



3170 Wasson Road • Cincinnati, OH 45209 USA  
Phone 513-533-5600 • Fax 513-871-0105  
E-Mail: [steriflow@richardsind.com](mailto:steriflow@richardsind.com) • [www.steriflowvalve.com](http://www.steriflowvalve.com)

## I & M JSB Series

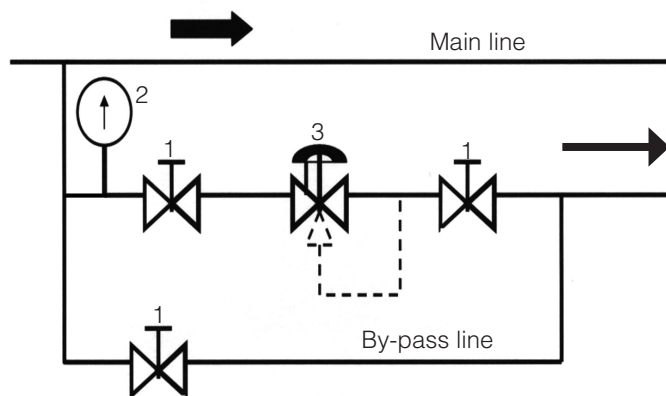
### *Installation & Maintenance Instructions for JSB Series Back Pressure Regulators*

Warning: Steriflow Valve Back Pressure 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 Steriflow Valve 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 Steriflow Valve parts, available for immediate shipment from the factory.

#### **Ideal Installation**



- 1 Shut off Valve
- 2 Pressure Gauge
- 3 JSB Series Regulator

- 3. A sanitary inlet pressure gauge, or Pressure Indicating Transmitter, should be located upstream.
- 4. Flow Direction: install so that the flow direction matches the inlet/outlet marking on the main regulator body (7).
- 5. For best performance, install in well drained horizontal pipe. For additional guidelines regarding orientation to ensure draining for liquid service and sanitization, See Figure 3 on Pg 4.
- 6. Basic regulator - (refer to Figure 2): regulator may be rotated around the pipe axis 360°. Recommended position is with knob (13) vertical upwards.
- 7. Regulators are not to be buried underground.
- 8. For insulated piping systems, recommendation is to not insulate regulator.

#### **Principles of Operation**

- 1. Movement occurs as pressure variations register on the diaphragm (16). The registering pressure is the inlet, P1, or upstream pressure. The range spring (20) opposes diaphragm (16) movement. As inlet pressure drops, the range spring (15) pushes the diaphragm (16) down, closing the port; as inlet pressure increases, the diaphragm (16) pushes up and the port opening opens.
- 2. A complete diaphragm (16) failure will cause the regulator to fail closed.

#### **Preferred Installation**

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. Sanitary diaphragm or ball valves are usually recommended.

#### **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. (Valve rating is 150 psi @ 100°F).

- 1. Start with the block valves closed. A bypass valve may be used to maintain inlet pressure in the up-

stream system without changing the following steps.

2. Relax the range spring (20) by turning the adjusting knob (13) counter clockwise (CCW) until there is no noticeable spring tension.
3. If it is a "hot" piping system, and equipped with a bypass valve, slowly open the bypass valve to pre-heat the system piping and to allow slow expansion of the piping. Closely monitor inlet (downstream) pressure via gauge to ensure no over-pressurizing. Note: if no bypass valve is installed, extra caution should be used in starting up a cold system; i.e. do everything slowly.
4. Crack open the inlet (downstream) block valve.
5. Slowly open the inlet (downstream) block valve observing the outlet (upstream) pressure gauge. Determine if the regulator is flowing.
6. Continue to slowly open the inlet (upstream) block valve until fully open.
7. Continue to slowly open the outlet (downstream) block valve, especially when the downstream piping isn't pressurized.
8. When flow is established steady enough that the outlet (upstream) block is fully open, begin to slowly close the bypass valve if installed.
9. Develop system flow to a level near its expected normal rate, and reset the regulator set point by turning the adjusting knob (13) CW to increase inlet pressure, or CCW to reduce inlet pressure.
10. Reduce system flow to a minimum level and observe set point. Inlet pressure will fall from the set point of Step 9.

---

## Start Up

---

1. On systems with a bypass valve, and where system pressure is to be maintained as the regulator is shut-down, 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.) Close the outlet (downstream) block valve. 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

---

**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 hereinafter are based upon removal of the regulator unit from the pipeline where installed.
2. Owner should refer to owner's procedures for removal, handling, cleaning and disposal of non-reuseable parts, i.e. gaskets, etc.
3. Refer to Page 4, Figure 2, for basic regulator components and Page 3, Figure 1, for diaphragm subassembly.

### B. Trim Replacement

Note: One of the features designed into the J-Pure valves is that a complete trim replacement and wet side cleaning can be done with the valve still installed, without complete disassembly. But please note the caution above. Make sure all upstream and downstream valves are closed and all pressure is relieved prior to beginning work.

