



LOWFLOW

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I & M JRHL Series

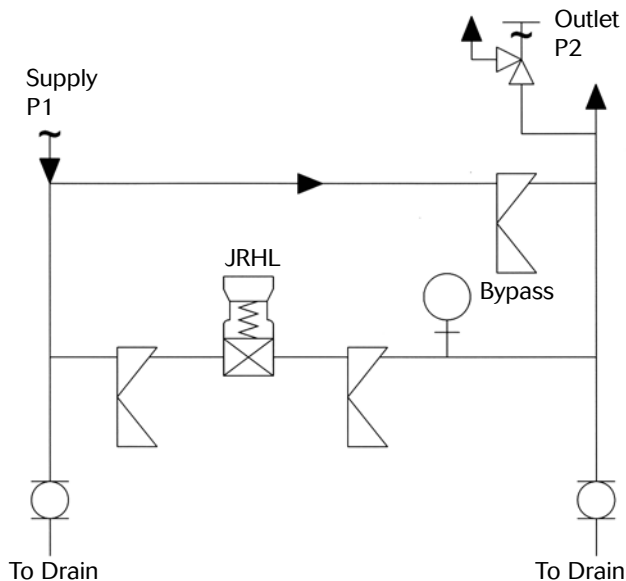
Installation & Maintenance Instructions for JRHL Series Pressure Reducing Valves

Warning: Lowflow 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 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



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. Diaphragm or ball valves are usually recommended.
3. An outlet pressure gauge should be located approxi-

mately ten pipe diameters downstream, and within sight. If you have ordered your JRHL with an outlet gauge option on the valve outlet, please note that the outlet pressure as registered on the gauge may be slightly higher than a gauge located x diameters downstream, with the difference typically no more than 0.5psig.

4. All installations should include a downstream relief device if the inlet pressure could exceed the pressure rating of any downstream equipment or the maximum outlet rating of the unit.
5. Flow Direction: install so that the flow direction matches the inlet/outlet marking on the main regulator body (15).
6. For best performance, install in well drained horizontal pipe.
7. Regulator may be rotated around the pipe axis 360°. Recommended position is with the knob (9) 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 (3). The registering pressure is the outlet, P2, or downstream pressure. The range spring (14) opposes diaphragm (3) movement. As outlet pressure decreases, the range spring (14) pushed the diaphragm (3) down, opening the port. As outlet pressure increases, the diaphragm (3) pushes up and the port opening closes.
2. A complete diaphragm (3) failure will cause the regulator to fail open.

Start Up

Caution! Don't 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 250 psi @ 100°F).

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

downstream system without changing the following steps.

2. Relax the range spring (14) by turning the adjusting knob assembly (9) 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 off the piping. Closely monitor outlet (downstream) pressure via gauge to ensure no over-pressurizing occurs. 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 outlet (downstream) block valve.
5. Slowly open the inlet (upstream) block valve, observing the outlet (downstream) pressure gauge. Determine if the regulator is flowing. If not, slowly rotate the regulator adjusting knob assembly (9) clockwise (CW) until flow begins.
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. If the outlet (downstream) pressure exceeds the desired pressure, close the block valve and go to Step 2, then return to Step 4.
8. When flow is established steady enough that the outlet (downstream) 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 assembly (9) CW to increase outlet pressure, or CCW to reduce outlet pressure.
10. Reduce system flow to a minimum level and observe set point. Outlet pressure will rise from the set point of Step 9.

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.) 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 shutdown, 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 assembly with bill of materials for basic regulator and Figure 1 for diaphragm/trim subassembly

B. Trim Replacement

Note: Complete trim and diaphragm replacement as well as wet side cleaning can be done with the valve still installed, however removal is recommended. Additionally, please note the cautions above. Make sure all upstream and downstream valves are closed and all pressure is relieved prior to beginning work. .

1. Remove knob assembly (9) completely from the spring housing (7).
2. Clamp the valve in a vise, upside down, securing on the spring housing (7) flats.
3. Remove bottom cap (10) by turning CCW and remove return spring (13).
4. Turn valve over and clamp the valve back in the vise, securing on the main body (15) flats.
5. Remove spring housing (7) and upper diaphragm casing (2) by removing 8-HHCS 5/16-18 x 3/4" (16) from perimeter of upper diaphragm casing (2). Remove spring guide (6) and spring (14).
6. Using soft jaw pliers on the upper diaphragm plate (4) and a flat screw driver inserted into the slot of the seat guide (12) disassemble the diaphragm/seat assembly in Fig. 1 at the LDP tied stem (1) and the seat guide (12) as indicated by the arrow.

