

**1/2" – 2" (DN 15 – 50)
Standard Bore Series 7000
1/2" – 1-1/2" (DN 15 – 40)
Full Bore Series 9000 Flanged Ball Valves
with ISO Bonnet**

Installation, Maintenance and
Operating Instructions

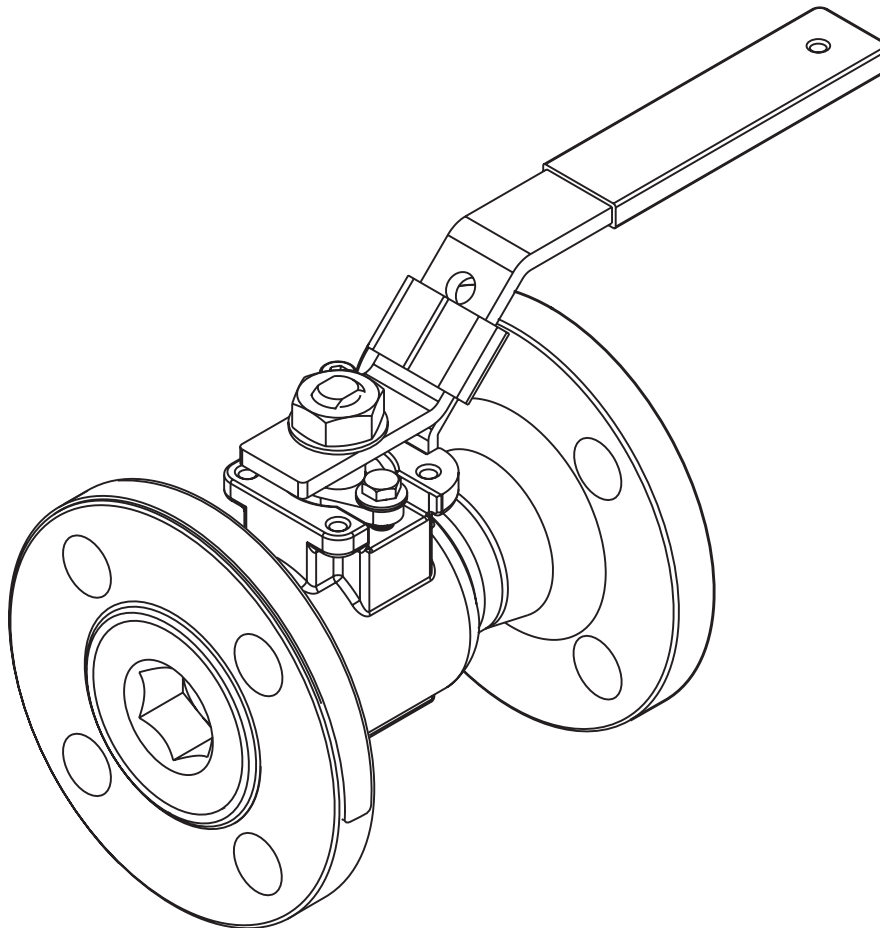


TABLE OF CONTENTS

1. GENERAL.....	3
2. INSTALLATION.....	3
3. MAINTENANCE.....	3
3.1 Disassembly.....	3
3.2 Assembly	4
4. REPAIR KITS/SPARE PARTS	4

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!

1. GENERAL

This instruction manual contains important information regarding the installation, operation and troubleshooting of the Jamesbury® 1/2" – 2" (DN 15 – 50) Standard Bore Series 7000 and the 1/2" – 1-1/2" (DN 15 – 40) Full Bore Series 9000 Flanged Ball Valves with ISO Bonnet. Please read these instructions carefully and save for further reference.

WARNING

FOR YOUR SAFETY, TAKE THE FOLLOWING PRECAUTIONS BEFORE REMOVING THE VALVE FROM THE LINE, OR BEFORE ANY DISASSEMBLY.

1. DURING REMOVAL AND DISASSEMBLY, WEAR ANY PROTECTIVE EQUIPMENT NORMALLY REQUIRED TO PROTECT AGAINST DISCHARGE OF TRAPPED FLUID.
2. DEPRESSURIZE THE LINE AND 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 RATING. READ THE NAME TAG AND CHECK BOTH 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 RATING. ALL OF THE BODY AND SEAT RATINGS ARE DEPENDENT ON **VALVE TYPE AND SIZE, SEAT MATERIAL AND TEMPERATURE**. DO NOT EXCEED THESE RATINGS.

NOTE: OPTIONAL ROUND AND OVAL HANDLES ARE AVAILABLE FOR THESE VALVES IN PLACE OF LEVER HANDLES.

