BUILDINGS
PRODUCT CATALOG

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GRUNDFOS

CONTENTS

CIRCULATORS

High Efficiency Circulator

GRUNDFOS ALPHA2

Grundfos ALPHA2 is versatile and efficient whether you use one of its seven speed or pressure control settings or simply leave it on the factory setting AUTOADAPT™. The ALPHA2 with its ECM motor design reduces energy consumption by 50%, and in AUTOADAPT mode, will automatically analyze the heating system, find the optimum setting, continue to adjust its operation to changes in demand, and reduce power consumption by up to 85% ensuring the lowest possible energy consumption without sacrificing comfort.

The Grundfos ALPHA2 circulator and AUTOADAPT are predicated on:

- 65 years of hydronic experience of how pumps work in countless applications and operating environments
- 15 years of ECM motor experience in the market
- ALPHA2 materials and design resist blockage from magnetite and iron oxide particles found in closed hydronic systems
- ALPHA2 is made at our Grundfos manufacturing plant in Fresno, California

Key Features and Benefits

- Simple push button control enables the ALPHA2 to be programmed in one of 3-constant speed, 3-constant pressure, or AUTO*ADAPT* control modes. The current operating mode is always visible on the ALPHA2's LED display
- The large LED display shows the current energy consumption in Watts and estimated flow in gallons per minute
- For installation, you have the flexibility to use either our unique ALPHA Plug with line cord or the ALPHA2 with terminal box for conduit connections
- ALPHA2 is complete with an integrated check-valve, foam insulation jacket, and nut captures for flanges. ALPHA2 comes in both cast iron and stainless steel models
- Robust startup enables the ALPHA2 to continuously attempt to restart – indefinitely – in blocked rotor conditions
- ALPHA2 can be used as a replacement for more than 30 competitor pump models

APPLICATIONS

- Heating & cooling
- Hot water recirculation

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ALPHA2 Technical Data

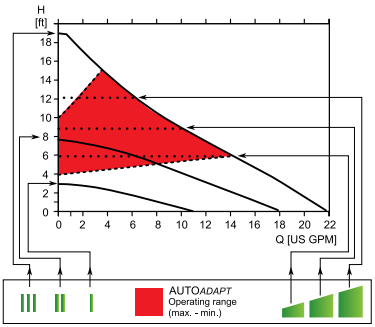
ALPHA2 INFORMATION

Flow, Q:	max. 21 gpm
Head, H:	max. 19 ft
Motor:	1 x 115V
Liquid Temperature:	36° F to 230° F
Working Pressure:	max. 150 psi
Watts:	5-45 W
Amps:	0.65 A
Approvals:	ETL, NSF 61, NSF 372

Product Offering

Model	Description
ALPHA2 15-55F	Cast iron flange with terminal box
ALPHA2 15-55FR	Cast iron rotated flange with terminal box
ALPHA2 15-55SF	Stainless flange with terminal box
ALPHA2 15-55F/LC	Cast iron flange with line cord
ALPHA2 15-55FR/LC	Cast iron rotated flange with line cord
ALPHA2 15-55SF/LC	Stainless flange with line cord

Performance Data



ALPHA APPROXIMATE POWER USAGE

Speed setting		Min.	Max.
High fixed speed	III	39W	45W
Medium fixed speed	II	15W	30W
Low fixed speed	I	5W	8W
Constant pressure		8W	45W
Constant pressure		14W	45W
Constant pressure		22W	45W
AUTOADAPT	AUTO ADAPT	5W	45W

Cross Reference Chart

ALPHA2	GRUNDFOS	TACO	B&G	Armstrong	WILO
ALPHA2 15-55F (LC)	UP 15-10F UP 15-42F UPS 15-42F UPS 15-58FC ALPHA 15-55F	005-F2-3 006-F7 007-F5-5 008-F6-1 008-F6-3 00R-F6-1 0015-MSF3-1	NRF-25 NRF-9F/LW Ecocirc 19-14 vario Ecocirc 19-14 auto	Astro 230CI-R Astro 250CI-R Compass 20-20	Star S 16FX Star S 21FX Star S 21RFC Stratos ECO 16 RFC
ALPHA2 15-55FR (LC)	UP 15-10FR UP 15-42FR UPS15-58FRC ALPHA 15-55FR	005-F2-2 007-F5 008-F6 00R-MSF 0015-MSF3	NRF-22 NRF-9F/LW	Astro 230CI Astro 250CI Astro 20 Astro 25 Astro 30	Star S 16F Star S 21F Star S 21RFC Stratos ECO 16 RFC

L-ALS1-002 01-18

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High Efficiency Circulator

GRUNDFOS ALPHA1

The ALPHA1 is an energy efficient, variable-speed circulator built with reliable, electronically controlled Grundfos permanent magnet motor (ECM) technology, which has been used by Grundfos in the industry for more than 16 years. Featuring three-constant pressure control modes, an LED display and easy-to-use push button controls, the ALPHA1 is the perfect solution for domestic hydronic heating and hot water recirculation applications.

Capable of replacing more than 30 other pump models, the ALPHA1 has the highest torque rating and most powerful start feature in its class. A magnetite resistant design, robust ceramic shaft and stainless steel bearing plate ensure that the ALPHA1 reliably delivers the optimal system flow at the lowest possible energy consumption.

The expanded ALPHA product line, including the ALPHA1 and ALPHA2, delivers the highest range of flexibility and feature options to meet the needs of many applications. All components of the ALPHA1 and ALPHA2 are produced by Grundfos with our highest manufacturing standards – the ALPHA product line is built by Grundfos in Fresno, California.

Not all circulators are created equal.
be genuine ALPHA1

Key Features and Benefits

- ALPHA1 can replace more than 30 other pump models
- Designed with trusted Grundfos ECM technology which has been used by Grundfos for more than 16 years
- ALPHA1 features the highest torque rating and most powerful start feature in its class which attempts to restart indefinitely every seven seconds in blocked rotor conditions
- ALPHA1 features an integrated check-valve and nut captures for flanges
- ALPHA1 features three-constant pressure control modes with easy to use push button settings
- Large LED display shows energy watt consumption and flow indicator in gallons per minute
- Magnetite resistant design with a stainless-steel bearing plate, robust ceramic shaft and ceramic bearing rings
- Extremely quiet 19.2 dB(A) operation – tested in one of the best European sound labs
- Available in both cast iron and stainless steel models
- ALPHA1 is compatible with either a line cord or terminal box for conduit connections

APPLICATIONS

- Heating & cooling
- Hot water recirculation

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ALPHA1 Technical Data

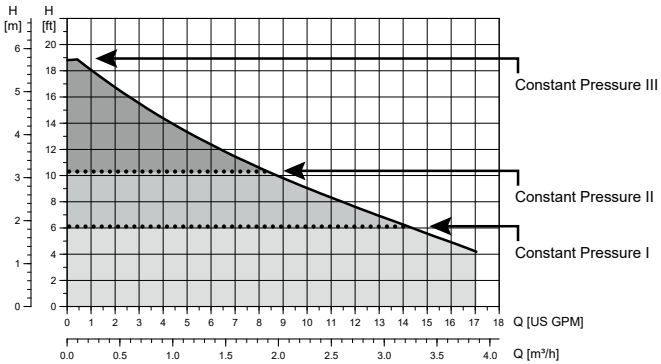
ALPHA1 INFORMATION

Flow, Q:	max. 21 gpm
Head, H:	max. 19 ft
Motor:	1 x 115V
Liquid Temperature:	36° F to 230° F
Working Pressure:	max. 150 psi
Watts:	5-45 W
Amps:	0.65 A
Approvals:	ETL, NSF 61, NSF 372 Canadian ICES-003

Product Offering

Product Number	Model	Description
99287256	ALPHA1 15-55 F	Cast iron flange with terminal box
99287259	ALPHA1 15-55 FR	Cast iron rotated flange with terminal box
99287262	ALPHA1 15-55 SF	Stainless flange with terminal box
99285998	ALPHA1 15-55 F/LC	Cast iron flange with line cord
99287244	ALPHA1 15-55 FR/LC	Cast iron rotated flange with line cord
99287250	ALPHA1 15-55 SF/LC	Stainless flange with line cord

Performance Data



- Push-button for selection of pump setting
- Every time the push-button is pressed, the circulator pump setting is changed.

III **Constant Pressure III**
- The duty point of the pump will move left and right along the highest constant-pressure curve depending on the water demand in the system.

II **Constant Pressure II**
- The duty point of the pump will move left and right along the middle constant-pressure curve depending on the water demand in the system.

I **Constant Pressure I**
- The duty point of the pump will move left and right along the lowest constant-pressure curve depending on the water demand in the system.

Cross Reference Chart

The Grundfos ALPHA1 can replace the pump models listed below:

GRUNDFOS	TACO	B&G	Armstrong	WILO
UP 15-10F UP 15-42F UPS 15-42F UPS 15-58FC	005-F2-3 006-F7 007-F5-5 008-F6-1 008-F6-3 00R-F6-1 00R-MSF 0015-MSF3-1 007e 0015e	NRF-9F/LW NRF-22 NRF-25 Ecocirc 19-14 vario Ecocirc 19-14 auto	Astro 20 Astro 25 Astro 30 Astro 230CI-R Astro 250CI-R Compass 20-20	Star S 16FX Star S 21FX Star S 21RFC Stratos ECO 16 RFC

Intertek

CLASSIFIED WATER QUALITY

Drinking Water System Component

NSF / ANSI 61

NSF / ANSI 372

L-ALS1-003 0-18

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All Purpose Circulator Pump

GRUNDFOS **MAGNA3**

MAGNA3 is the ideal all purpose circulator pump for heating and cooling applications as well as domestic hot water circulation systems. The permanent magnet motor, AUTOADAPT function and integrated frequency converter combined with groundbreaking new technologies make MAGNA3 a cutting-edge piece of intelligent technology that retains Grundfos' unrivalled industry leading experience with electronic pumps.

Key Features and Benefits

- Best efficiency in the market minimizes energy costs
- Intelligent control modes reduce investment costs and gain complete control of your system
- Full range of single and twin circulators in both cast-iron and stainless steel ensuring perfect fit and low life cycle costs
- Integrated pump, motor and control saves time and effort with easy installation
- Easy to use, intuitive controls
- Electronically commutated motor uses a fraction of the energy of a standard motor
- Insulating shells supplied with single-head pumps for heating systems
- Easy building management system integration, communication interface modules are easily mounted directly in the control box
- Wireless multi-pump control includes a built-in wizard, making connection to a parallel coupled pump quick and easy
- Built in diagnostics assist troubleshooting, energy tracking and logging without need for additional equipment
- Grundfos GO lets you use your smart phone to access interface, regardless of pump location
- Wet rotor design allows for maintenance free and quiet operation
- Innovative Grundfos Eye provides visual indication of pump status: pump running, warning or alarm

APPLICATIONS

- Heating & cooling
- Ground source heat pump systems
- Hydronic venting
- Chilled water
- Snow melt
- Hot water recirculation
- BTU meter

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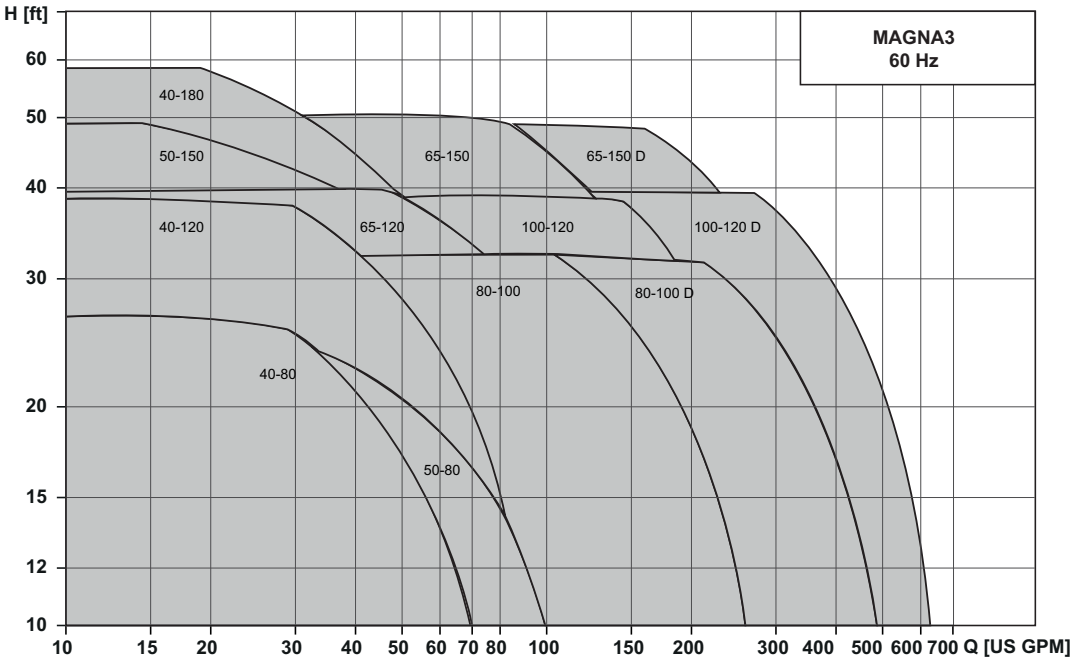
MAGNA3 **Technical Data**

MAGNA3 **INFORMATION (All Models)**

Flow, Q:	max. 346 gpm
Head, H:	max. 58 ft
Liquid Temperature:	14° F to 230° F
Ambient Temperature:	32° F to 104° F



L-MG-Si-001 01-18

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Hot Water Recirculation Pump

GRUNDFOS COMFORT PM AUTO

The COMFORT PM AUTO range sets new standards for energy-efficient hot water recirculation in residential homes. Thanks to a low noise permanent magnet motor, energy consumption is reduced to as little as 5-8.5 W. Utilizing AUTOADAPT ensures the pump only runs when required, so the result is maximum comfort with lower wait times for hot water as well as reducing water and electrical waste.

What is a comfort hot water recirculation pump?

A hot water recirculation pump is designed for recirculation of domestic hot water in single family homes with dedicated hot water return piping. The recirculation pump transfers hot water from the hot water tank to tapping points throughout the home, automatically sending cooled water back to the tank.

Key Features and Benefits

- Delivers hot water efficiently, eliminating the expensive and annoying wait for hot water delivery to the tap
- Easy to install, even in confined spaces
- Intelligent AUTOADAPT function significantly reduces energy consumption by ensuring the pump runs only when required
- Silent opertation
- Integrated external sensor cable allows sensor to be simple mounted on the hot water supply pipe
- With one -touch operation, settings are easily changed using only the fingertip
- 6 foot line cord standard
- Insulation shells provided for fast installation
- Lead free brass housing eliminates risk of corrosion
- Three operation modes to provide hot water in an instant:
  - AUTOADAPT mode: learns, stores and adapts operation time to the consumption pattern of the home owner
  - Temperature mode: keeps the water temperature within an automatically detected range in the individual system
  - 100% mode: lets the pump run constantly at full speed
- Extended pump range up to 20,000 gallons-per-minute to serve all your high flow applications
- Francis Vane Impeller design with extended vanes and enlarged eye increases efficiency and reduces vibration and noise
- NSF/50 certifications (available upon request)

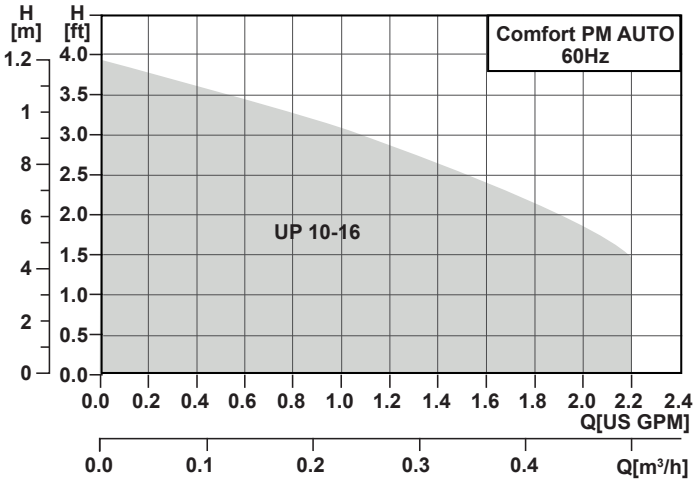
APPLICATIONS

- Hot water recirculation

COMFORT PM AUTO **Technical Data**

COMFORT PM AUTO **INFORMATION**

Flow, Q:	max. 2.2 gpm
Head, H:	max. 3.9 ft
Liquid Temperature:	36°F to 203°F
Power:	5 - 8.5 W



L-UP-SL-026 01-18

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PUMP SYSTEMS

Packaged Pumping Systems

HYDRO MPC BOOSTERPAQ®

Grundfos Hydro MPC BoosterpaQ is a fully integrated system with pump, motor and variable frequency drive – all from one manufacturer.

The system is controlled by the advanced CU 352 MPC controller, and features the extremely reliable, high efficiency CR pump range with MLE permanent magnet (ECM) integrated VFD/motor and hygienically designed 316 stainless steel manifolds.

This packaged pumping system is factory assembled and factory tested to the highest standard to ensure trouble free installation and commissioning.

The Best Booster System Just Got Even Better

- The new MLE permanent magnet (ECM) motor offers an additional 7-10% decrease in energy cost over NEMA Premium motors with conventional variable frequency drives
- System NSF 61/372 Approval allows us to build complete packaged pumping systems in unsurpassed pressure ranges
- Seismic certification by OSHPD (OSP-0491-10) for MPC E (CUE) systems

Key Features and Benefits

- Saves energy with the most efficient cascade control, application optimized software, and pumps in the industry
- Control features include estimated flow readout on controller and specific energy readout with inclusion of flow meter
- Built-in logging capability provides historical information for trouble-shooting and energy analysis
- Low flow stop control that exceeds ASHRAE 90.1 energy code for service water boosters
- Simple to operate with large, user friendly and advanced controls interface
- SCADA communication capable via ethernet and all industry standard BUS protocols
- Built with the world's number one multi-stage centrifugal pumps, the CR and CRE, known for their reliability, efficiency and adaptability
- MLE permanent magnet (ECM) motor in combination with pumps and advanced control with customizable software, optimizes your system's performance for any load point, resulting in an unsurpassed reduction of energy consumption of 18%, or greater, in comparison to conventional VFD constant pressure systems
- Single source responsibility ensures one manufacturer for pumps, motors, drives and control
- Hygienically designed 316 stainless steel manifolds guarantee protection against corrosion, and extrusion process results in hydraulic optimization, reduced pressure loss and noise
- Small footprint plug-and-pump complete solution

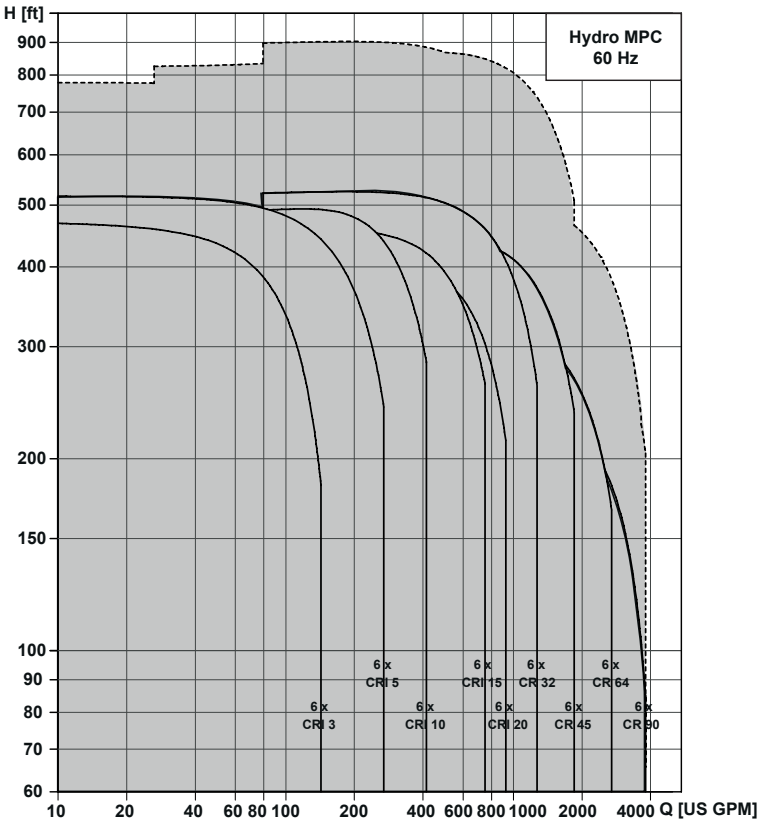
APPLICATIONS

- Domestic water pressure boosting
- Multi-story and commercial buildings
- Water utility and municipal settings
- HVAC applications
- Industry and plant boosting
- Irrigation

HYDRO MPC **Technical Data**

HYDRO MPC **INFORMATION**

Flow, Q (2-6 pumps):	max. 3,600 gpm (818 m3/h)
Head, H:	max. 800 ft. (244 m.)
Liquid Temperature:	max. 400 psi (27.6 bar)
Approvals:	System NSF 61/372 Approval OSHPD - Seismic Certification (OSP-0491-10) UL Listed Packaged Pumping System



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Pressure Boosting System

GRUNDFOS HYDRO MULTI-B

The Grundfos Hydro Multi-B is a compact, reliable, and energy efficient constant pressure booster system ideal for domestic water pressure such as apartments, large homes, and multi-story buildings.

This system is a unique combination of variable speed multi-stage pumps and simple user interface, and provides a lower cost booster solution. The CME pump combined with an MLE motor provides variable speed functionality and energy efficiency.

Key Features and Benefits

- Plug-and-pump system is the easiest on the market to specify, size, purchase, install and commission
- Single source responsibility ensures one manufacturer for pumps, motors, system components and control
- An affordable option for your pressure boosting applications
- Compact design fits into tight spaces which makes it ideal for retrofits
- SCADA communication capable via ethernet and all industry standard BUS protocols
- Grundfos GO lets you use your smart phone to access interface, regardless of pump location
- Drinking water approvals NSF61/372

CU 323 CONTROLLER

- Designed to run up to three parallel connected pumps
- Simplicity was the key design concept of this powerful and extremely easy to use pump controller
- Enables manual setting and change of parameters such as setpoint, start/stop of system or individual pumps, resetting of alarms
- BACnet, BACnet IP, Modbus, Modbus IP, Profibus and SCADA communication options guarantee integration into your management system of choice

CME PUMP

- An industrial quality and quiet horizontal multi-stage pump, the compactness of the Hydro Multi-B is only achievable due to the unique combination of size and performance that the Grundfos CME

MLE MOTOR

- Grundfos integrated variable frequency drive and motor combined eliminates complexity by matching variable speed motor, drive and control logic components
- Incorporates permanent magnet motor technology for overall variable frequency drive and motor efficiency higher than premium efficiency motors
- Integrated variable frequency drive saves space compared to motor and external drive
- Requires no external motor protection and incorporates thermal protection against slow overloading components

MANIFOLDS

- Hygienically designed 316 stainless steel manifolds guarantee protection against corrosion
- Extrusion process results in hydraulic optimization, reduced pressure loss and noise, as well as the best conditions to meet hygienic standards

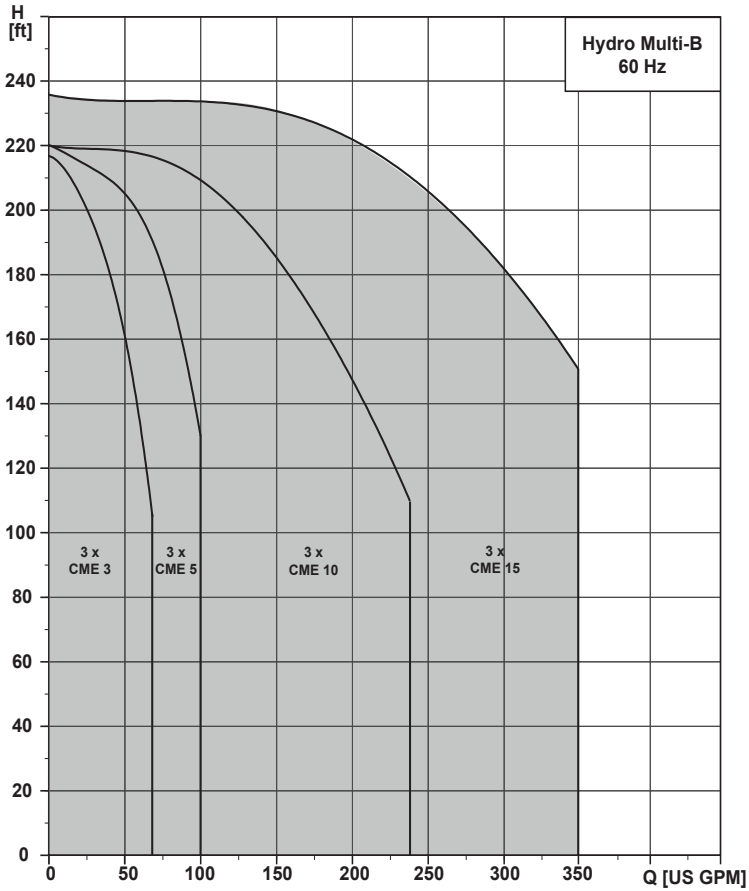
APPLICATIONS

- Domestic water pressure boosting
- Multistory buildings, such as apartment buildings
- Light commerical
- Rural areas requiring pressure boosting

HYDRO MULTI-B **Technical Data**

HYDRO MULTI-B **INFORMATION**

Flow, Q:	max. 360 gpm
Head, H:	max. 240 ft
Liquid Temperature:	+32° F to 176° F
Working Pressure:	max. 145 psi



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Pressure Boosting System

GRUNDFOS HYDRO MULTI-E

The Hydro Multi-E pressure booster system is an innovative boosting solution for variable water flow applications such as pressure boosting, process, and hydronic water circulation applications. For energy savings and comfort, the Hydro Multi-E system uses parallel mounted Grundfos CRE variable-speed pumps that have a reputation for providing the ultimate in efficiency and reliability. With a state-of-the-art integrated ECM MLE motor, the Hydro Multi-E arrives ready to install.

