SINGER VALVE
Result-Based Solutions. Globally.™

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SINGER MODEL 106/206-PR-C-SC

Pressure Reducing, Solenoid and Check Valve Schematic A0577A
Installation, Operating and Maintenance Instructions

DESCRIPTION:

Model 106/206-PR-C-SC is a pilot operated pressure reducing and check valve that automatically reduces a high inlet pressure into a lower outlet pressure. The valve acts as a check valve to prevent reverse flow. Two-way Solenoid Valve (11) in the pilot system overrides Pressure Reducing Pilot (7) to close the valve. A normally closed Solenoid Valve keeps Main Valve (1) closed until the Solenoid Valve is energized. When the Solenoid Valve is energized, the valve becomes a pressure reducing valve. A normally open Solenoid Valve acts as a pressure reducing valve while the Solenoid Valve is de-energized and closes when the Solenoid Valve is energized. The check function is not affected by the solenoid valve.

Unless otherwise specified, the valve will be assembled for service temperatures to 80°C (180°F). Higher temperature ratings are available - consult SINGER VALVE for details.

DESCRIPTION OF OPERATION:

Main Valve (1) is normally open when pressure is applied to the valve inlet. When this same pressure is applied to the bonnet, the Main 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.

Bonnet pressure (and therefore the position of the Main Valve) is controlled by a pilot circuit consisting of Fixed Restriction (5), Solenoid Valve (11) and Pressure Reducing Pilot (7). Two check valves in the pilot circuit assures that the highest pressure is directed to the bonnet and is kept in the bonnet. Under reversed pressure conditions this assures that the Main Valve closes to prevent reverse flow.

When there is no demand (and the downstream pressure is at the setting of Pilot [7]), Pilot (7) is closed. Pressure from the inlet side of the Main Valve is directed to the bonnet through Fixed Restriction (5) and Flow Stabilizer (4), if so equipped. The main valve closes. When flow is required, Pilot (7) senses a drop in pressure and opens. Flow through Pilot (7) is greater than the flow through Fixed Restriction (5). Bonnet pressure is reduced and the Main Valve opens to supply the demand. Speed of opening is determined by the setting of Flow Stabilizer (4), if so equipped. Refer to Model 26 Instructions for details and adjustment.

Description of Operation (Cont.):

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.

When Solenoid Valve (11) is closed, the effect is the same as Pressure Reducing Pilot (7) closing i.e. when the Solenoid Valve closes, the Main Valve closes.

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.
3. Connect Solenoid Valve (11) to the electrical system. Check for correct voltage.

ADJUSTING PROCEDURE:

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. Set reduced (downstream) pressure by turning Pilot (7) adjusting screw:
   To increase pressure, turn adjusting screw clockwise.
   To reduce pressure, turn adjusting screw counterclockwise.
   NOTE THAT THERE MUST BE FLOW THROUGH THE VALVE WHEN PRESSURE IS ADJUSTED.
6. Set Closing Speed Control (12) by turning clockwise for reduced speed, counterclockwise for increased speed. Closing Speed Control (12) is mainly required to prevent surges (water hammer) when the valve closes on the solenoid function. The closing speed should be set at highest possible speed that prevents EXCESSIVE surges. Needlessly slow closing speed is detrimental to the pressure reducing function.

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ADJUSTING PROCEDURE (Cont.)

7. If the valve does not open (pressure remains low), check the adjustment of Flow Stabilizer (4), if so equipped. SEE MODEL 26 INSTRUCTIONS.
8. If the valve begins to oscillate or hunt:

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

SERVICE SUGGESTIONS:

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

IF THE VALVE FAILS TO CLOSE:

Closing Speed Control (12) closed tight.

Isolating Valve (2) or (6) closed.

Close Isolating Valve (8). If the Main Valve closes, Pilot (7) (or Solenoid Valve [11]) is defective. If the valve does not close, close Isolating Valve (2) (or Closing Speed Control [12]) and remove the copper line between Flow Stabilizer (4), if so equipped, and Solenoid Valve (11). If there is continuous flow from Flow Stabilizer (4), Main Valve diaphragm is ruptured. If there is no flow from Flow Stabilizer (4), open Isolating Valve (2) and Closing Speed Control (12). If there is no flow from Flow Stabilizer (4), there is a blockage from the inlet of the Main Valve to Flow Stabilizer (4). Check Strainer (3).

Check Check Valves (9) and (10) for obstruction.

IF THE VALVE FAILS TO OPEN:

Isolating Valve (6) or (8) is closed.

Flow Stabilizer (4) is incorrectly adjusted.

Solenoid Valve (11) is closed.

