

Jamesbury™ 3-pieces ball valves

series 4000

reduced bore, 2½" (DN 65)

full bore, 2" (DN 50)

Installation, maintenance and
operating instructions

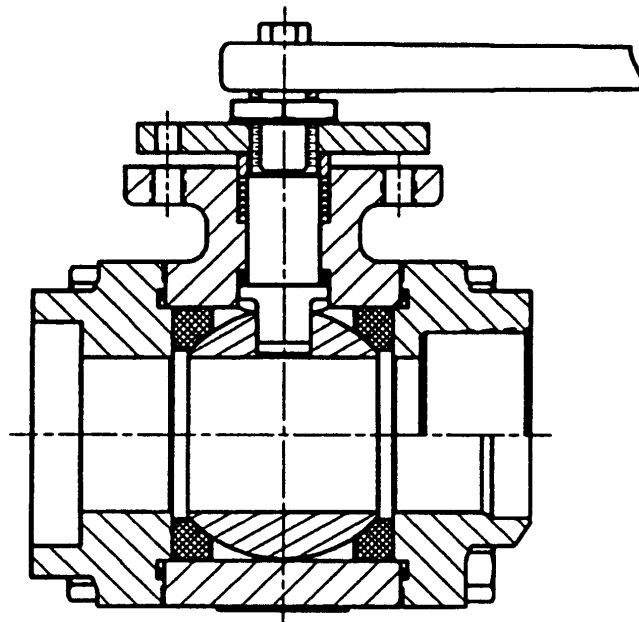


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READ THESE INSTRUCTIONS FIRST!

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.

SAVE THESE INSTRUCTIONS!

Addresses and phone numbers are printed on the back cover.

1. GENERAL

This instruction manual contains important information regarding the installation, operation and troubleshooting of the Jamesbury™ 2½" (DN 65) Reduced Bore and 2" (DN 50) Full Bore Series 4000 3-Piece Ball Valves. Please read these instructions carefully and save them for future reference.

WARNING:

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

DURING REMOVAL AND DISASSEMBLY, WEAR ANY PROTECTIVE EQUIPMENT NORMALLY REQUIRED TO PROTECT AGAINST DISCHARGE OF TRAPPED FLUID. 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.

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 MAY HAVE PRESSURE RATINGS THAT ARE LESS THAN THE BODY RATINGS. ALL OF THE BODY AND SEAT RATINGS ARE DEPENDENT ON VALVE TYPE AND SIZE, SEAT MATERIAL AND TEMPERATURE. DO NOT EXCEED THESE RATINGS.

1.1 INSTALLATION

Screwed End Style - Use standard piping practices to install valves with threaded end caps. When tightening valve to pipe, apply wrench to end cap nearest the pipe being worked.

Weld End Style - Only valves with UHMWPE or Acetal seats must be disassembled before welding in line. A warning tag and replacement body seals are affixed to valves with these seat materials. VALVES WITH OTHER SEAT MATERIALS SHOULD BE WELDED IN-LINE FULLY ASSEMBLED.

WARNING

WELDING AND/OR GRINDING OF STAINLESS STEEL AND OTHER ALLOY STEELS CONTAINING CHROMIUM METAL MAY CAUSE THE RELEASE HEXAVALENT CHROMIUM. HEXAVALENT CHROMIUM, CHROMIUM(VI) OR CR(VI), IS KNOWN TO CAUSE CANCER. BE SURE TO USE ALL APPROPRIATE PPE WHEN WELDING METALS CONTAINING CHROMIUM. IF YOU HAVE ANY QUESTIONS CONSULT YOUR SUPERVISOR.

1. Only a qualified person should weld, as outlined in Section IX of the ASME Boiler Construction Code.
2. Cycle the valve to the fully open position.
3. Remove or protect the handle or actuator from weld splatter or arc strikes.
4. Weld by applying a recommended 1/8" (3.2 mm) max. weld bead per pass around each end cap. **CAUTION: DO NOT** heat the center section over 350°F (176.7°C). Use a temperature stick and a wet cloth wrapped around the center section to prevent overheating.
5. For welds that require multiple passes to achieve weld size, stop after each pass and carefully monitor the valve body temperature.
6. After sufficient cooling of the valve, replace the handle or actuator.

IMPORTANT: If the body seals (6) and (18) are removed for welding, **DO NOT REUSE THEM**. When reassembling the valve, put new seals back into the grooves. Body seal kits are provided in (Table 5). Tighten the body bolts to the torques listed in (Table 1).

