

4" (DN 100) 5RET Tank Car Fire-Tite® Bottom Unloading Valves

Installation, Maintenance and
Operating Instructions

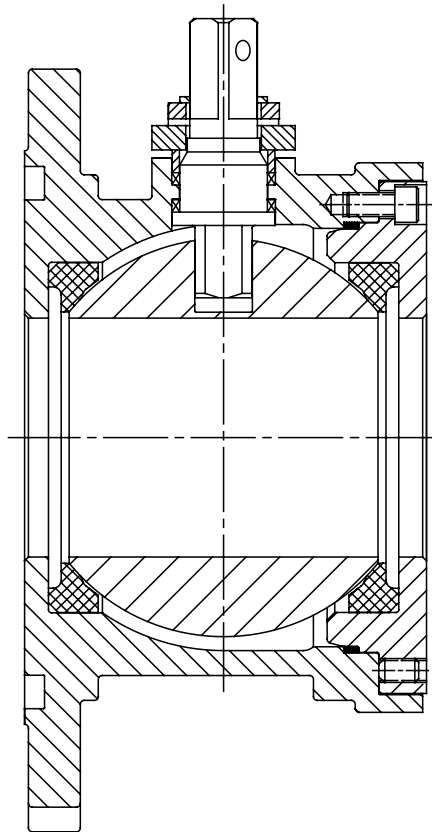


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READ THESE INSTRUCTIONS FIRST!

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/products/valves/tank-car-valves/ for the latest documentation.

SAVE THESE INSTRUCTIONS!

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1. GENERAL

This instruction manual contains important information regarding the installation, maintenance and operation of the Jamesbury® 4" (DN 100) 5RET Tank Car *Fire-Tite* bottom unloading valves. Please read these instructions carefully and save them for future reference.

1.1 WARNING

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

1. WEAR ANY PROTECTIVE CLOTHING OR EQUIPMENT NORMALLY REQUIRED WHEN WORKING WITH THE FLUID INVOLVED.
2. DEPRESSURIZE THE LINE AND CYCLE THE VALVE AS FOLLOWS:
 - A. PLACE THE VALVE IN THE OPEN POSITION AND DRAIN THE LINE.
 - B. CYCLE THE VALVE TO RELIEVE RESIDUAL PRESSURE IN THE BODY CAVITY BEFORE REMOVAL FROM THE LINE.
 - C. AFTER REMOVAL AND BEFORE ANY DISASSEMBLY, CYCLE THE VALVE AGAIN SEVERAL TIMES.
3. SEAT AND BODY RATINGS - THE PRACTICAL AND SAFE USE OF THIS PRODUCT IS DETERMINED BY BOTH THE SEAT AND BODY RATINGS. THIS PRODUCT IS AVAILABLE WITH A VARIETY OF SEAT MATERIALS. SOME OF THE SEAT MATERIALS HAVE PRESSURE RATINGS THAT ARE LESS THAN THE BODY RATINGS. ALL OF THE BODY AND SEAT RATINGS ARE DEPENDENT ON VALVE TYPE, SIZE, SEAT MATERIAL AND TEMPERATURE. DO NOT EXCEED THESE RATINGS.

2. INSTALLATION

Flow through these *Jamesbury* valves can be in either direction. In the case of a tongue and groove connection, however, the tongue is installed against the tank car.

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. Leaktight performance will be restored by a simple packing adjustment described in the **MAINTENANCE** Section.

3. MAINTENANCE

3.1 General

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 hex nuts (10) periodically to compensate for the wear caused by the stems turning against the resilient PTFE seals. Tighten the nuts equally 1/2 turn. Stem nut torque should be about 240 in.-lb.

Overhaul maintenance consists of replacing seats and seals. A standard repair kit consisting of these parts may be obtained through your Metso Distributor. (See **Table 1**) for the applicable repair kit.

