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1 SCOPE

1.1 CAUTION

- 1.1.1 For your safety, read this manual before installation or servicing.
- 1.1.2 Before installing or servicing, please ensure the line pressure has been relieved and any hazardous fluids have been drained or purged from the system.
- 1.1.3 Ensure that all Lockout and Tagout procedures for the system have been properly implemented.

1.2 USE

- 1.2.1 A-T Controls F9R-Series Ball Valve are available in Class 150# and Class 300# Flange Ends.
- 1.2.2 Maximum results and optimum valve life can be maintained under normal service conditions and in accordance with pressure/temperature ratings and corrosion data charts.

2 INSTALLATION

- 2.1 A-T Controls F9R-Series Ball Valves are bi-directional and can be installed with the flow in either direction. The valve can be mounted in any position so that the handle, gear, or actuator has proper clearance, allows for optimal drainage, can be easily accessed, and the open/close indicator can be viewed. If the gear is equipped with a chain wheel, the valve shall be mounted in a way so that the chain does not come in contact with the valve or pipeline.
- 2.2 For Dead End service applications, the valve can be installed in either direction. The preferred direction is with the retainer side upstream leaving the non-retainer side without a flange installed.
- 2.3 Before installation of the valves, the pipe must be flushed clean of dirt, burrs, and welding residues. Failure to do so can cause the seats, sealing surfaces, and internal polish to be damaged.
- 2.4 The pipe must be free from tension and in proper alignment.
- 2.5 Before installation of the valves, check to ensure that all connections are free from defects.
- 2.6 Be sure to consult with supplier of your flange gaskets for the proper material, pressure rating, and bolt torque for your process.

3 VALVE OPERATION

3.1 MANUAL

3.1.1 HANDLE

To **OPEN** the valve, turn the handle counterclockwise until the handle is parallel with the pipeline and the handle stop has been contacted.

To **CLOSE** the valve, turn the handle clockwise until the handle is perpendicular with the pipeline and the handle stop has been contacted.

3.1.2 GEAR

To **OPEN** the valve; turn the hand wheel counterclockwise. The indicator will be pointing to the open position and stop rotating when fully opened. The flow can be adjusted by stopping the indicator anywhere between open and close.

To **CLOSE** the valve; turn the hand wheel clockwise. The indicator will be pointing to the close position and the hand wheel will stop rotating when fully closed. The flow can be adjusted by stopping the indicator anywhere between open and close.

3.2 AUTOMATED

A-T Controls F9R-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 operating the actuator.

4 DISASSEMBLY

!!!WARNING!!!

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 REMOVAL OF THE VALVE FROM THE LINE OR ANY DISASSEMBLY.

- 4.1 Remove actuator or gear if equipped.
- 4.2 Care should be taken to not damage the surface finish of the valve components. See BOM in the drawing under Section "7" as some components change depending on the size of the valve.
- 4.3 To disassemble the valve, first remove the Retainer (2) from the Body (1) by unthreading it counterclockwise.
- 4.4 With the Retainer (2) removed and the valve in the closed position, the Body Seals (6 & 7), the Seats (5), and the Ball (3) will be free to remove.
- 4.5 If equipped, remove the Stem Nut (13) which will allow the Handle (14), Stem Ext Screw (15), Stem Extension (25), Tab Washer (21), Handle Space (12), and Stop Plate (17) able to be removed. Take note of the order that the parts are removed for reassembly.
- 4.6 Remove the Stem Nut (13) if equipped by holding the Stem (4) stationary and turning the Stem Nut (13) counter-clockwise or remove the Gland Flange (23) by removing the Gland Bolt/Nut (22). The Belleville Washers (20) and the Gland Bushing (11) will be free to remove.
- 4.7 The Stem (4) will be able to be pushed out by pressing the Stem (4) into the Body (1). Once removed, the Stem Packing (9) will be able to be removed and may need to be done with a pick. Remove the Thrust Washer (8) and Stem O-ring (9) from the stem.

