

4" (DN100) AZFRL and 4" (DN100) AZFRS Model A Tank Car Fire-Tite® Bottom Unloading Valves

Installation, Maintenance and
Operating Instructions

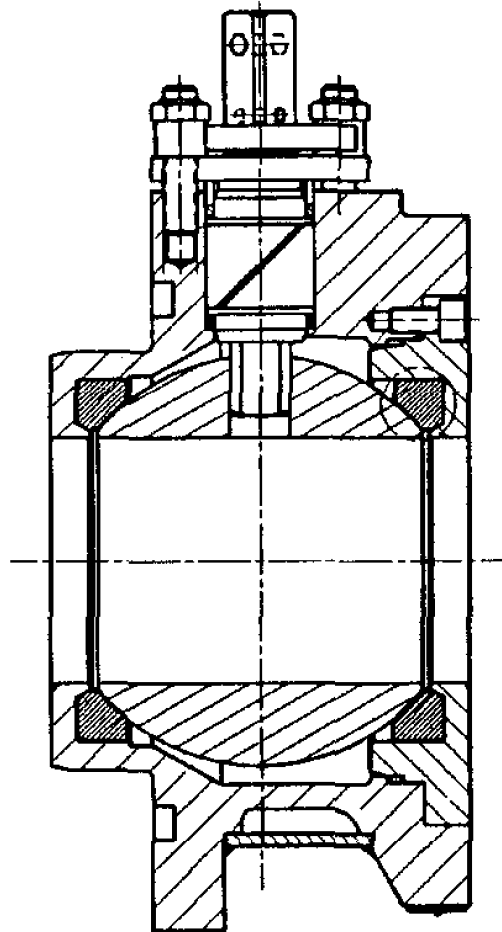


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READ THESE INSTRUCTIONS FIRST!

These instructions provide information about safe handling and operation of the valve.
If you require additional assistance, please contact the manufacturer or manufacturer's representative.
Addresses and phone numbers are printed on the back cover.
See also www.metso.com/valves for the latest documentation.

SAVE THESE INSTRUCTIONS!

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1 GENERAL

This instruction manual contains important information regarding the installation, operation and troubleshooting of the Jamesbury® 4" (DN 100) AZFRL and AZFRS Model A Tank Car *Fire-Tite* Bottom Unloading Valves. Please read these instructions carefully and save them for further reference.

1.1 WARNING

FOR YOUR SAFETY, IT IS IMPORTANT THAT THE FOLLOWING PRECAUTIONS BE TAKEN PRIOR TO REMOVAL OF THE VALVE FROM THE TANK CAR OR BEFORE ANY DISASSEMBLY.

1. EXERCISE NORMAL SAFETY PRECAUTIONS TO PROTECT YOURSELF AGAINST BOTH THE FLUID AND POSSIBLE UNRELIEVED PRESSURES IN THE VALVE ITSELF.
2. AFTER REMOVAL FROM THE CAR AND BEFORE DISASSEMBLY, CYCLE THE VALVE SEVERAL TIMES TO RELIEVE ANY RESIDUAL PRESSURE.

2 INSTALLATION

Refer to the **MAINTENANCE** Section for stem packing adjustment.

Follow the recommended practices of the gasket manufacturer when tightening flange bolts.

If there is weepage past the stem seals upon installation, it means the valve may have been subject to wide temperature variations in shipment. Tight sealing will be restored by a simple packing adjustment described in the **MAINTENANCE** Section.

2.1 Disassembly

1. Read the instructions in the **WARNING** Section.
2. Place the valve in the open position.
3. Remove the handle pin (28), handle (15), stem pin (21), self-locking stop nuts (10), stop sleeves (14), indicator stop (12) and bonnet plate (9).
4. Pull out the stem (4), with the compression ring (18), top stem seal (7) and stem bearing (11). After the stem has been removed from the valve body, remove the emergency stem seal (13) and lower stem seal (7).
5. Place the valve in the vertical position with the insert up.
6. Remove the body insert socket head cap screws (20) and jack the insert (2) out of the valve body by tightening the jacking screws (26) evenly and alternately. When the insert is free of the valve body, remove the seat (5) from the insert cavity.
7. Replace the stem (4) into the valve body stem bore and into the ball drive slot. Turn the stem so that the ball (3) is in the closed position. Remove the stem.

8. Remove the body seal (6) and the ball (3) from the valve body.
9. Remove the seat (5) from the valve body. Use care to prevent damage to the seat and sealing surface of the valve body.
10. Clean the valve body and all re-usable components before reassembly.

2.2 Assembly

A good lubricant compatible with the flow media should be applied lightly to seats, seals, ball and stem to facilitate assembly and ease initial operation.