2. INSTALLATION

1. Place valve in OPEN position.
2. Valve may be installed for flow in either direction. However, it is recommended that the valve be installed with the insert facing upstream.
3. Use the proper size flange bolts and follow the recommended practices of the gasket manufacturer when tightening the flange bolts.

3. MAINTENANCE

Although Metso's Jamesbury valves are designed to work under severe conditions, proper preventative maintenance can significantly help to prevent unplanned downtime and in real terms reduce the total cost of ownership. Metso recommends inspecting valves at least every five (5) years. The inspection and maintenance frequency depends on the actual application and process condition.

1. **Routine Maintenance** consists of tightening the compression plate hex head cap screws periodically to compensate for the wear caused by the stem turning against the stem seals. Check to make sure that the compression plate hex head cap screws are tightened to the torque listed in **(Table 1)**.

TABLE 1A		
Hex Head Cap Screw Torque Standard Bore Series 7000		
Valve Size	Torque IN•LBS	Torque N•m
1/2" & 3/4" (DN 15 & 20)	15	1.7
1" (DN 25)	20	2.3
1-1/2" & 2" (DN 40 & 50)	32	3.6

TABLE 1B		
Hex Head Cap Screw Torque Full Bore Series 9000		
Valve Size	Torque IN•LBS	Torque N•m
1/2" (DN 15)	15	1.7
3/4" & 1" (DN 20 & 25)	20	2.3
1-1/2" (DN 40)	32	3.6

2. **Overhaul Maintenance** consists of replacing seats and seals. A standard Repair Kit consisting of these parts may be obtained from your Metso Distributor **(See Table 4)**.

NOTE: Repair Kits contain the seats and stem seals for both the fire-tested and non-fire-tested valves. Refer to the ASSEMBLY Section for details on the correct installation of these parts.

3.1 Disassembly

1. Comply fully with the steps in the **WARNING** Section on page 1 prior to working on the valve.
2. Open and close the valve and leave in the closed position.
3. Remove the handle nut (16), lockwasher (19), and handle (17).
4. Remove hex head cap screws (29), disc springs (31) and compression plate (20).
5. Clamp the valve body (1) securely in a vise.
6. Unscrew and remove the insert (2).
7. Remove and discard the old body seal (6). Be careful not to damage the sealing surfaces. May include support ring (9) used with graphite seal.
8. With the ball in the closed position, remove ball (3) and seats (5). **NOTE:** A piece of wood or other soft material may be used to unseat the parts from the opposite side. Be careful not to damage the ball or seating surfaces in the body.
9. Press the stem (4) into the body (1) and remove it through the open end.

10. Carefully pry out and discard the stem seal (8) and stem bearing (24) being careful not to damage the bearing surfaces. **NOTE:** Fire-Tite® construction contains a secondary stem seal (7) and 2 stem bearings (13), in place of the non-Fire-Tite stem bearing (24). Also PEEK® seats have an additional upper stem bearing (10) and an anti extrusion ring (55).

3.2 Assembly

NOTE: Repair Kits contain replacement seals for *Fire-Tite* and non-*Fire-Tite* constructions.

1. Inspect the parts to ensure sealing surfaces are in good condition and all parts are properly cleaned and prepared for assembly.
2. Clamp the body (1) securely in a vise with the body joint opening facing up.
3. Insert the seat (5) into the body (1) with the flat side down, as shown in **(Figure 2)**.
4. Place the stem bearing (24) on the stem (4).
NOTE: *Fire-Tite* valves have 2 stem bearings (13) and a secondary stem seal (7) as shown in **(Figure 1)**.
5. Insert the stem (4) with the bearing(s) into the valve body and through the stem bore in the body, as shown in **(Figure 1)**.
6. Holding the stem in place from the inside, install the stem seal (8) and the compression plate (20). For PEEK seats, install upper bearing (10) and anti extrusion ring (55) into the packing bore prior to installing the stem seal (8).
7. Place the disc springs (31) on the hex head cap screws (29). Disc spring orientation is shown in **(Figure 1)**. Install the hex head cap screws through the compression plate and bring them down hand tight.
8. While pressing the stem (4) outward from inside the body, tighten the hex head cap screws to the torque provided in **(Table 1)**. Apply torque evenly, alternating between the two cap screws so that the compression plate will be parallel with the valve body bonnet.
9. Align the stem to the ball slot. Insert the ball (3) so that the internal stem blade fits into the ball slot.
10. Insert the second seat (5) with the flat facing up. Insert the body seal (6). **NOTE:** Some sizes of graphite body seals contain an additional support ring (9). Install support ring (9) prior to inserting body seal (6).