CAUTION: IF THE VALVE IS BEING DISASSEMBLED FOR WELDING, DO NOT CUT OR SCRATCH THE SEATS, SEALS AND SEALING SURFACES. DAMAGE TO THE SEALING SURFACES MAY CAUSE LEAKAGE.

After valve is in line, or before any testing, tighten stem nuts (16) according to the **MAINTENANCE** Section below.

2. MAINTENANCE

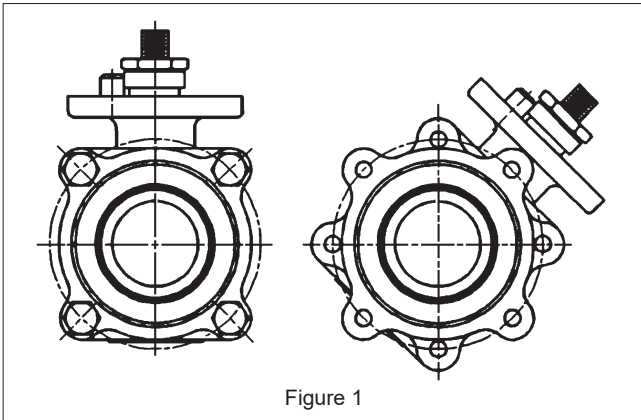
Although *Jamesbury* valves are designed to work under severe conditions, proper preventative maintenance can significantly help to prevent unplanned downtime and in real terms reduce the total cost of ownership. Valmet recommends inspecting valves at least every five (5) years. The inspection and maintenance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

Routine maintenance consists of tightening the stem nut 1/4 turn periodically to compensate for the wear caused by the stem turning against the stem seals. When tightening stem seals on actuated valves where the valve is connected to the actuator with a no-play (clamped) coupling, loosen the coupling before tightening the stem nut. Re-tighten the coupling. Overhaul maintenance consists of replacing seats and seals. A standard repair kit consisting of these parts may be obtained from your Valmet distributor or representatives (see Table 5).

2.1 DISASSEMBLY

The Series 4000 ball valve is designed to be serviced in or out of the line. The following instructions are for in-line disassembly. (For bench disassembly, which may be more convenient, follow a similar sequence.)

1. Comply fully with the instructions in the **WARNING** Section.
2. Be sure to cycle the valve. Leave in the open position. The body center section will not swing out in the closed position.
3. Remove the cap screw (21) and the handle (15).
4. Loosen all eight body bolts (20). Pick two bolts (closest to the top of the valve) that are in line and opposite each other, and back them off at least 5/16". Remove the remaining six bolts.

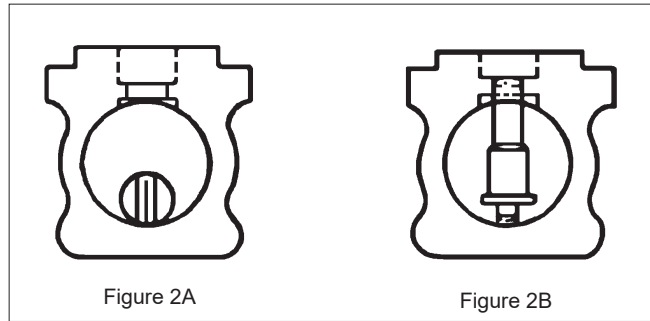


5. For positive alignment and ease of in-line assembly, each end cap is interlocked approximately 3/32" (2.4 mm) into the body as shown in (Figure 3). To overcome this feature during in-line disassembly, it is necessary to separate each cap at least 3/32" (2.4 mm) from the body. Sharply rap body and caps with a block of wood or plastic mallet to break the body seal loose. Spread end caps and swing the body out of the line. If the pipe does not allow simple spreading, remove the remaining body bolts and rotate center section per (Figure 1). This will improve access to the end cap flange for ease of spreading. Swing the valve body (1) out from between the end caps (2). Be careful not to damage the sealing surfaces "A" (see Figure 3) at each end of the valve.
6. Turn the stem (4) so that the valve is fully closed. Remove body seals (6) and seats (5). Body seals may be tightly compressed in their grooves. Use extreme care when prying them out. Damage such as scratches to the bottom of the groove will cause leaks. If the seats are not easily removed, gently tap the ball (3) with a piece of wood or other soft material.
7. Remove the ball (3).
8. Remove and save the stem nut (16), Shakeproof® washer (9), indicator stop (12), and compression ring (18).
9. Push the stem (4) from the top into the valve body (1), and remove it through the end of the body.
10. Carefully pry out and discard the old stem seals (7), the stem bearings (8), and the secondary seal (13) being careful not to damage the bearing surfaces.