1. Slide a valve seat (5) into the valve body seat cavity (1), so that the bevel surface of the seat will be adjacent to the ball (3) (**see Figure 2**).
2. Place the ball (3) in the closed position into the valve body (1). Insert the stem (4) as a temporary means of holding the ball.
3. Install the other seat (5) into the insert (2). Install body seal (6) into the machined sealing area of the body with the chamfer on the I.D. facing away from the ball.
4. Adjust the jacking screws (26) so they do not protrude through the insert or above the insert face.
5. Fit the insert (2) into the valve body, aligning the holes in the insert with threaded holes in the body.
6. Compress the insert into the body with the body insert cap screws (20) by tightening them evenly and alternately until the insert is **bottomed** and all cap screws are tight (torque, 25 – 35 FT•LBS [34 – 47 N•m]).
7. Remove the stem (4) and install a stem seal (7) into the valve body stuffing box. Place the emergency seal (13) on top of the stem seal. Pre-assemble the stem (4) and stem bearing (11) as shown in (**Figure 3**). Lubricate as noted with compatible lubricant. Install the stem/stem bearing assembly into the stem hole in the valve body (1). Exercise caution that the stem bearing remains in place on the stem as it is being installed into the body stem bore.
8. Slide the second stem seal (7) over the stem (4) and into the body stuffing box. Slide the compression ring (18) over the stem and up against the stem seal. Slide the bonnet plate (9) over the stem and line up with the body studs until it makes contact with the compression ring. Then gently tap the bonnet plate until the stem seal is seated on the stem shoulder.
9. Place one stop sleeve (14) and one bonnet nut (10) onto each bonnet stud.
10. Tighten each bonnet nut (10) evenly and alternately until contact is made with the bonnet plate (9). Then with a torque wrench, evenly apply 70 – 80 IN•LBS (8 – 9 N•m) of torque to each nut.

11. Place the indicator stop (12) over the stem (4). A tamper-proof pin in the stem will allow the indicator stop onto the stem only one way. At this point, the stem with the indicator stop mounted and located between stop sleeves (14) is positioned so that a counterclockwise rotation of the stem will open the valve. For valves with "FO" option, the indicator stop (12) is marked with "FO". When placing indicator stop over stem, "FO" marking shall be face up. At this point, the stem with the indicator stop mounted and located between the stop sleeve is positioned so clockwise rotation of the stem will open the valve.
12. Retain the indicator stop by inserting the stem pin (21) into the stem (4) (**see Figure 4**).
13. Place the valve handle on the valve stem and rotate the ball slowly with a gentle back and forth motion to gradually build to the full quarter turn. A quick turning motion at this point may cut the seats before they have a chance to cold flow into place.
14. Secure the handle (15) on the stem (4) with the handle pin (28) so that the handle is parallel with the ball port.

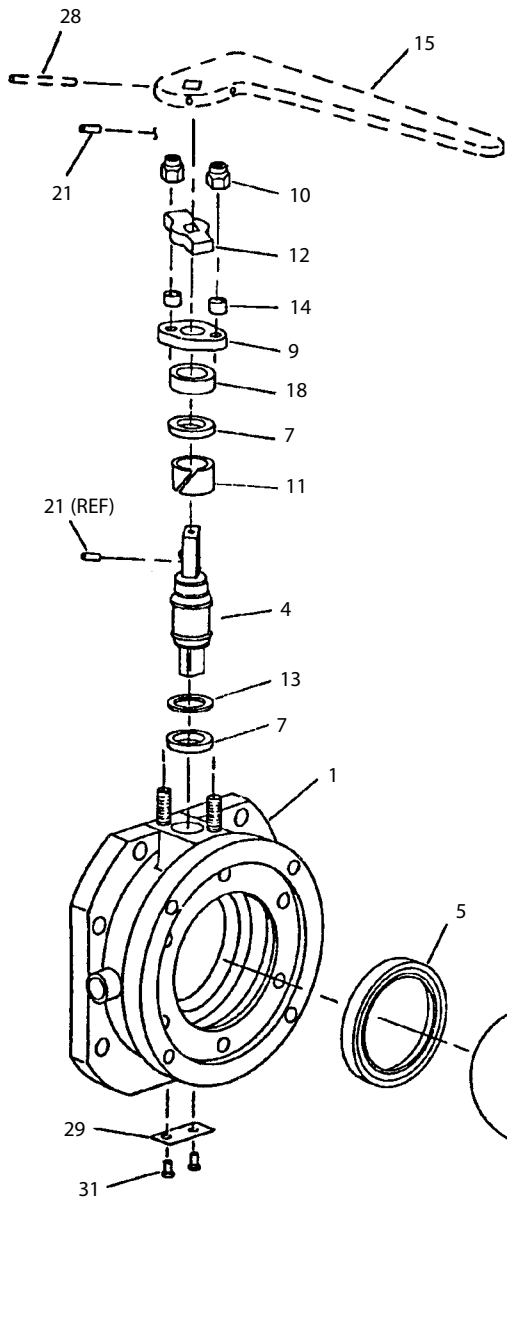
3 MAINTENANCE

Good operating procedure requires periodic observation to ensure that the valve is functioning well. The frequency of observation will depend on the application.

