



# JORDAN VALVE

3170 Wasson Road • Cincinnati, OH 45209 USA  
Phone 513-533-5600 • Fax 513-871-0105  
info@richardsind.com • www.jordanvalve.com

## I & M Mark 57

### Installation & Maintenance Instructions for Mark 57 (1/2" to 6") Pressure Regulators

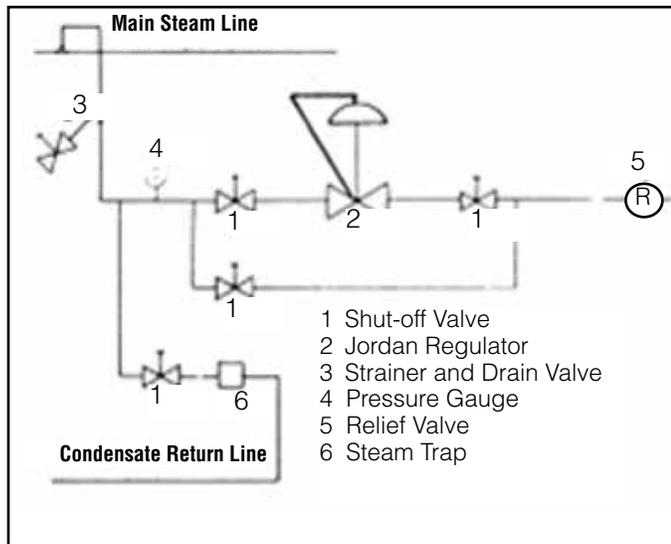
**Warning:** Jordan Valve pressure regulators must only be used, installed and repaired in accordance with these Installation & Maintenance Instructions. Observe all applicable public and company codes and regulations. In the event of leakage or other malfunction, call a qualified service person; continued 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 Jordan 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 Jordan Valve parts, available for immediate shipment from the factory.

### Ideal Installation

See page 5 for preferred mounting orientation for liquids and steam



- To protect the valve from grit, scale, thread chips and other foreign matter, ALL pipelines and piping components should be blown out and thoroughly cleaned before the installation process begins.
- Shutoff valves, pressure gauges, and by-pass piping should be installed as indicated in the diagram above to provide easier adjustment, operation and testing.
- A line strainer should be installed on the inlet side of the valve to protect it from grit, scale, and other foreign matter. A 0.033 perforated screen is usually suitable for this purpose. Line strainers are available from Jordan Valve.
- For best control, 3'0" straight sections of pipe should be installed on either side of the valve.
- In preparing threaded pipe connections, care

should be exercised to prevent pipe-sealing compound from getting into pipelines. Pipe sealing compound should be used sparingly, leaving the two end threads clean. Jordan uses, and recommends, thread sealer Teflon ribbon.

- The flow arrow on the valve body must be pointed in the direction of the flow. Ideally the valve should be installed in the highest horizontal line of piping to provide drainage for inlet and outlet piping, to prevent water hammer, and to obtain faster response.
- If possible, install a relief valve downstream from the valve. Set at 15 psi above the control point of the valve.
- In hot vapor lines, upstream and downstream piping near the valve should be insulated to minimize condensation.
- In gas service, expand the outlet piping at least one pipe size, if the control pressure (downstream) is 25 percent of the inlet pressure or less. A standard tapered expander connected to the outlet of the valve is recommended.
- Where surges are severe, a piping accumulator is recommended.
- On steam control applications, install a steam trap with sufficient capacity to drain the coil or condenser. Be sure to have a good fall to the trap, and no backpressure. Best control is maintained if the coil or condenser is kept dry.

### Start-Up

- Fully open the outlet shutoff valve.
- Slowly open the inlet shutoff valve.
- Slowly open and close the outlet shutoff valve several times. This fully strokes the valve to insure satisfactory operation.
- With the outlet shutoff valve open, slowly screw down the adjusting screw until the desired pressure is shown on the outlet pressure gauge.
- To change the controlled pressure, turn the adjusting screw clockwise to increase the pressure, counterclockwise to decrease pressure.

---

## Trouble Shooting

---

The first step in trouble-shooting a piloted back pressure regulator is to classify the action of the controlled pressure into one of the following categories:

- A. Over Pressure - Controlled pressure too high; not enough flow or no flow through valve.
- B. Under Pressure - Valve will not close or controlled pressure decreases after valve closes.
- C. Pressure Fluctuates - Controlled pressure rises and falls, will not settle out under low relief loads.

The next step is to determine what could cause the trouble. The third step is to locate and remedy the cause by the process of elimination. Make no assumptions and check the easy ones first. The guide below lists the controlled pressure action, common causes and procedure for checking each cause.