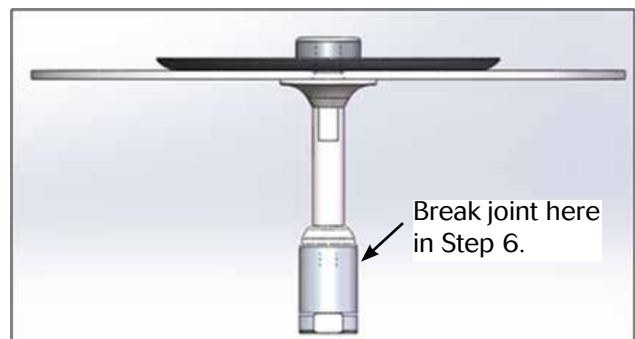


Figure 1: Diaphragm/Seat Assembly

7. Remove seat guide (12) and seat (11) from body subassembly (15).
8. Remove bottom cap gasket (5) and clean all parts to be reused according to owner's procedures.

9. Inspect all parts to be reused and replace if necessary. Note: Use only parts manufactured and supplied by Lowflow Valve for these parts.
10. Place seat guide (12) and new seat (11) back into body subassembly (15) cavity. Thread the seat guide (12) onto the LDP tied stem (1) and tighten.
11. Place new bottom cap gasket (5) into bottom of threaded body chamber.
12. Place return spring (13) into the body against diaphragm/seat assembly bottom.
13. Center bottom cap (10) onto return spring (13), and push to compress spring as you thread CW into body.
14. Tighten bottom cap (10) to the following torque value: all sizes – 20 ft-lbs (29 Nm).
15. Install spring (14) then spring guide (6) on top of upper diaphragm plate (4).
16. Place the upper diaphragm casing (2) with spring housing (7) attached over the spring (14) and spring guide (6). Align holes of upper diaphragm casing (2) with holes in body subassembly (15).
17. Secure upper diaphragm casing (2) to body subassembly (15) with 8-HHCS 5/16-18 x 3/4" (16). Tighten hex head cap screws in a star pattern to ensure even clamping pressure. Torque all bolts to 20 ft-lbs (29 Nm).
18. Install valve knob assembly (9) into spring housing (7).
19. With the valve removed from system, unit can be bench tested for suitable operation. Note: Regulators are not tight shutoff devices. Even if pressure builds up beyond set point, a regulator may or may not develop bubble tight shutoff.
20. Pressurize with air and spray liquid leak detector around the body subassembly (15), upper diaphragm casing (2), and spring housing (7) to test for leakage. Ensure that an outlet pressure is maintained during this leak test of at least mid-range spring level: i.e. 15-25 psig (1,03 – 1,72 barg) range spring, 20psig (1,38 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. Remove knob assembly (9) completely from the spring housing (7).
2. Clamp the valve in a vise, upside down, securing on the spring housing (7) flats.
3. Remove bottom cap (10) by turning CCW and remove return spring (13).
4. Turn the valve right side up and clamp the valve back in the vise, securing on the body subassembly (15) flats.
5. Remove spring housing (7) and upper diaphragm casing (2) by removing 8-HHCS 5/16-18 x 3/4" (16) from perimeter of upper diaphragm casing (2). Remove spring guide (6) and spring (14).
6. Using soft jaw pliers on the upper diaphragm plate (4) and a flat screw driver inserted into the slot of the seat guide (12) disassemble the diaphragm/seat assembly in Fig. 1 at the LDP tied stem (1) and the seat guide (12) as indicated by the arrow.
7. Remove seat guide (12) and seat (11) from body subassembly (15).
8. Remove upper diaphragm plate (4), diaphragm (3), and LDP tied stem (1) from the body subassembly (15).
9. Using soft jaw pliers on the upper diaphragm plate (4) or by holding it with a vise and using a box wrench on the flats of the LDP tied stem (1) loosen and remove the diaphragm.
10. Remove bottom cap gasket (5) and clean all parts to be reused according to owner's procedures.
11. Inspect all parts to be reused and replace if necessary. Note: Use only parts manufactured and supplied by Lowflow Valve for these parts.
12. Reassemble the upper diaphragm plate (4), the new diaphragm (3), and the LDP tied stem (1). Tighten the assembly until the diaphragm just starts to deform by holding the upper diaphragm plate (4) with soft jaw pliers or a vise and threading the LDP tied stem (1) into the upper diaphragm plate (4).
13. Place the assembly from step 12 into the top of the body subassembly (15) with the lower diaphragm plate/seat tip LDP tied stem (1) passing through the orifice of the body.
14. Place seat guide (12) and seat (11) back into main body (15) cavity. Thread the seat guide (12) onto the LDP tied stem (1) and tighten.
15. Place new bottom cap gasket (5) into bottom of threaded body chamber.
16. Place return spring (13) into the body against diaphragm/seat assembly bottom.
17. Center bottom cap (10) onto return spring (13), and push to compress spring as you thread CW into body.
18. Tighten bottom cap (10) to the following torque value: all sizes – 20 ft-lbs (29 Nm).
19. Install spring (14) then spring seat (6) on top of upper diaphragm plate (4).
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21. Secure upper diaphragm casing (2) to body subassembly (15) with 8-HHCS 5/16-18 x 3/4" (16). Tighten hex head cap screws in a star pattern to ensure even clamping pressure. Torque all bolts to 20 ft-lbs (29 Nm).
22. Install valve knob assembly (9) into spring housing (7).
23. If valve was removed from system, unit can be bench tested for suitable operation. Note: Regulators are not tight shutoff devices. Even if pressure builds up beyond set point, a regulator may or may not develop bubble tight shutoff.