Key Features and Benefits

- 2 and 3 pump systems with CRE3-CRE20 pumps
- Performance range: max gpm 460, max pressure 232 psi
- All motors capable of master motor control
- Two sensors standard – 100% redundancy
- Advanced control interface installed in one pump – System controller
- New functionality:
  - Control from discharge-suction sensor (DP across pumps)
  - Limit Exceed 1 & 2
  - Setpoint influence
  - Pipe fill
  - SCADA via CIM expansion card
- Small footprint for space-saving complete solution
- SCADA communication capable via CIM expansion card with all industry standard BUS protocols
- System NSF61/372 certified
- UL listed package pumping system

MLE MOTOR

- The Grundfos ECM MLE motors exceed IE5 motor efficiency standards, set by the International Electrotechnical Commission, currently the highest efficiency level worldwide for electrical motors. NEMA premium efficient motors are equal to IE3 level, so these motors represent two levels above NEMA premium. The result of this increased efficiency is reduced energy consumption/operating costs by 7-9%, based on a typical domestic water load profile
- Grundfos integrated variable frequency drive and motor combined eliminates complexity by matching variable speed motor, drive and control logic components

CRE PUMP

- World's number one multi-stage centrifugal pumps, the CR and CRE, known for their reliability, efficiency and adaptability

MANIFOLDS

- Hygienically designed 316 stainless steel manifolds guarantee protection against corrosion
- Extrusion process results in hydraulic optimization, reduced pressure loss and noise, as well as the best conditions to meet hygienic standards

APPLICATIONS

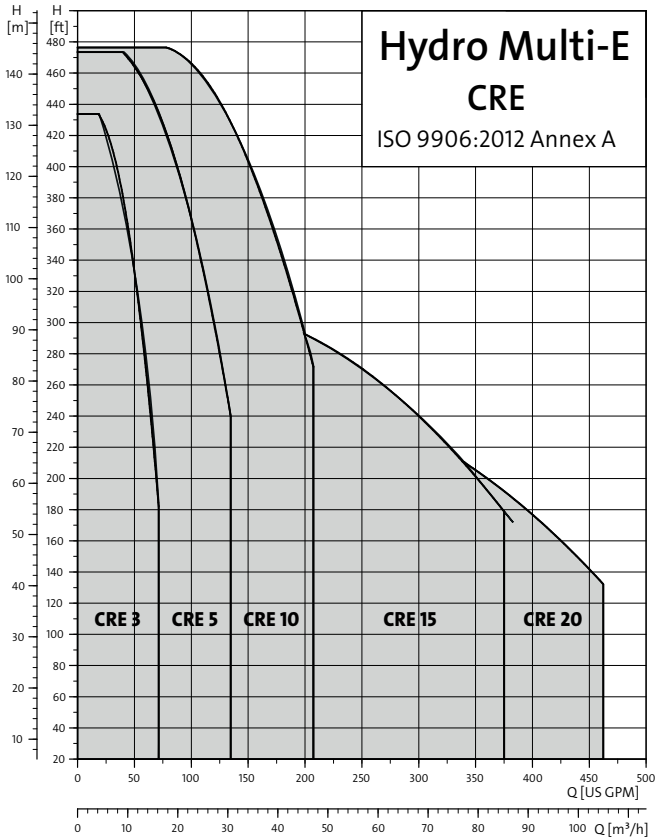
- Commercial building pressure boosting
- Industrial process
- Turf irrigation
- Hot/Cold hydronic water circulation

HYDRO MULTI-E **Technical Data**

HYDRO MULTI-E **INFORMATION**

Flow, Q:	max. 460 gpm
Head, H:	max. 475 ft
Liquid Temperature:	+32°F to +176°F
Working Pressure:	max. 232 psi

HP	TEFC Motor + Conventional VFD			Grundfos MLE	
	NEMA Premium (IE3) Eff.	Typical VFD Efficiency	Combined Motor+VFD Efficiency	MLE IE5 Efficiency	Efficiency Increase
2	85.5	97.0	82.9	89.4	6.5
3	86.5	97.0	83.9	90.7	6.8
5	88.5	97.0	85.8	92.5	6.7
7.5	89.5	97.0	86.8	92.4	5.6
10	90.2	97.0	87.5	92.5	5.0
15	91.0	98.0	89.2	93.2	4.0



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ENGINEERED SYSTEMS

Packaged Pumping Systems

GRUNDFOS ENGINEERED SYSTEMS

Grundfos Engineered Systems (GES) designs and manufactures packaged pumping systems for Commercial and Industrial applications. We focus on solutions that combine our unique core technologies. These solutions include optimized pumping systems with intelligent controls and packaged plants that include the selection of the most efficient equipment technology available for each application. GES offers open skid systems or enclosed systems. Our outdoor rated modular enclosures are designed for superior life and include lighting, convenience receptacles, and HVAC unit for equipment maintenance working conditions. Seismic and wind load rating available along with corrosive environment coatings for conditions such as sea water.

Key Features and Benefits

- Integration of Grundfos premium efficient pumps from our comprehensive range of pumps. The pump on any HVAC system is the engine that drives the heating and cooling medium throughout the building
- Complete electrical distribution for single-point input power connection.
- Innovative design and intensive engineering effort translate into lower initial cost, longer pump life, and lower maintenance costs
- Systems designed for maximum efficiency, reliability, and quieter operation for the end user
- Fixed costs and guaranteed delivery for a major portion of your project
- CU 352 control system for ease of use and integration with your facility
- GES systems are built to be shipped to jobsite, installed quickly, and efficiently for immediate operation. Factory built systems minimize jobsite disruption and various construction delays.
- Pressure testing of all finished piping and components up to 300 psi as needed by project
- Continuity test of all 480V power wiring for proper phasing and grounding
- Engineered to order design with 3D CAD modeling
- Single source of manufacturing and ISO 9001 facility provides quality construction and value-added services

APPLICATIONS

- Chilled water distribution
- Heating water distribution
- Condenser water distribution
- Geothermal loop
- Critical cooling
- District heating and cooling
- Industrial process

GES Packaged Pumping System **Technical Data**

Control variant	*GES Unit*
Hydraulic data	
Maximum head ft [m]	690 ft [210 m]
Flow rate gpm [m3/h]	**1** to 32,000 gpm (7268 m^3/h)
Liquid temperature °F [°C]	0° to 200° F [-18° to 93° C]
Maximum operating pressure psi [bar]	300 psi [20 bar]
Pump and motor data	
Number of pumps	as specified
Motor power hp	1 hp to 600 hp [0.7457 KW-447.42 KW]
Check Valve	
Non-slam Dual Disc	2" to 24" [5 to 60 Cm)
Silent check valve	○
Isolation valves	
Butterfly	2 1/2" to 36" [6.5 to 91Cm)
Ball Valve	1/4" to 2" [0.625 To 5cm]
Gate Valve	○
General materials and fittings	
Suction diffuser	●
Strainer	○
Concentric reducer	○
Eccentric reducer	○
Pipe supports	welded to frame
Decking: 3/16" gage hot rolled	●
Channel base frame	4" to 14"
Piping	
Carbon steel	●
Stainless steel 316/304	○
Pipe connections	
ANSI flange	●
Grooved	○
Threaded	○
Approvals	
ISO 9001	●
ETL listed	○
Electrical data	
VFDs	●
Power distribution	●
Control panel	○
Instrumentation	●
Options	
Standby pumps	○
CIM (Communication Interface Module)	○
Air Separator: ASME tangential	○
Expansion Tank: ASME, bladder	○
Pressure reducing valves (PRVs)	○
Buffer tanks	○
Filteration	○
Heat Exchanger	○
Enclosure	○

● Available as standard

○ Available as option or accessory

L-GES-SL-08 01-18

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Commercial / Industrial

GRUNDFOS ENGINEERED SYSTEMS

Grundfos Engineered Systems (GES) offers a broad range of products from standard designs to site specific engineered-to-order solutions. These solutions include optimized pumping systems with the selection of most efficient pump types and technologies and intelligent controls available for each application. The GES packages arrive pre-wired, pre-piped and pre-commissioned. A GES packaged system will eliminate the headaches of cost over-runs and unforeseen operational problems often experienced with a component system. Total cost and schedule are accurately determined long before installation is completed.

GES packaged systems and plants come with a multitude of options including: Grundfos premium efficient pumps combined with customer specified equipment, valves, controls, intelligent controllers and VFDs for your specific equipment requirements. GES provides skid mounted packages that can be open or enclosed in a variety of fiberglass and steel options. Each enclosed option has an assortment of exterior colors and façade options to meet your site conditions. The GES enclosed pumping systems and plants also can include electrical distribution, separate dry rooms, HVAC options and any customer specified accessories.

Key Features and Benefits

- Single source of products and manufacturing provide cost confidence and schedule ease for end user
- ISO 9001 manufacturing facility provides quality construction and value-added services
- Simplified power distribution for complete single-point input power connection
- Controlled manufacturing environment for on time delivery to site
- Innovative designs using 3D CAD modeling and dedicated engineering effort translate into lower initial cost, longer pump life, and lower maintenance costs
- GES team of engineering and manufacturing experts support our customers from concept design to installation and beyond
- GES facility manufacturing footprint of over 240,000 sq ft with heavy crane bays for large plants and systems
- Pressure testing of all finished piping and components up to 300 psi as required by project
- Continuity test of all 480V power wiring for proper phasing and grounding
- NSF61 compliant components and designs available

GES provides innovative solutions for a variety of systems, including:

- Packaged pumping systems
- Heat transfer systems
- Packaged chiller plants
- Packaged boiler plants
- Industrial processing systems

APPLICATIONS

- Chilled water distribution
- Heating water distribution
- Condenser water distribution
- Geothermal loop
- District heating and cooling
- Pressure boosting
- Industrial process

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GRUNDFOS

GES **Product Data**

Grundfos has served the North American market for more than 40 years, flourishing from one small factory in Fresno, California, to 17 manufacturing, logistics, sales and service facilities throughout the region. Today Grundfos provides comprehensive, cross-continental coverage through several marquee product brands, some with roots going back a century or more. GES, utilizing Grundfos and its legacy brands such as PACO and Peerless, provides a complete portfolio of products for its customers.

Pumps

- Any variation or quantity of pumps produced by Grundfos

Controls

- Integrated power panel (every component is pre-wired)
- UL rated control panels
- Grundfos CU intelligent controller or customer-specified PLC/HMI
- Grundfos CUE VFDs or customer specified
- Grundfos Remote Management or BACnet integration

Enclosures

- Fiberglass
- Steel with outdoor rated 3-part epoxy coating finish of 100+ color choices
- Separate dry room for controls and/or chemical feed
- Environmental controls options may include ventilation, heaters and/or self-contained HVAC units
- Upgraded façade options such as faux stone or brick
- Standard steel enclsoures include lighting and convenience receptacles
- Seismic and wind load rating per specificiation available. Minimum 120 MPH wind and 30 PSI snow load ratings standard
- Corrosive enviroment coatings for conditions such as sea water available

Accessories

- Expansion tanks
- Air separators
- Buffer tanks
- Heat exchangers
- Chemical bypass feeders
- Glycol management system
- Other, as specified

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Packaged Heat Transfer Systems

GRUNDFOS ENGINEERED SYSTEMS

Grundfos Engineered Systems (GES) designs and manufactures packaged units to transfer energy such as water and steam to usable energy for commercial and industrial applications. The GES engineering team designs each unit utilizing the most efficient and cost effective heat exchanger technology for each project need combined with pumps, valves, controls, VFDs and other customer specified equipment. ASME coded pressure vessels, accessories and piping are a standard for every GES packaged system.

Key Features and Benefits

- Integration of heat exchangers, pumps, controls, control valves and accessories on a common skid base
- Utilization of proper heat transfer technology custom engineered for your needs. Shell and tube, plate and frame or brazed plate heat exchangers as options
- Complete electrical distribution for single-point input power connection.
- Systems may be designed for up to 30 psi steam intake
- Innovative design and intensive engineering effort translate into lower initial cost and lower maintenance costs
- Systems designed for maximum efficiency, reliability, and quieter operation for the end user
- Fixed costs and guaranteed delivery for a major portion of your project
- CU 352 control system for ease of use and integration with your facility
- GES systems are built to be shipped to jobsite, installed quickly, and efficiently for immediate operation. Factory built systems minimize jobsite disruption and various construction delays.
- Pressure testing of all finished piping and components up to 300 psi as needed by project
- Engineered to order design with 3D modeling
- Continuity test of all 480V power wiring for proper phasing and grounding
- Single source of manufacturing and ISO 9001 facility provides quality construction and value-added services

APPLICATIONS

- HVAC
- Critical cooling
- Industrial processing
- District heating and cooling

GES Packaged Heat Transfer Systems **Technical Data**

Control variant	*GES Unit*
Hydraulic data	
Maximum head ft [m]	690 ft [210 m]
Flow rate gpm [m3/h]	1 to 32,000 gpm (7268 m^3/h)
Liquid temperature °F [°C]	0° to 200° F [-18° to 93° C]
Maximum operating pressure psi [bar]	300 psi [20 bar]
Pump and motor data	
Number of pumps	as specified
Motor power hp	1 hp to 600 hp [0.7457 KW-447.42 KW]
Heat Transfer System types	
Steam to Hot Water system	O
Chilled water System	O
Hot water System	O
Heat Exchanger Data	
Plate and Frame	O
Shell and Tube	O
Temp. range	as specified
Heat Transfer System types	
Hot water and Steam system	O
Chilled water System	O
Hot water System	O
Heat Exchanger Data	
Plate and Frame	O
Shell and Tube	O
Temp. range	0° to 200° F [-18° to 93° C]
General materials and fittings	
Pipe supports	welded to frame
Decking: 3/16" gage hot rolled	●
Channel base frame	4" to 14"
Piping	
Carbon steel	●
Stainless steel 316/304	O
Threaded	O
Approvals	
ISO 9001	●
ETL listed	O
Electrical data	
VFDs	●
Power distribution panel	●
Control panel	O
Options	
Standby pumps	O
CIM (Communication Interface Module)	O
Air Separator: ASME tangential	O
Expansion Tank: ASME, bladder	O
Pressure reducing valves (PRVs)	O
Enclosure	O

● Available as standard

O Available as option or accessory

L-GES-SL-05 01-18

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Packaged Chiller Plants

GRUNDFOS ENGINEERED SYSTEMS

Grundfos Engineered Systems (GES) designs and manufactures packaged chiller plants for optimal climatization. Our chiller plants incorporate Grundfos energy efficient pumping systems, a variety of chiller technologies, and condenser water systems for fully integrated modular plants. Our outdoor rated modular enclosures are designed for superior life and include lighting, convenience receptacles, and HVAC unit for equipment maintenance working conditions. Seismic and wind load rating available, along with corrosive environment coatings for conditions such as sea water.

Key Features and Benefits

- Integration of our Grundfos premium efficient pumps. The pump on any HVAC system is the engine that drives the heating and cooling medium throughout the building.
- Utilization of the proper chiller technology custom designed for your project need, not just a catalog product.
- Fixed costs and guaranteed delivery for a major portion of your project.
- Our plants are built to be shipped to jobsite, installed quickly, and efficiently for immediate operation. Factory built plants minimize jobsite disruption and various construction delays.
- Complete electrical distribution for single-point input power connection.
- Complete structural platforms for cooling tower installations. Options include: fully integrated structure to base, side-by-side designs for low profile, or other custom designs to provide lowest overall footprint.
- Pressure testing of all finished piping and components up to 300 psi as needed by project.
- Continuity test of all 480V power wiring for proper phasing and grounding.
- Complete controls integration, from mounting customer supplied controls to Grundfos fully integrated control systems with BACNet compatibility. Integration heat exchangers, pumps, controls, control valves and accessories on a common skid base
- Engineered to order design with 3D CAD modeling
- Single source of manufacturing provides quality construction and value-added services

APPLICATIONS

- HVAC
- Critical cooling
- District heating and cooling

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GES Packaged Chiller Plants **Technical Data**

Control variant	*GES Unit*
Hydraulic data	
Maximum head ft [m]	690 ft [210 m]
Flow rate gpm [m3/h]	**1** to 32,000 gpm (7268 m^3/h)
Liquid temperature °F [°C]	0° to 125° F [-18° to 51° C]
Maximum operating pressure psi [bar]	300 psi [20 bar]
Pump and motor data	
Number of pumps	as specified
Motor power hp	1 hp to 600 hp [0.7457 KW-447.42 KW]
Chiller types	
Water cooled chiller	●
Air cooled chiller	O
Absorption chiller	O
Chiller data	
Number of chillers	as specified
Cooling Capacity	2,600 ton per module
Cooling tower	
Number of towers	as specified
Tower cooling Capacity	2,600 ton per module
Counter-flow induced draft tower	●
Crossflow induced draft tower	O
General materials and fittings	
Pipe supports	welded to frame
Decking: 3/16" gage hot rolled	●
Channel base frame	4" to 14"
Piping	
Carbon steel	●
Stainless steel 316/304	O
Pipe connections	
ANSI flange	●
Grooved	O
Threaded	O
Approvals	
ISO 9001	●
ETL listed	O
Electrical data	
VFDs	●
Power distribution	●
Controls panel	O
Instrumentation	●
Options	O
Air Separator: ASME tangential	O
Expansion Tank: ASME, bladder	O
Insulation	O
Heat trace	O
Chilled water system Filtration	O
Cooling tower system side stream separation system/Filtration	O
Enclosure	O
Freon Monitoring and/or Purge unit	O

● Available as standard

O Available as option or accessory

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Packaged Boiler Systems & Plants

GRUNDFOS ENGINEERED SYSTEMS

Grundfos Engineered Systems (GES) designs and manufactures packaged boiler systems and plants for optimal climatization. Our boiler plants incorporate Grundfos energy efficient pumping systems, a variety of boiler technologies, and condensate return water systems for fully integrated modular plants. Our outdoor rated modular enclosures are designed for superior life and include lighting, convenience receptacles, and HVAC unit for equipment maintenance working conditions. Seismic and wind load rating available along with corrosive environment coatings for conditions such as sea water.

Key Features and Benefits

- Integration of our complete Grundfos premium efficient pumps. The pump on any HVAC system is the engine that drives the heating and cooling medium throughout the building.
- Utilization of the proper boiler technology custom designed for your project need.
- Fixed costs and guaranteed delivery for a major portion of your project. Gas and condensate lines included on systems when needed.
- Our plants are built to be shipped to jobsite, installed quickly, and efficiently for immediate operation. Factory built plants minimize jobsite disruption and various construction delays.
- Complete electrical distribution for single-point input power connection.
- Complete designs with steam generators along with both condensing and non-condensing hot water boilers.
- Pressure testing of all finished piping and components up to 300 psi as needed by project.
- Continuity test of all 480V power wiring for proper phasing and grounding.
- Engineered to order design with 3D CAD modeling.
- Single source of manufacturing provides quality construction and value-added services.

APPLICATIONS

- HVAC
- Critical cooling
- District heating
- Industrial process

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GES Packaged Boiler Systems **Technical Data**

Control variant	*GES Unit*
Hydraulic data	
Maximum head ft [m]	345 ft [m]
Flow rate gpm [m3/h]	1 to 4,200 gpm (m^3/h)
Liquid temperature °F [°C]	120° to 220° F [° to ° C]
Maximum operating pressure psi [bar]	150 psi [10 bar]
Pump and motor data	
Number of pumps	as specified
Motor power hp	1 hp to 350 hp [0.7457 KW-KW]
Boiler Type	
Hot water Gas Boiler	●
Hot water Electric Boiler	O
Temp. range	120 to 220 F
Isolation valves	
Butterfly	2 1/2" to 14" [6.5 to Cm)
Ball Valve	1/4" to 2" [1.75 To 5cm]
Gate valve	O
General materials and fittings	
Decking: 3/16" gage hot rolled	●
Channel base frame	4" to 14"
Makup water line double check valve	O
Piping	
Carbon steel	●
Stainless steel 316/304	O
Pipe connections	
ANSI flange	ANSI flange
Grooved	O
Threaded	O
Approvals	
ISO 9001	●
ETL listed	O
Electrical data	
VFDs	●
Power distribution	
Controls panel	O
Instrumentation	●
Options	
Standby pumps	O
Air Separator: ASME tangential	O
Expansion Tank: ASME, bladder, top feed	O
Pressure reducing valves (PRVs)	O
Steam Boiler Data	
Number of Boilers	as specified
Steam Capacity	as specified
Pressure Class	as specified
Temp. Range	as specified
Steam Separator	O
Pilot Operated Steam regulator Valve	O
Enclosure	O

● Available as standard

O Available as option or accessory

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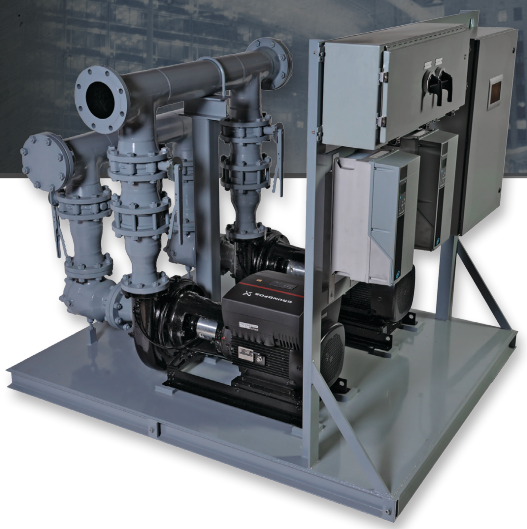
HVAC Packaged Pumping Systems

GRUNDFOS PACOpaQ™

The PACOpaQ™ is a packaged pumping system designed for commercial HVAC applications. The 2, 3 or 4 pump system features advanced controls, an integrated Grundfos variable frequency drive and comes standard with reliable PACO pumps. Modular customization is available for applications with specific requirements.



Key Features and Benefits

- Complete unit, single source responsibility for reduced installation costs
- Complete range of end suction and vertical in-line PACO pumps
- CU 352 control system for ease of use and integration with your facility
- ISO 9001 manufacturing facility provides quality construction and value-added services
- Innovative design and intensive engineering effort translate into lower initial cost, longer pump life, and lower maintenance costs
- Systems designed for maximum efficiency, reliability, and quieter operation for the end user
- Systems are thoroughly tested before they ship from the factory

Systems provide innovation solutions to the following markets:

- Commercial and Industrial
- Data Centers
- Primary and Secondary Education
- Healthcare
- Colleges and Universities
- Government and Military

APPLICATIONS

- Chilled water distribution
- Hot water distribution
- Condenser water distribution
- Geothermal loop
- District heating and cooling

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PACOpaQ **Technical Data**

Control variant	PACOpaQ
Hydraulic data	
Maximum head ft [m]	150 ft [45 m]
Flow rate gpm [m3/h]	0 to 4600 ft [0 to 1045 m]
Liquid temperature °F [°C]	0 to 240 ft [-18 to 115 m]
Maximum operating pressure psi [bar]	150 psi [10 bar]
Pump and motor data	
Number of pumps	2, 3, or 4
Motor power hp	5 to 100
Valve and fittings	
Check valve: Non-slam	2" to 12" [5 to 30 cm]
Isolation valve: Butterfly	2" to 12" [5 to 30 cm]
Suction diffuser	2" to 12" [5 to 30 cm]
Concentric reducer	•
Eccentric reducer	•
Materials	
Adjustable pipe supports	•
Channel base frame	4" to 8" [10 to 20 cm]
Header: Schedule 40 steel	4" to 14" [10 to 36 cm]
Decking: 1/4" gage hot rolled	•
Pipe connections	
ANSI flange	•
Approvals	
ISO 9001	•
Electrical data	
VFDs	5hp to 100hp [3.7kW to 74.6kW]
Power distribution	30A to 400A
Controls panel	•
Functions	
Pump cascade control	•
Automatic pump changeover	•
Dual zone, closed loop PID control	•
Integrated COMM link with VFDs	•
Options	
Standby pumps	o
CIM (Communication Interface Module)	o
Air Separator: ASME tangential, with strainer	o
Air Separator: ASME tangential, without strainer	o
Expansion Tank: ASME, bladder, top feed	o

• Available as standard.

