64PB14-1/2	G34
R64PB14-3/8	G34
R64PB4-1/4	G34
R64PB4-1/8	G34
R64PB6-1/4	G34
R64PB6-1/8	G34
R64PB8-1/4	G34
R64PB8-1/8	G34
R64PB8-3/8	G34
R68PB4M3	G35
R68PB4M5	G35
R68PB6M5	G35
RG04MA0061	B39
RG04MA0065	B39
RG04MA0101	B39
RG04MA0105	B39
RG04MA0131	B39
RG04MA0135	B39
RG04MA0171	B39
RG04MA0175	B39
RG0P1D0121	B82
RG0P1D0125	B82
RG0P1D0161	B82
RG0P1D0165	B82
RG0P1D0201	B82
RG0P1D0205	B82
RG0P1D0251	B82
RG0P1D0255	B82
RG0P1D0321	B82
RG0P1D0325	B82
RK0P1D0121	B82
RK0P1D0125	B82
RK0P1D0161	B82
RK0P1D0165	B82
RK0P1D0201	B82
RK0P1D0205	B82
RK0P1D0251	B82
RK0P1D0255	B82
RK0P1D0321	B82
RK0P1D0325	B82
RK118A	E93
RK118A250	E93
RK118B	E94
RK118X20A	E97
RK118X20B	E99
RK118X20D	E99
RK118X20Y	E97
RK118Y	E93
RK119A	E93
RK119A250	E93
RK119B	E94
RK119D	E94
RK119G	E99
RK119X20A	E97
RK119X20B	E99
RK119X20D	E99
RK119X20Y	E97
RK119Y	E93
RK504SY	E71
RK504SY-SS	E104, E108
RK548YSS	E108
RK549YSS	E108
RK602B	E84
RK602D	E84
RK602MD	E84
RK606SY	E101
RK606Y	E101
RK701P	E88
RKB605WB	E84, E101
RKB606X30B	E101
RKC 4.4T-	D179
RKC 4.4T-*-RSC 4.4T	D179
RKC 4.5-2/S1587	E29
RKC 4.5T-*-RSC 4.5T/S1587	D179
RKC 4.5T-*/S1587	D179
RKC119Y	E93
RKL10SS	E110
RKM 46-xM/S1587	D179
RKM 56-xM/S1587	D179
RKR10KYSS	E106, E108
RKR10YSS	E106, E108
RKR24KY	E69
RKR24Y	E69
RKR25KY	E69
RKR25Y	E69
RKR364KYSS	E106
RKR364YSS	E106
RKR45KY	E69
RKR45Y	E69
RRP-16-005-000	E71
RRP-16-024	E111
RRP-95-024	E111
RRP-95-151	E111
RRP-95-152	E111
RRP-95-153	E111
RRP-95-192	E111
RRP-95-585	E111
RRP-95-765	E111
RRP-95-766	E111
RRP-95-905	E111
RRP-95-906	E111
RRP-95-914	E111
RRP-96-934	E111
RRP-96-935	E111
RSC 4.4T-	D179
RSC 4.5-2/S1587	E29
RSC 4.5T-*/S1587	D179
RSC RKC 5711-xM	D179
RSC RKM 5711-xM	D179
RSM 57-TR2	D179
RSM RKC 5711-xM	D179
RSM RKM 46-x/S1587	D179
RSM RKM 56-x/S1587	D179
RSM RKM 57 WSM 40 PST	D179
RSM RKM 5711-xM	D179
RSM-2RKM 40	D179
RSM-2RKM 50	D179
RSSD RJ45S 443-xM	D179
RSSD RKSD 443-xM	D179
RSSW RKSW 455-xM	D179
RV01AN***	G12
S64PB10-1/4	G35
S64PB10-3/8	G35
S64PB12-1/4	G35
S64PB12-3/8	G35
S64PB14-1/2	G35
S64PB14-3/8	G35
S64PB4-1/8	G35
S64PB4-1/4	G35
S64PB6-1/8	G35
S64PB6-1/4	G35
S64PB8-1/8	G35
S64PB8-1/4	G35
S64PB8-3/8	G35
S68PB4M3	G35
S68PB4M5	G35
S68PB6M5	G35
SA10MDSS	E104, E108
SA15Y57	E93
SA161X57	E67, E69, E71
SA200AW57	E84, E88, E101
SA200CW57	E84, E88, E101
SA600Y7-1	E84, E88
SA600Y7-1SS	E104, E108, E110
SA602MD	E84
SA702MD	E88
SAC18A3/BK	E93
SAP05481	E104, E108, E110
SC 190-1	B365
SC 190-2	B365
SC 190-3	B365
SC 190-4	B365
SC 300-1	B365
SC 300-2	B365
SC 300-3	B365
SC 300-4	B365
SC 300-5	B366
SC 300-6	B366
SC 300-7	B366
SC 300-8	B366
SC 300-9	B366
SC 650-1	B365
SC 650-2	B365
SC 650-3	B365
SC 650-4	B365