PTFE Seats	RKR-3TT
Filled PTFE Seats	RKR-3MT
Barrier Seats	RKR-3MB

3.2 Disassembly

1. Read the instructions in the **WARNING** Section.
2. Place the valve in the closed position.
3. Remove the handle pin (28) and handle (15), if so equipped.
4. Remove the retaining ring (32), hex nuts (10), indicator stop (12), bonnet plate (9) and compression ring (18).
5. Remove the socket head cap screws (20). Remove the insert out of the body by tightening the set screws (26) evenly and alternately until the insert can be removed by hand.
6. Lift out the body seal (6) and the seat (5). If the seat did not come out with the insert (2), lift out the ball (3).
7. Carefully remove the bottom seat (5) from the body cavity being careful not to scratch the seat sealing surface in the body.
8. Remove the stem (4) by pressing it into the valve body cavity. It may be necessary to tap it with a piece of wood or some other soft material.
9. Carefully remove and discard the upper and lower stem seals (7) and the secondary stem seal (13), being careful not to scratch any sealing surfaces of the body.

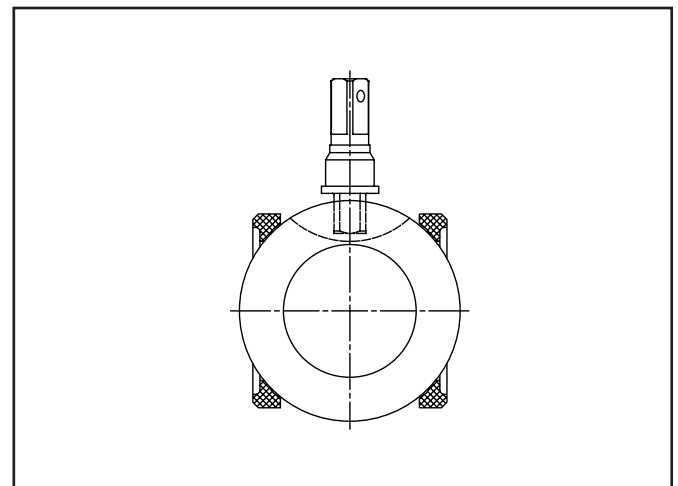


Figure 1.

3.3 Assembly

A good lubricant compatible with the commodity should be applied to seats, seals, ball and stem to facilitate assembly and for ease of initial operation.

1. Slide the first seat (5) into the body (1) to below the stem opening and tilt it into place so that the proper face will come into contact with the ball (3) (see **Figure 1**). Do not scratch or cut the seat faces.
2. From inside the valve body cavity, insert the secondary stem seal (13) and lower stem seal (7).
3. Insert the stem from inside the body (1), being careful not to scratch the stem seals and press it up into the stem bore until it is firmly seated against the lower stem seals (13 & 7).
4. Holding the stem in place from the bottom, insert the upper stem seal (7) over the stem and into the body stem bore.
5. Place the compression ring (18) on the stem and fit the bonnet plate (9) over the stem and the two bonnet studs.
6. Place the hex nuts (10) on the bonnet studs and tighten them evenly until they contact the bonnet plate (9) then tighten another 3/4 of a turn.
7. Place the indicator stop (12) over the stem, positioning it so that counter-clockwise rotation 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 bushing is positioned so clockwise rotation of the stem will open the valve.
8. Place the retaining ring (32) over the stem and into the groove on the stem.
9. Insert the ball (3) rotating it onto the stem (4) in the closed position. If necessary, turn the stem blade to align with the ball slot.
10. Insert the second seat (5) into the insert (2) so that the proper face will come in contact with the ball (3). Insert body seal (6) into the body with the chamfer on the I.D. facing away from the ball.
11. Adjust the set screws (26) so that they do not protrude through the insert or above the insert face.
12. Fit the insert (2) into the valve body, aligning the mounting holes in the insert with the threaded holes in the body.

