

MODEL 106-AC ANTI-CAVITATION CONTROL VALVE

KEY FEATURES

- Solves cavitation problems
- Controls variable flows and vibration
- Reduces noise significantly
- Every valve optimized for actual operating conditions

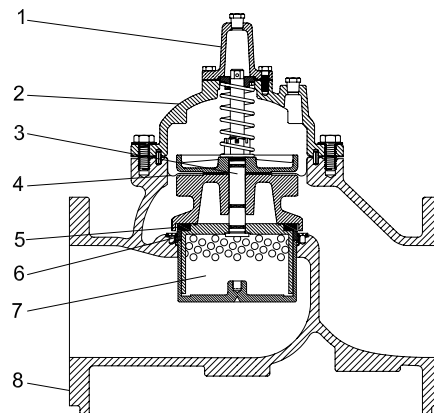
PRODUCT OVERVIEW

The 106-AC series control valve solves cavitation problems by taking the pressure drop in two stages and at higher pressure drops allowing and containing cavitation inside the Recovery Chamber. Reduced velocity out of the Recovery Chamber prevents cavitation and reduces noise and vibration.



PRODUCT LINE DRAWING

1. Removable Stem Cap
2. ASTM A536 Ductile Iron Construction
3. 316 Stainless Steel Stem
4. Buna-N / EPDM Diaphragm
5. Buna-N / EPDM Resilient Disc
6. 316 Stainless Steel Seat
7. Cavitation Recovery Chamber - AISI 316
8. NSF 61 Fusion Bonded Epoxy Coating



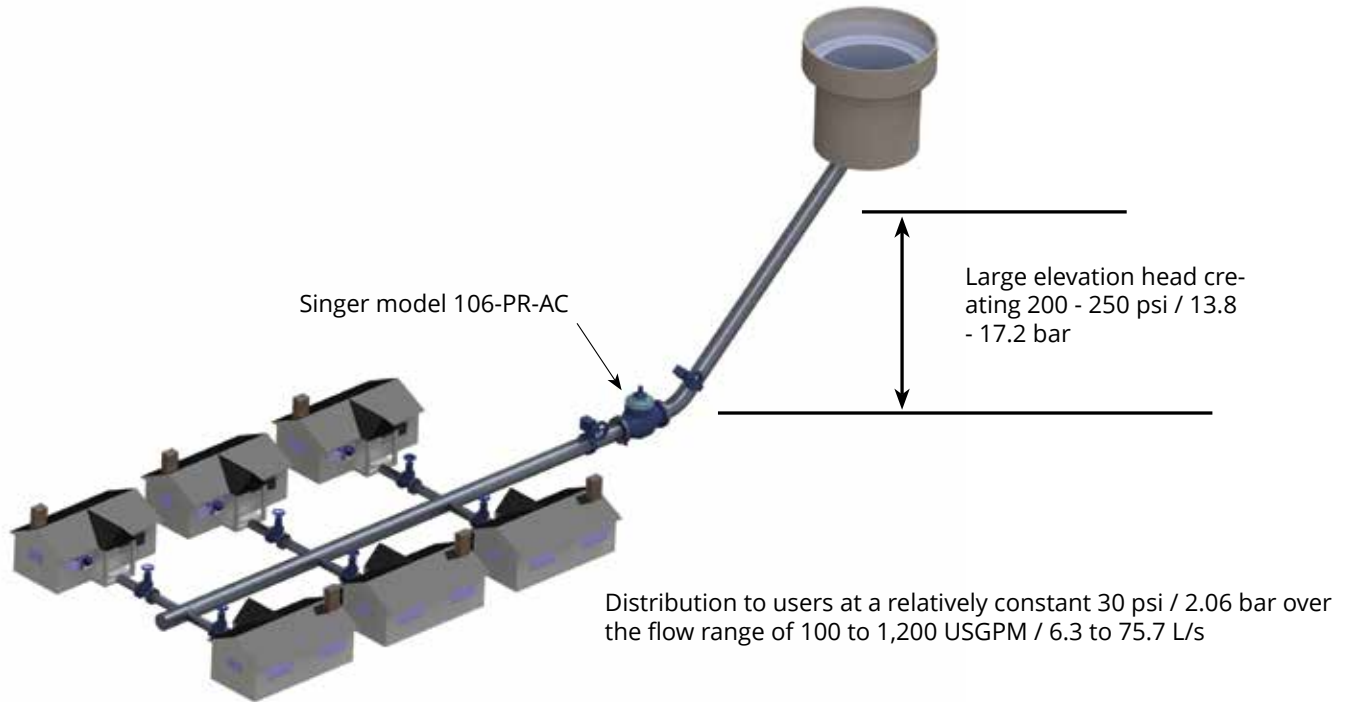
TYPICAL APPLICATION

PRESSURE REDUCING

Your application has a maximum continuous design flow of 1200 USGPM (76 l/s) and a minimum of 100 USGPM (6.3 l/s). Inlet pressure ranges from 200 psi (13.8 bar) at maximum flow to 250 psi (17.2 bar) at minimum flow. You need a relatively constant outlet pressure of 30 psi (2 bar). There is a possibility of demand for 2000 USGPM (130 l/s).