Parker Hannifin Corporation
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Part No.	Section/Page No.
SC 650-5	B366
SC 650-6	B366
SC 650-7	B366
SC 650-8	B366
SC 650-9	B366
SC 925-1	B365
SC 925-2	B365
SC 925-3	B365
SC 925-4	B365
SCD253W	D96, D98, D117
SCD259D	D96, D98, D117
SCD259WE	D96, D98, D117
SCP01-0250P-25-07	C77
SCP01-0250P-27-07	C77
SCP01-1000P-25-07	C77
SCP01-1000P-27-07	C77
SCP01-3000P-25-07	C77
SCP01-3000P-27-07	C77
SCP01-5000P-25-07	C77
SCP01-5000P-27-07	C77
SCP01-9000P-25-07	C77
SCPSD-016-04-17	C78
SCPSD-016-14-15	C78
SCPSD-0250P-0727	C78
SCPSD-0250P-1727	C78
SCPSD-1000P-1725	C78
SCPSD-1000P-1727	C78
SCPSD-250-04-17	C78
SCPSD-250-14-15	C78
SCPSD-3000P-0727	C78
SCPSD-3000P-1725	C78
SCPSD-3000P-1727	C78
SCPSD-5000P-1725	C78
SCPSD-5000P-1727	C78
SCPSD-600-04-17	C78
SCPSD-600-14-15	C78
SCPSD-9000P-0727	C78
SCPSD-9000P-1725	C78
SFBW15	C56
SFCHF90NN	C56
SIS-001	C56
SK032P1D01	B82
SK040P1D01	B82
SK050P1D01	B82
SK063P1D01	B82
SK080P1D01	B82
SK100P1D01	B82
SK125P1D01	B82
SK15003MA1	B15
SK15104MA1	B39
SK15104MA5	B39
SK15304MA1	B39
SK15304MA5	B39
SK20003MA1	B15
SK20104MA1	B39
SK20104MA5	B39
SK20304MA1	B39
SK20304MA5	B39
SK25003MA1	B15
SK25104MA1	B39
SK25104MA5	B39
SK25304MA1	B39
SK25304MA5	B39
SK32003MA1	B15
SK32104MA1	B39
SK32104MA5	B39
SK32304MA1	B39
SK32304MA5	B39
SK40003MA1	B15
SK40104MA1	B39
SK40104MA5	B39
SK40304MA1	B39
SK40304MA5	B39
SK50003MA1	B15
SK50104MA1	B39
SK50104MA5	B39
SK50304MA1	B39
SK50304MA5	B39
SK60104MA1	B39
SK60104MA5	B39
SK60304MA1	B39
SK60304MA5	B39
SK80104MA1	B39
SK80104MA5	B39
SK80304MA1	B39
SK80304MA5	B39
SKED3000N115	F9
SKS05LP251	B168
SKS05LP255	B168
SKS07LP311	B168
SKS07LP315	B168
SKS12LP501	B168
SKS12LP505	B168
SKS15LP621	B168
SKS15LP625	B168
SKS20LP751	B168
SKS20LP755	B168
SKS25LP751	B168
SKS25LP755	B168
SKS30LP871	B168
SKS30LP875	B168
SKS40LP101	B168
SKS40LP105	B168
SMC-1N	B341, B352
SMC-1NC	B341, B352
SMC-1P	B340, B352
SMC-1PC	B340, B352
SMD-1L	B342, B352
SMD-1LC	B342
SMD-1LD	B352
SMH-1N	B341, B352
SMH-1NC	B352
SMH-1P	B340, B352
SMH-1PC	B340, B352
SMR-1	B342, B352
SMR-1C	B342, B352
SMR-1L	B342, B352
SMR-1LC	B342, B352
SPR-375-1	E69
SPR-375-2-SS	E106, E108
SPR-376	E69
SPR-376-1-SS	E106, E108
SPR-377	E69
SPR-377-1-SS	E106, E108
SPR-388-1-SS	E106, E108
SPR-389-1-SS	E106, E108
SPR-390-1-SS	E106, E108
SPR-46	E69
SPR-47	E69, E76
SPR-48	E69, E76
SR	B83
SRX	B109
SWH-1N	B341, B353
SWH-1NC	B341, B353
SWH-1P	B340, B353
SWH-1PC	B340, B353
SWH-2N	B341, B353
SWH-2NC	B341, B353
SWH-2P	B340, B353
SWH-2PC	B340, B353
SWR-1	B342, B353
SWR-1C	B342, B353
SWR-2	B342, B353
SWR-2C	B342, B353
TEPB4-6	G35
TN-PF-15-M5	C31
TN-PF-20-M5	C31
TRPB10-4	G35
TRPB10-6	G35
TRPB10-8	G35
TRPB12-10	G35
TRPB12-6	G35
TRPB12-8	G35
TRPB14-10	G35
TRPB14-12	G35
TRPB14-8	G35
TRPB6-4	G35
TRPB8-4	G35
TRPB8-6	G35
TYS-120-20	C9, C22
TYS-120-70	C9, C22
TYS-20B-15	C9, C22, C35
TYS-20B-30	C9, C22, C35
TYS-50-15	C9, C22, C35
TYS-50-30	C9, C22, C35
TYS-5A-10	C9, C22
TYS-5A-15	C9, C22
TYS-60-30	C9, C22, C35
TYS-60-50	C9, C22, C35
U-21-xxx-0250	G18
U-21-xxx-0500	G18
U-42-xxx-0250	G18
U-42-xxx-0500	G18
U-64-xxx-0100	G18
U-64-xxx-0250	G18
U-86-xxx-0100	G18
U-86-xxx-0250	G18
UTK-60-N1	C51
UTYS-60-30	C51
UTYS-60-50	C51
VF-2E	C83
VF-2G	C83
VF-3E	C83
VF-3G	C83
VF-3K	C83
VF-5E	C83
VF-5G	C83
VF-6E	C83
VF-6G	C83
VFL-44	C83
VFL-44K	C83
VFL-66	C83
VFL-66K	C83
VFL-88	C83
VFL-88E	C83
VFL-88K	C83
VFL-E	C83
VFP0CFC01	C84
VFP0CFC03	C84
VFP0CFC11	C84
VFP0CFC13	C84
VFP1CFC01	C84
VFP1CFC03	C84
VFP1CFC11	C84
VFP1CFC13	C84
VFP2CFC01	C56, C84
VFP2CFC03	C56, C84
VFP2CFC11	C84
VFP2CFC13	C84
VFP3CFC01	C56, C84
VFP3CFC03	C56, C84
VFP3CFC11	C84
VFP3CFC13	C84
VFP4CFC01	C84
VFP4CFC03	C84
VFP4CFC11	C84
VFP4CFC13	C84
VFP5CFC01	C84
VFP5CFC03	C84
VFP5CFC11	C84
VFP5CFC13	C84
VFP6CFC01	C84
VFP6CFC03	C84
VFP6CFC11	C84
VFP6CFC13	C84
VL25	D233
VL37	D233
VL50	D233
W169PLP-2-1	G30
W169PLP-2-2	G30
W169PLP-2-4	G30
W169PLP-3-2	G30
W169PLP-4-1	G30
W169PLP-4-2	G30
W169PLP-4-4	G30
W169PLP-4-6	G30
W169PLP-5/32-1	G30
W169PLP-5/32-2	G30
W169PLP-5/32-4	G30
W169PLP-5-2	G30
W169PLP-5-4	G30
W169PLP-6-2	G30
W169PLP-6-4	G30
W169PLP-6-6	G30
W169PLP-6-8	G30
W169PLP-8-4	G30
W169PLP-8-6	G30
W169PLP-8-8	G30
W169PLPNS-2-2	G30
W169PLPNS-4-2	G30
W169PLPNS-4-4	G30
W169PLPNS5/32-2	G30
W169PLPNS5/32-4	G30
W169PLPNS-5-2	G30
W169PLPNS-5-4	G30
W169PLPNS-6-4	G30
W169PLPNS-6-6	G30
W169PLPNS-6-8	G30
W169PLPNS-8-6	G30
W169PLPNS-8-8	G30
W169PW-4-2	G30
W169PW-4-4	G30
W169PW-4-6	G30
W169PW-5-2	G30
W169PW-5-4	G30
W169PW-6-2	G30
W169PW-6-4	G30
W169PW-6-6	G30
W169PW-6-8	G30
W169PW-8-4	G30
W169PW-8-6	G30
W169PW-8-8	G30
W171PLP-2-2	G30
W171PLP-4-2	G30
W171PLP-4-4	G30
W171PLP-4-6	G30
W171PLP-5/32-2	G30
W171PLP-5-2	G30
W171PLP-5-4	G30
W171PLP-6-4	G30
W171PLP-6-6	G30
W171PLP-8-6	G30
W171PLP-8-8	G30
W171PW-4-2	G30
W171PW-4-4	G30
W171PW-4-6	G30
W171PW-5-2	G30
W171PW-5-4	G30
W171PW-6-4	G30
W171PW-6-6	G30
W171PW-8-6	G30
W171PW-8-8	G30
W172PLP-2-2	G31
W172PLP-3-2	G31
W172PLP-4-2	G31
W172PLP-4-4	G31
W172PLP-4-6	G31
W172PLP-5/32-2	G31
W172PLP-5/32-4	G31
W172PLP-5-2	G31
W172PLP-5-4	G31
W172PLP-6-2	G31
W172PLP-6-4	G31
W172PLP-6-6	G31
W172PLP-8-4	G31
W172PLP-8-6	G31
W172PLP-8-8	G31
W172PW-4-2	G31
W172PW-4-4	G31
W172PW-4-6	G31
W172PW-5-2	G31
W172PW-5-4	G31
W172PW-6-4	G31
W172PW-6-6	G31
W172PW-8-4	G31
W172PW-8-6	G31
W172PW-8-8	G31
W368PLP-4-2	G21
W368PLP-4-4	G21
W368PLP-5/32-2	G21
W368PLP-5/32-4	G21
W368PLP-6-4	G21
W368PLP-6-6	G21
W369PLP-10M-4	G24
W369PLP-10M-6	G24
W369PLP-10M-8	G24
W369PLP-12M-6	G24
W369PLP-12M-8	G24
W369PLP-2-1	G20
W369PLP-2-2	G20
W369PLP-2-4	G20
W369PLP-3-2	G20
W369PLP-4-2	G20
W369PLP-4-4	G20
W369PLP-4-6	G20
W369PLP-4M-2	G24
W369PLP-4M-4	G24
W369PLP-5/32-2	G20
W369PLP-5/32-4	G20
W369PLP-5-2	G20
W369PLP-5-4	G20
W369PLP-5-6	G20
W369PLP-6-2	G20
W369PLP-6-4	G20
W369PLP-6-6	G20
W369PLP-6-8	G20
W369PLP-6M-2	G24
W369PLP-6M-4	G24
W369PLP-8-4	G20
W369PLP-8-6	G20
W369PLP-8-8	G20
W369PLP-8M-2	G24
W369PLP-8M-4	G24
W369PLP-8M-6	G24
W369PLPX-2-2	G20
W369PLPX-2-4	G20
W369PLPX-4-2	G20
W369PLPX-4-4	G20
W369PLPX-4-6	G20
W369PLPX-5/32-2	G20
W369PLPX-5/32-4	G20
W369PLPX-5-2	G20
W369PLPX-5-4	G20
W369PLPX-6-2	G20
W369PLPX-6-4	G20
W369PLPX-6-6	G20
W371PLP-2-1	G21
W371PLP-2-2	G21
W371PLP-3-2	G21
W371PLP-4-2	G21
W371PLP-4-4	G21
W371PLP-4-6	G21
W371PLP-5/32-2	G21
W371PLP-5/32-4	G21
W371PLP-5-2	G21
W371PLP-5-4	G21
W371PLP-5-6	G21