11. Screw the insert (2) into the body (1) and tighten to the Torque listed in **(Table 2)**.
12. With ball (3) in the open position, install handle (17) over the non-insert flange, lockwasher (19) and handle nut (16) and tighten to torque listed in **(Table 3)**. Handle **MUST** be in this orientation as shown in **(Figure 1)**.
13. Cycle the valve slowly to ensure smooth operation.

4. REPAIR KITS/SPARE PARTS

We recommend that valves be directed to our service centers for maintenance. The service centers are equipped to provide rapid turn-around at a reasonable cost and offer new valve warranty with all reconditioned valves.

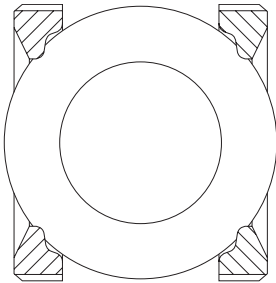
NOTE: When sending goods to the service center for repair, do not disassemble them. Clean the valve carefully and flush the valve internals. Include the material safety datasheet(s) (MSDS) for all media flowing through the valve. Valves sent to the service center without MSDS datasheet(s) will not be accepted.

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

NOTE: When ordering spare parts, always include the following information:

- a. Valve catalog code from identification plate,
- b. If the valve is serialized – the serial number (from identification plate).
- c. From **Figure 1**, the ballooned part number, part name and quantity required.

EXPLODED VIEW AND PARTS



Seats should be in this position at assembly

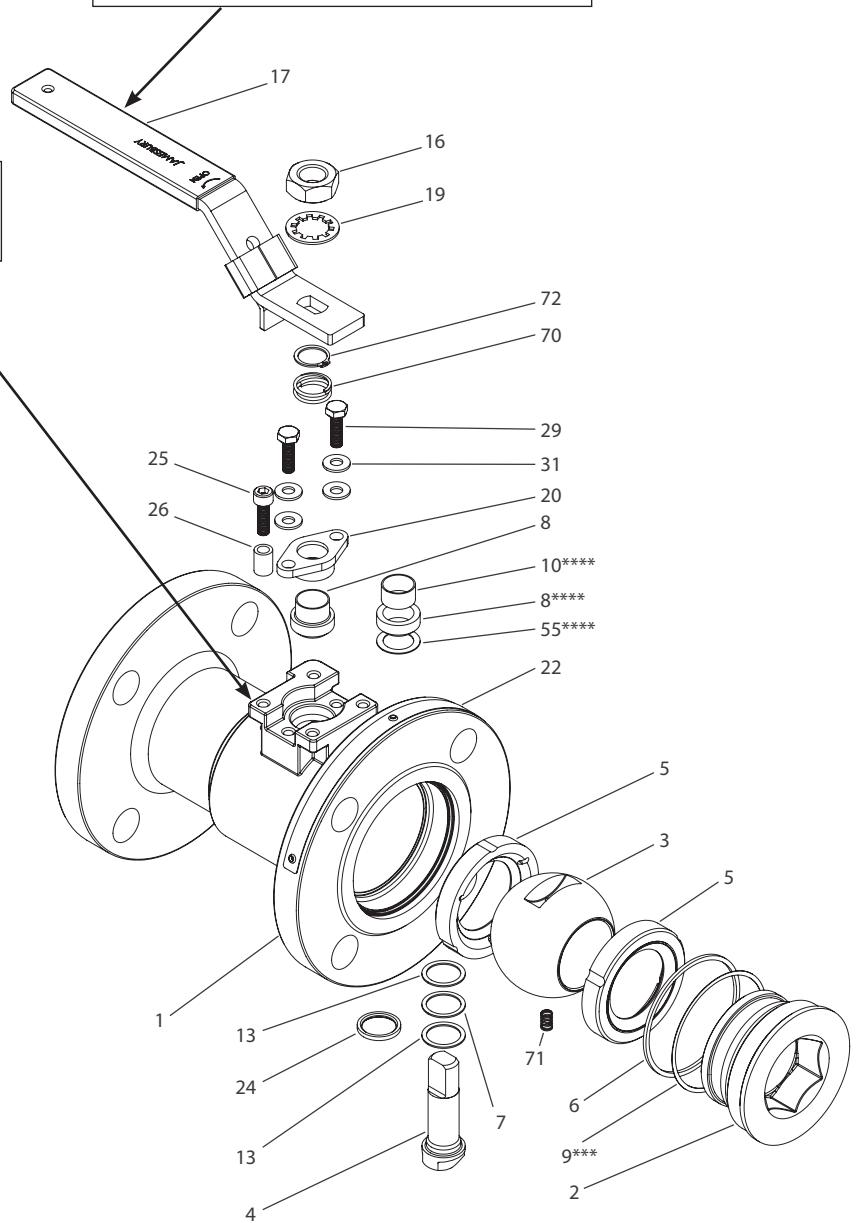
Figure 2

Stop screw (25) with bushing (26) **MUST** be in this location.



