

# PRATT®

a **MUELLER** brand

INSTALLATION/OPERATING MANUAL

# E-Lok® Seat Replacement For Butterfly Valves

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 **WARNING:**

1. Read all applicable directions and instructions prior to any maintenance, troubleshooting or installation.
2. Personnel involved in the installation or maintenance of valves should be constantly alert to potential emission of pipeline material and take appropriate safety precautions. Always wear suitable protection when dealing with hazardous pipeline materials.
3. Order parts from your local Pratt sales representative or directly from Pratt. When ordering parts, please include the serial number located on the valve tag.

*NOTE: "WARNING" and "CAUTION" messages (flagged with an exclamation symbol) indicate procedures that must be followed exactly to avoid equipment damage, physical injury, or death.*

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### SEAT REPLACEMENT PROCEDURE

1. With the valve disc in the closed position, set the valve horizontally on its flange with the seat side up so that there is sufficient clearance to rotate the disc.

**⚠ CAUTION: When the valve is horizontal with the seat side up, the valve disc is in an unstable condition and has a tendency to rotate 180° when the actuator or the valve shaft key is removed. Care must be taken to keep everything out of the path of the rotating disc edge.**

*NOTE: Each installed valve requires different methods to replace the seat. The E-lok seat is designed to be replaced with the valve installed. Adjustments for each installation are made by the service technicians at the time of service using best workmanship practice and proper safety precaution.*

2. Rotate the disc 1/2 turn from the closed position by removing either the actuator or the valve shaft key.

3. Cut and pull out old rubber seat from valve body.

4. Carefully chip and remove the epoxy and remaining seat from the seat groove so as not to damage the side walls or outer radius of the seat groove. Small nicks on the bottom of the groove will cause no harm.

5. Drill out the two injection holes (at 90° and 270° from the center line of shaft) being careful not to damage the pipe tap connections.

*NOTE: After installation the factory injection port is not usable.*

*New injection ports need to be drilled through the valve body, approximately 90° to the shaft 180° apart.*

6. Using the correct pipe tap to fit the above injection ports, retap the ports to clean up the threads.

7. Remove burrs and hand sand any rough spots on seat groove wall or outer radius, nicks on bottom of groove can be ignored. Clean groove with a rag, lightly coat the seat groove with a silicone grease.

8. Insert seat in the following manner:

- a) Wipe seat clean with a dry rag.
- b) Position seat splice 45° to shaft bore in body.
- c) Squeeze seat together and insert at beginning point 45° to shaft bore in body. The seat may be warmed to soften and ease this installation.
- d) Using a rubber mallet, locate and tap the seat into place for approximately 8" to 12".
- e) Repeat steps 8c and 8d at a point 180° from the starting point.
- f) Squeeze and insert seat from starting point **counter-clockwise** for 180° stuffing seat back towards starting point.
- g) Squeeze and insert second half of seat from starting point **counter-clockwise** for 180° stuffing seat back towards the starting point.
- h) Inspect seat installation making sure seat is in straight. The serrations in the seat must be parallel with the machined edge.

9. Close disc and remount actuator or replace valve shaft key.

10. Position disc parallel to body flange within  $\pm 1/16"$ .

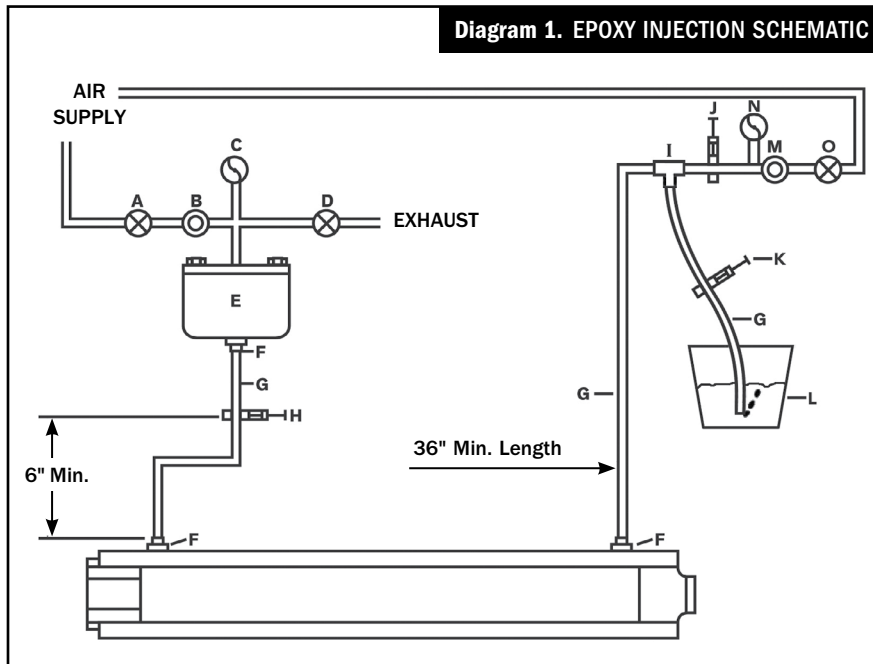
11. Inject epoxy behind seat in accordance with the epoxy injection procedure below.

12. After epoxy cures release the back pressure and cut the injection tubing flush with the face of the flange.

### Thrust Bearing Adjustment

The tight seal of your Pratt Rubber Seat Butterfly Valve is achieved by making the disc diameter somewhat larger than the inside of the rubber seat. To ensure equal interference of disc and rubber in the areas adjacent to the disc hubs, a double acting thrust bearing is provided at the lower end of the shaft. The thrust bearing has been properly set at the factory, and further adjustments will not be necessary.

