SINGER VALVE
Result-Based Solutions. Globally.™

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SINGER MODEL 106/206-PG-BPC

In-Line, Single Chamber, Pump Control Valve Schematic A-7254C
Installation, Operating and Maintenance Instructions

DESCRIPTION:

Model 106/206-PG-BPC is designed for installation in the outlet of a pump to prevent starting and stopping surges and to act as a check valve.

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

DESCRIPTION OF OPERATION:

For operation of Main Valve (1), refer to 106/206-PG 'Operation'.

The pump is started against a closed valve. On pump start-up, Solenoid Valve (6) is energized. Bonnet of Main Valve (1) is vented to downstream and Main Valve (1) starts opening. Opening speed is determined by the setting of Opening Speed Control (7).

On shut-down, Solenoid Valve (6) is de-energized while the pump continues to run. Inlet pressure of Main Valve (1) is connected to the bonnet of the Main Valve. Main Valve (1) starts closing. Closing speed is determined by the setting of Closing Speed Control (5).

While the valve closes, the pump is kept running by Limit Switch (11). When Main Valve (1) is almost closed, Limit Switch (11) shuts down the pump.

Since the flow into the system is started slowly and reduced slowly on shut-down, starting and stopping surges are eliminated on **NORMAL STARTING AND STOPPING OF THE PUMP**. This valve does not prevent stopping surges in case of power failure. A relief valve or anticipating relief valve should be considered to prevent surges due to power failure.

Two Check Valves (4 & 8) in the pilot system cause the valve to act as a check valve.

An **OPTIONAL SLIDING INNER VALVE, (DROP CHECK) FEATURE** is available to make the valve close immediately on flow stoppage. This makes the valve act like a SILENT CHECK VALVE. This feature reduces surges on power failure.

INSTALLATION:

1. See 106/206-PG 'Installation'.
2. Connect Solenoid Valve (6) and Limit Switch (11) to the electrical system as directed by the engineer. Note that the Solenoid Valve coil and Limit Switch bracket can be rotated to facilitate wiring.
3. After installation, SLOWLY pressurize the valve (either inlet or outlet) and vent air from the bonnet of the Main Valve by using the Bleed Screw (item 63 on Drawing A0707A) at the Limit Switch Adapter. Starting of the pump with air in the bonnet will result in a surge to the system.

ADJUSTING PROCEDURE:

1. Close Opening Speed Control (7) and Closing Speed Control (5).
2. Start the pump.
3. Open Opening Speed Control (7) slowly until desired opening speed is achieved.
4. Turn pump switch to the 'off' position. The pump should continue to run.
5. Open Closing Speed Control (5) slowly until desired closing speed is achieved. Note that this valve does not close at a constant speed. The valve will start closing rather slowly and increases it's closing speed as the pressure drop across the valve is increased. The closing speed should be just slow enough not to cause an objectionable surge at the end of the closing cycle. Excessively slow closing speeds should be avoided, because they make the Closing Speed Control prone to plugging from any silt or other solids in the water.
6. When the Main Valve is almost closed, Limit Switch (11) should stop the pump. If the pump does not stop, adjust the Limit Switch so that it is tripped just before the valve is completely closed (1/8” open).

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SERVICE SUGGESTIONS:

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

VALVE FAILS TO OPEN:

POSSIBLE CAUSE	/	REMEDY
1. Opening Speed Control (7) closed tight.		Open to setting required.
2. Solenoid Valve (6) does not operate.		Check wiring and solenoid valve
3. Isolating Valves (10) and / or (12) are closed.		Open fully.
4. Downstream Strainer (9) obstructed.		Clear obstruction.

VALVE FAILS TO CLOSE:

1. Closing Speed Control (5) closed tight.	Open to required setting.
2. Solenoid Valve (6) faulty.	Check wiring and solenoid valve.
3. Dirt in the pilot system.	Check (2), (3), (4), (5), (6), (8).
4. Main Valve (1) diaphragm ruptured.	Replace.
5. Obstruction in Main Valve (1).	Remove obstruction.
6. Mineral deposits on Main Valve stem.	Clean and / or use Delrin sleeves

