SINGER VALVE
Result-Based Solutions. Globally.™

12850-87th Avenue
Surrey, BC. Canada. V3W 3H9
Ph: 604-594-5404
Fx: 604-594-8845
www.singervalve.com

SINGER MODEL 106/206-BPC-R

Pump Control and Pressure Sustaining Valve Schematic A-7453A
Installation, Operating and Maintenance Instructions

DESCRIPTION:

Model 106/206-BPC-R is designed for installation in the outlet of pumps to prevent starting and stopping surges, and to protect the pump and supply from damage caused by over pumping by acting as a back pressure valve.

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

DESCRIPTION OF OPERATION:

For operation of the main valve (106/206-PG), refer to 106/206-PG "Operation".

The pump is started against a closed valve. Solenoid Valve (8) is energized and opens. This connects the sensing chamber of Pilot (9) to the inlet of Main Valve (1). If upstream pressure is above the setpoint of Pressure Sustaining Pilot (9), the valve opens. Opening speed is determined by the setting of the Opening Speed Control (6).

If the upstream pressure lowers to the setting of the Pressure Sustaining Pilot (9), the pilot modulates the Main Valve to maintain the upstream at the required minimum setting.

If the upstream pressure lowers slightly below the setpoint, Pressure Sustaining Pilot (9) closes slightly. High pressure from the upstream of the Main Valve causes the Main Valve to close further.

If the upstream pressure rises above the set point, Pressure Sustaining Pilot (9) opens and allows the Main Valve to open until the inlet pressure starts falling.

On shutdown, Solenoid Valve (8) is de-energized to close Pilot (9) but the pump continues to run. High pressure from the upstream closes the Main Valve. Closing speed is determined by the setting of Closing Speed Control (5). When the valve is almost closed, Limit Switch (12) stops the pump.

Two Check Valves (4 & 10) in the pilot circuit cause the valve to act as a check valve. A built-in, internal, drop check feature is available as an option.

INSTALLATION:

1. See 106/206-PG "Installation".
2. Refer to instructions for Solenoid Valve and Limit Switch.
3. Connect Solenoid Valve and Limit Switch to electrical system. Check Solenoid Valve name plate for correct pressure, check side of coil for correct voltage and service. Connect Limit Switch by using common and normally closed terminals. See suggested wiring diagram. Wiring must comply with local and national codes.
4. After installation pressurize the valve SLOWLY and release connections at high points to vent air. See 106/206-PG instructions for details on bleeding air from the bonnet. Failure to bleed the bonnet correctly may cause damage to the valve.

ADJUSTING PROCEDURE:

1. Close both opening and closing speed controls (5&6).
2. Start the pump.
3. Open Opening Speed Control (6) slowly until desired opening speed is achieved.
4. The valve should open until the inlet pressure drops to the setpoint of Pressure Sustaining Pilot (9).

12850-87th Avenue
Surrey, BC. Canada. V3W 3H9
Ph: 604-594-5404
Fx: 604-594-8845
www.singervalve.com

Adjusting Procedure (Cont.):

5. To perform fine adjustment of pilots, note setting of Opening Speed Control and open both speed controls fully.
6. Adjust Pressure Sustaining Pilot (9). If it is not possible to draw a large flow to adjust the Pressure Sustaining Pilot, install a pressure gauge and bleed valve in the sensing line of the back pressure pilot to simulate low inlet pressure. The pressure gauge should be installed between the bleed valve and the pilot.
7. Reset opening speed control and close Closing Speed Control (5).
8. Turn pump switch to off position. The pump should continue to run.
9. Open Closing Speed Control (5) slowly until desired closing speed is achieved.
10. When the valve is almost fully closed, Limit Switch (12) should stop the pump. If the pump does not stop or stops too early, adjust the Limit Switch to trip just before the valve is completely closed.
11. Do not close speed controls tight as this renders the valve inoperative.

NOTE: The same opening and closing speeds that are set for starting and stopping the pump also apply to Pressure Sustaining control. It is therefore important that opening and closing speeds are not set slower than is necessary to prevent surges.

SERVICE SUGGESTIONS:

In addition to service suggestions listed under Model 106/206-PG, we list the following:

TROUBLE: FAILS TO OPEN

Possible Cause../..Remedy

1. Opening Speed Control closed tight. / Open to setting required.

Solenoid Valve does not open. / Check solenoid and wiring. Isolating Valve (11) closed. / Open fully.

2. Pressure Sustaining Pilot set too high. / Decrease setting.
3. Obstruction in pilot line between bonnet and downstream. / Remove obstruction.
4. Obstruction in Main Valve. / Refer to 106/206PG instructions.

TROUBLE: FAILS TO CLOSE

1. Closing Speed Control closed tight. / Open to setting required.
2. Solenoid Valve does not close. / Check solenoid and wiring.
3. Obstruction in pilot line between upstream and bonnet. / Remove obstruction.
4. Pilot Check Valve (10) does not close. / Inspect & clean or repair as required.
5. Obstruction in Main Valve. / Refer to 106/206PG instructions.

To determine the location of the problem, close Isolating Valve (11). If the valve closes normally, the problem is caused by a leaking Check Valve (10) or pilot valve (Pressure Sustaining or Solenoid) not closing. If the valve does not close, the problem is 1 or 3 or 5 in above list or the diaphragm of the main valve is ruptured.

