SINGER VALVE
Result-Based Solutions. Globally.

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SINGER MODEL 106 or 206-2PR-630
Pressure Management Valve – Patented
Schematic A-10496A3

DESCRIPTION:

Model 106/206-2PR-360 is a pilot operated pressure management 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 valve is equipped with two Pressure Reducing Pilots (8) and (9). Differential Pilot (7) activates Pilot (8) at a pre-determined flow to increase the downstream pressure to the set point of Pilot (8).

Note: This valve must be applied as a single feed into the zone that it feeds.

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 140°F (60°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, 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.

The bonnet pressure (and therefore the position of the Main Valve) is controlled by a pilot circuit consisting of Fixed Restriction (5) and Pressure Reducing Pilot (8) or (9).

When there is no demand (and the downstream pressure is at the setting of Pilot [9]), Pilot (9) is closed. Pressure from the inlet side of the Main Valve is directed to the bonnet through Fixed Restriction (5) and Flow Stabilizer (4). The Main Valve closes. When flow is required, Pilot (9) senses a drop in downstream pressure and opens. The flow through Pilot (9) is greater than flow through Fixed Restriction (5). Bonnet pressure is reduced and the valve opens to supply the demand. Speed of opening is determined by the setting of Flow Stabilizer (4). Refer to Model 26 instructions for details and adjustment.

Under flowing conditions, Pilot (9) reacts to small changes in downstream pressure and modulates 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 (9). When Pilot (9) closes, the Main Valve closes. When Pilot (9) opens, the Main Valve opens.

Only one of pilots (8) or (9) controls Main Valve (1). When Differential Pilot (7) is closed, Pilot (9) controls the Main Valve at lower outlet pressure. Differential Pilot (7) senses the pressure drop produced by Orifice Plate (10). When this pressure drop is greater than the set point of Pilot (7), Pilot (7) opens and activates Pilot (8) to permit the increase of the downstream pressure to the set point of Pilot (8), the higher downstream pressure. The valve switches to the higher downstream pressure positively and accurately at the set flow.

When the flow is reduced to less than the tripping flow, Differential Pilot (7) closes and removes Pilot (8) from the circuit and makes Pilot (9) the active pilot; downstream pressure is reduced to the setting of Pilot (9).

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ORDERING INFORMATION:

It is important to consider the effect of the pressure drop of Orifice Plate (10) on the overall performance of the valve under all possible operating conditions, including fire flow. Adjustable range of Pilot (7) is 1–5 psid. If Orifice Plate (10) and Pilot (7) are designed to trip at 1 psid, there will be no adjustment down from that tripping flow but pressure drop of Orifice Plate (10) only increases to 4 psid at double the tripping flow and 16 psid at four times the tripping flow.

If Orifice Plate (10) and Pilot (7) are designed for 3 psid at tripping flow to give adjustment up and down, pressure drop of Orifice Plate (10) will be 12 psid at double the tripping flow and 48 psid at four times the tripping flow.

INSTALLATION:

1. Refer to 106/206-PG 'Installation'.
2. Install Orifice Housing and Plate (10) in the inlet of the valve. Orifice Plate and Orifice screws are on the upstream side of the housing.

ADJUSTING PROCEDURE:

To properly adjust the setpoint of Pilot (7), Singer Valve highly recommends that a flow meter be available.

1. Open Isolating Valves (2A), (2B), (2C) and (2D).
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. Take a low flow (much less than tripping flow) through the valve.
6. Set reduced (downstream) pressure by turning Pilot (9) adjusting screw: To increase pressure, turn adjusting screw clockwise. - To reduce pressure, turn adjusting screw counterclockwise.
7. Take a high flow (well in excess of tripping flow) when setting Pilot (8). Repeat step 6 for Pilot (8).
8. Tripping flow can be adjusted over a limited range. Loosen the Adjusting Screw Locknut of Pilot (7) and turn the Thread seal up to avoid damaging the Thread Seal. Turn Adjusting Screw clockwise for higher tripping flow, counterclockwise for lower tripping flow. Turn thread Seal clockwise and tighten the Locknut.
9. IF THE VALVE DOES NOT OPEN (pressure remains low), check the adjustment of Flow Stabilizer (4). SEE MODEL 26 INSTRUCTIONS.
10. IF THE VALVE BEGINS TO OSCILLATE OR HUNT:

- Bleed air from Main Valve bonnet. SEE 106-PG/206-PG 'INSTALLATION'.
- Adjust Flow Stabilizer (4). SEE MODEL 26 INSTRUCTIONS.