24. Pressurize with air and spray liquid leak detector around the body subassembly (15), upper diaphragm casing (2), and spring housing (7) to test for leakage. Ensure that an outlet pressure is maintained during this leak test of at least mid-range spring level: i.e. 15-25 psig (1,03 – 1,72 barg) range spring, 20psig (1,38 barg) test pressure minimum.

Troubleshooting

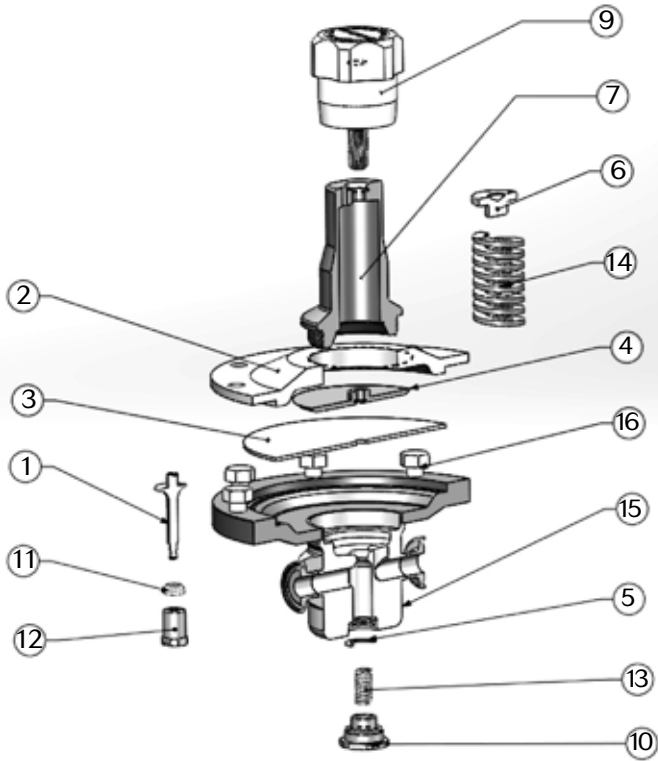
1. Erratic Operation; Chattering

- 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. No pressure relief protection
1. Install safety relief valve, or rupture disc.
- D. Restricted diaphragm movement
1. Ensure no moisture in spring chamber at temperature below freezing point.

Cross Section View



Item #	Description	Qty
1	Lower Diaphragm Plate	1
2	Upper Diaphragm Casing	1
3	Diaphragm	1
4	Upper Diaphragm Plate	1
5	Bottom Cap Gasket	1
6	Spring Seat	1
7	Spring Housing	1
9	Knob Assembly	1
10	Bottom Cap	1
11	Seat	1
12	Seat Guide	1
13	Return Spring	1
14	Spring	1
15	Body	1
16	5/16-18UNC-2B Hex Head Bolts	8

How to Order a Repair Kit

Model	Size	Material	Kit	1&2	3&4	5&6
JRHL	50	6L				

Model	
JRHL	Low Pressure Reducing Valve

Size	
050	1/2"
075	3/4"

Material	
6L	Stainless Steel 316L

Kit	
Kit	Repair Kit

1 & 2	Trim/Seat Material
1P	Cv 0.8/PEEK
1T	Cv 0.8/PTFE
1E	Cv 0.8/EPDM
2P	Cv 0.5/PEEK
2T	Cv 0.05/PTFE
2E	Cv 0.5/EPDM
ZZ	Non-Standard

3 & 4	Diaphragm Assembly
RJ	Self Relieving/Jorlon
SJ	Standard/Jorlon
ZZ	Non-Standard

5 & 6	Accessory Feature
OS	Clean for Oil Free Service
OX	Oxygen Clean