TROUBLE: - CONTROL SLOW (SLUGGISH)

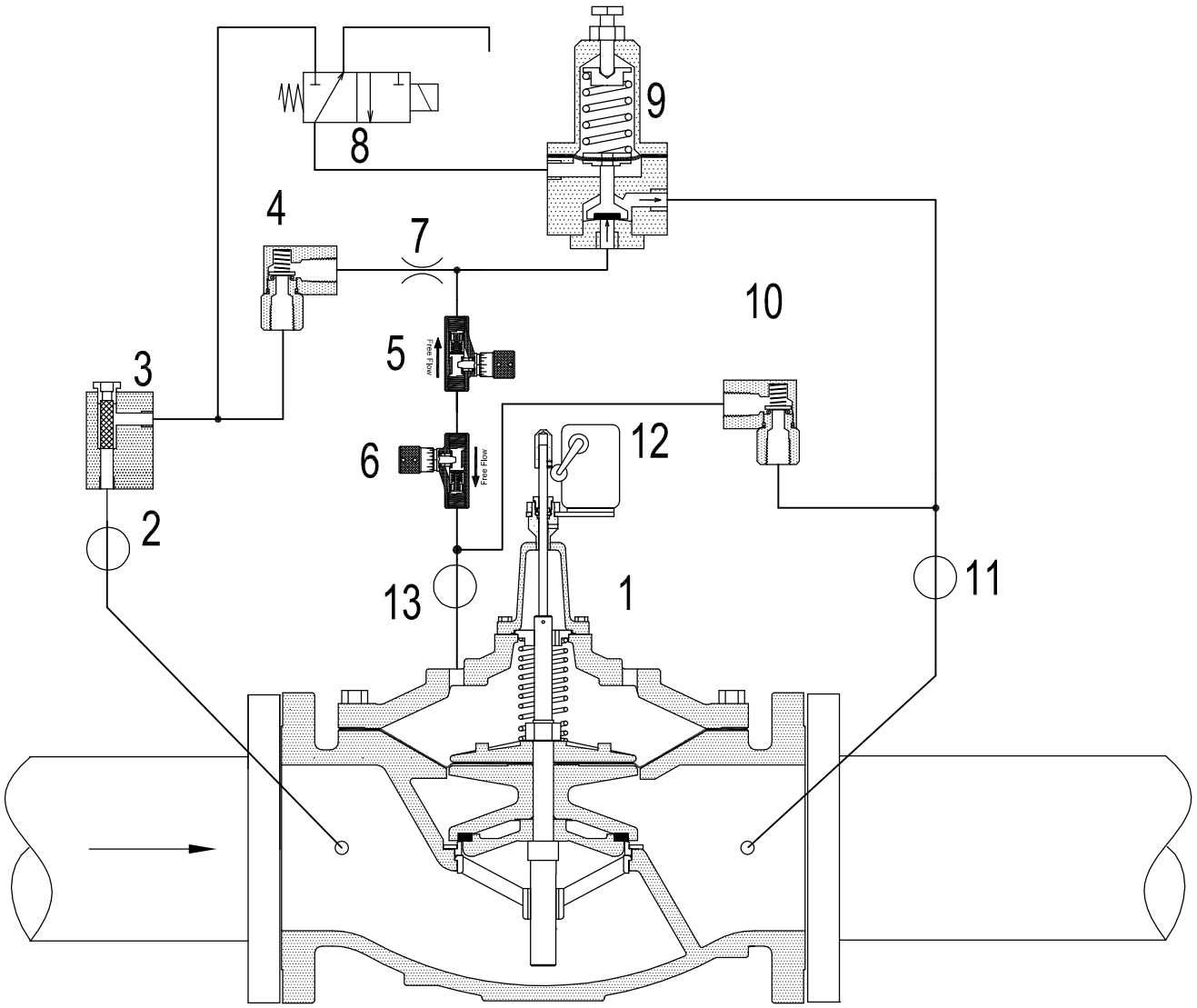
Opening and/or closing speed control set too low. / Increase setting.

Every time opening or closing speed is adjusted, it must be checked that no surges are created. See "Adjustment Procedure".

TROUBLE: - FAILS TO CHECK BACKFLOW

Pilot line check valves leak. / Clean check valves.

A-7453A



1. Main Valve - Model 106/206PG.
2. Isolating Valve.
3. Strainer - 40 mesh - J0098A.
4. Check Valve - Model 10.
5. Closing Speed Control.
6. Opening Speed Control.
7. Fixed Restriction - 1/8".
8. Solenoid Valve - Normally Closed.
9. Pressure Sustaining Pilot - Model 810RP.
10. Check Valve - Model 10.
11. Isolating Valve.
12. Limit Switch - S.P.D.T.
13. Isolating Valve .

Pump Control and Pressure Sustaining Valve.

Built-in, mechanical check (sliding inner valve or 'drop check') is available as an option .

SINGER VALVE
Result-Based Solutions. Globally.™

www.singervalve.com 12850-87th Avenue. Surrey, B.C. V3W 3H9

Drawn By:	Approved By:
Kari Oksanen	Kari Oksanen
Date:	Drawing:
October 30, 1995	A-7453A

Model 106 or 206-BPC-R