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Part No.	Section/Page No.
W371PLP-6-2	G21
W371PLP-6-4	G21
W371PLP-6-6	G21
W371PLP-6-8	G21
W371PLP-8-4	G21
W371PLP-8-6	G21
W371PLP-8-8	G21
W372PLP-2-1	G20, G24
W372PLP-2-2	G20, G24
W372PLP-2-4	G20, G24
W372PLP-3-2	G20, G24
W372PLP-4-2	G20, G24
W372PLP-4-4	G20, G24
W372PLP-4-6	G20, G24
W372PLP-5/32-2	G20, G24
W372PLP-5/32-4	G20, G24
W372PLP-5-2	G20, G24
W372PLP-5-4	G20, G24
W372PLP-5-6	G20, G24
W372PLP-6-2	G20, G24
W372PLP-6-4	G20, G24
W372PLP-6-6	G20, G24
W372PLP-6-8	G20, G24
W372PLP-8-4	G20, G24
W372PLP-8-6	G20, G24
W372PLP-8-8	G20, G24
W379PLP-2-2	G20
W379PLP-4-2	G20
W379PLP-4-4	G20
W379PLP-4-M7	G20
W379PLP-6-4	G20
W379PLP-6-6	G20
W68PLCK-4-2	G8
W68PLCK-4-4	G8
W68PLCK-5/32-2	G8
W68PLCK-6-4	G8
W68PLCK-6-6	G8
W68PLCKI-4-2	G8
W68PLCKI-4-4	G8
W68PLCKI-5/32-2	G8
W68PLCKI-6-4	G8
W68PLCKI-6-6	G8
W68PLP-2-1	G29
W68PLP-2-2	G29
W68PLP-2-4	G29
W68PLP-3-2	G29
W68PLP-3-4	G29
W68PLP-4-1	G29
W68PLP-4-2	G29
W68PLP-4-4	G29
W68PLP-4-6	G29
W68PLP-5/32-1	G29
W68PLP-5/32-2	G29, G33
W68PLP-5/32-4	G29, G33
W68PLP-5-2	G29
W68PLP-5-4	G29
W68PLP-5-6	G29
W68PLP-6-2	G29
W68PLP-6-4	G29
W68PLP-6-6	G29
W68PLP-6-8	G29
W68PLP-8-4	G29
W68PLP-8-6	G29
W68PLP-8-8	G29
W68PLPR-4-1	G29
W68PLPR-4-2	G29
W68PLPR-4-4	G29
W68PLPR-5/32-1	G29
W68PLPR-5/32-2	G29
W68PLPSP-4-2	G21
W68PLPSP-4-4	G21
W68PLPSP-5/32-2	G21
W68PLPSP-5/32-4	G21
W68PLPSP-5-2	G21
W68PLPSP-5-4	G21
W68PLPSP-6-2	G21
W68PLPSP-6-4	G21
W68PLPSP-6-6	G21
W68PLPSP-8-6	G21
W68PLPSP-8-8	G21
W68PW-4-2	G29
W68PW-4-4	G29
W68PW-4-6	G29
W68PW-5-2	G29
W68PW-5-4	G29
W68PW-5-6	G29
W68PW-6-2	G29
W68PW-6-4	G29
W68PW-6-6	G29
W68PW-6-8	G29
W68PW-8-4	G29
W68PW-8-6	G29
W68PW-8-8	G29
WBMPB10	G33
WBMPB12	G33
WBMPB14	G33
WBMPB4	G33
WBMPB6	G33
WBMPB8	G33
WDV3-G12BL	F10
WDV3-G13BL	F10
WDV3-G14BL	F10
WDV3-G22BL	F10
WDV3-G23BL	F10
WDV3-G24BL	F10
WDV3-G34BL	F10
WE6PB4	G33
WE6PB6	G33
WE6PB8	G33
WE6PB10	G33
WE6PB12	G33
WG4PB10-3/8	G34
WG4PB12-1/2	G34
WG4PB12-3/8	G34
WG4PB4-1/8	G34
WG4PB6-1/8	G34
WG4PB6-1/4	G34
WG4PB8-1/8	G34
WG4PB8-1/4	G34
WKM 46-xM/S1587	D179
WKM 56-xM/S1587	D179
WPB10	G33
WPB12	G33
WPB14	G33
WPB4	G33
WPB6	G33
WPB8	G33
XM30NB49A	D5
XM30NB549A	D5
XM30NB553A	D5
XM30NBG49A	D5
XM30NBG53A	D5
XM30NBH49A	D5
XM30NBH53A	D5
XM3VNB549A	D5
XM3VNB553A	D5
XM3VNBG49A	D5
XM3VNBG53A	D5
XM40NB549A	D5
XM40NB553A	D5
XM40NBG49A	D5
XM40NBG53A	D5
XM40NBH49A	D5
XM40NBH53A	D5
XM4VNB549A	D5
XM4VNB553A	D5
XM4VNBG49A	D5
XM4VNBG53A	D5
XV500P-4	G3
XV500P-6	G3
XV500P-8	G3
XV500P-12	G3
XV500P-16	G3
XV502SS-4	G3
XV502SS-6	G3
XV502SS-8	G3
XV502SS-12	G3
XV502SS-16	G3
XV502SS-20	G3
XV502SS-24	G3
XV502SS-32	G3
ZB2BY2002	D238
ZB4BA2	D237
ZB4BA3	D237
ZB4BA4	D237
ZB4BA5	D237
ZB4BA6	D237
ZB4BC2	D237
ZB4BC3	D237
ZB4BC4	D237
ZB4BD2	D237
ZB4BD3	D237
ZB4BD4	D237
ZB4BD5	D237
ZB4BD7	D237
ZB4BD8	D237
ZB4BG2	D237
ZB4BG3	D237
ZB4BG4	D237
ZB4BG5	D237
ZB4BG7	D237
ZB4BH02	D237
ZB4BH03	D237
ZB4BH04	D237
ZB4BJ2	D237
ZB4BJ3	D237
ZB4BJ4	D237
ZB4BJ5	D237
ZB4BL2	D237
ZB4BL3	D237
ZB4BL4	D237
ZB4BL5	D237
ZB4BP2	D237
ZB4BP3	D237
ZB4BP4	D237
ZB4BR2	D237
ZB4BR3	D237
ZB4BR4	D237
ZB4BS14	D237
ZB4BS24	D237
ZB4BS54	D237
ZB4BS64	D237
ZB4BT2	D237
ZB4BT3	D237
ZB4BT4	D237
ZB4BZ009	D237
ZB5AA2	D237
ZB5AA3	D237
ZB5AA4	D237
ZB5AL2	D237
ZB5AL3	D237
ZB5AL4	D237
ZB5AZ009	D237
ZB5AZ905	D239
ZBE101	D238
ZBE102	D238
ZBY2002	D238
ZBZ1602	D239
ZC2JE01	D242
ZC2JE02	D242
ZC2JE03	D242
ZC2JE05	D242
ZC2JE09	D242
ZC2JE61	D242
ZC2JE62	D242
ZC2JE63	D242
ZC2JE70	D242
ZC2JY11	D242
ZC2JY13	D242
ZC2JY21	D242
ZC2JY31	D242
ZC2JY41	D242
ZC2JY51	D242
ZC2JY61	D242
ZC2JY71	D242
ZC2JY81	D242
ZC2JY91	D242
ZCKD02	D242
ZCKD06	D242
ZCKD10	D242
ZCKD21	D242
ZCKD23	D242
ZCKG00	D242
ZCKY11	D242
ZCKY13	D242
ZCKY41	D242
ZCKY43	D242
ZCKY51	D242
ZCKY52	D242
ZCKY81	D242
ZCKY91	D242

