

MEIJI

PUMP CONTROL VALVE

VALVE FUNCTION

- Opens at a controlled rate on pump start-up (adjustable).
- Closes at controlled rate on pump shut-off (adjustable).
- Valve and pump are electrically interlocked so that power is shut-off when the valve is in near closed position.
- Hydraulic check feature closes valve when discharge pressure exceeds inlet pressure (power failure or pump failure)

SPECIFICATION

Type: pilot control valve, Working pressure: 16/25 bar.
 Flanged to JIS 10/16K, BS4504 PN16/25, ANSI#150/300.
 Size: 32mm~400mm

PRESSURE/TEMPERATURE RATINGS

Working pressure	16/25 bar
Testing Pressure	24/37.5 bar
Working temperatre	-10°C ~ 80°C

MATERIALS

Part	Material	ASTM	BS
Body, cover	Ductile iron	A536	Gr.420/12
Seat, Disc	Staniless steel	A240 304/410	SUS304/410
Stem, Spring	Staniless steel	A240 304/316	SUS304/316
Reducing valve	Brass	B124 C37700	2874 CZ122
Bolt/nut	Staniless steel	A240 304/410	SUS304/410
Fiting	Brass	B124 C37700	2874 CZ122
Painting	Epoxy power coating		

SIZE AND FLOWER DATA

Size(mm)	Maximum Continuous (l/s)	Maximum Intermittent (l/s)	Cv Factor (l/s)
32	5.81	7.26	1.83
40	7.98	9.97	2.15
50	13.12	16.41	3.47
65	18.68	23.35	4.73
80	28.77	35.97	7.89
100	50.48	63.10	13.88
125	116.10	145.13	29.03
150	196.87	246.09	48.90
200	302.88	378.60	75.72
250	434.13	542.66	109.16
300	530.04	662.55	132.51
400	706.72	883.40	176.68

Note:

1. Maximum continuous flow based on velocity of 8.66 psi. Per second.
2. Maximum intermitent flow based on velocity of 10.82 psi. Per sesond.
3. The Cv factor of a valve is the flow rate in (l/s) at 60° F that will cause a 1psi drop in pressure.
4. The factors stated are based upon a fully open valve.
5. Cv factor can be used in the following equations to determine Flow (Q) and Pressure Drop (ΔP)
6. Pressure Drop : $\Delta P = (Q/Cv)^2$, Q: Flow Rate, Cv: Cv Flactor (l/s)

Fig. 1021
PN16/20/25
DN 32-400



VALVE DESCRIPTION

1. Pump Control Valve eliminates damaging water surges (water hammer) caused when pump starts up and shuts off.
2. The electrically activated valves gradually opens when pump starts up, and slowly closes before the pump is switched off.
3. The valve also operates as a slow control check valve, preventing reverse flow and water hammer when power failure.
4. The valve is a kind of check valve intended for installation at outlets of pumps in high-rise buildings and other water supply systems to prevent reverse flow of the medium.
5. When the pump is about to stop water supply, the valve first shuts off slowly by about 90% so as to avoid water hammer caused by the sudden shut down of the pump.
6. When the pump comes to a complete stop, the valves then shuts off completely so as to prevent the reverse flow of water pumped out.
7. This can effectively protect the pump and avoid the reverse rotation caused by the impact of reverse flow.
8. This product is an indispensable protective device at outlets of pumps. It has a streamlined design, can realize precise turning on/off through guidance and is controlled by the solenoid valves.
9. Furthermore, our pump control valves is safe, reliable, effectively avoids water hammer, boasts a long service life and is easy to install and maintain.

FUNCTIONAL DESCRIPTION

2 - Ways solenoid on/off Function (Energize to Open Valve)

The control circuit is equipped with a 2-way direct acting solenoid which controls the position of the main valve

OPENING: When the solenoid is energized ports connected is blocked. Main valve cover pressure is vented. The main valve opens.

OPENING SPEED CONTROL: An adjustable flow control adjacent the valve cover port, determines the opening speed of the main valve. It allows free flow into the cover and restricted flow out of the cover, clockwise for slower opening. Complete closure prevent the main valve from opening.

CLOSING: When the solenoid is de-energized ports connected is blocked. The main valve cover is pressured. The main valve closes.

CLOSING SPEED CONTROL: An adjustable needle valve in the control circuit supply line determines the closing speed of the main valve. Counterclockwise adjustmnt for faster closing, clockwise for slower closing. Complete closure prevents the main valve from closing.

Limit switch:

The switch assembly consists of a Single Pole Double Throw Switch, a stem attached to the main valve stem and an adjustable collar. The adjustable collar is positioned on the stem to come in contact with the limit switch roller as the main valve opens or closes, actuating the limit switch.

On opening, this actuates the "pump run" relay circuit. On shut-down/check, valve closing, this de-actuates the "pump run" relay circuit, resulting in pump shut-down.

INSTALLATION/START-UP

• INSTALLATION:

- Clear the line free of slag and other debris.
- Install the valve so that the Flow Arrow marked on the valve body/tag corresponds to flow through the line.
- Close upstream and downstream isolation valves.
- Open ball valve or isolation cocks in the control tubing. Failure to open these will prevent the valve from functioning properly.
- Connect solenoid wiring leads to the desired switching device, using safe, standard electrical procedures.
- Adjust the limit switch collar to the approximate make/break contact position.
- Wire the limit switch contacts to the proper relay connections.

• START-UP:

Start-Up of an automatic control valve requires that proper procedures be followed. Time must be allowed for the valve to react to adjustments and the system to stabilize. The objective is to bring the valve into service in a controlled manner to protect the system from damaging over-pressure.

Step 1: Pre-set pilots as noted: Opening and Closing Speed-Turn the adjustment screws on the Closing Speed and Opening Speed Controls, if the main valve is so equipped, Out, counter-clockwise, turns from full closed position.

Step 2: Energize the solenoid to check actuation and to confirm connection to power source.

Step 3: De-energize the solenoid so that initial valve filling is against the closed solenoid.

Step 4: Loosen a tube fitting or cover plug at the main valve to allow air to vent during start-up.

Step 5: Pressure the line, opening the upstream isolation valve slowly. Air is vented through the loosened fitting. Tighten the fitting when liquid begins to vent.

Step 6: Actuate the solenoid to open the main valve, checking that the main valve opens.

Step 7: The opening speed flow control allows free flow into the cover and restricted flow out of the cover of the main valve.

If valve opening is too slow, turn the adjustment screw **OUT**, counter-clockwise, increasing the rate of opening.

If valve opening is too quick, turn the adjustment screw **IN**, clockwise, decreasing the rate of opening.

Step 8: Actuate the solenoid to close the main valve, checking that the valve closes.

Step 9: The closing speed needle valve regulates fluid pressure into the main valve cover chamber, controlling the valve closing speed. If valve closing is too slow, turn the adjustment screw **OUT**, counter-clockwise, increasing the rate of closing.

Step 10: Adjust limit switch collar to final position if necessary by sliding up/down to location.

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