

XOMOX®

brands you trust.

Installation, Operation and Maintenance Manual

Xomox®FK Soft Seated Ball Valves

CRANE®

www.cranecpe.com

Xomox[®]FK Soft Seated Ball Valves

1. Maintenance	Page 3
2. Stem seal adjustment	Page 3
3. Dissassembly	Page 4
4. Inspection and reassembly	Page 5
5. Assembly of packing	Page 6-7

CAUTION

READ INSTRUCTIONS BEFORE INSTALLATION or valve service. Failure to follow instructions could result in death or serious injury. If there is any question, contact the factory at 513-745-6000.

WARNING

Proper installation plays an important role in valves performance. Installation must be performed by qualified technicians only. Customer assumes all responsibility for valve performance on valves installed in the field by non-Crane ChemPharma and Energy personnel. Improper installation will result in damage to the valve.

WARNING

Fitting work on pressurized parts of the valve may only be carried out when the pipeline is depressurized. To prevent pressure and/or medium being trapped inside the ball valve, put the valve in the half open position. The valve must have cooled down to ambient temperature before work is started.

WARNING

Fitting work on pressurized parts of valves for caustic or toxic flow media may only be carried out following additional emptying and bleeding of the valve and the respective pipeline.

Xomox®FK Soft Seated Ball Valves

TROUBLE-FREE OPERATION.

The Xomox®FK Ball Valves, applied within their pressure and temperature limitations, properly installed, adjusted, and operated, these valves should require minimum attention supplying long-term, trouble-free service in a wide variety of applications.

READ CAREFULLY.

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

⚠ 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 Xomox FK process ball valves stem seals are adjusted and factory tested for tight shutoff, normally no further adjustment is necessary. If leakage should occur along the stem, follow the simple adjustment instructions at the right.

STEM SEAL ADJUSTMENT (threaded packing gland) Sizes: 1/2"-3" (K21F, K23F)

To adjust for leakage along the valve stem, turn the packing gland (#8) clockwise in approximately 1/3-turn increments to compress the packing (#13). Do not over-tighten.

Note: If a tight seal cannot be obtained, continue with the instructions for valve repair.

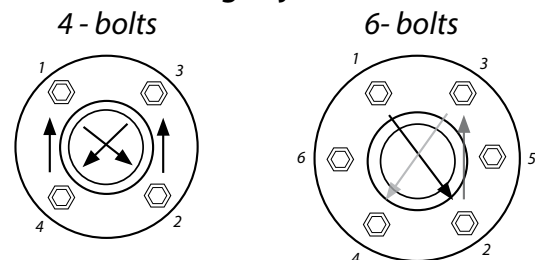


STEM SEAL ADJUSTMENT (BOLTED PACKING GLAND) SIZES: 4"-8" (K21F, K23F)

To adjust for leakage along the valve stem, turn the packing adjustment bolts (#21) (4pcs or 6pcs) clockwise, in approximately 1/2-turn increments to compress packing gland (#8) and packing (#13). Do not over-tighten. (when tightening packing bolts, use proper crisscross adjustment pattern as shown below).

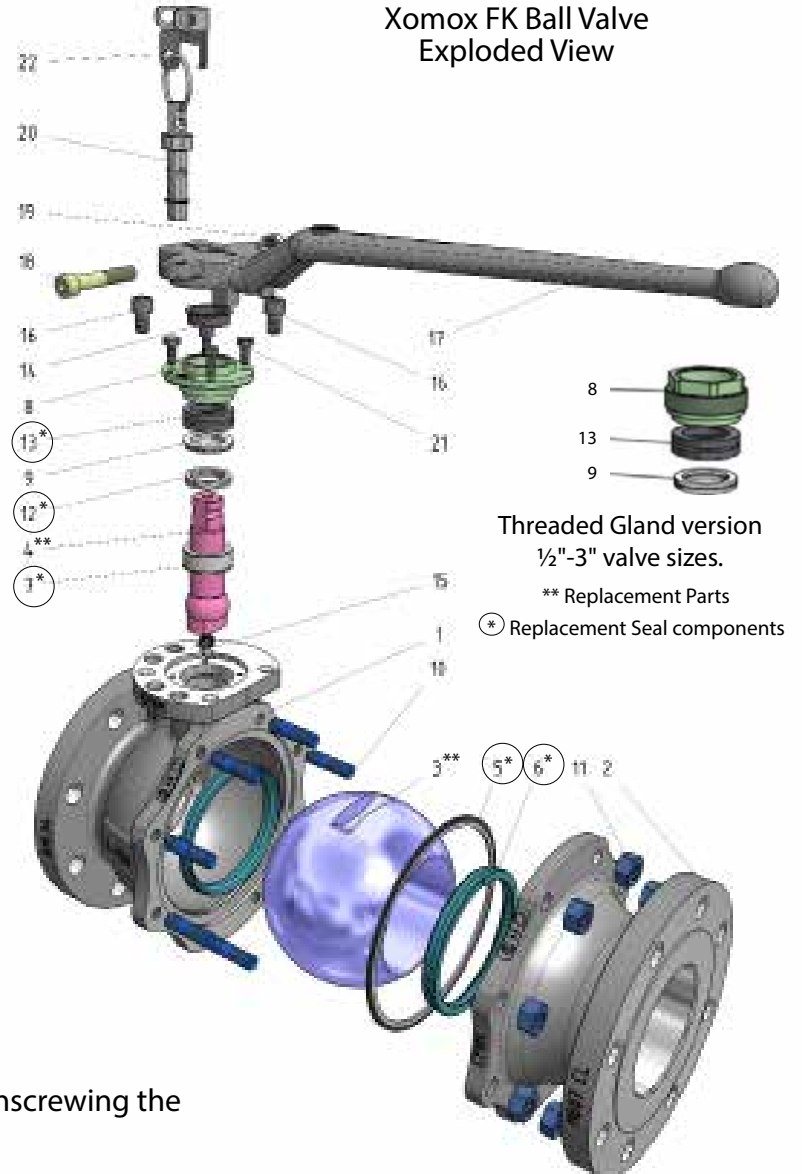
Note: If a tight seal cannot be obtained, continue with the instructions for valve repair.

