

SINGER MODEL 106-PT

Power Operated Globe Valve SIZE: 2"

Installation, Operation and Maintenance Instructions

DESCRIPTION:

Singer Model 106-PT is a hydraulically operated, diaphragm actuated valve with two operating chambers.

Unless otherwise specified, the valve will be assembled for service temperatures to 180°F.

DESCRIPTION OF OPERATION:

The valve is normally open when the operating chambers are vented to atmosphere and inlet pressure exceeds the outlet pressure.

When the top side of the diaphragm is pressurized and the bottom side of the diaphragm is vented to atmosphere, the valve will close.

By varying the operating pressures in the operating chambers with a SINGER Automatic Pilot Circuit the valve can be made to modulate.

The operating pressure may be either line pressure or external pressure. If external pressure is used, it must be equal to or greater than line pressure.

INSTALLATION:

Use washers under nuts when bolting valve flanges to pipe flanges to protect the Epoxy Coating.

1. For most convenient operation and maintenance, manual shut off valves should be installed.
2. A suitable bypass should be provided to allow for servicing of the valve without interrupting the flow stream.

3. Install pressure gauges upstream and/or downstream of valve as appropriate. This will make it easier to set the pilot system.
4. A strainer with a suitable basket should be installed ahead of the valve to protect it from foreign material.
5. Sufficient space should be provided around the valve for disassembly.
6. Flush system of all foreign matter before installing the valve.
7. Check direction of flow (arrow in the body shows flow direction) and install the valve accordingly.
8. It is possible that seals and diaphragms may take a set after being in storage. If leaks are observed on gasket surfaces, **de-pressurize the valve** and tighten the screws or bolts.

SERVICE SUGGESTIONS

TROUBLE: Fails to Open

POSSIBLE CAUSE

1. Insufficient inlet pressure
 - Pressure in the top chamber is not released or lack of pressure in the bottom chamber due to:
 - Isolating valves on pilot lines closed.
 - Pilot components not functioning.
 - Foreign material in pilot system.
2. Ruptured diaphragm.

TROUBLE: Fails to Close

POSSIBLE CAUSE

1. Lack of pressure in the top chamber or pressure in bottom chamber is not released due to:
 - Isolating valves on pilot lines closed.
 - Pilot components not functioning.
 - Foreign material in pilot system.
2. Ruptured diaphragm.
3. Obstruction in valve.
4. Worn main valve disc.

MAINTENANCE:

The SINGER Model 106-PT requires a minimum of maintenance. All parts are accessible for inspection and repair without removing the valve from the line.

DISASSEMBLY:

Refer to drawing A0905A for main valve and drawing A0707A for limit switch details.

1. Isolate the valve.
2. Disconnect pilot lines.
3. Remove bonnet. If bonnet does not come free readily, it can be pried loose with a small pry-bar.
4. Remove adaptor and stem as a unit.
5. Remove locknut, upper clamp plate, diaphragm and lower clamp plate.
6. Pull stem through guide bushing.

7. Remove inner valve and disassemble.
8. Do not attempt to remove seat ring unless inspection shows that seat is damaged. When necessary to remove seat ring, make a wrench out of a length of pipe. Cut three notches into one end to engage the spokes of the seat ring. Insert the wrench and turn counterclockwise.

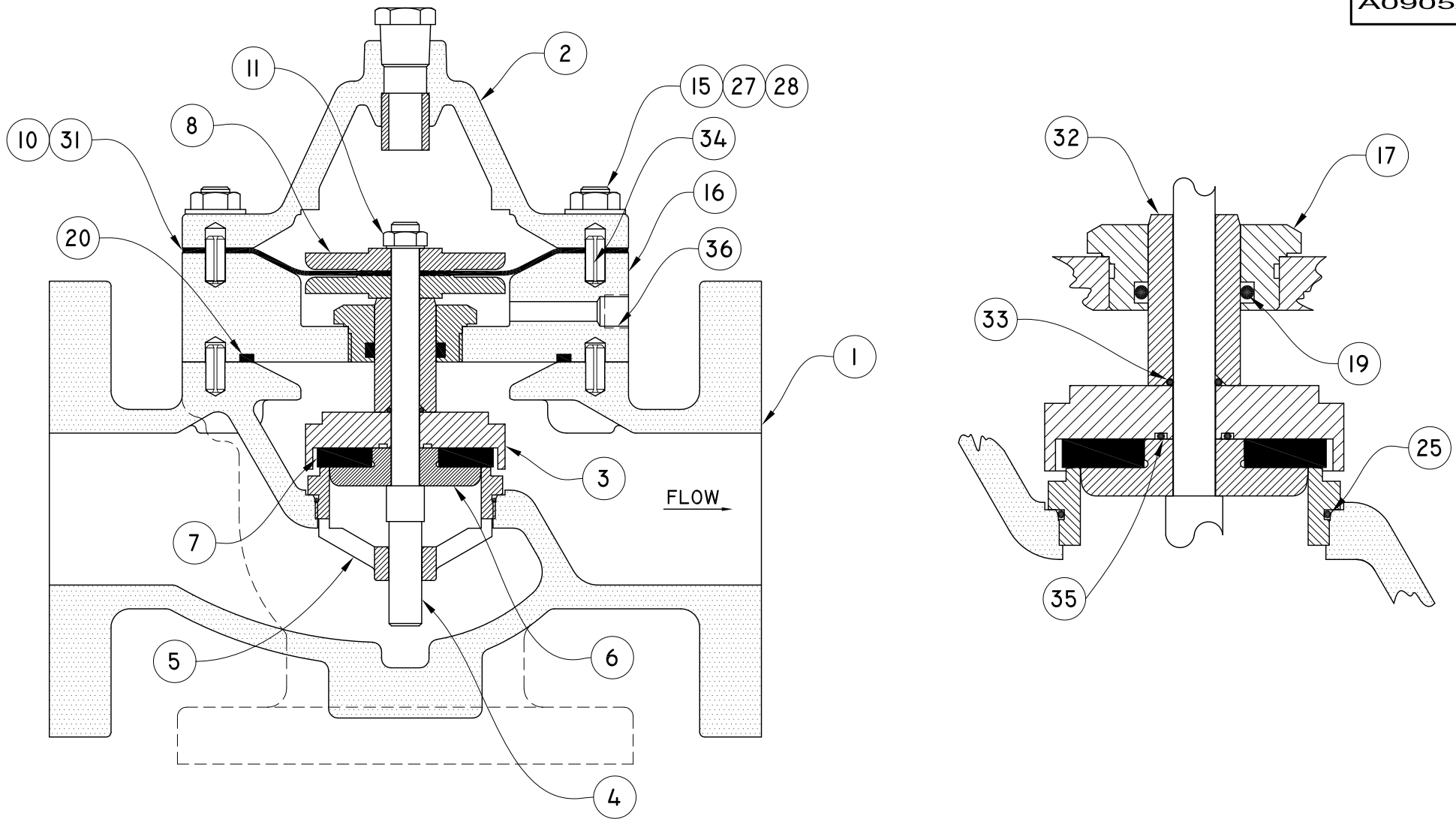
CLEANING AND INSPECTION:

1. Clean all parts, paying particular attention to resilient disc, diaphragm, 'O' rings, 'O' ring grooves and guiding and sealing surfaces.
2. Use suitable lubricant, such as silicon lubricant when assembling 'O' rings.
3. Assure that parts are assembled as shown in the enclosed drawing.
4. Assure that pilot piping is assembled as shown in the enclosed drawings or schematics.

NOTE REGARDING FREEZING:

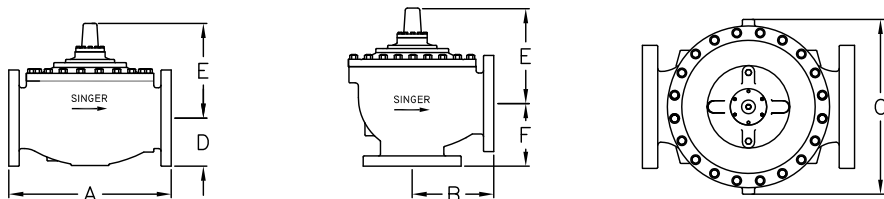
This valve does not drain completely when inlet and outlet pipes are drained. Where freezing conditions are expected, one of the following must be performed:

1. Drain valve and pilot system completely.
2. Provide insulation and/or heating to keep the valve from freezing.



DOUBLE CHAMBER MAIN VALVE

SIZE 2" (50MM) I06-PT & A106-PT



 SINGER VALVE <i>Result-Based Solutions. Globally.</i>	
www.singervalve.com 12850-87th Avenue, Surrey, B.C. V3W 3H9	
Drawn By: Scott Grover	Approved By: Kari Oksanen
Date: May 9, 2006	Drawing: A0905A
Model 106-PT & A106-PT	

Material Specifications & Dimensions

2" (50mm) 106-PT & A106-PT
For Drawing A0905A

<u>Item</u>	<u>Part Name</u>	<u>Material</u>	<u>Item</u>	<u>Part Name</u>	<u>Material</u>
1	Body	Ductile Iron	20 **	Body Seal	Buna-N
2	Bonnet	Ductile Iron	25 **	Seat Ring Seal	Buna-N
3	Inner Valve	Brass	27	Bonnet Nut	Stainless Steel
4	Stem	Stainless Steel	28	Bonnet Washer	Stainless Steel
5	Seat Ring	Stainless Steel	31 **	Diaphragm Seal	Buna-N
6	Disc Retainer	Brass	32	Stem Sleeve	Stainless Steel
7 **	Resilient Disc	EPDM or Buna-N	33 **	Stem Sleeve Seal	Buna-N
8	Clamp Plate	Brass	34	Locating Pin	Stainless Steel
10 **	Diaphragm	EPDM	35 **	Inner Valve Seal	Buna-N
11	Stem Nut	Stainless Steel	36	Adaptor Tube	Copper
15	Support Rod	Stainless Steel			
16	Adaptor	Ductile Iron			
17	Adaptor Bushing	Brass			
19 **	Adaptor Seal	Buna-N			

** Recommended spare parts (included in the Rebuild Kit)

106-PT & A106-PT		Globe			Globe & Ang	Angle		
		A	D	E	C	B	E	F
2" 50mm	NPT / BSPT	9.38"	2.75"	6.13"	6.50"	4.69"	6.13"	3.25"
		238mm	70mm	156mm	165mm	119mm	156mm	83mm
	150F / PN10, PN16, PN25, PN40	9.38"	3"	6.13"	6.50"	4.75"	6.13"	3.25"
		238mm	76mm	156mm	165mm	121mm	156mm	83mm
	300F	10"	3.25"	6.13"	6.50"	5"	6.13"	3.50"
		254mm	83mm	156mm	165mm	127mm	156mm	89mm

SINGER MODEL 106/206-PT

Power Globe Valve with Double Acting Actuator

SIZES: 2-1/2" - 8" 106-PT and A106-PT, 3" to 10" 206-PT, 4" to 8" A206-PT Drawing A0505F

Installation, Operation and Maintenance Instructions

DESCRIPTION:

Singer Model 106/206-PT is a hydraulically operated, diaphragm actuated valve with two operating chambers.

Unless otherwise specified, the valve will be assembled for service temperatures to 180°F (80°C).

