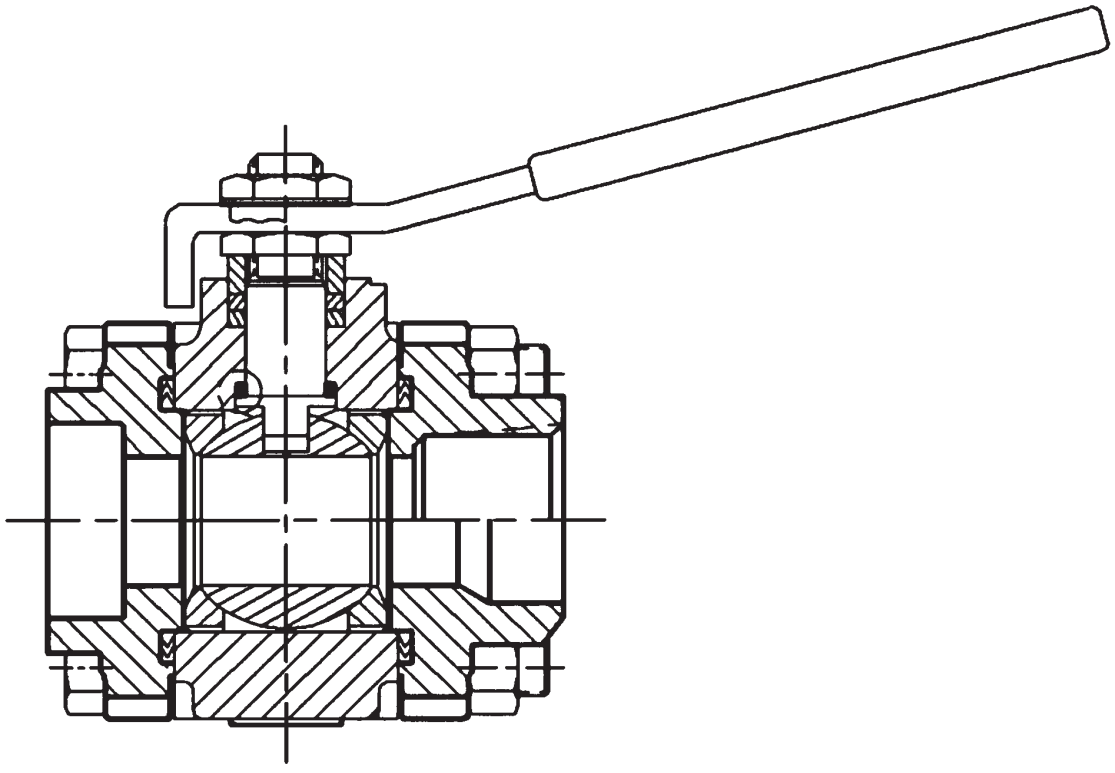
Jamesbury
3-piece ball valves
series 4000 model A
1/2" - 2" (DN15 - 50)

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

1.1 SCOPE OF THE MANUAL

This instruction manual contains important information regarding the installation, operation and maintenance of the *Jamesbury* 1/2" – 2" (DN 15 – 50) Series 4000 3 Piece Ball Valves. Please read these instructions carefully and save them for future reference.

WARNING:

AS THE USE OF THE VALVE IS APPLICATION SPECIFIC, A NUMBER OF FACTORS SHOULD BE TAKEN INTO ACCOUNT WHEN SELECTING A VALVE FOR A GIVEN APPLICATION. THEREFORE, SOME OF THE SITUATIONS IN WHICH THE VALVES ARE USED ARE OUTSIDE THE SCOPE OF THIS MANUAL.

IF YOU HAVE ANY QUESTIONS CONCERNING THE USE, APPLICATION OR COMPATIBILITY OF THE VALVE WITH THE INTENDED SERVICE, CONTACT VALMET FOR MORE INFORMATION.

WARNING:

BEWARE OF BALL MOVEMENT!

