F83/F8R Series

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2 SCOPE

This Installation, Operation, and Maintenance (IOM) manual provides instructions for the safe installation, operation, maintenance, disassembly, reassembly, and troubleshooting of A-T Controls Series F83/F8R three-piece ball valves.

The procedures contained in this manual apply to manually operated valves (lever and gear operated) as well as valves equipped with quarter-turn actuators. These instructions are intended for qualified personnel familiar with industrial piping systems and safe maintenance practices.

This manual applies to all standard Series F83/F8R valve sizes, pressure classes, end connections, and material configurations unless otherwise specified. Refer to the valve nameplate and product catalog for pressure-temperature ratings, material limitations, and application-specific information.

Failure to follow these instructions may result in equipment damage, personal injury, or reduced valve performance.

3 INSTALLATION

3.1 Safety Precautions

3.1.1 Prior to installation or servicing, review this manual to ensure proper procedures are followed.

3.1.2 Before installation or service operations, verify that line pressure has been fully relieved, and any hazardous fluids have been drained or purged from the system.

3.1.3 Ensure that all Lockout/Tagout protocols have been properly executed during maintenance or installation.

3.2 Operational Guidelines

3.2.1 Maximum results and long life of the valves can be maintained under normal working conditions and according with pressure/temperature rating.

3.3 General Installation Guidelines

3.3.1 The valve can be installed in any orientation within the pipeline.

3.3.2 Prior to valve installation, ensure the pipeline is thoroughly flushed to remove contaminants such as dirt, burrs, and welding residues to prevent damage to the valve seats and ball surface. The pipe must be free from any tension and properly aligned. Inspect all connections to verify they are defect-free.

3.4 Installation of Threaded Valves

3.4.1 Use a proper sealant, such as Teflon, or similar, on the valve threads.

3.4.2 When tightening, only apply the wrench to the hexagonal section of the valve ends. Avoid using the valve body or lever for tightening, as this could cause considerable damage.

3.4.3 In some cases, threaded valves may be back-welded on-site. In such instances, follow the installation guidelines for welded-end valves before performing back welding.

3.5 Installation of Welded-Ends Valves

3.5.1 Begin by tack-welding the valve to the pipe at four points on both end caps.

3.5.2 With the valve in the open position (lever parallel to the pipe axis), remove all body bolts except for one. Loosen the nut on the remaining bolt and swing the valve body outside the pipe. Complete the welding process on both end caps.

3.5.3 After welding, allow the valve to cool down.

3.5.4 Once cooled, clean the surfaces of the end caps and valve body.

3.5.5 Swing the valve body back into position and reinstall the bolts. Tighten the nuts slightly. This step is critical to keep the parallel alignment of the valve body and end caps, preventing distortion.

3.5.6 Tighten all body bolts evenly, following the specified torque values in section 6 (refer to Table 1 & Table 2). Verify the valve operates smoothly, ensuring it is functioning correctly before proceeding.

4 VALVE OPERATION

4.1 Manual Operation

4.1.1 **Handle**

4.1.1.1 Opening the Valve: Turn the handle counterclockwise until it is parallel with the pipeline and contacts the handle stop.

4.1.1.2 Closing the Valve: Turn the handle clockwise until it is perpendicular to the pipeline and contacts the handle stop.

4.1.1.3 Handle Lock: A lock is integrated into the handle for securing the valve in either the fully open or fully closed position. Slide the lock into the mounting pad and insert a suitable lock or hasp. After locking, if safe to do so, try to turn the handle to confirm that the valve is properly locked.

4.1.1.4 **Flow Indication for Valve:** The handle of the valve will indicate the direction of the bore on the ball (shown in Image 1). When reassembling the handle, there is only one correct orientation the handle can be in when in open position as shown below.