○ Available as accessory

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BOOSTING

Integrated Water Boosting Pump

GRUNDFOS SCALA2

SCALA2 is a fully integrated water booster pump providing perfect water pressure in all taps at all times – even with multiple taps and showers running at the same time. It packs pump, motor, tank, sensor, drive and non-return valve into one compact unit. And with its intelligent pump control, SCALA2 automatically adjusts performance to both inlet pressure and water consumption in the home. Thanks to a water-cooled motor, SCALA2 even offers one of the lowest noise levels of any booster on the market.

SCALA2 features a built-in sensor, which constantly measures the discharge pressure. If the pressure drops below the desired level, SCALA2 boosts its operation immediately to compensate for the loss of pressure. We call it intelligent pump control and the result is perfect water pressure.

Key Features and Benefits

- Perfect water pressure: Intelligent pump control adjusts operation automatically
- Low noise: As quiet as a modern dishwasher (47 dB(A) in typical use)
- Easy selection: One variant for all residential boosting needs
- Easy installation: Compact, all-in-one solution, plug-and-pump
- Easy to operate: User-friendly control panel
- Reliable operation: Dry-running protection, anti-cycling
- Long lifetime: Quality-tested to perfection, maintenance-free

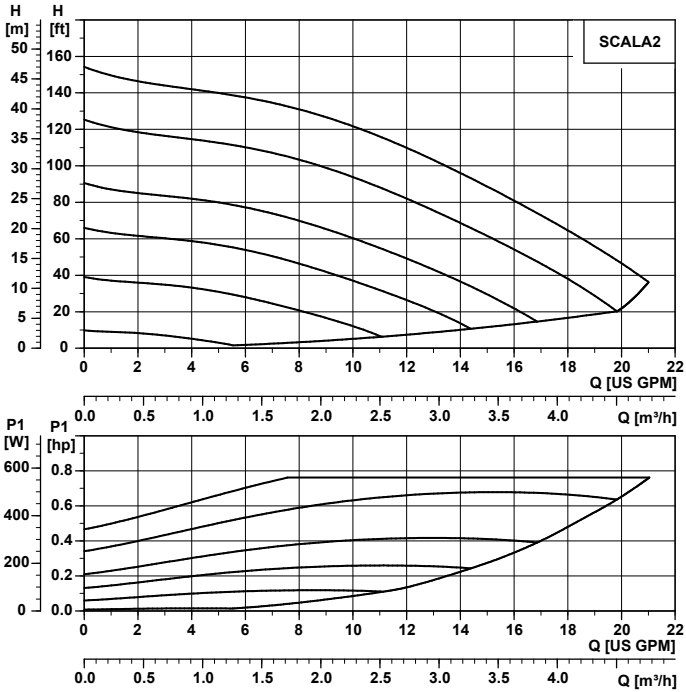
APPLICATIONS

- Boosting from mains: increases the water pressure delivered by city mains
- Boosting from tanks: increases water pressure from roof tanks, break tanks and ground tanks, including rainwater tanks
- Boosting from wells: pumps water from a depth of up to 26 feet (8 meters)
- Indoor and outdoor installation: NEMA 3

SCALA2 **Technical Data**

SCALA2 **INFORMATION**

Ambient Temperature:	max. 131°F (55°C)
Liquid Temperature:	max. 113°F (45°C)
System Pressure:	max. 145 psi (10 bar)
Floors:	NEMA 3
Simultanously Open Taps:	max. 8
Dimensions:	H: 11.9 in (302 mm) L: 15.9 in (403 mm) W: 7.6 in (193 mm)
Weight:	22 lbs (10 kg)



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Compact Boosting Pump

GRUNDFOS CMBE

The CMBE Booster is designed for residential and commercial water supply, pressure boosting, irrigation and dewatering applications. The CMBE series is available in both 1x110-120V and 1x200-240V variants and uses energy efficient, permanent magnet motor technology, which provides unmatched reliability, quiet operation, and energy savings.

Thanks to the integrated speed controller, the CMBE keeps a constant pressure in the pipe system. A pressure sensor monitoring discharge pressure will signal to the speed controller to change the motor speed to adapt the performance to the new situation.

Key Features and Benefits

- All-in-one solution including pump, motor, tank, pressure and flow sensor, controller and check valve
- Constant pressure and commercial grade quality in one compact system
- Reliable and easy to install
- Highly efficient ECM motor reduces operating costs
- Drinking water NSF 61/372 approved

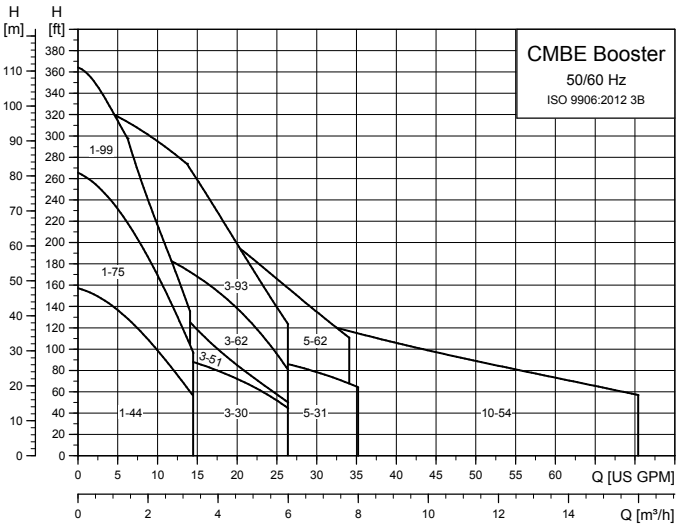
APPLICATIONS

- Residential and commerical water supply
- Pressure boosting
- Irrigation
- Dewatering

CMBE **Technical Data**

CMBE **INFORMATION**

System Pressure:	max. 145 psi
Suction Lift:	max. 23 ft including suction-pipe pressure loss at a liquid temperature of 68°F
Liquid Temperature:	32°F to +140°F
Ambient Temperature:	max. 113 °F for 115V max. 122 °F for 220V min. -4 °F
Sound Pressure Level:	max. 55 dB(A)
Supply Voltage:	1x115 V, 1x200-240 V, 60 Hz



I-CMB-SI-02 01-18

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Clean Water Submersible Pump

GRUNDFOS SBA

The SBA clean water submersible pump is designed for use in residential applications and especially suitable for rainwater applications and wells. When installed underground in a collection tank or well, noise is not an issue. The complete all in one plug-and- pump unit comes with an integrated control unit – eliminating the need for an external pump controller. Once installed and connected, all you need to do is switch on the pump.

Key Features and Benefits

- Noiseless operation: Emits no noise when submerged and is therefore a noiseless alternative to non-submersible pumps.
- High reliability: Built from composite and stainless steel materials that are resistant to corrosion. The pump has a stainless-steel strainer that prevents large particles from entering the pump housing. A Grundfos float switch prevents air from entering the system because of dry running.
- Integrated protection: The pump offers thermal overload protection. Built-in thermal protection immediately stops the pump if it overheats. The pump automatically restarts when it has returned to normal temperature.
- Floating suction strainer: The model with floating suction strainer always draws the water from just below the water surface where the water is clean and free from solid particles. The SBA features integrated dry-running protection. All pumps are available with float switches for low water stop.
- SBA pumps are available in two main variants, with or without float switch. With integrated suction strainer (1 mm mesh), or with side inlet/flexible suction hose with floating suction strainer (1 mm mesh).
- Complete all-in-one unit. It comes with an integrated control unit – eliminating the need for an external pump controller.
- Plug-and-pump solution. Once installed and connected to the piping, all you need to do is switch on the pump.

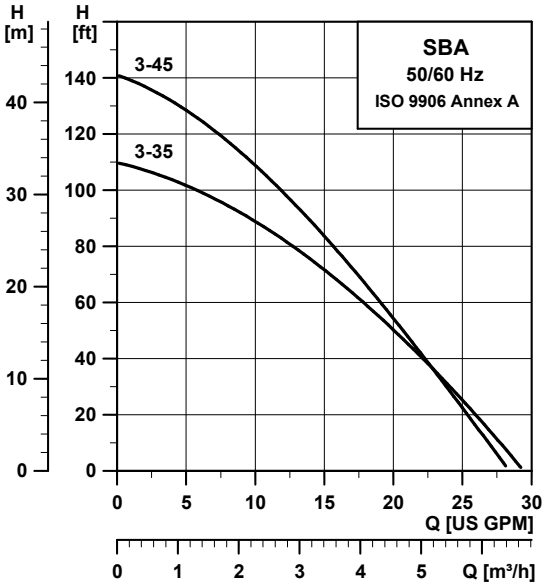
APPLICATIONS

- Rainwater
- Private wells

SBA **Technical Data**

SBA **INFORMATION**

Flow, Q:	max. 13 gpm
Head, H:	max. 148 ft.
Depth:	max. 33 ft.
Liquid Temperature:	32° F to 104° F



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MULTISTAGE

Vertical Multistage Variable Speed System

GRUNDFOS CR/CRE

The Grundfos CR is the world's number one vertical multistage centrifugal pump, known for its reliability, efficiency and adaptability. The basic CR pump range, which can be applied in almost any industrial solution, is already in itself the broadest range available. Through our modular approach, we have made it even broader. Customers needing a non-standard solution are able to pick and choose pump elements or "modules" to cover nearly any situation. Pump parts which are typically vulnerable to difficult liquids or particularly demanding operating conditions can be optimized for their purpose and designed for specific requirements.

The Grundfos CRE represents the union of the well known Grundfos CR and variable speed MLE motors developed by Grundfos with optimum electronic control in mind. The CRE features a pump and motor with an integrated variable frequency drive, controller and sensor. The CRE offers a plug-and-pump solution.

Key Features and Benefits

- Compact, inline design fits into small footprint
- Easy installation and operation with settings and internal connections done at factory
- Highly efficient design reduces energy consumption by up to half compared to fixed speed pumps
- Unique cartridge seal design can be replaced in minutes
- Spacer coupling allows motor to be left in place during seal replacement
- Remote control/fieldbus monitoring and data collection
- Building management system compatible
- User friendly controller interface with advanced features and functionality
- Laser welded stainless impellers promote class leading efficiency
- Optional CR Cool-Top™ allows pump to withstand liquid temperatures of up to 356°F
- Integrated sensor available
- Four material options available, including cast iron, two grades of stainless steel, and all-titanium
- Eleven flow sizes, capable of producing up to almost 725 psi pressure, and with a variety of shaft seals, rubber materials and supply voltages
- MAGdrive option available for demanding industrial applications where zero-leakage is required

APPLICATIONS

- Boiler feed
- Pressure boosting
- Chilled water
- Heating water
- Condenser water
- Industrial processing
- Washing and cleaning systems
- HVAC
- Irrigation
- General purpose pump

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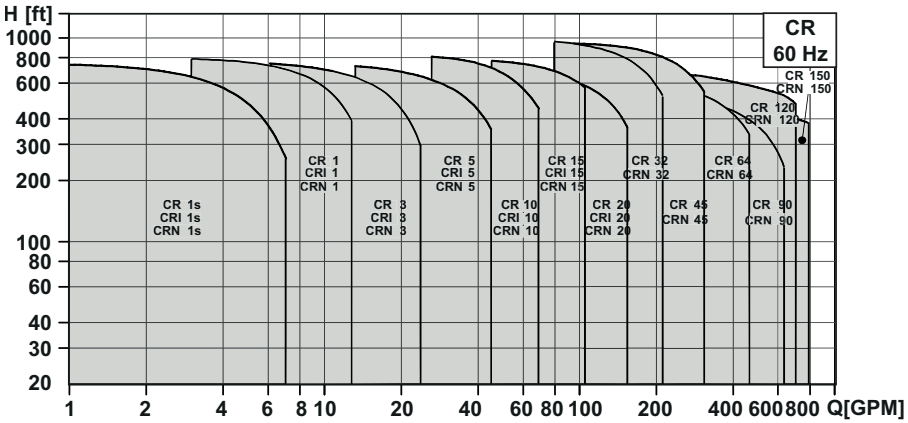
CR/CRE **Technical Data**

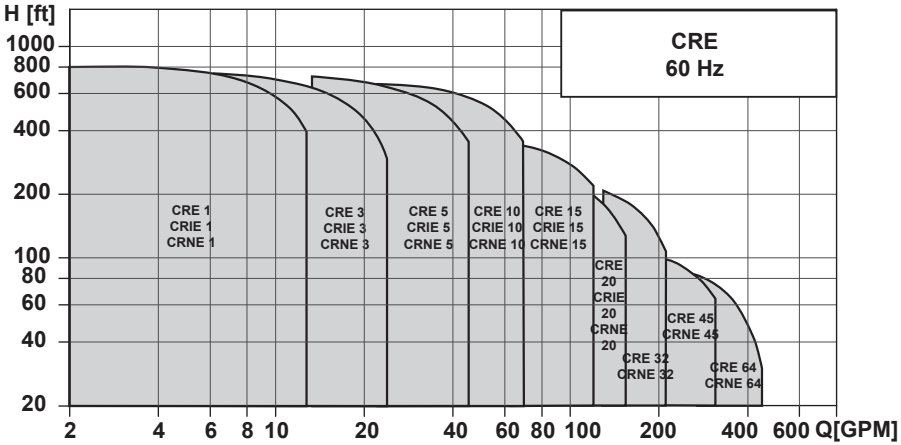
CR INFORMATION

Flow, Q:	max. 792 gpm
Head, H:	max. 995 ft
Liquid Temperature:	-22°F to +248°F
Working Pressure:	max. 752 psi

CRE INFORMATION

Flow, Q:	max. 450 gpm
Head, H:	max. 820 ft
Liquid Temperature:	-22°F to +248°F
Working Pressure:	max. 435 psi





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Proportional Differential Pressure System

GRUNDFOS CRE-DP

The CRE-DP pump is a perfect pump for HVAC applications – a unitized solution that brings together the pump, motor, variable frequency drive and controls to make Energy Optimization of your HVAC pump as easy as possible.

The pump features “closed loop control” including proportional differential pressure and constant differential pressure; and “open loop control” from control signal in order for you to optimize your HVAC pumping application.

Proportional differential pressure control will save energy by adjusting the setpoint pressure based on flow rate - lower setpoint at lower flows and higher setpoint at higher flows. This control adjust pump performance based on how friction head affects the head requirement needed from the pump.

Proportional differential pressure control gives you the ability to simulate a remote mounted DP sensor, whereas constant

differential pressure offers the ability to maintain differential pressure across the pump or at a remote location; or control signal from user or building management system.

Key Features and Benefits

- Plug-and-pump solution speeds installation, commissioning and startup due to integrated components
- Factory mounted and with a pre-configured differential pressure sensor, system arrives optimized and ready for installation and operation
- Flexibility with multiple control modes: closed loop – proportional differential pressure, closed loop – constant differential pressure, open loop – external setpoint, constant curve
- Proportional pressure control logic can be employed to adjust the setpoint to simulate operation of remote sensor, delivering maximum energy optimization via the factory installed sensor reducing labor, installation time and cost
- Easy savings of up to 70% by upgrading fixed speed pumps with a CRE-DP and the proportional differential pressure control
- Data communication via the communication interface module (CIM) and the communication interface unit (CIU) ensure easy building management system integration
- Grundfos GO lets you use your smart phone to access interface for control, data collection and reporting, regardless of pump location
- Low rotating mass provides less wear and longer seal life
- Innovative design to minimize equipment footprint, speed up installation, ease of service and maintenance
- Single source responsibility ensures one manufacturer for pump, motor, drive and control
- Compliant with ASHRAE 90.1 energy standard for buildings

APPLICATIONS

- Chilled water
- Hot water
- District cooling/heating systems
- Cooling towers

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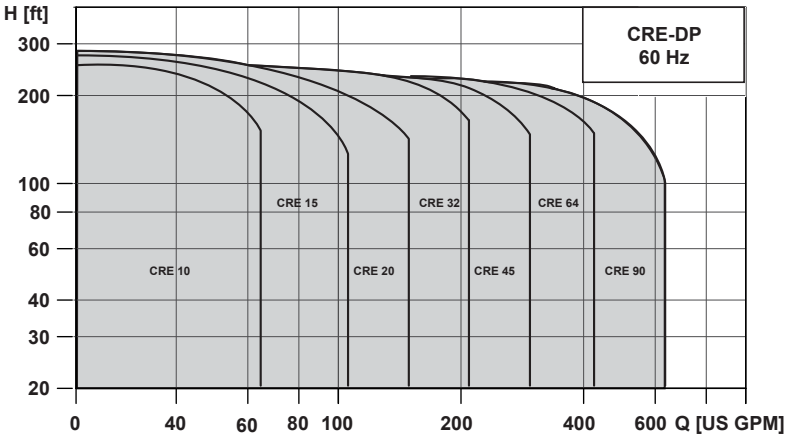
CRE-DP **Technical Data**

CRE-DP **INFORMATION**

	Single-phase motors	Three-phase motors	
Power supply	1x200-240V, 50/60Hz	3x208-230V, 60Hz	3x460-480V, 60Hz
Power range	0.5 - 2 Hp	1.5 - 7.5 Hp	1 - 30 Hp
External setpoint signal	10 kΩ potentiometer 0 - 10V 0 - 20 mA or 4 - 20 mA		
Built-In PI controller	Yes		
Sensor Input signal	0 - 20 mA or 4 -20 mA 0 - 10V 24V supply for sensor included		
Start/stop input	Input for external contact		
Signal relay	Potential-free signal relay is included		
Pump control	Grundfos GO or R100 infared remote control		
SCADA communication	CIU/CIM SCADA communication modules with a variety of communication protocols		
EMC	All pumps comply with “The Electromagnetic Compatibility Directive 89/336/EEC” EN61800-3		
Enclosure class	TEFC, IP55 (IEC 34-5)		
Sensor	Differential Pressure Sensor included		
Pump data	Pump curve data loaded into motor		



I-CRE-SI-01 01-18

Grundfos
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Vertical Multistage Simplex Pumps

GRUNDFOS **CRE PLUS**

The CRE Plus is a simplex pump system that utilizes advanced pump technology to vary motor output according to demand so energy is not wasted on generating pump speed that is not required. The CRE Plus optimizes pumping efficiency at all times, saving energy, driving down costs and lessening system wear and tear. CRE pumps maintain constant pressure at any time, even with the most challenging variations in demand.

The Grundfos CRE represents the union of the well known Grundfos CR and variable speed MLE motors developed by Grundfos with optimum electronic control in mind. The CRE features a pump and motor with an integrated variable frequency drive, controller and sensor. The CRE offers a plug-and-pump solution.

The integrated variable frequency motor MLE is available with permanent magnet motors and exceed IE5 efficiency levels set by International Electro Technical Commission, currently the highest efficiency worldwide for electrical motors. Premium efficient motors equal IE3, making the MLE motors two levels above NEMA Premium Efficiency, and have higher combined motor + VFD efficiency, higher than NEMA Premium motor alone.

Key Features and Benefits

- Large, graphical display control interface (HMI) on MLE motor allows control of all settings without need of separate interface device (GO Remote) and provides user friendly operation
- Plug and pump, compact, single pump solution ensures quick and easy installation
- Advanced control capabilities including: soft pressure build up (i.e., pipefill), limit exceed (i.e., high system pressure), and set point influence (i.e., proportional pressure)
- Steep performance curve gives greater speed reduction at part load conditions
- Factory tested as a complete system
- Available with all popular SCADA communication options
- Best in class energy efficiency means low life cycle costs
- Quiet operation and no vibration
- Balanced cartridge mechanical seal design can be replaced in minutes, simplifying maintenance
- UL Listed (Category QCZJ - Packaged Pumping System)
- NSF 61 / UL 372 certified

CRE PLUS MOTOR RANGE

MLE Motors that include permanent magnet motors will be available in horsepower and voltage range as follows:

- 1 - 15 HP in 3 x 460-480V
- 1.5 - 7.5 HP in 3 x 208-230V (Spring '18)
- 10 HP in 3 x 230V (Spring '18)

APPLICATIONS

- Water supply
- Irrigation
- Water treatment
- Industrial plants
- Pressure boosting

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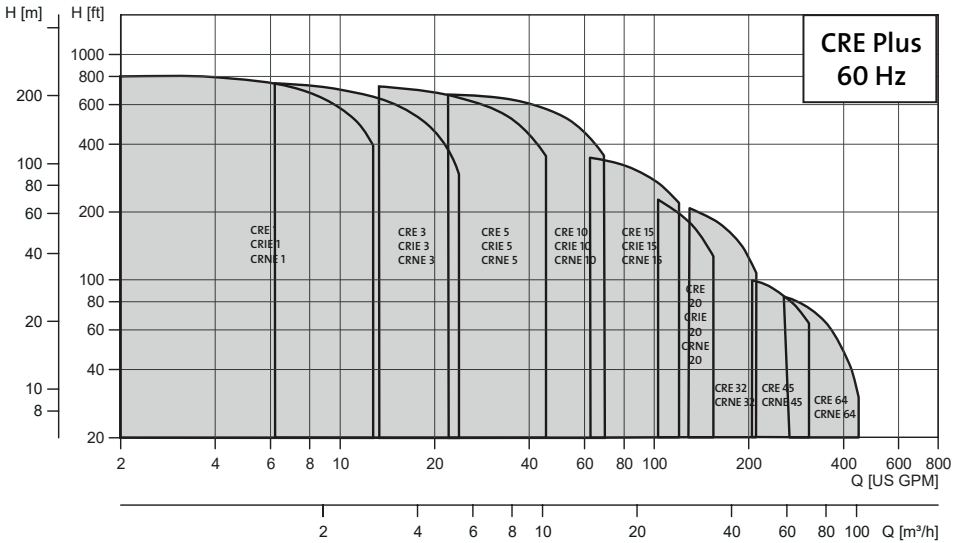
CRE Plus **Technical Data**

CRE Plus **INFORMATION**

Flow, Q:	max. 450 gpm (102 m³/h)
Head, H:	max. 790 ft. (240 m)
Liquid Temp:	max. +176 °F (80 °C)
Working Pressure:	max. 362 psi (25 bar)



I-CRE-SI-02 0118

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Vertical Multistage ANSI Dimensional Pumps

GRUNDFOS CR-H/CRN-H CRE-H/CRNE-H

The CR-H, CRN-H, CRE-H and CRNE-H models provide all the benefits of the renowned Grundfos CR for an ANSI dimensional solution that will fit into your existing pump and piping footprint. The Grundfos multistage CR-H offers optimized duty points to maximize pump efficiency and minimize internal wear which significantly lowers energy costs, increases pump life, and reduces maintenance.

Key Features and Benefits

- Drop in replacement (ANSI / ASME B73.1 piping layout) pump solution, with other configurations available
- Compact, inline design fits into small footprint
- Easy installation and operation with settings and internal connections done at factory
- Highly efficient design reduces energy consumption by up to half compared to fixed speed pumps
- Unique cartridge seal design can be replaced in minutes
- Spacer coupling allows motor to be left in place during seal replacement
- Remote control/fieldbus monitoring and data collection
- Building management system compatible
- User friendly controller interface with advanced features and functionality
- Laser welded stainless impellers promote class leading efficiency
- Optional CR Cool-Top™ allows pump to withstand liquid temperatures of up to 356°F
- Integrated sensor available
- Available in cast iron (CR-H) or 316 stainless steel (CRN-H) pump casing
- Eleven flow sizes with a variety of shaft seals, rubber materials and supply voltages
- MAGdrive option available for demanding industrial applications where zero-leakage is required operating range
- Suitable for slightly aggressive liquids

APPLICATIONS

- Industrial/chemical processing systems
- Washing and cleaning systems
- Pumping of acids and alkalis
- Filtration systems
- Water pressure boosting
- Water treatment
- HVAC
- Irrigation

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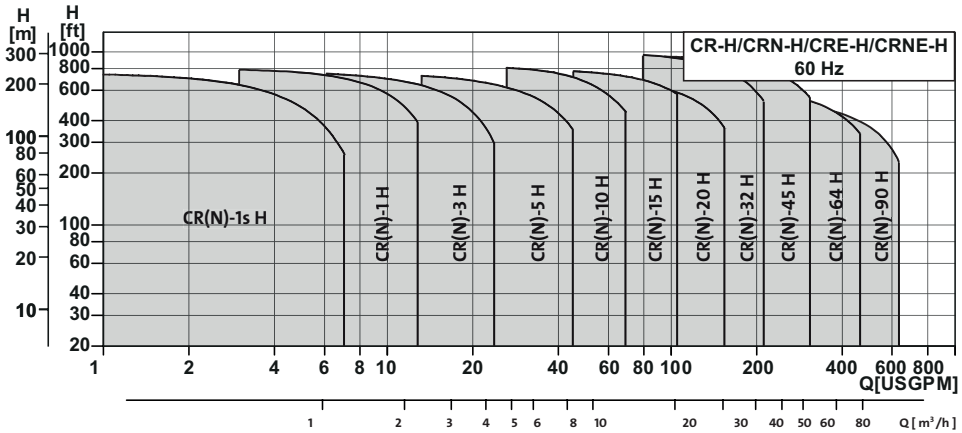
CR-H/CRN-H/CRE-H/CRNE-H **Technical Data**

CR-H/CRN-H/CRE-H/CRNE-H
INFORMATION

Flow, Q:	max. 630 gpm (143 m³/h)
Head, H:	max. 985 ft (300 m.)
Liquid Temp:	-22°F to +248°F (-30°C to +120°C)
Working Press:	max. 435 psi (30 bar)



I-CRH-SI-02 0118

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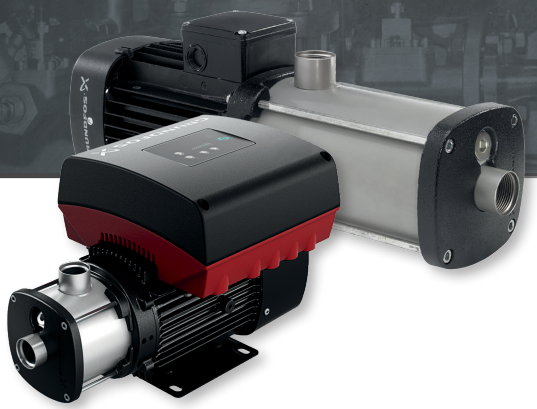
Compact Horizontal Multistage Pumps

GRUNDFOS CM/CME

The Grundfos CM range of horizontal multi-stage pumps provide a compact, reliable and quiet solution designed to work on a variety of applications. While CM pumps are fitted with mains-operated motors, the CME incorporates a motor with an integrated frequency converter and PID controller.