KEEP HANDS, OTHER PARTS OF THE BODY, TOOLS AND OTHER OBJECTS OUT OF THE OPEN FLOW PORT. LEAVE NO FOREIGN OBJECTS INSIDE THE VALVE. WHEN THE VALVE IS ACTUATED, THE BALL FUNCTIONS AS A CUTTING DEVISE. FAILURE TO DO THIS MAY RESULT IN DAMAGE OR PERSONAL INJURY!

1.2 SAFETY PRECAUTIONS

WARNING:

VALVE RATINGS!

THE PRACTICAL AND SAFE USE OF THIS PRODUCT IS DETERMINED BY BOTH THE CWP RATINGS: CAREFULLY CHECK RATING. THIS IS THE SAFE USE PRESSURE FOR THIS VALVE BETWEEN -20 TO +100F (-29 TO +38C). DO NOT EXCEED THESE RATINGS! FOR INSTALLATION TEMPERATURES BELOW AND ABOVE THESE LIMITS CONTACT VALMET.

2. TRANSPORTATION AND STORAGE

Check the valve for any damage that may have occurred during transport.

Store the valve carefully. Storage indoors in a dry place is recommended.

Do not remove the flow port protectors until installing the valve.

Move the valve to its intended location just before installation.

The valve is usually delivered in the open position.

If the valve(s) are to be stored for a long duration, follow the recommendations of IMO-S1.

3. INSTALLATION

3.1 GENERAL

Remove the protective packaging and flow port protectors and check that the valve is clean inside. Clean valve if necessary.

Flush the pipeline carefully before installing the valve. Foreign objects, such as sand or pieces of welding electrodes, will damage the ball and seats.

Read and follow all **WARNINGS!**

Refer to the Section 4, **MAINTENANCE** for stem seal adjustment. If there is weepage past the stem seals upon installation, it means the valve may have been subject to wide temperature variations in shipment. Leak-tight performance will be restored by a simple stem seal adjustment described in the **MAINTENANCE** section.

1. **Screwed End Style** - Screwed end valves have NPT threads. To insure a leak tight joint, liberal use of a compatible pipe joint compound is necessary. 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.

2. **Weld End Style** - All standard weld end valves must be partially disassembled prior to welding. Follow Steps 1, 2, 4 and 5 of **DISASSEMBLY** Section. Socket weld ends are per ANSI B16.11 and butt weld ends are per ANSI B16.25. Welding should be done using procedures and welders qualified under Section IX of the ASME Boiler and Pressure Vessel Code. **IMPORTANT:** If the body seals (6) are removed for welding, DO NOT MIX THEM. When reassembling the valve, put each seal back into the groove from which it was removed.

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

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.

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

WARNING:

FOR YOUR SAFETY IT IS IMPORTANT THE FOLLOWING PRECAUTIONS BE TAKEN PRIOR TO INSTALLATION, SERVICING OR REMOVAL OF THE VALVE FROM THE PIPELINE OR BEFORE ANY DISASSEMBLY:

1. WEAR ANY PROTECTIVE CLOTHING OR EQUIPMENT NORMALLY REQUIRED WHEN WORKING WITH THE FLUID INVOLVED.
2. DEPRESSURIZE THE PIPELINE AND CYCLE THE VALVE AS FOLLOWS:

A. PLACE THE VALVE IN THE OPEN POSITION AND DRAIN THE PIPELINE.

B. CYCLE THE VALVE TO RELIEVE RESIDUAL PRESSURE IN THE BODY CAVITY BEFORE REMOVAL FROM THE PIPELINE.

C. AFTER REMOVAL AND BEFORE ANY DISASSEMBLY, CYCLE THE VALVE AGAIN SEVERAL TIMES.

3. THESE VALVES ARE SUITABLE FOR A WIDE VARIETY OF FLUIDS AND GASES. BE CERTAIN THAT THE VALVE MATERIALS SELECTED ARE SUITABLE FOR THE APPLICATION.

For Series 4000 with NPT threads, to insure a leak tight joint, liberal use of a compatible pipe joint compound is necessary.

