SINGER VALVE
Result-Based Solutions. Globally.™

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SINGER MODEL 106/206-RPS

Pressure Relief or Sustaining Valve Schematic A-0423F
Installation, Operating and Maintenance Instructions

DESCRIPTION:

This valve is a pilot operated pressure relief or pressure Sustaining valve designed to open when the inlet pressure exceeds a predetermined setting.

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 because the area of the diaphragm is greater than the area of the seat. By controlling the bonnet pressure, the Main Valve can be made to open, close or throttle.

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

Bonnet pressure of the Main Valve is controlled with a pilot circuit consisting primarily of Closing Speed Control (5) and Relief Pilot (6). Pilot (6) senses the upstream pressure of the Main Valve. When this pressure is less than the setting of Pilot (6), Pilot (6) is closed. Pressure from the upstream side of Main Valve (1) is directed to the bonnet through Closing Speed Control (5), keeping the Main Valve closed. When the upstream pressure is greater than the setting of Pilot (6), Pilot (6) opens to allow flow. If this flow is greater than the flow coming through Closing Speed Control (5), Main Valve bonnet pressure is reduced and the Main Valve opens.

When the high pressure has been released and the inlet pressure drops to less than the setting of Pilot (6), Pilot (6) closes. This increases the bonnet pressure; the Main Valve closes. The closing speed is controlled by the setting of Closing Speed Control (5).

On back pressure service, where the valve is to maintain a predetermined upstream pressure, Pilot (6) will modulate its flow so that the bonnet pressure is varied. This, in turn, will modulate the Main Valve. If the inlet pressure rises slightly, Pilot (6) opens a little wider and causes the Main Valve to open further. When the inlet pressure decreases, Pilot (6) closes slightly and the Main Valve will also close slightly. The valve reacts to maintain the upstream pressure with varying flows.

OPTIONAL Opening Speed Control (9) controls flow out of the bonnet of the Main Valve, thereby controlling the opening speed. Controlling opening speed can help stabilize the valve at low flows.

INSTALLATION:

1. See 106/206-PG “Installation”.
2. Improved accuracy of control can be achieved by connecting the sensing of pilot (6) to header or upstream of the valve.
3. After pressurizing the valve, bleed air from the bonnet.

ADJUSTING PROCEDURE:

1. Turn adjusting screw of Relief Pilot (6) counterclockwise until spring is free.
2. Apply pressure to valve inlet. Main Valve (1) should be wide open.
3. Turn adjusting screw slowly clockwise until pressure at the Main Valve inlet reaches desired point.
4. Lock adjusting screw in place. Valve is now set to relieve at the desired pressure.

TROUBLESHOOTING AND MAINTENANCE:

Unstable operation: Bleed air from the Bonnet. Connect sensing line to header. Install Opening Speed Control.

Valve does not open: Pilot set too high. Isolating Valve(s) closed. Opening Speed Control closed. Pilot Diaphragm ruptured. Not enough pressure drop on the Main Valve.

Valve does not close: Closing Speed Control (5) closed. Strainer (3) plugged. Other obstruction in the line from inlet to bonnet. Main Valve Diaphragm ruptured. Obstruction in the Main Valve.

