

Instruction  
D-8100-1NE  
December 2010

# NOR'EAST

— CONTROLS, INC.

A DIVISION OF ALLGASH INTERNATIONAL, INC.



## Operator's Manual

### SERIES 8100 SINGLE SEATED, CAGE TYPE GLOBE VALVES

Previously manufactured by Dezurik® and Honeywell®

# Nor' East

## 2-1/2" – 6" 8100 Series Single Seated Cage Valves

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**Instructions** These instructions are intended for personnel who are responsible for installation, operation and maintenance of your DeZURIK Globe Valve.

**Safety Messages** All safety messages in the instructions are flagged with the word Caution, Warning or Danger. These messages must be followed exactly to avoid equipment damage, personal injury or death.

Safety label(s) on the product indicate hazards that can cause equipment damage, personal injury or death. If a safety label becomes difficult to see or read, or if a label has been removed, please contact DeZURIK for replacement label(s).



### **WARNING!**

**Personnel involved in the installation or maintenance of valves should be constantly alert to potential emission of pipeline material and take appropriate safety precautions. Always wear suitable protection when dealing with hazardous pipeline materials. Handle valves, which have been removed from service with suitable protection for any potential pipeline material in the valve.**

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**Inspection** Your DeZURIK Globe Valve has been packaged to provide protection during shipment. Carefully inspect the unit for damage upon arrival and file a claim with the carrier if damage is apparent.

**Parts** Order parts from your local sales representative, or directly from DeZURIK, as listed on the back cover. Recommended spare parts are listed on the assembly drawing. These parts should be stocked to minimize downtime.

**DeZURIK Service** DeZURIK service personnel are available to install, maintain and repair all DeZURIK products. DeZURIK also offers customized training programs and consultation services.

For more information, contact your local DeZURIK sales representative or visit our website at [www.dezurik.com](http://www.dezurik.com).

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# Nor' East

## 2-1/2" – 6" Series 8100 Single Seated Cage Valves

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### Description

The Series 8100 valve is a medium duty, single seated, cage-type globe valve with an available pneumatic diaphragm spring actuator or electric motor actuator.

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#### **WARNING!**

**This valve is a pressure vessel. Failure to release pipeline pressure may result in personal injury and/or flow system damage. Completely release pipeline pressure before removing the actuator from the valve or removing the valve from the pipeline.**

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### Valve Pressure Ratings

See Table A for valve pressure ratings.

Table A: Valve Pressure Ratings

| Valve Size | Pressure Rating (ANSI)    |
|------------|---------------------------|
|            | Cast Iron<br>(ANSI B16.1) |
|            | Flanged Ends              |
| 2-1/2"     | 125 & 250 lbs             |
| 3"         |                           |
| 4"         |                           |
| 5"         |                           |
| 6"         |                           |

### Installation

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#### **CAUTION!**

**If valve is used in a water system, the water must be adequately treated to prevent the formation of rust, carbonates and other undesirable deposits on valve parts. Otherwise, deposit build ups can damage packing, seats or other internal valve parts.**

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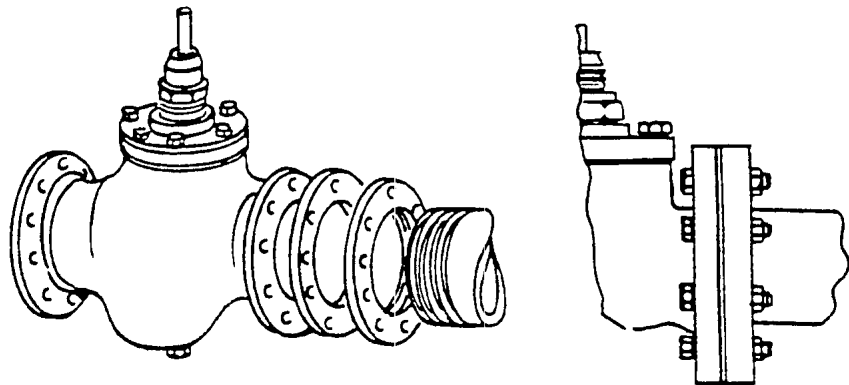
- For maximum efficiency and minimum wear, install valve in the vertical position with valve stem pointing up.
- Be sure to leave a minimum of 4 inches clearance for actuator removal.
- Before installing, be sure valve and pipeline are clean inside and free of scale, chips and welding spatter.