Stem Packing Adjustment - Routine maintenance consists of tightening the two self-locking stop bonnet nuts (10) periodically to compensate for the wear caused by the stem's turning against the resilient PTFE seals. Tighten the bonnet nuts equally 1/2 turn. If weepage still occurs, tighten another 1/2 turn. Overhaul maintenance consists of replacing seats and seals. A standard service kit consisting of these parts may be obtained by contacting Metso Automation. See page 3 for kit designations.

4 REPAIR KITS/SPARE PARTS

For further information on spare parts and service or assistance visit our website at www.metso.com/valves.



SERVICE KITS	
VALVE	4" (DN100) AZFRL AND 4" (DN100) AZFRS
PTFE SEATS	RKR-3TT
FILLED PTFE SEATS	RKR-3MT

PARTS LIST		
ITEM	PART NAME	QTY
1	Body Sub-Assembly	1
2	Insert	1
3	Ball	1
4	Stem	1
5	Seat	2
6	Body Seal	1
7	Stem Seal	2
9	Bonnet Plate	1
10	Self Locking Stop Nut	2
11	Stem Bearing	1
12	Indicator Stop	1
13	Emergency Stem Seal	1
14	Stop Sleeve	2
15*	Handle	1
18	Compression Ring	1
20	Cap Screw	6
21	Stem Pin	1
26	Set Screw	3
28*	Handle Pin	1
29	Identification Tag	1
31	Drive Screw	2

*Handle kit optional.