SELECTION

Pressure Reducing: 6 in / 150 mm Singer model 106-PR-AC, ANSI Class 150 flange, range 10 – 80 psi / 0.7 bar – 5.5 bar, set at 30 psi / 2 bar



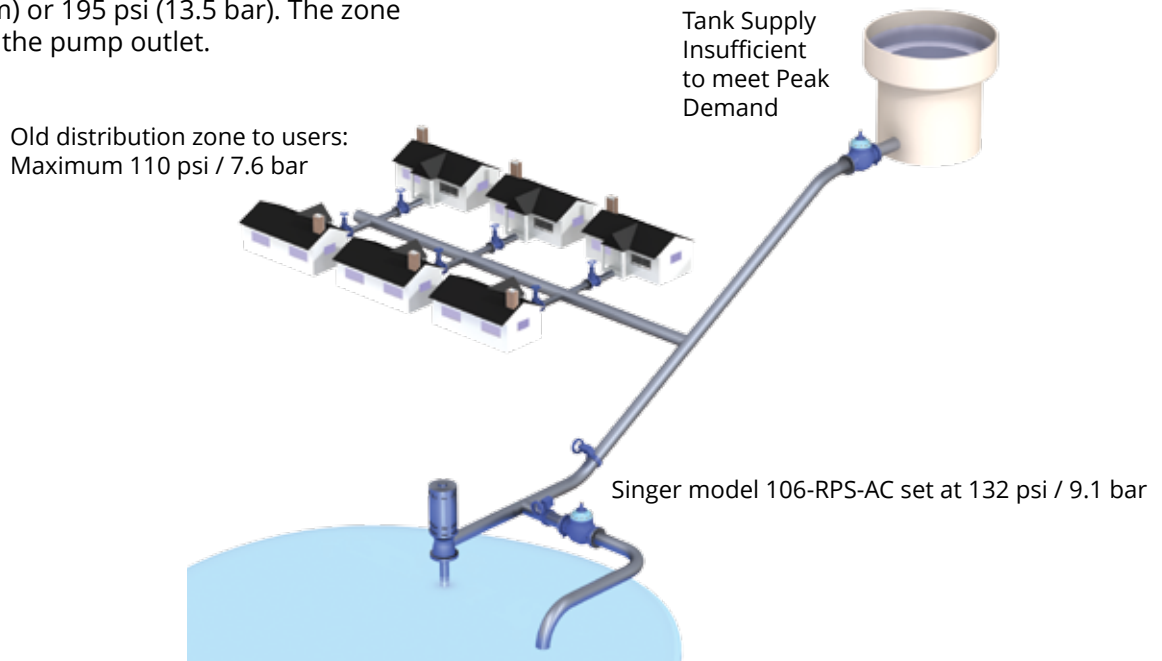
SELECTION AND SIZING

1. Referring to page 240 Cavitation Chart, 250 psi (17.2 bar) to 30 psi (2 bar) is deep in the severe cavitation zone. Anti-Cavitation valve is required.
2. There seems to be no reason for the downstream pressure to go sub-atmospheric. Application is OK.
3. 200 psi (13.8 bar) is 80% of 250 psi (17.2 bar). Application is OK.
4. 220 psi (15 bar) pressure drop is acceptable for an outlet pressure of 30 psi (2 bar).
5. Referring to Graph 106-415 on page 82 or 239, intersection of minimum pressure drop of 170 psi (11.7 bar) and maximum flow of 1200 GPM (76 l/s) is right on the line for 4" (100mm) valve. If a capacity of 2000 GPM (130 l/s) is required, a 6" valve would be selected.
6. Referring to pages 14 to 19, maximum recommended continuous flow for a 4" 106 valve is 800 GPM (50 l/s). If it is expected that flows of more than 800 GPM (50 l/s) will take place more than intermittently, a 6" valve should be selected. Referring to page 100, 100 GPM (6.3 l/s) is higher than minimum recommended flow for 4" (100mm) or 6" (150mm) pressure reducing valve.

TYPICAL APPLICATION

CONTINUOUS SUSTAINING

Your application requires the discharge pressure of a fixed speed pump to be limited to a pressure that keeps the pressure in an old distribution zone to a maximum of 110 psi (7.6 bar). The pump is designed for 1200 USGPM (76 l/s) at 140 psi (9.6 bar) Shut-off head is 450 ft (137 m) or 195 psi (13.5 bar). The zone is 55 ft (34m) above the pump outlet.