Key Features and Benefits

- Nordlock© washer ensures secure clamping of pump impellers and provides quick and easy assembly and disassembly
- Grundfos designed mechanical o-ring shaft seal offers superior dry running capabilities and reduced sticking problems
- Encapsulated sleeve o-ring design retains o-ring when temperature change causes expansion and contraction
- Labyrinth seal provides protection for motor bearings and reduces maintenance
- Rotation indicator allows you to quickly check if 3-phase electrical connection is correct; indicator shows black if correct, white if incorrect
- Filling plug is sealed by o-ring for easy maintenance
- CME option with integrated pump, motor and variable frequency drive delivers a plug and pump solution
- Materials of construction include ASTM A48 cast iron, AISI 304 stainless steel and AISI 316 stainless steel

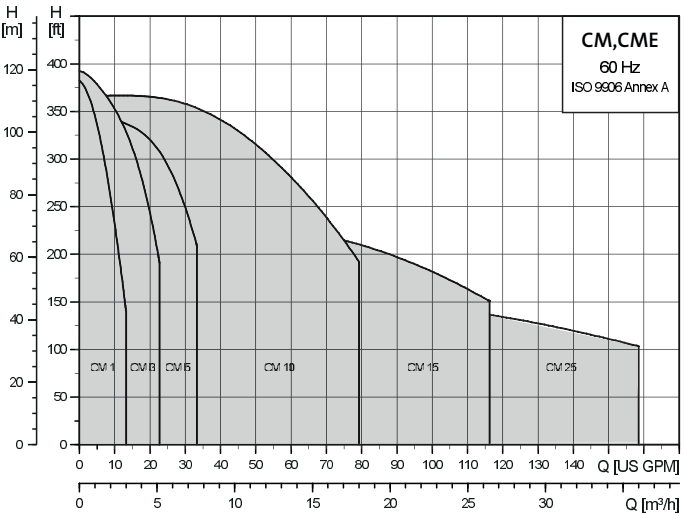
APPLICATIONS

- Washing and cleaning
- Temperature control
- Water treatment
- Chemical and pharmaceutical industries
- Building services
- Irrigation

CM/CME **Technical Data**

CM/CME **INFORMATION**

Flow, Q:	max. 160 gpm
Head, H:	max. 393 ft
Liquid Temperature:	-22°F to +248°F
Operating Pressure:	max. 232 psi
Power:	0.3 to 8.4 HP



I-CM-SL-002 01-18

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END SUCTION

End Suction Split Coupled Pump

GRUNDFOS LCSE

The Grundfos LCSE end suction, split coupled pump with integrated motor, drive, and control serves as the industry standard in performance, quality, and durability. Together with various sensors, these products allow for dynamic and intelligent solutions to many industrial and commercial building applications. With a selection of 21 sizes available, the LCSE provides all the benefits of an LCS pump, enhanced by an integrated motor and variable frequency drive, all made by one supplier.

The integrated variable frequency motor (MLE) is available with permanent magnet motors and exceed IE5 efficiency levels set by International Electro Technical Commission, currently the highest efficiency worldwide for electrical motors. NEMA Premium Efficient motors are equivalent to IE3, meaning these MLE motors are two levels above NEMA Premium Efficiency. The combined motor and VFD efficiency is higher than a NEMA Premium motor alone.

Key Features and Benefits

- Plug-and-pump solution speeds installation, commissioning and startup due to integrated components
- Provides seamless integration with Grundfos MLE integrated motor, drive and control for an all-in-one solution
- Large, graphical display control interface (HMI) on MLE motor allows control of all settings without need of separate interface device (GO Remote) and provides user friendly operation
- No baseplate grouting required
- Axially split, rigid coupling enhances ease of service with reduced maintenance costs
- No alignment required between the pump and motor eliminates laser alignment costs and reduces installation time
- Optimized, space-saving design has 35% smaller footprint than frame mount design
- Spacer coupling allows rapid mechanical seal access without motor removal for service friendly design
- Double volute design increases lowers life cycle costs and prolongs seal and bearing life
- Francis Vane impeller design increases efficiency and reduces NPSH required
- Reduced installation and wiring cost
- Integrally cast diffuser vane reduces turbulence and need for suction guides
- Trimmed and balanced impellers allow customization, reduce noise and vibration for quiet operation and prolong seal and bearing life
- Grundfos GO lets you use your smart phone to access interface, regardless of pump location
- Single source responsibility ensures one manufacturer for pump, motor, drive and control

APPLICATIONS

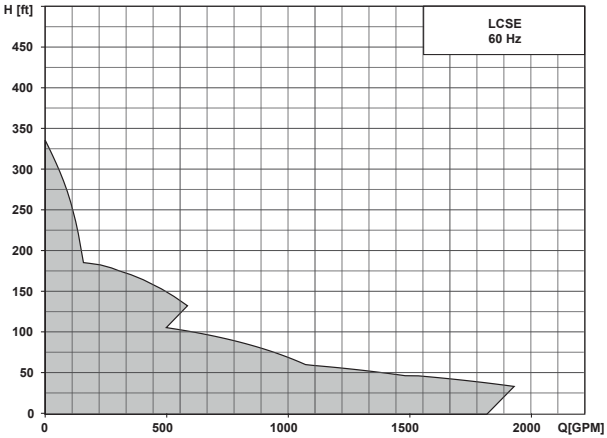
- Chilled water
- Condensed water
- Hot water
- District heating/cooling
- HVAC
- Process water
- Light industrial
- Water utility

LCSE **Technical Data**

LCSE INFORMATION

Flow, Q:	max. 1900 gpm
Head, H:	max. 380 ft
Liquid Temperature:	10°F to 275°F
Working Pressure:	max. 175 psi
HP Range / Speed:	3 to 30 HP / 3600 RPM
	3 to 25 HP / 1800 RPM
Discharge Sizes:	1 to 6 in.

Control Modes	Description		LCSE New MLE Motor	LCSE MLE Motor
		2 Pole	3 - 15 HP	20 - 30 HP
		4 Pole	3 - 10 HP	15 - 25 HP
	Constant Flow		•	•
	Constant Pressure		•	•
	Constant Differential Pressure		•	•
	Constant Temperature		•	•



The Perfect Motor is Half the Solution

For an intelligent pumping solution, the motor is half the story. Our E-motors (MLE) are frequency converter controlled motors that have been designed specifically for use with Grundfos pumps, and they feature unique functionalities that allow for complete system optimization. The new MLE permanent magnet (ECM) motor offers an additional 7-10% decrease in energy cost over NEMA Premium motors with industry standard variable frequency drives.

Ultimate Flexibility and Efficiency

The MLE motors can be operated to meet any individual needs for a specific solution. This makes them an excellent choice for a number of applications within heating, cooling, ventilation and industrial processes – each of which are characterized by varying demands, different control needs, and varying number of operating hours.

New Functionalities for Advanced Solutions	
Real Time Clock*	**Adjustable Proportional Pressure Control Curve**
Allows for calendar function for e.g. automatic system stop during weekends.	You can select the shape and steepness of the control curve - choose between a linear or quadratic curve
2 Analogue Inputs	**Manual Speed Operation Mode**
Get Delta P and Delta T control with two sensors.	Even while under external signal control, you can switch to manual speed operation mode to test the pump's operation.
Timer Functions on Digital Inputs	**PT100/1000 Input***
For each digital input you can activate and set a delay time and a duration time	Get temperature and differential temperature control at a low cost
1 Analogue Output*	**Predefined Set-Point***
Get relevant parameter information in real time	Get dynamic response to different operation profiles

* Advanced functional module FM300 is required for these functionalities

L-LCSE-SL-01 01-18

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End Suction Split Coupled Pump

PACO LCS

The LCS single stage, end suction, split coupled pump serves as the industry standard in performance, quality, and durability. The LCS provides hydraulic performance equal to that of a frame mounted, long coupled model, but in a compact design. Advanced features and benefits incorporated as standard, as well as optional features that meet specialized needs, set these high-efficiency, end suction pumps apart as the broadest line offered to the marketplace.

Key Features and Benefits

- No baseplate grouting required
- Axially split, rigid coupling enhances ease of service with reduced maintenance costs
- No alignment required between the pump and motor eliminates laser alignment costs and reduces installation time
- Optimized, space-saving design has 35% smaller footprint than frame mount design
- Spacer coupling allows rapid mechanical seal access without motor removal for service friendly design
- Vesconite case wear rings extend pump life and increase efficiency
- Double volute design increases efficiency, lowers life cycle costs and prolongs seal and bearing life
- Francis Vane impeller design increases efficiency and reduces NPSH required
- Reduced installation and wiring cost
- Integrally cast diffuser vane reduces turbulence and need for suction guides
- Trimmed and balanced impellers allow customization, reduce noise and vibration for quiet operation and prolong seal and bearing life
- Large seal chamber allows various seal configurations and customization

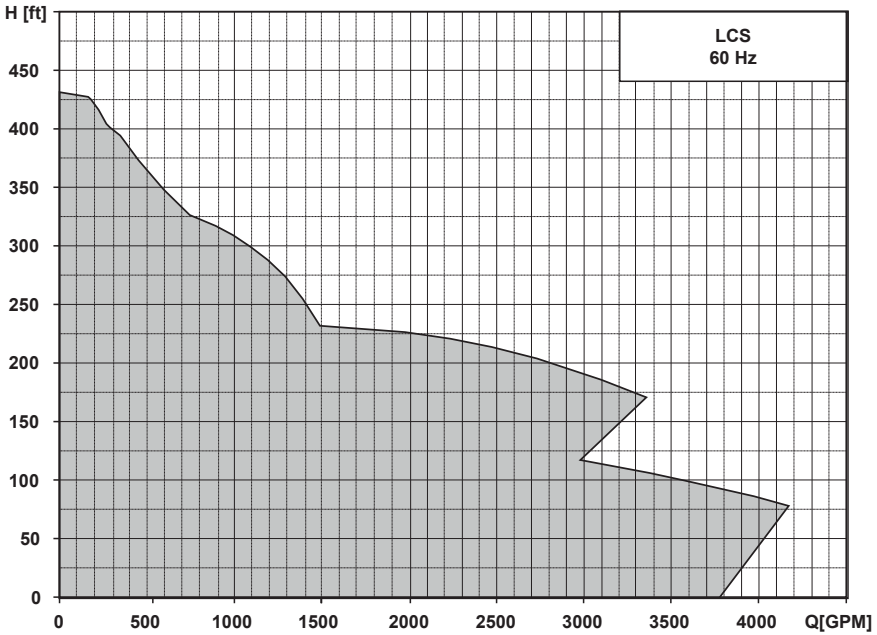
APPLICATIONS

- Chilled water
- Condensed water
- Hot water
- District heating/cooling
- HVAC
- Process water
- Light industrial
- Water utility

LCS **Technical Data**

LCS INFORMATION

Flow, Q:	max. 4200 gpm
Head, H:	max. 430 ft
Liquid Temperature:	10°F to 275°F
Working Pressure:	max. 175 psi
HP Range:	max. 125 HP
Speed:	3600, 1800, and 1200 RPM
Discharge Sizes:	1 to 8 in.



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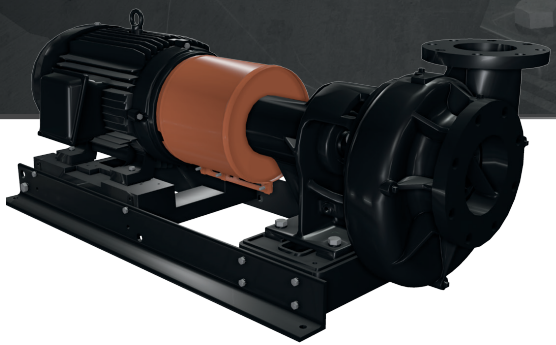
Frame Mounted End Suction Pump

PACO LF

The LF frame mounted end suction pump serves as the industry standard in performance, quality, and durability. Advanced features and benefits incorporated as standard, as well as optional features that meet specialized needs, set these high efficiency, end suction pumps apart as the broadest line offered to the marketplace.



Key Features and Benefits

- Double volute design increases efficiency, lowers life cycle costs, and prolongs seal and bearing life
- Francis Vane impeller design increases efficiency and reduces NPSH required
- Integrally cast diffuser vane reduces turbulence and need for suction guides
- Bronze case wear rings as standard extend pump life and increase efficiency
- Back pull-out design enables maintenance without disturbing piping
- Footed bearing frame eases maintenance
- Stainless steel balanced impellers (standard) can be trimmed to spec for customization
- Footless volute establishes single point support for reducing alignment restrictions and permits discharge orientation flexibility
- Machined mounting surfaces and fabricated base plate aids in alignment
- Choice of motor enclosures increases flexibility of design
- Large seal chamber allows various seal configurations and customization
- NSF61/50 certification available

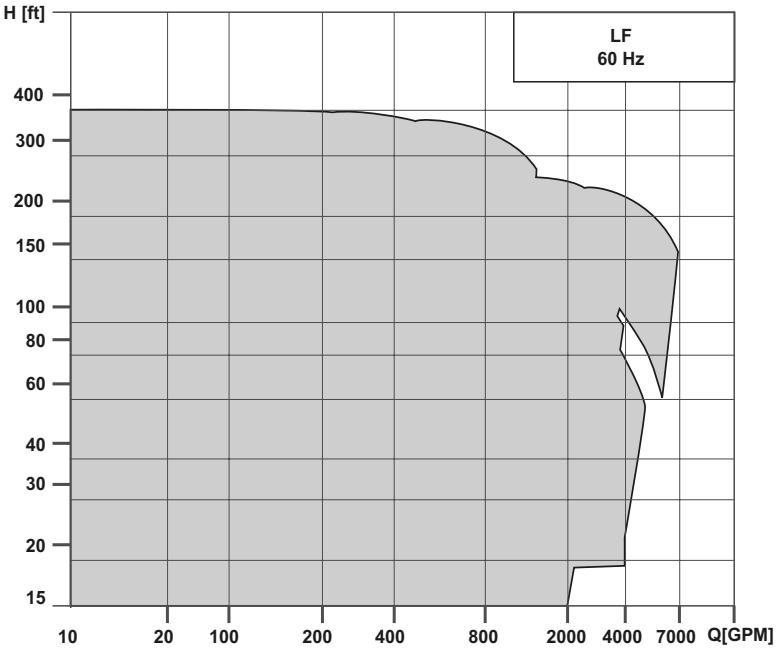
APPLICATIONS

- HVAC
- Plumbing
- Pressure boosting
- Industrial
- Water utility
- Wastewater
- Agriculture

LF **Technical Data**

LF **INFORMATION**

Flow, Q:	max. 6,000 gpm
Head, H:	max. 400 ft
Liquid Temperature:	max. 275°F
HP Range:	1/3 to 300 HP
Discharge Sizes:	1 to 10 in.



L-LF-SL-001 01-18

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General Purpose End Suction Pumps

PEERLESS **F/C SERIES**

Peerless F Series pumps are general purpose, frame mounted, end suction pumps flexibly coupled to drivers and equipped with coupling guards. Each entire unit can be mounted on a steel base. An optional drip pan is available.

Peerless Pump C Series pumps are close coupled with standard C-face JM or JP solid shaft ball bearing motors specifically designed for pump applications in accordance with standards developed by the Hydraulic Institute (HI) and the National Electrical Manufacturers Association (NEMA).

Key Features and Benefits

- Available in cast iron bronze fitted and all iron construction; packed boxes or mechanical seals are available
- Casing is fitted with a bronze/steel replaceable wear ring and pipe connection flanges are equivalent 125# ANSI flanges rated for 175# Maximum Working Pressure (MWP)
- Motor bearings are grease lubricated and are sized for a minimum of 20,000 hours L10 basic rating life or 100,000 hours median bearing life; shaft is designed to limit the shaft deflection to no more than .002" at the seal faces
- The motor/impeller shaft is protected with a replaceable (bronze/stainless steel) sleeve installed between the shaft and the packing or mechanical seal
- Mechanical seals are designed for water service and light hydrocarbons up to 250 °F, and seals are face type with Ni-resist seat, carbon washer, 18-8 stainless steel metal parts and Viton elastomers
- Furnished with enclosed dynamically balanced impellers for smooth, low vibration operation; impeller is keyed to the shaft for positive driving and is secured in place with astainless steel washer and self-locking cap screw
- The impeller diameter is no more than 90 percent of the maximum impeller diameter which the case tongue or cut-water could accommodate, resulting in low hydraulic noise levels

APPLICATIONS

- Medium service duty
- HVAC
- Boosting
- General circulating

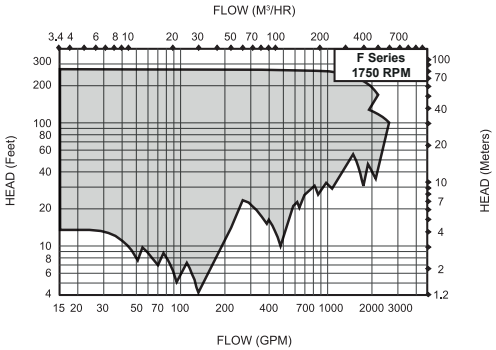
F/C Series **Technical Data**

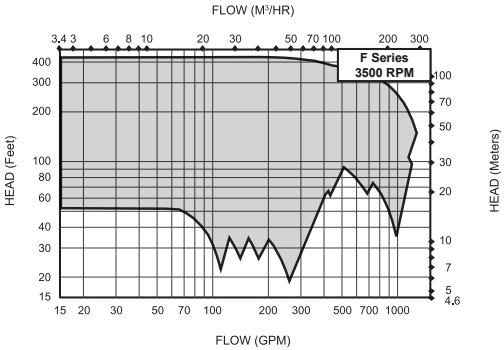
F SERIES **INFORMATION**

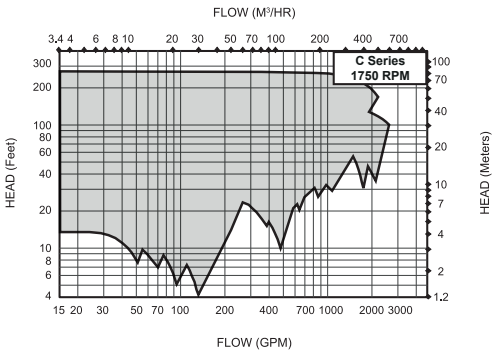
Flow, Q:	max. 3000 gpm (675 m³/h)
Head, H:	max. 400 ft. (122 m.)
Operating Press:	max. 175 psi (12.3 kg/cm2)
Horsepower:	max. 125 hp (93kW)
Liquid Temp:	+32 °F to +250 °F (0 °C to 120 °C)

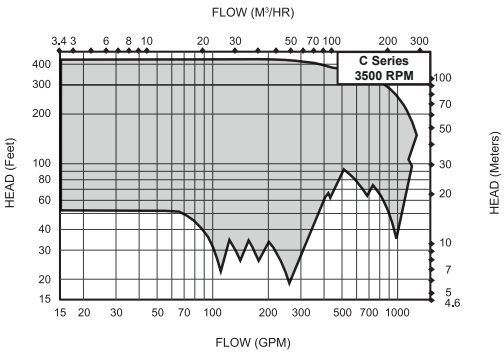
C SERIES **INFORMATION**

Flow, Q:	max. 2300 gpm (560 m³/h)
Head, H:	max. 400 ft. (122 m.)
Operating Press:	max. 175 psi (12.3 kg/cm2)
Horsepower:	max. 75 hp (55kW)
Liquid Temp:	+32 °F to +250 °F (0 °C to 120 °C)









L-FC-SL-001 04-17

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INLINE

Vertical Split Coupled Inline Pump
PACO **VLS**

The PACO VLS vertical spilt coupled, inline pump has proven to be extremely versatile, often exceeding the requirements for a variety of market applications, such as chilled water, condenser water, and hot water systems. Once fitted with a speed-control system, the VLS significantly cuts energy use and provides a pump payback in as little as one to two years.

Key Features and Benefits

- Vertical configuration saves floor space and reduces piping
- Axially split coupling enhances ease of service and alignment
- Spacer coupling allows rapid mechanical seal access without motor removal for service friendly design
- Double volute design extends seal and bearing life, minimizes noise and vibration, and improves operating efficiency
- No inertia base required
- Vertical shaft configuration promotes longer seal and bearing life
- No coupling alignment or bearing frame assembly needed
- Equal size suction and discharge pipes eliminate need for reducers or other fittings
- Heavy duty cast and machined motor bracket creates rigid and reliable mounting surface with easy alignment
- Case wear rings reduce maintenance costs and maintain high efficiency
- Shaft sleeves extend life of shaft and usable life of pump
- Suction baffle creates a smooth, quiet pump operation
- No flexible connectors or foundation grouting needed
- Mounts like a valve for quick installation
- Francis Vane impeller design increases efficiency and reduces net positive suction head required
- Broad range of industry-standard TC motors are stocked by motor manufacturers

APPLICATIONS

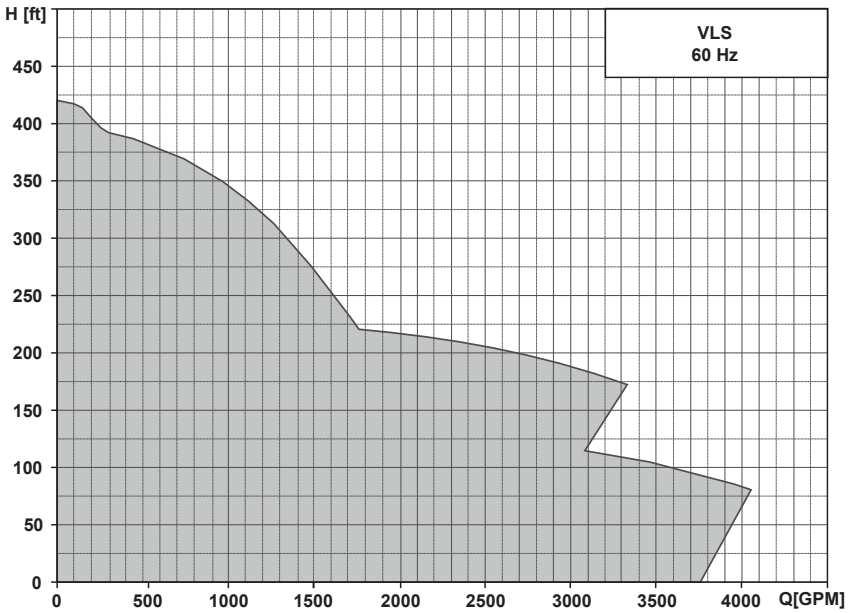
- Chilled water
- Condensed water
- Hot water
- Service water
- District cooling/heating systems
- Boiler/hydronic heating
- Air conditioning
- Cooling towers

VLS **Technical Data**

VLS with TC motor **INFORMATION**

Flow, Q	max. 4100 gpm
Head, H	max. 420 ft
Fluid temp.	10° to 275° F
Working pressure	max. 175 psi*
HP range	max. 125 Hp
Speed	3600, 1800, and 1200 RPM
Discharge/Suction sizes	1.25 to 10 in.

*** 250 psi rating available**



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Inline Split Coupled Variable Speed Pumps

GRUNDFOS VLSE/VLSC

The Grundfos VLSE and VLSC, inline, split coupled, variable speed pumps are engineered to increase efficiency and reduce radial loads. These offerings deliver a highly efficient solution while saving on installation costs.

VLSE Models

The VLSE incorporate all essential components into one product and features a VLS pump, MLE motor and integrated variable frequency drive and control, all made by one supplier. Together with various sensors, these products allow for dynamic and intelligent solutions to many industrial and commercial building applications. The innovative solution cuts planning, purchasing, installation and commissioning costs.

The integrated variable frequency motor (MLE) is available with permanent magnet motors and exceed IE5 efficiency levels set by International Electro Technical Commission, currently the highest efficiency worldwide for electrical motors. NEMA Premium Efficient motors are equivalent to IE3, meaning these MLE motors are two levels above NEMA Premium Efficiency. The combined motor and VFD efficiency is higher than a NEMA Premium motor alone.

VLSC Models

The VLSC features a VLS pump with a Grundfos CUE variable frequency drive and control, all made by one supplier.