WARNING:

ANY COMPOUND OR LUBRICANT USED ON THREADS SHALL BE SUITABLE FOR THE SERVICE CONDITIONS AND SHALL NOT REACT UNFAVORABLY WITH EITHER THE SERVICE FLUID OR THE PIPING MATERIAL.

Flow through the *Jamesbury* Series 4000 valve can be in either direction.

Use standard piping practices when installing the valves with threaded connections. When tightening the valve to the pipe, apply the wrench to the end nearest the pipe being worked.

3.2 HANDLES

If the Series 4000 valve handle (17) must be removed for any reason, the handles must be remounted with the handle stop tang as shown in **Figure 4**.

WARNING:

FAILURE TO PROPERLY MOUNT THE HANDLE MAY RESULT IN IMPROPER VALVE OPERATION, DAMAGE OR PERSONAL INJURY.

3.3 COMMISSIONING

Ensure that there is no dirt or foreign objects left inside the valve or pipeline. Flush the pipeline carefully. Make sure that the valve is fully open when flushing.

WARNING:

GOOD PIPING PRACTICE DICTATES THAT ONCE INSTALLED, BUT PRIOR TO FIRST USE, THE VALVE IS LEAK TESTED IN PLACE TO ASSURE LEAK-TIGHTNESS HAS NOT BEEN COMPROMISED BY THE INSTALLATION PROCESS. INSTALLATION ACTIONS THAT CAN CAUSE LEAKAGE INCLUDE, BUT ARE NOT LIMITED TO, WRENCHING, SOLDERING, WELDING AND/OR HOISTING. PIPELINE MIS-ALIGNMENTS AND/OR LACK OF SUFFICIENT SUPPORT CAN ALSO PLACE UNDUE STRESS ON THE VALVE, POSSIBLY RESULTING IN LEAKAGE.

4. MAINTENANCE

4.1 GENERAL

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 lower stem nut (16) 1/4 turn periodically to compensate for wear caused by the stem turning against the seal. Loosen the upper stem nut (16) on top of the handle (17) before tightening the lower stem nut. Retighten the upper stem nut after tightening the lower stem nut. (See **Figure 4**)

4.2 DISASSEMBLY

NOTE: If complete disassembly becomes necessary, replacement of all seats and seals is recommended. Refer to (**Table 3**).

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 moreconvenient, follow a similar sequence).

1. Comply fully with the instructions in all the **WARNING** Sections.
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 top stem nut (16), Shakeproof Washer (19) and handle (17).
4. Loosen all four body bolts/tie rods (52). Remove three from the valve. Leave the remaining bolt in place with the nut backed off at least 1/4” (6mm)

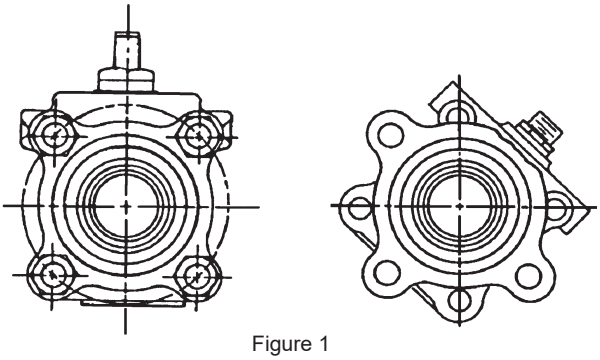


Figure 1

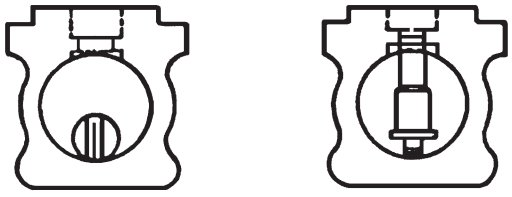


Figure 2A Figure 2B

5. For positive alignment and ease of in-line assembly, each end cap is interlocked approximately 1/16” (1.6 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 1/16” (1.6 mm) from the body. Sharply rap body and caps with a block of wood or plastic mallet to break loose body seal. Spread end caps and swing the body out of the line. If pipe does not allow simple spreading, remove the remaining body bolt 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 the lower stem nut (16) and the compression ring (21).
9. Press 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 (8), the stem bearings (24), and the secondary stem seal (7), being careful not to damage the bearing surfaces.

