SINGER VALVE
Result-Based Solutions. Globally.

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MODEL 106/206-PG POWER OPERATED GLOBE VALVE

Sizes 1/2" to 8" (106-PG) 4" to 10" (206-PG)

Installation, Operating and Maintenance Instructions

DESCRIPTION:

This valve is the basic component used for most Singer Model 106/206 Automatic Valves. It is a hydraulically operated valve.

DESCRIPTION OF OPERATION:

The valve opens when the bonnet (area above the diaphragm) is connected to the downstream side of the valve AND a pressure drop of 5 psi (35 kPa) is available across the valve. The valve also opens when the bonnet is vented to atmosphere, regardless of pressure drop, provided that the line pressure is 5 psi (35 kPa) or more.

The valve closes when the inlet pressure is directed to the bonnet.

The valve can be made to modulate by varying the bonnet pressure between inlet pressure and outlet pressure. This is done by the pilot circuit.

In some cases the line media is unsuitable for use in the pilot system. In these circumstances external water pressure can be used in the pilot system. The external pressure must be equal to or higher than the line pressure.

If available pressure drop is less than 5 psi (35 kPa), spring lift and external water pressure must be used. (consult factory)

Unless otherwise specified, the valve is assembled with components suitable for water service up to 120° F (50° C). For other service conditions, contact your Singer Valve representative.

INSTALLATION:

Use washers under nuts when bolting valve flanges to pipe flanges to protect the Epoxy Coating.

Control valves must be installed in a horizontal pipe with the bonnet up. Smaller valves (6" and smaller) can be installed in a vertical pipe if the order states the orientation. Disassembly is difficult but not impossible in valves installed in vertical pipe.

A stable, non-failing source of pressure is necessary to operate a pilot operated control valve.

Operating fluid must be clean and free of air.

Under high velocity conditions the pressure signal, when the pick-up point is located on the main valve inlet, may be adversely affected. As an example, a relief valve will operate more effectively and control more accurately if the operating pressure and sensing pressure is connected to the header.

Ideally, six pipe diameters of straight pipe is required on the inlet of any control valve but

- Fully open **Gate Valve** can be installed on the inlet of a valve, provided it is used as an isolating valve and never used in partially open condition.
- A **Butterfly Valve** with stem horizontal can not be installed in the inlet of a control valve unless operating pressure and sensing lines are connected upstream of the butterfly valve, in a location that gives true system pressure.
- A **Butterfly Valve** with stem vertical can be installed in the inlet of a control valve as long as velocity does not exceed 15 ft/sec. The butterfly valve can not be used for throttling. If problems develop at high flows, operating pressure and possible sensing can be connected upstream of the butterfly valve, in a location that gives true system pressure.
- A control valve can be installed with no straight pipe on the inlet if the operating and sensing lines are connected to a location that gives true system pressure.

The connection point should be made at the pipe centerline to avoid air pick-up at the top of the pipe.

1. **It is possible that diaphragms may take a set after shipping and storage. It is highly recommended that Bonnet and Body Bolts or Nuts be tightened after installation but before pressurizing the valve. If a leak develops after pressurizing, de-pressurize the valve and tighten the bolts or nuts.**
2. For most convenient operation and maintenance, line isolation valves should be installed.
3. A suitable bypass should be provided to allow for servicing of the valve without interrupting the flow.

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Installation (Cont.):

4. Install pressure gauges upstream and/or downstream of valve as appropriate. This will facilitate ease of setting the pilot system.
5. A strainer with a suitable basket should be installed ahead of the valve to protect it from foreign material.
6. Sufficient space should be provided around the valve for disassembly.
7. Flush system of all foreign matter before installing the valve.
8. Check direction of flow (inlet of valve is marked OR an arrow on the side of body indicates flow direction) and install the valve accordingly.
9. VENT AIR FROM THE BONNET After installation, when the valve is pressurized, vent air from the bonnet:

a) Valves installed in horizontal piping with bonnet up (NO LIMIT SWITCH):
Sizes up to 2" where pilot connection is to the guide bushing at the center of the valve do not require venting (they vent automatically).
Sizes up to 2" with position indicator: use bleed-cock on indicator.
Sizes 2-1/2" and larger, loosen pipe plug at the center of the bonnet to bleed air. If equipped with position indicator, use bleed-cock on indicator.

b) Valves installed in horizontal piping with bonnet up (WITH LIMIT SWITCH): Refer to Drawing A0707A. Use bleed screw (63) to vent air.

c) Valves installed in vertical pipe: The pilot connection will be to the highest point on the bonnet if the orientation and flow direction were specified on the order. Some sizes vent automatically. Some sizes are provided with a small screw to facilitate bleeding (do not remove completely).

d) Valves that do not have the bleed screw and do not bleed completely from existing connections must be bled by loosening the bonnet bolts.

SERVICE SUGGESTIONS:

POSSIBLE CAUSE / REMEDY

FAILS TO OPEN

1. Insufficient inlet pressure. / Increase pressure

2. Pressure in the bonnet is not released:

- Isolating valves on pilot lines closed. - Open valves
- Pilot components not functioning. - Refer to specific instructions on pilot components
- Foreign material in pilot system. - Clear obstruction

FAILS TO CLOSE

Lack of pressure in the bonnet due to:

- Pilot components not functioning. - Refer to specific instructions on pilot components.
- Foreign material in pilot system.
- Ruptured diaphragm.
- Obstruction in the valve.
- Worn main valve disc.

PULSATIONS

- Air in the bonnet. - Vent air. Refer to "Installation (9)" above.
- Improper adjustment to pilot components. - Refer to specific instructions on pilot components.
- Valve oversized. A smaller valve in parallel may be required.

MAINTENANCE:

The SINGER Model 106/206-PG requires a minimum of maintenance. All parts are accessible for inspection and repair without removing the valve from the line.

1. Close upstream and downstream isolating gate valves.
2. Disconnect body and bonnet pilot lines.
3. Remove bonnet. If bonnet does not come free readily, it can be pried loose with a small pry-bar.
4. Remove main valve assembly for inspection. Do not remove seat ring unless inspection shows that it is damaged.
5. Replace worn or defective parts and reassemble.

NOTE REGARDING FREEZING:

This valve does not drain completely when inlet and outlet pipes are drained. Where freezing conditions are expected, one of the following must be performed:

- Drain valve and pilot system completely.
- Add suitable anti-freeze to valve and pilot system **(Non-potable water service only).**
- Provide insulation and/or heating to keep the valve from freezing.