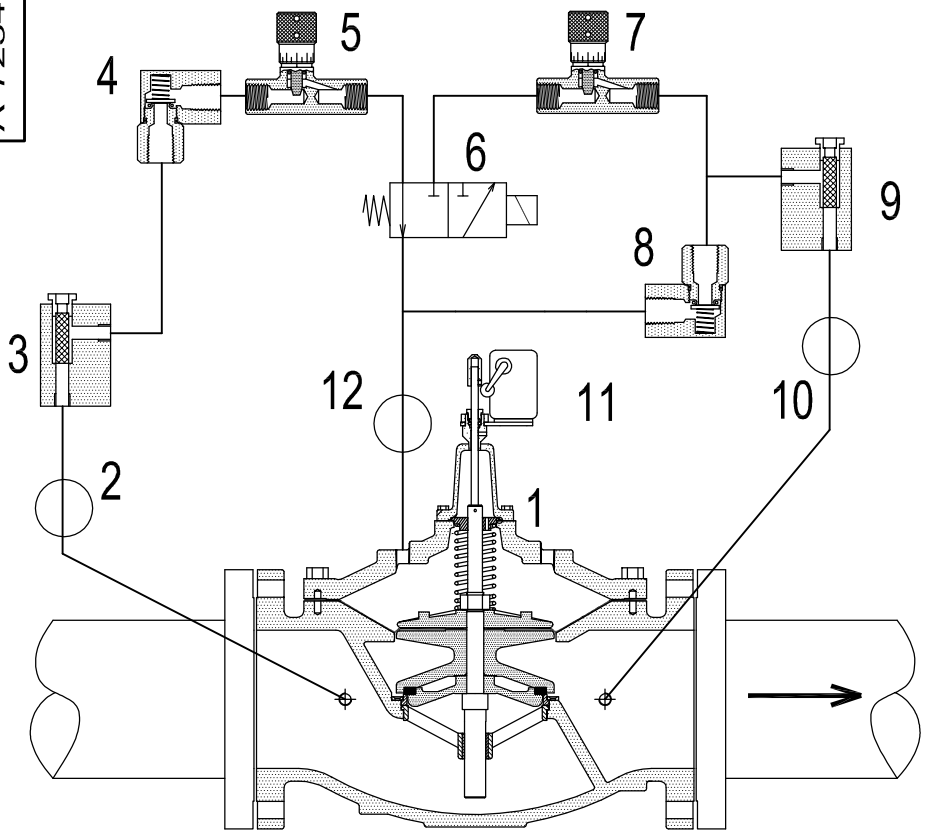
VALVE CLOSING IS TOO SLOW:

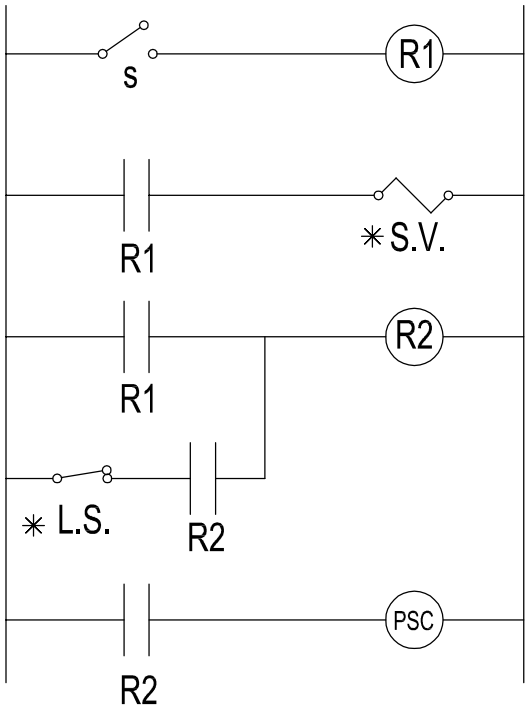
1. See Adjusting Procedure above.
2. Additional pilot components are available to improve closing.

VALVE DOES NOT OPEN FULLY:

This valve does not open fully at velocities less than about 15 ft/sec. Variations of this valve are available that do open fully and existing valves can be field modified. Contact Singer Valve or your Singer Valve representative.

A-7254C





NOTE: This is 'minimum' required diagram. Additional safety and operational functions are frequently added.

1. Main Valve - Model 106/206-PG.
2. Isolating Valve.
3. Strainer - 40 mesh - J0098A.
4. Check Valve - Model 10.
5. Closing speed Control - Micrometer Needle Valve.
6. Solenoid Valve.
7. Opening speed Control - Micrometer Needle Valve.
8. Check Valve - Model 10.
9. Strainer - 40 mesh - J0098A.
10. Isolating Valve.
11. Limit Switch - S.P.D.T.
12. Isolating Valve.

S. On-off Switch.
✳ S.V. Solenoid Valve.
R1, R2 Auxiliary Relays.
✳ L.S. Limit Switch-Connection(typical switch is S.P.D.T.)-N.C. Terminal.
PSC Pump Motor Starting Contactors.

✳ Solenoid Valve and Limit Switch are supplied on the valve.
Other items are supplied by others.

Booster Pump Control Valve.

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

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Drawn By:	Approved By:
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Date: August 9, 2004	Drawing: A-7254C

Model 106 or 206-PG-BPC