

SINGER MODEL 106/206-PR-8761A Special Pressure Reducing Valve Schematic A-8761A

DESCRIPTION:

Model 106-/206PR-8761A 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.

This valve is specially modified to open fully under low supply pressure conditions.

NOTE: With any manufactured product there is a risk of malfunction in service, whether by operating conditions such as a plugged strainer or normal wear and tear. Singer Valve recommends regular maintenance with frequency to suit the importance to customers application. We draw attention to our warranty which limits our responsibility to defects in workmanship and materials only. See Singer Valve Inc. Warranty IOM 613 attached and forming part of this Instruction and Operating Manual.

Unless otherwise specified, the valve will be assembled for service temperatures to 180°F (80°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 (above the diaphragm), the valve closes tight. Refer to 106/206-PG 'Description of Operation'. By controlling the pressure in the bonnet, the valve can be made to open fully, close tight or open partially.

Bonnet pressure (and therefore the position of the valve) is controlled by a pilot circuit consisting of Ejector (4) 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 Ejector (4) and Altitude Pilot (5). Main Valve (1) closes. When flow is required, Pilot (7) senses a drop in downstream pressure and opens. The flow through Pilot (7) is greater than flow through the primary orifice of Ejector (4). The bonnet pressure is reduced and the valve opens to supply the demand.

Under flowing conditions Pilot (7) reacts to small changes in downstream pressure and modulates the bonnet pressure (and valve position) as required to keep the downstream pressure constant. Note that the 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.

Ejector (4) helps to open Main Valve (1) under low pressure drop conditions by creating a reduced pressure in the bonnet of the Main Valve.

Altitude Pilot (5) senses the inlet pressure of Main Valve (1). When this pressure drops to the setpoint of Pilot (5), Pilot (5) switches and vents the bonnet to atmosphere. As long as there is a minimum of 2 M pressure in the line, Main Valve (1) opens fully. Check Valve (9) prevents the Main Valve from closing as long as Altitude Pilot (5) connects the bonnet of the Main Valve to atmosphere. Main Valve (1) remains fully open even if the line pressure drops to atmospheric pressure.

When the inlet pressure of Main Valve (1) recovers above the setting of Altitude Pilot (5), Pilot (5) switches to connect the bonnet to Ejector (4) and the valve resumes operation as a pressure reducing valve.

INSTALLATION:

Refer to 106/206-PG 'Installation'.

ADJUSTING PROCEDURE:

Pressure Reducing Pilot:

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.**

Altitude Pilot:

Turning Pilot (5) Adjusting Nut clockwise increases the pressure at which the pilot opens the Main Valve fully. Turning the Adjusting Nut counterclockwise reduces the pressure at which the pilot opens the Main Valve fully. One turn of the Adjusting nut results in 0.5 M change.

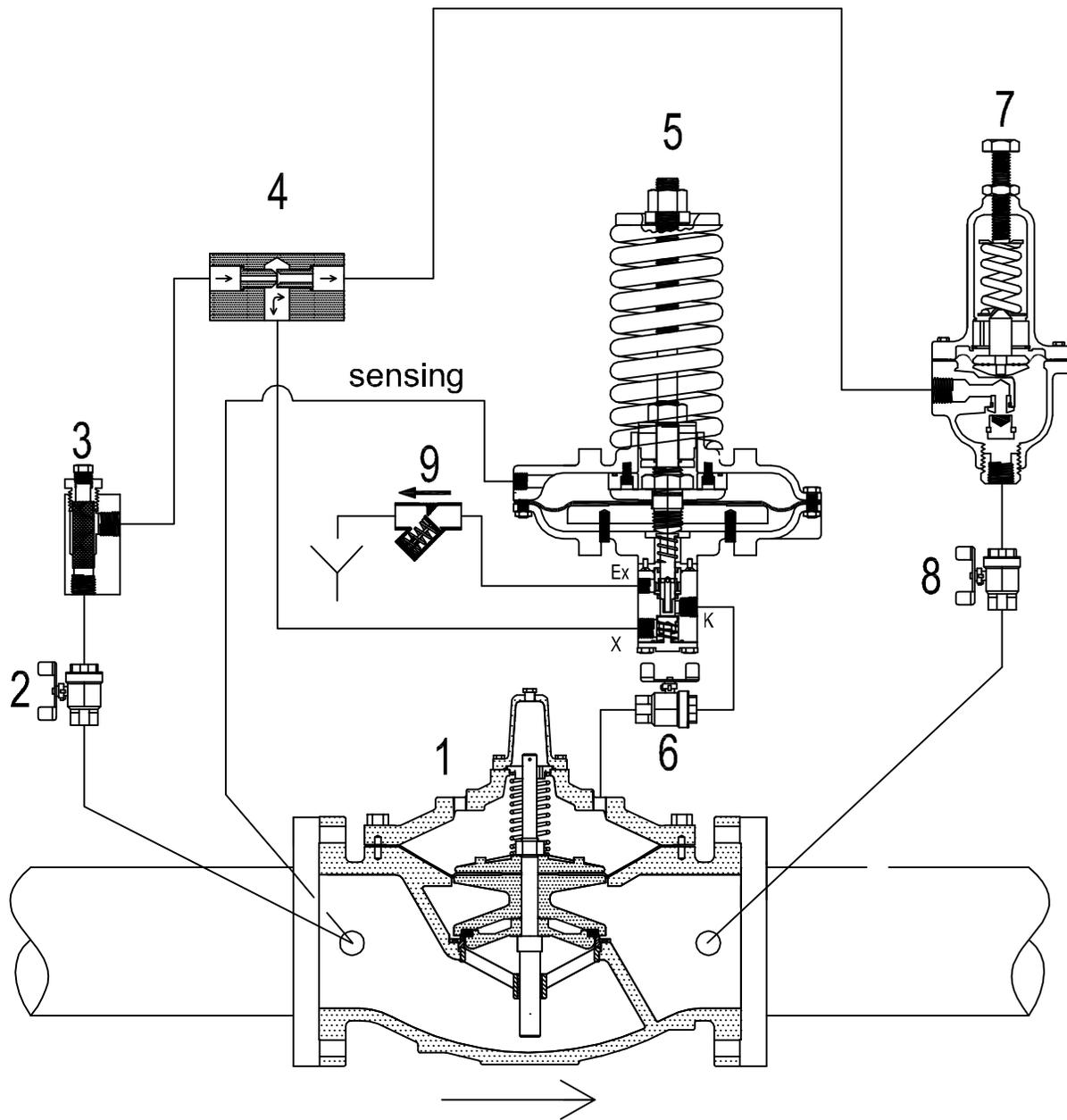
SERVICE SUGGESTIONS:

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

IF THE VALVE FAILS TO CLOSE:

Check that isolating valves (2) and (6) are open. 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 Strainer (3) and Ejector (4). If there is continuous flow from Ejector (4), Main Valve diaphragm is ruptured. If there is no flow from Ejector (4), open Isolating Valve (2) slowly. If there is no flow, Strainer (3) is plugged.



1. Main Valve - Model 106/206-PG.
2. Isolating Valve.
3. Strainer - J0098A.
4. Ejector - X141A.
5. Altitude Pilot - Model 301-4.
6. Isolating Valve.
7. Pressure Reducing Pilot - Model 160.
8. Isolating Valve.
9. Check Valve - V0122.

Pressure Reducing Valve with
Full-Opening on low inlet pressure

SINGER VALVE INC



12850-87th Avenue
Surrey, BC
Canada. V3W-3H9

Date: July 2003

Appd. By:

Drawn By: Eugene Bahia

Drawing

A-8761A

106/206-PR-8761A