DESCRIPTION OF OPERATION:

The valve is normally open when the operating chambers are vented to atmosphere and inlet pressure exceeds the outlet pressure.

When the top side of the diaphragm is pressurized and the bottom side of the diaphragm is vented to atmosphere, the valve closes.

By varying the pressures in the operating chambers with a SINGER Automatic Pilot Circuit the valve can be made to modulate.

The operating pressure may be either line pressure or external pressure. If external pressure is used, it must be equal to or greater than line pressure.

STORAGE:

This valve must be stored indoors, away from direct sunlight.

INSTALLATION:

Use washers under nuts when bolting valve flanges to pipe flanges to protect the Epoxy Coating.

1. It is possible that diaphragms may take a set after shipping and storage. It is highly recommended that Bonnet and Body Bolts or Nuts be tightened after installation but before pressurizing the valve. If a leak develops after pressurizing, de-pressurize the valve and tighten the bolts or nuts.

2. For the most convenient operation and maintenance, manual shut off valves should be installed.
3. A suitable bypass should be provided to allow for servicing of the valve without interrupting the flow.
4. Install pressure gauges upstream and/or downstream of valve as appropriate. This will make it easier to set the pilot system.
5. A strainer with a suitable basket should be installed ahead of the valve to protect it from foreign material.
6. Sufficient space should be provided around the valve for disassembly.
7. Flush system of all foreign matter before installing the valve.
8. Check direction of flow (arrow in the valve body shows flow direction) and install the valve accordingly.

SERVICE SUGGESTIONS

TROUBLE: Fails to Open

POSSIBLE CAUSE / REMEDY

1. Insufficient inlet pressure.
2. Pressure in the top chamber is not released or lack of pressure in the bottom chamber due to:
 - Isolating valves on pilot lines closed.
 - Pilot components not functioning.
 - Foreign material in pilot system.
 - Ruptured diaphragm.

Service Suggestions (Cont.):

TROUBLE: Fails to Close

1. Lack of pressure in the top chamber or pressure in bottom chamber is not released due to:
 - Isolating valves on pilot lines closed.
 - Pilot components not functioning.
 - Foreign material in pilot system.
2. Ruptured diaphragm.
3. Obstruction in valve.
4. Worn main valve disc.

MAINTENANCE:

The SINGER Model 106/206-PT requires a minimum of maintenance. All parts are accessible for inspection and repair without removing the valve from the line.

DISASSEMBLY: Refer to drawing A0505D [106] or A0744A [206] for main valve and drawing A0707A for limit switch details.

1. Isolate the valve.
2. Disconnect pilot lines.
3. Refer to drawing A0505D. Remove bonnet. If bonnet does not come free readily, it can be pried loose with a small pry-bar.
4. Remove adaptor and stem as a unit.
5. Remove spindle locknut, upper clamp plate, diaphragm and lower clamp plate.
6. Pull spindle through adaptor bushing.
7. Remove inner valve and disassemble by removing the inner valve sleeve nut. **NOTE:** Avoid damaging seat when removing inner valve.

8. Do not attempt to remove seat ring unless inspection shows that seat is damaged. When necessary to remove seat ring on size 2-1/2" (threaded in), make a wrench out of a length of pipe. Cut three notches into one end to engage the spokes of the seat ring. Insert the wrench and turn counterclockwise. On sizes 3" and over, the seat ring is held by Seat Screws and Retaining Washers. To remove seat ring, remove the Seat Screws and Retaining Washers.

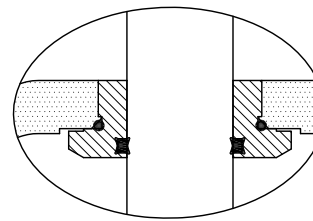
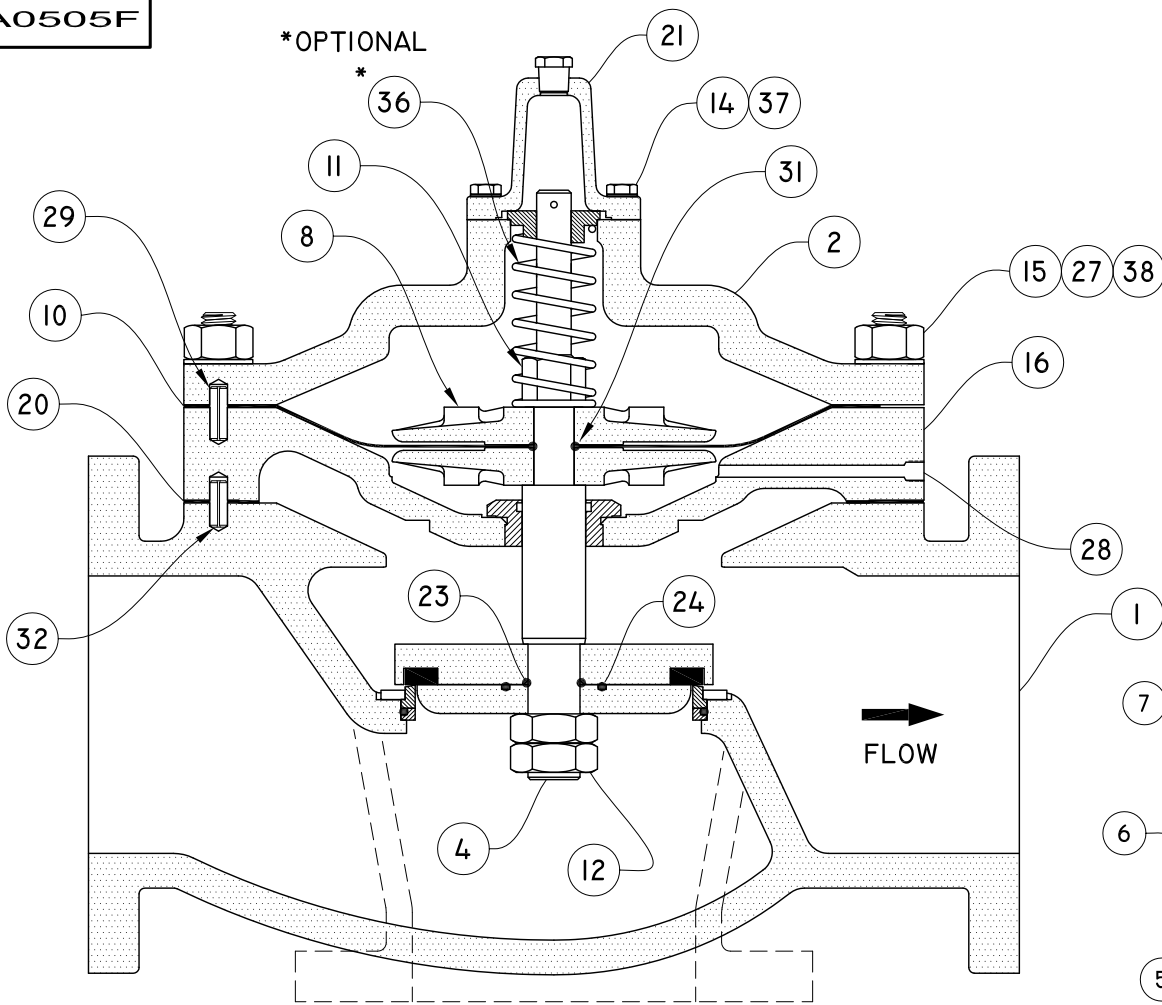
CLEANING AND INSPECTION:

1. Clean all parts, paying particular attention to resilient disc, diaphragm, 'O' rings, 'O' ring grooves and guiding and sealing surfaces.
2. Use suitable lubricant such as silicon lubricant when assembling 'O' rings.
3. Assure that parts are assembled as shown in the enclosed drawing.
4. Assure that pilot piping is assembled as shown in the enclosed drawings or schematics.

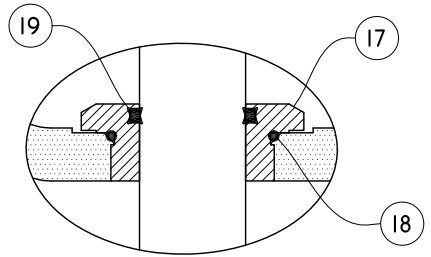
NOTE REGARDING FREEZING:

This valve does not drain completely when inlet and outlet pipes are drained. Where freezing conditions are expected, one of the following must be performed:

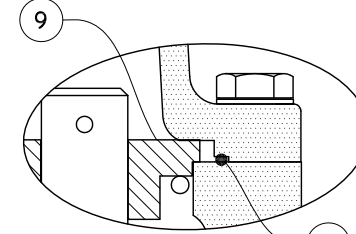
1. Drain valve and pilot system completely.
2. Provide insulation and/or heating to keep the valve from freezing.



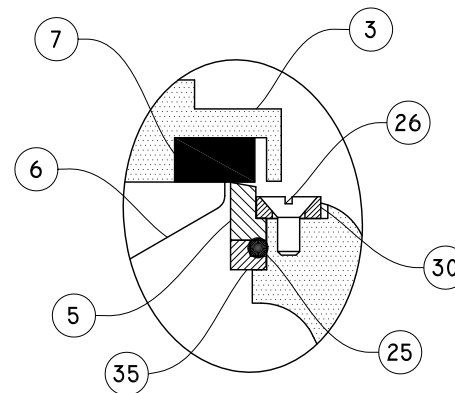
ADAPTOR BUSHING DETAIL
(2.5" 106 / 3" 206)



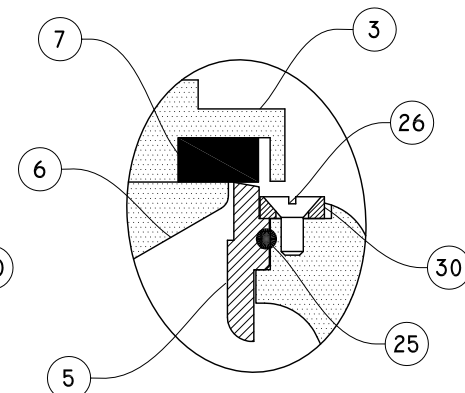
ADAPTOR BUSHING DETAIL
(3" - 8 106 / 4" - 10" 206)



STEM CAP DETAIL



SEAT DETAIL
TWO PIECE DESIGN

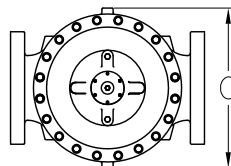
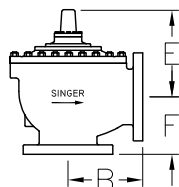
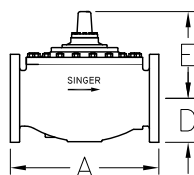


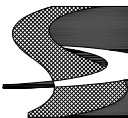
SEAT DETAIL
ONE PIECE DESIGN

REV: ADDED ONE AND TWO PIECE SEAT DETAILS. JUNE 5, 2008.

