

# **ONYX VALVE CO MODEL CER with JORDAN ACTUATOR**

## **Installation & Maintenance**

### **OPERATION:**

**(7-2011)**

The Onyx series CER is electric operated pinch valve, with full round configuration and a single pinching mechanism. It fails in last position on loss of electric power. The electric actuator drives a direct acting pinch bar to close the rubber sleeve bubble tight. Positive opening tabs molded into the sleeve attached to the pinch bar insure complete opening.

When equipped with a positioner, the CER pinch valve is efficient, reliable control valve.

### **TESTING:**

All Onyx pinch valves are tested to customer specifications before shipment. Unless otherwise specified, all valves are shipped assembled with all actuator limit switches, torque switches, and positioners fully adjusted and calibrated.

### **STORAGE**

Correct storage extends 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 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 drip onto electrical equipment or plant personnel, or where 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.
  3. Allow a 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. (Refer to 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.

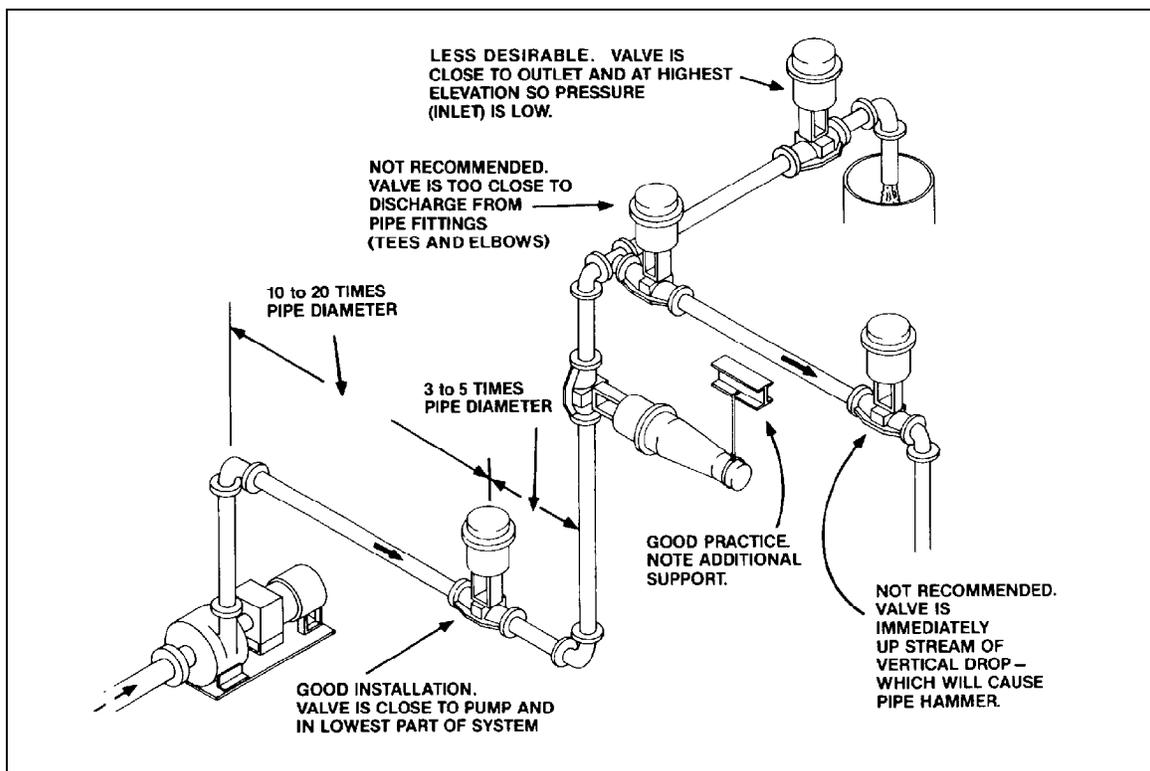


fig 1

5. Be sure pipeline is clean. Foreign material left in the pipeline can damage valve. Clean the mating flanges of adjacent pipe. Remove old gasket material.

6. Inspect 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. Onyx pinch valves can be installed in any position with flow in either direction. 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.)
  - i) 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.**
11. Connect power and control wiring to appropriate terminals inside the actuator wiring compartment. Refer to wiring diagram supplied with valve actuator for correct wiring sequence.

