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I & M JBDL Series

Installation & Maintenance Instructions for JBDL Series Back Pressure Regulators

Warning: Low Flow Regulators must only be used, installed and repaired in accordance with these Installation & Maintenance Instructions. Observe all applicable public and company codes and regulations. In the event of leakage or other malfunction, call a qualified service person; continued operation may cause system failure or a general hazard. Before servicing any valve, disconnect, shut off, or bypass all pressurized fluid. Before disassembling a valve, be sure to release all spring tension.

Please read these instructions carefully!

Your LowFlow/Jordan product will provide you with long, trouble-free service if it is correctly installed and maintained. Spending a few minutes now reading these instructions can save hours of trouble and downtime later. When making repairs, use only genuine LowFlow Valve parts, available for immediate shipment from the factory.

Ideal Installation

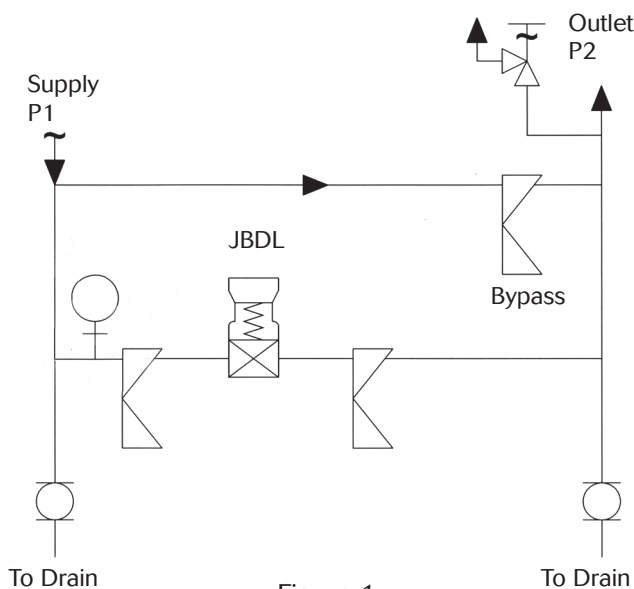


Figure 1.

Preferred Installation

Refer to Figure 1.

Caution! Installation of adequate overpressure protection is recommended to protect the regulator from overpressure and all downstream equipment from damage in the event of regulator failure.

1. An inlet block valve should always be installed.
2. If service application is continuous such that shut-down is not readily accomplished, it is recommended that an inlet block valve, outlet block valve, and a manual bypass valve be installed.
3. An inlet pressure gauge should be located approxi-

4. mately ten pipe diameters upstream, and within sight. If you have ordered your JBDL with inlet gauge option on the valve body, please note that the pressure as registered on the gauge may be slightly different than a gauge located downstream.
4. All installations should include an upstream relief device if the inlet pressure could exceed the pressure rating of any downstream equipment or the maximum inlet pressure rating of the unit.
5. Flow Direction: install so that the flow direction matches the inlet/outlet marking on the main regulator body (1).
6. For best performance, install in well drained horizontal pipe.
7. Basic regulator - regulator may be rotated around the pipe axis 360°. Recommended position is with knob assembly (3) vertical upwards.
8. Regulators are not to be buried underground.
9. For insulated piping systems, recommendation is to not insulate regulator.

Principles of Operation

1. Movement occurs as pressure variations register on the diaphragm (8). The registering pressure is the inlet, P1, or upstream pressure. The range spring (4) opposed diaphragm (8) movement. As inlet pressure rises, the diaphragm (8) pushes up against the range spring (4) opening the port. As inlet pressure decreases, the range spring (4) pushes down and closes the port.
2. A complete diaphragm (8) failure will cause the regulator to fail closed.

Start Up

Caution! Do not exceed the maximum rated pressure of the regulator if installed for a hydrostatic test. Isolate the unit if the test is above the valve rating.

1. Start with the block valves closed. A bypass valve should be used to maintain upstream pressure in the system without changing the following steps.
2. Relax the range spring (4) by turning the adjusting

- knob (3) counter-clockwise (CCW) until there is no noticeable spring tension.
3. Slowly open the inlet block valve. **Note:** if no bypass valve is installed, extra caution should be used in starting up a cold system; i.e. do everything slowly.
 4. Slowly open the outlet (downstream) block valve.
 5. Slowly rotate the regulator adjusting knob (3) clockwise (CW) until flow begins.
 6. Develop system flow to a level near its expected normal rate, and reset the regulator set point by turning the adjusting knob (3) CW to increase inlet pressure, or CCW to reduce inlet pressure.
 7. Reduce system flow to a minimum level and observe set point. Inlet pressure will rise from the set point of Step 6.

