SINGER VALVE
Result-Based Solutions. Globally.

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SINGER MODEL 106/206-PR-48

Pressure Reducing Valve with Direct Acting Low Flow By-Pass

Schematic A-8063E

Installation, Operating and Maintenance Instructions

DESCRIPTION:

Model 106/206-PR-48 is a pilot operated pressure reducing valve designed to automatically reduce a high inlet pressure to a lower outlet pressure. The valve will maintain a relatively steady downstream pressure regardless of fluctuations in the supply pressure or flow rate.

Main Valve (1) is pilot operated . For low flow stability, a ¾" direct acting Pressure Reducing Valve (9) is piped in parallel to the Main Valve. The standard configuration is to have the by-pass valve piped into the ports on the opposite side of the pilot system.

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

DESCRIPTION OF OPERATION:

Main Valve (1) is normally open when pressure is applied to the valve inlet. When the same pressure is applied to the bonnet, the valve closes tight. Refer to 106/206-PG 'Description of Operation'. By controlling the pressure in the bonnet, the Main Valve can be made to open fully, close tight or open partially.

The bonnet pressure (and therefore the position of the Main Valve) is controlled by a pilot circuit consisting of Fixed Restriction (4), Flow Stabilizer (5) if so equipped and Pressure Reducing Pilot (7).

When there is no demand (and the downstream pressure is at the setting of Pilot [7]), Pressure Reducing Pilot (7) is closed. Pressure from the inlet side of the Main Valve is directed to the bonnet through the Fixed Restriction (4) and the Flow Stabilizer (5), if so equipped. The Main Valve closes.

When flow is required, Pilot (7) senses a drop in the downstream pressure and opens. Flow through Pilot (7) is greater than flow through Fixed Restriction (4). Bonnet pressure is reduced and Main Valve (1) opens to supply the demand. Speed of opening is determined by the setting of Flow Stabilizer (5), if so equipped. Refer to Model 26 instructions for details and adjustment.

Under flowing conditions, Pilot (7) reacts to small changes in pressure to modulate the bonnet pressure (and valve position) as required to keep the downstream pressure constant. Note that Main Valve position follows the position of Pilot (7). When Pilot (7) closes, the Main Valve closes. When Pilot (7) opens, the Main Valve opens.

Direct acting Pressure Reducing Valve (9) is normally held open by the internal spring. Downstream pressure acting on the diaphragm is opposed by the spring force. When the downstream pressure acting on the diaphragm area exceeds the spring force, the valve closes. Being a direct acting valve, this valve operates 'instantly' and is very stable.

INSTALLATION:

1. Refer to 106/206-PG 'Installation'.
2. Installation where there is loosely held piping and/or elbows close to the valve may cause the valve to pulsate.

ADJUSTING PROCEDURE:

PILOT OPERATED MAIN VALVE ;

1. Open Isolating Valves (2), (6) and (8).
2. Crack outlet stop valve and slowly open inlet stop valve wide.
3. Bleed air from Main Valve bonnet. **SEE 106/206-PG 'INSTALLATION'.**
4. Open outlet stop valve wide.
5. Close Isolating Valve (10).
6. Set reduced (downstream) pressure approximately 5 psi lower than the desired low flow pressure, by turning Pilot (7) adjusting screw: To increase pressure, turn adjusting screw clockwise. - To reduce pressure, turn adjusting screw counterclockwise.
7. **NOTE THAT THERE MUST BE FLOW THROUGH THE VALVE WHEN PRESSURE IS ADJUSTED.**
8. **IF THE VALVE DOES NOT OPEN** (pressure remains low), check the adjustment of Flow Stabilizer (5), if so equipped. **SEE MODEL 26 INSTRUCTIONS.**
9. **IF THE VALVE BEGINS TO OSCILLATE OR HUNT:**

- Bleed air from Main Valve bonnet. **SEE 106-PG/206-PG 'INSTALLATION'.**
- Adjust Flow Stabilizer (4), if so equipped. **SEE MODEL 26 INSTRUCTIONS.**

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Adjusting Procedure (Cont.):

BY-PASS VALVE ;

1. Open Isolation Valve (10).
2. Close Isolating Valve (8) and leave Isolating Valves (2) and (6) open.
3. There must be flow through the valve for the pressure to be adjusted.
4. Set reduced (downstream) pressure at the desired low flow setting (approximately 5 psi higher than Main Valve setting). To increase pressure, turn adjusting screw clockwise. - To reduce pressure, turn adjusting screw counterclockwise.