4.3 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.

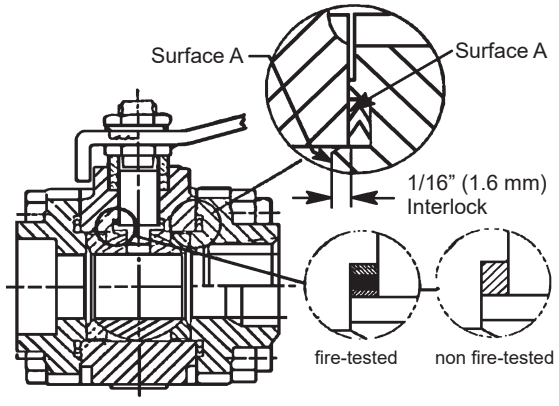


Figure 3

1. With the valve swung to the out-of-line position, insert from the inside of the body a stem bearing (24), a secondary stem seal (7), then another stem bearing (24) into the stem bore. For non-Fire-Tested valves use one stem bearing (24). (See **Figure 3 and parts list.**)
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 2B**). Guide the stem into the stem hole being careful not to scratch the bearings.
3. Holding the stem in place from the bottom, install two stem seals (8), a compression ring (21) from the outside and thread on one stem nut (16) until the stem 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, applying the torque shown in (**Table 2)**.
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 4**).
7. Place a body seal (6) into the machined sealing groove of the end caps (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 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 (52) and nuts (53). Tighten these bolts evenly and alternately. (See **Table 1** for the torques and lubricant.)
13. Attach the handle (17), the Shakeproof Washer (19) and secure them with the stem nut (16) (See **Table 2** for torques).

5. REPAIR KITS

NOTE: FIRE-TESTED repair kits include two seats (5), two stem seals (8), two stem bearings (24), a secondary seal (7 and two 316 stainless steel/graphite body seals (6). The body seals are suitable for valves with carbon steel or 316 stainless trim. Consult the factory for replacement parts of valves with trim other than carbon or stainless steel, and for seat material not listed or for special services.

NOTE: NON-FIRE-TESTED repair kits include two seats (5), one stem bearing (24) and two body seals (6). The body seals are suitable for valves with carbon steel or 316 stainless trim.

6. 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.

