

# ONYX VALVE CO MODEL DBC

## Installation & Maintenance

### OPERATION:

(07-10)

The Onyx series DBC is a bevel gear operated manual pinch valves, full round full port with two pinch bars that close on centerline. The bevel gear operator provides smooth, even torque transmission for thrust for opening and closing of valves.

To close the valve, turn the hand wheel clockwise until mechanical stop (#7A) hit the bottom. To open the valve, turn hand wheel counter-clockwise. Positive opening tabs molded into the sleeve attach to the pinch bars to insure complete opening.

### TESTING:

All Onyx pinch valves are tested to customer specifications before shipment. Unless otherwise specified, all valves are shipped assembled with all accessories piped, mounted and calibrated.

### STORAGE

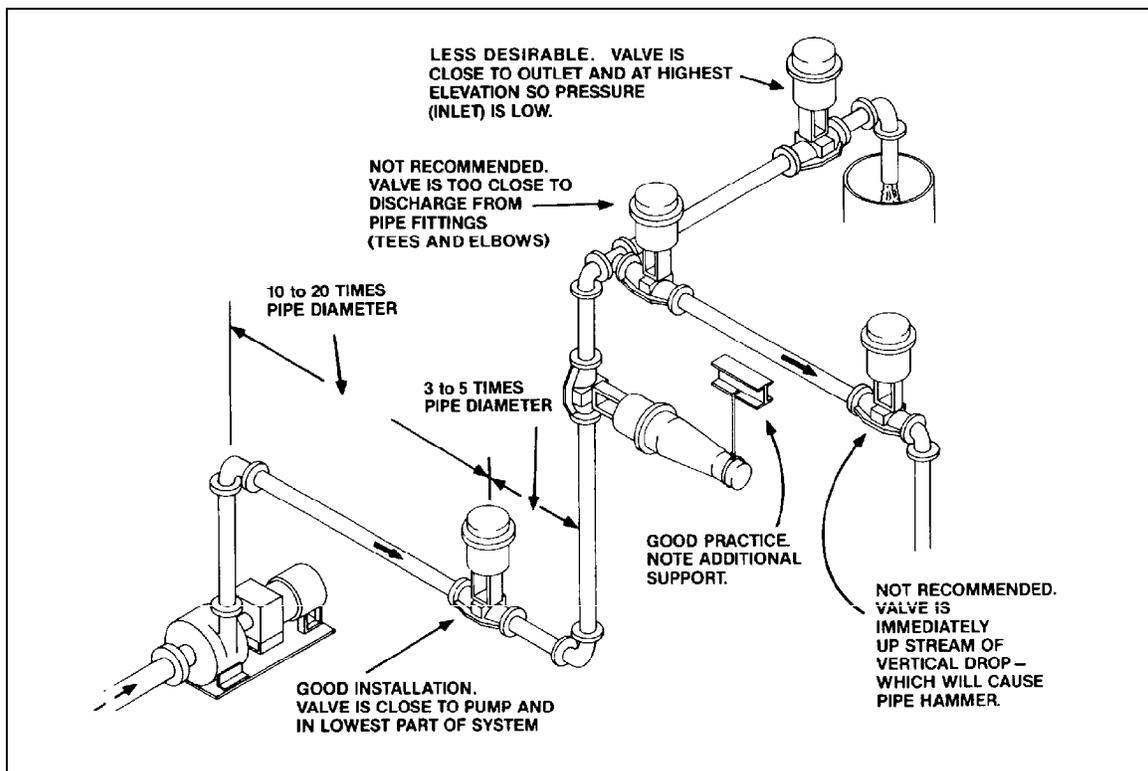
Correct storage procedures extend valve life. The rubber sleeve in the valve is perishable. Ideal storage conditions are 50°F and 60% relative humidity.

1. Keep valves and spare sleeves as cool as possible. They can be stored in an unheated area, but allow maximum ventilation in storage areas subject to high ambient summer temperatures. Truck trailers and storage sheds become incredibly hot during summer months. Avoid such locations.
2. Avoid sunlight. Ultra-violet light accelerates the deterioration of rubber. Leave the valve in its box. If not feasible to box the valve, cover the sleeve with black plastic.
3. Avoid ozone. DO NOT STORE valve near active electrical equipment. For long-term storage, coat the face and inside the sleeve twice yearly with silicone spray or liquid.

### INSTALLATION:

1. Safety considerations.
  - a) Leakage: Consider the possibility of flange leakage due to improper tightening of flange bolts. Pinch valves handle abrasive fluids; it may be reasonable to expect the sleeve to eventually wear out. Precautions should be taken where liquids may spray out or drip down onto electrical equipment or plant personnel, or combustible fluid may drain into a dangerous area.
  - b) After shut down: Pinch valves can hold pressure in a system for a considerable length of time. Means should be provided to safely relieve pressure and drain lines.

