

XOMOX®

brands you trust.

Maintenance & Repair Instructions

CRANE ChemPharma, Tuflin® Flanged 6" & 8" Process Ball Valves

CRANE®

ChemPharma Flow Solutions

www.cranechempharma.com

Read carefully.

The following procedures and illustrations have been prepared to assist you in the maintenance and repair of your Tufline Process Ball Valves. Please read these instructions carefully.

Product responsibility.

Xomox's concern for product performance extends to the product's period of service. We feel it is important for users to also be aware of their responsibilities. Our products are manufactured and used in numerous applications with a wide variety of service conditions. While general guidelines are often furnished, it obviously is not possible to provide complete and specific performance data for every conceivable service condition. Therefore, the end user must assume final responsibility for proper evaluation, application and performance of all products. The contents of this document are presented for information purposes only. Every effort has been made to ensure accuracy. This information is not intended to be construed as warranties or guarantees, expressed or implied, nor imply use applicability, for products or services described herein. We reserve the right to modify or improve the designs and specifications of such products at any time without notice. As the manufacturer, Xomox sells its products and services pursuant to its standard terms and conditions of sale, including its limited warranty, copies of which are available upon request. Xomox limits its liability specifically to the replacement or repair of defective items, or to a refund for same. Xomox does not accept liability for any incidental or consequential damages.

Trouble-free operation.

Tufline Figure 500 Process Ball Valves have proven themselves with long-term, trouble-free service in a wide variety of applications.

Applied within their pressure and temperature limitations, properly installed, adjusted, and operated, these valves should require minimum attention.

⚠ WARNING

READ AND UNDERSTAND INSTRUCTIONS BEFORE SERVICING VALVE. Failure to follow instructions could result in death or serious injury. If you have any questions, contact the factory at 513-745-6000.

⚠ CAUTION

These instructions have been prepared for valves as they are currently manufactured. If you have an older design valve that needs repair, contact either the factory or your nearest Service Center to make sure that you have the correct repair parts and instructions.

Maintenance.

All Tufline Process Ball Valves are factory tested for tight shutoff. Standard valves with a stem packing adjustment nut are live loaded and normally no further adjustment is necessary.

If leakage should occur along the stem, follow the simple adjustment instructions that follow.

Stem seal adjustment.

Stem nut arrangement (standard)

To adjust for leakage along the valve stem, bend the tab on the locking washer down. Turn the stem nut clockwise in approximately $\frac{1}{3}$ -turn increments to compress the spring washers. Do not over-tighten, flattening the spring washers. Bend the tab on the locking washer to hold the position of the stem nut. If a tight seal cannot be obtained, continue with the instructions for valve repair.

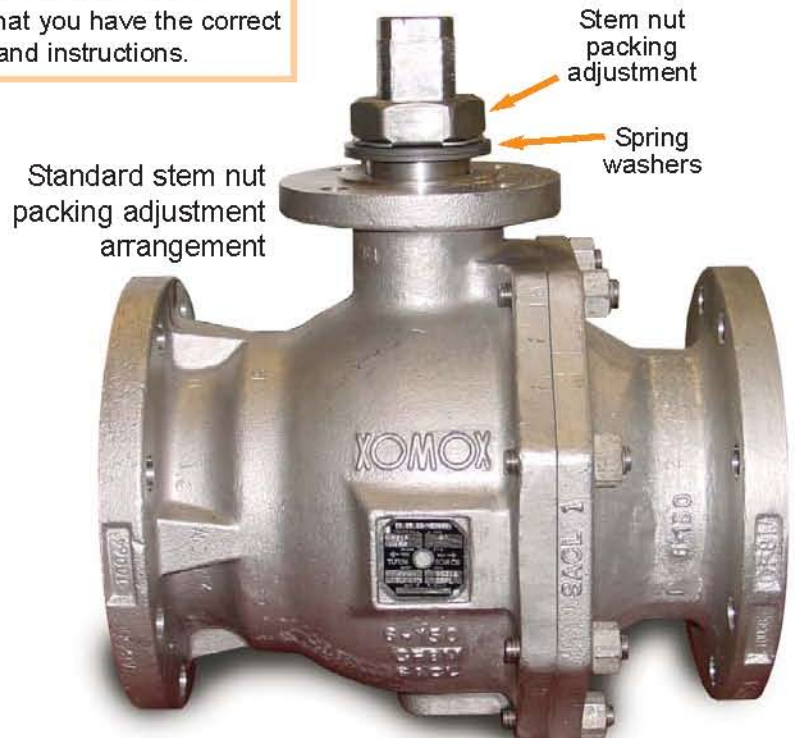


Figure 1. 2-Piece Ball Valves

Tufline 521F, 523F
Size: 6" - 8"

