SINGER VALVE
Result-Based Solutions. Globally.™

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SINGER MODEL 106-PR-AC

Pressure Reducing Valve for Cavitating Conditions Schematic A-7553B
Installation, Operating and Maintenance Instructions

DESCRIPTION:

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

The main valve is equipped with ANTI-CAVITATION TRIM to prevent damage caused by cavitation.

Unless otherwise specified, the valve will be assembled for service temperatures to 140° F (60° C). Higher temperature ratings are available - consult SINGER VALVE for details.

DESCRIPTION OF OPERATION:

Main Valve (1) is normally open when there is sufficient pressure drop available. Note that ANTI-CAVITATION valves are designed for specific operating conditions. Operation outside of design conditions will result in unsatisfactory results.

When the inlet pressure of the Main Valve is connected 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.

The bonnet pressure (and therefore the position of the Main Valve) is controlled by a pilot circuit consisting of Fixed Restriction (6), 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 Fixed Restriction (5) and Flow Stabilizer (5), 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 flow through Fixed Restriction (6). Bonnet pressure is reduced and the Main Valve 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 Main 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.

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 oscillate or hunt.
3. The ANTI-CAVITATION TRIM can not handle as many types of foreign materials as a standard main valve. If troublesome materials are suspected, a strainer should be installed ahead of the valve.

ADJUSTING PROCEDURE:

1. Open Isolating Valves (2), (4) and (9).
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. **IF THE VALVE DOES NOT OPEN** (pressure remains low), check the adjustment of Flow Stabilizer (5), if so equipped. **SEE MODEL 26 INSTRUCTIONS**.
7. **IF THE VALVE BEGINS TO OSCILLATE OR HUNT:**
   - Bleed air from Main Valve bonnet. **SEE 106/206-PG 'INSTALLATION'.**
   - Adjust Flow Stabilizer (5), if so equipped. **SEE MODEL 26 INSTRUCTIONS.**

SERVICE SUGGESTIONS:

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

IF THE VALVE FAILS TO CLOSE:

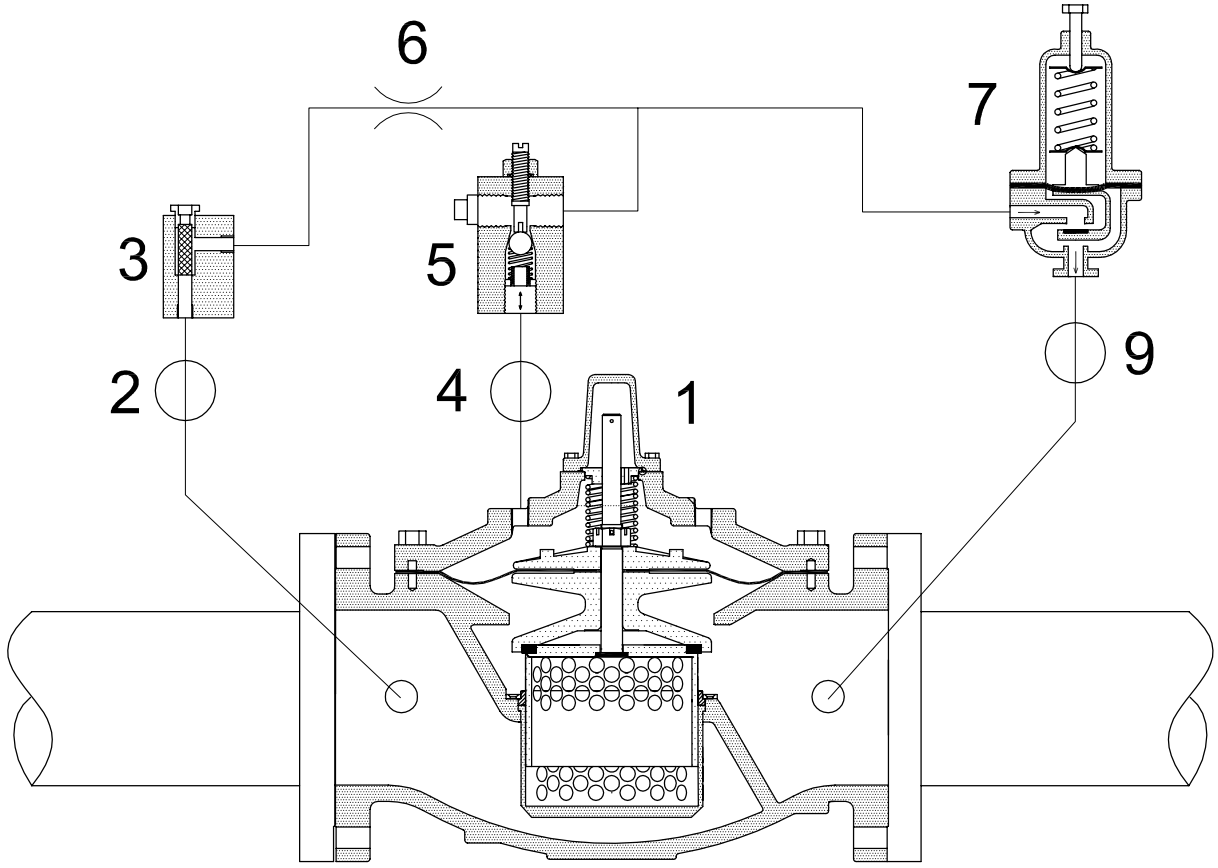
Close Isolating Valve (9). If the Main Valve closes, Pilot (7) is defective or is set too high. If the valve does not close, close Isolating Valve (2). Remove the copper tube between Strainer (3) and Flow Stabilizer (5), if so equipped. There should be some flow from Flow Stabilizer (5) but the flow should stop. If there is continuous flow from the Flow Stabilizer, Main Valve diaphragm is ruptured. If there is no continuous flow from the Flow Stabilizer, open Isolating Valve (2) slowly. If there is no flow, Strainer (3) is plugged.

If the Strainer is not plugged, open the pipe plug on top of the stem cap or spring casing and open isolating valve (2). There should be a flow from the bonnet signifying that there is no obstruction in the line from the inlet to the bonnet. If there is no flow, find the obstruction.

IF THE VALVE FAILS TO OPEN:

Pilot (7) set too low.
Isolating Valves (4) or (9) closed.
Flow Stabilizer (5), if so equipped, is set too low.
Operating conditions are not what the valve was designed for.

A-7553B



1. Main Valve - Model 106-PG-AC.
2. Isolating Valve.
3. Strainer - J0098A.
4. Isolating Valve.
5. Flow Stabilizer - Model 26 - 8" 106/10" 206 and smaller only.
6. Fixed Restriction - Stainless Steel - 1/16".
7. Pressure Reducing Pilot - Model 160.
9. Isolating Valve.

Pressure Reducing Valve for Cavitating Condition.

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

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Date:	Drawing:
June 1, 2002	A-7553B

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