**Installation**  
*(Continued)*

- The valve must be installed with the fluid flow in the direction of the arrow on the valve body (pressure under plug). Pipes must be lined squarely with the valve at each connection. If they are forced into the valve, the body may become twisted, causing improper seating. Be sure there are no pockets in the line where condensate could accumulate and cause an undesirable water hammer.
- Be sure that the flow medium and ambient temperature and the selected location will not exceed the maximum temperature limitations for the valve or actuator.
- If the valve has flanged ends, tighten flange bolts evenly to prevent excessive stress and possible cracking.

**Piping Tips for Valves with Flanged Ends**

If possible, mount companion flange on pipe before mounting flange on the valve.



Do not apply pipe dope to valve flange, companion flange or gasket. Be sure face of companion flange is flush with face of valve-body flange and lined up square before tightening mounting nuts.

**Note:** If valve has welded ends, prevent plug and cage distortion by keeping excess heat from valve body.

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## 2-1/2" – 6" Series 8100 Single Seated Cage Valves

### Parts Identification

#### Nameplate Data

The nameplate gives vital information on valve construction and operation. Always reference the serial number when ordering spare parts.

The spring range (on spring diaphragm actuators) is factory set to specifications on the order. Note the type of trim material, packing and lubricant number ("NONE" means packing does not require lubrication.) Remember that a change in operating conditions may mean a change in trim material, packing and lubricant type. Keep a permanent record of all nameplate information.

See Figure 1 for parts identification.