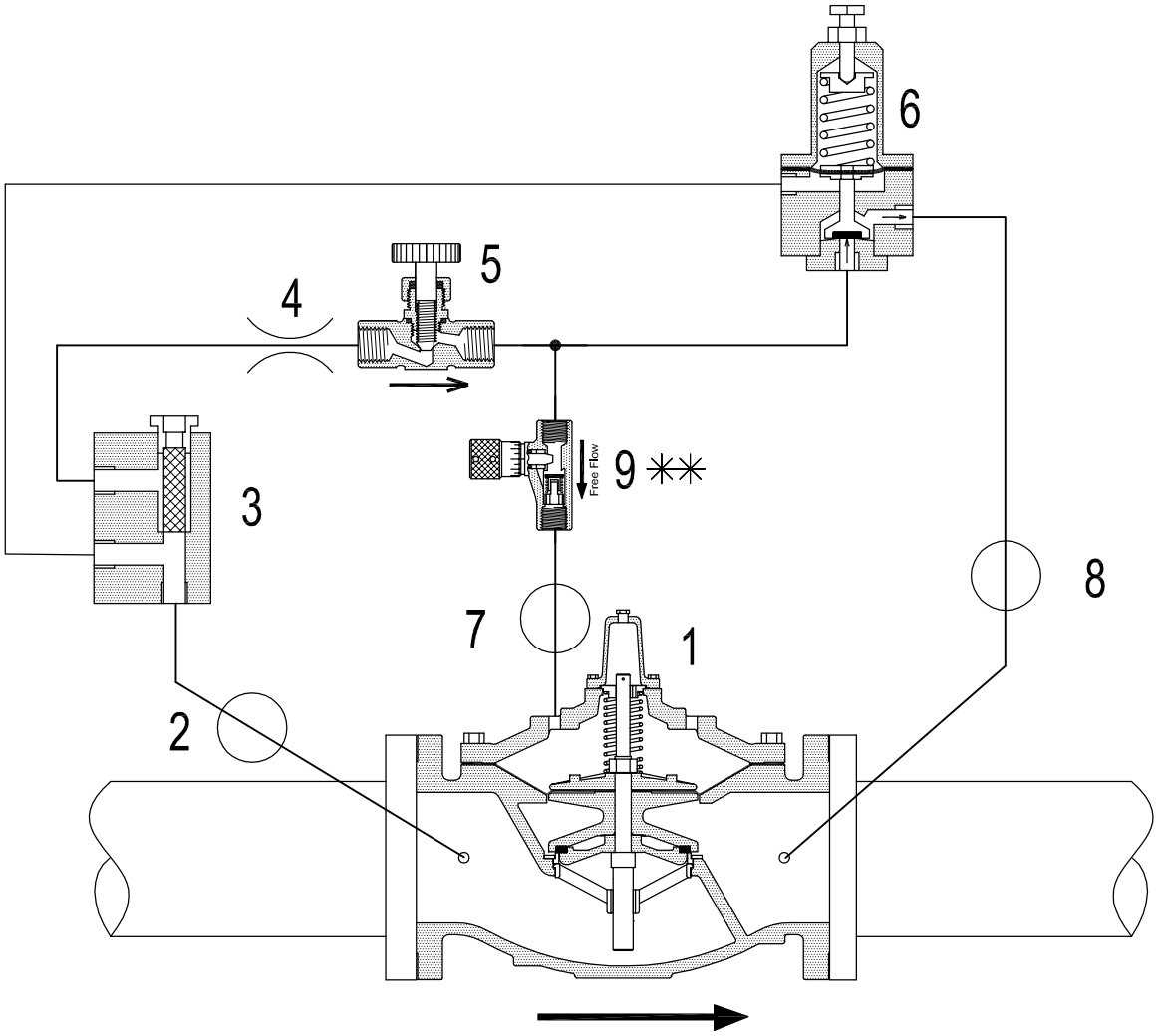
Maintenance: Clean Strainer. Frequency depends on local conditions. Clean Main Valve and Pilot as required. Lubricate the Body Seal in the Pilot. No other lubrication is required. Check condition of Main Valve and Pilot Diaphragms and other resilient parts. Replace when required.

To increase pressure setting of pilot valve, turn adjusting screw clockwise. As an approximate guide:

Range	1 turn equals
5 - 50 psi	8 psi change
10 - 80 psi	10 psi change
20 - 200 psi	25 psi change
100 - 300 psi	40 psi change
200 - 500 psi	42 psi change

To close Main Valve faster, turn Closing Speed Control (5) counterclockwise, to close Main Valve slower, turn Closing Speed Control (5) clockwise **- do not close tight.**

A-0423F



1. Main Valve - Model 106/206-PG.
2. Isolating Valve - 4" and larger ONLY.
3. Strainer - J0097A - 4" and larger only.
4. Fixed Restriction -1/8".
5. Closing Speed Control - Model 852-B.
6. Relief/Sustaining Pilot - Model 81-RP/83-RP (High Pressure).
7. Isolating Valve - 4" and larger only.
8. Isolating Valve.

✳✳ 9. Opening Speed Control - OPTIONAL Micrometer Flow Control.

Pressure Relief and Pressure Sustaining Valve.

Note : See Model RPS-8700A for UL/FM Relief Valve

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Date:	Drawing:
January 28, 1997	A-0423F

Model 106 or 206-RPS