SINGER VALVE
Result-Based Solutions. Globally.™

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SINGER MODEL RPS-8700A

UL/FM Approved Fire Pump Relief Valve Schematic A-8700A
Installation, Operating and Maintenance Instructions

DESCRIPTION:

This valve is a pilot operated pressure relief 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 Main Valve closes tight because the area of the diaphragm is greater than the area of the seat. By controlling the bonnet pressure, the valve can be made to open, close or throttle.

This valve is rated for service temperatures up to 180°F (80°C).

The bonnet pressure is controlled by 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 spring setting, Pilot (6) is closed. Pressure from the upstream side of the Main Valve is directed to the bonnet through Closing Speed Control (5), keeping the Main Valve closed. When the upstream pressure is greater than the spring setting, Pilot (6) opens to allow flow. 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 spring setting, Pilot (6) closes. This increases the bonnet pressure; the Main Valve closes. Closing speed is controlled by the setting of Closing Speed Control (5).

When the valve opens, Pilot (6) modulates 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 its upstream pressure with varying flows.

INSTALLATION:

1. See 106/206-PG “Installation”.
2. Improved accuracy of control can be achieved by connecting the sensing line of Pilot (6) to header or upstream of the valve.

ADJUSTING PROCEDURE:

1. Turn adjusting screw of Relief Pilot (6) counterclockwise until spring is free.
2. Apply pressure to Main Valve inlet. Valve should be wide open.
3. Turn adjusting screw of Pilot (6) 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.

TEST PROCEDURE:

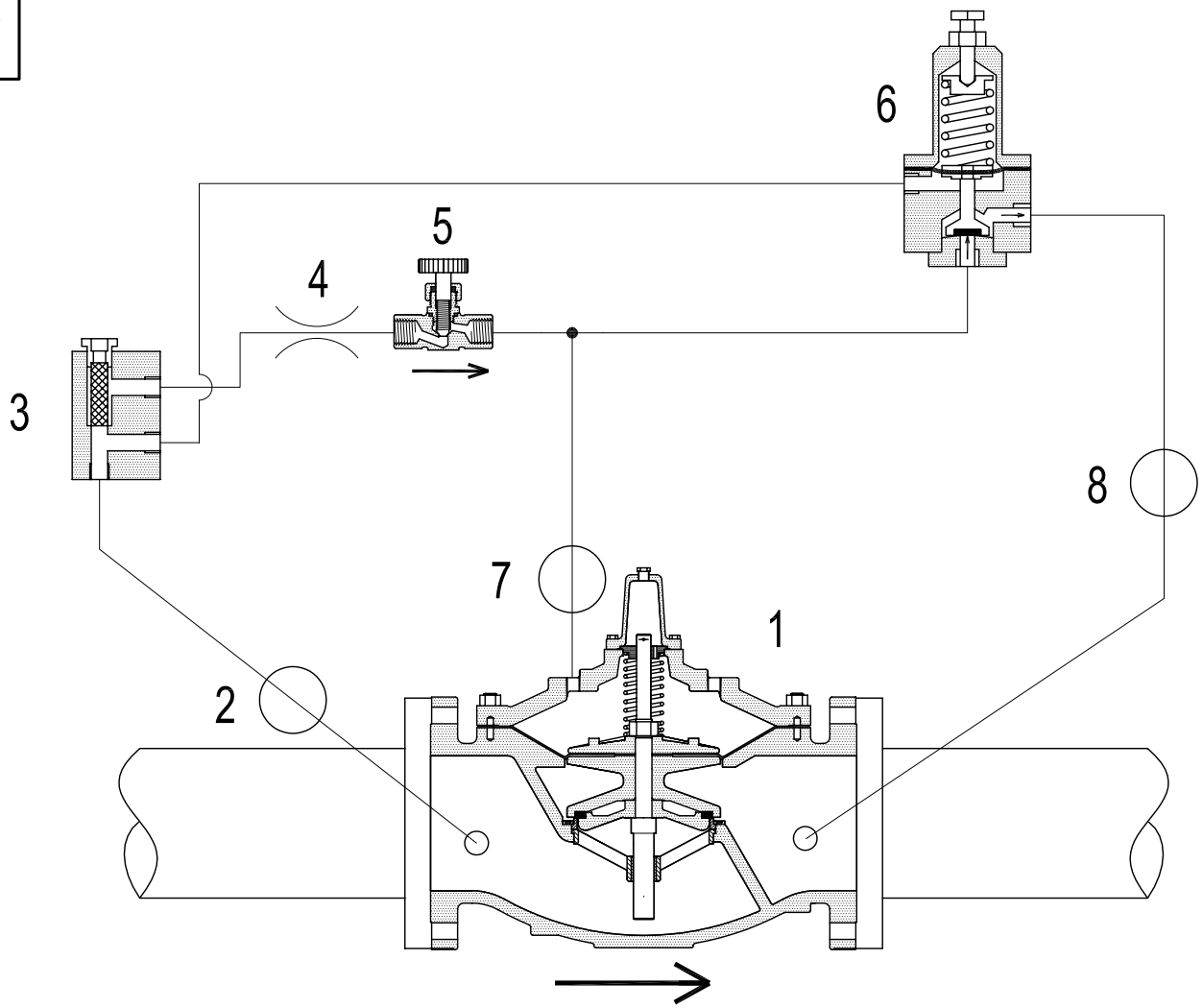
1. Main Valve should be closed tight if line pressure is less than the setting of Pilot (6).
2. Increase pressure in the upstream line gradually to beyond set point of Pilot (6). Main Valve should open slowly and modulate to maintain the set pressure.
3. Increase pressure in the upstream line suddenly to beyond set point of Relief Pilot (6). Valve should open further immediately and close slowly as pressure is restored to set point.
4. Repeat this procedure several times. Valve must function smoothly and open and close at same pressure each time.

To increase pressure setting of Pilot (6), turn adjusting screw clockwise. As an approximate guide:

Range	1 turn equals
5 - 50 psi	8 psi change
10 - 80 psi	10 psi change
30 - 200 psi	25 psi change
100 - 300 psi	40 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-8700A



1. Main Valve - Model 106-PG or A106-PG.
2. Lockable Isolating Valve - OPTIONAL .
3. Strainer - J0097A - All sizes
4. Fixed Restriction -1/8".
5. Closing Speed Control.
6. Relief Pilot - Model 81-RP (Range 30 to 200 psi or 100 to 300 psi).
7. Lockable Isolating Valve - OPTIONAL.
8. Lockable Isolating Valve - OPTIONAL

Assembly Notes:
1) Main valve must use Buna-N diaphragm.
2) Pilot diaphragm must be Buna-N
3) Main valve resilient disc and pilot inner valve must be black EPDM (Buna-N as alternate)

Pressure Rating	
ANSI 150 Flanged:	200 PSI
ANSI 300 Flanged:	300 PSI
Grooved Ends (Rigid Radius Cut):	300 PSI

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Rev: B. Added Pressure rating table. 02/04/08
Rev: A. Added assembly notes. 06/08/04

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Date: July 15, 2002	Drawing: A-8700A

Model 106-RPS-8700A