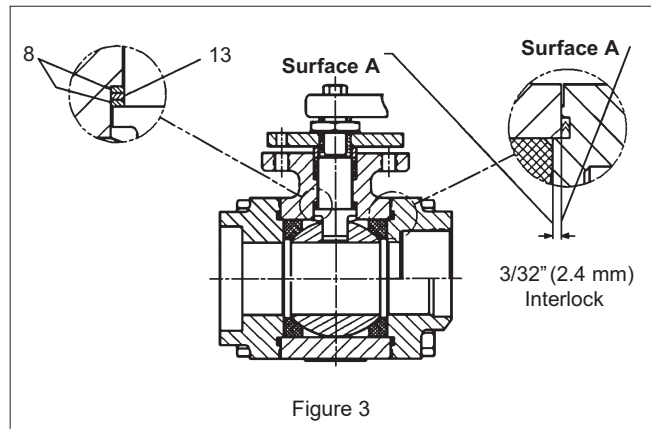
2.2 ASSEMBLY

The following instructions are for in-line assembly. For bench assembly, which may be more convenient, follow a similar sequence by holding the valve in a vise by one end cap. Use care not to cut or scratch the seats, seals or sealing surface.

1. With the valve swung to the out-of-line position, insert from the inside of the body a stem bearing (8), a secondary seal (13), then another stem bearing (8) into the stem bore.
2. Insert the stem (4) horizontally into the body bore (threaded end first). The blade at the ball end of the stem must be vertical (see Figure 2A and B). Guide the stem into the stem hole being careful not to scratch the bearings.



3. Holding the stem in place from the bottom, install the top stem seal (7), a compression ring (18), indicator stop (12), Shakeproof washer (9), and thread on stem nut (16) until the stem (4) starts to turn.



4. Place a wrench through the body on the bottom stem blade to hold the stem stationary. Place another wrench on the stem nut and turn the nut down until the seals are bottomed and the stem comes snugly into place. Tighten an additional 1/4 to 1/2 turn.
5. Align the stem blade with the ball slot. Insert the ball (3) and rotate the stem (4) to the ball closed position.
6. Working at either end of the body (1), place a seat (5) into the body. Fit it snugly against the closed ball. **NOTE:** The sealing surface of the seat is toward the ball (See Figure 3).

7. Place a body seal (6) into the machined sealing groove of the end cap (2) (**See Figure 3**). Be certain the groove and seal are clean.
8. Repeat instructions 6 and 7 for assembly at the opposite end.
9. Turn the stem (4) to the full ball open position.
10. Swing the entire body assembly back into the properly aligned and interlock position between the end caps, being careful not to scratch the body seals. Caps may have to be spread slightly to accept the body.
11. Close the valve.
12. Bolt the valve together with lubricated body bolts (20). Using a calibrated torque wrench, tighten these bolts evenly and alternately. (**See Table 1 for the torques and lubricant.**) Failure to properly tighten the bolting may result in leakage.
13. Attach the handle (15); secure it with the cap screw.
14. On manual valves be sure item (38), socket head cap screw, is not loose.

TABLE 1							
REQUIRED FASTENER TORQUES, FT•LBS (N•m)							
Fastener (Last Digit in Figure No.)		-1	-2	-4	-5	-7	-8
Valve Size - Full Port Size IN ()	Fastener Material	A193 GR.B7	A194 GR.B8	K-Monel®+	A193 GR.B7M	A320 GR.L7M	A453 GR.660
	Fastener Ident. Mark	B7	B8	K	B7M	L7M	"660A or 660B"
Body Bolt Torque	FT•LBS	74 – 93	71 – 89	64 – 80	60 – 75	57 – 71	60 – 75
	N•m	100 – 126	96 – 121	87 – 108	81 – 102	77 – 86	81 – 102
NOTES: 1. Lubricate threads with Never-Seez® or equivalent. 2. Fastener materials have different corrosion, thermal and strength properties and should not be mixed. The fastener identification and coding must be in agreement with the valve Identification Plate, item 29. + Monel is a registered trademark of INCO.							