SELECTION AND SIZING

To keep the pressure in the distribution zone to a maximum of 110 psi (7.6 bar), we must limit the pressure on the pump discharge header to 110 psi (7.6 bar) + 50 ft (34m) or 132 psi (9.1 bar).

1. Referring to Cavitation Chart on page 240, 132 psi (9.1 bar) is in the very severe cavitation zone. Anti-Cavitation valve is a must.
2. It is likely that sub-atmospheric pressure will develop on the outlet of the valve. A vacuum breaker is required.
3. Pressure drop is constant. Application is OK.
4. 132 psi (9.1 bar) to atmosphere is OK.

5. Referring to Graph 106-415 on page 82 or 239, intersection of 132 psi (9.1 bar) and 1200 GPM (76 l/s) is above the line for 4" (100mm) valve but below the line for 6" (150mm) line. Select a 6" (150mm) valve.

6. Referring to pages 11 to 19, recommended continuous flow for 6" (150mm) valve is 1800 GPM (114 l/s). 6" (150mm) valve is OK. Referring to page 120, minimum recommended flow for 6" (150mm) 106-RPS pressure sustaining valve is 20 USGPM (1.3 l/s) for flat diaphragm valve and 1 USGPM (0.06 l/s) for rolling diaphragm valve. Low flow should not be a problem.

106-AC VALVE SIZES AND MATERIALS

Valve Materials			
	Standard		Optional
Available Sizes	Threaded	Flanged	-
Globe	1 in to 3 in (25-80 mm)	1-1/2 in to 36 in (40-900 mm)	-
Valve Components			
1. Valve Body, Cover	65-45-12 Ductile Iron		316 Stainless Steel (limited sizes)
2. Seat Ring	316 Stainless Steel		-
4. Stem	316 Stainless Steel		-
5. Stem Nut	B16 Brass		316 Stainless Steel
6. Spring	316 Stainless Steel		-
7. Guide Bushings	B16 Brass or SAE 660 Bronze		AISI 316 Stainless Steel
8. Diaphragm	EPDM		Buna-N / Viton (limited sizes)
9. Resilient Disc	EPDM		Buna-N / Viton (limited sizes)
10. Coating	NSF61 Approved Fusion Bonded Epoxy - Thickness 10-14 mils (250-350 microns)		Consult factory
11. Fasteners	18-8 Stainless Steel		316 Stainless Steel
12. Anti-Cavitation Cage	316 Stainless Steel		-

SELECTION AND SIZING

- Check Cavitation Chart on page 240. If the intersection of inlet pressure and outlet pressure is inside the cavitation zone, Anti-Cavitation valve is recommended. As a guide, if the pressure drop is more than 2/3 of the inlet pressure, cavitation may occur.
- If there is any possibility that the outlet pressure can be sub-atmospheric even occasionally, consult with Singer Valve or one of our representatives for a possible solution.
- If the pressure drop varies more than 25%, consult Singer Valve or one of our representatives for a solution.
- If the outlet pressure is less than 20 psi (1.38 bar), pressure drop should be limited to 200 psi (13.8 bar) for continuous service.
- Refer to Graph 106-415 on pages 82 or 239. Locate intersection of minimum pressure drop on the horizontal axis and maximum flow on the vertical axis. Select the next valve size above this intersection.
- Refer to pages 14 to 19 for recommended limitations for Continuous and Intermittent flows and description of standard valve for minimum stable flow where applicable.

ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

Additionally, include the following information for this product:

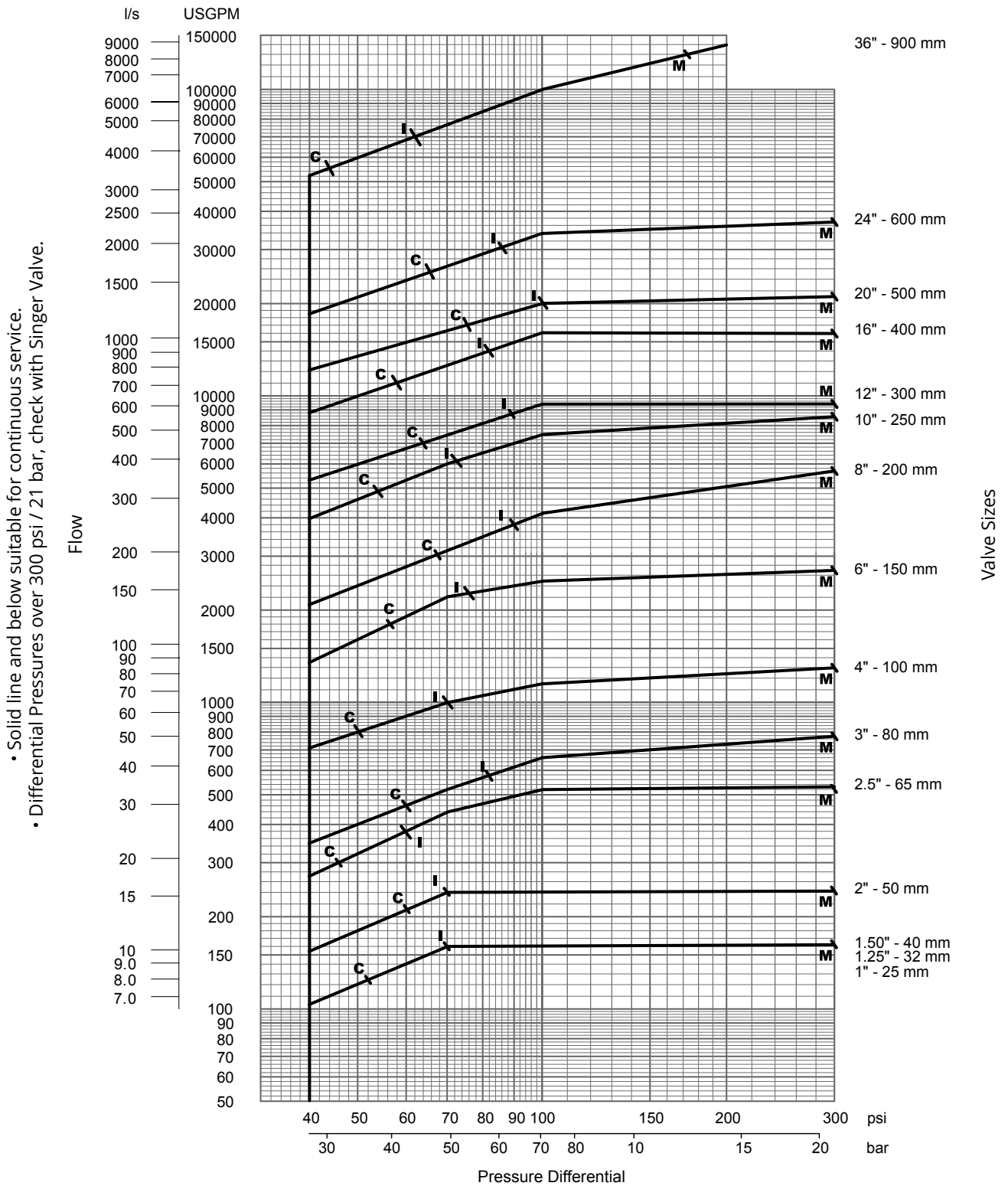
Inlet / outlet pressure range

Minimum / maximum differential pressure

Minimum / maximum flow rate

MODEL 106-AC ANTI-CAVITATION CONTROL VALVE

Flow vs. Pressure Differential
Model 106 Series (PG-AC, PGX-AC, PT-AC, PGM-AC) – Full Port, Globe Body, Flat / Rolling Diaphragm
 Anti-Cavitation Valve Curve 106-415 (1 in / 25 mm – 36 in / 900 mm)

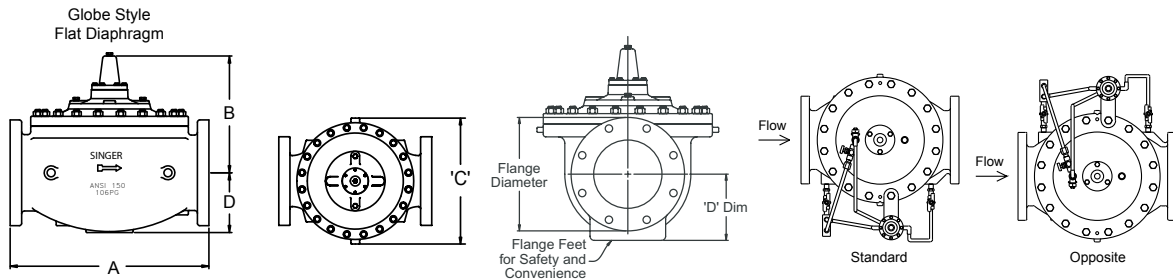


• Solid line and below suitable for continuous service.
 • Differential Pressures over 300 psi / 21 bar, check with Singer Valve.