SINGER MODEL 106 / 206-PT
POWER OPERATED MAIN VALVE WITH DOUBLE CHAMBER

2-1/2" 106 TO 8" 106-PT & A106-PT
3" 206 TO 10" 206-PT
4" 206 TO 8" 206 A206-PT





SINGER VALVE
Result-Based Solutions. Globally.™

www.singervalve.com 12850-87th Avenue, Surrey, B.C. V3W 3H9

Drawn By: STEPHEN BISHOP	Approved By:
Date: JUNE 12th 2008	Drawing: A0505F

MODEL 106-PT & 206-PT

Material Specifications & Dimensions

 2-1/2"-8" (65mm-200mm) 106-PT & A106-PT, 3" to 10" 206-PT, 4" to 8" A206-PT
 For Drawing A0505F

Item	Part	Material	Item	Part	Material
1	Body	Ductile Iron	21	Stem Cap	Ductile Iron
2	Bonnet	Ductile Iron	23 **	Inner Valve Seal	Buna-N
3	Inner Valve	Ductile Iron	24 **	Disc Retainer Seal	Buna-N
4	Stem	Stainless Steel	25 **	Seat Ring Seal	Buna-N
5	Seat Ring	Stainless Steel	26	Seat Ring Screw	Stainless Steel
6	Disc Retainer	Ductile Iron	27	Bonnet Nuts	Stainless Steel
7 **	Resilient Disc	EPDM or Buna	28	Adaptor Tube	Copper
8	Clamp Plates	Ductile Iron	29	Bonnet Locating Pins	Steel
9	Guide Bushing	Brass	30	Retaining Washer	Stainless Steel
10 **	Diaphragm	Neoprene	31 **	Diaphragm Seal	Buna
11	Clamp Plate Locknut	Brass	32	Adaptor Locating Pins	Steel
12	Disc Ret. Locknut	Brass	35	Spacer Ring	Bronze
13 **	Stem Cap Seal	Buna-N	36	Optional Spring	Stainless Steel
14	Stem Cap Capscrew	Stainless Steel	37	Stem Cap Washer	Stainless Steel
15	Bonnet Studs	Stainless Steel	38	Bonnet Washer	Stainless Steel
16	Adaptor	Ductile Iron			
17	Adaptor Bushing	Brass			
18 **	Adaptor Seal	Buna - N			
19 **	Adaptor Stem Seal	Buna - N			
20 **	Body Gasket	Cork Nitrile			

** Recommended spare parts (included in the Rebuild Kit)

106-PT & A106-PT		Globe			Globe & Ang	Angle		
		A	D	E	C	B	E	F
2-1/2" 65mm	NPT / BSPT	11" 279mm	3.38" 86mm	8.93" 227mm	8.19" 208mm	5.50" 140mm	8.93" 227mm	4" 102mm
	150F / PN10, PN16, PN25, PN40	11" 279mm	3.50" 89mm	8.93" 227mm	8.19" 208mm	5.50" 140mm	8.93" 227mm	4" 102mm
	300F	11.63" 295mm	3.75" 95mm	8.93" 227mm	8.19" 208mm	5.88" 149mm	8.93" 227mm	4.31" 109mm
3" 80mm	NPT / BSPT	13.50" 343mm	3.68" 93mm	9.75" 248mm	9.25" 235mm	6.63" 168mm	9.75" 248mm	4.63" 118mm
	150F	12" 305mm	3.75" 95mm	9.75" 248mm	9.25" 235mm	6" 152mm	9.75" 248mm	4" 102mm
	300F	13.25" 337mm	4.13" 105mm	9.75" 248mm	9.25" 235mm	6.38" 162mm	9.75" 248mm	4.38" 111mm
	PN10, PN16, PN25, PN40	318mm	100mm	248mm	235mm	162mm	248mm	111mm
4" 100mm	150F / PN10, PN16, PN25, PN40	15" 381mm	4.60" 117mm	10.88" 276mm	10.88" 276mm	7.50" 191mm	10.88" 276mm	5" 127mm
	300F	15.63" 397mm	5.09" 129mm	10.88" 276mm	10.88" 276mm	7.88" 200mm	10.88" 276mm	5.31" 135mm
	6"	20" 508mm	5.60" 142mm	13.88" 353mm	16.63" 422mm	10" 254mm	13.88" 353mm	6" 152mm
6" 150mm	150F / PN10, PN16	21" 533mm	6.34" 161mm	13.88" 353mm	16.63" 422mm	10.50" 267mm	13.88" 353mm	6.50" 165mm
	300F / PN25, PN40	21" 533mm	6.34" 161mm	13.88" 353mm	16.63" 422mm	10.50" 267mm	13.88" 353mm	6.50" 165mm
8" 200mm	150F / PN10, PN16	25.38" 645mm	7.63" 194mm	17.75" 451mm	21.63" 549mm	12.75" 324mm	17.75" 451mm	8" 203mm
	300F / PN25, PN40	26.38" 670mm	7.63" 194mm	17.75" 451mm	21.63" 549mm	13.25" 337mm	17.75" 451mm	8.50" 216mm
	10"	24.50" 622mm	8" 203mm	21.38" 543mm	20" 508mm	-	-	-
10" 250mm	300F / PN25, PN40	25.88" 657mm	8.63" 219mm	21.38" 543mm	20" 508mm	-	-	-