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Pneumatic Division
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Safety Guide for Selecting and Using Hydraulic, Pneumatic Cylinders and Their Accessories

WARNING: ⚠ FAILURE OF THE CYLINDER, ITS PARTS, ITS MOUNTING, ITS CONNECTIONS TO OTHER OBJECTS, OR ITS CONTROLS CAN RESULT IN:

- **Unanticipated or uncontrolled movement of the cylinder or objects connected to it.**
- **Falling of the cylinder or objects held up by it.**
- **Fluid escaping from the cylinder, potentially at high velocity.**

THESE EVENTS COULD CAUSE DEATH OR PERSONAL INJURY BY, FOR EXAMPLE, PERSONS FALLING FROM HIGH LOCATIONS, BEING CRUSHED OR STRUCK BY HEAVY OR FAST MOVING OBJECTS, BEING PUSHED INTO DANGEROUS EQUIPMENT OR SITUATIONS, OR SLIPPING ON ESCAPED FLUID.

Before selecting or using Parker (The Company) cylinders or related accessories, it is important that you read, understand and follow the following safety information. Training is advised before selecting and using The Company's products.

1.0 General Instructions

1.1 Scope – This safety guide provides instructions for selecting and using (including assembling, installing, and maintaining) cylinder products. This safety guide is a supplement to and is to be used with the specific Company publications for the specific cylinder products that are being considered for use.

1.2 Fail Safe – Cylinder products can and do fail without warning for many reasons. All systems and equipment should be designed in a fail-safe mode so that if the failure of a cylinder product occurs people and property won't be endangered.

1.3 Distribution – Provide a free copy of this safety guide to each person responsible for selecting or using cylinder products. Do not select or use The Company's cylinders without thoroughly reading and understanding this safety guide as well as the specific Company publications for the products considered or selected.

1.4 User Responsibility – Due to very wide variety of cylinder applications and cylinder operating conditions, The Company does not warrant that any particular cylinder is suitable for any specific application. This safety guide does not analyze all technical parameters that must be considered in selecting a product. The hydraulic and pneumatic cylinders outlined in this catalog are designed to The Company's design guidelines and do not necessarily meet the design guideline of other agencies such as American Bureau of Shipping, ASME Pressure Vessel Code etc. The user, through its own analysis and testing, is solely responsible for:

- Making the final selection of the cylinders and related accessories.
- Determining if the cylinders are required to meet specific design requirements as required by the Agency(s) or industry standards covering the design of the user's equipment.
- Assuring that the user's requirements are met, OSHA requirements are met, and safety guidelines from the applicable agencies such as but not limited to ANSI are followed and that the use presents no health or safety hazards.
- Providing all appropriate health and safety warnings on the equipment on which the cylinders are used.

1.5 Additional Questions – Call the appropriate Company technical service department if you have any questions or require any additional information. See the Company publication for the product being considered or used, or call 1-800-CPARKER, or go to www.parker.com, for telephone numbers of the appropriate technical service department.

2.0 Cylinder and Accessories Selection

2.1 Seals – Part of the process of selecting a cylinder is the selection of seal compounds. Before making this selection, consult the "seal information page(s)" of the publication for the series of cylinders of interest.

The application of cylinders may allow fluids such as cutting fluids, wash down fluids etc. to come in contact with the external area of the cylinder. These fluids may attack the piston rod wiper and or the primary seal and must be taken into account when selecting and specifying seal compounds.

Dynamic seals will wear. The rate of wear will depend on many operating factors. Wear can be rapid if a cylinder is mis-aligned or if the cylinder has been improperly serviced. The user must take seal wear into consideration in the application of cylinders.

2.2 Piston Rods – Possible consequences of piston rod failure or separation of the piston rod from the piston include, but are not limited to are:

- Piston rod and or attached load thrown off at high speed.
- High velocity fluid discharge.
- Piston rod extending when pressure is applied in the piston retract mode.

Piston rods or machine members attached to the piston rod may move suddenly and without warning as a consequence of other conditions occurring to the machine such as, but not limited to:

- Unexpected detachment of the machine member from the piston rod.
- Failure of the pressurized fluid delivery system (hoses, fittings, valves, pumps, compressors) which maintain cylinder position.
- Catastrophic cylinder seal failure leading to sudden loss of pressurized fluid.
- Failure of the machine control system.

Follow the recommendations of the "Piston Rod Selection Chart and Data" in the publication for the series of cylinders of interest. The suggested piston rod diameter in these charts must be followed in order to avoid piston rod buckling.

Piston rods are not normally designed to absorb bending moments or loads which are perpendicular to the axis of piston rod motion. These additional loads can cause the piston rod to fail. If these types of additional loads are expected to be imposed on the piston rod, their magnitude should be made known to our engineering department.

The cylinder user should always make sure that the piston rod is securely attached to the machine member.

On occasion cylinders are ordered with double rods (a piston rod extended from both ends of the cylinder). In some cases a stop is threaded on to one of the piston rods and used as an external stroke adjuster. On occasions spacers are attached to the machine member connected to the piston rod and also used as a stroke adjuster. In both cases the stops will create a pinch point and the user should consider appropriate use of guards. If these external stops are not perpendicular to the mating contact surface, or if debris is trapped between the contact surfaces, a bending moment will be placed on the piston rod, which can lead to piston rod failure. An external stop will also negate the effect of cushioning and will subject the piston rod to impact loading. Those two (2) conditions can cause piston rod failure. Internal stroke adjusters are available with and without cushions. The use of external stroke adjusters should be reviewed with our engineering department.

The piston rod to piston and the stud to piston rod threaded connections are secured with an anaerobic adhesive. The strength of the adhesive decreases with increasing temperature. Cylinders which can be exposed to temperatures above +250°F (+121°C) are to be ordered with a non studded piston rod and a pinned piston to rod joint.

2.3 Cushions – Cushions should be considered for cylinder applications when the piston velocity is expected to be over 4 inches/second.