VALVE DATA (US UNITS)

Size	DWG	Standard	Flat Diaphragm System								
Inches	REF	ANSI	1 in	1-1/4 in	1-1/2 in	2 in	2-1/2 in	3 in	4 in	6 in	8 in
Globe Dimensions			All figures shown in inches unless otherwise stated								
Lay Length	A	FNPT	6.75	6.75	6.75	9.38	11.00	13.50	-	-	-
Centerline to Bottom	D	FNPT	2.50	2.50	2.50	2.75	3.38	3.68	-	-	-
Lay Length	A	150F	-	-	8.50	9.38	11.00	12.00	15.00	20.00	25.38
Centerline to Bottom	D	150F	-	-	2.75	3.00	3.50	3.75	4.60	5.60	7.88
Lay Length	A	300F	-	-	9.00	10.00	11.63	13.25	15.63	21.00	26.38
Centerline to Bottom	D	300F	-	-	3.25	3.25	3.75	4.13	5.09	6.34	7.88
Common Dimensions (Globe)											
Width	C		4.88	4.88	6.13	6.50	8.19	9.25	10.88	16.75	21.63
Height (To Stem Cap) Globe	E		4.38	4.38	4.38	4.75	7.50	8.00	9.15	11.75	14.91
Body Port Tapping		FNPT	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	1/2
Stem Cap Plug		MNPT	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Cover Port Tapping		FNPT	3/8	3/8	3/8	3/8	3/8	3/8	3/8	1/2	1/2
Valve Stroke			9/16	9/16	9/16	9/16	15/16	1-1/8	1-7/16	1-11/16	2-7/8
Displaced Bonnet Volume (Gallons)			0.007	0.007	0.007	0.02	0.07	0.09	0.20	0.56	1.67
Approximate Shipping Weight (Lbs)			25	25	25	45	80	125	250	400	700
Capacities			Please consult Singer Valve								
Maximum Pressure Ratings (Ductile Only)											
PSI ¹		FNPT	400	400	400	400	400	400	-	-	-
PSI		150F	-	-	-	250	250	250	250	250	250
PSI ¹		300F	-	-	-	400	400	400	400	400	400
Maximum Temperature											
Fahrenheit			180°	180°	180°	180°	180°	180°	180°	180°	180°

¹Valves rated and stamped 400 psi as standard. Valves rated and stamped 600 psi on request.



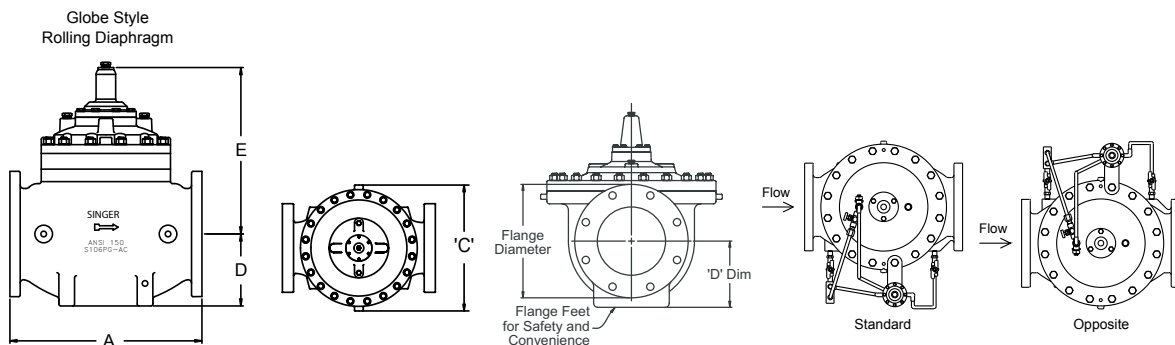
See pilot system information, page 207.
For additional Engineering notes, see page 242.

MODEL 106-AC ANTI-CAVITATION CONTROL VALVE

VALVE DATA (US UNITS)

Size	DWG	Standard	Rolling Diaphragm System							
Inches	REF	ANSI	6 in	8 in	10 in	12 in	16 in	20 in	24 in	36 in
Globe Dimensions			All figures shown in inches unless otherwise stated							
Lay Length	A	FNPT	-	-	-	-	-	-	-	-
Centerline to Bottom	D	FNPT	-	-	-	-	-	-	-	-
Lay Length	A	150F	20.00	25.38	29.75	34.00	41.38	52.00	61.50	76.00
Centerline to Bottom	D	150F	5.60	7.63	8.25	9.62	12.13	14.43	17.13	23.50
Lay Length	A	300F	21.00	26.38	31.13	35.50	43.50	53.62	63.25	78.00
Centerline to Bottom	D	300F	6.34	7.88	9.00	10.38	13.13	15.75	19.65	25.50
Common Dimensions (Globe & Angle)										
Width	C		12.75	16.09	18.00	21.25	27.06	35.00	49.68	64.50
Height (To Stem Cap) Globe	E		15.43	20.19	22.13	23.75	30.31	35.50	45.75	61.00
Body Port Tapping		FNPT	3/8	1/2	3/4	3/4	3/4	3/4	3/4	1
Stem Cap Plug		MNPT	3/8	3/8	3/4	3/4	3/4	3/4	3/4	1
Cover Port Tapping		FNPT	1/2	1/2	3/4	3/4	3/4	3/4	3/4	1
Valve Stroke			1-11/16	2-7/8	3-1/4	3-3/4	4-3/4	5-9/16	6	9
Displaced Bonnet Volume (Gallons)			0.5	1.0	1.5	2.3	6.8	9.0	14.8	43.0
Approximate Shipping Weight (Lbs)			360	660	900	1400	2400	3450	5300	13500
Flow Capacities			Please consult Singer Valve							
Maximum Pressure Ratings (Ductile Only)										
PSI ¹		FNPT	-	-	-	-	-	-	-	-
PSI		150F	250	250	250	250	250	250	250	250
PSI ¹		300F	400	400	400	400	400	400	400	400
Maximum Temperature										
Fahrenheit			180°	180°	180°	180°	180°	180°	180°	180°