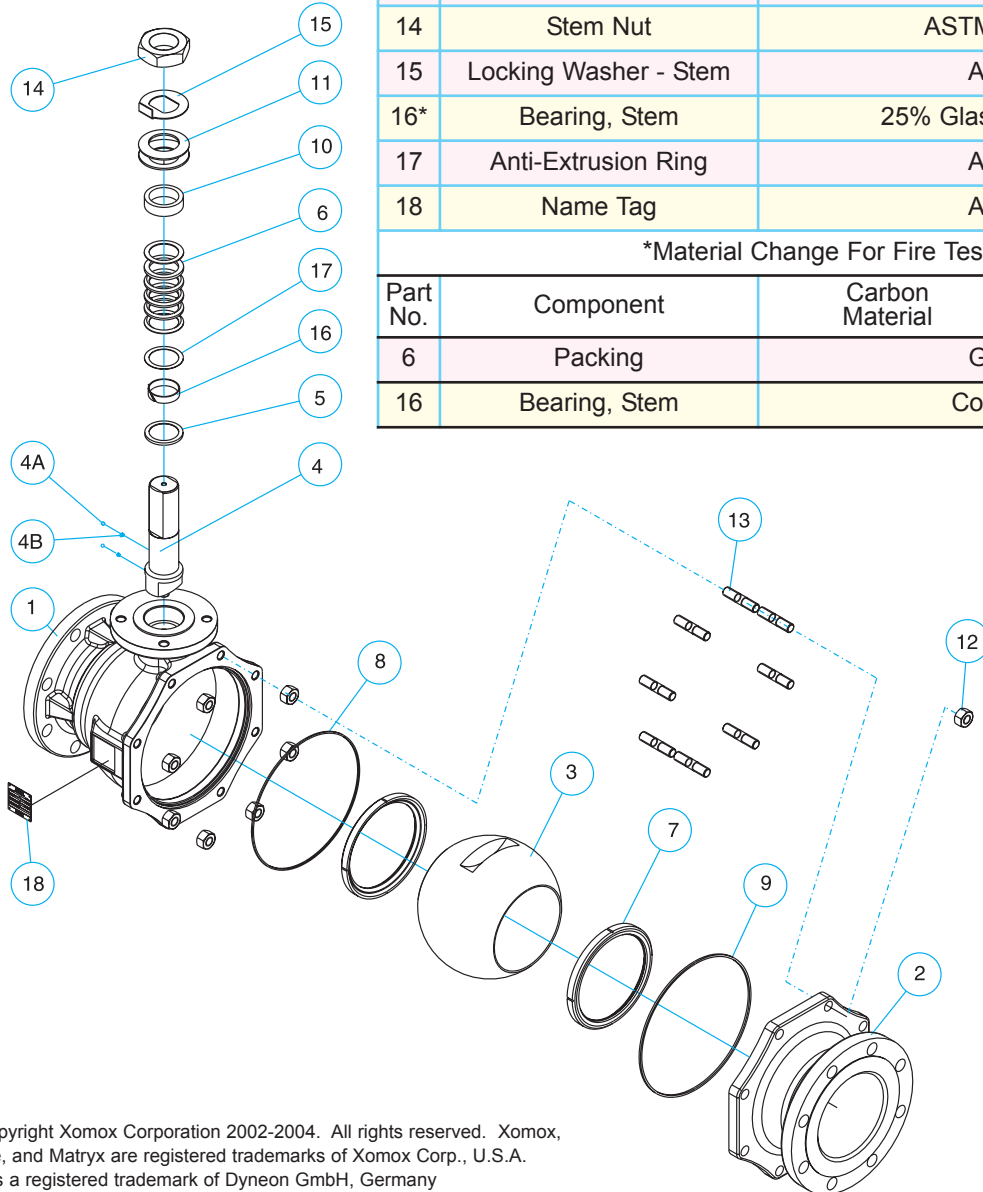
Tufline 521R, 523R
Size: 6" - 8"
Reduced Port

Reduced Port
Raised Face
Flanged Ends

Class 150 & 300

Less Operator

Component numbers 5, 6, 7, 8, 9, 15 and 16 are recommended replacement parts. They are available in the appropriate seal kit.