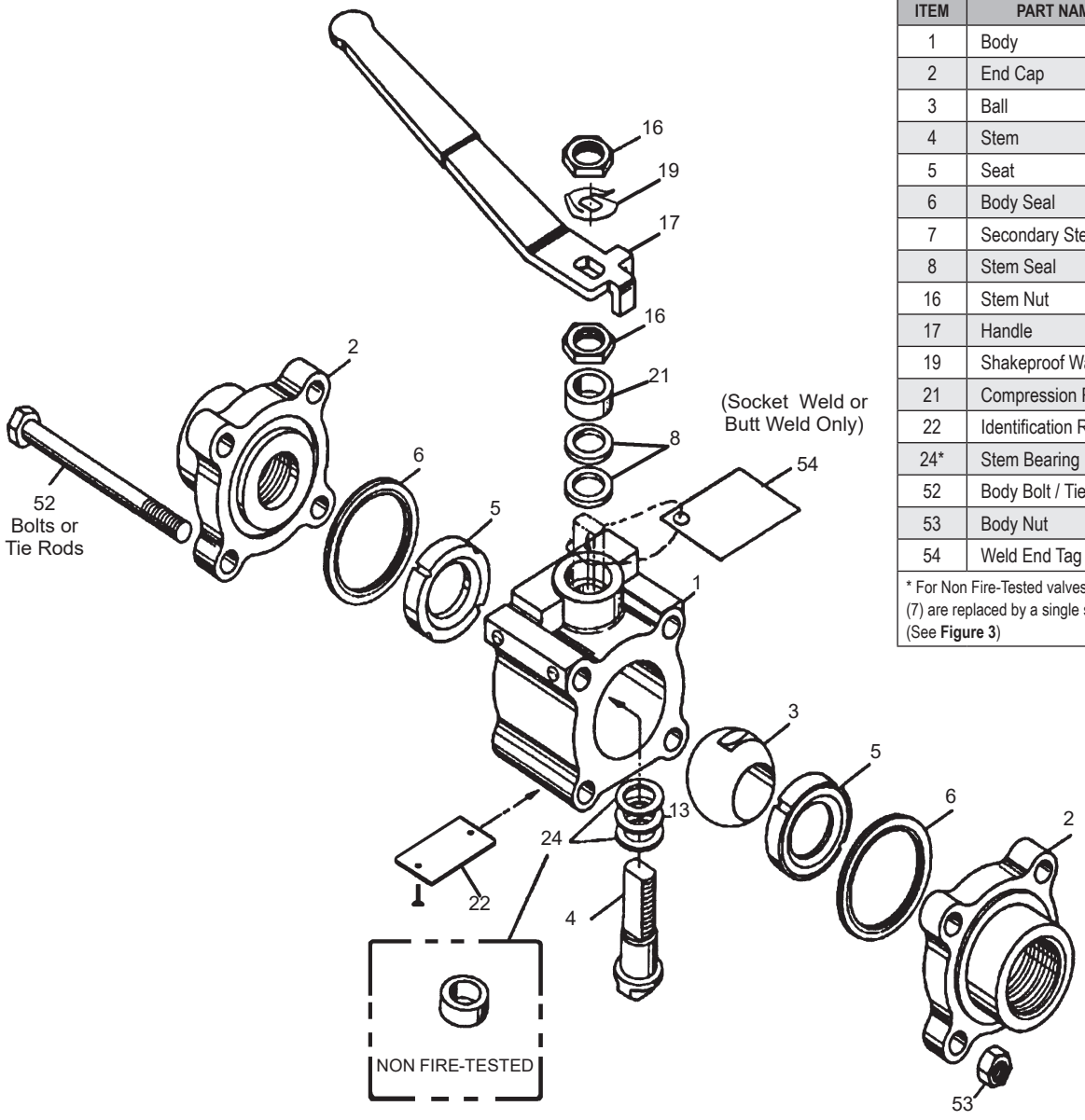
For further information on spare parts and service or assistance visit our web-site at **www.neles.com/valves**.

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 4**, the ballooned part number, part name and quantity required.



PARTS LIST		
ITEM	PART NAME	QTY
1	Body	1
2	End Cap	2
3	Ball	1
4	Stem	1
5	Seat	2
6	Body Seal	2
7	Secondary Stem Seal	1
8	Stem Seal	2
16	Stem Nut	2
17	Handle	2
19	Shakeproof Washer	1
21	Compression Ring	2
22	Identification Ring	1
24*	Stem Bearing	1
52	Body Bolt / Tie Rod	4
53	Body Nut	4/8
54	Weld End Tag	1

* For Non Fire-Tested valves, items (24) and (7) are replaced by a single stem bearing (24). (See **Figure 3**)

