

Models 106-PR-SM / 206-PR-SM Pressure Reducing Control Valve with Integral Back-up



106-PR-SM Globe

KEY FEATURES

- Ideal for applications where failure is not an option
- Includes a back-up system to protect against diaphragm or pilot failure
- Reduces unnecessary maintenance
- Provides downstream surge protection

Product Overview

The 106-PR-SM and 206-PR-SM series control valves are engineered to be used anywhere pressure reducing valve failure is unacceptable. These valves have a second and independent operating system superimposed upon the standard primary system. With the assurance of a back-up system, maintenance schedules may be extended as pressures will continue to be controlled even in the event of failure with the primary system.

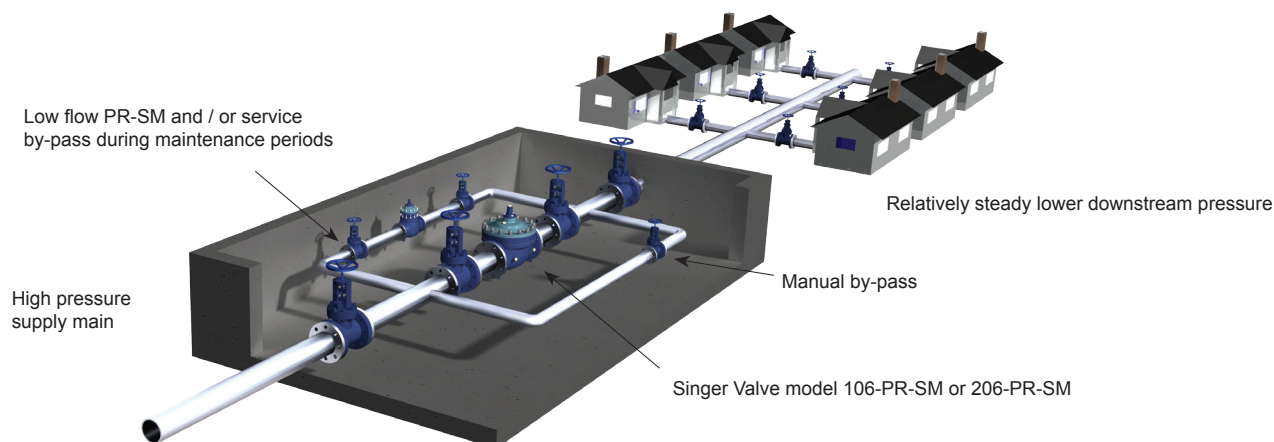
Under normal pressure reducing conditions, the primary pilot senses the downstream pressure through a connection at the valve outlet. Under flowing conditions, the pilot reacts to small changes in pressure to control the valve position by modulating the pressure above the diaphragm in the lower operating chamber. The downstream pressure is maintained virtually steady at the pilot set-point that is adjustable.

Should the primary pilot system and / or main valve fail to control the downstream pressure, the independent back-up pilot system will begin to operate. It controls the pressure above the diaphragm in the second operating chamber. The back-up pilot is set slightly higher than the primary pilot. The forces now operating in the top chamber assume control of the inner valve assembly and maintain pressure reducing control. During back-up operation only, there is a small (1 USGPM / 0.063 L/s) continuous discharge that should be taken to drain.

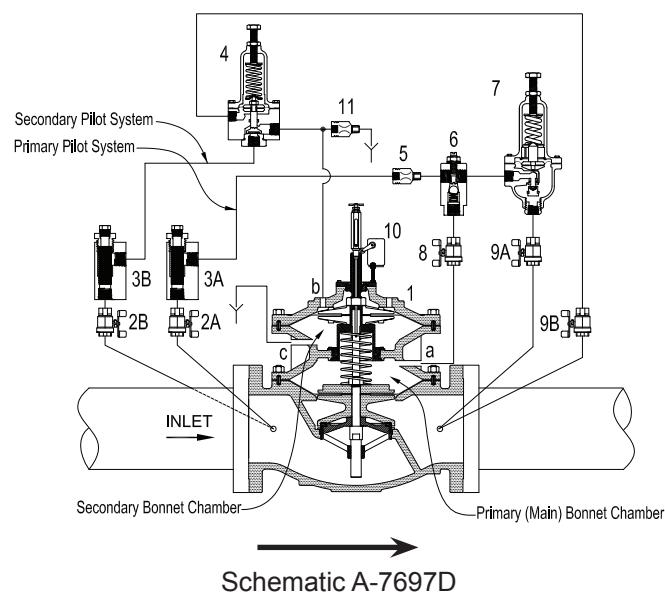
The secondary pilot continually senses the downstream pressure. Should there be a rapid rise in downstream pressure for any reason, the secondary pilot will respond quickly, and will pressurize the top chamber. This will compliment the primary pressure reducing controls and provide faster response.

