



## BU-3025

### MAINTENANCE INSTRUCTIONS FOR 3K63/3K93 MANUAL BALL VALVES

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## 1.0 REFERENCE

- 1.1 Butech Assembly Drawing C-1378 and C-1751, Latest Revisions.

## 2.0 PURPOSE

- 2.1 To establish maintenance instructions for 3K63/3K93 ball valves.

## 3.0 SCOPE

- 3.1 This maintenance instruction is to be used for all 3K63/3K93 ball valves.

## 4.0 INSTRUCTIONS

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

### 4.1 Disassembly

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

- 4.1.1.1 IMPORTANT NOTE: Vent all pressure before removing from system.

- 4.1.2 Place valve assembly in vise equipped with "soft jaws" and tighten vise.

- 4.1.3 Place appropriate open-ended wrench on side adapter (item 4) and turn the side adapter counterclockwise to loosen. Continue to turn side adapter until adapter "O" ring (item 14) and seal and retainer assembly are disengaged from the valve body (item #1). Remove bottom pipe plug (item 23) if applicable.

- NOTE: Repeat step (par. 4.1.3) for remaining side adapter (item 5).

CAUTION: Trunnion (item 6) will drop from body as the side adapter is loosened.

- 4.1.4 Insert standard 3/32" hex wrench into the hex socket set screw (item 20) and loosen the set screw. Remove handle (item 19) and the hub (item 21) from the stem (item 3).



- 4.1.5 Place a 7/16" open-ended wrench on the packing gland (item 2) and turn the packing gland counterclockwise to loosen. Continue to turn packing gland until disengaged from valve body (item 1) and remove from stem (item 3).
  - 4.1.6 Re-attach handle (item 19) and hex socket set screw (item 20) to the stem (item 3) and tighten.
  - 4.1.7 Utilizing the reattached handle, remove the stem (item 3) with attached bottom washer (item 9), packing (item 10), packing support washer (item 11) and spring washer (item 22) from the valve body (item 1). Remove and discard packing (item 10).
  - 4.1.8 Inspect the valve body for unusual wear and/or damage.
- 4.2 Re-assembly
- 4.2.1 Lightly lubricate the stem (Item 3) with "christo-lube" in the areas where there is contact with the bottom washer (item 9), the packing (item 10), the support washer (item 11) and the spring washer (item 22).
  - 4.2.2 Assemble the bottom washer (item 9), the packing (item 10), the support washer (item 22) and the spring washer (item 22) onto the stem (item 3). CAUTION: See assembly drawing for proper component orientation.
  - 4.2.3 Insert stem and packing subassembly into the valve body.
  - 4.2.4 Lightly lubricate the threads of the packing gland (item 2). Slide packing gland over the stem (item 3) and while turning clockwise, engage the threads in the valve body (item 1) stuffing box. Tighten packing gland finger tight.
  - 4.2.5 Pull seal and retainer (item 8) assembly from side adapter (item 4). Remove and discard o-ring (item 13) and backup washers (item 16). Lightly lubricate new seal and seal assembly on the face of the seal (item 7) and the shaft of the retainer (item 8). Note placement and configuration of spring washers (item 15) and re-install on new retainer. The first spring washer is concave toward the seal (item 7), the second is opposing and the last is once again concave toward the seal. Insert new o-ring and backup washers in the configuration shown on the attached assembly drawing. Lightly lubricate the assembled o-ring and backup washers. Gently push completed assembly into the side adapters.

NOTE: Repeat step 4.2.5 for remaining side adapter (item 5).



- 4.2.6 Lightly lubricate all exterior surfaces of the replacement trunnion (item 6) with "christo-lube". Invert body and turn stem (item 3) so the "tang" is axial to the valve body. Drop trunnion (item 6) into the valve body to engage the slot with the stem "tang."
- 4.2.7 Rotate stem (item 3) and engaged trunnion (item 6) 90 degrees until ball is in the closed position. This is important to prevent damage to the seal assembly.
- 4.2.8 Remove old o-ring (item 14) from side adapter (item 4). Place new o-ring (item 14) on the side adapter. Lightly lubricate the exterior threads of the side adapter with "moly-lit". Turn clockwise to engage the threads in the valve body and tighten until finger tight.
- 4.2.9 Repeat stem 4.2.8 for remaining side adapter (item 5).
- 4.2.10 Place appropriate open-ended wrench on side adapter (item 4) and tighten to 35 - 40 lb-ft.  
  
NOTE: Repeat for remaining side adapter (item 5).
- 4.2.11 Place a 7/16" open-ended wrench on the packing gland (item 2) and tighten to 7.5 to 8.3 lb-ft.
- 4.2.12 Reassemble the hub (item 21), the handle (item 19) and the hex socket set screw (item 20) with the stem (item 3) and tighten hex socket set screw. Install and tighten bottom pipe plug (item 23) if applicable
- 4.2.13 Loosen vise and remove valve assembly.

GENERAL NOTE: Butech Pressure Systems recommends that refurbished valves be pressure tested before being returned to service.



**RECORD OF REVISIONS**

REV NO	DESCRIPTION OF CHANGES	DATE	BY	APPR
0	Original document	03/27/98	DTG	DTG
1	Added C-1751 to para. 1.1. Revised para's 4.1.3 and 4.2.12 to include pipe plug removal and installation. Revised para. 4.2.5 for clarity on configuration of spring washers. Added assembly torque to para. 4.2.10 and 4.2.11.	12/11/01	DTG	DTG