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Revision No. O
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BU-3093

Maintenance Instructions for a
3K206-16-16-16B-WHE110 Ball Valve
Butech Catalog Number C-1986-01

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1.0 Reference

1.1 Applicable valve assembly drawing C-1986, latest revision.

2.0 Purpose

2.1 To establish maintenance instructions for all special ball valves Catalog Number C-1986-01.

3.0 Scope

3.1 These maintenance instructions are to be used for all special ball valves Catalog Number C-1986-01.

4.0 Instructions

Caution: Vent all pressure from system before removing valve for maintenance.

4.1 Disassemble

4.1.1 Remove valve assembly, with side adapters intact, from system.

4.1.2 Place valve assembly, with actuator in the 12 o'clock position, in vise equipped with "soft jaws" and tighten vise.

4.1.3 Loosen and remove the hex socket set screw (item #22) from the coupling (item #24) and the locknut (item #23) from the valve body (item #01). Remove the actuator sub-assembly from the valve assembly.

- 4.1.4 Loosen both side adapters (items #03 & #04) and back off side adapters approximately three turns.**
- 4.1.5 Loosen vise and remove valve sub-assembly. Orient the bottom connection, of the valve sub-assembly, in the 3 o'clock position and re-tighten vise.**
- 4.1.6 Place appropriate open-ended wrench on bottom adapter (item # 05) loosen and turn counter-clockwise until threads are disengaged from body.**
- 4.1.7 Remove stem (item # 19) and trunnion (item #15) from valve sub-assembly.**
- 4.1.8 Loosen vise and remove valve sub-assembly. Orient the side adapters (items #03 & #04) in the 3 o'clock and 9 o'clock positions and re-tighten vise.**
- 4.1.9 Remove the end adapters (items #03 & #04) together with the seal and seal retainers (item #09), the spring washers (item #011, the followers (item #08), the back-up washers (item #07), and the "O" rings (items #12 & #17) from the valve body (item # 01).**
- 4.1.10 Inspect all components for wear and/or defects. Replace all defective components.**

4.2 Re-assembly

- 4.2.1 Check quality and quantity of all replacement components required to re-assemble valve. Use parts list on assembly drawing as a checklist.**
- 4.2.2 Loosen vise and remove valve body. Orient the bottom opening of the valve body (item #01) in the 3 o'clock position and re-tighten vise.**

- 4.2.3 Lightly lubricate the stem (item #19), in the area of the “O” ring (item #06) and bearing washer (item #16), with an approved lubricant such as “*Christo-lube*” and/or “*Dow Corning #33*”.
- 4.2.4 Assemble the “O” ring (item #06), the back-up washer (item # 18), and the bearing washer (item # 16) on the stem (item #19).
- 4.2.5 Insert the stem sub-assembly into the bottom opening of the valve body (item #01). Rotate stem sub-assembly while gently pulling the stem through the body opening. CAUTION be careful not to damage the “O” ring (item #06).
- 4.2.6 Lightly lubricate the top of the trunnion (item #15) with the approved lubricant and insert the trunnion through the bottom opening so that the slot in the trunnion engages the tab on the bottom of the stem sub-assembly.
- 4.2.7 Rotate the trunnion and stem sub-assembly until the 1/16inch diameter hole in the trunnion is in the 12 o’clock position.
- 4.2.8 Assemble the “O” ring (item #14) and the bearing (item # 13) on to the bottom adapter (item #05). CAUTION be careful not to damage the “O” ring on the threads of the bottom adapter.

- 4.2.9** Lightly lubricate the external threads of the bottom adapter (item #05) the “O” ring (item #14) and the internal surface of the bearing washer (item #13) with the approved lubricant. Insert the bottom adapter sub-assembly into the valve body (item #01) rotate clockwise until finger-tight. Place a torque wrench on the bottom adapter and torque to 140 to 150 foot pounds.
- 4.2.10** Loosen vise and remove valve, stem, and the trunnion sub-assembly. Orient the side adapters (items #03 & #04) in the 3 o'clock and 9 o'clock positions and re-tighten vise.
- 4.2.11** Re-orient the trunnion (item #15), if necessary, so the 1/16inch diameter hole in the trunnion is in the 3 o'clock position
- 4.2.12** Assemble the “O” ring (item #12) on one of the side adapters (items #03). CAUTION be careful not to damage the “O” ring on the threads of the adapter. Insert one back-up washer (item #07) one “O” ring (item #17) the second back-up washer (item #07) the follower (item #80) into the side adapter (item #03). Place the two spring washers (items #11) on the seal and seal retainer sub-assembly (item #09) lightly lubricate the smallest external diameter of the seal retainer and insert the spring and seal retainer sub-assembly into the side adapter. CAUTION proper orientation of the spring washers is critical. See enlarged view of side adapter on assembly drawing.

