

OPERATION AND MAINTENANCE INSTRUCTIONS

337FM SERIES THREE-PIECE SANITARY BALL VALVES

HIGH CYCLE TYPE

½" – 4"

Thank you for purchasing Inline Industries' 337FM Series Sanitary Ball Valve. This product has been constructed for maximum process performance and system design flexibility. The valve can be used for manual operation with a standard lockout device or easily adapted for electric or pneumatic automation. Our ISO 5211 Direct Mount actuation system enhances actuator performance, improves safety and eliminates the need for costly brackets. Available in tube full bore sizes from ½" – 4" with clamp, butt and extended butt weld ends, the 337FM is an outstanding choice as a universal valve for all of your high purity fluid processing needs.

Installation and Operation

Always install your valve according to accepted industry standards and practices and operate only within stated pressure, temperature and fluid media limits. Do not open or disassemble valve unless you intend to replace resilient seat and gasket materials. Repair kits are available from your local Inline representative or call 1-800-568-8998.

Your 337FM valve is available lever operated with our standard lockout device and incorporates an integrally cast ISO 5211 mounting pad for electric or pneumatic actuation. Product specification sheets and technical drawings are available for dimensional information required for proper installation and automation.

Maintenance

Resilient seated valve products may wear over time resulting in loosening at component boundaries. If leakage is detected, tighten according to the steps and torque values outlined below. If tightening does not correct the problem, it is time to replace your seats and seals.

Repair

Remove and Clean Valve

- A. If valve is in line, make sure system is purged and line, ball and cavity pressure are released before unbolting from piping system.
- B. Remove all add-on components such as actuators and set aside.
- C. Disassemble valve. Remove old seats and seals and discard them. Clean and dry metal components in preparation for reassembly.

Install Repair Kit and Reassemble Valve

Arrange cleaned valve parts on workbench. Position body on its side (top of the valve body facing you).

A. Stem Assembly

1. Place thrust washer on stem sliding over threaded end and seating on shoulder at base. Place Viton o-ring on stem sliding over threaded end and seating into groove notched at mid-point of stem.

2. Insert stem into body cavity through side, threaded end first, and glide through the hole in the top of the body until seated.
3. While holding stem in place, slide stem packing set over threaded end. Stem packing should be stacked with mating concave/convex sides facing each other. Slide stem packing set over stem, concave piece first, until seated.
4. Place stem packing gland over threaded end of the stem and lower over stem packing set.
5. Position spring washers with concave sides facing each other and lower set over stem bringing them to rest upon stem packing gland.
6. Thread stem nut down stem and hand tighten until stem and packing assembly are properly seated, aligned and fixed in position. Once properly positioned, tighten stem nut to the minimum torque specified in Table 1 and rotate slightly more until stem nut flats are perpendicular to stem flats. This will allow you to slide the lock washer down stem and into position over stem nut. (Please note: torque should not exceed maximum indicated in Table 1.) Thread second stem nut down over stem until resting on lock washer to keep stem assembly locked in place for further valve assembly and adjustments.

B. Ball/End Caps

1. Your 337FM valve has two (2) seats. Place one seat into body cavity, curved side first, until the back or flat side is flush with the end of the body.
2. Select one of the two (2) gaskets provided. Gently inset the gasket into the step machined into the end of the body, also until flush with the end of the body.
3. Select one end cap. Gently place the end cap against the body where the seat and gasket have just been positioned.
4. Insert bolts threaded end first into each of four guide holes around outside of end cap.
5. Turn body over carefully onto end cap so that the threaded ends of the body bolts are pointed upward. Make sure seat is properly positioned in end cap.
6. Orient the axis of the key at base of stem vertically so as to facilitate ball entry. Carefully lower the ball into the body cavity gliding ball key way over stem key until cradled on seat. Rotate ball 90° to keep ball from sliding out of the body.
7. Gently insert the other seat (again, curved side first) into body cavity coming to rest on the ball. Insert the other gasket into the step machined into the end of the body (side now facing upward) until flush with the end.
8. Select the other end cap and carefully lower it onto the seat and gasket making sure the bolts pass through the end cap guide holes.
9. Place a washer and nut on each bolt and loosely hand-tighten. Continue hand tightening according to pattern in Figure 1 to insure that each bolt is secured to the same length. Do not over-tighten any one bolt.
10. Ball should now be loosely secure. Turn valve body upright and inspect to see that the stem is straight and ball orifice is aligned with the end cap bore holes. Use of a cylindrical dowel to properly align the axis of the ball between opposing end caps is highly recommended. Continue hand tightening according to sequence in Figure 1 until proper alignment is secured.
11. Once end caps are on and proper alignment is achieved, tighten each end cap bolt with a torque wrench 1/4 turn alternating according to Figure 1. Continue repeating this cycle until reaching the torque value specified in Table 2. This should ensure proper seating and ball alignment.

C. Final Assembly and Test

1. Your 337FM ball valve is now ready for final assembly, adjustment, and testing. Remove top stem nut. Place stem spacer washers onto lock washer until higher than mounting pad surface. This will provide clearance for hand operation of the valve. Place the stop plate over stem and lower until coming to rest on stem spacer washers. Next, slide handle over stem. Hand-tighten stem nut until handle is fixed in place. Secure with wrench.
2. Insert the stopper into the mounting pad and secure with nut and washer provided. This provides a fixed stop for the stop plate allowing for 90° rotation of the valve.
3. Submit valve to qualified valve test facility for pressure test.

Your repaired 337FM ball valve is now ready for installation and service.

Inline Industries makes a number of other fluid processing valves which complement this offering. Please consult your local Inline representative for more information about our products or call 800-568-8998 for more details. Thank you for purchasing an Inline product.

Table 1. 337FM Suggested torque values of gland nut.

Gland Nut Size	Type and size of ball valve	Torques (in.-lbs.)
	337FM	
M12	1/2" – 3/4"	70 – 80
M14	1" – 1 1/4"	85 – 95
M18	1 1/2" – 2"	105 – 115
M22	2 1/2" – 3"	145 – 160
M28	4"	170 – 185

Table 2. 337FM Suggested maximum torque values of ball valve bolts.

Bolt Size	Type and size of ball valve	Torque (in.-lbs.)
	337FM	
M6*P1.0	1/2"	80
M8*P1.25	3/4", 1"	160
M10*P1.5	1 1/4" – 2"	320
W 1/2"*13UNC	2 1/2"	550
W 5/8"*11UNC	3"	850
W 3/4"*10UNC	4"	1100

Figure 1. 337FM Suggested body bolting sequence.



4 bolt sequence
($\frac{1}{2}$ "—3")

6 bolt sequence
(4")