¹Valves rated and stamped 400 psi as standard. Valves rated and stamped 600 psi on request.

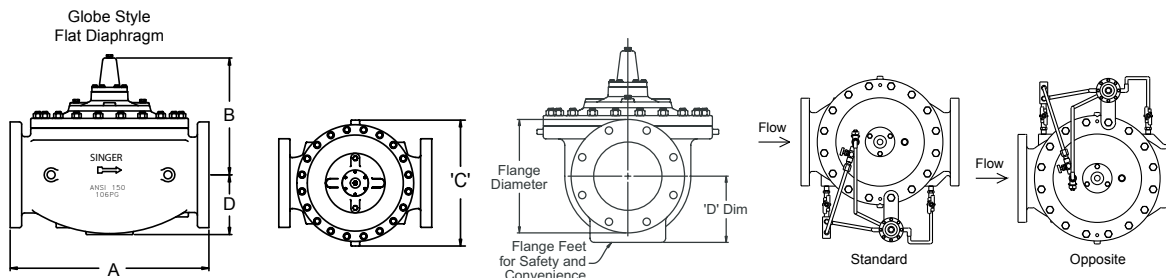


See pilot system information, page 207.
For additional Engineering notes, see page 242.

VALVE DATA (METRIC UNITS)

Size	DWG	Standard	Flat Diaphragm System								
MM	REF	ANSI	25 mm	32 mm	40 mm	50 mm	65 mm	80 mm	100 mm	150 mm	200 mm
Globe Dimensions			All figures shown in mm unless otherwise stated								
Lay Length	A	FNPT	171	171	171	238	279	343	-	-	-
Centerline to Bottom	D	FNPT	64	64	64	70	86	93	-	-	-
Lay Length	A	150F	-	-	216	238	279	305	381	508	645
Centerline to Bottom	D	150F	-	-	70	76	89	95	117	142	200
Lay Length	A	300F	-	-	229	254	295	337	397	533	670
Centerline to Bottom	D	300F	-	-	83	83	95	105	129	161	200
Common Dimensions (Globe)											
Width	C		124	124	156	165	208	235	276	425	549
Height (To Stem Cap) Globe	E		111	111	111	121	191	203	232	298	379
Body Port Tapping	FNPT	Inches	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	1/2
Stem Cap Plug	MNPT	Inches	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Cover Port Tapping	FNPT	Inches	3/8	3/8	3/8	3/8	3/8	3/8	3/8	1/2	1/2
Valve Stroke		mm	14	14	14	14	25	29	37	43	73
Displaced Bonnet Volume (Litres)			0.03	0.03	0.03	0.1	0.3	0.3	0.8	2.1	6.3
Approximate Shipping Weight (Kilograms)			11	11	11	20	36	57	113	181	317
Capacities			Please consult Singer Valve								
Maximum Pressure Ratings (Ductile Only)											
Bar ¹		FNPT	27.6	27.6	27.6	27.6	27.6	27.6	-	-	-
Bar		150F	-	-	-	17	17	17	17	17	17
Bar ¹		300F	-	-	-	27.6	27.6	27.6	27.6	27.6	27.6
Maximum Temperature											
Celsius			82°	82°	82°	82°	82°	82°	82°	82°	82°

¹Valves rated and stamped 27.6 bar as standard. Valves rated and stamped 41 bar on request