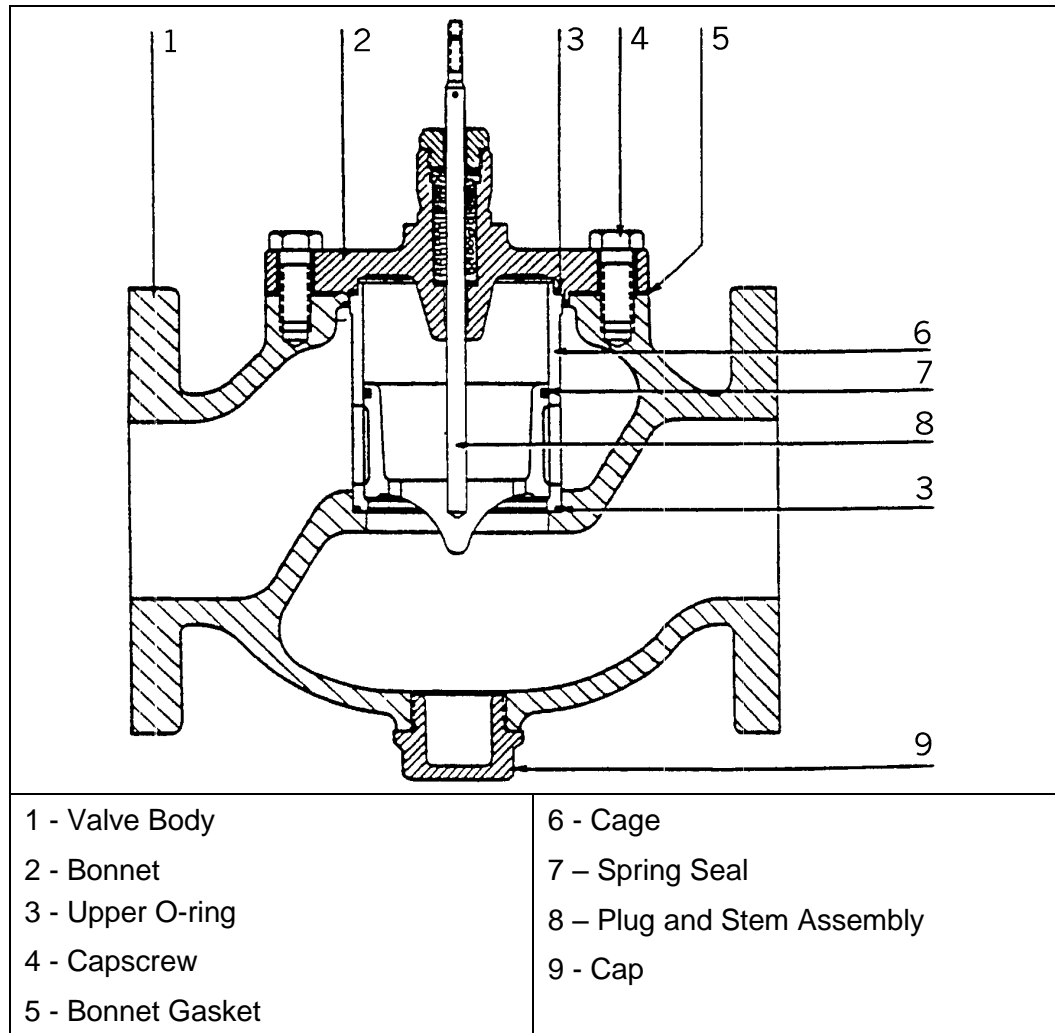


Figure 1: Parts Identification

**Maintenance**

Preventive maintenance consists of making a periodic visual inspection. This will reveal packing box leaks, loosening of air connections due to vibration and visible failures of valve parts and accessories.

***Packing Box***

Checking packing box for leakage. If leakage is evident;

- With spring-loaded Teflon packing, replace packing.

***Connections***

Check all mechanical and air connections. In some applications, particularly where the valve is located in a line near a pump, vibrations may cause both mechanical and air connections to work loose.

If possible, stroke the valve through several cycles, noting the operation, the pressure required to for stroking and the normal action of the valve.

# Nor' East

## 2-1/2" – 6" Series 8100 Single Seated Cage Valves

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### **Valve Overhaul**

Generally, when a valve is overhauled the bonnet and actuator are removed from the valve body, the packing is removed from the packing box and all parts are cleaned. Make a thorough inspection of the plug, cage and stem to determine whether these parts should be re-used, re-worked or replaced. To minimize the possibility of leakage, always replace the bonnet and cage gaskets whenever the valve is disassembled.

#### ***Actuator Removal***

- Stop pipeline flow and completely release pipe line pressure.
- 



#### **WARNING!**

**This valve is a pressure vessel. The bonnet will blow off the actuator if the bonnet bolts are removed with pressure in the valve. Completely release pressure before disassembling the valve.**

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- Disconnect and lock out the pneumatic or electrical power to prevent accidental operation of the actuator.
- 



#### **WARNING!**

**Moving parts from accidental operation of power actuator can cause personal injury or equipment damage. Disconnect and lock out power to actuator before removal.**

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- Remove actuator from valve. See Figures 2 and 3 for actuator removal.



**Valve Overhaul**  
*(Continued)***Actuator Removal**

1. Loosen stem lock nut.
2. **IMPORTANT:** For **Air-to-Close** action, apply enough air pressure to almost close the valve but not seat the plug, to prevent damage.

For **Air-to-Open** action, apply air pressure to lift the plug slightly off the seat to prevent damage.

3. Unscrew stem connector from actuator stem.
4. Disconnect pneumatic connections.
5. Loosen hex socket head capscrew in yoke collar and lift actuator off valve.

