



**Maintenance Instructions for  
Manual Ball Valve Catalog Number K204**

- 1.0 Reference
  - 1.1 Butech Assembly Drawing B-2141, Latest Revision.
- 2.0 Disassembly
  - 2.1 Remove valve assembly with side connection adapters from system.  
  
***IMPORTANT NOTE: Vent all pressure before removing valve from system.***
  - 2.2 Place valve assembly in vise equipped with "soft jaws" and tighten vise.
  - 2.3 Place appropriate open-ended wrench on side adapter (items 2 and 3) and turn the side adapter counter-clockwise to loosen. Continue to turn side adapter until adapter and "o" ring (item 11) are disengaged from the valve body (item #1). Repeat for other side adapter.
  - 2.4 Insert a standard 3/16" hex wrench into the hex socket set screw (item 13) and loosen. Remove handle (item 16) and the hub (item 15) from the stem (item 5).
  - 2.5 Place a 5/8" open-ended wrench on the packing gland (item 10) and turn the packing gland counter-clockwise to loosen. Continue to turn packing gland until disengaged from valve body and remove from stem.
  - 2.6 Re-attach handle to the stem with the set screw
  - 2.7 Utilizing the reattached handle, remove the stem (item 5), the bottom washer (item 8), the packing (item 12) and the packing support washers (item 7) from the valve body.
  - 2.8 Remove the ball (item 4), seat retainers (item 6) and the seals (item 9) from the valve body by inserting a wooden dowel pin and tapping gently.
  - 2.9 Inspect the valve body for unusual wear or damage.



### 3.0 Reassembly

3.1 Lightly lubricate all exterior surfaces of the replacement ball with "Christo-Lube" and/or "Dow Corning #33" type lubricant.

3.2 Insert ball into the valve body.

**CAUTION: Slot in ball to be in the up position. See assembly drawing for proper orientation.**

3.3 Lightly lubricate the stem (item 5) in the areas where there is contact with the bottom washer (item 8), the packing support washers (item 7) and the packing (item 12).

3.4 Assemble the bottom washer, the packing support washers and the packing on to the stem.

**CAUTION: See assembly drawing for proper component orientation.**

3.5 Insert stem and packing sub-assembly into the valve body and rotate the stem until the male slotted end engages the female slot in the ball.

NOTE: Rotate stem until the ball is in the open position.

3.6 Lightly lubricate the threads of the packing gland (item 10). Slide packing gland over the stem and while turning clockwise engage the threads in the valve body stuffing box. To hold ball in place, tighten packing gland finger tight.

3.7 Lightly lubricate the seal (item 9) and seat retainer (item 6) sub-assembly on the exterior surface of the seal, and insert into the valve body.

3.8 Lightly lubricate all surfaces of the "o" ring (item 14) and insert into the valve body. Repeat steps 3.7 and 3.8 for remaining seal.

3.9 Place new "o" ring (item 11) on the side adapter (item 2 or 3). Lightly lubricate the exterior threads of the side adapter and while turning clockwise, engage the threads in the valve body. Tighten finger tight. Repeat for remaining side adapter.



- 3.10 Rotate stem and engaged ball until ball is in the closed position.
- 3.11 Place appropriate open-ended wrench on side adapter and tighten to approximately 80-90 ft.-lbs. Repeat for remaining side adapter.
- 3.12 Place a 5/8" open-ended wrench on the packing gland and tighten to approximately 35-40 ft.-lbs.
- 3.13 Re-attach handle and set screw to the stem.

**Note: Do not attach the hub (item 15) at this time.**

General Note: The ball valve, assembled with the replacement packing, seals, and new components is now ready to be pressure tested.

#### 4.0 Pressure Test

- 4.1 With the ball in the closed position, connect pressure source to side adapter and pressurize to the rated MAWP of the valve or 20,000 PSI (whichever is less). Dwell time is five (5) to ten (10) seconds.

NOTE: A pressure drop may occur as seals form to replacement ball.

- 4.2 Release pressure in the ball valve and turn the handle approximately 120 deg. back and forth several times to assure free movement of the ball.
- 4.3 Loosen and remove the handle sub-assembly.
- 4.4 Re-attach the hub, handle and the set screw to the stem.
- 4.5 Loosen vise and remove valve assembly.
- 4.6 The refurbished valve is now ready to be returned to service.



**RECORD OF REVISION**

REV NO	DESCRIPTION OF CHANGE	DATE	BY	APPR
0	Original document	23-Mar-93	RAC	RAC