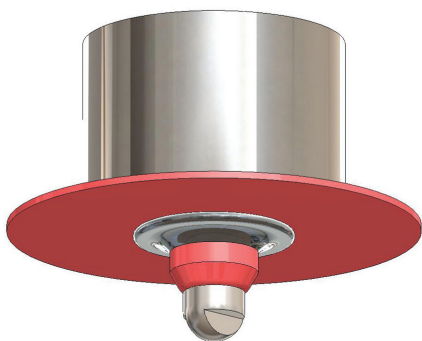
1. Remove knob assembly (13) completely out of the spring housing.
2. If valve is removed from the line, clamp the valve in a vise, clamping on the body (6) flats.
3. Remove spring housing (7).
4. Set aside range spring and spring guide.
5. Lift out diaphragm/trim assembly.
6. Inspect all parts for damage and replace if necessary. Note: Use only parts manufactured and supplied by Steriflow Valve for these parts.
7. Place diaphragm assembly in body cavity, make sure the diaphragm is centered in the body.
8. Place range spring and spring guide on diaphragm assembly.
9. Thread spring housing back onto body and tighten securely.
10. Re-install knob assembly until spring compression is felt.
11. Bench test unit for suitable operation. Note: Regulators are not tight shutoff devices. Even if pressure builds up beyond setpoint, a regulator may or may not develop bubble tight shutoff.
12. Pressurize with air and spray liquid leak detector around body (7) and spring chamber (6) to test for leakage. Ensure that an inlet pressure is maintained during this leak test of at least mid-range spring level: i.e. 50-125 psig (3,44 - 8,66 barg) range spring, 90 psig (6,2 barg) test pressure minimum.

### C. Diaphragm Replacement

Caution! To prevent damage to body, use soft jaws when placing the body in a vise. Position so that vise closes over the flats on lower end of body.

1. Rotate the knob CCW until the knob assembly (13) comes out of the spring housing (6).

2. Place the valve body (7) in a vise clamping on the flats on the bottom of the body.
3. Remove spring housing (6) by grasping the flats with a wrench and turning (CCW). Upon removal, the range spring (2), diaphragm assembly (11, 16, 18), and the spring seat (12) will be visible.
4. Remove the diaphragm assembly, range spring (2), and the spring seat (12).
5. Disassemble the diaphragm subassembly (11, 16, 18) (See Figure 1).
6. Clean all reusable parts according to owner's procedures.
7. Inspect and replace any necessary parts. NOTE: Use only parts manufactured and supplied by Steri-flow Valve for these products.
8. Reassemble diaphragm assembly (11, 16, 18) by placing the diaphragm (16) and upper diaphragm plate (11) over the threads of the stem, tip, seat and lower diaphragm plate. Tighten the assembly until the diaphragm just starts to deform. Holding the upper diaphragm plate (11) in a vise.
9. Set diaphragm/trim assembly in body bore, make sure it is centered.
10. Place range spring and spring guide on top of diaphragm assembly.
11. Thread spring housing onto body. Tighten the spring housing to the following torque value: all sizes 65-70 ft-lbs (88-95 Nm). Remove from vise.
12. Replace the adjusting screw assembly (13) into the spring housing (6) until range spring tension is felt.
13. Pressurize with air and spray liquid leak detector around body (7) and spring chamber (6) to test for leakage. Ensure that an outlet pressure is maintained during this leak test of at least mid-range spring level. i.e. 50-125 psig (3,44 - 9,6 bar) range spring, 90 psig (6,2 bart) test pressure minimum.