Figure 4

TABLE 1								
Required Fastener Torque, FT•LBS (N•m)								
Fastener (Last Digit in Fig. No.)		-1	-2	-4	-5	-7	-8	-3
Valve Size-Full Port Size in( )	Fastener Material	A193 GR. B7	A193 GR.B8	K-Monel®	A193 GR.B7M	A320 GR. L7M	A453 GR.660	Series 300 St.Sd.
	Fastener ident. Mark	B7	B8	K	B7M	L7M	660A OR 660B	–I
1/2" (1/2")	DN 15 (DN15)	9 (12)	9 (12)	8 (11)	7 (9.5)	7 (9.5)	7 (9.5)	5 (7)
3/4"	DN 20	20 (27)	18 (23)	17 (23)	15 (20)	15 (20)	15 (20)	9 (12)
1" (3/4")	DN 25 (DN 20)	35 (49)	32 (43)	30 (40)	28 (38)	25 (34)	28 (38)	15 (20)
1-1/4" (1")	DN 30 (DN 25)	40 (54)	37 (50)	35 (47)	32 (43)	30 (40)	32 (43)	18 (24)
1-1/2" (1-1/4")	DN 40 (DN 30)	80 (119)	80 (110)	70 (95)	70 (95)	65 (90)	70 (95)	40 (54)
2" (1-1/2")	DN 50 (DN 40)	100 (135)	90 (120)	80 (110)	75 (100)	70 (95)	75 (100)	45 (60)

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 22.
3. Torque valves are for lubricated, **unplated** fasteners.

Monel is a registered trademark of Inco.

TABLE 2	
Stem Nut Torque	
Valve Size - Full Port Size In ( )	FT•LBS (N•m)
1/2" – 3/4" (1/2")	4 (5.7)
1" – 1-1/4" (3/4" – 1")	5 (6.8)
1-1/2" – 2" (1-1/4" – 1-1/2")	11 (15.3)

TABLE 3						
Repair Kits	Valve Size - Full Port Size Shown in ( ) FOR FIRE -TESTED VALVES					
VALVE SIZE	1/2" (1/2") DN 15 (DN 15)	3/4" DN 20	1" (3/4") DN 25 (DN 20)	1-1/4" (1") DN 30 (DN 25)	1-1/2" (1-1/4") DN 40 (DN30)	2" (1-1/2") DN 50 (DN40)
PTFE SEATS	RKN-107-TT	RKN-108-TT	RKN-109-TT	RKN-110-TT	RKN-111-TT	RKN-112-TT
FILLED PTFE SEATS	RKN-107-MT	RKN-108-MT	RKN-109-MT	RKN-110-MT	RKN-111-MT	RKN-112-MT
DELRIN® SEATS	RKN-107-RT	RKN-108-RT	RKN-109-RT	RKN-110-RT	RKN-111-RT	RKN-112-RT
PEEK SEATS	RKN-107-LT	RKN-108-LT	RKN-109-LT	RKN-110-LT	RKN-111-LT	RKN-112-LT
METAL SEATS	RKN-107-DH	RKN-108-DH	RKN-109-DH	RKN-110-DH	RKN-111-DH	RKN-112-DH
XTREME® SEATS	RKN-107-XT	RKN-108-XT	RKN-109-XT	RKN-110-XT	RKN-111-XT	RKN-112-XT

TABLE 4						
Repair Kits	Valve Size - Full Port Size Shown in ( ) FOR NON FIRE -TESTED VALVES					
VALVE SIZE	1/2" (1/2") DN 15 (DN 15)	3/4" DN 20	1" (3/4") DN 25 (DN 20)	1-1/4" (1") DN 30 (DN 25)	1-1/2" (1-1/4") DN 40 (DN30)	2" (1-1/2") DN 50 (DN40)
PTFE SEATS	RKN-137-TT	RKN-138-TT	RKN-139-TT	RKN-140-TT	RKN-141-TT	RKN-142-TT
FILLED PTFE SEATS	RKN-137-MT	RKN-138-MT	RKN-139-MT	RKN-140-MT	RKN-141-MT	RKN-142-MT
UHMW POLY SEATS	RKN-137-UB	RKN-138-UB	RKN-139-UB	RKN-140-UB	RKN-141-UB	RKN-142-UB
XTREME SEATS	RKN-137-XT	RKN-138-XT	RKN-139-XT	RKN-140-XT	RKN-141-XT	RKN-142-XT

Valmet Flow Control Oy
Vanha Porvoontie 229, 01380 Vantaa, Finland.
flowcontrol@valmet.com
Tel. +358 10 417 5000.
www.valmet.com/flowcontrol