206-PT & A206-PT		Globe			Globe & Ang	Angle		
		A	D	E	C	B	E	F
4" 100mm	150F / PN10, PN16, PN25, PN40	15" 381mm	4.60" 117mm	11.28" 287mm	10" 254mm	7.56" 192mm	9.50" 241mm	5.94" 151mm
	300F	15.63" 397mm	5" 127mm	11.28" 287mm	10" 254mm	7.88" 200mm	9.50" 241mm	6.25" 159mm
	6"	20.12" 511"	5.62" 143mm	12.18" 308mm	12.50" 318mm	10.19" 259mm	10.50" 267mm	6.19" 157mm
6" 150mm	150F / PN10, PN16	21" 533mm	6.34" 161mm	12.18" 308mm	12.50" 318mm	10.63" 270mm	10.50" 267mm	6.81" 173mm
	300F / PN25, PN40	21" 533mm	6.34" 161mm	12.18" 308mm	12.50" 318mm	10.63" 270mm	10.50" 267mm	6.81" 173mm
8" 200mm	150F / PN10, PN16	25" 635mm	6.75" 171mm	16.25" 413mm	16" 406mm	12.50" 318mm	13.43" 341mm	9" 229mm
	300F / PN25, PN40	26" 660mm	7.50" 191mm	16.25" 413mm	16" 406mm	13" 330mm	13.43" 341mm	9.50" 241mm
	10"	24.50" 622mm	8" 203mm	21.38" 543mm	20" 508mm	-	-	-
10" 250mm	300F / PN25, PN40	25.88" 657mm	8.63" 219mm	21.38" 543mm	20" 508mm	-	-	-

SINGER MODEL S106/S206-PT

Power Globe Valve with Double Acting Actuator

SIZES: 10" to 16" S106 12" to 24" S206 DWG. A0898B

Installation, Operation and Maintenance Instructions

DESCRIPTION:

Singer Model S106/S206-PT is a hydraulically operated, diaphragm actuated valve with two operating chambers.

Unless otherwise specified, the valve will be assembled for service temperatures to 180°F (80°C).

DESCRIPTION OF OPERATION:

The valve is normally open when the operating chambers are vented to atmosphere and inlet pressure exceeds the outlet pressure.

When the top side of the diaphragm is pressurized and the bottom side of the diaphragm is vented to atmosphere, the valve closes.

By varying the pressures in the operating chambers with a SINGER Automatic Pilot Circuit the valve can be made to modulate.

The operating pressure may be either line pressure or external pressure. If external pressure is used, it must be equal to or greater than line pressure.

STORAGE:

This valve must be stored indoors, away from direct sunlight.

INSTALLATION:

Use washers under nuts when bolting valve flanges to pipe flanges to protect the Epoxy Coating.

- 1. Flush system of all foreign matter before installing the valve.**
- 2. This valve MUST be installed in a horizontal pipe with the bonnet up.**
- 3. It is possible that diaphragms may take a set after shipping and storage. It is highly recommended that Bonnet and Body Bolts or Nuts be tightened after installation but before pressurizing the valve. If a leak develops after pressurizing, de-pressurize the valve and tighten the bolts or nuts.**
4. For the most convenient operation and maintenance, manual shut off valves should be installed.
5. A suitable bypass should be provided to allow for servicing of the valve without interrupting the flow.
6. Install pressure gauges upstream and/or downstream of valve as appropriate. This will make it easier to set the pilot system.
7. A strainer with a suitable basket should be installed ahead of the valve to protect it from foreign material.
8. Sufficient space should be provided around the valve for disassembly.
9. Check direction of flow (arrow in the valve body shows flow direction) and install the valve accordingly.

SERVICE SUGGESTIONS

TROUBLE: Fails to Open

POSSIBLE CAUSE / REMEDY

1. Insufficient inlet pressure. / Increase pressure.
2. Pressure in the top chamber is not released or lack of pressure in the bottom chamber due to:
 - Isolating valves on pilot lines closed. / Open valves.
 - Pilot components not functioning. / Refer to specific instructions on pilot components.
 - Foreign material in pilot system. / Clear obstructions.
 - Ruptured diaphragm. / Replace.

TROUBLE: Fails to Close

1. Lack of pressure in the top chamber or pressure in bottom chamber is not released due to:
 - Isolating valves on pilot lines closed. / Open valves.
 - Pilot components not functioning. / Refer to specific instructions on pilot components.
 - Foreign material in pilot system. / Clear obstructions.
2. Ruptured diaphragm. / Replace.
3. Obstruction in valve. / Remove obstruction.
4. Worn main valve disc. / Replace disc.

MAINTENANCE:

The SINGER Model S106/S206-PT requires a minimum of maintenance. All parts are accessible for inspection and repair without removing the valve from the line.

DISASSEMBLY:

Refer to drawing A0898B for main valve and drawing A0707A for limit switch details.

1. Isolate the valve.
2. Disconnect pilot lines.

3. Refer to drawing A0898B. Remove Bonnet (2). If bonnet does not come free readily, it can be pried loose with a small pry-bar.
4. Remove Floor Plate Adaptor (3) and Stem (9) as a unit.
5. Remove Stem Nut (17), Clamp Plate (15), Diaphragm (46) and Piston (13).
6. Pull Stem (9) through Upper Guide (5).
7. Remove Stem Sleeve (14) and Inner Valve (12).

Do not attempt to remove Seat Ring (8) unless inspection shows that the Seat Ring is damaged.

