

## DISASSEMBLY OF 3081 CHECK VALVES

2 1/2-10"

### CHECK VALVE COVER REMOVAL

It is suggested that jack screws be used when removing or replacing the covers (item 2) of 8" and 10" check valves. 8" check valves use two 5/8-11 althread approximately 8" long, with one wing nut or lever nut on each length of althread. 10" check valves use two 3/4-10 althread approximately 8" long.

Remove two cover bolts (item 22) on opposite side of the bolt circle, and install althread (jack screws) and nuts. Remove remaining cover bolts. Simultaneously, back the wing nut or lever nut off until the spring tension is released. Remove the cover.

NOTE: Carefully examine interior of check valve. Note position of clapper assembly, knee, freedom of movement; and remove all foreign material therein.

### TOGGLE-LEVER (CLAPPER) ASSEMBLY REMOVAL

Remove the two pipe plugs (item 31) on each side of the check valve body above the centerline, to expose the lever arm pin (item 13) and the hinge pin (item 11). Using a brass rod (smaller in diameter than the pins), gently tap out the rear (lever arm) pin first.

CAUTION: Support the lever arm (item 10) while completely removing the lever arm pin. Let the lever arm rest gently in the bottom of the check valve.

NOTE: On 8" and 10" sizes, a lever arm spacer (item 26) is installed between the two lever arms to maintain proper distance between them, and prevent binding.

Grasp the yoke (item 7) with one hand, while removing the front (hinge) pin (item 11). Lift out the toggle-lever (clapper) assembly, being careful that the brass seat (item 3) is not dented.

Prior to disassembly of the clapper assembly, thoroughly and closely examine the area of the disc (item 6) that meets the seat. Pay particular attention to the indentation in the disc made by the seat. Ensure that equal distances between all sides of the disc guide (item 5) and the indentations are present, indicating proper alignment. Inspect for indentations caused by foreign materials between the seat and the disc.

**CAUTION:** If indentations are discovered on the disc, examine this same relative area of the seat for dents/nicks.

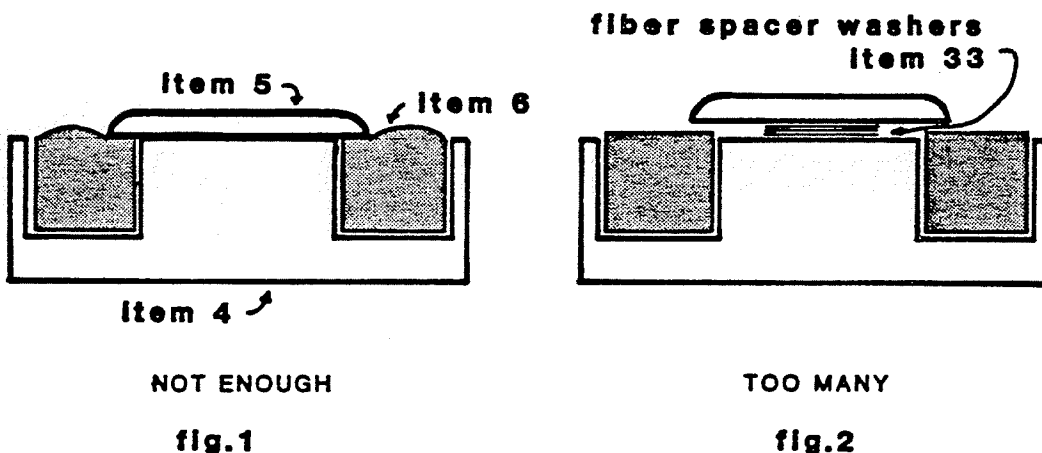
TOGGLE-LEVER (CLAPPER) DISASSEMBLY

Removing the disc guide bolt (item 23) from the center of the disc guide (for 2" through 8"), or sixteen disc guide screws (item 25) from the periphery of the disc guide (item 5) (for 10" only); permits separation of the disc guide from the disc retainer (item 4), and provides access to the disc (item 6).

**NOTE:** An O-Ring (item 20) is installed on the disc guide bolts in sizes 2½", 3", 4", 6" & 8".

When installing a new disc, fiber spacer washers between the disc retainer and the disc guide MAY or MAY NOT be required. The fiber spacer washers (item 33) are installed, IF REQUIRED, to ensure that the proper "squeeze" on the disc (item 6) is obtained by the disc guide and the disc retainer. Too many fiber spacer washers between the disc guide and disc retainer will not generate sufficient squeeze on the disc (not a water-tight seal), permitting water to get between the disc and disc retainer; pushing the disc out of the disc retainer, giving the disc a "swollen" appearance and resulting in insufficient pressure drop (too little head loss) across that particular check valve.