**Figure 1: Diaphragm Subassembly**

## Troubleshooting

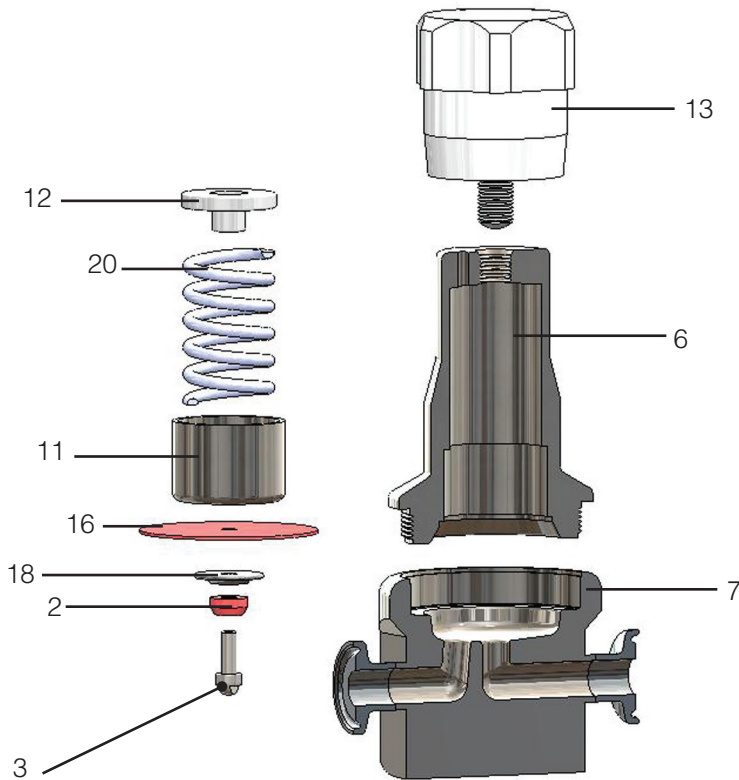
### 1. Erratic Operation; Chattering

- A. Oversize regulator; inadequate rangeability
  1. Check actuator flow conditions, re-size regulator for minimum and maximum flow.
  2. Increase flow rate.
  3. Decrease regulator pressure drop; decrease inlet pressure by placing a throttling orifice in inlet piping.
  4. Install next step higher range spring. Before replacing regulator, contact factory
- B. Worn poppet; inadequate guiding
  1. Replace trim (possible body replacement)
- C. Weakened/broken return spring.
  1. Determine if corrosion is causing. Replace return spring.

### 2. Regulator can't pass sufficient flow

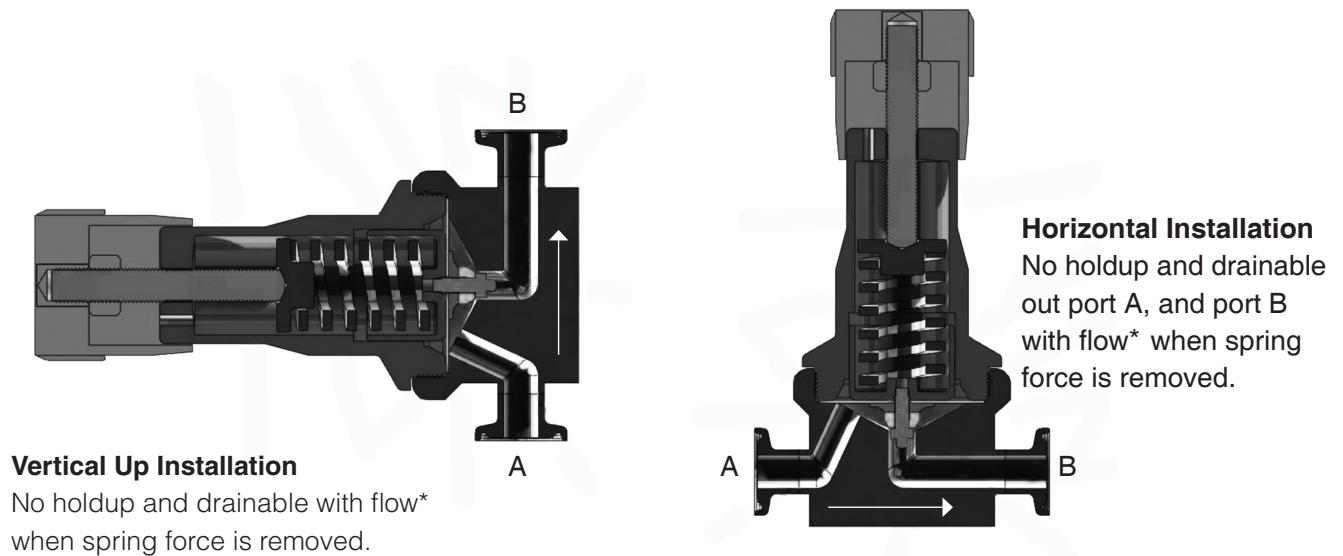
- A. Regulator not closing tightly
  1. Inspect the seat of the plug sub-assembly, replace if worn.
- B. Downstream blockage
  1. Check system; isolate (block flow at regulator inlet - not outlet.
  2. Relocate regulator if necessary
- C. Restricted diaphragm movement
  1. Ensure no moisture in spring chamber at temperature below free point.
- D. Regulator is undersized. Recheck sizing and conditions.

## Cross Section View



Item No.	Description	Quantity
2	Seat	1
3	Seat Tip	1
6	Spring Housing	1
7	Body	1
11	Upper Diaphragm Plate	1
12	Spring Seat	1
13	Adjusting Knob	1
16	Diaphragm	1
18	Lower Diaphragm Plate	1
20	Range Spring	1

**Figure 2: Basic Regulator Components**



**Figure 3: Orientation for Drainability and Sanitization**

### \*Notes

1. For sanitization routines, all spring force should be removed.
2. CIP, Rinse liquids, Clean Steam and drying air must flow from A to B in order to open the valve. With spring force removed, very little pressure is needed to move the diaphragm and plug upward, allowing full velocity flow.