5 ASSEMBLY

- 5.1 Care should be taken to not damage the surface finish of the valve components.
- 5.2 Place the Thrust Washer (8) and Stem O-ring (9) on the Stem (4) and insert the Stem (4) into the Body (1). Once inserted, slide the Stem Packing (9) over the stem with the Graphite rings on the bottom. Slide the Gland Bushing (11) over the Stem(4) followed by the Belleville Washers (8).
- 5.3 The Stem Nut (13) or Gland Flange (23) can now be reinstalled. Torque evenly to the value in the chart below.

Size	Packing Gland Torque
	in*lbs
1/2"	89
3/4"	89
1"	89
1-1/2"	177
2"	177
2-1/2"	266
3"	266
4"	266
6"	443
8"	443

- 5.4 Insert a Seat (5) into the Body (1). With the Stem (4) in the closed position, slide the Ball (3) into the Body (1).
- 5.5 Put the other Seat (5) into the Retainer (2). Also put the Body Seals (6 and 7) on the Retainer (2). Apply antisieze to the threads on the Retainer (2). Thread the Retainer (2) into the Body (1) to the torque below.

Size	Retainer Torque
	ft*lbs
1/2"	167
3/4"	188
1"	238
1-1/2"	376
2"	506
2-1/2"	557
3"	614
4"	722
6"	1012
8"	1360

6 REPAIR KITS

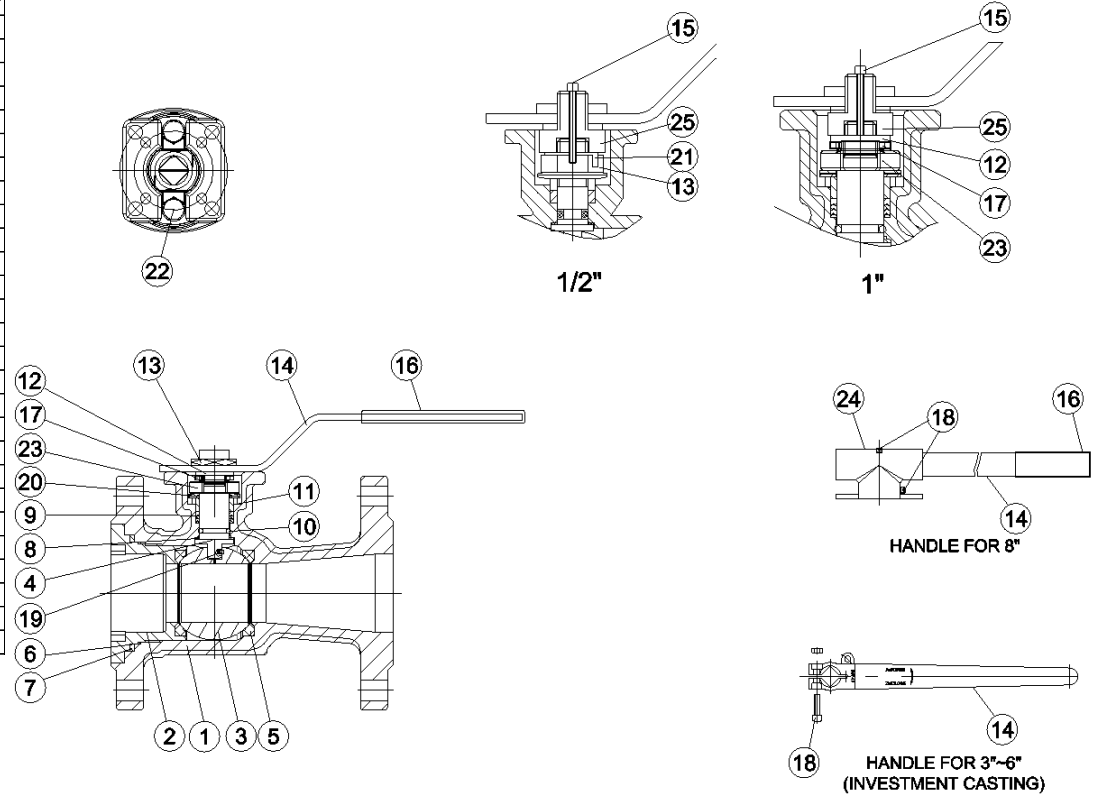
Repair kits are available to replace all soft goods. See Bill of Materials for components that are included in the repair kits.