Cylinder cushions are normally designed to absorb the energy of a linear applied load. A rotating mass has considerably more energy than the same mass moving in a linear mode. Cushioning for a rotating mass application should be review by our engineering department.

2.4 Cylinder Mountings – Some cylinder mounting configurations may have certain limitations such as but not limited to minimum stroke for side or foot mounting cylinders or pressure de-ratings for certain mounts. Carefully review the catalog for these types of restrictions.

Always mount cylinders using the largest possible high tensile alloy steel socket head cap screws that can fit in the cylinder mounting holes and torque them to the manufacturer's recommendations for their size.

2.5 Port Fittings – Hydraulic cylinders applied with meter out or deceleration circuits are subject to intensified pressure at piston rod end.

The rod end pressure is approximately equal to:

$$\frac{\text{operating pressure x effective cap end area}}{\text{effective rod end piston area}}$$

Contact your connector supplier for the pressure rating of individual connectors.

3.0 Cylinder and Accessories Installation and Mounting

3.1 Installation

3.1.1 – Cleanliness is an important consideration, and cylinders are shipped with the ports plugged to protect them from contaminants entering the ports. These plugs should not be removed until the piping is to be installed. Before making the connection to the cylinder ports, piping should be thoroughly cleaned to remove all chips or burrs which might have resulted from threading or flaring operations.

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3.1.2 – Cylinders operating in an environment where air drying materials are present such as fast-drying chemicals, paint, or weld splatter, or other hazardous conditions such as excessive heat, should have shields installed to prevent damage to the piston rod and piston rod seals.

3.1.3 – Proper alignment of the cylinder piston rod and its mating component on the machine should be checked in both the extended and retracted positions. Improper alignment will result in excessive rod gland and/or cylinder bore wear. On fixed mounting cylinders attaching the piston rod while the rod is retracted will help in achieving proper alignment.

3.1.4 – Sometimes it may be necessary to rotate the piston rod in order to thread the piston rod into the machine member. This operation must always be done with zero pressure being applied to either side of the piston. Failure to follow this procedure may result in loosening the piston to rod-threaded connection. In some rare cases the turning of the piston rod may rotate a threaded piston rod gland and loosen it from the cylinder head. Confirm that this condition is not occurring. If it does, re-tighten the piston rod gland firmly against the cylinder head.

For double rod cylinders it is also important that when attaching or detaching the piston rod from the machine member that the torque be applied to the piston rod end of the cylinder that is directly attaching to the machine member with the opposite end unrestrained. If the design of the machine is such that only the rod end of the cylinder opposite to where the rod attaches to the machine member can be rotated, consult the factory for further instructions.

3.2 Mounting Recommendations

3.2.1 – Always mount cylinders using the largest possible high tensile alloy steel socket head screws that can fit in the cylinder mounting holes and torque them to the manufacturer's recommendations for their size.

3.2.2 – Side-Mounted Cylinders – In addition to the mounting bolts, cylinders of this type should be equipped with thrust keys or dowel pins located so as to resist the major load.

3.2.3 – Tie Rod Mounting – Cylinders with tie rod mountings are recommended for applications where mounting space is limited. The standard tie rod extension is shown as BB in dimension tables. Longer or shorter extensions can be supplied. Nuts used for this mounting style should be torqued to the same value as the tie rods for that bore size.

3.2.4 – Flange Mount Cylinders – The controlled diameter of the rod gland extension on head end flange mount cylinders can be used as a pilot to locate the cylinders in relation to the machine. After alignment has been obtained, the flanges may be drilled for pins or dowels to prevent shifting.

3.2.5 – Trunnion Mountings – Cylinders require lubricated bearing blocks with minimum bearing clearances. Bearing blocks should be carefully aligned and rigidly mounted so the trunnions will not be subjected to bending moments. The rod end should also be pivoted with the pivot pin in line and parallel to axis of the trunnion pins.

3.2.6 – Clevis Mountings – Cylinders should be pivoted at both ends with centerline of pins parallel to each other. After cylinder is mounted, be sure to check to assure that the cylinder is free to swing through its working arc without interference from other machine parts.

4.0 Cylinder and Accessories Maintenance, Troubleshooting and Replacement

4.1 Storage – At times cylinders are delivered before a customer is ready to install them and must be stored for a period of time. When storage is required the following procedures are recommended.

4.1.1 – Store the cylinders in an indoor area which has a dry, clean and noncorrosive atmosphere. Take care to protect the cylinder from both internal corrosion and external damage.

4.1.2 – Whenever possible cylinders should be stored in a vertical position (piston rod up). This will minimize corrosion due to possible condensation which could occur inside the cylinder. This will also minimize seal damage.

4.1.3 – Port protector plugs should be left in the cylinder until the time of installation.

4.1.4 – If a cylinder is stored full of hydraulic fluid, expansion of the fluid due to temperature changes must be considered. Installing a check valve with free flow out of the cylinder is one method.

4.1.5 – When cylinders are mounted on equipment that is stored outside for extended periods, exposed unpainted surfaces, e.g. piston rod, must be coated with a rust-inhibiting compound to prevent corrosion.

4.2 Cylinder Trouble Shooting

4.2.1 – External Leakage

4.2.1.1 – Rod seal leakage can generally be traced to worn or damaged seals. Examine the piston rod for dents, gouges or score marks, and replace piston rod if surface is rough.

Rod seal leakage could also be traced to gland wear. If clearance is excessive, replace rod bushing and seal. Rod seal leakage can also be traced to seal deterioration. If seals are soft or gummy or brittle, check compatibility of seal material with lubricant used if air cylinder, or operating fluid if hydraulic cylinder. Replace with seal material, which is compatible with these fluids. If the seals are hard or have lost elasticity, it is usually due to exposure to temperatures in excess of 165°F. (+74°C). Shield the cylinder from the heat source to limit temperature to 350°F. (+177°C.) and replace with fluorocarbon seals.

4.2.1.2 – Cylinder body seal leak can generally be traced to loose tie rods. Torque the tie rods to manufacturer's recommendation for that bore size.

Excessive pressure can also result in cylinder body seal leak. Determine maximum pressure to rated limits. Replace seals and retorque tie rods as in paragraph above. Excessive pressure can also result in cylinder body seal leak. Determine if the pressure rating of the cylinder has been exceeded. If so, bring the operating pressure down to the rating of the cylinder and have the tie rods replaced.

Pinched or extruded cylinder body seal will also result in a leak. Replace cylinder body seal and retorque as in paragraph above.

Cylinder body seal leakage due to loss of radial squeeze which shows up in the form of flat spots or due to wear on the O.D. or I.D. – Either of these are symptoms of normal wear due to high cycle rate or length of service. Replace seals as per paragraph above.

4.2.2 – Internal Leakage

4.2.2.1 – Piston seal leak (by-pass) 1 to 3 cubic inches per minute leakage is considered normal for piston ring construction. Virtually no static leak with lipseal type seals on piston should be expected. Piston seal wear is a usual cause of piston seal leakage. Replace seals as required.

4.2.2.2 – With lipseal type piston seals excessive back pressure due to over-adjustment of speed control valves could be a direct cause of rapid seal wear. Contamination in a hydraulic system can result in a scored cylinder bore, resulting in rapid seal wear. In either case, replace piston seals as required.

4.2.2.3 – What appears to be piston seal leak, evidenced by the fact that the cylinder drifts, is not always traceable to the piston. To make sure, it is suggested that one side of the cylinder piston be pressurized and the fluid line at the opposite port be disconnected. Observe leakage. If none is evident, seek the cause of cylinder drift in other component parts in the circuit.