Shutdown

1. On systems with a bypass valve, and where system pressure is to be maintained as the regulator is shutdown, slowly open the bypass valve while closing the inlet (upstream) block valve. (When on bypass, the system pressure must be constantly observed and manually regulated.) **CAUTION! Do not walk away and leave a bypassed regulator unattended.**
2. If the regulator and system are to both be shut down, slowly close the inlet (upstream) block valve. Close the outlet (downstream) valve only if regulator removal is required.

Maintenance

Standard Repair Kit Parts are identified on the parts listing by an ** after the item number. LowFlow Valve recommends that all of these parts be replaced during servicing.

Warning! System Under Pressure. Prior to performing any maintenance, isolate the regulator from the system and relieve all pressure. Failure to do so could result in personal injury.

A. General

1. Maintenance procedures can be done after removal of the regulator unit from the pipeline where installed; it may be maintained in-line if it is safe to do so.
2. Always follow local or company procedures for removal, handling, cleaning, and disposal of non-reuseable parts, i.e. gaskets, etc.

B. Trim Replacement

1. Remove adjusting knob (3) completely from the

- spring housing (2).
2. If valve is removed from the line, clamp the valve body in a vise upside down. Remove the bottom cap (9), seat holder (11), and seat (10). Discard the seat (10). Place body right-side up and clamp in vise again.
3. Remove spring housing (2), spring guide (5), and range spring (4).
4. Remove diaphragm assembly parts (6), (8), (7), (12), and (13). See Figure 2.
5. Unscrew the lower diaphragm plate (7) from the upper diaphragm plate (6). Discard the old diaphragm (8) and replace with new one. Remove and replace the backup ring (16) and o-ring (15) off of the plug. Inspect remaining parts of the diaphragm assembly and replace if necessary and reassemble. **Note:** Use only parts manufactured and supplied by LowFlow Valve for these parts.
6. Place diaphragm assembly (6), (8), (7), (12), and (13) back into the body cavity (1).
7. Replace range spring (4) and spring guide (5) on top of the upper diaphragm plate (6). Replace the spring housing (2) and knob assembly (3).
8. Reorient the valve so it is upside down again.
9. Place the new soft seat (10) into the seat holder (11) and put back into the bottom of the body (1).
10. Remove the o-ring (14) from the bottom cap and install the replacement.
11. Install the bottom cap (9) back into the body cavity (1).

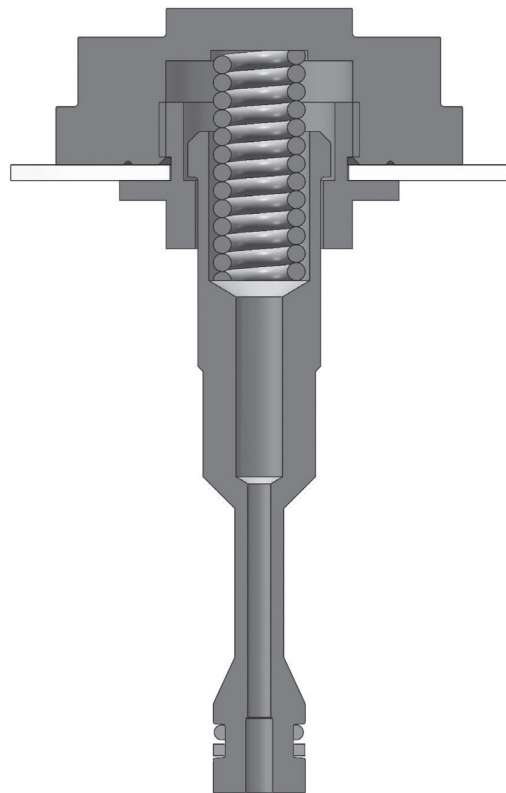


Figure 2. Diaphragm Subassembly

Troubleshooting

If You Experience Erratic Control:

- Regulator may be oversized. Oversizing causes cycling and hunting, and reduces the rangeability of the valve - make certain that your valve has been correctly sized according to your application conditions.
- Valve seat (10) may be defective - replace seat holder (11) and soft seat (10).
- Valve plug (12) may not be moving freely - inspect the diaphragm assembly.
- Weakened/broken return spring (13) - Determine if corrosion is causing plug (12) to not move freely. Replace return spring (13).