**Warning!**

High voltages may be present inside the electric actuator.

Turn off all power before proceeding with wiring.

Wiring must be performed by a qualified electrician in accordance with local and national electrical codes. Failure to heed this warning could result in injury, death, and/or damage to equipment.

Refer to instruction manual supplied with actuator for details of operation related to the electric actuator.

**MAINTENANCE**

1. Visually inspect valve periodically.
2. Lubricate valve once a year. Coat stem (#7) where it passes through the yoke adapter (#12) with grease. If valve is in a dusty environment, grease may cause dust to stick to the stem; use light oil.

## SLEEVE REPLACEMENT

**WARNING:** Before attempting to disassemble the valve housing the stem must be in the retracted position. Failure to retract the stem could result in equipment damage and/or serious personal injury.

1. Relieve process pressure and drain process line.
2. 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. Disassemble valve bonnet assembly (#2) by removing bolts, nuts, and washers (#2A, 2B, 2C).
6. Separate upper and lower bonnet halves (#2).
7. Turn the manual hand wheel override of electric actuator clockwise to push the sleeve clear of the upper bonnet. If the valve is equipped with POF tabs, drive the pinch bar out far enough to access the POF hardware.
8. If sleeve (#1) is provided with positive opening tabs (integrally molded tabs bolted to the pinch bar), follow steps 'a' through 'e' below. If no positive opening tabs are provided, proceed directly to step 9.
  - a) Remove bolts, nuts and washers that secure the positive opening tabs to the pinch bar (8A, 8B, 8C). The sleeve (#1) is now free from the pinch bar (#8). 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 approximately equal to hole diameter in pinch bar.
  - c) **Positive Opening Tab Holes** must be in proper **Alignment** with respect to the **Flange Face Holes**.



- d) Replace 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.
9. Apply a coat of silicone valve sealant to the mating flanges of the bonnet assembly.
  10. Pull bonnet halves together with clamps or by temporarily inserting threaded rods in diagonally opposite holes and drawing bonnet into bolting range by gradually turning nuts down the threaded rods. Replace bonnet hardware (#2A, 2B & 2C).
  11. Reinstall valve in process line.
  12. Reconnect electric lines.



### **ACTUATOR REMOVAL**

1. Disconnect electric lines.
2. Remove bolts (#11A) and lock washers (#11B).
3. Loosen coupling jam nut (#13A) and remove coupling (#13).

NOTE: Valve stems have left hand threads. Turn jam nut and coupling the 'wrong' way to remove.

### **ACTUATOR INSTALLATION**

1. Thread jam nut (#13A) onto valve stem (#7).
2. Lower actuator stem and sandwich the coupling (#13) between the actuator stem and valve stem. Engage both stems simultaneously. Turn coupling clockwise until stems are drawn against each other.
3. Turn jam nut (#13A) clockwise to lock coupling.
4. Replace actuator bolts and lock washers (#11A, 11B).

## Questions?

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<b>ITEM</b>	<b>NOMENCLATURE</b>
<b>1</b>	SLEEVE
<b>2</b>	BONNET ASSY
<b>2A</b>	BOLT, BONNET ASSY
<b>2B</b>	LK WASHER, BONNET ASSY
<b>2C</b>	NUT, BONNET ASSY
<b>2E</b>	PLUG, BONNET
<b>7</b>	STEM
<b>7A</b>	MECHANICAL STOP
<b>8</b>	PINCH BAR
<b>8A</b>	BOLT, POF
<b>8B</b>	WASHER, POF
<b>8C</b>	NUT, POF
<b>11</b>	YOKE
<b>11A</b>	BOLT, YOKE-ACTUATOR
<b>11B</b>	LK WASHER, YOKE- ACTUATOR
<b>11C</b>	BOLT, YOKE-BONNET ASSY
<b>11D</b>	LK WASHER, YOKE-BONNET ASSY
<b>12</b>	YOKE ADAPTER
<b>12B</b>	BEARING, YOKE ADAPTER
<b>13</b>	COUPLING, STEM-ACT STEM
<b>13A</b>	JAM NUT, STEM-ACT STEM

# ACTUATOR