4.2.3 – Cylinder Fails to Move the Load

4.2.3.1 – Pneumatic or hydraulic pressure is too low. Check the pressure at the cylinder to make sure it is to circuit requirements.

4.2.3.2 – Piston Seal Leak – Operate the valve to cycle the cylinder and observe fluid flow at valve exhaust ports at end of cylinder stroke. Replace piston seals if flow is excessive.

4.2.3.3 – Cylinder is undersized for the load – Replace cylinder with one of a larger bore size.

4.3 Erratic or Chatter Operation

4.3.1 – Excessive friction at rod gland or piston bearing due to load misalignment – Correct cylinder-to-load alignment.

4.3.2 – Cylinder sized too close to load requirements – Reduce load or install larger cylinder.

4.3.3 – Erratic operation could be traced to the difference between static and kinetic friction. Install speed control valves to provide a back pressure to control the stroke.

4.4 Cylinder Modifications, Repairs, or Failed Component – Cylinders as shipped from the factory are not to be disassembled and or modified. If cylinders require modifications, these modifications must be done at company locations or by The Company's certified facilities. The Cylinder Division Engineering Department must be notified in the event of a mechanical fracture or permanent deformation of any cylinder component (excluding seals). This includes a broken piston rod, tie rod, mounting accessory or any other cylinder component. The notification should include all operation and application details. This information will be used to provide an engineered repair that will prevent recurrence of the failure.

It is allowed to disassemble cylinders for the purpose of replacing seals or seal assemblies. However, this work must be done by strictly following all the instructions provided with the seal kits.

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Safety Guide For Selecting And Using Pneumatic Division Products And Related Accessories

⚠ WARNING:

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF PNEUMATIC DIVISION PRODUCTS, ASSEMBLIES OR RELATED ITEMS ("PRODUCTS") CAN CAUSE DEATH, PERSONAL INJURY, AND PROPERTY DAMAGE. POSSIBLE CONSEQUENCES OF FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THESE PRODUCTS INCLUDE BUT ARE NOT LIMITED TO:

- Unintended or mistimed cycling or motion of machine members or failure to cycle
- Work pieces or component parts being thrown off at high speeds.
- Failure of a device to function properly for example, failure to clamp or unclamp an associated item or device.
- Explosion
- Suddenly moving or falling objects.
- Release of toxic or otherwise injurious liquids or gasses.

Before selecting or using any of these Products, it is important that you read and follow the instructions below.

1. GENERAL INSTRUCTIONS

1.1. Scope: This safety guide is designed to cover general guidelines on the installation, use, and maintenance of Pneumatic Division Valves, FRLs (Filters, Pressure Regulators, and Lubricators), Vacuum products and related accessory components.

1.2. Fail-Safe: Valves, FRLs, Vacuum products and their related components can and do fail without warning for many reasons. Design all systems and equipment in a fail-safe mode, so that failure of associated valves, FRLs or Vacuum products will not endanger persons or property.

1.3 Relevant International Standards: For a good guide to the application of a broad spectrum of pneumatic fluid power devices see: ISO 4414:1998, Pneumatic Fluid Power – General Rules Relating to Systems. See www.iso.org for ordering information.

1.4. Distribution: Provide a copy of this safety guide to each person that is responsible for selection, installation, or use of Valves, FRLs or Vacuum products. Do not select, or use Parker valves, FRLs or vacuum products without thoroughly reading and understanding this safety guide as well as the specific Parker publications for the products considered or selected.

1.5. User Responsibility: Due to the wide variety of operating conditions and applications for valves, FRLs, and vacuum products Parker and its distributors do not represent or warrant that any particular valve, FRL or vacuum product is suitable for any specific end use system. This safety guide does not analyze all technical parameters that must be considered in selecting a product. The user, through its own analysis and testing, is solely responsible for:

- Making the final selection of the appropriate valve, FRL, Vacuum component, or accessory.
- Assuring that all user's performance, endurance, maintenance, safety, and warning requirements are met and that the application presents no health or safety hazards.
- Complying with all existing warning labels and / or providing all appropriate health and safety warnings on the equipment on which the valves, FRLs or Vacuum products are used; and,
- Assuring compliance with all applicable government and industry standards.

1.6. Safety Devices: Safety devices should not be removed, or defeated.

1.7. Warning Labels: Warning labels should not be removed, painted over or otherwise obscured.

1.8. Additional Questions: Call the appropriate Parker technical service department if you have any questions or require any additional information. See the Parker publication for the product being considered or used, or call 1-800-CPARKER, or go to www.parker.com, for telephone numbers of the appropriate technical service department.

2. PRODUCT SELECTION INSTRUCTIONS

2.1. Flow Rate: The flow rate requirements of a system are frequently the primary consideration when designing any pneumatic system. System components need to be able to provide adequate flow and pressure for the desired application.

2.2. Pressure Rating: Never exceed the rated pressure of a product. Consult product labeling, Pneumatic Division catalogs or the instruction sheets supplied for maximum pressure ratings.

2.3. Temperature Rating: Never exceed the temperature rating of a product. Excessive heat can shorten the life expectancy of a product and result in complete product failure.

2.4. Environment: Many environmental conditions can affect the integrity and suitability of a product for a given application. Pneumatic Division products are designed for use in general purpose industrial applications. If these products are to be used in unusual circumstances such as direct sunlight and/or corrosive or caustic environments, such use can shorten the useful life and lead to premature failure of a product.

2.5. Lubrication and Compressor Carryover: Some modern synthetic oils can and will attack nitrile seals. If there is any possibility of synthetic oils or greases migrating into the pneumatic components check for compatibility with the seal materials used. Consult the factory or product literature for materials of construction.

2.6. Polycarbonate Bowls and Sight Glasses: To avoid potential polycarbonate bowl failures:

- Do not locate polycarbonate bowls or sight glasses in areas where they could be subject to direct sunlight, impact blow, or temperatures outside of the rated range.
- Do not expose or clean polycarbonate bowls with detergents, chlorinated hydro-carbons, keytones, esters or certain alcohols.
- Do not use polycarbonate bowls or sight glasses in air systems where compressors are lubricated with fire resistant fluids such as phosphate ester and di-ester lubricants.

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2.7. Chemical Compatibility: For more information on plastic component chemical compatibility see Pneumatic Division technical bulletins Tec-3, Tec-4, and Tec-5

2.8. Product Rupture: Product rupture can cause death, serious personal injury, and property damage.
- Do not connect pressure regulators or other Pneumatic Division products to bottled gas cylinders.
- Do not exceed the maximum primary pressure rating of any pressure regulator or any system component.
- Consult product labeling or product literature for pressure rating limitations.

3. PRODUCT ASSEMBLY AND INSTALLATION INSTRUCTIONS

3.1. Component Inspection: Prior to assembly or installation a careful examination of the valves, FRLs or vacuum products must be performed. All components must be checked for correct style, size, and catalog number. DO NOT use any component that displays any signs of nonconformance.

3.2. Installation Instructions: Parker published Installation Instructions must be followed for installation of Parker valves, FRLs and vacuum components. These instructions are provided with every Parker valve or FRL sold, or by calling 1-800-CPARKER, or at www.parker.com.

3.3. Air Supply: The air supply or control medium supplied to Valves, FRLs and Vacuum components must be moisture-free if ambient temperature can drop below freezing

4. VALVE AND FRL MAINTENANCE AND REPLACEMENT INSTRUCTIONS

4.1. Maintenance: Even with proper selection and installation, valve, FRL and vacuum products service life may be significantly reduced without a continuing maintenance program. The severity of the application, risk potential from a component failure, and experience with any known failures in the application or in similar applications should determine the frequency of inspections and the servicing or replacement of Pneumatic Division products so that products are replaced before any failure occurs. A maintenance program must be established and followed by the user and, at minimum, must include instructions 4.2 through 4.10.