13. Compress the insert into the body with the socket head cap screws (20) by tightening them evenly and alternately until the insert is bottomed and all the cap screws are tight.
14. Replace the handle (15), if present, and fasten to the stem using the handle pin (28).
15. Cycle the valve slowly with a gentle back and forth motion to build gradually to the full quarter turn. A fast turning motion at this point may cut the seats before they have a chance to form the proper seal.

3.4 Barrier Seat Installation (See Figure 2 & 3 - repair kit #RKR-3MB)

This section covers the disassembly and assembly of *Barrier* seats only. Follow the instructions in the Disassembly and assembly Sections of this IMO for all other parts.

3.4.1 Disassembly

1. Break the tack welds and remove the seat (5) and o-ring (27) from the valve insert (2) and body (1). Use care to prevent damage to the sealing surface on the body and insert.
2. Clean the areas that were previously tack welded in both the body and insert to bare metal.

3.4.2 Assembly

1. Place the O-ring (27) in the groove on the back of the seat (5). A small amount of lubricant applied to the O-ring will help hold the O-ring in the groove during assembly.
2. Insure that all sealing surfaces are cleaned before continuing.
3. Slide the first seat (5) with O-ring (27) into the body (1) to below the stem opening and tilt it into place so that the proper face will come in contact with the ball (3) (See **Figure 2**).
4. Center and firmly clamp seat (5) and o-ring (27) into the body (1) using the fixture in (**Figure 3**). Tack weld the seat into position per the instructions indicated in (**Figure 3**).
5. Assemble o-ring (27) and seat (5). Place the seat assembly into the insert (2) in a manner that the sealing face will contact the ball (3) (**Figure 2**). Center and firmly clamp seat assembly into the body using the fixture in (**Figure 3**). Tack weld the seat into position per the instructions indicated in (**Figure 3**).

4. REPAIR KITS/SPARE PARTS

For further information on spare parts and service or assistance visit our web-site at www.metso.com/products/valves/tank-car-valves/.

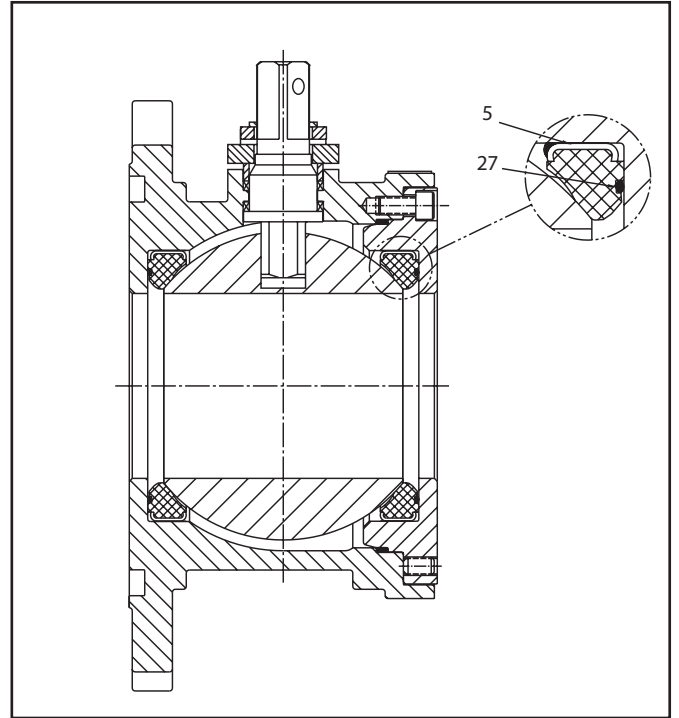


Figure 2.