Key Features and Benefits

- Plug-and-pump solution speeds installation, commissioning and startup due to integrated components
- Provides seamless integration with Grundfos MLE integrated motor, drive and control for an all-in-one solution (VLSE)
- Large, graphical display control interface (HMI) on MLE motor allows control of all settings without need of separate interface device (GO Remote) and provides user friendly operation
- Isolation pads between the motor and CUE mounting plate to absorb vibration and heat transfer (VLSC)
- Axially split coupling enhances ease of service and alignment
- Spacer coupling allows rapid mechanical seal access without motor removal for service friendly design
- Double volute design extends seal and bearing life, minimizes noise and vibration, and improves operating efficiency
- No inertia base required
- Vertical shaft configuration promotes longer seal and bearing life
- No coupling alignment or bearing frame assembly needed
- Heavy duty cast and machined motor bracket creates rigid and reliable mounting surface with easy alignment
- Case wear rings reduce maintenance costs and maintain high efficiency
- Suction baffle creates a smooth, quiet pump operation
- No flexible connectors or foundation grouting needed
- Francis Vane impeller design increases efficiency and reduces NPSH required
- Saves energy, optimizes efficiency and lowers operating cost
- Grundfos GO lets you use your smart phone to access interface, regardless of pump location

APPLICATIONS

- Chilled water
- Condensed water
- Hot water
- Service water
- District heating/cooling
- Boiler/hydronic heating
- Air conditioning
- Cooling towers

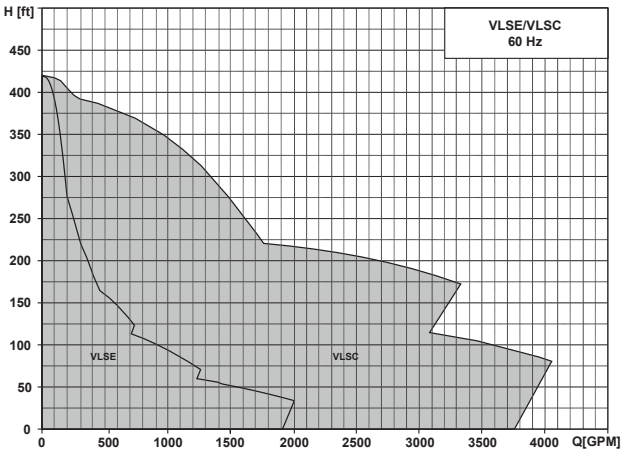
VLSE/VLSC **Technical Data**

*** 250 psi rating available**

VLSE/VLSC **INFORMATION**

	VLSE	VLSC
Flow, Q:	max. 1900 gpm	max. 4100 gpm
Head, H:	max. 420 ft	max. 420 ft
Liquid Temperature:	10° F to +275° F	10° F to +275° F
Working Pressure:	max. 175 psi	max. 175 psi
HP Range / Speed:	3 to 30 HP / 3600 RPM	5 to 125 HP / 3600 RPM
	3 to 25 HP / 1800 RPM	3 to 125 HP / 1800 RPM
Discharge / Suction Sizes:	1.25 to 8 in.	1.25 to 8 in.

Control Modes	Description		LCSE New MLE Motor	LCSE MLE Motor
		2 Pole	3 - 15 HP	20 - 30 HP
		4 Pole	3 - 10 HP	15 - 25 HP
	Constant Flow		•	•
	Constant Pressure		•	•
	Constant Differential Pressure		•	•
	Constant Temperature		•	•



The Perfect Motor is Half the Solution

For an intelligent pumping solution, the motor is half the story. Our E-motors (MLE) are frequency converter controlled motors that have been designed specifically for use with Grundfos pumps, and they feature unique functionalities that allow for complete system optimization. The new MLE permanent magnet (ECM) motor offers an additional 7-10% decrease in energy cost over NEMA Premium motors with industry standard variable frequency drives.

Ultimate Flexibility and Efficiency

The MLE motors can be operated to meet any individual needs for a specific solution. This makes them an excellent choice for a number of applications within heating, cooling, ventilation and industrial processes – each of which are characterized by varying demands, different control needs, and varying number of operating hours.

New Functionalities for Advanced Solutions	
Real Time Clock*	**Adjustable Proportional Pressure Control Curve**
Allows for calendar function for e.g. automatic system stop during weekends.	You can select the shape and steepness of the control curve - choose between a linear or quadratic curve
2 Analogue Inputs	**Manual Speed Operation Mode**
Get Delta P and Delta T control with two sensors.	Even while under external signal control, you can switch to manual speed operation mode to test the pump's operation.
Timer Functions on Digital Inputs	**PT100/1000 Input***
For each digital input you can activate and set a delay time and a duration time	Get temperature and differential temperature control at a low cost
1 Analogue Output*	**Predefined Set-Point***
Get relevant parameter information in real time	Get dynamic response to different operation profiles

* Advanced functional module FM300 is required for these functionalities

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Vertical Space Miser Pumps

PACO VSM/VSMS

With the smallest footprint in industry, the Grundfos VSM and VSMS vertical space miser pumps offer unique versatility for retrofit projects and small spaces.

VSM Models (Close Coupled)

The VSM features a one-piece registered fit bracket and seal housing which prolongs the life of the mechanical seals and bearings. The pump includes a shaft sleeve and industry standard JM frame motor.

VSMS Models (Axially Split)

The VSMS features an axially split, rigid spacer coupling which allows for simple alignment, service and replacement of mechanical seals without removing the motor. The pump includes a registered fit bracket and a stainless steel shaft that eliminates oxidation. VSMS models are available with an industry-standard NEMA TC frame motor.

Key Features and Benefits

- Same-size, vertically mounted suction and discharge connections simplifies piping while vertical flanges eliminate the need for a suction-diffuser, making installation quick and easy
- Vertically mounted motor and piping create a compact design with minimal footprint making it ideal for retrofits and small space applications
- Double volute, top pull out design allows quick removal of rotating assembly without disturbing the volute or piping
- Ductile iron pump stand eliminates the need for grouting and laser alignment, allowing for simple installation
- Axially split spacer couplings allow for easy replacement of mechanical seal without removing the motor (VSMS)
- Replaceable case wear rings and shaft seals prolong the life of the pump and protect it from erosion
- Francis Vane impellers and contoured suction vanes increase pump efficiency and reduce vibration and noise
- Hydraulic double volute design reduces radial loads, internal recirculation and turbulence, resulting in a longer pump life span and a higher operation efficiency

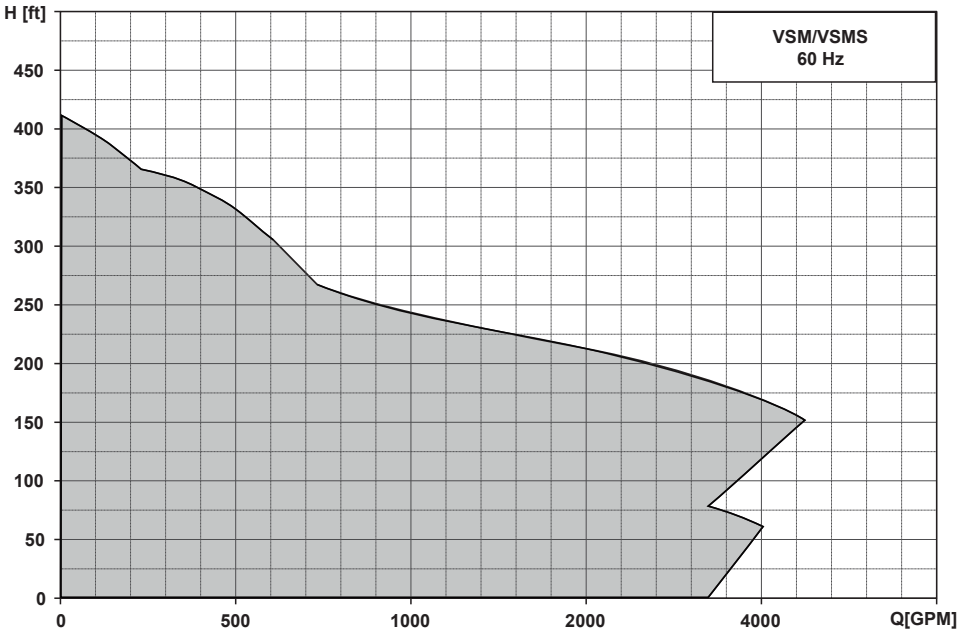
APPLICATIONS

- Chilled water
- Hot water
- Condensed water
- Service water
- District heating/cooling
- Pressure boosting

VSM/VSMS **Technical Data**

VSM/VSMS **INFORMATION**

Flow, Q:	max. 4100 gpm
Head, H:	max. 400 ft
Liquid Temperature:	max. 275° F
Working Pressure:	max. 300 psi
HP Range:	max. 125 HP
Discharge / Suction Sizes:	4 to 10 in.



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Vertical Space Miser Pump
GRUNDFOS **VSMSE**

With the smallest footprint in industry, the Grundfos VSMSE vertical space miser pumps offer unique versatility for retrofit projects and small spaces.

The axially split VSMSE features the same low maintenance and space saving advantages as the VSMS model with the added benefit of a Grundfos MLE variable speed motor. This allows the pump to integrate with communication systems for unmatched operation monitoring and control.

Key Features and Benefits

- Plug-and-pump solution speeds installation, commissioning and startup due to integrated components
- Same-size, vertically mounted suction and discharge connections simplifies piping while vertical flanges eliminate the need for a suction-diffuser, making installation quick and easy
- Vertically mounted motor and piping create a compact design with minimal footprint making it ideal for retrofits and small space applications
- Double volute, top pull out design allows quick removal of rotating assembly without disturbing the volute or piping
- Ductile iron pump stand eliminates the need for grouting and laser alignment, allowing for simple installation
- Axially split spacer couplings allow for easy replacement of mechanical seal without removing the motor
- Replaceable case wear rings and shaft seals prolong the life of the pump and protect it from erosion
- Francis Vane impellers and contoured suction vanes increase pump efficiency and reduce vibration and noise
- Hydraulic double volute design reduces radial loads, internal recirculation and turbulence, resulting in a longer pump life span and a higher operation efficiency

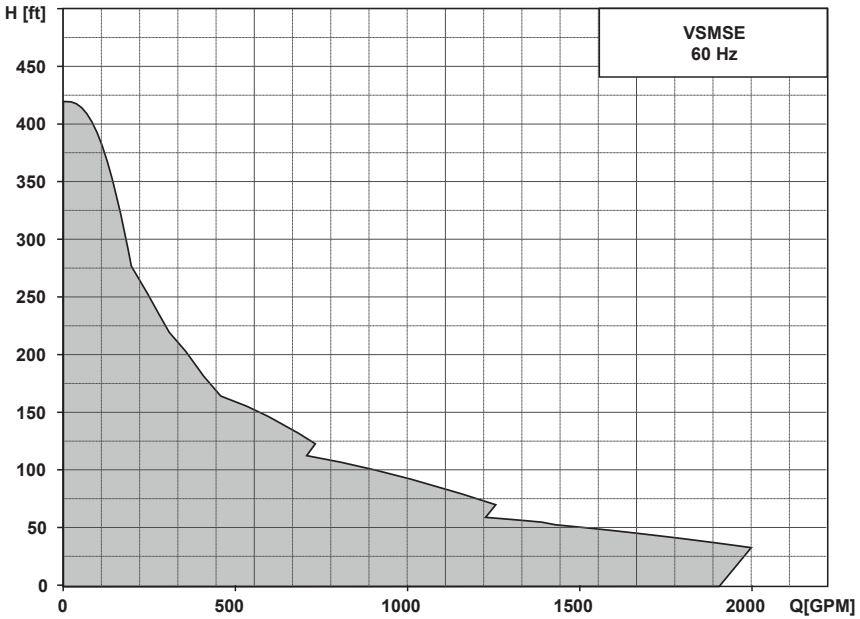
APPLICATIONS

- Chilled water
- Hot water
- Condensed water
- Service water
- District heating/cooling
- Pressure boosting

VSMSE **Technical Data**

VSMSE **INFORMATION**

Flow, Q:	max. 1,900 gpm
Head, H:	max. 400 ft
Liquid Temperature:	max. 275°F
Working Pressure:	max. 300 psi
HP Range:	3 to 30 HP / 3600 rpm, 3 to 25 HP / 1800 rpm
Discharge Sizes:	1.25 to 8 in.



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SPLIT CASE

Vertical Split Case Pump

PACO **KPV**

The single stage Grundfos KPV offers robust and reliable operation in a compact, vertically mounted frame. The pump's double volute design balances radial loads while extending the life of wear rings, shaft seals and bearings. The KPV also features a TC motor with liquid cooled sleeve bearing which promotes a longer pump life.

Available with a wide range of material options, the KPV is highly customizable and perfect for retrofits or specialized applications in small spaces.

Key Features and Benefits

- Lower sleeve bearing with liquid cooled design facilitates leak-free performance and reduces maintenance costs by eliminating the need for a lower mechanical seal
- Axially split design allows for quick removal of the top casing and access to pump components (bearings, wear rings, impeller, mechanical and shaft seals) without disturbing the motor or pipe work, saving time and money
- Standard bronze wear rings protect pump from erosion and permit simple maintenance of proper running clearances
- Spiral grooves on sleeve bearings flush contaminates and particles via recirculation line, reducing maintenance
- Highly customizable construction including choices of case material with numerous impeller and shaft seal options
- Integrally cast suction baffles reduce suction recirculation loss and ensure even flow distribution and quiet, vibration-free operation. Suction chamber inlet configuration also increases hydraulic efficiency and lowers net positive suction head requirements
- Francis Vane Impeller design with extended vanes and enlarged eye increases efficiency and reduces vibration and noise
- Hydraulic double volute design reduces radial loads, internal recirculation and turbulence, resulting in a longer pump life span and a higher operation efficiency
- Vertical design provides further space savings over the already compact KP model
- NSF61/50 certifications (available upon request)

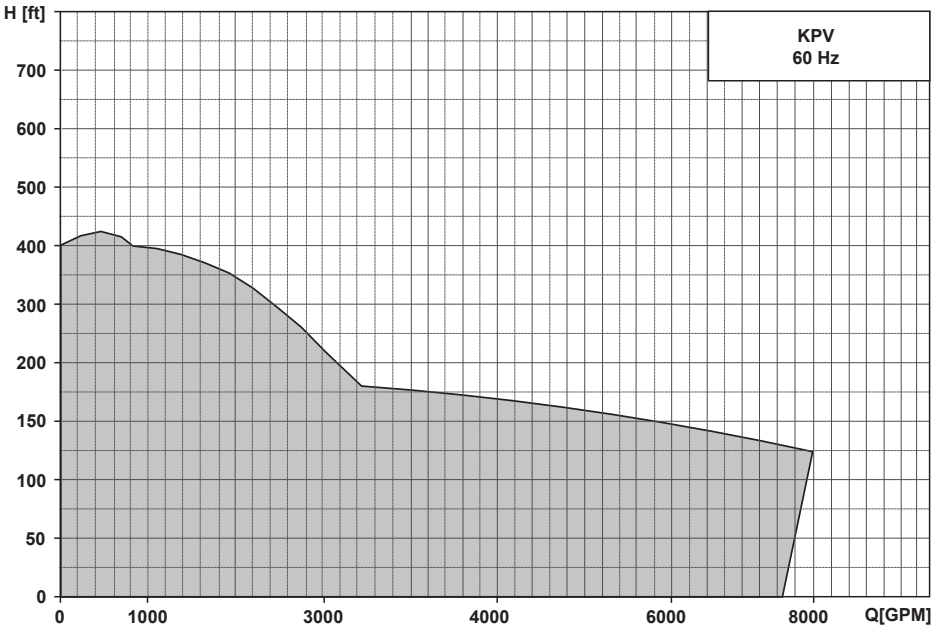
APPLICATIONS

- Chilled water
- Condensed water
- Service water
- District energy
- Water distribution
- Central plant heating/cooling

PACO KPV **Technical Data**

PACO KPV **INFORMATION**

Flow, Q:	max. 8,000 gpm
Head, H:	max. 420 ft
Liquid Temperature:	-20°F to +275°F
Working Pressure:	max. 400 psi
HP Range:	max. 500 HP
Discharge Sizes:	2 to 10 in.
Impellers:	7 to 24 in.



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Compact Vertical Split Case Pump

PACO KPVS

The KPVS incorporates the best of all worlds – vertically mounted motor for reducing the mechanical space footprint, easy access to seal and internal components without ever needing to remove the motor, and no field alignment necessary.

Smaller footprint and smaller piping requirements
A KPVS 8015 will cover the same range as a 10" inline pump. The flangeto-flange dimensions on the KPVS 8015 is 38 inches. The equivalent flange-to-flange dimension for the vertical inline is 48 inches. The KPVS 8015 is a 10 inch suction and a 8 inch discharge, meaning that the discharge piping is one-size smaller than the equivalent vertical inline.

Between bearing design
The KPVS is still a splitcase at heart, with all the strength of the between bearing design. The double volute design reduces loads and leads to better overall performance.

Improved maintenance
Never a need to remove the motor – even when replacing the impeller or entire rotating assembly. How do you get access to the entire rotating assembly of the KPVS? The motor will never have to be removed, the split case housing can be removed without ever having to break the motor free.

Key Features and Benefits

- Best servicability of any vertical pump in the market
- Exceptional efficiency in a space saving design
- Double suction design reduces axial forces by directing flow into both sides of the impeller
- Easy access to the shaft seal with the split coupling and removable bearing
- Lower sleeve hearing reduces maintenance costs by eliminating the need for a lower mechanical seal
- Hydraulic double volute design reduces radial loads, internal recirculation and turbulence, resulting in a longer pump life span and a higher operation efficiency
- Included pump stand holds the weight of the pump

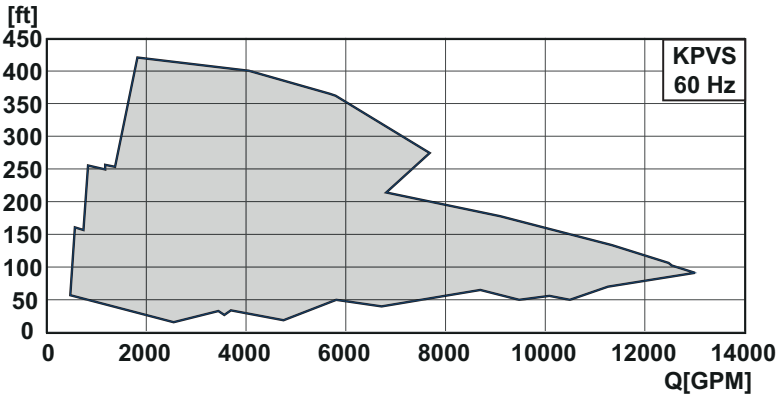
APPLICATIONS

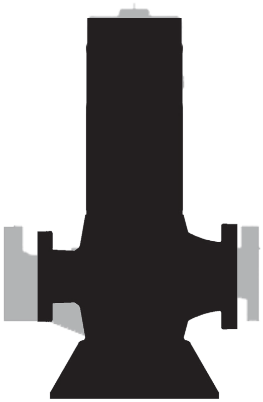
- Chilled water
- Condensed water
- Service water
- District energy
- Water distribution
- Central plant heating/cooling

KPVS **Technical Data**

KPVS **INFORMATION**

Flow, Q:	max. 13,000 gpm
Head, H:	max. 420 ft
Liquid Temperature:	-20°F to 275°F
Working Pressure:	max. 300 psi





Flange to flange footprint of KPVS is less than comparable vertical inline pumps, meaning the smallest footprint in the space.

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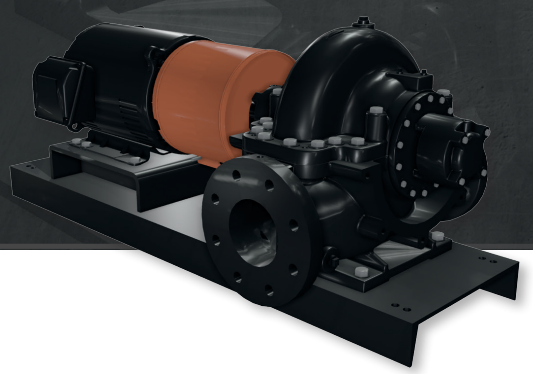
Horizontal Split Case Pump

PACO KP

Built to deliver up to 20,000 gallons-per-minute, this high capacity single stage pump is ideal for demanding applications. The KP features compact, robust bearing housing with a 360-degree machined register fit, which limits shaft deflection and optimizes alignment.

Available in a wide range of material options, the KP is highly customizable and perfect for specialized, challenging applications.



Key Features and Benefits

- Hydraulic double volute design reduces radial loads, internal recirculation and turbulence, resulting in a longer pump life span and a higher operation efficiency
- Axially split design allows for quick removal of the top casing and access to pump components (bearings, wear rings, impeller, and shaft seal) without disturbing the motor or pipe work, saving time and money
- Standard bronze wear rings protect pump from erosion and permit simple maintenance of proper running clearances
- Horizontal, space saving design eliminates need for distance around pump for maintenance access
- Highly customizable construction including choices of case material with numerous impeller and shaft seal options
- Integrally cast suction baffles reduce suction recirculation loss and ensure even flow distribution and quiet, vibration-free operation. Suction chamber inlet configuration also increases hydraulic efficiency and lowers net positive suction head requirements
- Independent bearing housing design allows access to the pump components without removing the top half of the casing
- Extended pump range up to 20,000 gallons-per-minute to serve all your high flow applications
- Francis Vane Impeller design with extended vanes and enlarged eye increases efficiency and reduces vibration and noise
- NSF/50 certifications (available upon request)

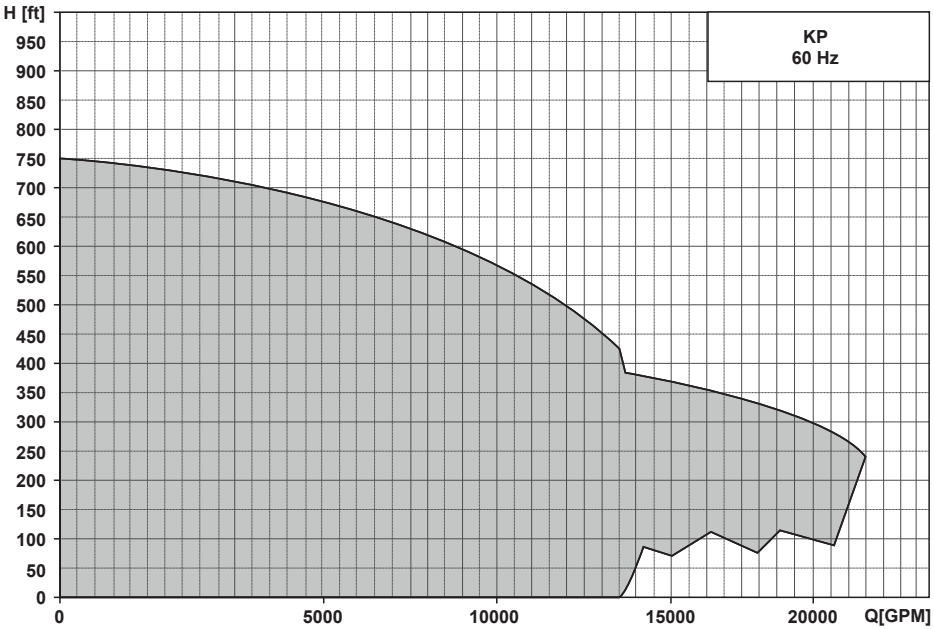
APPLICATIONS

- Chilled water
- Condensed water
- Service water
- District energy
- Water distribution
- Central plant heating/cooling

PACO KP **Technical Data**

PACO KP **INFORMATION**

Flow, Q:	max. 20,000 gpm
Head, H:	max. 700 ft
Liquid Temperature:	-20°F to +275°F
Working Pressure:	max. 400 psi
HP Range:	max. 2000 HP
Discharge Sizes:	2 to 20 in.
Impellers:	7 to 24 in.



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DOSING

Dosing Skid Systems
GRUNDFOS DSS

The DSS is a pre-engineered floor or panel dosing system package that offers integrated controls and one, two or three pump configurations designed to accurately meter liquid chemicals for a variety of water supply/treatment systems, as well as industrial and manufacturing applications. At the heart of each DSS is the Grundfos metering pump: hydraulically actuated and mechanically actuated pumps including SMART Digital Dosing pumps with stepper motor technology offering up to 3000:1 flow turndown.

Key Features and Benefits

- Grundfos SMART Digital Dosing pumps provide precise performance and reliability in a complete solution
- Available in one, two and three pump system configurations making the system suitable for a broad scope of applications
- Plug and pump solution ensures quick and easy installation
- Pre engineered system allows quick delivery, even for customized skids
- Factory tested to the highest standard to ensure trouble free installation
- Floor and wall mount provides a wide range of flexible installation solutions
- User friendly panel options include: junction, HOA, plug only, and none
- Control cables options include: analog/pulse/stop input, relay output and analog output
- Durable materials include PVC/CPVC pipe and EPDM/ Viton gaskets
- Available with or with pulsation dampener
- ISO certified manufacturing options

Custom ETO Dosing Skid Systems

Grundfos understands that there are applications and installations that require a completely unique Engineered to Order (ETO) solution for project based work. The custom DSS may be constructed in nearly any configuration and include any dosing pump offered by Grundfos. The Custom ETO systems are reliable solutions built with Grundfos quality and sure to meet your project needs.