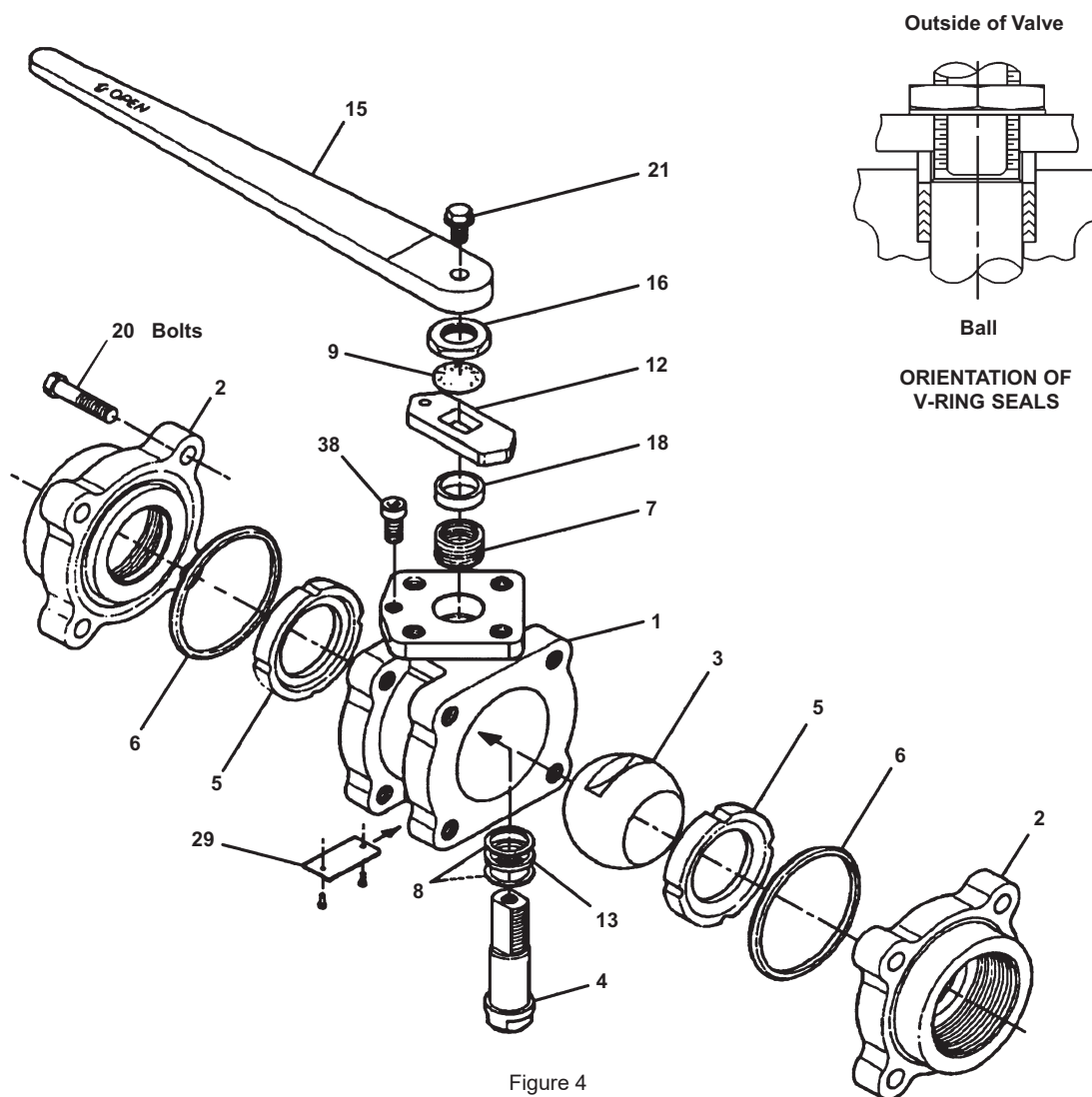


Figure 4

PARTS LIST

ITEM	PART NAME	QTY
1	Body	1
2	Body Cap	2
3	Ball	1
4	Stem	1
5	Seat	2
6	Body Seal	2
7	Stem Seal	1
8	Stem Bearing	2
9	Shakeproof® Washer	1
12	Indicator Stop	1
13	Secondary Stem Seal	1
15	Handle	1
16	Stem Nut	1
18	Compression Ring	1
20	Body Bolt	8
21	Hex Cap Screw	1
25	Weld End Tag*	1
29	Identification Plate	1
38	Socket Head Screw	1

* Socket weld or butt weld only.

3. ACTUATOR MOUNTING

(See Figure 5)

When these valves are equipped with an actuator, and the actuator is removed to service valve, proper alignment of the actuator driver and valve stem is essential when the actuator is remounted.