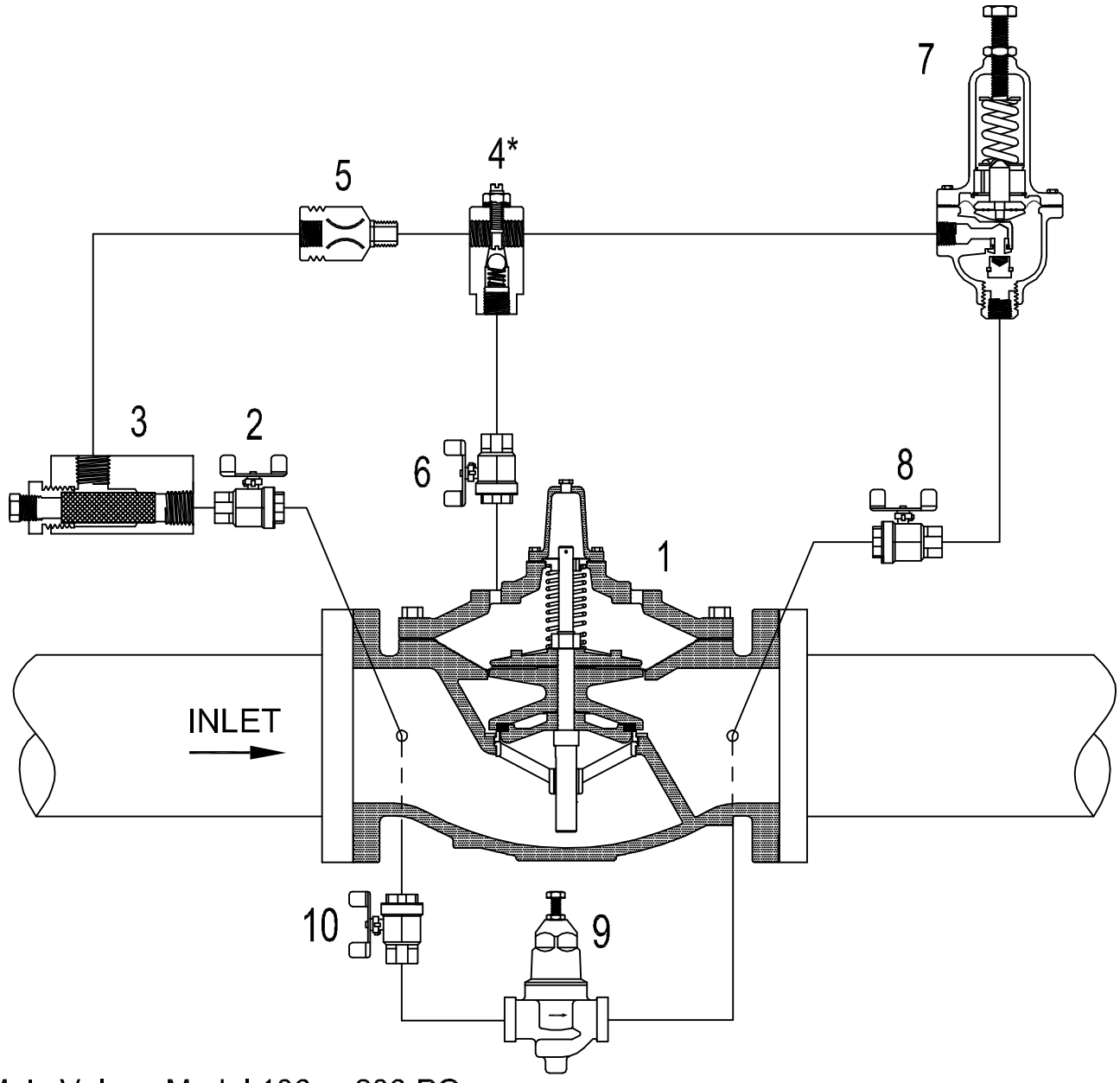
SERVICE SUGGESTIONS:

In addition to service suggestions listed in the 106-PG/206-PG instruction, we suggest the following:

IF THE MAIN VALVE FAILS TO CLOSE:

Close Isolating Valve (10). Close Isolating Valve (8) . If the Main Valve closes, Pilot (7) is defective. If the valve does not close, close Isolating Valve (2). Remove the copper tube between Fixed Restriction (4) and Flow Stabilizer (5), if so equipped. If there is continuous flow from Flow Stabilizer (5), Main Valve diaphragm is ruptured. If there is no continuous flow from Flow Stabilizer (5), open Isolating Valve (2) slowly. If there is no flow, Strainer (3) is plugged.

A-8063E



1. Main Valve - Model 106 or 206-PG.
2. Isolating Valve (standard on 4" and larger).
3. Strainer - J0098A (standard on 4" and larger).
4. Model 26 Flow Stabilizer / Opening Speed Control
   * Standard on FLAT (106 or 206) diaphragm valves.
   * Optional on ROLLING (S106 or S206) diaphragm valves.
5. Fixed Restriction.
6. Isolating Valve (standard on 4" and larger).
7. Pressure Reducing Pilot - Model 160.
8. Isolating Valve.
9. Pressure Reducing Valve DA - Model J0196A.
10. Isolating Valve.

Pressure Reducing Valve with Direct Acting Low-Flow Bypass.

* Model 26 removed from 10" 106/12" 206 and larger April 25, 2008.
* Added to Model 26 'Standard on FLAT, ... Optional on ROLLING...' April 15, 2010.

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June 2, 2003	A-8063E

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