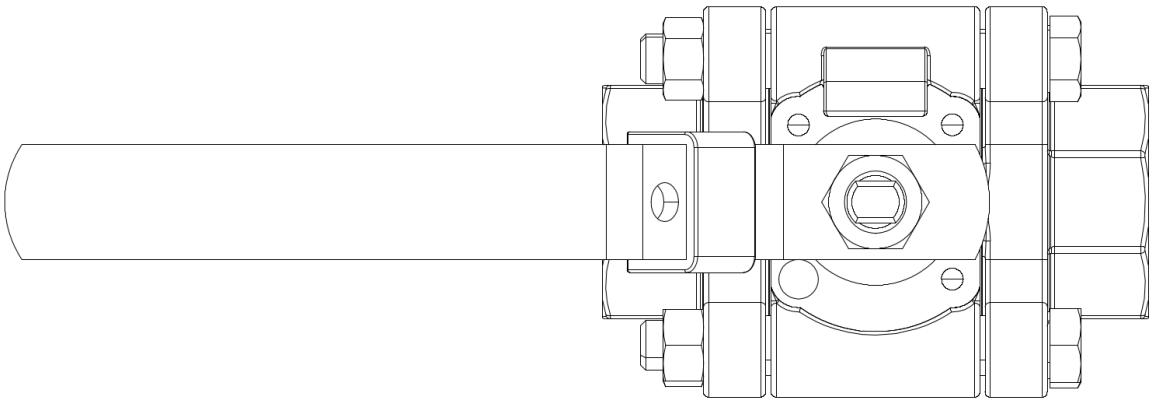


Image 1: Open position for valve

4.1.2 **Gear**

4.1.2.1 Opening the Valve: Turn the handwheel counterclockwise. The indicator will point to the "open" position, stop rotating once the valve is fully open.

4.1.2.2 Closing the Valve: Turn the handwheel clockwise. The indicator will point to the "closed" position, the handwheel will stop rotating once the valve is fully closed.

4.2 Automated Operation

4.2.1 A-T Controls F83/F8R Series Ball Valves can be mounted with quarter turn actuators. Valves with actuators shall be checked for proper valve stem alignment. Angular or linear misalignments may result in high operational torque and unnecessary wear on the valve stem. See the actuator IOM for information on using the actuator.

5 DISASSEMBLY

Caution, fluids can be trapped in the body of the valve, possibly under high pressure. For your safety, it is important that precautions are taken before removing the valve from the line or any disassembly.

5.1 Remove the actuator or gear, if applicable.

5.2 Take care not to damage the surface finish of the valve components.

5.3 Remove the ends (2) from the body (1) by removing the body bolts (16) and body nuts (17).

5.4 Remove the seat (4) and body gaskets (5) from both sides of the body (1). Once removed, with the valve in the fully closed position, the ball (3) should slide freely out of the body (1).

5.5 If equipped, remove the handle nut (12), handle (13), and the handle stop assembly items (15).

5.6 While holding the stem (6) stationary, remove the packing nut (12). After removing the packing nut, the locking saddle (11), Belleville washers (10), and packing bushing (9) should be easily removed.

5.7 While holding the bottom of the stem (6), push the stem through the inside of the valve body (1).

5.8 Remove the packing set (8) and the stem seal (7).

5.9 Inspect all components for any damage. Clean or replace components as necessary.

6 ASSEMBLY

6.1 Take care not to damage the surface finish of the valve components.

6.2 Place the stem seal (7) onto the stem (6) and install it by passing it through the body (1). Then, insert the packing set (8) onto the stem (6) and into the body (1).

6.3 Install the packing gland (9), Belleville washers (10), locking saddle (11), and packing nut (12). While holding the stem (6) in place, tighten the packing nut (12) to the torque specified in the Fastener Torque Chart. If necessary, tighten further to allow the locking saddle (11) to fit over the packing nut (12).

6.4 Ensure that the stem (6) is in the closed position with the stem tang parallel to the flow direction of the valve. Insert a seat (4) and body gasket (5) into one side of the body (1). Carefully slide the ball (3) into the body (1), then insert the second seat (4) and body gasket (5).

6.5 Attach the ends (2) to the body (1). Insert all body bolts (16) and nuts (17) into the valve, tightening them to finger tight while ensuring the ends (2) are flush against the body (1). For valves 2-1/2” through 4”, tighten the body bolts (on both sides) from the nut (17) side (if equipped) in a star pattern to 50% of the final torque specified in the Fastener Torque Charts. Using the handle (13) or an adjustable wrench, cycle the valve 3 times, then tighten all body bolts (16) to the final torque in a star pattern. Verify the torque on each body bolt (16) and tighten if needed. It is acceptable for the torque to slightly relax over time due to polymer component relaxation, but the valve will still seal correctly. If leakage is detected, repeat the body bolt tightening procedure.

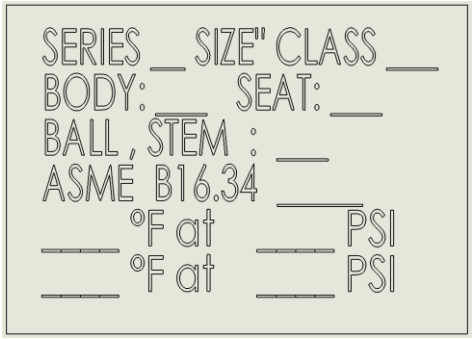
6.6 If necessary, assemble the locking device (18), handle stop (15), handle (13), and handle nut (12).