- 4.2.13** Lightly lubricate the external threads of the side adapter (item #03) the external surface of the “O” ring (item #12) and the face of the new seal with the approved lubricant. Insert the side adapter sub-assembly into the valve body (item #01) rotate clockwise until finger-tight. Place a torque wrench on the side adapter and torque to 140 to 150 foot pounds.
- 4.2.14** Re-orient the trunnion (item #15), if necessary, so the 1/16inch diameter hole in the trunnion is now in the 9 o'clock position.
- 4.2.15** Assemble the “O” ring (item #12) on one of the side adapters (items #04). CAUTION be careful not to damage the “O” ring on the threads of the adapter. Insert one back-up washer (item #07) one “O” ring (item #17) the second back-up washer the follower (item #07) into the side adapter (item #04). Place the two spring washers (items #11) on the seal and seal retainer sub-assembly (item #09) lightly lubricate the smallest external diameter of the seal retainer and insert the spring and seal retainer sub-assembly into the side adapter. CAUTION proper orientation of the spring washers is critical. See enlarged view of side adapter on assembly drawing.
- 4.2.16** Lightly lubricate the external threads of the side adapter (item #04) the external surface of the “O” ring (item #12) and the face of the new seal with the approved lubricant. Insert the side adapter sub-assembly into the valve body (item #01) rotate clockwise until finger-tight. Place a torque wrench on the side adapter and torque to 140 to 150 foot pounds.

4.3 Pressure Test

4.3.1 Rotate the stem until the 1/16inch diameter hole in the trunnion is 90 degrees to the 3'oclock side adapter. Pressurize through the 3 o'clock side adapter to 20,000 PSIG. Dwell time is 10 seconds minimum.

4.3.2 Release pressure on the 3'oclock port,rotate the stem until the 1/16inch diameter hole in the trunnion is 90 degrees to the 9'oclock side adapter. Pressurize through the 9 o'clock side adapter to 20,000 PSIG. Dwell time is 10 seconds minimum.

Note: Trunnion is to be positioned so that the pressurization of the seals is against the solid surface of the trunnion.

4.3.3 Grasp stem and slowly rotate the stem and trunnion sub-assembly 360 degrees. Rotate stem three complete turns to complete optimum formation of the new seals.

4.3.4 If the ball valve has passed the pressure test the next is to re-assemble the actuator to the ball valve.

4.4 Re-attach Actuator

4.4.1 Place the bottom plate of the actuator subassembly over the stem (item #19) and the external threads of the body until it rests on the top of the valve body (item #01) and re-attach and tighten the lock-nut (item #23). Insert the hex socket set screw (item #22) into the coupling (item #24) and tighten the set screw accordingly.

4.4.2 Loosen vise and remove valve assembly

4.4.3 The refurbished valve is now ready to be returned to service.

Repair Kit:

Catalog Number RK-C-1986-01
Consists of the following components:

Item No.	Quantity	Description	Part Number
(1)	1 each	Trunnion	
(2)	1 each	Bearing Washer	A-2825-01
(3)	1 each	“O” Ring	PH-1346
(4)	1 each	Backup Washer	PH-1274
(5)	1 each	“O” Ring	PH-1402
(6)	2 each	“O” Ring	PH-1326
(7)	4 each	Backup Washer	A-3505-01
(8)	2 each	“O” Ring	PH-1315
(9)	2 each	Follower	A-3503-01
(10)	4 each	Spring Washer	PH-1555
(11)	2 each	Seat & Seat Retainer Sub-Assembly	A-4150-01

Record Of Revisions

Rev. No.	Description of Changes	Date	Approved By
0	Original Document	2-2-1999	