Part No.	Component	Carbon Material	Stainless Material	Qty.
1	Body	ASTM A216, WCB	ASTM A351, CF8M	1
2	Tail	ASTM A216, WCB	ASTM A351, CF8M	1
3	Ball	ASTM A351, CF8M	ASTM A351, CF8M	1
4	Stem	ASTM A479 TP 316		1
4A	Anti-Static Ball	AISI 316		2
4B	Anti-Static Spring	AISI 316		2
5	S2 Stem Seal Ring	Xomox's CMP		1
6*	Packing	PTFE		1 Set
7	Soft Seat	Xomox's CMP		2
8	Body Gasket - Inner Seal	PTFE		1
9	Body Gasket - Outer Seal	Graphite		1
10	Gland, Packing	ASTM A479 TP 316		1
11	Spring Washer	AISI 304		2
12	Nut (Body Joint)	ASTM A194 2HM	ASTM A194 B8M	8-12
13	Studs (Body Joint)	ASTM A193 B7M	ASTM A193 8MA	8-12
14	Stem Nut	ASTM A194, 8M		1
15	Locking Washer - Stem	AISI 304		1
16*	Bearing, Stem	25% Glass- Filled PTFE		1
17	Anti-Extrusion Ring	AISI 316		1
18	Name Tag	AISI 314		1
*Material Change For Fire Tested Valve				
Part No.	Component	Carbon Material	Stainless Material	Qty.
6	Packing	Graphite		1 Set
16	Bearing, Stem	Coated 316		1

Repair.

It is important that leakage be attended to promptly. If leakage is allowed to persist, the valve top works could be damaged by corrosive media.

⚠️WARNING

The procedures below must be followed carefully. Failure to do so could result in equipment damage, serious injury, or death.

⚠️WARNING

Depressurize, clean, and neutralize any media that may remain in the valve and pipeline.

If the valve is in the pipeline, you must follow your line entry procedures.

Always wear appropriate personal protective equipment.

Failure to follow these warnings could result in property damage, personal injury, or death.

Before disassembly.

1. Open the valve to the 45-degree position. This will allow any trapped pressure within the valve to escape.
2. Remove the valve from the pipeline.
3. If the valve has been used with hazardous fluids, make certain the valve is thoroughly cleaned and decontaminated before disassembly.

Disassembly.

1. Separate the body halves by unscrewing the body stud nuts or bolts.
2. Remove the body joint inner and outer seals gaskets.
3. Bend the tab on the locking washer down and remove the stem nut by turning it counter-clockwise.
4. Rotate the ball to the closed position and remove it from the valve body.
5. Remove the locking washer, gland, and spring washers from the stem.
6. Remove the stem by pressing it down into the body cavity.

7. Remove the stem packing, **S2** stem seal ring, and soft seats from the body.

Inspection.

Inspect the valve components for wear or damage.

Be sure to carefully inspect the following components for nicks, cracks, breaks, or other defects:

- Valve soft seats
- Ball
- Stem
- Packing rings (see drawing)
- Spherical stem seal

The parts listed above, along with the body gaskets, are the only components that should require replacement.

Inspect both the seat pockets and body joint gasket areas. Clean all areas thoroughly to remove all signs of corrosion and media build-up.

Reassembly.

When reassembling valves, it is recommended that new seal components be used to minimize the chance of internal and external leakage. Seal kits are available containing new seals for repairing Tufline Process Ball Valves. The components included in each kit are indicated in figure 1.

1. Install S2 Seal onto shank of stem by placing the spherical (S2) stem seal over the stem with the spherical surface facing the spherical stem shoulder.
2. Insert the stem bearing into the valve body stem bore from the ISO pad side. A machined area equal to the height of the bearing is available for the bearing.
3. Insert the anti-extrusion ring from the ISO pad side of the valve.
4. Carefully insert the shank of the stem through the body cavity and into the cavity of the packing chamber. Ensure that the S2 Seal sits firmly in the back bore and the bearing remains in place. The packing compression tool can be used to assist in holding the bearing and the anti-extrusion ring in place. See table 1 for a list of packing compression tools. Make

sure the anti-static spring and ball are located properly in the stem.

Table 1.