7 BILL OF MATERIALS

F9R-F1

Material List					
NO.	Part	QTY.	STAINLESS STEEL	CARBON STEEL	REPAIR KIT
1	BODY	1	ASTM A351 GRADE CF8M	ASTM A216 GRADE WCB	
2	RETAINER	1	ASTM A351 GRADE CF8M	ASTM A216 GRADE WCB	
3	BALL	1	ASTM A351 GRADE CF8M	ASTM A351 GRADE CF8M	
4	STEM	1	AISI 316 (1/2"-4")	AISI 316 (1/2"-4")	
		1	17-4 PH® (6" & 8")	17-4 PH® (6" & 8")	
5	SEAT	2	TFM-1600	TFM-1600	✓
6	BODY SEAL 1	1	TFM™-1600 (1-1/2"-8")	TFM™-1600 (1-1/2"-8")	✓
7	BODY SEAL 2	1	GRAPHITE (1/2"-1")	GRAPHITE (1/2"-1")	✓
		1	GRAPHITE + 316 (1-1/2"-8")	GRAPHITE + 316 (1-1/2"-8")	✓
8	THRUST WASHER	1	RTFE	RTFE	✓
9	STEM PACKING	1^	GRAPHITE + MG1241	GRAPHITE + MG1241	✓
10	STEM O-RING	*	FKM	FKM	✓
11	GLAND BUSHING	1	AISI 304	AISI 304	
12	HANDLE SPACER	1	AISI 304	AISI 304	
13	STEM NUT	1	AISI 304 (1/2")	AISI 304 (1/2")	
14	HANDLE	1	AISI 304	AISI 304	
15	STEM EXT SCREW	1	AISI 304 (1/2" & 1")	AISI 304 (1/2" & 1")	
16	HANDLE COVER	1	VINYL	VINYL	
17	STOP PLATE	1	AISI 304 (3/4" - 8")	AISI 304 (3/4" - 8")	
18	HANDLE NUT/BOLT	#	AISI 304 (3"-6")	AISI 304 (3"-6")	
19	ANTI-STATIC BALL	1	AISI 316	AISI 316	
20	BELLEVILLE WASHER	2	AISI 301	AISI 301	
21	TAB WASHER	1	AISI 304 (1/2")	AISI 304 (1/2")	
22	GLAND BOLT/NUT	2	AISI 304 (3/4" - 8")	AISI 304 (3/4" - 8")	
23	GLAND FLANGE	1	AISI 304 (3/4" - 8")	AISI 304 (3/4" - 8")	
24	HANDLE ADAPTER	1	AISI 304 (8")	AISI 304 (8")	
25	STEM EXTENSION	1	AISI 304 (1/2" & 1")	AISI 304 (1/2" & 1")	