3.1 GENERAL

These mounting instructions describe the steps required to assemble the Jamesbury 2 1/2" (DN65) Reduced Bore and 2" (DN50) Full Bore, Series 4000 Mod A 3-Piece Ball Valves to Jamesbury actuators. Linkage kits that are needed to mount specific Jamesbury actuators to different types and sizes of Jamesbury Valves can be identified by Valmet or your authorized Valmet Distributor. These linkages can be classified into two different types, Slip-On Coupling and No-Play Coupling. Mounting instructions are provided for each type in this section, examples of standard Jamesbury actuator linkage types are listed in the table below.

Linkage Type	Applicable Jamesbury Actuators
Slip-On Coupling	QPX_M, Torq-Handle
No-Play Coupling	MGR, VPVL

WARNING

FOR YOUR SAFETY IT IS IMPORTANT THAT THE FOLLOWING PRECAUTIONS BE TAKEN!

BEFORE INSTALLING THE VALVE AND ACTUATOR, BE SURE THE INDICATOR POINTER ON TOP OF THE ACTUATOR IS CORRECTLY INDICATING THE VALVE'S POSITION. FAILURE TO ASSEMBLE THESE TO INDICATE THE CORRECT VALVE

POSITION COULD RESULT IN DAMAGE OR PERSONAL INJURY! WHEN INSTALLING A LINKAGE KIT OR SERVICING THE VALVE/ACTUATOR ASSEMBLY, THE BEST PRACTICE IS TO REMOVE THE ENTIRE ASSEMBLY FROM SERVICE!

AN ACTUATOR SHOULD BE REMOUNTED ON THE SAME VALVE FROM WHICH IT WAS REMOVED. THE ACTUATOR MUST BE ADJUSTED FOR THE PROPER "OPEN" AND "CLOSE" POSITIONS EACH TIME IT IS REMOVED! THE LINKAGE KITS HAVE BEEN DESIGNED TO SUPPORT THE WEIGHT OF THE VALMET ACTUATOR AND RECOMMENDED ACCESSORIES. USE OF THE LINKAGE TO SUPPORT ADDITIONAL EQUIPMENT OR ADDITIONAL WEIGHT SUCH AS PEOPLE, LADDERS, ETC., MAY RESULT IN THE FAILURE OF THE LINKAGE, VALVE, OR ACTUATOR; AND MAY CAUSE DAMAGE OR PERSONAL INJURY!

3.2 VALVE PREPARATION

1. With the valve removed from the pipeline, turn the valve to the closed position.
2. On valves with handles; remove Hex Head Cap Screw (21), Handle (15), Stem Nut (16), Shakeproof Washer (9), Indicator Stop (12), Compression Ring (18) and Socket Head Screw (38). These parts are no longer needed and may be discarded.
3. Install new Compression Ring (A18) provided with linkage kit.

4. Install new Stem Nut (A16) provided with linkage kit. Tighten Stem Nut (A16) an additional 1/8 to 1/4 turn after it bottoms out on Compression Ring (A18).

3.3 BRACKET PREPARATION

1. Install the Base Plate (A1) on the valve and secure with four Hex Head Cap Screws (A5) and Lockwashers (A6) provided.
2. Mount Bracket (A2) to the actuator with the four Hex Head Cap Screws (A7) and Lockwashers (A8) provided.

3.4 COUPLING PREPARATION

Slip-On Coupling:

1. Inspect the Coupling (A3), locate end that will attach to the valve stem and place on top of stem.
2. If Reducer/Spacer (A4) is present in linkage kit; add to the actuator side of the Coupling (A4).

No-Play Coupling:

1. Loosely assemble the two Coupling Halves (A3) using the four Socket Head Cap Screws (A11) and Lock Nuts (A12) to form a sub-assembly.
2. Identify the end of the sub-assembly that will engage the valve stem, slide that end onto the stem of the valve.
3. If Adapter (A13) is present in linkage kit; identify the actuator side of the Adapter (A13). Insert the opposite end into the Coupling sub-assembly so the actuator end of the Adapter (A13) is the exposed side once installed in coupling sub-assembly.
4. Leave the fasteners in the coupling sub-assembly loose.