### Controlled Pressure Action OVER PRESSURE

- Valve undersized for application. Check capacity required and valve capacity.
- Line strainer screen clogged. Blow down strainer or visually check that it is clear.
- Incorrect setting on range spring. Vary the setting and check response.
- Main valve diaphragm ruptured. See section on Main Valve Maintenance.

### Controlled Pressure Action UNDER PRESSURE

- Incorrect setting on range spring. Vary the setting and check response.
- Pilot Valve or main valve seats leaking. Close inlet shut-off valve. Close outlet shut-off valve and remove loading pressure tubing. Both pilot valve and main valve are closed. Barely open inlet shut-off valve until fluid issues from pilot valve port, then close inlet valve. Flow from pilot valve port should cease. If it does not, the pilot seats are leaking. If fluid issues from main valve port, the main valve seats are leaking.
- By-pass shut-off valve leaking. During period of leakage, close inlet shut-off valve, observe pressure gauge.
- Bleed port in main valve clogged. Remove Upper Bonnet to gain access bleed port and clean bleed port. Follow instructions in section TO REMOVE MAIN VALVE DIAPHRAGM.

### Controlled PRESSURE FLUCTUATES

- Valve oversized. Check capacity required and valve capacity.

---

## Maintenance

---

**Caution: Make certain that there is no pressure in the valve before loosening any fittings or joints. The following steps are recommended:**

1. Close the inlet shutoff valve.
2. Allow pressure to bleed off through the downstream piping. Do not attempt to reverse the flow through the valve by bleeding pressure from the upstream side of the valve.
3. When the pressure gauges indicate that all pressure has been removed from the system, close the outlet shutoff valve, and the valve may be serviced.

**Note: refer to the drawing at the end of this document for description and proper orientation of parts.**

---

## Pilot Valve

---

The pilot valve is a Jordan Mark 50 Back Pressure Regulator. For maintenance, refer to the Mark 50 Installation & Maintenance sheet.

---

## Main Valve

---

It is necessary to remove the main valve from the line only if the main valve seats must be replaced, inspected or adjusted. All other operations can be performed with the valve in the line and without disturbing the stroke adjustment.

---

## To Repair Main Valve

---

The sliding Gate Seats of Jordan Valves are lapped to light band flatness. Maintaining such tolerances is of paramount importance for your assurance of excellent control and tight shutoff. **DO NOT** use metallic objects in removing the seats. Care in handling is imperative.

---

## To Remove Main Valve Seats

---

1. Remove the pilot tubing and the pilot valve with the mounting nipple.
2. With the main valve out of the line, remove the bolts securing the main valve cap to the main valve body and lift the cap straight up.
3. Lift the disc from the plate and place on a clean surface with the seating side up.
4. Place the valve body on a side. Hold one hand over the plate to receive it and tap lightly on the back of the plate with a soft, blunt object; push the plate out evenly. Place the plate on a clean surface seating side up.

---

## To Remove Main Valve Diaphragm and Disc Pin

---

1. Remove the bottom cap. The spring and spring guide will come out with it.
2. Disconnect the loading pressure tubing from the upper case, remove the case bolts and upper case.

3. Lift out the diaphragm assembly consisting of the diaphragm retainer, stroke stop shim (2 1/2 or 3" valve size only), diaphragms and diaphragm plate.
4. Fasten the hub of diaphragm plate in a vise and unscrew diaphragm retainer. 1/2" to 1-1/4" has one diaphragm and 1-1/2" to 6" has two diaphragms.
5. To remove stem and disc pin, hold the disc pin with a wrench and loosen the locknut, unscrew the stem. Lift the stem out through the bonnet and pull the disc pin through the body bore.
6. Assemble valve in the reverse order of above, following the procedure for MAIN VALVE STROKE ADJUSTMENT.

---

## Main Valve Stroke Adjustment

---

1. Do not tighten locknut on the stem; run it to the upper end of the thread with the disc pin located at about the center of the threaded section.
2. Place the plate and disc in the valve body so that the disc pin protrudes through the center slot in the plate and engages the disc. Use the following as a guide to properly install the plate and disc.
  - **1/2" THROUGH 1 1/4" VALVE SIZES-** The scribed line on the side of the valve body locates the position of the index pin hole in the face of the plate. The arrow which is stamped on the disc should point to the index pin hole. (Since the disc can be rotated 180° in some sizes without affecting the stroke adjustment, there may be no arrow on the disc.) The vertical milled portion of the disc guide serves as a guide for the disc. A 0.005" feeler gauge should be used to check the clearance between the valve disc and disc guides. If the clearance is less, clean the guide surfaces of the disc guide with a fine file.
  - **1 1/2" and 2" VALVE SIZES-** Place the disc on the plate and install the disc guide screws. Tighten the screws but make sure that they do not bind the disc against the plate. Place the assembly in the valve body so that the orifices will be open when the disc is stroked down. (With wording "TOP REVERSE" on plate at the top nearest diaphragm.) Engage the disc with the disc pin and check to be sure that the plate seats solidly against the shoulder in the body. Rotate the assembly slightly to align the disc screws with the vertical centerline of the valve. The arrow on the disc should be pointing up to the diaphragm.
  - **2 1/2" THROUGH 6" VALVE SIZES-** The plate are stamped on the backside with the wording, "TOP DIRECT" and "TOP REVERSE" to indicate their proper position in the valve body. The wording "TOP REVERSE" is at the top, nearest the diaphragm and the engraved arrow on