2. **Flanges:** Onyx pinch valves are designed to work with standard ANSI 150# (or 300#) **flat face** flanges. No gasket is required; the sleeve face *is* the gasket. Be careful when using Victaulic type flanges, as the grooving machine often leaves a sharp edge inside the flange. This sharp edge will cut the rubber valve sleeve causing premature sleeve failure. Make absolutely sure that the inside edges of mating flanges are filed or ground smooth. Valve flanges have through holes and are designed to have an ANSI hex (not heavy hex) nut behind the flange. Flange bolts must be inserted from the mating flange side.
2. Allow a long straight run into and out of throttling valves. A good rule of thumb is 10 to 20 pipe diameters up stream, and 3 to 5 pipe diameters down stream. (See Fig. 1)
4. Locate the valve where it can be reached for service and sleeve replacement. Allow access by technicians who may have to calibrate automatic valves. Allow access to the auxiliary hand wheel.



**Fig 1**

5. Be sure pipeline is clean. Foreign material left in the pipeline can damage valves. Clean the mating flanges of adjacent pipe. Remove any old gasket material.
6. Inspect the valve before installation. Report any shipping damage before installation. **DO NOT INSTALL A VALVE KNOWN TO HAVE BEEN DAMAGED IN SHIPMENT.** Check inside the valve to make sure no foreign objects are present.

7. Pinch valves can be installed in any position with flow in either horizontal or vertical directions.
  - i) Do not install valve next to a source of extreme heat.
8. Close valve prior to installation. Make sure adjacent pipe is properly aligned. Adjacent pipe must have sufficient travel to insert valve and draw tight to compress sleeve faces; valve will not stretch. Add an expansion joint if necessary to obtain required free play. Make certain adjacent pipe has sufficient free play to allow removal and reinstallation of the valve. (Flange gaskets are not required, but may be used for spacers if necessary.)
  - ii) Coat faces of valve sleeve with silicone lubricant to facilitate installation and later removal of the valve and to preserve the resiliency of the rubber.
9. Bolt valve into pipeline. Snug up the bolts gently in a criss cross pattern. It may be necessary to re tighten bolts later after the rubber has taken set.
10. IMPORTANT - INSTALL SUFFICIENT PIPE SUPPORTS TO ISOLATE VALVE BODY FROM EXCESSIVE FORCES.

## **MAINTENANCE**

1. Visually inspect valve periodically.
2. Lubricate valve once a year. Coat stem (#7) and guide rods (#23) where they pass through the bearings (#2G, 2H, 22) with grease. If valve is in a dusty environment, grease may cause dust to stick to the stem; use light oil.

## **SLEEVE REPLACEMENT**

1. Relieve process pressure and drain process line.
2. Turn off electric power. Disconnect electric lines. Label and record connections so the valve can be reconnected in the same manner.
3. Remove valve from process line.
4. Disconnect any accessories attached to the stem.
5. Keep the valve in the open position.

Disassemble valve bonnet assembly (#2) by removing bonnet bolts, nuts, and washers (#2A, 2B, 2C).

6. Separate upper and lower bonnet halves (#2).
7. Remove positive opening tabs from lower pinch bar (#10) by removing bolts, nuts and washers (#8A, 8B, 8C).
8. Remove the lower pinch bar by removing hex nuts (#23A) from the guide rods (#23).
9. Turn hand wheel clockwise to push the sleeve clear out of the upper bonnet, far enough to access the positive opening tabs hardware attached to upper pinch bar (#9). In case the mechanical stop (#7A) to be moved, leave marker on the valve stem (#7) so the mechanical stop (#7A) can be reattached to the original position when valve is re-assembled.
10. If no positive opening tabs are provided, in case of high line pressure valves where heavy duty sleeves were used, proceed directly to step 11.

- a) Remove bolts, nuts and washers that secure the positive opening tabs to the pinch bars (#8A, 8B, 8C). The sleeve (#1) is now free from the pinch bars (#9 & 10). Discard old sleeve. Prepare new sleeve for installation.

- b) Punch holes through the positive opening tabs using a gasket or pliers type punch. The diameter of the holes in tabs should be equal to hole diameter in pinch bar.

- c) Positive opening tab holes must be in proper alignment with respect to the flange face holes, or there will be hell to pay when you reinstall the new sleeve.

- d) Reattach tab bolts, nuts and washers (#8A, 8B & 8C). Use flat washers on every hole. If you replace bolts (#8A), cut or grind flush with nut (#8C) so bolts do not puncture sleeve in closed position.

- e) Trim the tabs even with the top surface of the pinch bar.



