

MAINTENANCE INSTRUCTIONS FOR  
"ZERO CLEARANCE" BALL VALVE

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## 1.0 REFERENCE

1.1 Applicable valve assembly drawing.

## 2.0 PURPOSE

2.1 To establish maintenance instructions for all "Zero Clearance" Ball Valves.

## 3.0 SCOPE

3.1 These maintenance instructions are to be used for all "Zero Clearance" Ball Valves.

## 4.0 INSTRUCTIONS

**CAUTION:** VENT ALL PRESSURE FROM SYSTEM BEFORE REMOVING VALVE FOR MAINTENANCE.

### 4.1 DISASSEMBLY

4.1.1 To remove valve from system loosen both back nuts (By turning counter clockwise) and disengage threads completely. This will allow the valve to be removed from the system.

4.1.2 Place valve assembly in vice equipped with "Soft Jaws", and tighten vice.

4.1.3 Place appropriate wrench on side adapter and turn the side adapter counter-clockwise to loosen, Continue to turn the side adapter until adapter and gasket are disengaged from the valve body. Repeat this step for remaining adapter.

4.1.4 Insert standard 3/16" hex wrench into the hex socket set screw and turn counter-clockwise until removed from the hub. Using the same wrench, loosen the second set screw. Now remove the hub and handle combination by pulling up and off the stem.

4.1.5 Place a 13/16" wrench on the packing gland and turn counter-clockwise to loosen. Continue to turn packing gland until disengaged from the valve body.

- 4.1.6 Reattach the handle, the hub, and the hex socket set screw. Assemble with the stem and tighten the set screw with a standard 3/16" hex wrench.
- 4.1.7 Utilizing the reattached handle, pull straight up to remove the stem, bottom washer, packing, and the packing support washers from the valve body.
- 4.1.8 To remove the ball, seat retainers, seals, and the O-Rings, insert a wooden dowel pin and tap gently, pushing all items out one of the side connections.
- 4.1.9 Inspect all components for extrusion, wear, or defect and replace all defective items.

#### **4.2 REASSEMBLY**

- 4.2.1 Gather all components, including all the new ones required to reassemble valve as per parts list and check quantity and condition of items for shortage or defects.
- 4.2.2 Lightly lubricate the stem in the area where there is contact with the bottom washer with the approved lubricant.
- 4.2.3 Assemble bottom washer with the undersized O.D. end up onto the stem as shown, followed by a packing washer, packing support washer, and second packing washer, and second packing support washer.
- 4.2.4 Place a tapered dowel or similar object into orifice of ball and insert into valve side connection. Align slot in ball with center of stem engagement hole in top of valve body.
- 4.2.5 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.

- 4.2.6 Lubricate the threads of the packing gland. Slide the packing gland over the stem and rotate clockwise to engage the threads. Tighten the packing gland finger tight and this will hold the ball in place. Remove the tapered dowel from the ball.
- 4.2.7 Lightly lubricate the seal and seat retainer sub-assembly, on the exterior surface of the seals.
- 4.2.8 Place the appropriate O-Ring onto the shoulder of the seat retainer as shown. Repeat this step for the other seal and seat retainer sub-assembly.
- 4.2.9 Insert the seal and seat retainer sub-assembly into the side connection of valve body, making sure that the seal makes contact with the ball. Repeat this step for the other side.
- 4.2.10 Place new gasket on the side adapter. Lightly lubricate the exterior threads of the side adapter and turning clockwise engage the threads into the valve body. Rotate the side adapter clockwise until you feel it touch the seat retainer O-Ring. Repeat this step for the other side.
- 4.2.11 Rotate stem 90 degrees so that the ball is in the closed position. This will prevent damage to the seals during the final steps of assembly. Rotate both side adapters clockwise until finger tight.
- 4.2.12 Place appropriate wrench on side adapter and tighten. Torque the side adapter to value indicated on assembly drawing. Repeat this step for the other side adapter.
- 4.2.13 Place a 13/16" wrench on the packing gland and tighten. Torque packing gland to value indicated on assembly drawing.

- 4.2.14 Place a 3/16" hex wrench into the hex socket cap screw and loosen. Turn counter-clockwise until free from the valve body. Repeat this step for the other cap screw.
- 4.2.15 Reattach the handle, hub, and the hex socket set screws. Assemble with the stem and tighten the hex socket set screws with a 3/16" hex wrench.
- 4.2.16 Lightly grease O-Ring groove(s) and place O-Ring in groove(s).
- 4.2.17 Loosen vice to remove valve assembly.

**GENERAL NOTE:** BUTECH PRESSURE SYSTEMS RECOMMENDS THAT REFURBISHED VALVES BE PRESSURE TESTED TO WORKING PRESSURE BEFORE BEING RETURNED TO SERVICE.

RECORD OF REVISIONS

REV NO	DESCRIPTION OF CHANGES	DATE	BY	APPR
0	Original document	9/30/94	RAC	