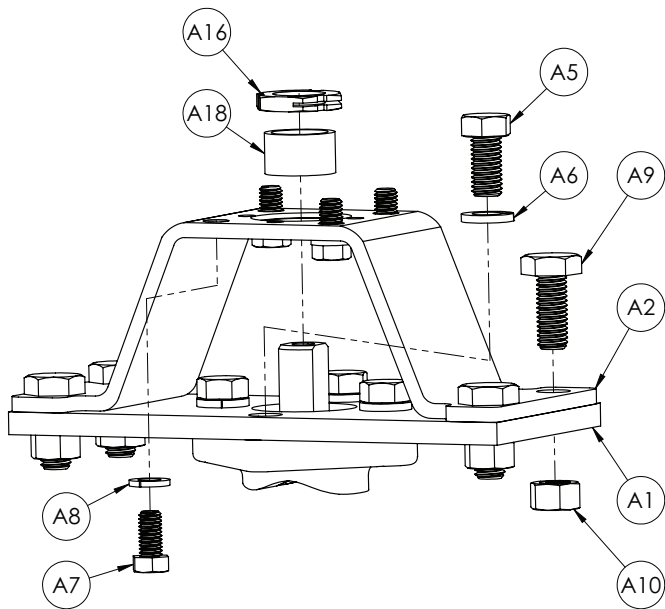
3.5 ACTUATOR VERSUS VALVE POSITION

IMPORTANT: The actuator and valve position must agree before further assembly.

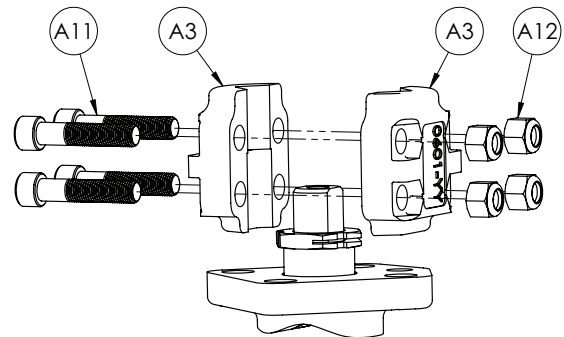
Since the valve has already been set in the closed position (Step 1 under Valve Preparation), make sure that the actuator is also in the closed position. **EXCEPTION:** If mounting a spring-return actuator in the spring-to-open operation; cycle the valve to the open position and proceed with the valve AND actuator in the open position.

3.6 ACTUATOR ATTACHMENT

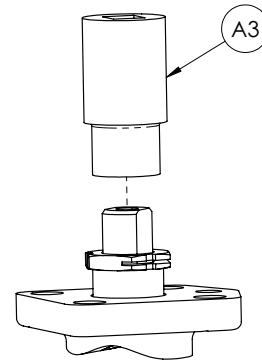
1. Place actuator with mounted Bracket (A2) onto the Base Plate (A1) mounted to valve. While putting the actuator on, take care to align the coupling or adapter with the drive or bore of the actuator.
2. Using the four Hex Head Cap Screws (A9) and Lock Nuts (A10), secure the Bracket (A2) to the Base Plate (A1). Apply slightly more than finger-tightness to these fasteners but DO NOT TIGHTEN.
3. If using No-Play Coupling: Torque the Socket Head Cap Screws (A11) to the values listed in **Table 2**. Be sure to tighten bolts sequentially by approximately 1/8 turns until the final torque is met. Sequence to be top right, bottom left, top left and bottom right. **Skip this step if using Slip-On Coupling.**
4. Cycle the actuator, allowing the assembly to position itself for good stem to driver alignment.
5. Tighten the four Hex Head Cap Screws (A9) and Lock Nuts (A10) securing the Bracket (A2) to the Base Plate (A1).



Common Parts for Both Linkage Types



No-Play Coupling Type Only



Slip-On Coupling Type Only

Figure 5

Table 2: No-Play Coupling Fastener Torques	
Bolt Size	Torque
1/4" (6.35mm)	8-10 Ft-Lbs (11-14 Nm)
5/16" (7.9mm)	20-25 Ft-Lbs (27-34 Nm)
3/8" (9.5mm)	30-35 Ft-Lbs (41-47 Nm)
1/2" (12.7mm)	40-45 Ft-Lbs (54-61 Nm)

3.7 OPEN/CLOSE POSITION ADJUSTMENT

NOTE: Refer to the appropriate Installation, Maintenance, and Operating Instructions (IMO) for specific directions on how to adjust the actuator travel stops or limit switch (see **Table 3**).

Table 3: Actuator IMO Reference	
Actuator Model	IMO#
B1C	6 BC 71
B1J	6 BJ 71
BCH	6 BCH 70
SL10	21
ST20, ST50	22
ST13MS, ST20MS	25
Quadra-Powr II (1, 2, 3)	31
Series B & C Quadra-Powr	32
PMV	36
EJ20, EJX20	41
EL20	43
EL8	44
EJ50, EJX50, EJ90, EJX90	48
MA010	63
Torq-Handle	71
Quadra-Powr QPX	215
Vane, V Series	510
SP & SP-SR	512
VPVL	553
MGR	554
LCR	I1262
LCU	I1263
V	I2100 or I2700
ADC	I4900 or I7300

The actuator travel stops should be adjusted so that there is proper ball position in the full open and full close valve positions. Use the following procedures to determine correct ball position.