Fastener Torque Chart Table 1: Bolting Torque F83 Series			
Valve Size	**50% of Max Body Bolt Torque (In-lbs.)**	**Max Torque of Body Bolt (In-lbs.)**	**Max Torque of Stem Nut (In-lbs.)**
¼"	50	100	78
3/8"	50	100	78
½"	50	100	95
¾"	80	160	95
1"	100	200	130
1-1/4"	110	220	130
1-1/2"	188	375	174
2"	203	405	174

Fastener Torque Chart Table 2: Bolting Torque F8R Series			
Valve Size	**50% of Max Body Bolt Torque (In-lbs.)**	**Max Torque of Body Bolt (In-lbs.)**	**Max Torque of Stem Nut (In-lbs.)**
½"	50	100	78
¾"	65	130	95
1"	80	160	95
1-1/4"	100	200	130
1-1/2"	110	220	130
2"	188	375	174
2-1/2"	203	405	174

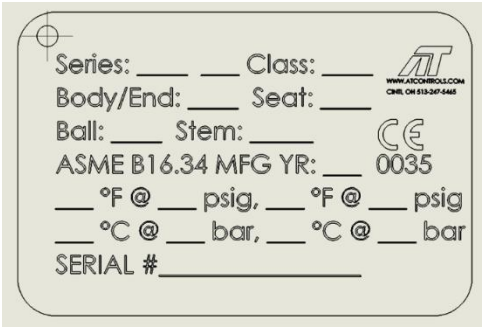
7 VALVE TAGGING

Example of standard valve name plate



- **Series:** Valve Series followed by nominal size of valve
- **Class:** ASME B16.34 Pressure Class.
- **Body:** Valve Body Material.
- **Ball, Stem:** Ball and stem Material.
- **ASME:** ASME B16.34 design and if the valve is fire safe tested, API 607 will be engraved in the tag.
- **°F, psig:** Units of temperatures and pressures. Upper and lower temperature rating shown on tag.

Tagging for CE/PED name plate.



- **Series:** Valve Series followed by nominal size of valve.
- **Class:** ASME B16.34 Pressure Class.
- **Body/End:** Valve Body and End Cap Material.
- **Stem:** Valve Stem Material.
- **MFG YR:** Year of manufacture of valve.

- **°F, psig, °C, bar:** Units of temperatures and pressures. Upper and lower temperature rating shown on tag.
- **Serial #:** Serial number of the valve.
- **CE Marking:** (Pressure Equipment Directive 2014/68/EU).

8 REPAIR KITS

Repair kits are available to replace all soft goods. See Bill of Materials for components that are included in the repair kits.