the disc always points to the wording "TOP REVERSE" on the plate. Check that the index pins in the valve body engage the plate to align the plate in the body.

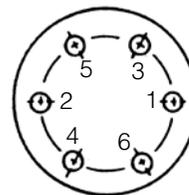
3. Place the diaphragm assembly on the stem with the diaphragm in its recess in the lower bonnet. Hold the diaphragm assembly firmly against the stop in the lower bonnet and push on the bottom of the stem so that it fully enters the socket in the diaphragm retainer. In this position, the disc should be in its lowermost position with the orifices of the disc and plate fully aligned. If the orifices are not fully aligned, rotate the stem clockwise to move the disc up, or counterclockwise to move the disc down.
4. When the orifices are aligned; remove the disc and plate and lock the locknut on the stem against the disc pin. Replace the disc and plate and recheck the orifice alignment.
- 5.

---

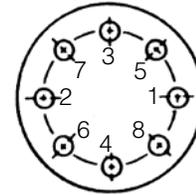
## Torque Procedure for Cap and Spring Housing Bolts

---

1. Install all bolts hand-tight.
2. Torque the bolts in order of the bolt pattern to a value equal to 1/4 of the recommended torque valve.
3. Re-torque each bolt to the recommended valve using the same bolt pattern as shown.



6 bolts  
(or multiples)



8 bolts  
(or multiples)