^ PACKING SET
 * 1/2" THRU 2-1/2" & 8" QTY=1 PC
 * 3"-6" QTY=2 PCS
 # < 3" QTY=0 PCS
 # 3"-6" QTY=1 PC
 # 8" QTY=2 PCS



F9R-F3

Material List					
NO.	Part	QTY.	STAINLESS STEEL	CARBON STEEL	REPAIR KIT
1	BODY	1	ASTM A351 GRADE CF8M	ASTM A216 GRADE WCB	
2	RETAINER	1	ASTM A351 GRADE CF8M	ASTM A216 GRADE WCB	
3	BALL	1	ASTM A351 GRADE CF8M	ASTM A351 GRADE CF8M	
4	STEM	1	AISI 316	AISI 316	
		1	17-4 PH* (6" & 8")	17-4 PH* (6" & 8")	
5	SEAT	2	TFM-1600	TFM-1600	✓
6	BODY SEAL 1	1	TFM™-1600 (1-1/2"-8")	TFM™-1600 (1-1/2"-8")	✓
7	BODY SEAL 2	1	GRAPHITE (1/2"-1")	GRAPHITE (1/2"-1")	✓
		1	GRAPHITE + 316 (1-1/2"-8")	GRAPHITE + 316 (1-1/2"-8")	✓
8	THRUST WASHER	1	RTFE	RTFE	✓
9	STEM PACKING	1^	GRAPHITE + MG1241	GRAPHITE + MG1241	✓
10	STEM O-RING	*	FKM	FKM	✓
11	GLAND BUSHING	1	AISI 304	AISI 304	
12	HANDLE SPACER	1	AISI 304	AISI 304	
13	STEM NUT	1	AISI 304 (1/2")	AISI 304 (1/2")	
14	HANDLE	1	AISI 304	AISI 304	
15	STEM EXT SCREW	1	AISI 304 (1/2"-1-1/2")	AISI 304 (1/2"-1-1/2")	
16	HANDLE COVER	1	VINYL	VINYL	
17	STOP PLATE	1	AISI 304 (3/4" - 8")	AISI 304 (3/4" - 8")	
18	HANDLE NUT/BOLT	#	AISI 304 (3"-6")	AISI 304 (3"-6")	
19	ANTI-STATIC BALL	1	AISI 316	AISI 316	
20	BELLEVILLE WASHER	2	AISI 301	AISI 301	
21	TAB WASHER	1	AISI 304 (1/2")	AISI 304 (1/2")	
22	GLAND BOLT/NUT	2	AISI 304 (3/4" - 8")	AISI 304 (3/4" - 8")	
23	GLAND FLANGE	1	AISI 304 (3/4" - 8")	AISI 304 (3/4" - 8")	
24	HANDLE ADAPTER	1	AISI 304 (8")	AISI 304 (8")	
25	STEM EXTENSION	1	AISI 304	AISI 304	

^ PACKING SET

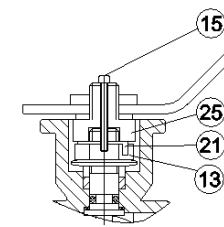
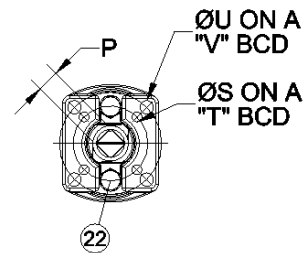
* 1/2" THRU 2-1/2" & 8" QTY=1 PC

* 3"-6" QTY=2 PCS

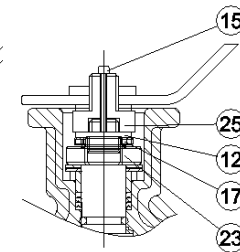
< 3" QTY=0 PCS

3"-6" QTY=1 PC

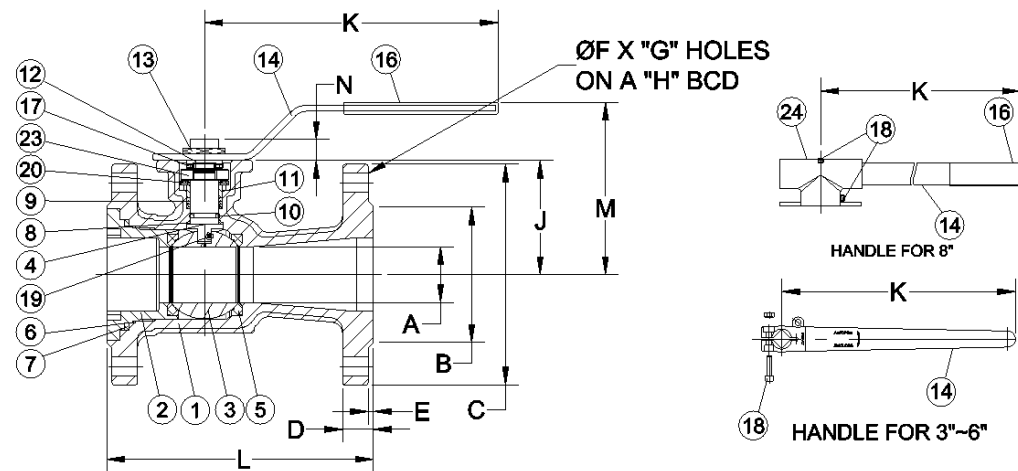
8" QTY=2 PCS



1/2"



3/4"~1-1/2"



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 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.

For product specifications go to <https://a-tcontrols.com/Downloads/>

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