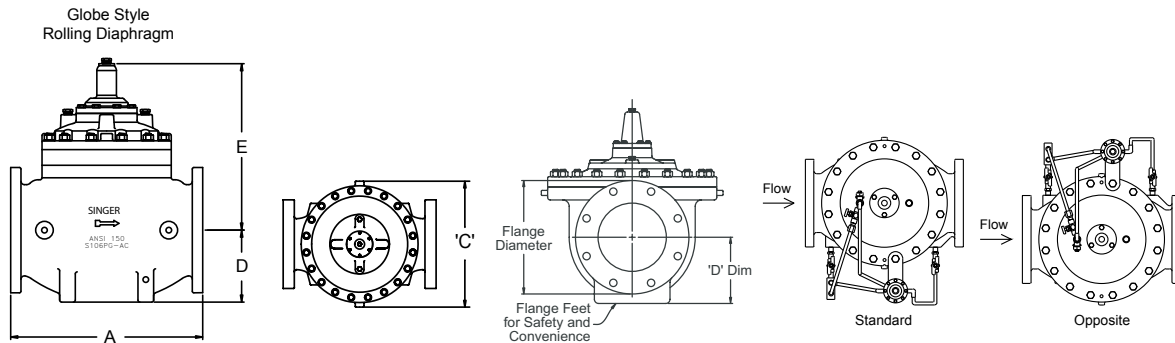
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MODEL 106-AC ANTI-CAVITATION CONTROL VALVE

VALVE DATA (METRIC UNITS)

Size	DWG	Standard	Rolling Diaphragm System							
mm	REF	ANSI	150 mm	200 mm	250 mm	300 mm	400 mm	500 mm	600 mm	900 mm
Globe Dimensions			All figures shown in mm unless otherwise stated.							
Lay Length	A	FNPT	-	-	-	-	-	-	-	-
Centerline to Bottom	D	FNPT	-	-	-	-	-	-	-	-
Lay Length	A	150F	508	645	756	864	1051	1321	1562	1930
Centerline to Bottom	D	150F	142	194	210	244	308	367	435	597
Lay Length	A	300F	533	670	791	902	1105	1362	1607	1981
Centerline to Bottom	D	300F	161	200	229	264	334	400	499	648
Common Dimensions (Globe)										
Width	C		324	409	460	540	687	889	1262	1422
Height (To Stem Cap) Globe	E		346	455	562	603	770	902	1162	1550
Body Port Tapping	FNPT	Inches	3/8	1/2	3/4	3/4	3/4	3/4	3/4	1
Stem Cap Plug	MNPT	Inches	3/8	3/8	3/4	3/4	3/4	3/4	3/4	1
Cover Port Tapping	FNPT	Inches	1/2	1/2	3/4	3/4	3/4	3/4	3/4	1
Valve Stroke		mm	43	73	83	95	120	141	150	229
Displaced Bonnet Volume (Litres)			2	4	6	9	26	34	56	163
Approximate Shipping Weight (Kilograms)			163	300	408	635	1089	1565	2268	6124
Flow Capacities			Please consult Singer Valve							
Maximum Pressure Ratings (Ductile Only)										
Bar*		FNPT	-	-	-	-	-	-	-	-
Bar		150F	17	17	17	17	17	17	17	17
Bar*		300F	27.6	27.6	27.6	27.6	27.6	27.6	27.6	27.6
Maximum Temperature										
Celcius			82°	82°	82°	82°	82°	82°	82°	82°

*Valves rated and stamped 400 psi as standard. Valves rated and stamped 600 psi on request.

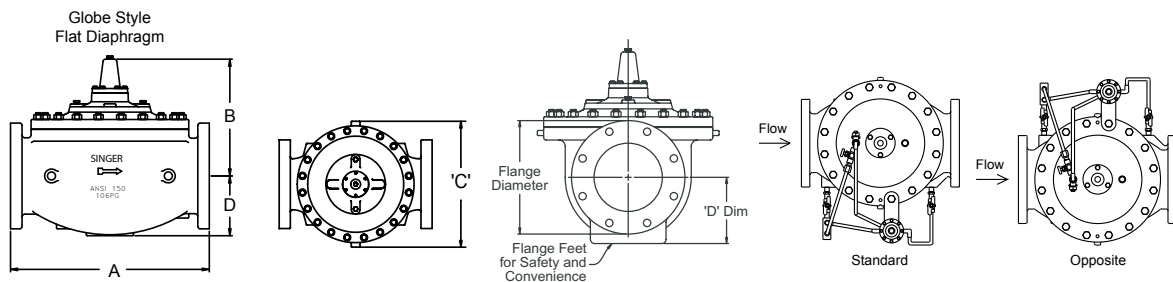


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AC VALVE DATA (ISO UNITS)