4.2. Installation and Service Instructions: Before attempting to service or replace any worn or damaged parts consult the appropriate Service Bulletin for the valve or FRL in question for the appropriate practices to service the unit in question. These Service and Installation Instructions are provided with every Parker valve and FRL sold, or are available by calling 1-800-CPARKER, or by accessing the Parker web site at www.parker.com.

4.3. Lockout / Tagout Procedures: Be sure to follow all required lockout and tagout procedures when servicing equipment. For more information see: OSHA Standard – 29 CFR, Part 1910.147, Appendix A, The Control of Hazardous Energy – (Lockout / Tagout)

4.4. Visual Inspection: Any of the following conditions requires immediate system shut down and replacement of worn or damaged components:
- Air leakage: Look and listen to see if there are any signs of visual damage to any of the components in the system. Leakage is an indication of worn or damaged components.
- Damaged or degraded components: Look to see if there are any visible signs of wear or component degradation.
- Kinked, crushed, or damaged hoses. Kinked hoses can result in restricted air flow and lead to unpredictable system behavior.
- Any observed improper system or component function: Immediately shut down the system and correct malfunction.
- Excessive dirt build-up: Dirt and clutter can mask potentially hazardous situations.

Caution: Leak detection solutions should be rinsed off after use.

4.5. Routine Maintenance Issues:
- Remove excessive dirt, grime and clutter from work areas.
- Make sure all required guards and shields are in place.

4.6. Functional Test: Before initiating automatic operation, operate the system manually to make sure all required functions operate properly and safely.

4.7. Service or Replacement Intervals: It is the user's responsibility to establish appropriate service intervals. Valves, FRLs and vacuum products contain components that age, harden, wear, and otherwise deteriorate over time. Environmental conditions can significantly accelerate this process. Valves, FRLs and vacuum components need to be serviced or replaced on routine intervals. Service intervals need to be established based on:
- Previous performance experiences.
- Government and / or industrial standards.
- When failures could result in unacceptable down time, equipment damage or personal injury risk.

4.8. Servicing or Replacing of any Worn or Damaged Parts: To avoid unpredictable system behavior that can cause death, personal injury and property damage:
- Follow all government, state and local safety and servicing practices prior to service including but not limited to all OSHA Lockout Tagout procedures (OSHA Standard – 29 CFR, Part 1910.147, Appendix A, The Control of Hazardous Energy – Lockout / Tagout).
- Disconnect electrical supply (when necessary) before installation, servicing, or conversion.
- Disconnect air supply and depressurize all air lines connected to system and Pneumatic Division products before installation, service, or conversion.
- Installation, servicing, and / or conversion of these products must be performed by knowledgeable personnel who understand how pneumatic products are to be applied.
- After installation, servicing, or conversions air and electrica supplies (when necessary) should be connected and the product tested for proper function and leakage. If audible leakage is present, or if the product does not operate properly, do not put product or system into use.
- Warnings and specifications on the product should not be covered or painted over. If masking is not possible, contact your local representative for replacement labels.

4.9. Putting Serviced System Back into Operation: Follow the guidelines above and all relevant Installation and Maintenance Instructions supplied with the valve FRL or vacuum component to insure proper function of the system.

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1. Terms and Conditions. Seller's willingness to offer Products, or accept an order for Products, to or from Buyer is subject to these Terms and Conditions or any newer version of the terms and conditions found on-line at www.parker.com/saleterms/. Seller objects to any contrary or additional terms or conditions of Buyer's order or any other document issued by Buyer.

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3. Delivery Dates; Title and Risk; Shipment. All delivery dates are approximate and Seller shall not be responsible for any damages resulting from any delay. Regardless of the manner of shipment, title to any products and risk of loss or damage shall pass to Buyer upon placement of the products with the shipment carrier at Seller's facility. Unless otherwise stated, Seller may exercise its judgment in choosing the carrier and means of delivery. No deferment of shipment at Buyers' request beyond the respective dates indicated will be made except on terms that will indemnify, defend and hold Seller harmless against all loss and additional expense. Buyer shall be responsible for any additional shipping charges incurred by Seller due to Buyer's acts or omissions.

4. Warranty. Seller warrants that the Products sold hereunder shall be free from defects in material or workmanship for a period of twelve months from the date of delivery to Buyer or 2,000 hours of normal use, whichever occurs first. The prices charged for Seller's products are based upon the exclusive limited warranty stated above, and upon the following disclaimer: **DISCLAIMER OF WARRANTY: THIS WARRANTY COMPRISES THE SOLE AND ENTIRE WARRANTY PERTAINING TO PRODUCTS PROVIDED HEREUNDER. SELLER DISCLAIMS ALL OTHER WARRANTIES, EXPRESS AND IMPLIED, INCLUDING DESIGN, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.**

5. Claims; Commencement of Actions. Buyer shall promptly inspect all Products upon delivery. No claims for shortages will be allowed unless reported to the Seller within 10 days of delivery. No other claims against Seller will be allowed unless asserted in writing within 30 days after delivery. Buyer shall notify Seller of any alleged breach of warranty within 30 days after the date the defect is or should have been discovered by Buyer. Any action based upon breach of this agreement or upon any other claim arising out of this sale (other than an action by Seller for an amount due on any invoice) must be commenced within 12 months from the date of the breach without regard to the date breach is discovered.

6. LIMITATION OF LIABILITY. UPON NOTIFICATION, SELLER WILL, AT ITS OPTION, REPAIR OR REPLACE A DEFECTIVE PRODUCT, OR REFUND THE PURCHASE PRICE. **IN NO EVENT SHALL SELLER BE LIABLE TO BUYER FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF, OR AS THE RESULT OF, THE SALE, DELIVERY, NON-DELIVERY, SERVICING, USE OR LOSS OF USE OF THE PRODUCTS OR ANY PART THEREOF, OR FOR ANY CHARGES OR EXPENSES OF ANY NATURE INCURRED WITHOUT SELLER'S WRITTEN CONSENT, EVEN IF SELLER HAS BEEN NEGLIGENT, WHETHER IN CONTRACT, TORT OR OTHER LEGAL THEORY. IN NO EVENT SHALL SELLER'S LIABILITY UNDER ANY CLAIM MADE BY BUYER EXCEED THE PURCHASE PRICE OF THE PRODUCTS.**

7. User Responsibility. The user, through its own analysis and testing, is solely responsible for making the final selection of the system and Product and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application and follow applicable industry standards and Product information. If Seller provides Product or system options, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the Products or systems.

8. Loss to Buyer's Property. Any designs, tools, patterns, materials, drawings, confidential information or equipment furnished by Buyer or any other items which become Buyer's property, may be considered obsolete and may be destroyed by Seller after two consecutive years have elapsed without Buyer ordering the items manufactured using such property. Seller shall not be responsible for any loss or damage to such property while it is in Seller's possession or control.

9. Special Tooling. A tooling charge may be imposed for any special tooling, including without limitation, dies, fixtures, molds and patterns, acquired to manufacture Products. Such special tooling shall be and remain Seller's property notwithstanding payment of any charges by Buyer. In no event will Buyer acquire any interest in apparatus belonging to Seller which is utilized in the manufacture of the Products, even if such apparatus has been specially converted or adapted for such manufacture and notwithstanding any charges paid by Buyer. Unless otherwise agreed, Seller shall have the right to alter, discard or otherwise dispose of any special tooling or other property in its sole discretion at any time.