Proper Disc Spring Orientation

Handle (17) **MUST** be in this orientation over non-insert flange when valve is in the open position.



PARTS LIST		
ITEM	PART NAME	QTY
1	Body	1
2	Insert	1
3	Ball	1
4	Stem	1
5	Seat	2
6	Body Seal	1
7*	Secondary Stem Seal	1
8	Stem Seal	1
9***	Support Ring	1
10****	Upper Stem Bearing	1
13*	Stem Bearing	2
16	Handle Nut	1
17	Handle	1
19	Shakeproof Washer	1
20	Compression Plate	1
22	Identification Tag	1
24**	Stem Bearing Non-Fire-Tite	1
25	Socket Head Cap Screw	1
26	Spacer	1
29	Hex Head Cap Screw	2
31	Disc Spring	4
55****	Anti Extrusion Ring	1
70	Upper Grounding Spring	1
71	Lower Grounding Spring	1
72	Retaining Ring	1

* Fire-Tite valves only
 ** Non-Fire-Tite valves only
 *** Use Item 9 for 1" and 1-1/2" (DN 25 and 40)
 9000, 1-1/2" and 2" (DN 40 and 50) 7000
 graphite seals only
 ****Used for upper graphite stem seals only

Figure 1

TABLE 2A	
Insert Torques Standard Bore Series 7000	
Valve Size	Torque – FT•LBS (N•m)
Inches (DN)	
1/2 – 3/4 (15 – 20)	100 (136)
1 (25)	150 (203)
1-1/2 (40)	250 (339)
2 (50)	350 (476)

TABLE 2B	
Insert Torques Full Bore Series 9000	
Valve Size	Torque – FT•LBS (N•m)
Inches (DN)	
1/2 (15)	100 (136)
3/4 (20)	150 (203)
1 (25)	200 (271)
1-1/2 (40)	350 (476)

TABLE 3A	
Handle Nut Torque Standard Bore Series 7000	
Valve Size	Torque – FT•LBS (N•m)
Inches (DN)	
1/2 – 3/4 (15 – 20)	9 (12)
1 (25)	23 (31)
1-1/2 (40 – 50)	33 (45)

TABLE 3B	
Handle Nut Torque Full Bore Series 9000	
Valve Size	Torque – FT•LBS (N•m)
Inches (DN)	
1/2 (15)	9 (12)
3/4 – 1 (20 – 25)	23 (31)
1-1/2 (40)	33 (45)

TABLE 4A					
Repair Kits Standard Bore Series 7000					
Repair Kits	Valve Size				
Valve Size	1/2" (DN 15)	3/4" (DN 20)	1" (DN 25)	1-1/2" (DN 40)	2" (DN 50)
Xtreme® Seats	RKN-354XT	RKN-355XT	RKN-356XT	RKN-358XT	RKN-359XT
PTFE Seats	RKN-354TT	RKN-355TT	RKN-356TT	RKN-358TT	RKN-359TT
Acetal Seats	RKN-354RT	RKN-355RT	RKN-356RT	RKN-358RT	RKN-359RT
UHMW Seats	RKN-354UU	RKN-355UU	RKN-356UU	RKN-358UU	RKN-359UU
PEEK Seats	RKN-354LG	RKN-355LG	RKN-356LG	RKN-358LG	RKN-359LG

TABLE 4B				
Repair Kits Full Bore Series 9000				
Repair Kits	Valve Size			
Valve Size	1/2" (DN 15)	3/4" (DN 20)	1" (DN 25)	1-1/2" (DN 40)
Xtreme Seats	RKN-354XT	RKN-356XT	RKN-357XT	RKN-359XT
PTFE Seats	RKN-354TT	RKN-356TT	RKN-357TT	RKN-359TT
Acetal® Seats	RKN-354RT	RKN-356RT	RKN-357RT	RKN-359RT
UHMW Seats	RKN-354UU	RKN-356UU	RKN-357UU	RKN-359UU
PEEK Seats	RKN-354LG	RKN-356LG	RKN-357LG	RKN-359LG

Acetal is a registered trademark of Dupont Co.

Subject to change without prior notice.

Metso Flow Control 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, M A 01545, 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

Asia Pacific, 238B Thomson Road, #17-01 Novena Square Tower B, Singapore 307685. Tel. +65 6511 1011. Fax +65 6250 0830

China, 11/F, China Youth Plaza, No.19 North Rd of East 3rd Ring Rd, Chaoyang District, Beijing 100020, China. Tel. +86 10 6566 6600. Fax +86 10 6566 2583

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

www.metso.com/valves