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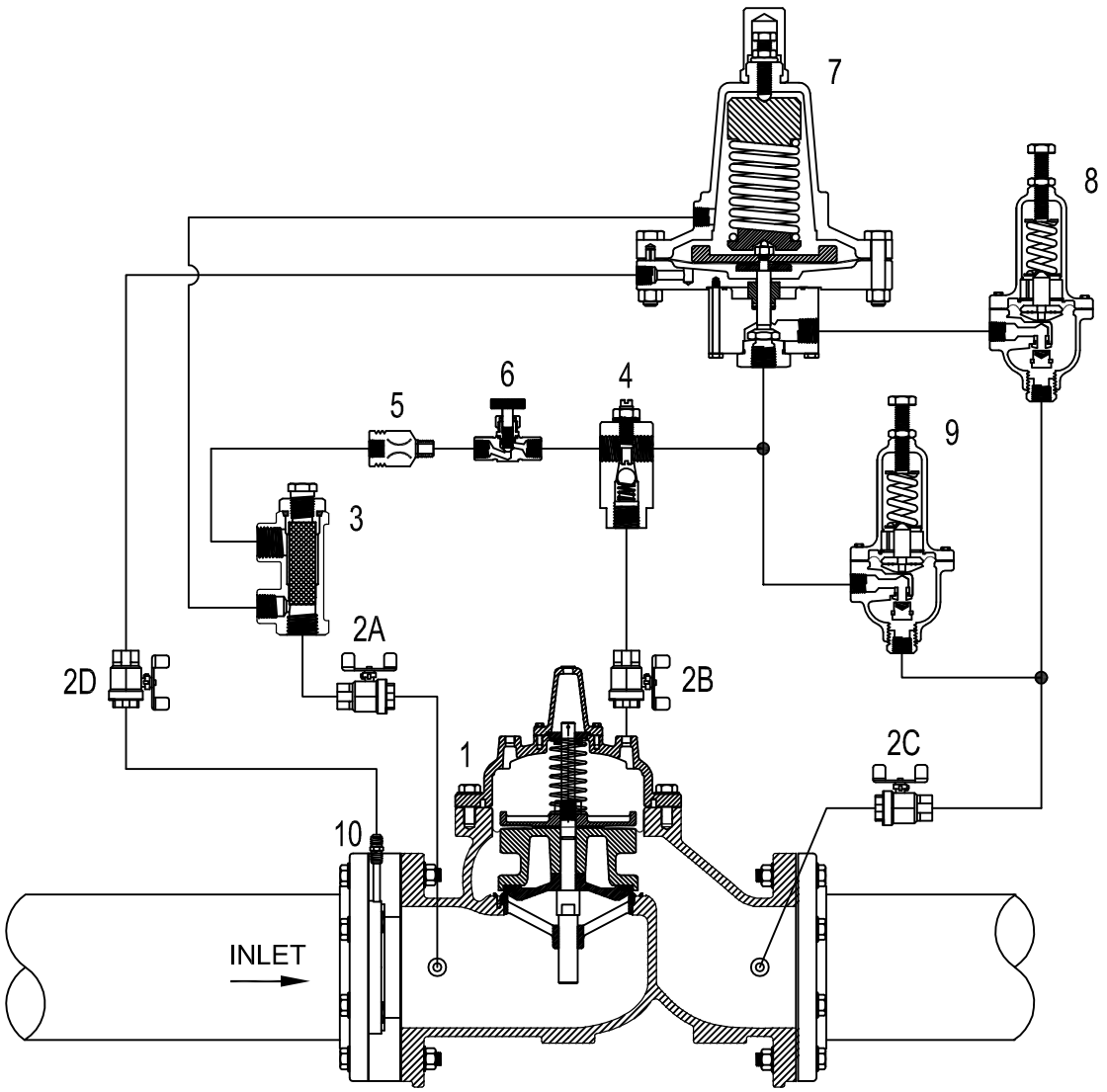

1. Main Valve - Model 106/206-PG.
2. Isolating Valves.
3. Strainer.
4. Flow Stabilizer - Model 26 Opening Speed Control.
5. Fixed Restriction.
6. Closing Speed Control.
7. Differential Pilot - Normally Closed - Model 625-RPD.
8. Pressure Reducing Pilot - High Setpoint - Model 160 c/w Pilot Bracket.
9. Pressure Reducing Pilot - Low Setpoint - Model 160.
10. Orifice Plate with Housing and Sensing Port.

Pressure Reducing Valve with
Two Setpoints, Flow Selected.

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Drawn By:	Approved By:
M.Strijack	
Date:	Drawing:
January 6, 2014	A-10496A3

Model 106/206-2PR-630