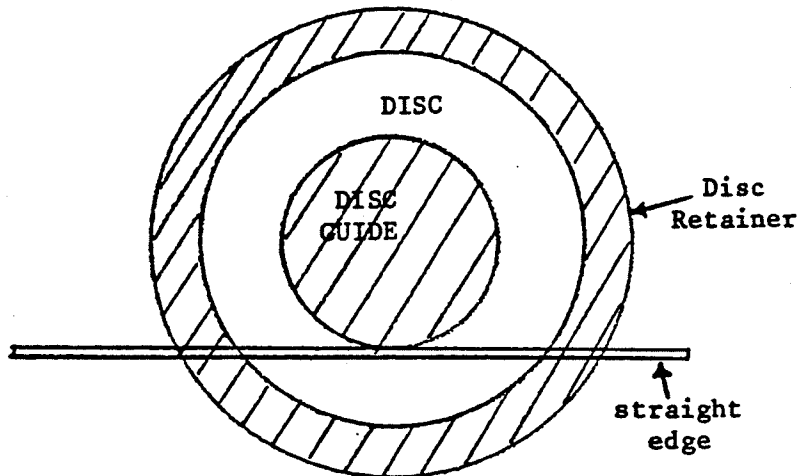
Not enough fiber spacer washers between the disc guide and disc retainer can generate TOO MUCH squeeze on the disc, causing it to "round off" around the disc guide, resulting again in insufficient pressure drop (too little head loss) across that particular check valve.



In Fig 1 above, ADD fiber spacer washers (item 33) between the disc guide (item 5) and disc retainer (item 4), until bulge disappears, but disc cannot be rotated.

In Fig 2 above, REMOVE fiber spacer washers between disc guide and disc retainer, until disc cannot be rotated and no bulge appears.

A straight edge just touching the disc guide, the disc and the disc retainer will indicate proper squeeze on the disc WHEN NO LIGHT CAN BE SEEN BETWEEN THE BOTTOM OF THE STRAIGHT EDGE AND THE DISC.



Two grey (thin) and one red (thick) spacer washers with each kit.

Inspect all internal parts for wear, corrosion, erosion or mineral buildup. Thoroughly clean all parts and bearing surfaces; replace any damaged parts.

#### TOGGLE-LEVER (CLAPPER) REASSEMBLY

Insert disc in disc retainer. Install fiber spacer washers as required, to give the correct amount of squeeze. Insert and tighten the disc guide bolt or disc guide screws as required. Lay the toggle-lever (clapper) assembly aside.

Inspect the seat (item 3) for nicks and cleanliness. In the event the seat is nicked or dented, very fine wet-or-dry sandpaper may be used to "polish out" the blemish. Remove the seat only if damage cannot be polished out.

**CAUTION:** Use a very fine grade of sandpaper that will retain the abrasive properties when wet.

Polish the inside diameter of the throat and the beveled area of the seat.

Polish in as wide an arc as possible, to ensure a proper and continuous match between the seat and the disc.

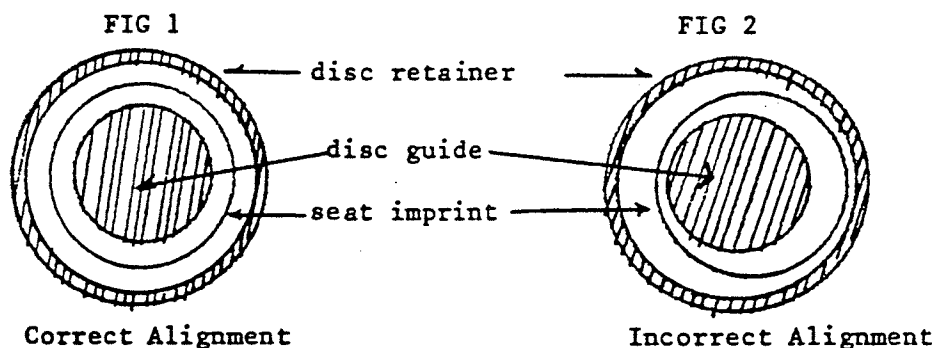
ALIGNMENT OF THE CLAPPER ASSEMBLY

Re-install clapper assembly. Do not permit disc guide to come in contact with the seat. Damage to seat may occur.

Support clapper assembly in one hand, insert through cover cavity and install hinge pin.

With clapper assembly supported by hinge pin only, exert pressure to force disc against the seat, and leave an imprint of the seat in the disc. Remove clapper assembly. Inspect disc to ascertain that alignment is correct.

NOTE: Alignment is correct if seat leaves imprint on disc equidistant on all sides of disc guide, as indicated by FIG. 1.



In the event the seat imprint resembles FIG. 2, adjust hinge pin bushing OUT, on side corresponding to least distance between seat imprint and disc guide. In FIG 2 above, adjust hinge pin bushing on your RIGHT out. (For proper perspective, assume that you are looking into the inlet check valve).

REASSEMBLY

To reassemble, reverse the order of disassembly. When installing the toggle-lever (clapper) assembly in the valve body, use care that the valve seat is not nicked or otherwise damaged. When the two pins that hold the toggle-lever (clapper) assembly are installed, be sure to note that the knee (yoke, item 7) of the toggle-lever (clapper) assembly pivots upward freely into the opening.

NOTE: If the toggle-lever (clapper) assembly is installed with the knee pivoting downward, the valve will fail to function.

If both check valve #1 and #2 are disassembled simultaneously be sure that the HEAVY spring is installed in the #1 check valve cover cavity; and in sizes 2½", 3", 4", 6" & 8", ensure that the finned clapper assembly is installed in the #1 check valve body.

Follow instructions, "To place in service" and "Testing", as set forth in the appropriate technical manual.