SINGER VALVE
Result-Based Solutions. Globally.

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SINGER MODEL 106/206-PGM

Power Operated Globe Valve with Integral Back-up Operator

Sizes 3" to 8" (106-PGM) 4" to 10" (206-PGM) Drawing A0749F

Installation, Operating and Maintenance Instructions

DESCRIPTION:

This valve is a variation of the basic valve (106/206-PG) used as the main valve for most automatic control valves. The integral, secondary operating chamber can operate the primary valve, using a separate and independent pilot system.

OPERATION:

The primary valve [everything below adapter (48)] is normally open when a pressure of 5 PSI or greater is applied to the inlet and the bonnet is vented to the atmosphere. When the inlet pressure is directed to the bonnet [above the lower diaphragm (20)], the valve closes because the area of the diaphragm is greater than the area of the seat.

By varying the pressure in the bonnet with a SINGER Automatic Pilot Circuit the primary valve can be made to open, close or modulate. This varies the flow to suit any particular service such as pressure reduction, relief, level control, etc.

In some cases the line media is unsuitable (viscous, dirty, etc.) for control. Under these conditions it will be necessary to use external water pressure for controlling. External pressure must be equal to, or greater than maximum line pressure.

The secondary operating chamber and pilot system is operated by the Upper Diaphragm (21) Assembly. The bottom side of Upper Diaphragm (21) is at atmospheric pressure (vented through ***port "c"***). Connecting the inlet pressure of the valve above this diaphragm produces a high closing force, which will close the primary valve under most circumstances. This high and positive closing force is used for various functions, most often as a back-up for component failure or a requirement for fast closing. Unless otherwise specified, the valve will be assembled for service temperatures to 180°F (80°C).

STORAGE:

This valve must be stored indoors, away from direct sunlight.

INSTALLATION:

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

1. **This valve must be installed in a horizontal line with the bonnet up.**
2. **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.**
3. For most convenient operation and maintenance, manual shut off valves should be installed, in the mainline, upstream and downstream of the Singer PGM valve.

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INSTALLATION (Cont.):

4. A suitable bypass should be provided to allow for servicing of the valve without interrupting the flow.
5. Install pressure gauges upstream and/or downstream of valve as appropriate. This will facilitate setting of the pilot system(s).
6. A strainer with a suitable basket should be installed ahead of the valve to protect it from foreign material.
7. Sufficient space should be provided around the valve for disassembly.
8. Flush system of all foreign matter before installing the valve.
9. 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.
10. Bleed air from the bonnet. Use bleed screw (63).

SERVICE SUGGESTIONS:

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 bonnet due to:

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

PULSATIONS

1. Air in the bonnet. - Vent air.
2. Improper adjustment of pilot components. - Refer to specific instructions on pilot components
3. Valve oversized (improper sizing if valve operates on wide range of flow rates. - Install a smaller valve in parallel to handle low flow rates.

MAINTENANCE:

The SINGER Model 106/206-PGM 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 all pilot lines.
3. If valve is equipped with position indicator, limit switch or position transmitter, remove any parts that prevent removal of the secondary operator assembly.
4. Remove lower body capscrews (16B) or nuts and remove the secondary operating chamber (all parts above # 48) as an assembly.

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:

1. Drain valve and pilot system completely.
2. Provide insulation and/or heating to keep the valve from freezing.