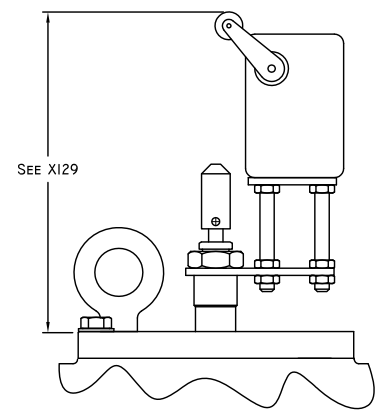
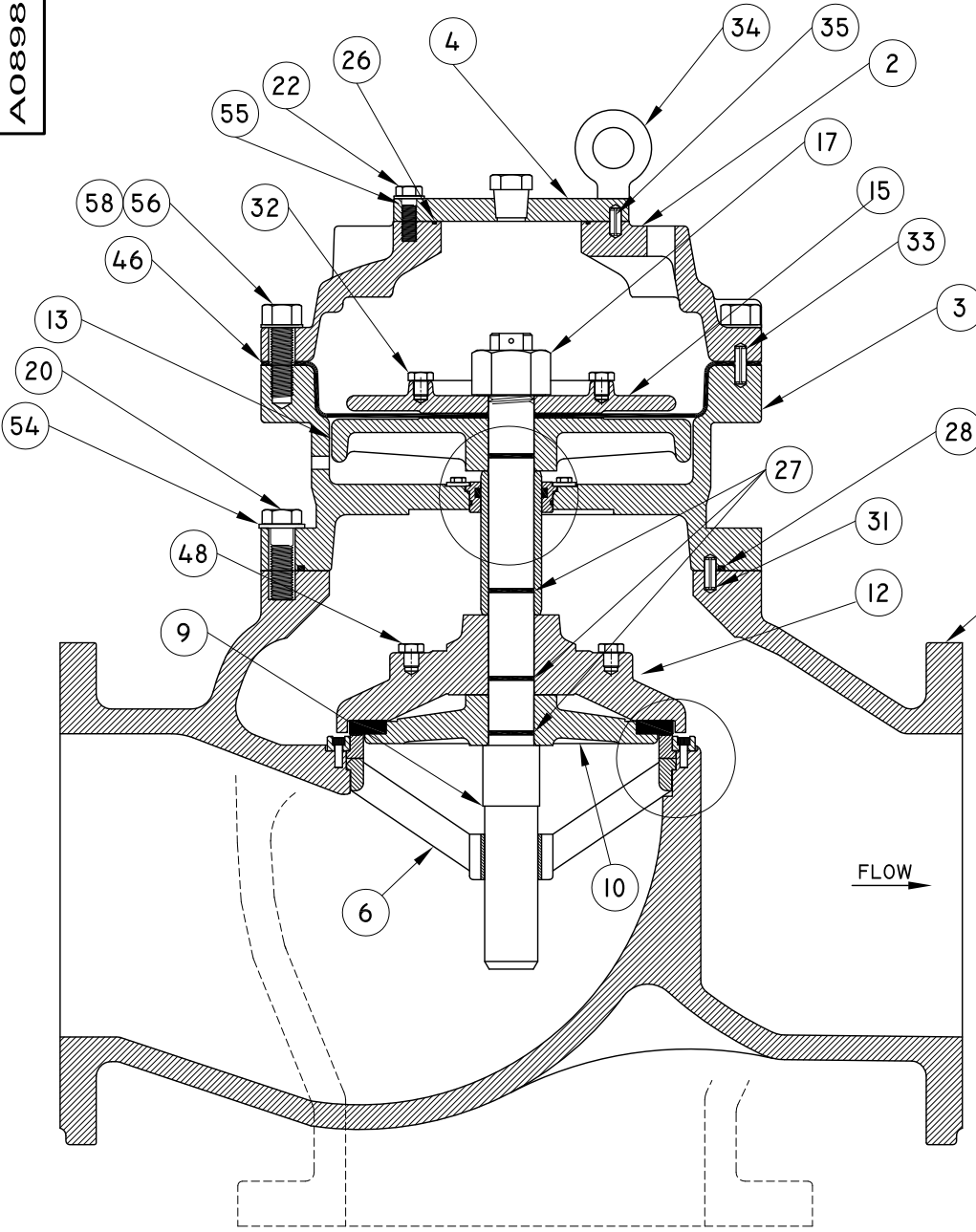
CLEANING AND INSPECTION:

1. Clean all parts, paying particular attention to resilient disc, diaphragm, 'O' rings, 'O' ring grooves and guiding and sealing surfaces.
2. Use suitable lubricant such as silicon lubricant when assembling 'O' rings.
3. Assure that parts are assembled as shown in the enclosed drawing.
4. Assure that pilot piping is assembled as shown in the enclosed drawings or schematics.

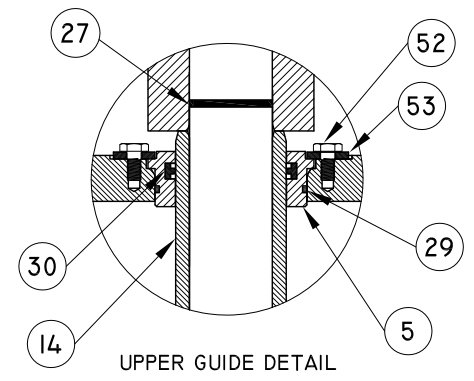
NOTE REGARDING FREEZING:

This valve does not drain completely when inlet and outlet pipes are drained. Where freezing conditions are expected, one of the following must be performed:

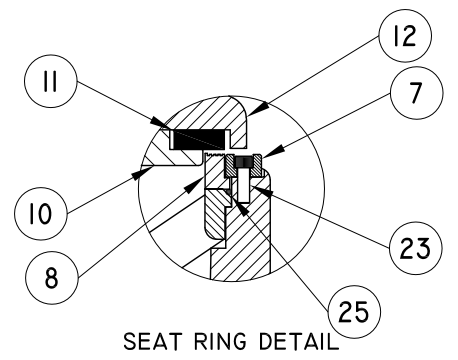
1. Drain valve and pilot system completely.
2. Provide insulation and/or heating to keep the valve from freezing.