APPLICATIONS

- Sodium hypochloride
- Sodium bisulfate
- Alum
- Potassium permanganate
- Sodium hydroxide
- Acids
- Anti-scalants

DSS **Technical Data**

DSS **INFORMATION (Standard)**

Flow, Q:	0.0007 to 8 gph
Operating pressure:	max. 150 psi
Turndown ration:	max. 3000:1
Power:	115 VAC / 60Hz / 1 phase

DSS **INFORMATION (Custom ETO)**

Flow, Q:	0.0007 to 556 gph
Operating pressure:	max. 2900 psi
Turndown ration:	max. 3000:1
Power:	115 or 230 VAC / 50 or 60 Hz / 1 or 3 phase

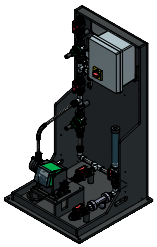
COMPONENTS

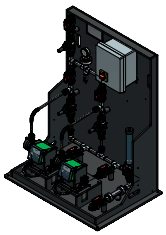
Pos.	Description
1	Inlet isolation valve
2	Y-strainer
3	Calibration column isolation valve
4	Calibration column
5	Dosing pump inlet isolation valve
6	Dosing pump
7	Pressure relief valve
8	Dosing pump outlet isolation valve
9	Dosing pump inlet isolation valve
10	Dosing pump
11	Pressure relief valve
12	Dosing pump outlet isolation valve
13	Sample valve/bleed valve
14	Pressure gauge with diaphragm gauge guard
15	Back pressure valve
16	Discharge isolation valve
17	Nameplate
18	Junction box/control panel (optional)

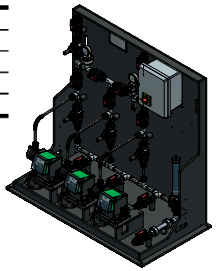
DIMENSIONS

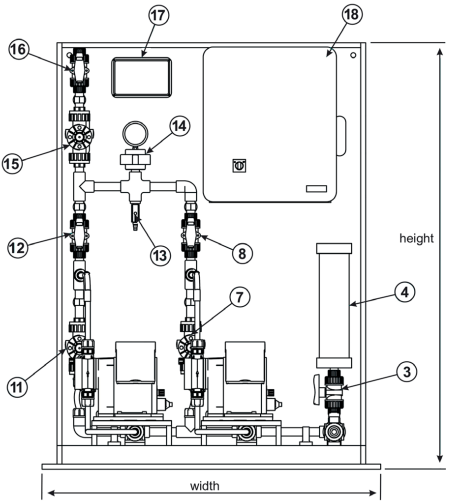
Smart Digital Dosing Skid System Dimensions

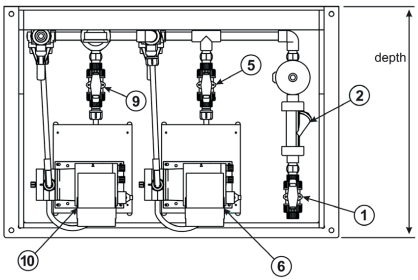
	Height	Width	Depth
Simplex	43"	24"	23.5"
Duplex	43"	34"	23.5"
Triplex	43"	46"	23.5"











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Smart Digital
GRUNDFOS DDA/DDC/DDE

The SMART Digital DDA, DDC and DDE models with powerful variable-speed stepper motors bring state-of-the art technology to perfection. Combined expert knowledge and the new patented solutions set future standards. Traditional technologies such as stroke length/stroke frequency adjustment with synchronous motor or solenoid drive become a thing of the past. The click-stop mounting plate provides unique mounting flexibility, and the entire dosing range up to 8 gph is covered with only a few pump variants.

Key Features and Benefits

- Modularity: The included click-stop mounting plate is an example of the unique flexibility offered, with only a few variants
- Simplicity: Easy handling and perfect overview and control ensure simple installation, commissioning and operation
- Flow intelligence: The pump monitors the dosing process of liquids when the FlowControl function is activated, for advanced process reliability with accuracy of 1% of setpoint

DDA Models

- High-end solution for complex and demanding applications
- Flow and pressure up to 8 gph and up to 232 psi
- Auto-deaeration during pump standby
- Flexible Fieldbus control
- Turn-down ratio 3000:1 with constant 100% stroke length

DDC Models

- Optimal price-performance ratio
- Flow and pressure up to 4 gph and up to 145 psi
- Two SlowMode functions (25% and 50%), calibration mode, service display
- External stop, dual-level tank control, 2 relay outputs
- DDE Models
- Digital Dosing™ even for the low budget segment
- Flow and pressure from 0.0015 to 4 gph and up to 145 psi; two models cover entire range
- Control options: manual control 0.1-100 %, pulse in % of stroke volume
- External stop, empty tank control

APPLICATIONS

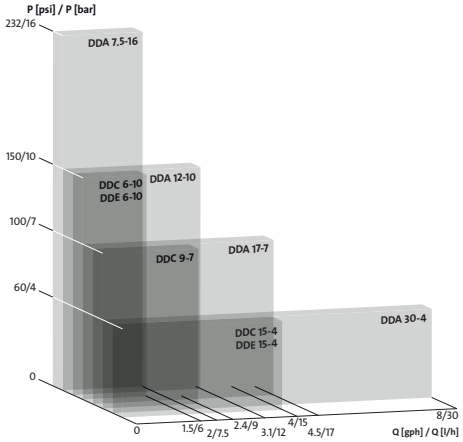
- Disinfection and pH adjustment
- Drinking water, process water and wastewater
- Food and beverage, Clean-in-place
- Ultrafiltration and reverse osmosis
- Pulp and paper, boiler feed water
- Swimming pool water, cooling towers
- Coagulation, flocculation, precipitation
- Chemical industry, car wash, irrigation
- Anywhere chemical treatment and conditioning of water is required

Technical Data & Feature Overview

DDA/DDC/DDE **INFORMATION**

Dosing head:	PP, PVC, PVDF and Stainless Steel 1.4401
Gaskets:	EPDM, FKM or PTFE
Valve balls:	Ceramics or stainless steel 1.4401 (SS heads only)
Connection sets (suction / pressure):	• Tubing: 1/4", 3/8", 1/2" • Threaded: 1/2" MNPT for PP, PVC and PVDF; 1/4"FNTP for SS
Max Flow, Q:	8 gph (30 l/h)
Max Pressure, P:	232 psi (16 bar)
Turndown ratio:	3000:1 or 1000:1
Liquid viscosity:	max 2500mPas, depending on model and setup
Supply voltage:	100-240 V, 50-60Hz
Power consumption:	max 18 W
Weight:	5.3-8.8 lbs (2.4-4 kg), depending on material
Sound pressure level:	60 dB(A)
Enclosure rating:	IP65, NEMA 4X
Approvals:	NSF61, CSA-US

Performance Range



Pump type	DDA			DDC		DDE		
Control variant	**FCM**	**FC**	**AR**	**AR**	**A**	**PR**	**P**	**B**
Operation modes								
Manual speed control	•	•	•	•	•	•	•	•
Pulse control in ml/pulse	•	•	•	•	•			
Pulse control (1:n)						•	•	
Analog control 0/4-20 mA	•	•	•	•				
Batch control (pulse-based)	•	•	•					
Dosing timer cycle	•	•	•					
Dosing timer week	•	•	•					
Fieldbus control	•	•	•					
Functions								
Auto deaeration also during pump standby	•	•	•					
FlowControl system with selective fault diagnosis	•	•						
Pressure monitoring (min / max)	•	•						
Flow measurement	•							
AutoFlowAdapt	•							
SlowMode (anti-cavitation)	•	•	•	•	•			
Calibration mode	•	•	•	•	•			
Scaling of analogue input	•	•	•					
Service information display	•	•	•	•	•			
Relay setting: alarm, warning, stroke signal, pump dosing	•	•	•	•		•		
Relay setting (additionally): timer cycle, timer week	•	•	•					
Inputs/outputs								
Input for external stop	•	•	•	•	•	•	•	
Input for pulse control	•	•	•	•	•	•	•	
Input for analogue 0/4-20 mA control	•	•	•	•				
Input for low-level signal	•	•	•	•	•	•	•	
Input for empty tank signal	•	•	•	•	•	•	•	
Output relay (2 relays)	•	•	•	•		•		
Output, analogue 0/4-20 mA	•	•	•					
Input/output for GeniBus	•	•	•					
Input/output for E-box (Profibus DP or additional alarm relays)	•	•	•					

Control Variants

FCM: Flow Control Measurment
FC: Flow Control
PR: Pulse Relay
P: Pulse input
AR: Analog Relay
A: Analog
B: Basic

L-SD-SL-001 Rev. 2-17

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Safe, Flexible, Cost-Saving
SMART DIGITAL XL RANGE

The Grundfos SMART Digital XL DDA and DDE digital diaphragm dosing pumps enable accurate dosing of virtually all chemicals up to 52.8 gph and 145 psi while offering great flexibility and user friendliness. The two pump models open up new application possibilities within industry, water utility, agriculture and more.

Easy selection, few variants, stock reduction
The SMART Digital XL DDE (Economical) and DDA (Advanced), can easily be integrated into typical dosing applications.

Three sizes (60-10, 120-7, 200-4) cover a dosing range from 0.02 gph to 52.8 gph (0.075 to 200 l/h). With its wide range of power supplies (100-240 V, 50/60 Hz) the SMART Digital XL can be used globally. All international approvals are available.

Degassing chemicals (hypochlorite) and high-viscosity liquids up to 3,000 mPas can be dosed. The dosing head is available in various materials fit for all liquid chemicals.

The mounting plate allows quick installation on any horizontal surface, and the control cube can easily be modified to face left, right, or straight ahead.

Excellent dosing accuracy
The dosing accuracy is +/- 1.5 % of the actual setpoint and +/- 0.1% of full scale. This allows precise dosing of chemicals, even with small dosing quantities (ratio 800:1).

SMART Digital XL is able to dose concentrated chemicals, they don't have to be diluted. Chemicals are saved, transportation costs are reduced, smaller dosing tanks can be used. Moreover,the chemical consumption is reduced by dosing precisely the amount of chemicals required.

Dosing is almost pulsation-free, no additional accessories are needed. Overdosing is prevented and environmental and health protection are improved.

Integrated flowmeter reduces installation costs
An external flowmeter is not required. The integrated positive-displacement like flow measurement capability of the (DDA-FCM) measures precisely the dosed volume per stroke, and the integrated controller corrects the dosing flow automatically. Temperature, counterpressure, viscosity or air bubbles have no influence on the dosing accuracy.

This means full control of the dosing process on both the suction and pressure side with automatic failure correction, detection of air bubbles, and start of the automatic priming program.

Safe dosing with automatic failure correction
- Reduced operator time
- Increased system safety
- High process reliability
- Low failure rate

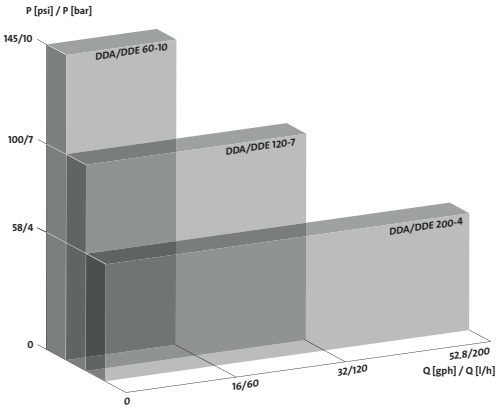
APPLICATIONS

- Disinfection
- pH adjustment
- Chemical dosing (anti foamers, cleaners, biocides, bleaches, surface handling agents, etc.)
- Cleaning in place (CIP)
- Coagulation
- Precipitation/flocculation
- Filtration
- Reverse osmosis

Technical Data

DDA/DDC/DDE **INFORMATION**	
Dosing head:	PVC, PVDF and Stainless Steel 1.4401
Gaskets:	EPDM, FKM or PTFE
Valve balls:	Ceramics or stainless steel 1.4401 (SS heads only)
Connection sets (suction / pressure):	Threaded: 3/4" MNPT for PVC and PVDF; 3/4" FNPT for stainless steel
Max Flow, Q:	52.8 gph (200 l/h)
Max Pressure, P:	145 psi (10 bar)
Turndown ratio:	800:1
Liquid viscosity:	max 3000 mPas, depending on model and setup
Supply voltage:	100-240 V, 50-60Hz
Power consumption:	max 80 W
Weight:	14.8-33.1 lbs (6.7-15 kg), depending on material
Sound pressure level:	80 dB(A)
Enclosure rating:	IP65, NEMA 4X
Approvals:	NSF61, CSA-US

Performance Range



Feature Overview

Pump type	DDA		DDE	
Control variant	FCM	AR	AR	B
Operation modes				
Manual speed control	•	•	•	•
Pulse control in ml/pulse	•	•	•	
Analog control (0)4-20 mA	•	•	•	
Batch control (pulse-based)	•	•		
Dosing timer, cycle	•	•		
Dosing timer, week	•	•		
Fieldbus control	•	•		
Functions				
Auto-deaeration also during pump standby	•	•		
Flow Control system with selective fault diagnosis	•			
Pressure monitoring (min/max)	•			
Flow measurement	•			
AutoFlowAdapt	•			
SlowMode (anti-cavitation)	•	•		
Double-diaphragm leakage detection (optional)		•		
Inputs / Outputs				
Input for external stop	•	•	•	
Input for pulse control	•	•	•	
Input for analog 0/4-20 mA control	•	•	•	
Input for low-level signal	•	•	•	
Output relay (2 relays)	•	•	•	
Analog output (0)4-20 mA	•	•		
Input/output for GeniBus	•	•		
Input/output for Grundfos CIU (Profibus DP or additional alarm relays)	•	•		

Control Variants

FCM: Flow Control Measurement
AR: Analog Relay
B: Basic

L-SD-SL-002 01-18

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Digital Dosing Pumps
GRUNDFOS **DME**

The DME Digital Dosing pumps combine perfect precision and user-friendliness for large dosing quantities from 15.9 to 248 gph, offering all the benefits of the highly acclaimed smaller Digital Dosing range, making accurate dosing easier than ever.

Key Features and Benefits

- Wide dosing range with a turndown ratio of 800:1 for a range of water supply, wastewater and water treatment applications
- Easy to install, the operator can set the pump to discharge exactly the quantity of dosing liquid required in the application
- Available with Profibus interface to supply performance data and status information for quality control, preventive maintenance and future reference
- The dosing heads of DME pumps are available in stainless steel, PVDF, and environmentally friendly, cost-efficient polypropylene
- Simple display allows easy navigation of the menus to use the impressive range of standard control features – including pulse, analog, timer, batch, and anti-cavitation control – as well as simple calibration and much more
- Anti-cavitation: slows down the suction stroke speed 75%, 50%, or 25% to facilitate handling viscous fluids
- DME uses a full stroke length every time, and the speed of each stroke is carefully timed, ensuring even concentration in the system and optimal priming throughout the entire operating range.
- Built-in overload protection monitors pump counter pressure and protects against exceptionally high pressure loads

APPLICATIONS

- Drinking water treatment
- Water distribution
- Wastewater transport
- Wastewater treatment
- Pulp and paper
- Textile industry
- Food and beverage
- Industrial process water

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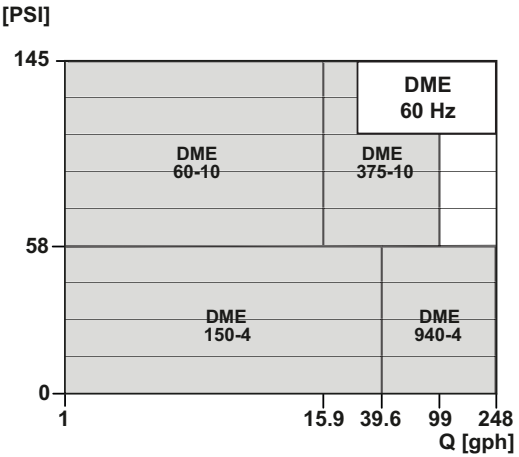
DME **Technical Data**

DME **INFORMATION**

Flow, Q:	0.2 to 248 gph
Operating pressure:	60 to 145 psi
Turndown ration:	max. 800:1



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Chlorine Dioxide Preparation and Dosing Systems

GRUNDFOS OXIPERM®

The Grundfos Oxiperm® provides chlorine dioxide generators that are extremely easy to use, bringing together precise dosing technology, an ideal mixture of components, quick chemical reactions with Maximum conversion rates, and outstanding reliability for effective disinfection.

Chlorine dioxide is an extremely long-lasting and effective disinfectant. Even relatively small quantities of chlorine dioxide display high disinfecting properties against all critical and chlorine-resistant germs, almost regardless of pH value. Chlorine dioxide can be used to successfully reduce the formation of biofilm in water pipes, which removes the life source for harmful germs such as legionella.

The compact Oxiperm® Pro OCD-162 system has been developed for applications in building services. This disinfection system is specifically designed for fighting legionella in drinking water and cooling tower installations.

The Oxiperm® range offers compact, effective and cost-effective disinfection.

Key Features and Benefits

- Compact design, offering easy installation even in confined spaces
- Low operating costs and low consumption of chemicals ensure a solution that saves time and cost
- Innovative dosing and calibration technology; always the optimum solution for your specific application
- On-site preparation of chlorine dioxide
- Complete chemical reaction within short timeframe
- Chlorine dioxide provides a highly effective solution against legionella and biofilm

APPLICATIONS

- Fighting legionella in hotels, hospitals, retirement homes,fountains, swimming pools and sports facilities
- Municipal waterworks
- Independent water suppliers
- Industrial process water like brewing water, bottle washing and CIP systems
- Cooling towers

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Oxiperm® **Technical Data**

OXIPERM® **INFORMATION**

Oxiperm® Pro OCD	162 - 5/10/30/55 g/hour
Oxiperm® 164 C	450 g/hour -> 2.5 kg/hour
Oxiperm® 164 D	120 g/hour -> 750 g/hour
Oxiperm® 166	up to 10 kg/hour

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WASTEWATER

Commercial Sump, Sewage & Effluent Pumps

GRUNDFOS **PIP**

The Grundfos PIP series vortex pumps are designed for pumping water or sewage in non-hazardous applications where explosion-proof motors are not required. The all cast iron construction of the pump makes it extremely durable against corrosion. The pumps vortex impeller allows it to pass up to 2 inch solids and can handle stringy trash without clogging the impeller. The motors are totally submersible design, constructed with open windings and completely oil filled. This gives greatest heat dissipation and helps motor run cooler and last longer.

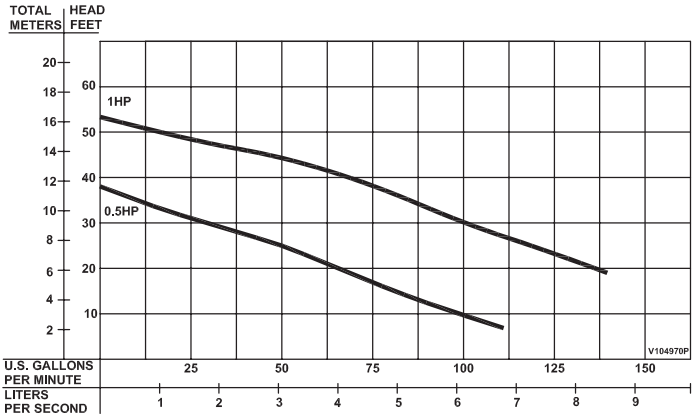
GRUNDFOS **PIP 1/2 HP to 1 HP**

PUMP SPECIFICATIONS

Discharge	2” NPT, Vertical, Bolt-on Flange
Liquid Temperature	104°F (40° C) Intermittent
Motor Housing	Cast Iron ASTM A-48, Class 30
Volute	Cast Iron ASTM A-48, Class 30
Seal Plate	Cast Iron ASTM A-48, Class 30
Impeller Design	Vortex, Open with Pump Out Vanes on Back Side. Dynamically Balanced, ISO G6.3
Impeller Material	85-5-5-5 Cast Iron
Shaft	416 Stainless Steel
Square Rings	Buna-N
Hardware	300 Series Stainless Steel
Paint	Air Dry Enamel, Top Coat
Seal Design	Single Mechanical, or Tandem Mechanical with Oil Filled Reservoir
Seal Material	Rotating Faces - Carbon
	Stationary Faces - Ceramic
	Elastomer - Buna-N
	Hardware - 300 Series Stainless Steel

Cord Entry	2” NPT - 20 FT. (6.1m) Custom Molded for Sealing and Strain Relief
Speed	3450 RPM, 60Hz (Nominal)
Upper Bearing Design	Single Row, Ball, Oil Lubricated
Upper Bearing Load	Radial
Lower Bearing Design	Single Row, Ball, Oil Lubricated
Lower Bearing Load	Radial & Thrust
Motor Design	NEMA L, Single Phase,
	NEMA B, Three Phase Torque Curve, Oil Filled Squirrel Cage Induction
Motor Insulation	Class B Class F on Selected Models
Single Phase	Permanent Split Capacitor (PSC)
Three Phase	200-240/480 is Tri-Voltage Motor.
	600V Requires Overload Protection to be Included in Control Panel

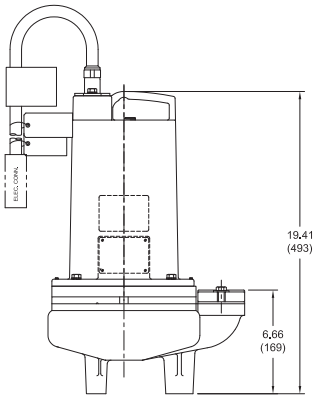
GRUNDFOS **PIP Technical Data – 1/2 HP to 1 HP**



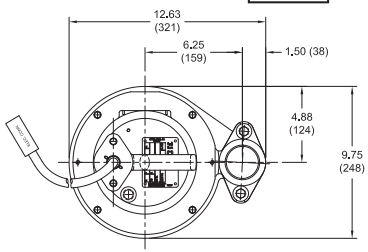
MODEL NO.	HP	VOLT/PH	HZ	RPM (Nom)	NEMA START CODE	INSUL. CLASS	FULL LOAD AMPS	LOCKED ROTOR AMPS	CORD SIZE	CODE TYPE	CORD O.D. inch (mm)	WINDING RESISTANCE		
												"Emerson Main-Start"	"Franklin Main-Start"	"G.E. Main-Start"
PIP512L*	0.5	120/1	60	3450	G	B	12.6	24.6	14/3	SJTOW	0.375 (9.5)	1.04-7.20	1.47-9.59	–
PIP522L	0.5	240/1	60	3450	E	B	6	10.2	14/3	SOW	0.530 (13.5)	–	5.08-9.00	10.10-10.16
PIP592L	0.5	200-240/3	60	3450	P/R	B	5.8/5.3	19.9/18.4	14/4	SOW	0.570 (14.5)	–	5.5	6.3
PIP542L	0.5	480/3	60	3450	R	B	2.6	9.1	14/4	SOW	0.570 (14.5)	–	22	25.18
PIP552L	0.5	600/3	60	3450	T	B	2.1	8.7	14/4	SOW	0.570 (14.5)	21.20	–	34.57
PIP1022L	1	240/1	60	3450	F	B	10.7	21.8	14/3	SOW	0.530 (13.5)	–	2.37-6.44	3.04-15.49
PIP1092L	1	200-240/3	60	3450	H/J	B	7.9/7.5	19.9/18.4	14/3	SOW	0.570 (14.5)	–	5.5	6.3
PIP1042L	1	480/3	60	3450	J	B	3.7	9.1	14/4	SOW	0.570 (14.5)	–	22	25.18
PIP1052L	1	600/3	60	3450	L	B	2.9	8.7	14/4	SOW	0.570 (14.5)	21.20	–	34.57

OPTIONAL - Temperature sensor cord for 3 phase models is 14/3 SOW, 0.530 (13.5mm) O.D.
OPTIONAL - Moisture sensor cord is 18/5 SOW, 0.470 (11.9mm) O.D.

OPTIONAL - Moisture & Temperature sensor cord for 3 phase models is 18/5 SOW, 0.470 (11.9mm) O.D. (*) Pump is CSA listed ONLY.



inches (mm)



Plugs for 120 Volt and .5Hp, 240 Volt Single Phase Models.

PIPXXX-L SERIES

PUMP MODEL NO. _____

PUMP SERIAL NO. _____

IMPORTANT !

1.) Pump may be operated "dry" for extended periods without damage to motor and/or seals.
2.) This pump is appropriate for those applications specified as class I division II hazardous locations.
3.) This pump is not appropriate for those applications specified as class I division i hazardous locations.
4.) Installations such as decorative fountains or water features provided for visual enjoyment must be installed in accordance with the national electric code ANSI/NFPA 70 and/or the authority having jurisdiction. This pump is not intended for use in swimming pools, recreational water parks, or installations in which human contact with pumped media is a common occurrence.

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Commercial Sump, Sewage & Effluent Pumps

GRUNDFOS **PIP**

The Grundfos PIP series vortex pumps are designed for pumping water or sewage in non-hazardous applications where explosion-proof motors are not required. The all cast iron construction of the pump makes it extremely durable against corrosion. The pumps vortex impeller allows it to pass up to 2 inch solids and can handle stringy trash without clogging the impeller. The motors are totally submersible design, constructed with open windings and completely oil filled. This gives greatest heat dissipation and helps motor run cooler and last longer.