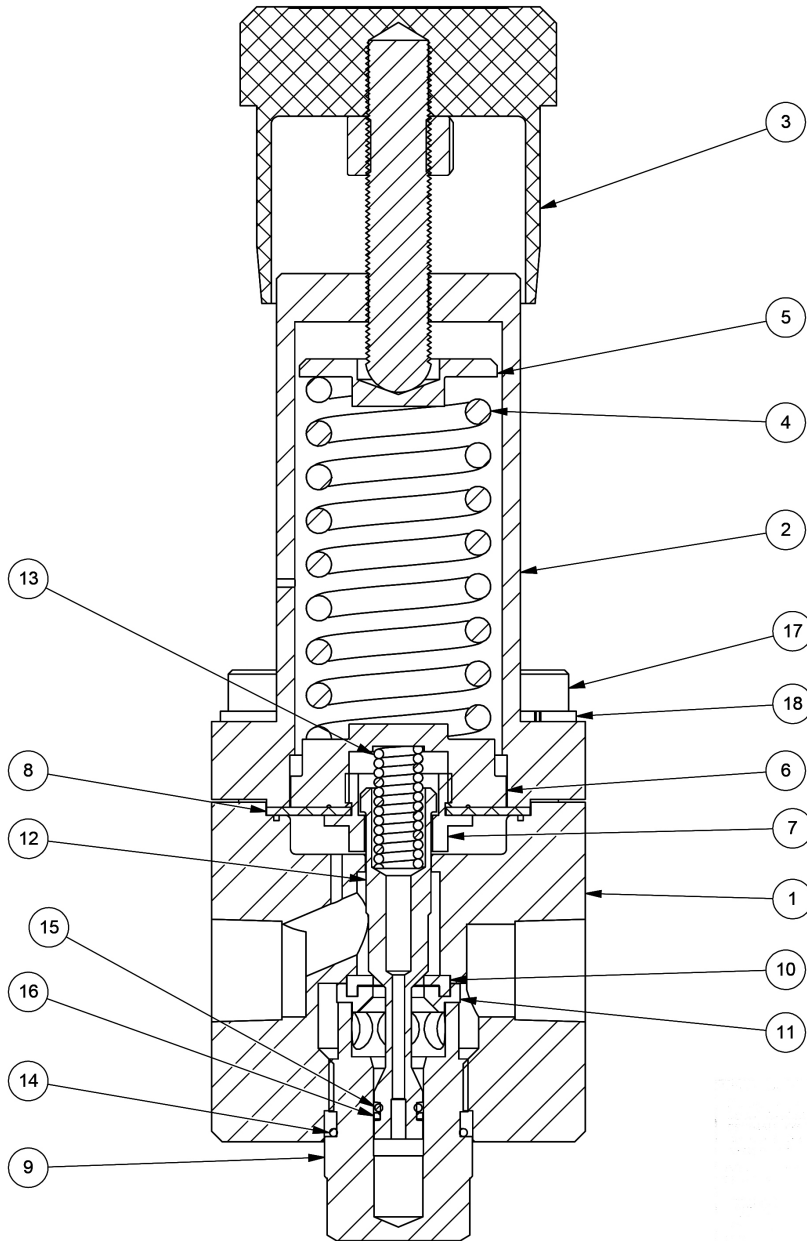
If You Experience Upstream Pressure Build-up or Inability to Maintain Regulated Pressure:

- Inspect for jamming between upper diaphragm plate (6) and spring housing (2).
- Diaphragm (8) may have failed - replace as necessary.
- Piping may be blocked or undersized.
- Range Spring (4) may be set too high or may be broken - inspect and reset or replace as necessary.
- The valve may be undersized for required flow - make certain that the valve has been sized correctly.

If the Regulator can't pass sufficient flow:

- A. Downstream blockage
 1. Check system; isolate (block flow at regulator inlet, not outlet).
 2. Relocate regulator if necessary
- B. No pressure relief protection
 1. Install safety relief valve, or rupture disc.
- C. Restricted diaphragm movement
 1. Ensure there are no obstructions in the vent hole of the spring housing (2), and check for icing on the spring.

Cross Section View



Item No.	Description	Quantity
1	Body	1
2	Housing	1
3	Knob Assembly	1
4	Spring	1
5	Spring Guide	1
6	Upper Diaphragm Plate	1
7	Lower Diaphragm Plate	1
8	Diaphragm	1
9	Bottom Cap	1
10	Seat	1
11	Seat Holder	1
12	Plug	1
13	Return Spring	1
14	O-Ring	1
15	O-Ring	1
16	Back-Up Ring	1
17	Shcs	6
18	Lock Washer	6