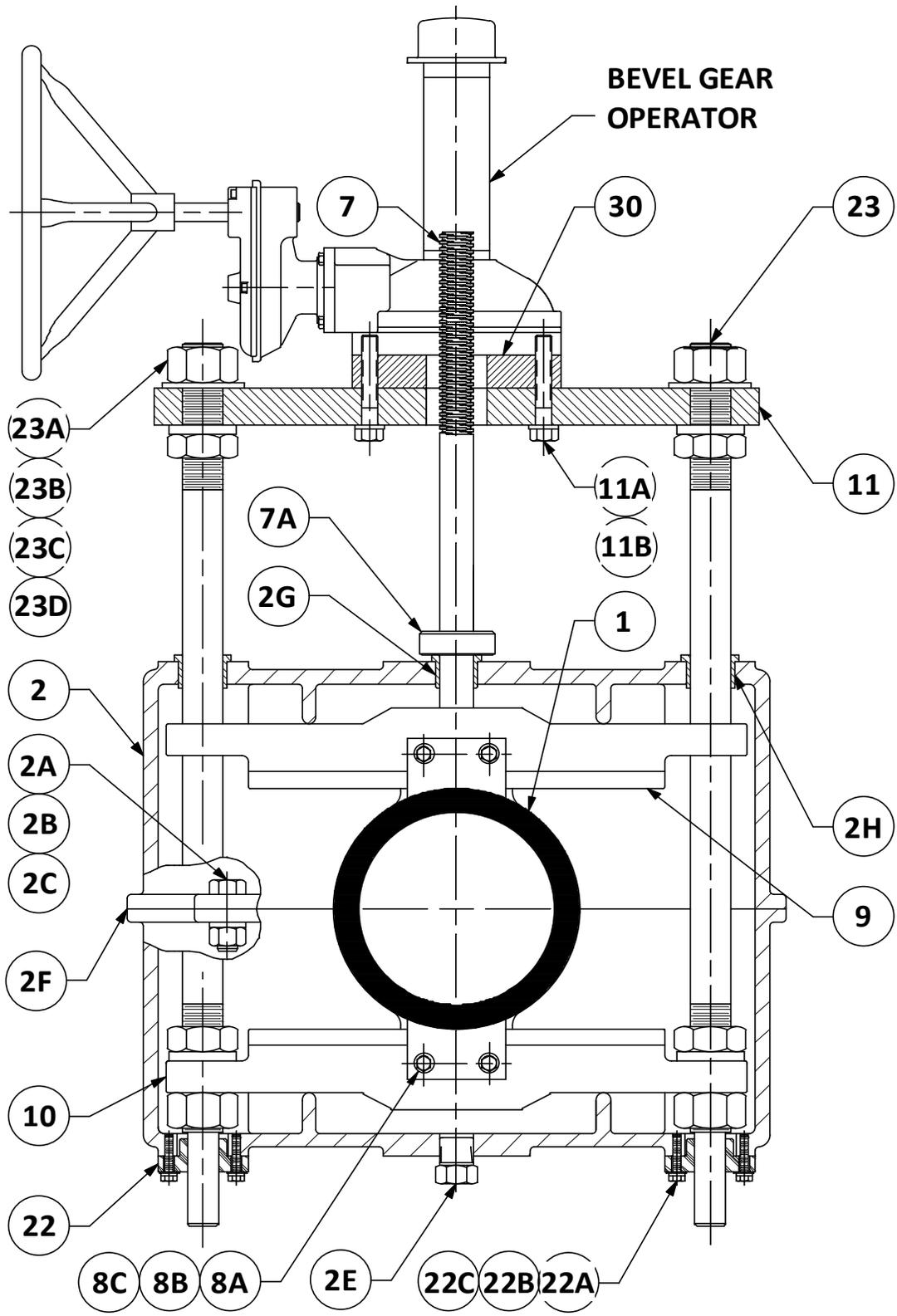
11. Coat the stem (#7) where it passes through the bearing with a light application of grease or machine oil.
12. Insert new sleeve and reattach the lower pinch bar. Reattach the nuts on the guide rods.
13. Reattach the lower bonnet. Apply a coat of valve seal to the mating flanges of the bonnet halves. Bonnets are matched and must be oriented as they were originally or guide rods will not line up properly.



Reattach bonnet hardware (#2A, 2B & 2C).

14. The valve can now be put back into service.

<b>Item</b>	<b>Description</b>
1	Sleeve
2	Bonnet Assembly
2A	Bolt, bonnet
2B	Lock Washer, bonnet
2C	Nut, bonnet
2E	Drain Plug, bonnet
2F	Sealant, bonnet
2G	Bearing, Stem
2H	Bearing, Guide rod, upper
7	Valve stem
7A	Mechanical Stop
8A	Bolts, P.O.F.
8B	Washer, P.O.F.
8C	Nuts, P.O.F.
9	Upper Pinch Bar
10	Lower Pinch Bar
11	Yoke
11A	Bolts, Yoke-Bevel Gear Operator
11B	Lock Washers, Yoke-Bevel Gear Operator
22	Bearing, Guide Rod, Lower
22A	Bolt, Lower Bearing-Bonnet
22B	Flat Washer, Lower Bearing
22C	Lock Washer, Lower Bearing
23	Guide Rods
23A	Nut, Guide Rod
23B	Washer, Guide Rod
23C	Lock Washer, Guide Rod
23D	Jam Nut, Guide Rod
30	Spacer, Yoke-Bevel Gear Operator



**Questions?**

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