Packing adjustment



Xomox® FK Soft Seated Ball Valves

Item	Description	Carbon Steel	Stainless Steel
1	Body	(1.0619) ASTM A216 Gr WCB	(1.4408) ASTM A351 Gr. CF8M
2	Tail	(1.0619) ASTM A216 Gr WCB	(1.4408) ASTM A351 Gr. CF8M
3	Ball	316ss	316ss
4	Stem	UNS S31803	UNS S31803
5	Body Gasket	PTFE/Graphite /316ss	PTFE/Graphite /316ss
6	Seat	TFM	TFM
7	SX Stem Seal	TFM	TFM
8	Packing Gland	316ss	316ss
9	Support Ring	316ss	316ss
10	Stud	ASTM A193 Gr. B7	ASTM A193 Gr. B8M Cl.2
11	Heavy hex nut	ASTM A194 Gr. 2H	ASTM A194 Gr. 8M
12	Spring energized Lip Seal	PTFE Filled/SST	PTFE Filled/SST
13	Packing	Graphite	Graphite
14	Guide bushing	PTFE-Carbon filled	PTFE-Carbon filled
15	Anti-static spring	SST	SST
*16	Stop Pin	316ss	316ss
*17	Hand lever	316ss	316ss
*18	Socket Head Cap Screw	316ss	316ss
*19	Hex nut	316ss	316ss
*20	Locking pin with ring	316ss	316ss
21	Packing Adjustment Bolt	ASTM A193 Gr. B8M	ASTM A193 Gr. B8M



* Lever Kit components

DISASSEMBLY

1. Remove Lever or Operator from valve.
2. Separate the body halves (#1 Body & #2 Tail) by unscrewing the body Heavy Hex Nuts (#11).
3. Remove the Body Gasket (#5).
4. Rotate the ball (#3) to the closed position and remove it from the valve body.
5. Rotate the Packing Gland (#8) by turning counter-clockwise and remove from the body (#1) and Stem (#4).
6. Remove the Seats (#6) from the body & tail.
7. Remove the Stem (#4) by pressing it down into the body cavity.
8. Remove the Packing (#13), Support Ring (#9) Spring Energize Lip Seal (#12), and SX Stem Seal (#7) from the body.

Xomox® FK Soft Seated Ball Valves

INSPECTION

1. Inspect the valve components for wear or damage.
2. Be sure to carefully inspect the following components for nicks, cracks, breaks, or other defects:
 - Valve Soft Seats (#6) • Ball (#3) • Stem (#4) • SX Stem Seal (#7) • Spring Energized Lip Seal (#12) • Packing Rings (#13) (as shown in Exploded View)
3. The parts listed above, along with the Body Gasket (5), are the only components that should require replacement. In addition, carefully inspect the Valve Body and Tail.
4. Inspect the seat pockets, stem bore, packing chamber and body joint gasket areas. Clean all areas thoroughly to remove all signs of corrosion and media build-up.

REASSEMBLY

When reassembling the valve, 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 Xomox FK Ball Valves.

The components included in each kit are indicated on the exploded view.