Valve Open Position: With the valve in the open position (actuator is against the "OPEN" travel stop), the maximum allowable misalignment of the ball port is 1/32" (0.8mm) on either side of the ball. Do not use the seat I.D. to measure misalignment, since in many cases it is larger than the ball or body port.

Valve Close Position: With the valve in the closed position (actuator is against the "CLOSE" travel stop), make a pencil mark on the ball at the 9 o'clock and 3 o'clock locations as shown in **Figure 6**. Open the valve part way and measure dimension A. This measurement should deviate no more than $\pm 1/32$ " (0.8mm) from the given value in **Table 4** for all valves.

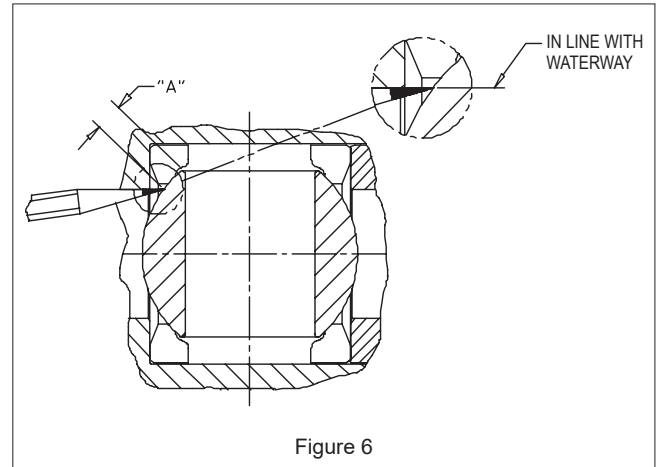


Figure 6

Table 4: Dimension A for Series 4000	
Valve Size	Dimension A
2" FB (DN50)	0.34" (8.6mm)
2 1/2" RB (DN65)	0.34" (8.6mm)

4. REPAIR KITS

NOTE: FIRE-TESTED repair kits include two seats (5), one stem seal (7), two stem bearings (8), a secondary seal (13) and two 316 stainless steel/graphite body seals (6). The body seals are suitable for valves with carbon steel or 316 stainless steel trim.

5. SERVICE/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 <https://www.valmet.com/flowcontrol/valves>.

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

- Valve catalog code from identification plate,
- If the valve is serialized – the serial number (from identification plate)
- From **Figure 4**, the ballooned part number, part name and quantity required.

TABLE 5	
Repair Kits	For Fire-Tested Valves
PTFE Seats	RKN-150-TT
Filled PTFE Seats	RKN-150-MT
Delrin® Seats	RKN-150-LT
Metal Seats	RKN-150-DH
Xtreme® Seats	RKN-150-XT
Repair Kits	For Non-Fire-Tested Valves
PTFE Seats	RKN-151-TT
Filled PTFE Seats	RKN-151-MT
UHMW Poly Seats	RKN-151-UB
Xtreme® Seats	RKN-151-XT
Peek Seats	RKN-151-LG