Size	Tool Number
6" R.P.	Y6553-10
6" F.P. - 8" R.P.	Y6553-11
8" F.P.	Y6553-12

5. Install valve stem Packing, the orientation of the packing is very important.

PTFE packing:

- a) Insert the PTFE Packing Set over the stem with the concave side down.
- b) Carefully push the rings into the body-packing chamber.

Graphite packing:

- a) There are three rings of graphite packing (2 rings are of equal shorter height and (1) ring is taller height. The (2) shorter rings are to be used on the bottom and top of the packing set. The taller ring is the middle ring.
- b) Each graphite ring must be independently compressed as it is installed.
- c) Carefully push the ring into the body-packing chamber using the packing compression tool. Carefully "seat" the Graphite packing using the packing compression tool. Place the packing compression tool over the stem and in contact with the Graphite packing ring; firmly compress the Graphite packing ring by firmly hitting the top of the tool with a mallet to "seat" the Graphite packing ring into the packing chamber.
- d) Repeat this procedure with the remaining 2 Graphite packing ring. (Firmly compress each graphite ring independently as it is installed)

6. Place the packing gland over the valve stem.

7. Install the two (2) spring washers over the stem with the concave surfaces face to face.

8. Place the locking washer over the stem. Thread the stem nut over the stem and turn clockwise till jam nut is in contact with lock washer. Do not tighten at this time. Check inside the water cavity to insure the stem is pushed completely into the back bore and engaging the S2 stem seal.

9. Insert the replacement seats with the conical surface facing the ball.

10. Insert the ball into the body cavity with the port opening in the closed position. With the stem drive tab positioned in the ball drive slot, turn the ball to the open position.

11. Install inner and outer gaskets into body.

12. Join the body halves, making sure the lettering on the halves faces the same direction.

13. Install and tighten the body stud nuts in the crossing pattern shown in figure 2. Tighten the nuts to the torque values listed in table 2 below. When tightening in the crossing pattern, cycle through the pattern at least three (3) times to assure proper and uniform torque. When the 2-piece valve is reassembled, be sure the studs protrude through the nut a minimum of one (1) thread.

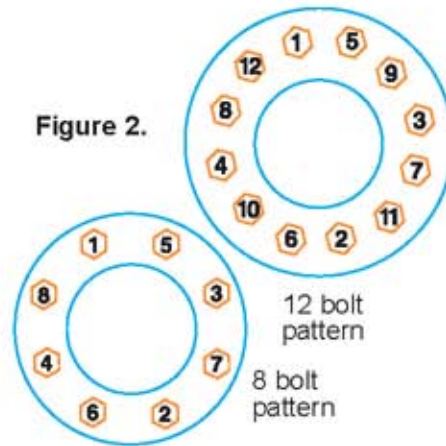
14. Tighten the stem jam nut clockwise till the jam nut comes in contact with the spring washers, an addition two (2) turns of the jam nut will seat the packing set (do not over-tighten, flattening the spring washers).

15. Open and close the valve two (2) or three (3) times to be sure the valve operates properly.

16. Shell-test the valve to insure proper seating of the packing and make adjustments as needed. Seat-test the valve to insure correct seating of the ball with the seats.

17. Bend the tab up on the locking washer to hold the position of the jam nut.

Figure 2.



Service Center Repair.

Before attempting field repair, you may wish to consider sending the valve to a Xomox Service Center for repair. Specialized equipment and experienced personnel at Xomox Service Centers can often provide repairs more economically than repairs performed in the field.

New valve warranty.

Valves repaired at Xomox Service Centers are tested to the same specifications as new valves, and carry the standard new valve warranty.

Shipping precautions.

When shipping valves to a service center, I.C.C. regulations require that all valves be thoroughly decontaminated and depressurized prior to shipment.

The customer must provide certification that these regulations have been adhered to, and that valves shipped to Xomox Service Centers are completely free of hazardous liquids or gases.

Shipments to Xomox Service Centers must be prepaid. Return shipments will be f.o.b. Xomox Service Center.

Global locator.

For a listing of Xomox Manufacturing Facilities, Service Centers, Regional Offices, and Authorized Distributors, visit our web site www.xomox.com.

Valve Size		Body Stud Size	Torque Ft. Lbs.
150	300		
6" FP	6" RP	5/8-11 UNC	90-100
6" & 8" RP			
	6" FP	3/4-10 UNC	125-135
	8" RP		
8" FP		7/8-9 UNC	165-195
	8" FP	1-8 UNC	175-215

Table 2.

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