1. Insert the SX Stem Seal (#7) over the top of the Stem (#4) with the conical surface facing the spherical stem shoulder (See Fig. 1), Snap the SX Seal over the spherical portion of the stem (see Fig. 2)



Figure 1



Figure 2

2. Insert the Antistatic Spring (#15) in the hole on the bottom of the stem with the loop end sticking out. (see Fig. 3)



Figure 3

3. Insert the Stem (#4) through the valve body cavity, allowing the SX Seal to be seated into the body counter bore. (see Fig. 4).

Note: make sure the antistatic spring is located properly in the small hole on the bottom of the stem).



Figure 4

4. Place the Spring Energized Lip Seal (#12) (Fig. 5) over the Stem (#4) with the spring side facing downward into the body (as shown in Fig. 6) and gently push into position (below the packing chamber).



Figure 5



Figure 6

Xomox® FK Soft Seated Ball Valves

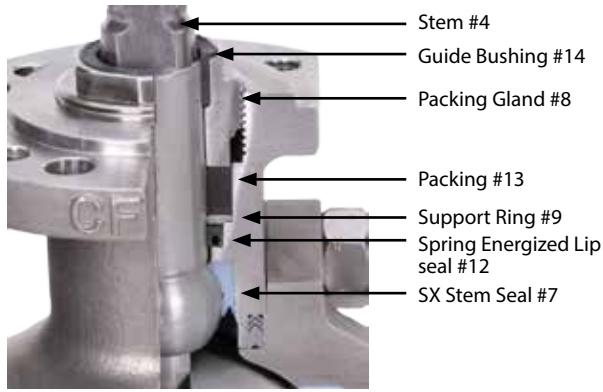


Figure 7

5. Install the Support Ring (#9) over the Stem (#4) with the raised step facing downward until it bottoms out at the bottom of the packing chamber. (See Fig. 6)

6. Install the Graphite Packing (#13) over the Stem (#4), pushing the graphite ring into the body packing chamber. (it is important to firmly compress each graphite ring independently as it is installed.)

7. Install the Packing Gland (#8) over the valve stem;

7.1 Threaded Packing Gland Sizes: 1/2"-3" (K21F, K23F)

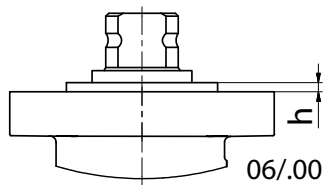
7.1.1 Rotate the packing gland (#8) clockwise until it is lightly compressing the packing (#13).

Note: Care must be taken to not cross-thread the packing gland and the body.

7.1.2 Initial packing adjustment as follows (Fig 8) per dimension h.



Figure 8



7.2 Bolted Packing Gland Sizes: 4"-8" (K21F, K23F)

7.2.1 Install the Packing Adjustment Bolts (#21) through the holes in the Packing Gland (#8)

7.2.2 Turn the packing adjustment bolts (#21) (4pcs or 6pcs) clockwise to compress packing gland (#8) and packing (#13).

Note: When tightening packing bolts, use proper crisscross adjustment pattern as shown on page 3

7.2.3 Initial packing adjustment as follows

(Fig. 8a) Per dimension h.

$$4" = .24/.18$$

$$6" = .28/.22$$

$$8" = .31/.25$$

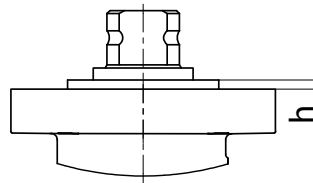
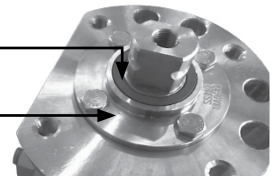


Figure 8a

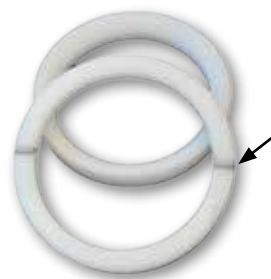
8. Insert the Guide Bushing (14) over the Stem (4) and into Packing Gland (8).

Guide Bushing

Packing Gland



9. Insert the replacement Seats (#6) with the conical surface facing the ball and the flat surface with slots facing the Body (#1) and Tail (#2) seat pocket.



Front side of Seat showing the conical surface that in contact with the Ball.

Back side of seat showing the pressure relief slot, installed against the Body or Tail.

Figure 10

Please read the warning and caution statements on pg 2 prior to installation.

Xomox® FK Soft Seated Ball Valves

10. Insert the ball (#3) into the body cavity with the port opening in the closed position. (Fig.11), with the stem drive tab positioned in the ball drive slot, rotate the ball (#3) to the open position. (Fig.12).