OPTIONAL LIMIT SWITCH
SEE DRAWING A0707B



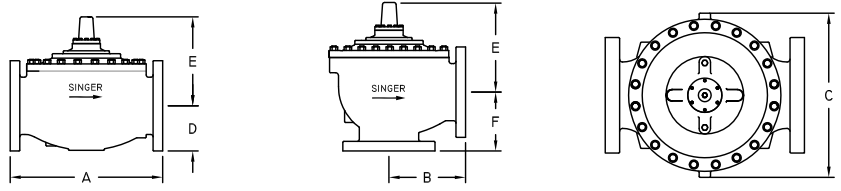
UPPER GUIDE DETAIL



SEAT RING DETAIL

DOUBLE CHAMBER MAIN VALVE

SIZES 10" TO 16" (250MM TO 400MM) S106-PT & SA106-PT
SIZES 12" TO 24" (300MM TO 600MM) S206-PT



SINGER VALVE

Result-Based Solutions. Globally.

www.singervalve.com 12850-87th Avenue, Surrey, B.C. V3W 3H9

Drawn By: Scott Grover	Approved By: Kari Oksanen
Date: April 26, 2006	Drawing: A0898B
Model S106-PT, SA106-PT & S206-PT	

Material Specifications & Dimensions

 10"-16" (250mm-400mm) S106-PT & SA106-PT
 12"-24" (300mm-600mm) S206-PT
 For Drawing A0898B

Item	Part Name	Material	Item	Part Name	Material
1	Body	Ductile Iron	25 **	Seat Ring Seal	Buna-N
2	Bonnet	Ductile Iron	26 **	Top Cover Seal	Buna-N
3	Adaptor	Ductile Iron	27 **	Stem Seal	Buna-N
4	Top Cover	Ductile Iron	28 **	Adaptor Seal	Buna-N
5	Upper Guide	Delrin	29 **	Upper Guide Seal	Buna-N
6	Bottom Guide	Ductile Iron & Bronze	30 **	Adaptor Stem Seal	Buna-N
7	Seat Ring Washer	Stainless Steel	31	Adaptor Locating Pins	Steel
8	Seat Ring	Stainless Steel	32	Clamp Plate Plugs	Stainless Steel
9	Stem	Stainless Steel	33	Bonnet Locating Pins	Steel
10	Disc Retainer	Ductile Iron	34	Eye Bolt	Steel
11 **	Resilient Disc	EPDM	35	Top Cover Locating Pins	Steel
12	Inner Valve	Ductile Iron	46 **	Diaphragm	Buna-N or EPDM
13	Piston	Ductile Iron	48	Inner Valve Plugs	Stainless Steel
14	Stem Sleeve	Stainless Steel	52	Upper Guide Screw	Stainless Steel
15	Clamp Plate	Ductile Iron	53	Upper Guide Washer	Stainless Steel
17	Stem Nut	Brass ASTM	56/58	Bonnet Bolt/Washer	Stainless Steel
20/54	Body Bolts/Washers	Stainless Steel			
22/55	Top Cover Screw/Washer	Stainless Steel			
23	Seat Retaining Screw	Stainless Steel			

** Recommended spare parts (included in the Rebuild Kit)

S106-PT & SA106-PT		Globe			Globe & Angle	Angle		
		A	D	E	C	B	E	F
10" 250mm	150F / PN10, PN16	29.75" 756mm	8.56" 217mm	22.63" 575mm	22.13" 562mm	11.50" 292mm	19.34" 491mm	12.50" 318mm
	300F / PN25, PN40	31.12" 790mm	9.56" 243mm	22.63" 575mm	22.13" 562mm	12.19" 310mm	19.34" 491mm	13.19" 335mm
12" 300mm	150F / PN10, PN16	34" 864mm	9.50" 241mm	27" 686mm	26" 660mm	13.75" 349mm	24" 610mm	12.50" 318mm
	300F / PN25, PN40	35.50" 902mm	10.25" 260mm	27" 686mm	26" 660mm	14.50" 368mm	24" 610mm	13.25" 337mm
14" 350mm	150F / PN10, PN16	31" 787mm	10.50" 267mm	27" 686mm	26" 660mm	-	-	-
	300F / PN25, PN40	32.50" 826mm	11.50" 292mm	27" 686mm	26" 660mm	-	-	-
16" 400mm	150F / PN10, PN16	41.38" 1051mm	11.75" 298mm	32.50" 826mm	32" 813mm	18" 457mm	29.50" 749mm	15.69" 399mm
	300F / PN25, PN40	43.50" 1105mm	12.75" 324mm	32.50" 826mm	32" 813mm	18.81" 478mm	29.50" 749mm	16.50" 419mm

S206-PT		Globe			Globe & Angle	Angle		
		A	D	E	C	B	E	F
12" 300mm	150F / PN10, PN16	27.50" 699mm	9.50" 241mm	22.63" 575mm	22.12" 562mm	-	-	-
	300F / PN25, PN40	29" 737mm	10.50" 267mm	22.63" 575mm	22.12" 562mm	-	-	-
16" 400mm	150F / PN10, PN16	36" 914mm	11.75" 298mm	27" 686mm	26" 660mm	-	-	-
	300F / PN25, PN40	37.63" 956mm	12.75" 324mm	27" 686mm	26" 660mm	-	-	-
18" 450mm	150F / PN10, PN16	42" 1067mm	12.50" 318mm	32.38" 822mm	31.31" 795mm	-	-	-
	300F / PN25, PN40	43.63" 1108mm	14" 356mm	32.38" 822mm	31.31" 795mm	-	-	-
20" 500mm	150F / PN10, PN16	45" 1143mm	13.93" 354mm	32.38" 822mm	31.50" 800mm	-	-	-
	300F / PN25, PN40	46.63" 1184mm	15.25" 387mm	32.38" 822mm	31.50" 800mm	-	-	-
24" 600mm	150F / PN10, PN16	50.50" 1283mm	16.50" 419mm	32.38" 822mm	36" 914mm	-	-	-
	300F / PN25, PN40	52.25" 1327mm	18" 457mm	32.38" 822mm	36" 914mm	-	-	-