10. Buyer's Obligation; Rights of Seller. To secure payment of all sums due or otherwise, Seller shall retain a security interest in the goods delivered and this agreement shall be deemed a Security Agreement under the Uniform Commercial Code. Buyer authorizes Seller as its attorney to execute and file on Buyer's behalf all documents Seller deems necessary to perfect its security interest.

11. Improper use and Indemnity. Buyer shall indemnify, defend, and hold Seller harmless from any claim, liability, damages, lawsuits, and costs (including attorney fees), whether for personal injury, property damage, patent, trademark or copyright infringement or any other claim, brought by or incurred by Buyer, Buyer's employees, or any other person, arising out of: (a) improper selection, improper application or other misuse of Products purchased by Buyer from Seller; (b) any act or omission, negligent or otherwise, of Buyer; (c) Seller's use of patterns, plans, drawings, or specifications furnished by Buyer to manufacture Product; or (d) Buyer's failure to comply with these terms and conditions. Seller shall not indemnify Buyer under any circumstance except as otherwise provided.

12. Cancellations and Changes. Orders shall not be subject to cancellation or change by Buyer for any reason, except with Seller's written consent and upon terms that will indemnify, defend and hold Seller harmless against all direct, incidental and consequential loss or damage. Seller may change product features, specifications, designs and availability with notice to Buyer.

13. Limitation on Assignment. Buyer may not assign its rights or obligations under this agreement without the prior written consent of Seller.

14. Force Majeure. Seller does not assume the risk and shall not be liable for delay or failure to perform any of Seller's obligations by reason of circumstances beyond the reasonable control of Seller (hereinafter "Events of Force Majeure") Events of Force Majeure shall include without limitation: accidents, strikes or labor disputes, acts of any government or government agency, acts of nature, delays or failures in delivery from carriers or suppliers, shortages of materials, or any other cause beyond Seller's reasonable control.

15. Waiver and Severability. Failure to enforce any provision of this agreement will not waive that provision nor will any such failure prejudice Seller's right to enforce that provision in the future. Invalidation of any provision of this agreement by legislation or other rule of law shall not invalidate any other provision herein. The remaining provisions of this agreement will remain in full force and effect.

16. Termination. Seller may terminate this agreement for any reason and at any time by giving Buyer thirty (30) days written notice of termination. Seller may immediately terminate this agreement, in writing, if Buyer: (a) commits a breach of any provision of this agreement (b) appointments a trustee, receiver or custodian for all or any part of Buyer's property (c) files a petition for relief in bankruptcy on its own behalf, or by a third party (d) makes an assignment for the benefit of creditors, or (e) the dissolves or liquidates all or a majority of its assets.

17. Governing Law. This agreement and the sale and delivery of all Products hereunder shall be deemed to have taken place in and shall be governed and construed in accordance with the laws of the State of Ohio, as applicable to contracts executed and wholly performed therein and without regard to conflicts of laws principles. Buyer irrevocably agrees and consents to the exclusive jurisdiction and venue of the courts of Cuyahoga County, Ohio with respect to any dispute, controversy or claim arising out of or relating to this agreement.

18. Indemnity for Infringement of Intellectual Property Rights. Seller shall have no liability for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights except as provided in this Section. Seller will defend and indemnify Buyer against allegations of infringement of U.S. patents, U.S. trademarks, copyrights, trade dress and trade secrets ("Intellectual Property Rights"). Seller will defend at its expense and will pay the cost of any settlement or damages awarded in an action brought against Buyer based on an allegation that a Product sold pursuant to this Agreement infringes the Intellectual Property Rights of a third party. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of such allegations of infringement, and Seller having sole control over the defense of any allegations or actions including all negotiations for settlement or compromise. If a Product is subject to a claim that it infringes the Intellectual Property Rights of a third party, Seller may, at its sole expense and option, procure for Buyer the right to continue using the Product, replace or modify the Product so as to make it noninfringing, or offer to accept return of the Product and return the purchase price less a reasonable allowance for depreciation. Notwithstanding the foregoing, Seller shall have no liability for claims of infringement based on information provided by Buyer, or directed to Products delivered hereunder for which the designs are specified in whole or part by Buyer, or infringements resulting from the modification, combination or use in a system of any Product sold hereunder. The foregoing provisions of this Section shall constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for infringement of Intellectual Property Rights.

19. Entire Agreement. This agreement contains the entire agreement between the Buyer and Seller and constitutes the final, complete and exclusive expression of the terms of sale. All prior or contemporaneous written or oral agreements or negotiations with respect to the subject matter are herein merged.

20. Compliance with Law, U. K. Bribery Act and U.S. Foreign Corrupt Practices Act. Buyer agrees to comply with all applicable laws and regulations, including both those of the United Kingdom and the United States of America, and of the country or countries of the Territory in which the Buyer may operate, including without limitation the U. K. Bribery Act, the U.S. Foreign Corrupt Practices Act ("FCPA") and the U.S. Anti-Kickback Act (the "Anti-Kickback Act"), and agrees to indemnify and hold harmless Seller from the consequences of any violation of such provisions by Buyer, its employees or agents. Buyer acknowledges that they are familiar with the provisions of the U. K. Bribery Act, the FCPA and the Anti-Kickback Act, and certifies that Buyer will adhere to the requirements thereof. In particular, Buyer represents and agrees that Buyer shall not make any payment or give anything of value, directly or indirectly to any governmental official, any foreign political party or official thereof, any candidate for foreign political office, or any commercial entity or person, for the purpose of influencing such person to purchase products or otherwise benefit the business of Seller.

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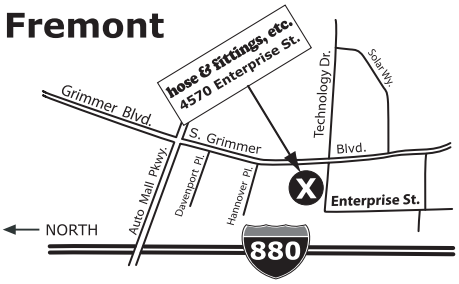

4570 Enterprise St.
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Hours: 7 a.m. - 5 p.m. (M-F)

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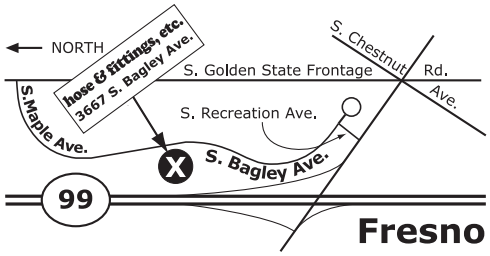

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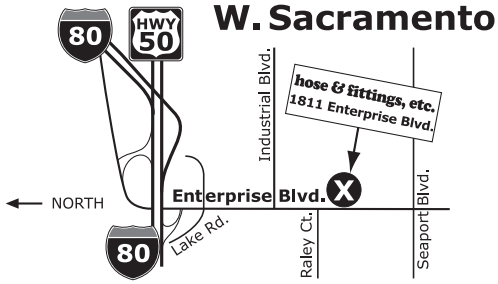
W. Sacramento



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W. Sacramento

San Leandro

3007 Teagarden St.
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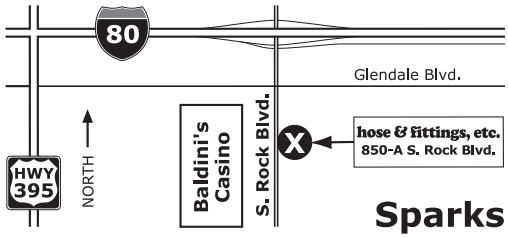
San Leandro



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