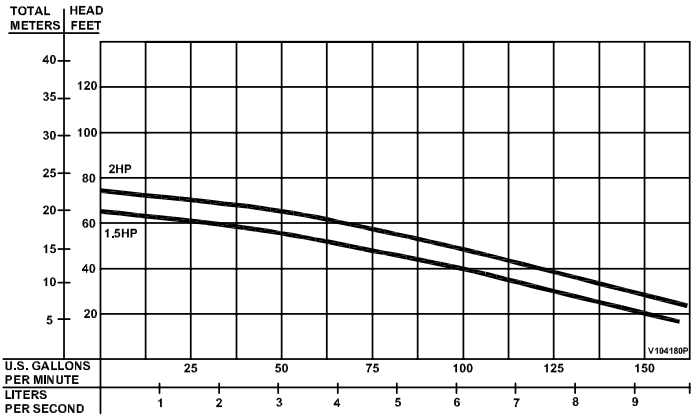
GRUNDFOS **PIP 1-1/2 HP to 2 HP**

PUMP SPECIFICATIONS

Discharge	2” NPT, Vertical, Bolt-on Flange
Liquid Temperature	104°F (40° C) Intermittent
Motor Housing	Cast Iron ASTM A-48, Class 30
Volute	Cast Iron ASTM A-48, Class 30
Seal Plate	Cast Iron ASTM A-48, Class 30
Impeller Design	Vortex, Open with Pump Out Vanes on Back Side. Dynamically Balanced, ISO G6.3
Impeller Material	85-5-5-5 Cast Iron
Shaft	416 Stainless Steel
Square Rings	Buna-N
Hardware	300 Series Stainless Steel
Paint	Air Dry Enamel, Top Coat
Seal Design	Single Mechanical, or Tandem Mechanical with Oil Filled Reservoir
Seal Material	Rotating Faces - Carbon
	Stationary Faces - Ceramic
	Elastomer - Buna-N
	Hardware - 300 Series Stainless Steel

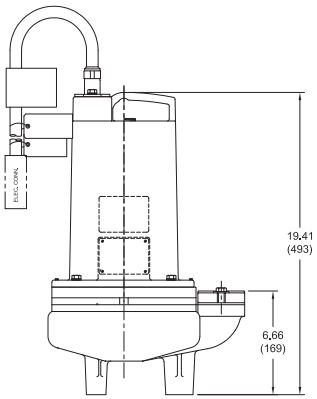
Cord Entry	2” NPT - 20 FT. (6.1m) Custom Molded for Sealing and Strain Relief
Speed	3450 RPM, 60Hz (Nominal)
Upper Bearing Design	Single Row, Ball, Oil Lubricated
Upper Bearing Load	Radial
Lower Bearing Design	Single Row, Ball, Oil Lubricated
Lower Bearing Load	Radial & Thrust
Motor Design	NEMA L, Single Phase,
	NEMA B, Three Phase Torque Curve, Oil Filled Squirrel Cage Induction
Motor Insulation	Class B Class F on Selected Models
Single Phase	Permanent Split Capacitor (PSC)
Three Phase	200-240/480 is Tri-Voltage Motor.
	600V Requires Overload Protection to be Included in Control Panel

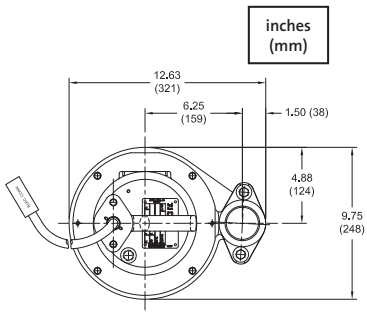
GRUNDFOS **PIP** Technical Data – 1-1/2 HP to 2 HP



MODEL	HP	VOLT	PH/Hz	RPM (Nom)	NEMA START CODE	INSUL. CLASS	FULL LOAD AMPS	LOCKED ROTOR AMPS	CORD SIZE	CODE TYPE	CORD O.D. ± .02 (.5) in (mm)	WINDING RESISTANCE MAIN -- START
PIP1522L	1.5	240	1/60	3450	A	F	13.5	31.5	12/3	SOW	0.61 (15.5)	2.15 -- 12.49
PIP1592L	1.5	200/240	3/60	3450	C	F	10.8/9.8	27	14/4	SOW	0.60 (15.2)	4.22
PIP1542L	1.5	480	3/60	3450	F	F	4.9	13.5	14/4	SOW	0.60 (15.2)	17.0
PIP1552L	1.5	600	3/60	3450	F	B	3.9	11	14/4	SOW	0.60 (15.2)	22.2
PIP2022L	2	240	1/60	3450	C	F	16	42	12/3	SOW	0.61 (15.5)	1.26 -- 55.34
PIP2092L	2	200/240	3/60	3450	J	F	13.2/12	30	14/4	SOW	0.60 (15.2)	3.08
PIP2042L	2	480	3/60	3450	J	F	6	15	14/4	SOW	0.60 (15.2)	12.30
PIP2052L	2	600	3/60	3450	J	B	4.8	12	14/4	SOW	0.60 (15.2)	19.70

Winding Resistance ± 5%, measured from terminal block. Pump rated for operation at ± 10% voltage at motor.
Optional - Moisture sensor cord for DS models is 18/5 SOW, 0.47 ± .02 O.D.
Optional - Temperature sensor cord for 3 phase models is 14/3 SOW, 0.53 ± .02 O.D.
Optional - Moisture & Temperature sensor cord for 3 phase DS models is 18/5 SOW, 0.47 ± .02 O.D.





Plugs for 120 Volt and .5Hp, 240 Volt Single Phase Models.

PIPXXX-L SERIES

PUMP MODEL NO. _____

PUMP SERIAL NO. _____

IMPORTANT !

1.) Pump may be operated "dry" for extended periods without damage to motor and/or seals.
2.) This pump is appropriate for those applications specified as class I division II hazardous locations.
3.) This pump is not appropriate for those applications specified as class I division i hazardous locations.
4.) Installations such as decorative fountains or water features provided for visual enjoyment must be installed in accordance with the national electric code ANSI/NFPA 70 and/or the authority having jurisdiction. This pump is not intended for use in swimming pools, recreational water parks, or installations in which human contact with pumped media is a common occurrence.

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Submersible Wastewater Pump

GRUNDFOS **SL RANGE**

Designed for the most demanding situations, the Grundfos SL range of submersible wastewater pumps is bridging the gap between superior performance, innovative design, and rock solid durability. Technologies rooted in high overall efficiencies, advanced physical pumps design, superior hydraulic performance, and adaptive control features help make the SL range the most fundamentally sound wastewater pump on the market. With the SL range of pumps, Grundfos is forging relationships between eco-friendly and performance, bringing it all together in high performance wastewater pumping.

Key Features and Benefits

- Moisture-proof stainless steel plug prevents moisture from entering the motor via cable core
- Single cord for both power and control cable allows for quick change
- Compact motor construction reduces vibrations protecting shaft seals and bearings
- Primary and secondary seals are combined into a single cartridge to reduce maintenance time, increase reliability and protect the motor
- Motors are based on IE3 components, improving motor efficiency and prolonging pump life
- Sensor options include integrated moisture switches, motor temperature sensors, and water in oil (WIO) sensors
- Easy-to-open clamp (1.5 hp -15 hp) allows easy access for pump maintenance
- Vortex impellers are available for free passage of solids up to 4", making them ideal for liquids with high content of solids, fibers or gassy sludge
- S-Tube impellers are available for free passage of solids up to 5", ideal for large flows of raw sewage and highly efficient to reduce horsepower usage
- Wet balancing capability enables less vibration during operation leading to increased seal and bearing life
- Innovative handle design positions pump properly on auto coupling
- Smooth outer surfaces to wick away debris for easy clean up
- SE models for submersible dry pit installations (12 hp - 42 hp)

APPLICATIONS

- Raw water intake
- Commercial wastewater
- Municipal wastewater
- Industrial wastewater
- Process water
- Storm water run off

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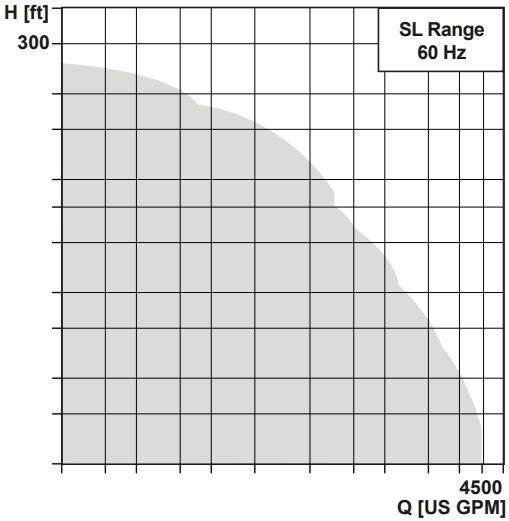
SL RANGE **Technical Data**

SL RANGE **INFORMATION**

Flow, Q:	max. 4500 gpm
Head, H:	max. 280 ft.
Liquid Temperature:	max. 104° F
Particle Size:	2 to 5 in.



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Solids Handling Dry Pit Pumps

GRUNDFOS SD SERIES

Grundfos' offering of the SD (Sewage Dry-Pit) line of large, solids-handling, dry-pit pumps are engineered to handle the demands of a wastewater or storm water collection and treatment system.

We have consolidated our Yeomans, Chicago and Morris brands into one Grundfos SD line of pumps to improve on our industry leading quality and exceed our customers' expectations.

Grundfos SD pumps are the ideal choice for pumping sewage, sludge, corrosives, caustics and industrial by-products. Heavy duty industrial quality, superior design features and a wide range of materials and options combine to provide the user with the ultimate in long service life and system reliability

Key Features and Benefits

- SmartTrim Impeller adjustment to maintain peak efficiency
- Impellers for high head, medium head and low head applications
- Designed to handle large abrasive solids
- Made with ASTM 48 Class 35 Cast Iron construction; material options for casing and impeller that include Ductile Iron, 3% Nickel cast iron, Duplex Stainless Steel (CD4MCu), and AISI 316 SS
- Heavy duty bearings for industry leading bearing life
- AISI 4140 steel shaft as standard with 420 SS shaft sleeve
- Multiple sealing options ranging from packing to split seals
- Motor mounting options available include vertical pedestal mounted, vertical open shaft and horizontal base mounted
- Removable suction cover allows easy maintenance access to pump internals
- Discharge size ranging from 4" to 54"
- Performance testing on every pump comes standard at the following test levels:
  - HI grade 3B standard for less than 13HP
  - HI grade 2B standard for greater than 13HP
- SD Series is now available to size and select in Grundfos Product Center (GPC)

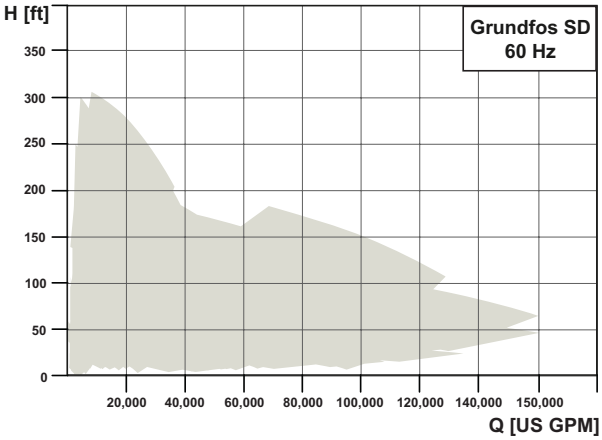
APPLICATIONS

- Raw water intake
- Stormwater
- Wastewater treatment
- Municipal wastewater
- Commercial wastewater
- Industrial wastewater

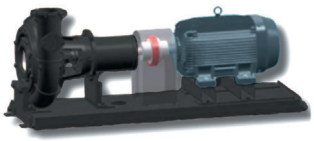
Grundfos SD **Technical Data**

GRUNDFOS SD **INFORMATION**

Flow, Q:	max. 150,000 gpm
Head, H:	max. 300 ft.
Horsepower:	max. 3000 hp
Discharge diameter:	4 in. to 54 in.
Solids passage:	max. 9.75 in.



Mounting Orientations



Horizontal Ball Bearing (HBB)
A fabricated steel base supports both the pump and driver in a horizontal position.

Vertical Pedestal Mounted (VPM)
The motor is directly mounted and connected to the pump assembly.

Vertical Open Shaft (VOS)
A configuration when motor location requires remote mounting at higher elevation due to flooring or space requirements.

L-DP-SL-001 Rev. 01-18

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Sewage Pumps

GRUNDFOS S RANGE

The Grundfos S range of highly dependable, powerful sewage pumps are designed for handling unscreened raw sewage. Acknowledged for their strength, their durability, and for innovative features such as SmartTrim impeller clearance adjustment system and SmartSeal for leakage prevention, the S pumps form the backbone of many sewage systems.

Key Features and Benefits

- High efficiency and excellent non-clogging capabilities with large free passage of up to 5.7 in. (145 mm)
- Patented SmartTrim system for extremely easy impeller adjustment without dismantling the pump, to maintain peak performance and keep lifecycle costs low
- The SmartSeal auto-coupling gasket provides a completely leak-proof connection between the pump and the base unit of the auto-coupling system
- Lower bearings are doubled for additional safety and select models feature an additional radial bearing
- Leak free design keeps liquid away from the motor by a double mechanical shaft seal system in the intermediate oil chamber,
- Watertight cable entry point prevents liquid from entering at this often vulnerable spot, while rounded edges also prevent cable wear
- Sensors available for monitoring the pump, including bearing and winding temperature, vibrations and water in oil
- Stainless steel wet components available as variants

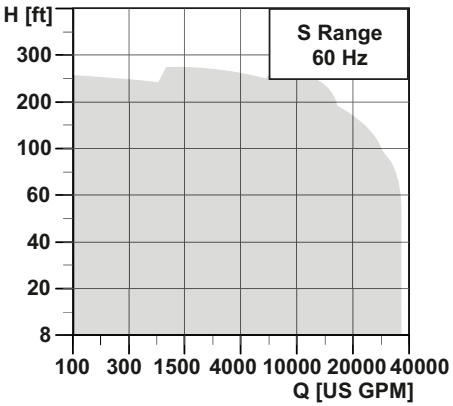
APPLICATIONS

- Municipal wastewater
- Wastewater treatment
- Raw water intake
- Industry/corrosive liquids
- Commercial wastewater
- Stormwater

S RANGE **Technical Data**

S RANGE **INFORMATION**

Flow, Q:	max. 39,500 gpm
Head, H:	max. 280 ft.
Liquid Temperature:	32° F to 104° F
Motor Size:	max. 608 HP
Discharge Diameter:	4 in. to 24 in.
Free Passage:	max. 5.80 in.
Insulation Class:	H
Sysytem Pressure:	max. PN 10
Hydraulic Efficiency:	max. 85%



I-SR-SI-001 01-18

Grundfos
2001 Butterfield Rd, Ste 1700
Downers Grove, IL 60515

www.grundfos.us
www.grundfos.ca
www.grundfos.mx

Grinder Pumps

GRUNDFOS SEG

The Grundfos SEG range of grinder pumps are specifically designed for pumping effluent and untreated sewage in small communities or sparsely populated areas with no sewer systems or areas where gravitation systems are unsuitable. The high discharge pressure enables transfer of effluents and sewage over longer distances to the public sewer or sewage treatment plan. Designed to reduce energy consumption and to keep downtime costs to a minimum, while maintaining peak performance throughout the lifetime of the system, the SEG combines dependability, efficiency and cost-effectiveness.

Key Features and Benefits

- Cartridge shaft seal system, together with the polyurethane-sealed cable plug system, prevent liquid from penetrating into the motor
- Compact construction with short shaft outside bearings, ensures less stress on bearings and, consequently, longer lifetime
- Double mechanical cartridge shaft seal system provides longer operating time and less downtime - easy to replace in the field without use of special tools
- Feet on the pump housing facilitate suction for freestanding installation
- Unique clamp system enables quick and easy dismantling of pump and motor unit and enables 180° rotation of motor housing
- Specially designed lifting handle ensures correct lifting regardless of installation or motor positioning
- Built-in thermal switches in the motor windings provide protection against overheating, ensuring a long lifetime
- Leakage detection for protection against water intrusions in case of component failure
- Patented grinder system ensures extremely high efficiency and reliable operation with quick and easy dismantling for replacement of wear parts
- Patented SmartTrim system enables quick and easy impeller clearance adjustment, without dismantling the pump, in order to maintain peak performance

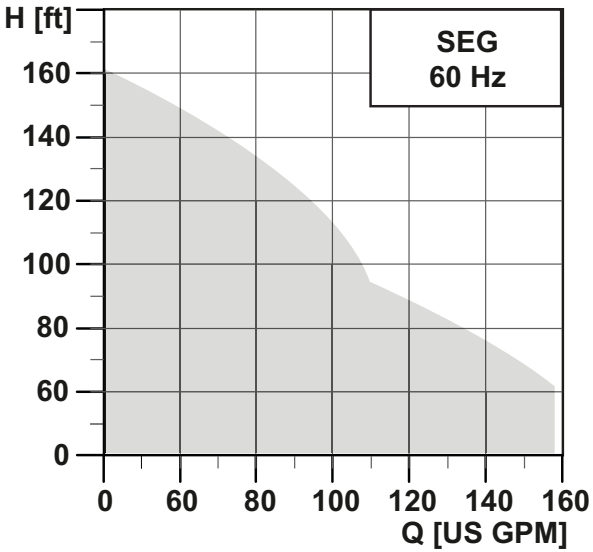
APPLICATIONS

- Wastewater treatment
- Commercial wastewater
- Municipal wastewater
- Industrial wastewater

SEG **Technical Data**

SEG **INFORMATION**

Flow, Q:	max. 160 gpm
Head, H:	max. 160 ft. tdh
Liquid temp.:	max. 104°F
Working press.:	90+ psi
Motor size:	2hp, 3hp, 4hp, 5.5hp



I-SEG-SI-01 03-18

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Grinder Pumps

GRUNDFOS SEWER CHEWER

The Grundfos Sewer Chewer wastewater/sludge grinder provides state of the art twin-shaft design and offers a wide range of mounting options for in-line, channel-mount and submersible wet-well applications. A standard digital interface controller combines unmatched user configurability with simple and reliable operation.

Key Features and Benefits

- Featuring competitive new elements such as a durable ductile iron frame and an improved high-pressure pipe flanged seal
- Rugged motor support and flexible coupling for effective and reliable power transmission
- High efficiency side rails are contoured to allow maximum flow while directing solids inward to the cutting zone, providing superior head-loss characteristics
- Patented cutter design provides maximum solids reduction; unique cutting tip enhances grabbing action; side cutting feature provides additional cutting and shearing
- Digital controller and PLC keypad operator interface provides unmatched control, operation and monitoring features
- Standard high-efficiency TEFC (IP55) integrated gearmotor, with alternate motor enclosures and modifications are available to meet your application requirements
- Optional integrated 5HP (IP68) submersible gear motor rated for continuous operation with thermal overload protection, and explosion proof approvals
- Available in both channel and inline mounting orientations

APPLICATIONS

- Wastewater treatment
- Raw sewage
- Food processing waste
- Primary and thickened sludge
- Septage receiving station
- Municipal wastewater
- Industrial wastewater
- Commercial wastewater

SEWER CHEWER **Technical Data**

SEWER CHEWER **INFORMATION**

Flow, Q:	max. 2300 gpm (channel mount) max. 1500 gpm (inline mount)
Size:	8-40 inch stack height (channel mount) 4-12 inch stack height (inline mount)
Liquid Temperature:	max. 104°F
Working Pressure:	90+ psi
Motor Size:	3hp, 5hp

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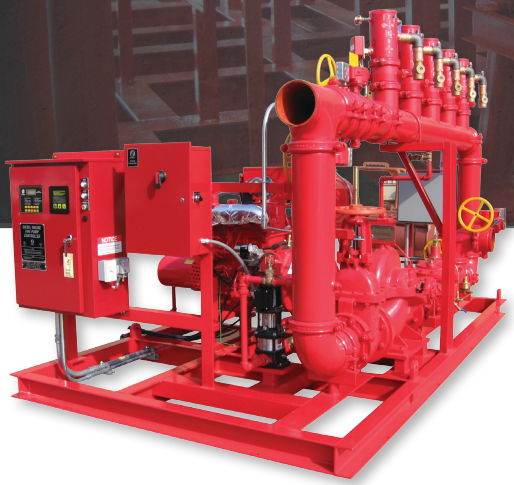
FIRE PUMPS & SYSTEMS

Fire Pump Units and Enclosed Packaged Systems

PEERLESS **FIRE PUMPS**

Peerless Fire Pump installations (UL, ULC or FM approved) deliver superior fire protection to facilities worldwide. For over eighty years Peerless Pump has been offering complete service, from engineering assistance to in-house fabrication to field start-up. Products are designed from a broad selection of pumps, drives, controls, baseplates and accessories. Fire pump choices include horizontal split case, in-line and end suction centrifugal, as well as vertical turbines pumps.



Key Features and Benefits

- Proven pumping systems for changing and demanding conditions
- Recognized leader in the fire pump industry
- Custom engineered designs allow for thousands of installations of all sizes and types
- Complete in-house fabrication capabilities
- Mechanical-run test capabilities enclosures
- Horizontal models for capacities to 5,000 gpm
- Vertical models for capacities to 5,000 gpm
- In-line models for capacities to 1,500 gpm
- End suction models for capacities to 500 gpm
- Drives available in electric motor or diesel engine
- Available as basic units, packaged systems, and engineered enclosures

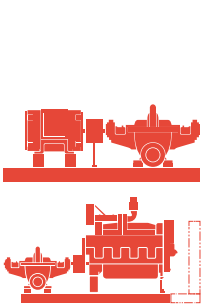
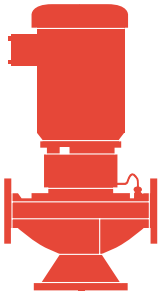
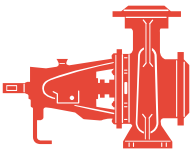
Fire Product Line

- AEF - Horizontal Split Case Fire Pump
- VTF - Vertical Turbine Pump
- PVF - In Line Fire Pump
- TUF - Horizontal Split Case Multistage Pump
- TUTF - Horizontal Split Case Multistage Pump
- UNF - End Suction Fire Pump

APPLICATIONS

- Commercial fire protection in buildings such as schools, hospitals, office buildings and shopping centers
- Industrial and power fire protection including power generating plants and manufacturing facilities
- Offshore fire protection including drilling platforms, production platforms or onshore storage and distribution terminals

PEERLESS FIRE PRODUCT LINE **Technical Data**

	 **Horizontal Fire Pumps, UL Listed, ULC Listed and FM Approved**	 **In-Line Fire Pumps, UL and ULC Listed**	 **End Suction Fire Pumps, UL Listed and FM Approved**	 **Vertical Fire Pumps UL Listed, ULC Listed and FM Approved**
Type	Horizontal centrifugal pumps with appropriate fittings for providing water supply to fire protection systems in buildings, plants and yards. Types AF, ADF, AEF, TUF, TUTF.	Compact in-line centrifugal fire pumps with appropriate fittings for providing water supply to fire protection systems in buildings, plants and yards. Type PVF.	End suction centrifugal fire pumps with appropriate fittings for providing water supply to fire protection systems in buildings, plants and yards. Type UNF.	Vertical turbine pumps with appropriate fittings for providing water supply to fire protection systems in buildings, plants and yards.
Capacities	250 to 5,000 gpm (57 to 1,136 m^3/hr)	50 to 1,500 gpm (11 to 341 m^3/hr)	Up to 1,500 gpm (341 m^3/hr)	250 to 5,000 gpm (57 to 1,136 m^3/hr)
Head	92 to 1178 feet (28 to 359 meters)	Up to 406 feet (123 meters)	Up to 367 feet (112 meters)	92 to 1,176 feet (28 to 359 meters)
Pressure	Up to 640 psi (45 kg/cm^2, 4,414 kPa)	Up to 175 psi (12 kg/cm^2, 1,207 kPa)	Up to 159 psi (11.2 kg/cm^2, 1,096 kPa)	Up to 500 psi (35.15 kg/cm^2, 3,515 kPa)
Horsepower	Up to 800 hp (597 kW)	Up to 125 hp (93 kW)	Up to 210 hp (157 kW)	Up to 600 hp (448 kW)
Drives	Horizontal electric motors, and diesel engines	Vertical close coupled electric motors	Horizontal electric motors and diesel engines	Vertical electric motors and diesel engines with right angle gears
Liquids Pumped	Water.	Water.	Water.	Water.
Temperature	Ambient within the limits for satisfactory equipment operation.	Ambient within the limits for satisfactory equipment operation.	Ambient within the limits for satisfactory equipment operation.	Up to 115°F (46°C)
Materials of Construction	Cast iron, bronze fitted as standard. Optional materials available for sea water applications.	Cast iron, bronze fitted.	Cast iron, bronze fitted.	Cast iron, bronze fitted as standard. Optional materials available for sea water applications.

L-PF-SL-001 01-18

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MOTORS

Energy Efficient & Intelligent Motor

GRUNDFOS **MLE**

The ***NEW*** Grundfos MLE permanent magnet motor with integrated frequency drive allows you to benefit from the highest level efficiency for electrical motors.