---

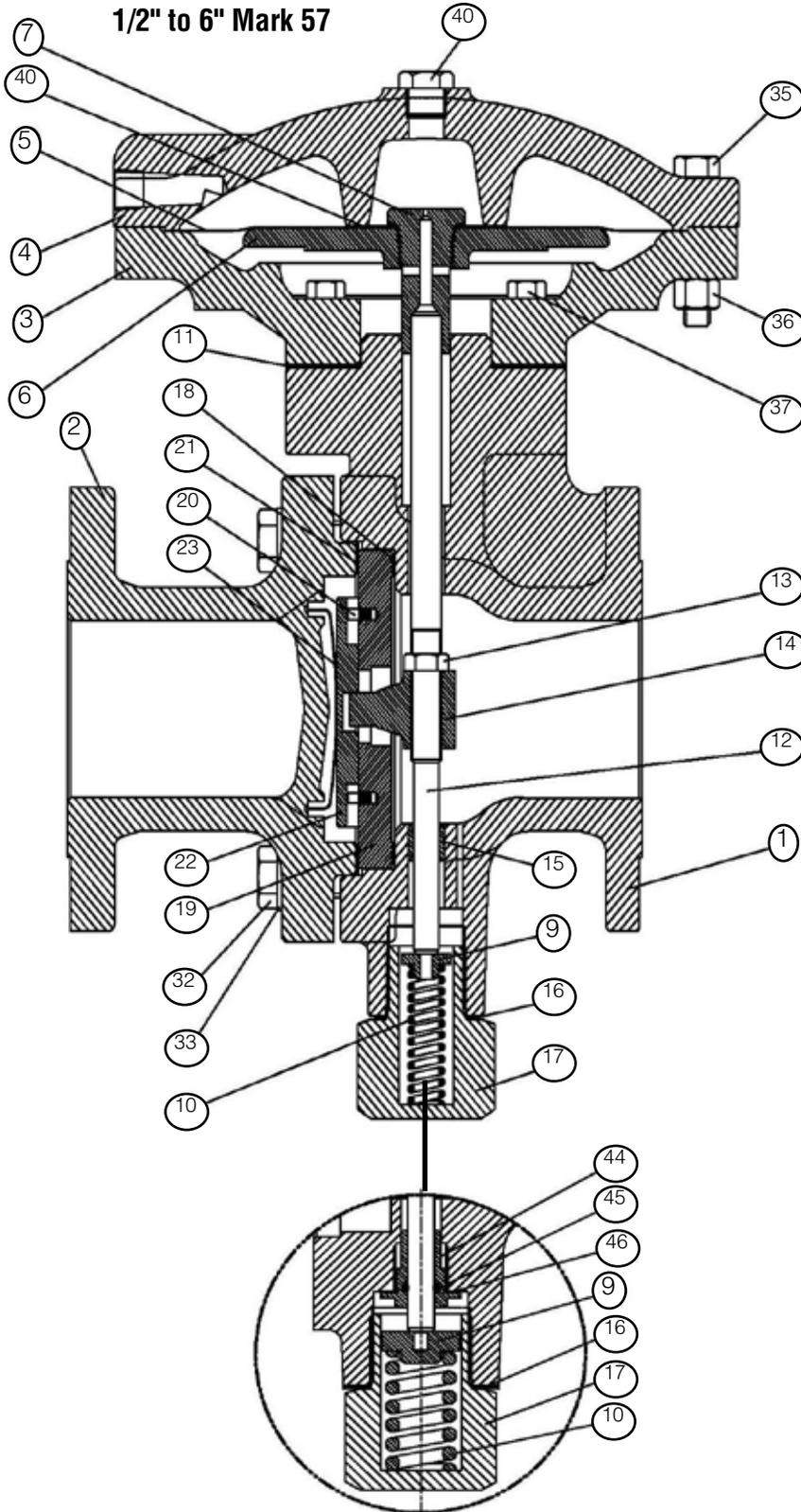
## Torque Values

---

1/2" - 2" Body/Cap: 200 In. - Lbs.  
 Upper Bonnet: 240 In. - Lbs.  
 Pilot Dome: 350 In. - Lbs.

2 1/2" - 6" Body/Cap: 1080 In. - Lbs. (90 Ft. - Lbs.)  
 Upper Case: 240 In. - Lbs.  
 Pilot Dome: 350 In. - Lbs.

## Illustration and Parts List



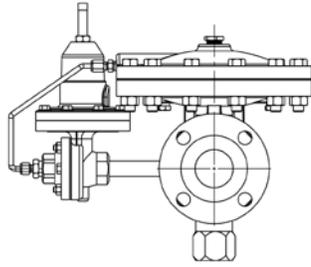
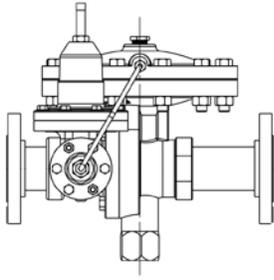
Item	Description
1	Body
2	Cap
3	Lower Case
4	Upper Case
5	Diaphragm
6	Diaphragm Plate
7	Diaphragm Retainer
9	Spring Seat
10	Return Spring
11	Gasket (Lower Bonnet)
12	Stem
13	Locknut
14	Disc Pin
15	Stem Bushing
16	Gasket (Bottom Cap)
17	Bottom Cap
18	Gasket (Body)
*19	Plate
20	Guide Pin
21	Gasket (Cap)
*22	Disc
*23	Disc Spring
32	Cap Screw
33	Lock Washer
35	Bolt
36	Nut
37	Cap Screw
39	Stroke Stop Shim (2-1/2" - 3" Only)
40	Pipe Plug
44	Bottom Guide
45	O-Ring
46	Gasket
*	Recommended Spare Parts

100% 316SS Configuration Only

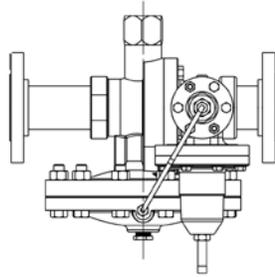
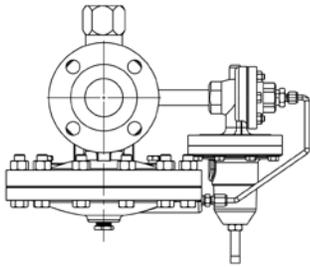
---

## Mounting Orientation for Liquid and Steam Services

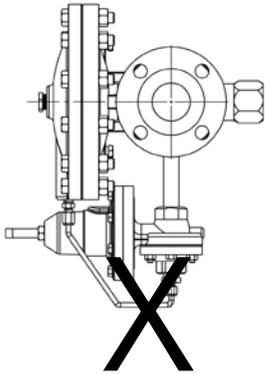
---



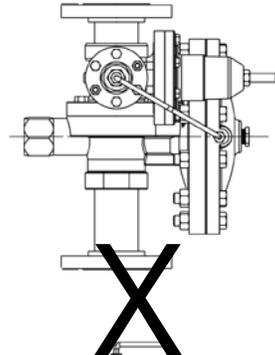
**OK**



**OK**



**NO**



**NO**