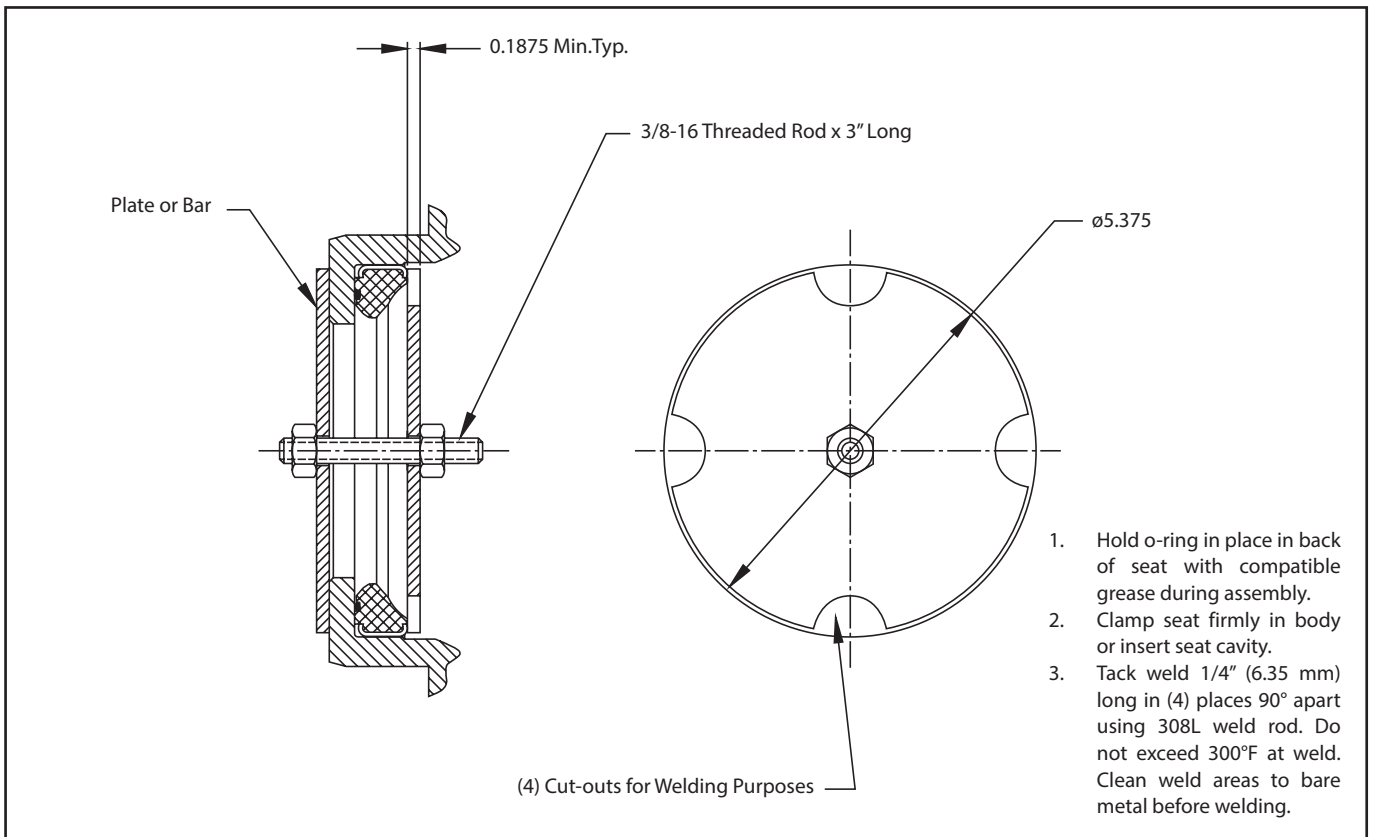
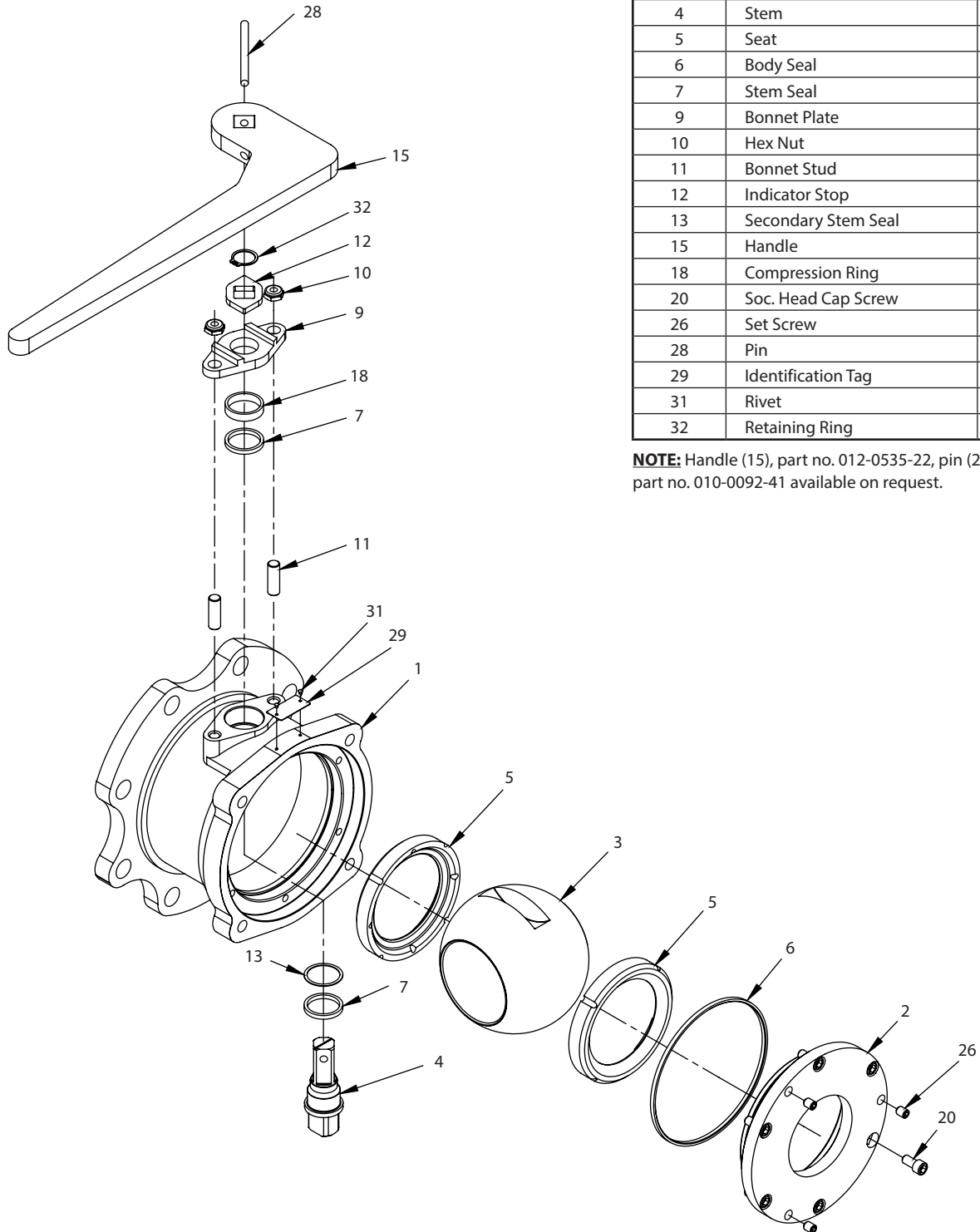


Figure 3.

EXPLODED VIEW & PARTS LIST



PARTS LIST		
Item no.	Description	QTY.
1	Body	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	Hex Nut	2
11	Bonnet Stud	2
12	Indicator Stop	1
13	Secondary Stem Seal	1
15	Handle	1
18	Compression Ring	1
20	Soc. Head Cap Screw	6
26	Set Screw	3
28	Pin	1
29	Identification Tag	1
31	Rivet	2
32	Retaining Ring	1

NOTE: Handle (15), part no. 012-0535-22, pin (28), part no. 010-0092-41 available on request.

Figure 4.

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