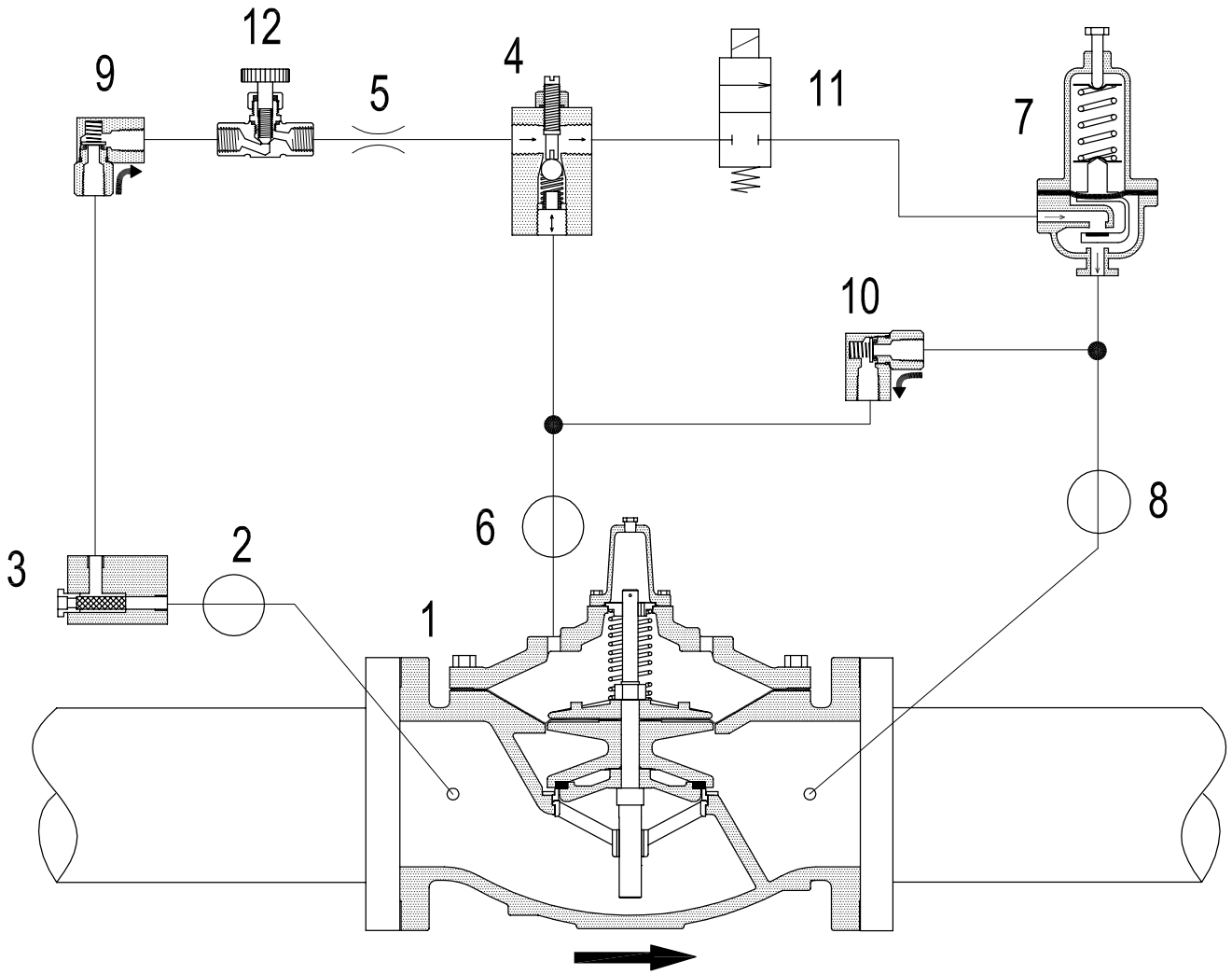
Pressure Reducing Pilot (7) set too low.

Insufficient pressure drop available.

VALVE FLUCTUATES/OSCILLATES:

See ADJUSTING PROCEDURE, part 7 & 8 above.

A-0577A



1. Main Valve - Model 106/206-PG.
2. Isolating Valve - 4" and larger only.
3. Strainer - 40 mesh - J0098A.
4. Flow Stabilizer - Model 26 - 8" 106/10" 206 and smaller only.
5. Fixed Restriction.
6. Isolating Valve - 4" and larger only.
7. Pressure Reducing Pilot - Model 160.
8. Isolating Valve.
9. Check Valve - Model 10.
10. Check Valve - Model 10.
11. Solenoid Valve - two way - Normally Closed.
12. Closing Speed Control - Model 852-B.

Pressure Reducing and Check Valve.
with Solenoid Override Feature

Model 26 removed from 10" 106/12" 206 and larger April 25, 2008

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Drawn By:	Approved By:
Kari Oksanen	Kari Oksanen
Date:	Drawing:
February 26, 1996	A-0577A

Model 106 or 206-PR-C-SC-NC (or NO)