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Typical Application



Schematic Drawing



1. Main Valve - 106-PGM or 206-PGM
- 2, 8, 9. Isolation Valves - (2A, 2B, 8, 9A, 9B)
3. Strainer - 40 mesh stainless steel screen (3A, 3B)
4. Model 81-RP Pilot (Back-up)
- 5, 11. Fixed Restriction
6. Model 26 Flow Stabilizer (sizes 8 in / 200 mm 106, 10 in / 250 mm 206 and smaller is included)
7. Model 160 PR Pilot (Primary)
10. Limit Switch Assembly - SPDT - Optional

Standard Materials

Standard materials for pilot system components are:

- ASTM B-62 bronze or ASTM B-16 brass
- AISI 303 stainless steel trim

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Pressure Reducing Control Valve with Integral Back-up

Specifications

- The valve shall be a Singer Valve model 106-PR-SM / 206-PR-SM, size “_____”, ANSI Class 150 (ANSI 300, ANSI flanges drilled to ISO PN 10 / 16 / 25 or 40) pressure rating / flange standard, globe (angle), style valve. The Model 160 Pressure Reducing Pilot (Normally Open Pilot) spring range shall be “___ to ___” psi / “___ to ___” bar, with set-point preset at Singer Valve to “___” psi / “___” bar.
- The Model 81-RP Pressure Relief Pilot (Normally Closed Pilot) spring range shall be “___ to ___” psi / “___ to ___” bar, with set-point preset at Singer Valve (slightly higher than Model 160 Normally Open Pilot) to “___” psi / “___” bar. Assembly shall be according to Schematic A-7697D.
- The primary main valve and pilot system shall maintain relatively accurate control of the downstream pressure regardless of fluctuation in flow or upstream pressure. Should the primary main valve and / or pilot system fail to maintain downstream pressure, the independent back-up pilot system will take over and control the downstream pressure (at a slightly higher pressure).
- Refer to Main Valves section, 106-PGM or 206-PGM, pages 53 or 64, for detailed information pertaining to valve sizes and materials, selection criteria and specifications.
- Refer to Pilot and Accessories section, page 249, Model 160 Pressure Reducing Pilot (Normally Open Pilot), Model 81-RP Pressure Relief Pilot (Normally Closed Pilot) and Model 26 Flow Stabilizer for detailed information pertaining to materials and specifications.

Selection Summary

1. Select the valve series and size with sufficient capacity
2. Check the operating flow against valve minimum.
3. Provide a smaller valve in parallel to facilitate maintenance and low flow capability, if required.
4. If the outlet pressure is less than 35% of the inlet pressure, check for cavitation.
5. Ensure that the valve and flange working pressure rating exceeds the maximum operating pressure.

Ordering Instructions

Refer to page 286 for the order form and ordering instructions.

Additionally, include the following information for this product:

1. Full port (106) or reduced port (206)
2. Outlet pressure range

Models 106-PR-SM / 206-PR-SM

Pressure Reducing Control Valve with Integral Back-up

106-PR-SM	Flow Capacity (See 106-PGM in Main Valve section for other valve data)									
	3 in	4 in	6 in	8 in	10 in	12 in	14 in	16 in	20 in	24 in
Size (inches)	3 in	4 in	6 in	8 in	10 in	12 in	14 in	16 in	20 in	24 in
Size (mm)	80 mm	100 mm	150 mm	200 mm	250 mm	300 mm	350 mm	400 mm	500 mm	600 mm
Minimum (USGPM) Flat Diaphragm	5	10	20	40	-	-	-	-	-	-
Minimum (USGPM) Rolling Diaphragm	-	-	1	1	3	3	3	3	10	10
Minimum (L/s) Flat Diaphragm	0.32	0.63	1.26	2.52	-	-	-	-	-	-
Minimum (L/s) Rolling Diaphragm	-	-	0.06	0.06	0.19	0.19	0.19	0.19	0.63	0.63
Maximum Continuous (USGPM)	460	800	1800	3100	4900	7000	8500	11000	17500	25000
Maximum Continuous (L/s)	29	50	114	196	309	442	536	694	1104	1577

206-PR-SM	Flow Capacity (See 206-PGM in Main Valve section for other valve data)													
	4 in	6 in	8 in	10 in	12 in	16 in	18 in	20 in	24 x 16 in	24 x 20 in	28 in	30 in	32 in	36 in
Size (inches)	4 in	6 in	8 in	10 in	12 in	16 in	18 in	20 in	24 x 16 in	24 x 20 in	28 in	30 in	32 in	36 in
Size (mm)	100 mm	150 mm	200 mm	250 mm	300 mm	400 mm	450 mm	500 mm	600 x 400 mm	600 x 500 mm	700 mm	750 mm	800 mm	900 mm
Minimum (USGPM) Flat Diaphragm	5	10	20	40	-	-	-	-	-	-	-	-	-	-
Minimum (USGPM) Rolling Diaphragm	-	-	-	-	3	3	3	3	3	3	10	10	10	10
Minimum (L/s) Flat Diaphragm	0.32	0.63	1.26	2.52	-	-	-	-	-	-	-	-	-	-
Minimum (L/s) Rolling Diaphragm	-	-	-	-	0.19	0.19	0.19	0.19	0.19	0.19	0.63	0.63	0.63	0.63
Maximum Continuous (USGPM)	580	1025	2300	4100	6400	9230	16500	16500	16500	21700	33600	33650	33700	33800
Maximum Continuous (L/s)	37	65	145	259	404	582	1041	1041	1041	1370	2120	2123	2126	2132