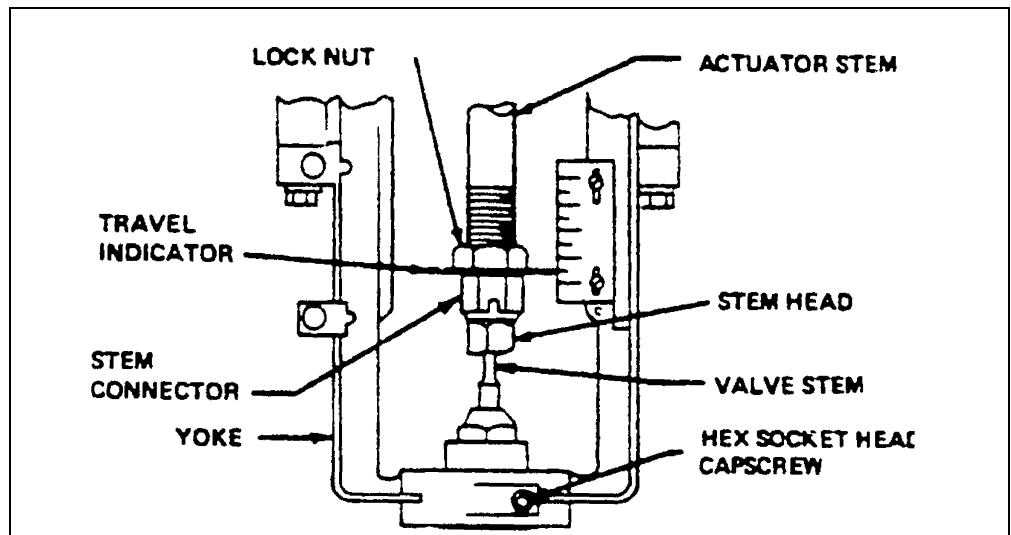


Figure 2: Actuator Removal (Pneumatic Actuator)