### SEAT INJECTION MATERIALS



### Epoxy Injection Equipment

- Sufficient quantity of pre-weighed two-component epoxy resin and hardener (catalyst).
  - Resin component to specification HPCO XR-70-EC-3 (packaged one gallon kits). Approximately 10-1/2 pounds, pre-mixed gallon (available from Pratt).
  - Sufficient quantity of approved release agent (available from Pratt).
- Spatula or paint stirrer for epoxy materials transfer.
- Stirring rod (propeller type) for mixing epoxy for 3/8" or 1/2" electric or pneumatic drill.
- Several one-gallon slop buckets (cardboard okay).
- Toluene or safety solvent, and disposable towels or rags for clean-up.

**⚠ CAUTION: Concentrate solvent fumes could be toxic – should be used in well ventilated area.**

- Tubing pinch-on clamps (or screw type) – at least 7 per valve.

**NOTE: Epoxy Injection Equipment supplied by Pratt Field Service injection kit. The customer need not supply these materials.**

ID	DESCRIPTION
A	One – two-way valve – inlet side
B	One – pressure regular – inlet side (0 to 100 psig)
C	One – pressure gauge – inlet side (0 to 100 psig)
D	One – two-way valve - inlet side (air exhaust)
E	One – epoxy reservoir and pressure pot – 2 or 5 gallon capacity for epoxy (100 psi rating)
F	Three – 1/2" NPT x 1/2" I.D. tube or 1/4" NPT x 3/8" I.D. tube disposable plastic adapters to fit tapped holes in valve body and injection pot.
G	Varying lengths – 1/2" I.D. x 5/8" O.D. or 3/8" I.D. x 1/2" O.D. low density Polyethylene tubing
H	One – tubing clamp – on/off, inlet side
I	One – 1/2" x 1/2" x 1/2" I.D. tube or 3/8" x 3/8" x 3/8" I.D. tube plastic disposable tee to match tubing
J	One – tubing clamp – on/off, outlet side
K	One – tubing clamp – on/off, outlet side
L	One – one gallon waste bucket – outlet side (0 to 100 psi)
M	One – pressure regulator – outlet side (0 to 100 psi)
N	One – pressure gauge – outlet side (0 to 100 psi)
O	One – two-way valve – outlet side

### Tube Fitting and Injection Preparation

1. Pipe and fit (as per Diagram 1), varies based on customer installation.
2. Valve (A) and (O) to be closed.
3. Regulators (B) and (M) to be off.
4. Valve (D) to be open.
5. Close tubing clamps (H), (J), and (K).
6. Remove pressure pot lid.

### Seat Air Pressure Test - Prior to Epoxy Injection

1. On outlet side, open valve (O).
2. Adjust regulator (M) to 80 psig as shown on gauge (N).
3. Snap open clamp (J) quickly. This will snap seat out to disc edge and seal in seat groove. Air leaks can be heard. If not properly sealed, adjust seat using blunt edge screwdriver or shut off air and readjust seat in groove. Seat must be air tight before injection.
4. Adjust regulator (M) to specified injection pressures as shown on gauge (N). **See Table 1.**
5. Close clamp (J).
6. Open clamp (K) to exhaust air.

### Preparation of Epoxy Material

1. Stir pre-weighed resin component in original container - gallon can.
2. Step 3 – 6 must be done in no longer than five minutes to allow maximum pot life.

3. Add pre-weighed hardener component to resin component in original resin component container, mix thoroughly.
4. While mixing additional gallon as specified, pour each container into epoxy reservoir and pressure pot (E) as quickly as possible and add each additional container as soon as they are mixed.
5. Check to confirm that the lid seal is in its proper position.
6. Attach pressure pot lid.

### Injecting the Valve

**NOTE: Steps 1 – 17 should be completed within 20 minutes.**

1. Open clamp (H).
2. Open clamp (K).
3. Close clamp (J).
4. Close valve (D).
5. Open valve (A) and adjust regulator to approximately 20 psi. This pressure will move the epoxy through the system with a certain rate of flow. However, larger valves may require more volume and a faster rate of flow.

The main idea is to push the epoxy through the valve slow enough as not to entrap air in the epoxy and fast enough so that the epoxy will not start to set up during the injection process.

6. Epoxy will exhaust into waste bucket (L) in several minutes. Allow epoxy to exhaust into bucket with tube end slightly submerged to allow for visual indication of air bubbles. Exhaust no more than 1/2 of slop bucket.
7. Close clamp (K).
8. Adjust pressure regulator (B) to show exact specified holding pressure on gauge (C). **See Table 1.**
9. Close clamp (H).
10. Open valve (O).
11. Adjust pressure regulator (M) to show specified holding pressure on gauge (N). **See Table 1.**
12. Open clamp (J).
13. Close valve (A).
14. Open valve (D) to release the pressure in the pot.
15. Cut tubing between pressure pot (E) and clamp (H).
16. Close valve (D).
17. Using 10 to 15 psig pressure on pot, exhaust remaining epoxy from pressure port. Shut off valve (A), open valve (D), open lid and clean pot with safety solvent.

**Table 1. TEST/HOLDING PRESSURE**

VALVE SIZE	BUBBLE TEST PRESSURE (PSIG)	EPOXY HOLDING PRESSURE (PSIG)
6" to 24"	0 – 200	60
	201 – 300	70
30" and Larger	0 – 50	40
	51 – 71	50
	76 – 200	60
	201 – 300	70

### For Additional Information:

If you would like more detailed information, please contact the Field Service Department, at Pratt – 630.844.4000.