The new MLE motor goes far beyond what regulations require in terms of energy efficiency just as the advanced built-in control system makes it possible to enable application-related functions to optimize system performance.

Experience extreme energy efficiency today!

Key Features and Benefits

- Energy and cost savings with optimized efficiency
- Single source supplier for motor, drive, pump and controls
- Higher performance and more compact pumps
- Plug-and-pump integration
- Motor and variable frequency drive are perfectly matched for troublefree operation.
- Dedicated functionality for specific pump applications – no further programming required
- Predefined intelligent control modes such as constant pressure, proportional pressure, and constant level, make it easy to fit the pump into any application

PRODUCTS FEATURING THE *NEW* MLE (1.0 HP - 15 HP ONLY)

- HYDRO MPC BoosterpaQ
- CRE
- CME
- TPE
- VLSE
- LCSE
- MTRE
- & MORE....

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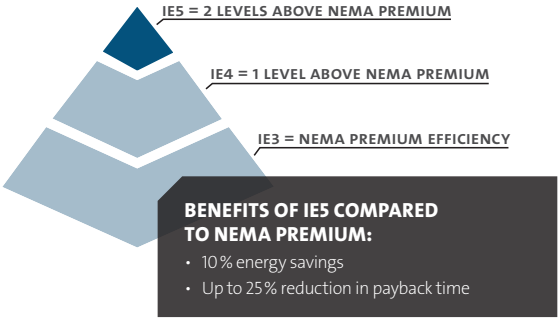
GRUNDFOS

Raising the Bar Above NEMA Premium

Grundfos is proud to introduce its new MLE motors with IE5 – the world's highest possible energy efficiency rating. This groundbreaking motor represents two levels above NEMA Premium standards – and ensures an unsurpassed level of energy efficiency in your pump application.

The new Grundfos MLE motors (motor only) from 1.0 Hp through 15 Hp have attained IE5 status.

Grundfos MLE motors (motor only) from 20 Hp through 30 Hp meet NEMA premium efficient.

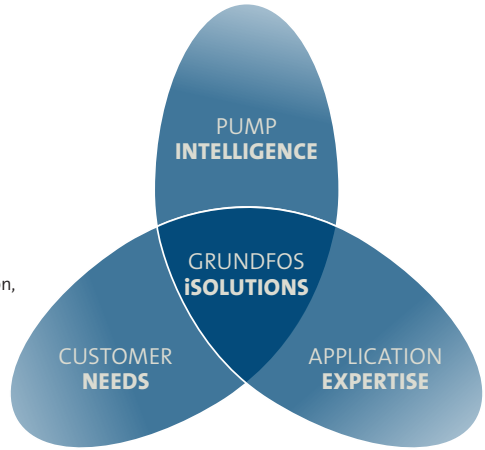


Grundfos iSolutions

Grundfos iSOLUTIONS delivers the optimal combination of pumps, drives and auxiliary components for the specific application, incorporating special features and functions and building on application knowledge and experience.

Grundfos iSOLUTIONS allows easy integration of pumps, drives, measurement, controls, protections, and communication, saving you valuable engineering, installation and commissioning time.

Learn more on grundfos.com/isolutions



L-MLE-SL-01 01-18

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GRUNDFOS

CONTROLS & MONITORING

Mobile Pump Control Tool

GRUNDFOS GO

Grundfos GO is the mobile tool box for professional users on the go, giving you intuitive handheld pump control, and full access to all the Grundfos Online tools via a mobile device. Grundfos GO consists of two apps: GO Remote and GO CAPS.

Key Features and Benefits

Grundfos GO Remote

Grundfos GO Remote gives you intuitive handheld pump control. Save valuable time on pump control, data collection and reporting with the most comprehensive mobile platform on the market. Grundfos GO Remote works with all our E-pumps and communicates both using both radio and infrared technology. It provides easy-to-follow tips and guidance as well as live pump data feeds.

To communicate with the pumps, special hardware (Mobile Interfaces) from Grundfos is required. The Grundfos GO Remote app can be downloaded for free for both Apple iOS and Android devices.

While connected to a Grundfos product, the following features are available:

- Product dashboard - gives the user a quick overview of the connected product
- Status data - monitor status data from the Grundfos product
- Alarms and warnings - see detailed alarm information with timestamps
- Configuration/commissioning
- Create installation report in pdf format
- Read / write profiles - copy configuration from one product to another
- Supports 28 languages

Grundfos GO CAPS

GO CAPS works on-line and supports all the basic CAPS functionalities. It is available for Apple iOS devices only, and is free to download. The detailed features are:

Search product by: Number, Name or QR code

Size a product (Heating, Air-conditioning, Pressure boosting & Wastewater)

- Catalog
- Replace product
- Compare products
- Product view
- Projects
- Favorites
- Supports 11 local languages

APPLICATIONS

- Heating and cooling
- Pressure boosting
- Groundwater

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GRUNDFOS

GRUNDFOS GO **Technical Data**

Your own smartphone

If you already have a smartphone, simply order the appropriate MI (mobile interface) device from Grundfos and download the free Grundfos GO Remote application available on the App Store and Google play.

Available on the App Store

Google play

Something you can share with colleagues

If you prefer a ready-to-use solution, Grundfos can provide an iPod touch, complete with the Grundfos GO Remote application pre-installed and a convenient cover with the MI (mobile interface) device built-in.

Compatibility

Grundfos GO Remote is backwards compatible with Grundfos E-pumps and will communicate with the following Grundfos products:

Pumps:

MAGNA
CRE, CRIE, CRNE
MTRE, SPKE, CRKE
TPE, TPED
Multi-E, CME

Control boxes:

CU 300
CU 301
IO 351
MP 204

L-GO-SL-002 0118

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Remote Management
GRUNDFOS GRM

Grundfos Remote Management (GRM) is an internet based remote monitoring, management and reporting system for pump installations in water infrastructure and commercial applications, allowing a user full control of their system from a PC or smart phone. GRM provides remote access and control to data and alarms from pumps, pump controllers, and auxiliary equipment such as sensors and meters. Data from pump installations is transferred to a central database and published to subscribers on a secure web server. Users have access to data from pump installations that are registered to their own account, allowing complete insight to their wastewater network.

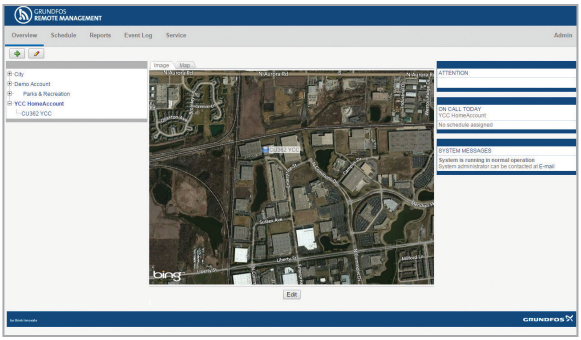
Key Features and Benefits

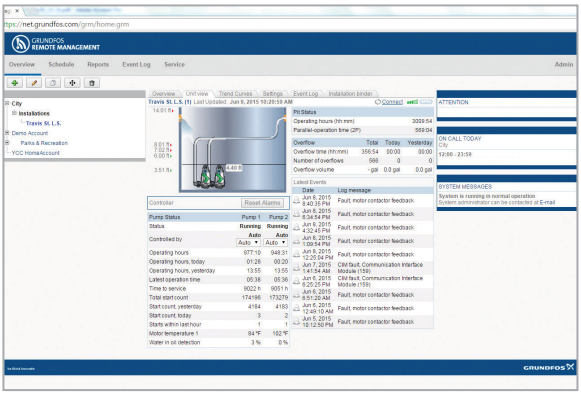
- A complete overview of the operation, performance and trends and see the status of your entire system on your own map or aerial photo
- User friendly interface allows live monitoring, analysis and adjustments, monitoring of energy consumption, and optimization of system performance, all from the comfort of your office
- Cost effective solution saves time and cost with reduced need for onsite inspection
- Flexible on-call scheduling feature allows simple planning of who responds to alarms, and in the event of an alarm or warning, the relevant people are notified directly via text message and/or email
- Service and maintenance work is simplified when planned on the basis of actual operating data, and notifications are sent when service is due
- Easily plan and prioritize maintenance and new projects to meet the changing demands for your wastewater network
- System documentation is easily shared online with relevant personnel
- Secure and reliable, a fixed low fee covers data traffic, hosting costs and system support, including back-up of all data
- The CIU501 communication interface enables data transmission via a 3G/4G smart phone or internet connection from your Grundfos pumps and controls
- Utilizing discrete/analog inputs and relay outputs, the CIU501 allows the user to monitor and control virtually anything in their system

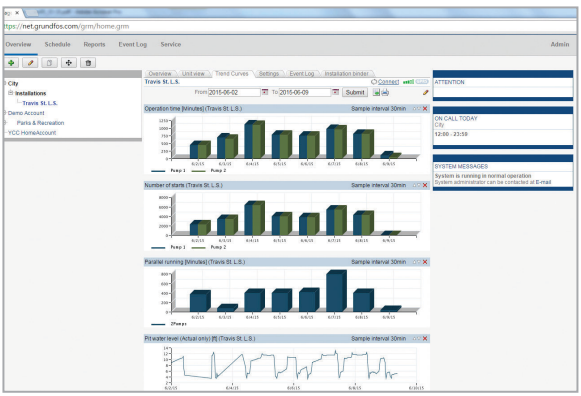
APPLICATIONS

- Wastewater lift stations, including Dedicated Controls
- Booster stations, including BoosterpaQ systems
- Water supply networks
- Wastewater plants
- Agricultural irrigation systems
- Commercial buildings
- Mines and construction sites
- Any application where user wants to monitor and control their system remotely

GRM **Technical Data**







ALARMS AND WARNINGS

Overflow	Motor temperature
High level	Overvoltage
Alarm level	Undervoltage
Dry running	Overload
Bearing temp. high	Underload
...and many more	

OPERATIONAL DATA

Pumped volume	Motor temperature
Energy consumption	Overvoltage
Specific Energy	Undervoltage
...and more	Overload

REMOTE CONTROL

Manual operation (forced start)	Motor temperature
Alarm reset	Overvoltage
Adjust start, stop and alarm levels	Undervoltage

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Wastewater Controls

GRUNDFOS DEDICATED CONTROLS

Grundfos Dedicated Controls is an intelligent monitoring and control solution developed specifically for network pumping stations and commercial buildings. Designed to control groups of up to six pumps in sewage pumping stations, this solution is an excellent choice for wastewater lift stations, stormwater stations, influent/effluent stations and many other similar applications. A range of advanced features allow for system measurement and calculation, and integration with other monitoring, control and energy optimizing equipment. Gain full control of your system - from anywhere.

Key Features and Benefits

- Supports communication with monitoring equipment or other external units Communication Interface Module (CIM) via a number of different fieldbus protocols
- Compatible with Grundfos Remote Management (GRM)
- Communication using wired or wireless networks to SCADA and BMS systems
- The anti-clogging feature utilizes a reverse pump rotation function that is unique to Dedicated Controls, as is the ability for continuous energy optimization according to duty condition
- User-friendly color display interface with an intuitive and easy-to-follow set-up wizard simplifies installation and operation
- In addition to a comprehensive range of basic features, user-defined inputs/outputs can be added for system functions specific for the pumping station
- Continuously learns and adapts to duty conditions to ensure the lowest possible specific energy consumption
- Free PC Tool software included for configuring and backing up of system settings, utilizing a simple USB cable connection
- Automatically and precisely monitors flow using our unique integrated flow calculation feature, or by wiring in a physical flow meter
- Available as cataloged or custom control panels

APPLICATIONS

- Wastewater lift stations
- Stormwater
- Wastewater treatment
- Influent/effluent stations

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GRUNDFOS

Dedicated Controls **System Components**

Grundfos Control Panels – TOTAL SOLUTION

- UL508A/698A Standard or Custom control panels ranging from the most basic to advanced applications

Control Unit – CU362

- Low cost controller for 'empty' pump stations with 1-6 pumps, ready to use out of the box
- Full color graphical display and intuitive menu structure
- No more programming! Easy 17-step setup wizard will have your station up and running in minutes
- Energy Optimization – Utilizing our CUE VFD drives with the CU362, we find the optimal speed to run your pumps to save energy and run the most efficient station possible and display the specific energy curve in an easy-to-read screen
- Important Pump Data Accessible Onsite for effective troubleshooting

- Utilizes Grundfos GENIbus® 3-wire communication between CU362 and other Grundfos components to simplify and drastically reduce the amount of panel wiring necessary
- Station Flow Calculations - station inflow and pump outflow calculated without a flow meter needed
- PID Control - Turn on and setup a PID loop controlled station in minutes!
- Anti-Blocking feature utilized with Grundfos CUE VFDs detects and attempts countermeasures to unblock pump
- Dynamic log capability of faults, warnings and alarms
- Variable Frequency Drive control and optimization for Grundfos CUE drives or any other manufacturer of VFD's
- Easy Integration to SCADA utilizing open protocols (Modbus RTU, Modbus TCP/IP) and a pre-configured profiles list

IO 351B – Input Output Module

- Communicates to CU362 via GENIbus®
- Enough inputs and outputs for a 2-pump configuration utilizing ball floats or any 4-20mA level detection device
- 9 digital inputs, 7 digital outputs (240VAC, 2A), 2 analog inputs, 3 analog outputs, 4 PTC inputs for motor protection

CUE – Grundfos Variable Frequency Drives

- Specifically designed for operating pumps (up to 350HP)
- NO NEED FOR HARDWIRED SIGNALS! All data from CUE is communicated to CU362 via GENIbus® (data includes: Frequency, "State," Voltage, Current, Power, Energy, Torque)
- Easiest User friendly setup wizard of any VFD on the market (initial setup takes 5-10 minutes)
- Pump rotation check
- RFI filters for domestic applications built-in
- Low Total Harmonic Distortion (THD)
- Will work with any pump brand

MP204 – Motor Protection and Information Module

- Designed for across-the-line and soft-starter applications
- Monitors and protects pump on station voltage, pump current, current asymmetry, power, energy, insulation resistance
- Works as a stand-alone device or transmits all data to CU362 via Grundfos GENIbus®
- Built in current transformers up to 120A (for larger pumps, external current transformers are wired in)
- Built in megger for testing pump winding insulation

IO113 – Pump Protection and Monitoring for Grundfos Pumps with Sensors

- Monitors pump thermals, seal failure and percentage of water-in-oil (if equipped with WIO sensor)
- Built in megger for testing pump winding insulation
- When used in conjunction with our SM113 and corresponding sensors within our Grundfos Pumps, monitors bearing temperature, stator temperature, vibration and PTC's
- Specific individual fault LED indicators on front of unit for easy field troubleshooting

L-DC-SL-001 01-18

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ACCESSORIES

Heating System Maintenance Accessories

GRUNDFOS MagFilter

Today's high- performance circulators and boilers bring new levels of efficiency and cost savings to homeowners. But they are uniquely vulnerable to a danger lurking in nearly every hydronic heating system – black iron oxide. An unavoidable result of oxidation inside untreated systems, black iron oxide forms on the surface of pipes and components where it deposits into the system water as microscopic particles which combine to form a black sludge. Even in small quantities, these particles can potentially cause expensive damage. As sludge accumulates, system efficiency is dramatically reduced and operating cost increase.

MagFilter features a unique, patented magnetic and non-magnetic filtration system that starts to work from the moment it is installed. Powerful magnetic capture zones extend the operational life of the hydronic heating system by removing virtually all of the suspended black iron oxide sludge buildup and offers a host of other unique benefits.

MagFilter Pro and MagFilter Pro XL

MagFilter Dual XL

Homeowner Benefits

- Long-term system protection for peace of mind
- Reduced maintenance costs
- Extends system life

Installer Benefits

- Compact profile for tight spaces
- Rapid in line installation
- Integral flow-diverters ensure 360 distribution for uniform flow around magnets, maximizing sludge capture
- Powerful permanent magnet
- Captures non-magnetic debris
- Quick release trigger and rapid fit connectors for servicing and re-installation in seconds
- Low profile drain valve and built in air vent for easier maintenance
- Easy dosing of treatment products via canister

APPLICATIONS

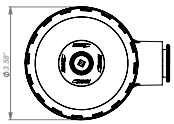
- Residential hydronic heating systems
- Light commercial hydronic heating systems

MagFilter **Technical Data**

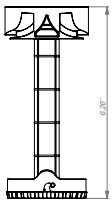
Specification	MagFilter Pro	MagFilter Pro XL	MagFilter Dual XL
Connection size:	3/4" Conn. (1" option)	1" Conn. (1.25" option)	1.5" Conn.
Working press (PSI) Working temp. (F)	87 / 203	87 / 203	87 / 203
Max flow rate (gpm):	13.2	21.1	26.4
Dimensions (L x W x H)	5.7" x 3.1" x 7.6"	4.1" x 3.1" x 10.1"	7.6" x 5" x 10.8"
Weight (lbs.)	6.0	7.6	18.2

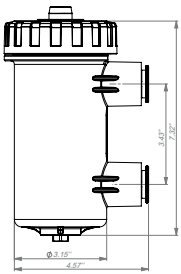
MagFilter Pro

Canister

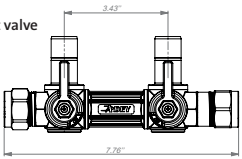


Non-magnetic cover



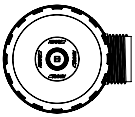


Inlet/outlet valve

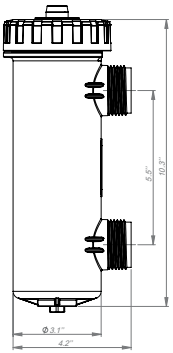


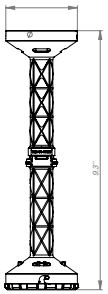
MagFilter Pro XL

Canister

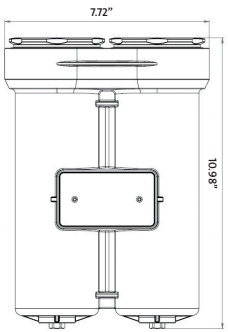


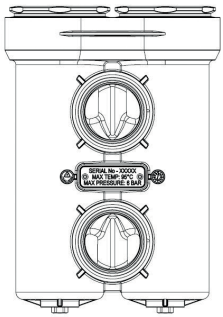
Non-magnetic cover

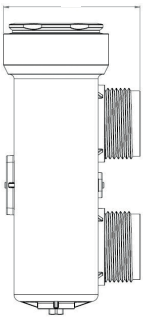




MagFilter Dual XL







L-MF-SL-001 01-18

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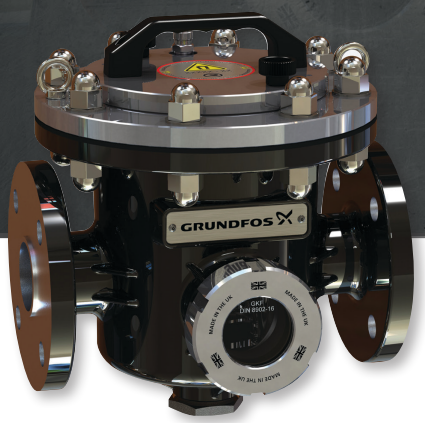
Commercial Hydronic Maintenance Accessories

GRUNDFOS MagFilter

Protect your commercial hydronic heating system from damaging black, iron oxide sludge with a MagFilter Commercial Filter. An exceptionally powerful line of magnetic filters in a variety of sizes, MagFilter Commercial is designed to begin cleaning and protecting from the moment it's installed. Proven MagFilter technology effectively removes iron oxide sludge, and maintains critical system efficiency.

MagFilter Commercial Filter high-performance filters not only maintain heating and cooling systems, but they also provide ongoing protection and contribute significantly to reduced energy, maintenance, and repair costs.

Extensive research has shown that magnetic filtration is the most effective means of sludge capture in maintaining and protecting commercial hydronic heating systems. When compared with a dirt separator and a basket filter, test results show that MagFilter Commercial Filter is up to 80% more effective in capturing damaging iron oxide sludge than these other forms of filtration, and at least 30% more energy-efficient.



Key Features and Benefits

Superior Iron Oxide Capture
The unique, proprietary design of the MagFilter Commercial line maximizes first-pass capture of magnetic debris by forcing system water flow past powerful magnets that 'ACTIVELY' trap any circulating iron oxide sludge, preventing potentially expensive damage to the system and its components. MagFilter Commercial filters not only begin cleaning almost immediately upon installation, but also provide ongoing protection over the life of the system.

Less Pressure Drop
MagFilter Commercial also has a lower pressure drop than other tested methods of filtration. Even when fully loaded with trapped iron oxide sludge, there was nearly 54% less pressure drop across a MagFilter Commercial filter than the dirt separator, and 68% less than the basket filter. The differential pressure should be minimized so flow rates can remain at an optimum constant, ensuring system efficiency and lower energy usage.

APPLICATIONS

- Manufacturing
- Multi-family housing
- Healthcare
- Education
- Institutional
- Hospitality

MagFilter Commercial **Technical Data**

MagFilter Commercial
Maximum working pressure: 145 psi
Maximum working temperature: 212°F

Casing Housing and lid material
304L stainless steel (SA351CF3) Drain:
1¼" FEMALE NPT hole, with 1¼" MALE NPT plug
Lid Seal: EPDM

Flow flanges
ASME B16.5 Class 150
Supplied with IBC gaskets (EPDM)

Magnets
Material: High power, NdFeB
Pocket sleeves: 304L Stainless steel (SA351CF3)
MagFilter designed, manufactured and third party approved to ASME Boiler and Pressure Vessel Code

Filter size	Filter diameter (inch)	Inlet size (inch)	Number of magnetic rods	Filter volume (US gallons)	Filter dry weight (lbs)
2"	6.30	2	5	0.83	54.7
3"	8.27	3	6	1.84	88.6
4"	8.50	4	7	2.18	103.4
6"	12.76	6	9	7.4	211.4

Inlet and outlet flanges
Size options: 2", 3", 4", 6"
Flanges: ASME B16.5 Class 150

Filter size	Flange thickness (inch)	Bolt size (inch)	Bolt quantity	Bolt hole PCD (inch)
2"	6.30	2	5	0.83
3"	8.27	3	6	1.84
4"	8.50	4	7	2.18
6"	12.76	6	9	7.4

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Heating System Maintenance Accessories

GRUNDFOS MagFlush Pro

Grundfos MagFlush Pro is designed to deliver a fast and effective flushing process for your central heating system.

The highly effective approach is designed to keep your boiler system performing to its highest standard, while also delivering a financial return:

- Removes virtually ALL suspended black iron oxide in one pass
- Routine system flushing could be possible in just two hours
- Cleanser remains concentrated within the system throughout the process
- Cleanser remains heated within the system throughout the process
- Significant water savings – Disposal ONLY at the end of the process

Key Features and Benefits

The MagFlush Pro filter process delivers exceptional system cleaning and maintenance in regards to:

- Improved magnetic filtration – Up to 40% increase in capacity
- More powerful – 33% increase in magnet strength
- Improved EPDM pharmaceutical grade seals
- Stronger, rigid stainless steel link pipe
- Improved high pressure thread system between canister and lid
- No running costs
- Quick and easy chemical dosing

***NEW* case design**

An innovative approach has been applied to the Grundfos MagFlush Pros' outer case which not only provides greater protection, but forms an integral part of the successful flushing process.

- Stronger for improved durability
- Improved slide locking system
- Improved portable drip tray for easier cleaning
- Anti-slip grips to toolbox base
- Ergonomically designed handles

APPLICATIONS

- Residential hydronic heating systems
- Light commercial hydronic heating systems

Set-up instructions

1

Lift the handle to unlock the box, slide and lift off the top case.

2

Lift the canisters from the base and slot into recessed area.

3

Remove the valve and camlock assembly from the parts box and attach to existing hose either from the connection kit or hose from your existing *PowerFlush* machine.

Your filter is now ready for use.

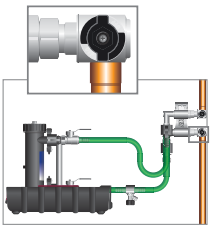
Please refer to the process instructions, or continue with the traditional power-flushing process.

CAUTION

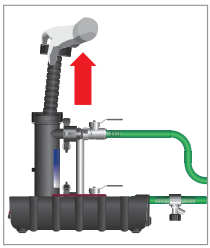
Stainless steel link pipe may become hot during operation. Handle with caution.

Cleaning instructions

1 Turn the isolation valves to the OFF position and release pressure using the bleed valve.



2 Unscrew the black lid and remove the lid along with the attached magnet.



3 Wearing a disposable glove, grip one third of the sludge build-up. Gently twist and slide the deposit into a suitable container.

4 Repeat the process one third at a time, until the magnet is clean.

5 Carry out the same process on the other lid and magnet assembly as required.

On larger or heavily sludged systems, this process may need to be repeated as appropriate and depending on the individual heating system.

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GRUNDFOS **SERVICE**

Grundfos offers full-range, nationwide service for pumps and systems through our network of service centers and Authorized Service Partners. Our certified technicians provide on-site and in-shop repair for any major pump brand including those used in large scale water utility and industrial systems. From commissioning, and maintenance to repair and replacement we are committed to delivering quality service and products that reduce downtime and energy consumption.

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