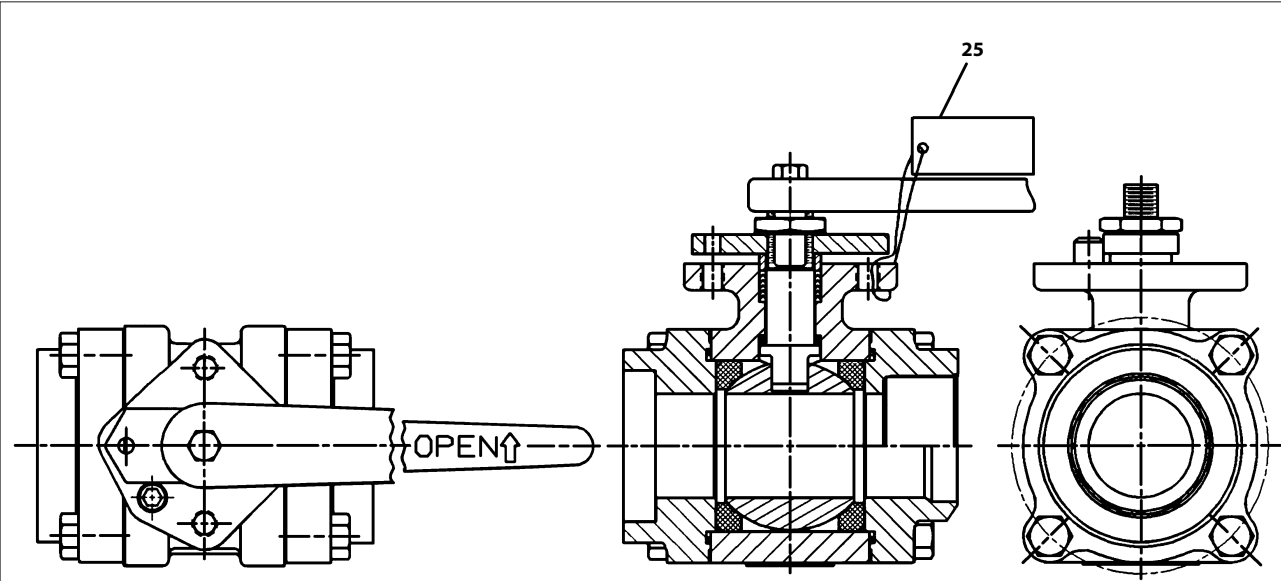


Figure 7



EU DECLARATION OF CONFORMITY



Manufacturer:

Valmet Flow Control Inc.
Shrewsbury, MA 01545-8044
USA

*Valmet Flow Control (Jiaxing) Co., Ltd.
Jiaxing, China

*) Also manufactures certain series

for ATEX approved valves

EU Authorised Representative: Valmet Flow Control Oy, Vanha Porvoontie 229, 01380
Vantaa, Finland. Contact details: [+358 10 417 5000](tel:+358104175000)

This declaration of conformity is issued under the sole responsibility of the manufacturer.

Product:	Jamesbury Threaded/Welded End & Flanged Ball valves		
Type:	1/4" – 2" 4000 & Eliminator Series 1/2" – 24" 7000 & 9000 Series		
ATEX group and category:		II 2 GD, II 3 GD	
Ex GAS:		Ex h IIC 85°C...Tmax Gb/Gc	
Ex DUST:		Ex h IIC T85°C...T(Tmax) Db/Dc	

Tmax= valve max. temperature in name plate

Manufacturer's certificates:

Standard / Directive	Notified Body and NoBo number	Certificate No.
ISO 9001:2015	LRQA (Certification body)	10531829
PED 2014/68/EU Module H	DNV Business Assurance Italy S.r.l. 0496	142306-2013-CE-FIN-ACCREDIA
ATEX 2014/34/EU Annex IV	DNV Product Assurance AS Norway 2460	Presafe 18 ATEX 91983Q Issue 6

ATEX 2014/34/EU Annex VIII technical files are archived by Notified Body number 0537

The object of the declaration described above is in conformity with the relevant Union harmonisation legislation:

PED 2014/68/EU	Valve
ATEX 2014/34/EU	Non-electrical equipment

Main components:

Valve:
The valve is suitable for service up to PED Cat III
Valve design standard: ASME B16.34

Installation, Maintenance and Operating instructions manual (IMO) must be followed before installation in order to ensure proper and safe mounting and usage of equipment.

The product above is manufactured in compliance with the applicable European directives and technical specifications/standards EN10204:3.1. The product is in conformity with the customer order.

Instrumentation and accessories having equal protection concept, level and performance specification with the original can be presumed to be in conformity with this Declaration of Conformity.

Protection from e.g. static electricity caused by the process or connected equipment must be considered by the user (EN 60079-14 § 6). EN 60079-19 applies for modifications.

Non-electrical equipment is according EN 80079-37:2016 and EN 80079-36:2016. The actual surface temperature of non-electrical equipment is depended on the process and ambient conditions (EN 80079-36:2016 § 6.2.5 and 6.2.7). The protection from high or low temperature must be considered by the end user before put into service.

The product does not possess any residual risk according to hazard analysis conducted under the applicable directives providing that the procedures stated by the IMO are followed and the product is used under conditions mentioned in the technical specifications.

Documents with digital and/or e-signature conveyed by Valmet Flow Control conform to the Regulation (EU) No 910/2014 as well as the national code on e-signatures. In order to secure the integrity of the document, the authenticity of the sender, and indisputableness of the dispatch the identification is covered by individual ID codes, passwords, and by regularly changing passwords. The authorization to sign documents is based on organizational position and/or is task related. The impartial third party in the company bestows the access right with predefined authorities to particular databases.

Shrewsbury

10.9.2024

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