# Nor' East

## 2-1/2" – 6" Series 8100 Single Seated Cage Valves

### Valve Overhaul (Continued)

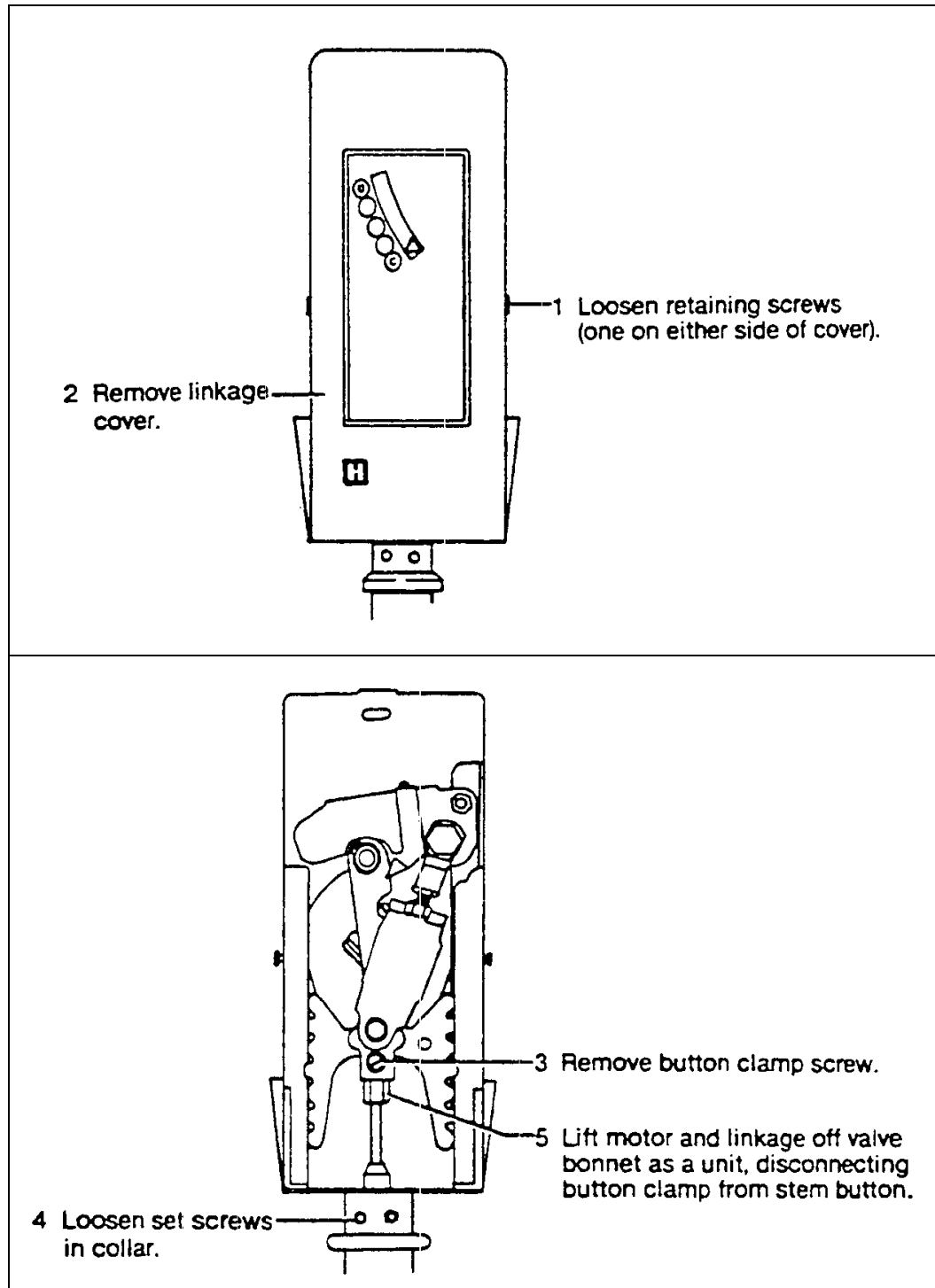


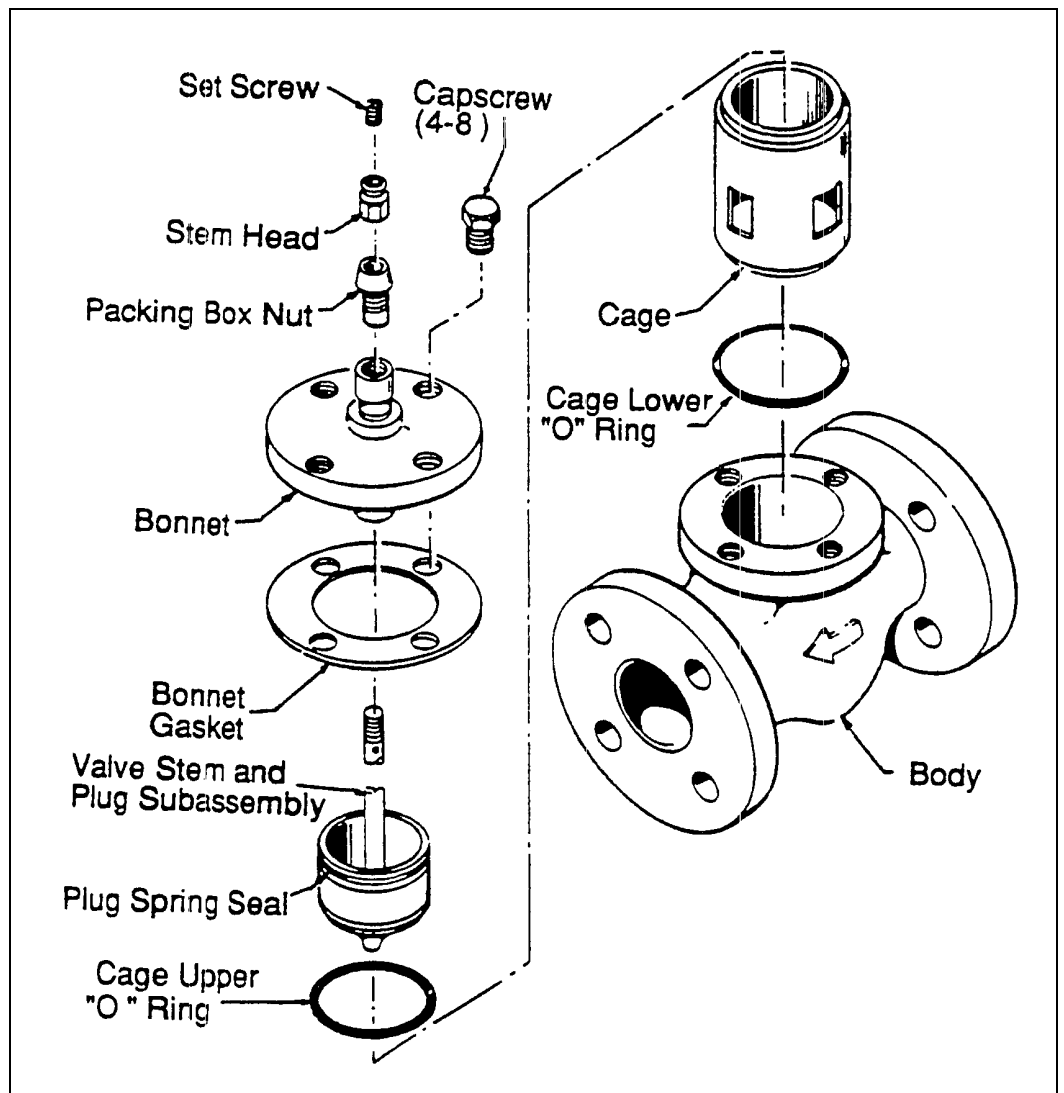
Figure 3: Actuator Removal (Electric Motor)