Figure 1

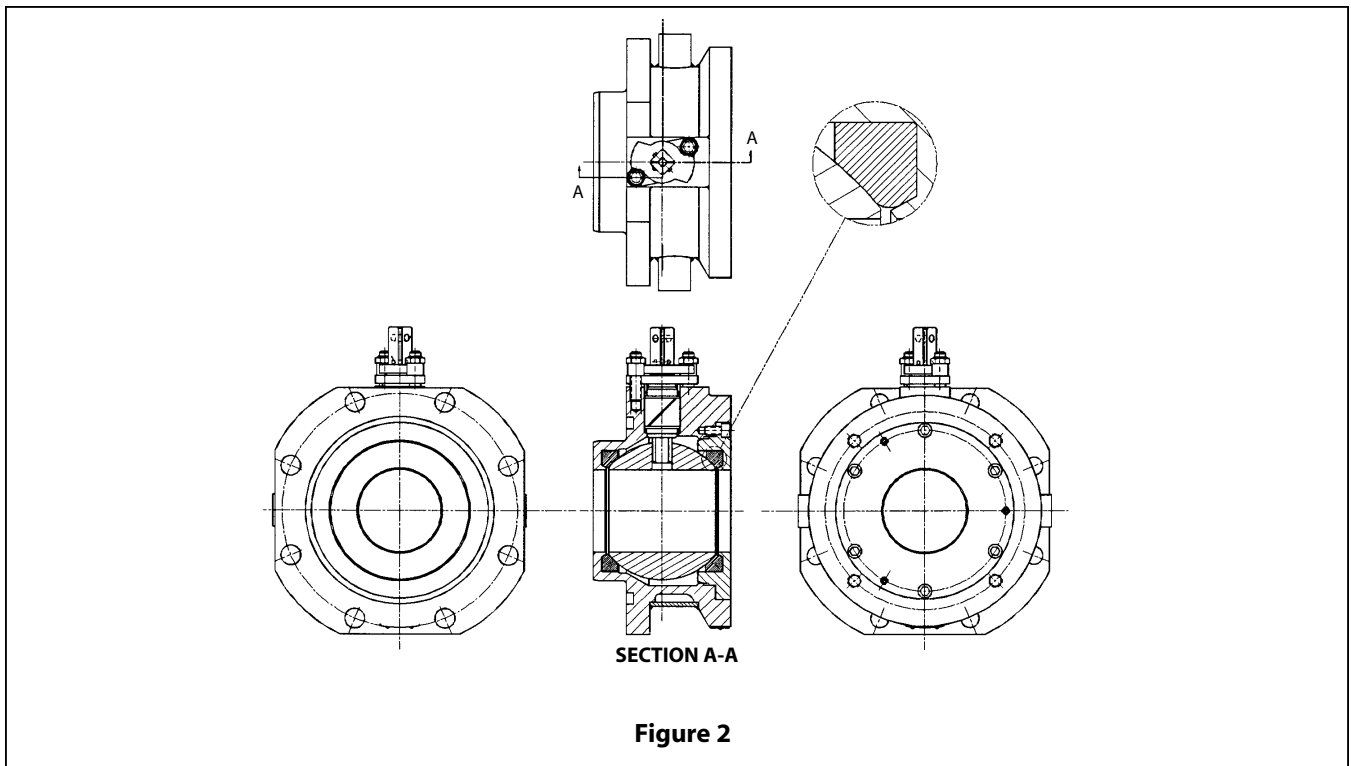


Figure 2

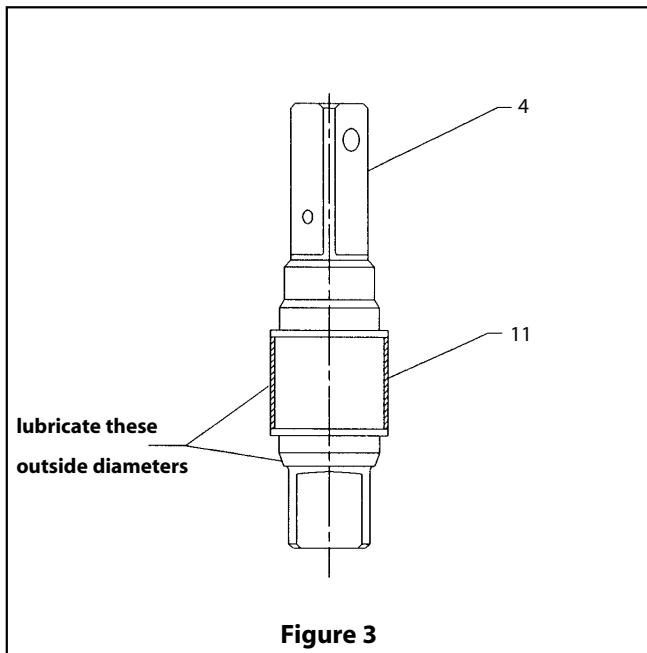


Figure 3

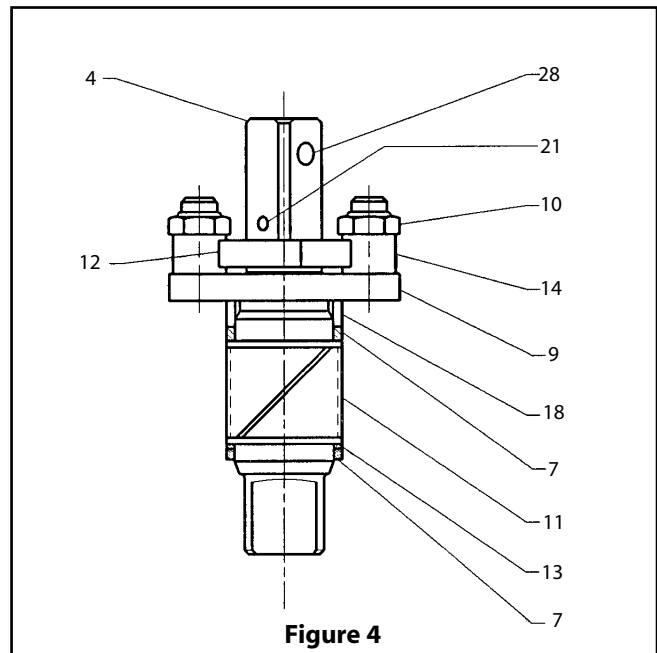


Figure 4

Subject to change without prior notice.

Metso Automation Inc.

Europe, Vanha Porvoontie 229, P.O. Box 304, FI-01301 Vantaa, Finland, Tel. +358 20 483 150, fax +358 20 483 151

North America, 44 Bowditch Drive, P.O. Box 8044, Shrewsbury, Massachusetts, 01545-8044, USA, Tel. +1 508 852 0200, fax +1 508 852 8172

South America, Av. Independência, 2500-Iporanga, 18087-101, Sorocaba-São Paulo, Brazil, Tel. +55 15 2102 9700, fax +55 15 2102 9748/49

Asia Pacific, 20 Kallang Avenue, Lobby B, #06-00, PICO Creative Centre, Singapore 339411, Singapore, Tel. +65 6511 1011, fax +65 6250 0830

China, 19/F, the Exchange Beijing, No. 118, Jianguo Lu Yi, Chaoyang Dist, 100022 Beijing, China, Tel. +86-10-6566-6600, fax +86-10-6566-2575

Middle East, Roundabout 8, Unit AB-07, P.O. Box 17175, Jebel Ali Freezone, Dubai, United Arab Emirates, Tel. +971 4 883 6974, fax +971 4 883 6836

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