Size	DWG	Standard	Flat Diaphragm System								
MM	REF	ISO	25 mm	32 mm	40 mm	50 mm	65 mm	80 mm	100 mm	150 mm	200 mm
Globe Dimensions			All figures shown in mm unless otherwise stated								
Lay Length	A	BSPT	171	171	171	238	279	343	-	-	-
Centerline to Bottom	D	BSPT	64	64	64	70	86	93	-	-	-
Lay Length	A	PN10 / PN16	-	-	229	238	279	318	381	508	645
Centerline to Bottom	D	PN10 / PN16	-	-	83	76	89	100	117	142	200
Lay Length	A	PN25 / PN40	-	-	229	238	295	318	397	533	670
Centerline to Bottom	D	PN25 / PN40	-	-	83	76	89	100	129	161	200
Common Dimensions (Globe)											
Width	C		124	124	156	152	208	235	276	425	549
Height (To Stem Cap) Globe	E		111	111	111	121	191	203	232	298	379
Body Port Tapping	FNPT	Inches	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	1/2
Stem Cap Plug	MNPT	Inches	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Cover Port Tapping	FNPT	Inches	3/8	3/8	3/8	3/8	3/8	3/8	3/8	1/2	1/2
Valve Stroke		mm	14	14	14	14	25	29	37	43	73
Displaced Bonnet Volume (Litres)			0.03	0.03	0.03	0.1	0.3	0.3	0.8	2.1	6.3
Approximate Shipping Weight (Kilograms)			11	11	11	20	36	57	113	181	317
Capacities			Please consult Singer Valve								
Maximum Pressure Ratings (Ductile Only)											
Bar		BSPT	27.6	27.6	27.6	27.6	27.6	27.6	-	-	-
Bar		PN16	-	-	-	16	16	16	16	16	16
Bar		PN25	-	-	-	25	25	25	25	25	25
Maximum Temperature											
Celsius			82°	82°	82°	82°	82°	82°	82°	82°	82°

*Valves rated and stamped 27.6 bar as standard. Valves rated and stamped 41 bar on request

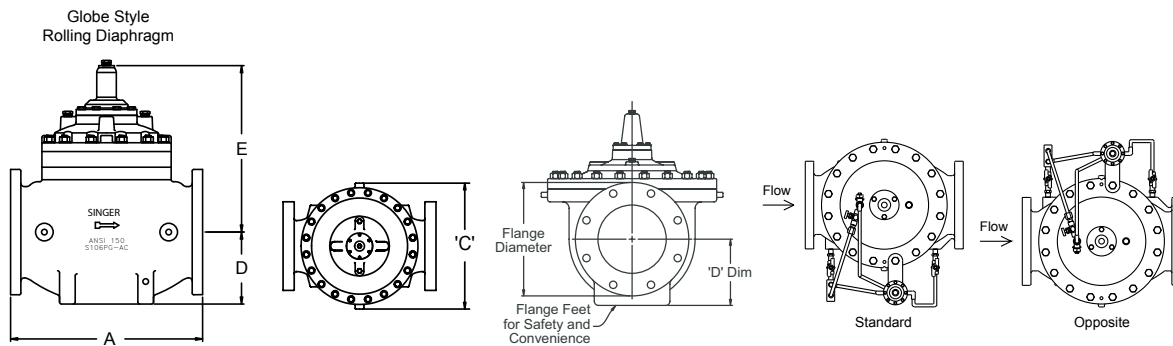


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MODEL 106-AC ANTI-CAVITATION CONTROL VALVE

AC VALVE DATA (ISO UNITS)

Size	DWG	Standard	Rolling Diaphragm System							
			150 mm	200 mm	250 mm	300 mm	400 mm	500 mm	600 mm	900 mm
Globe Dimensions			All figures shown in mm unless otherwise stated							
Lay Length	A	BSPT	-	-	-	-	-	-	-	-
Centerline to Bottom	D	BSPT	-	-	-	-	-	-	-	-
Lay Length	A	PN10 / PN16	508	645	756	864	1051	1321	1562	1930
Centerline to Bottom	D	PN10 / PN16	142	200	210	244	308	367	435	597
Lay Length	A	PN25 / PN40	533	670	791	902	1105	1362	1607	1981
Centerline to Bottom	D	PN25 / PN40	161	200	229	264	334	400	499	648
Common Dimensions (Globe)										
Width	C		324	409	460	540	687	889	1262	1422
Height (To Stem Cap) Globe	E		346	455	562	603	770	902	1162	1550
Body Port Tapping	FNPT	Inches	3/8	1/2	3/4	3/4	3/4	3/4	3/4	1
Stem Cap Plug	MNPT	Inches	3/8	3/8	3/4	3/4	3/4	3/4	3/4	1
Cover Port Tapping	FNPT	Inches	1/2	1/2	3/4	3/4	3/4	3/4	3/4	1
Valve Stroke		mm	43	73	83	95	120	141	150	229
Displaced Bonnet Volume (Litres)			2	4	6	9	26	34	56	163
Approximate Shipping Weight (Kilograms)			163	300	408	635	1089	1565	2268	6124
Flow Capacities	Please consult Singer Valve									
Maximum Pressure Ratings (Ductile Only)										
Bar		BSPT	-	-	-	-	-	-	-	-
Bar		PN16	16	16	16	16	16	16	16	16
Bar		PN25	25	25	25	25	25	25	25	25
Maximum Temperature										
Celsius			82°	82°	82°	82°	82°	82°	82°	82°



See pilot system information, page 207.
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