**Valve Overhaul**  
**(Continued)**

**Valve Disassembly**

See Figure 4 for disassembly of valve.

1. Remove bonnet capscrews.
2. Lift bonnet, valve stem and plug assembly from valve body.
3. Remove bonnet gasket.
4. Remove cage from valve body and remove upper and lower O-rings from cage.
5. Loosen packing nut.
6. Rotate plug and stem from bonnet and remove plug spring seal from plug.



**Figure 4: Disassembly of Valve**

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## 2-1/2" – 6" Series 8100 Single Seated Cage Valves

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### Valve Overhaul *Lapping Plug*

*(Continued)*

See Figure 5 for lapping plug.

1. Apply lapping compound to the seat ring as well as the seating surface of the plug.
2. Lap plug into seat ring to obtain a good seating surface. Do not remove too much metal from the plug. Stop lapping after a seating surface 1/32 inch (0.8mm) wide is obtained.
3. Be sure to remove all traces of the lapping compound from the plug and seat ring.

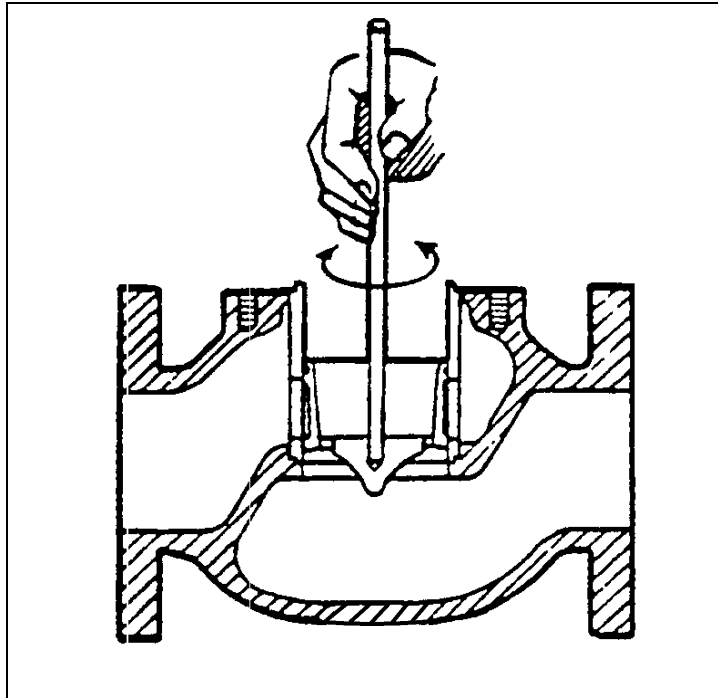


Figure 5: Lapping Plug

**Valve Overhaul**  
(Continued)

**Valve Re-assembly**

**NOTE:** A new plug and cage should be installed at the same time to insure tight shutoff. Always replace required gaskets and O-rings whenever the valve is disassembled to prevent leakage.