9 BILL OF MATERIALS

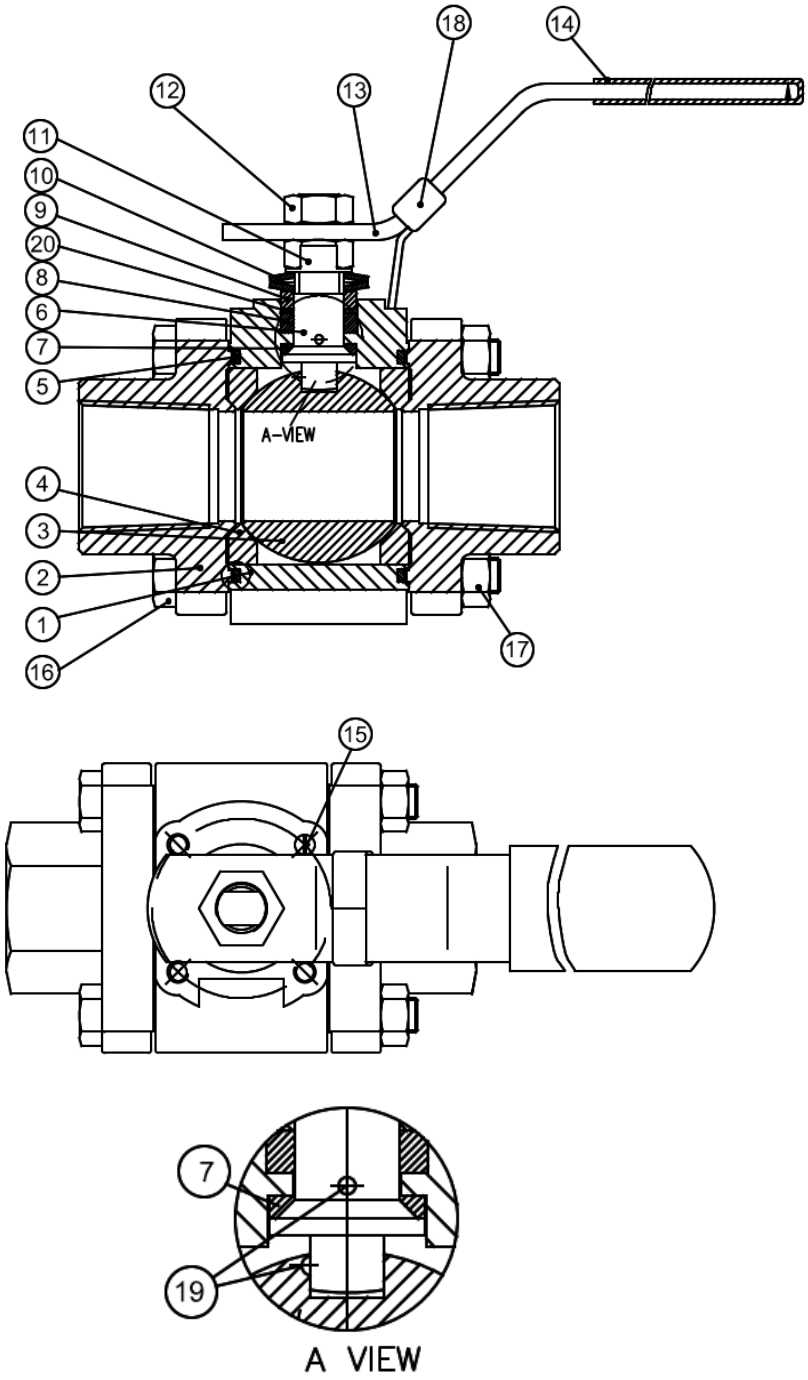
MATERIAL LIST			
NO.	**PART NAME**	**QTY**	**REPAIR KIT**
1	BODY	1	
2	END CAP	2	
3	BALL	1	
4	SEAT	2	X
5	JOINT GASKET	2	X
6	STEM	1	
7	STEM SEAL	1	X
8	STEM PACKING	1	X
9	GLAND BUSHING	1	
10	BELLEVILLE WASHER	2	
11	LOCK SADDLE	1	
12	STEM NUT	2	
13	HANDLE	1	
14	HANDLE SLEEVE	1	
15	STOP BOLT	1	
16	BODY BOLT	*	
17	BODY NUT	*	
18	HANDLE LOCK	1	
19	ANTI-STATIC DEVICE	2	
20	GLAND WASHER	1	X

* 1/4” THRU 1-1/2” QTY = 4 PCS (83 SERIES)

* 2” QTY = 6 PCS (83 SERIES)

* 1/2” THRU 2” QTY = 4 PCS (8R SERIES)

* 2-1/2” QTY = 6 PCS (8R SERIES)



10 TROUBLESHOOTING

Area	Problem	Possible Root Cause	Possible Solution
Inner	Internal Seat Leakage	• High media pressure. • High cycle time. • Media contains small solids.	Check if there is any damage on the contact surface of ball and seats. If parts are damaged, replace the damaged ball, seats, and joint gaskets (soft components found in repair kit).
Outer	Stem Leakage	• High cycle time.	Tighten the stem nut to the torque values specified in the Fastener Torque Charts. If leakage continues, disassemble the valve, replace the soft components, and re-tighten the stem nut.
	Body Gasket Leakage	• High media pressure. • High cycle time. • Media contains small solids.	Tighten the body stud nuts to the torque values specified in the Fastener Torque Charts (avoid over-tightening). If leakage persists, disassemble the body and end cap to replace the joint gasket.

A-T Controls product, when properly selected, is designed to perform its intended function safely during its useful life. However, the purchaser or user of A-T Controls products should be aware that A-T Controls products might be used in numerous applications under a wide variety of industrial service conditions. Although A-T Controls can provide general guidelines, it cannot provide specific data and warnings for all possible applications. The purchaser / user must therefore assume the ultimate responsibility for the proper sizing and selection, installation, operation, and maintenance of A-T Controls products. The user should read and understand the installation, operation, and maintenance (IOM) instructions included with the product and train its employees and contractors in the safe use of A-T Controls products in connection with the specific application.

While the information and specifications contained in this literature are believed to be accurate, they are supplied for informative purposes only. Because A-T Controls is continually improving and upgrading its product design, the specifications, dimensions and information contained in this literature are subject to change without notice. Should any question arise concerning these specifications, the purchaser/user should contact A-T Controls.