Figure 11

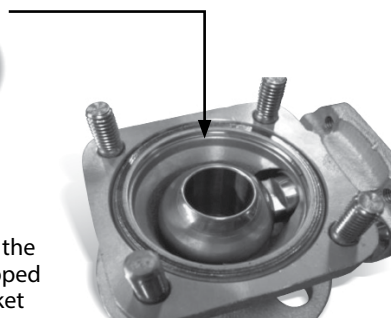


Figure 12

11. Install spiral wound Body Gasket (5) in the groove in the body (Fig.13).



Figure 13



Note: Do not remove the white PTFE tape wrapped around the body gasket

12. Join the Body (#1) and Tail (#2), (lettering on the halves face the same direction), Install and tighten the body stud nuts in the crossing pattern shown in Figure 14.



13. Tighten the nuts to the torque values listed in Table A. When tightening in the crossing pattern, cycle through the pattern at least three (3) times to assure proper and uniform torque.

Note: When the valve is reassembled, be sure the studs protrude through the nut a minimum of one (1) thread.

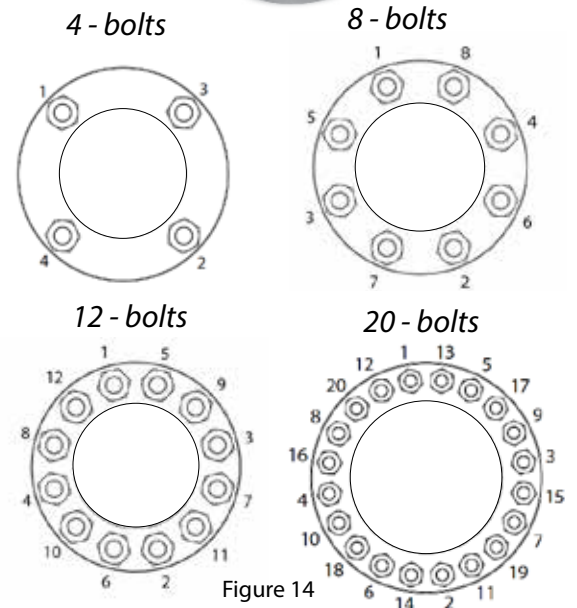
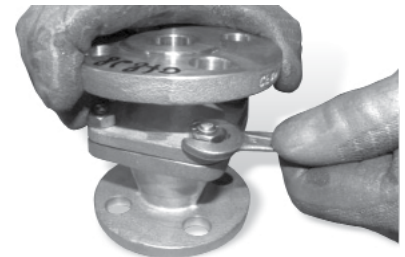


Figure 14

Body joint bolting torques

Class 150		Class 300		Bolt Size	Bolt Torque (ft/lb)
Valve Size	Bolt Qty.	Valve Size	Bolt Qty.		
½", ¾", 1"	4	88		5/16"-18UNC	12
		½", ¾", 1"	4	3/8"-16UNC	21
1½", 2"	4			7/16"-14UNC	33
4"	8	1½", 2"	4	1/2"-13UNC	52
3"	4	3", 4"	8	5/8"-11UNC	103
6"	8	6"	12	3/4"-10UNC	177
8"	12	8"	20	3/4"-10UNC	177

Table A

Please read the warning and caution statements on pg 2 prior to installation.

XOMOX®

Crane ChemPharma & Energy

Xomox® Headquarters
4444 Cooper Road,
Cincinnati, OH 45242, U.S.A.
Tel.: (513) 745-6000
Fax: (513) 745-6086
www.cranecpe.com



brands you trust.



COMPAC-NOZ®



DEPA®

ELRO® DUO-CHEK®



NOZ-CHEK®



RESISTOFLEX®



Saunders®
the science inside

STOCKHAM®



UNI-CHEK®

W.t.a.®

XOMOX®

CPE-XOMOX-FK SSBV-IOM-EN-LT-9-3-2014

Crane Co., and its subsidiaries cannot accept responsibility for possible errors in catalogues, brochures, other printed materials, and website information. Crane Co. reserves the right to alter its products without notice, including products already on order provided that such alteration can be made without changes being necessary in specifications already agreed. All trademarks in this material are property of the Crane Co. or its subsidiaries. The Crane and Crane brands logotype, in alphabetical order, (ALOYCO®, CENTER LINE®, COMPAC-NOZ®, CRANE®, DEPA®, DUO-CHEK®, ELRO®, FLOWSEAL®, JENKINS®, KROMBACH®, NOZ-CHEK®, PACIFIC VALVES®, RESISTOFLEX®, REVO®, SAUNDERS®, STOCKHAM®, TRIANGLE®, UNI-CHEK®, WTA®, and XOMOX®) are registered trademarks of Crane Co. All rights reserved.