SINGER VALVE
Result-Based Solutions. Globally.™

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SINGER MODEL 106/206-RPS-C

Pressure Sustaining and Check Valve
Installation, Operating and Maintenance Instructions
½" - 6" 106/ 4" - 8" 206 Schematic A-0425D
8" 106/10" 206 & Larger Schematic A-0425D1

DESCRIPTION:

Model 106/206-RPS-C is a pilot operated pressure sustaining valve designed to open when the inlet pressure exceeds a predetermined setting. When required, the valve modulates to keep the inlet pressure from dropping below the setting. If pressure reversal occurs, the valve closes to prevent reverse flow.

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, the Main Valve closes tight because the area of the diaphragm is greater than the area of the seat. Pressure above the diaphragm determines the position of the Main Valve - whether it be open, closed or in intermediate position.

The bonnet pressure is controlled with a pilot circuit consisting primarily of Closing Speed Control (5) and Relief/Sustaining 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. Upstream pressure 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. As this flow is greater than the flow coming through Closing Speed Control (5), pressure in the bonnet of the Main Valve is reduced, causing the Main Valve to open.

On back pressure service, where the valve is to maintain a constant inlet 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 more, allowing the Main Valve to open further. If the inlet pressure decreases, Pilot (6) closes slightly and the Main Valve closes slightly. The upstream pressure is maintained with varying flows.

If pressure reversal occurs, Check Valve (10) allows the higher pressure into the bonnet and Check Valve (9) keeps the high pressure in the bonnet to close the valve.

INSTALLATION:

1. See 106/206-PG "Installation".
2. Model 106/206-RPS-C is normally factory assembled so that Pilot (6) senses the pressure directly at the inlet of the Main Valve. At high flows the valve will provide better accuracy of control if the sensing line of Pilot (6) is connected to the header or piping ahead of the Main Valve.
3. Pressurize the valve slowly and bleed air from the bonnet of the Main Valve. See 106/206-PG Instructions.

ADJUSTING PROCEDURE:

1. Set Closing Speed Control (5) half to one turn open.
2. Slowly open main inlet stop valve wide.

The following methods are suggested to set pilot valve; use the most convenient method:

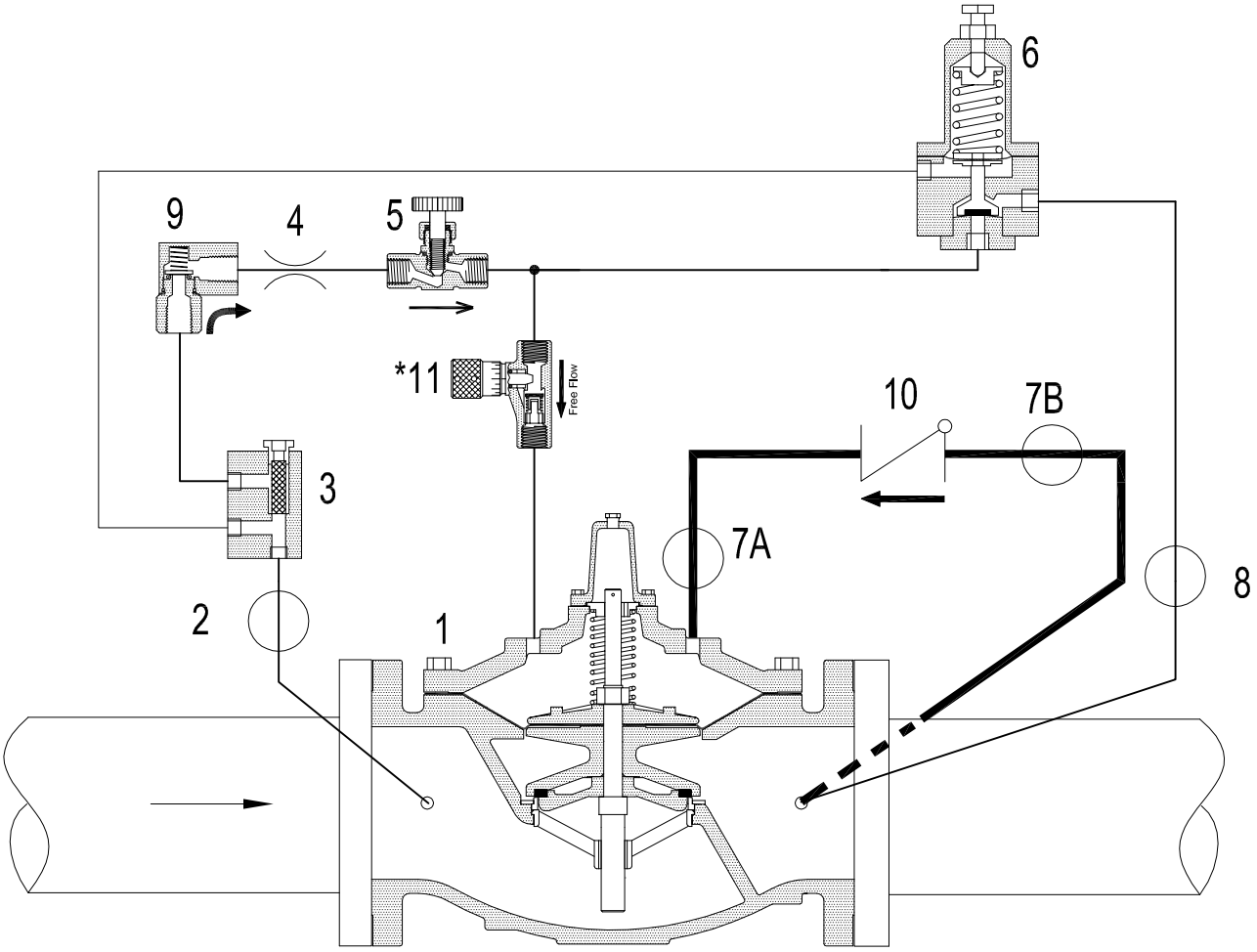
A. Turn adjusting screw on Pilot (6) clockwise until it stops. Establish desired pressure at valve inlet. Turn adjusting screw slowly counterclockwise until valve begins to open. Valve is now set to relieve at the desired pressure. Lock adjusting screw in place.

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

TEST PROCEDURES:

1. Main Valve should be closed tight if inlet pressure of Main Valve (1) is less than the setting of Pilot (6).
2. Increase pressure in the upstream line gradually past the set point of Pilot (6). Valve should open slowly and modulate to maintain the set pressure.
3. Increase pressure in the upstream line suddenly past the set point of 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, opening and closing at the same pressure each time.

A-0425D1



1. Main Valve - Model 106/206-PG.
2. Isolating Valve.
3. Strainer - 40 mesh - J0097A.
4. Fixed Restriction.
5. Closing Speed Control - Model 852-B.
6. Relief/Sustaining Pilot - Model 81-RP.

7A. Isolating Valve.

7B. Isolating Valve - for Check valve piping.

8. Isolating Valve.
9. Check Valve - Model 10.
10. Swing Check Valve.

* 11. OPTIONAL Opening speed control.

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Drawn By:	Approved By:
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Date:	Drawing:
April 26, 1999	A-0425D1

Model 106 or 206-RPS-C

Pressure Sustaining and Check Valve.
Sizes 8" 106 / 10" 206 and larger.