If plug and cage have been replaced, refer to *Lapping Plugs* section before proceeding with reassembly. See Figure 6.

See "Packing Replacement" section to install new packing.

1. Lubricate and insert new upper and lower O-rings into cage.
2. Carefully insert cage into valve body. While holding down cage with one hand, visually check that the lower O-ring has seated properly.

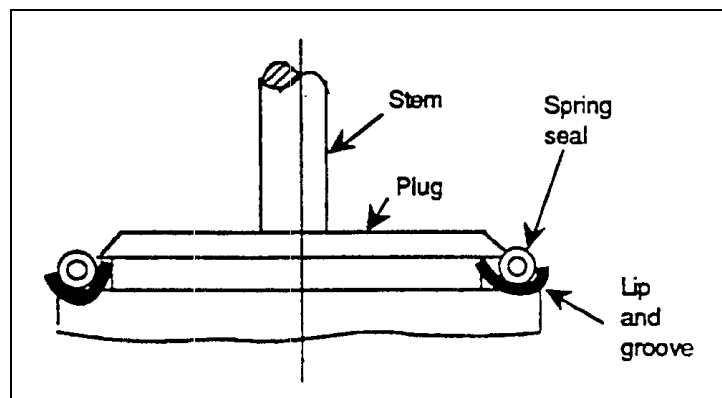
**NOTE:** Once the cage has seated, it should not be lifted again during remainder of re-assembly process to avoid unseating the lower O-ring.

3. Insert new spring seal into plug. **CAUTION:** Failure to install spring seal correctly will cause the valve to malfunction.

**NOTE:** To aid in the installation of the seal, soak the spring seal in hot water (130° to 160°F) for 10 minutes.

Apply a uniform coating of lubricant to tapered lip and groove of plug. Remove spring seal from hot water and quickly apply lubricant to it. Align spring seal so its open end (side with coiled spring showing) is facing valve stem.

Insert one side of spring seal over lip and into groove of plug, and carefully work spring seal into groove, one section at a time, until entire seal is properly sealed in groove. See Figure 6.



**Figure 6: Spring Seal Installation**

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### Valve Overhaul

*(Continued)*

4. Insert the bonnet gasket into the valve body.
5. Insert the plug and stem into the cage.
6. Slide the bonnet down the stem.
7. Finger tighten the bonnet capscrews.
8. Install new packing. (See "Packing Replacement" section.)
9. Alternate tightening of the bonnet nuts or capscrews until the bonnet raised face contacts the body on all sides. Tighten to the appropriate torque listed in Table B.
10. Return valve to service and check for leaks before installing actuator.

**Table B: Bonnet Capscrews Torque**

| Stud Size<br>(Inches-UNC) | Recommended Torque |         |
|---------------------------|--------------------|---------|
|                           | Lbs.-ft.           | N-m     |
| 7/16-14                   | 15-25              | 21-33   |
| 1/2-13                    | 30-40              | 41-54   |
| 9/16-12                   | 50-70              | 68-94   |
| 5/8-11                    | 70-100             | 95-135  |
| 3/4-10                    | 120-170            | 163-230 |

**Valve Overhaul***(Continued)***Packing Replacement**

**Spring-Loaded Teflon** - To replace this packing, it is necessary to remove the actuator from valve and stem clamp from valve stem. See "Actuator Removal" section for instructions to remove actuator.

- Disconnect and lock out the pneumatic or electrical power to prevent accidental operation of the actuator.

**WARNING!**

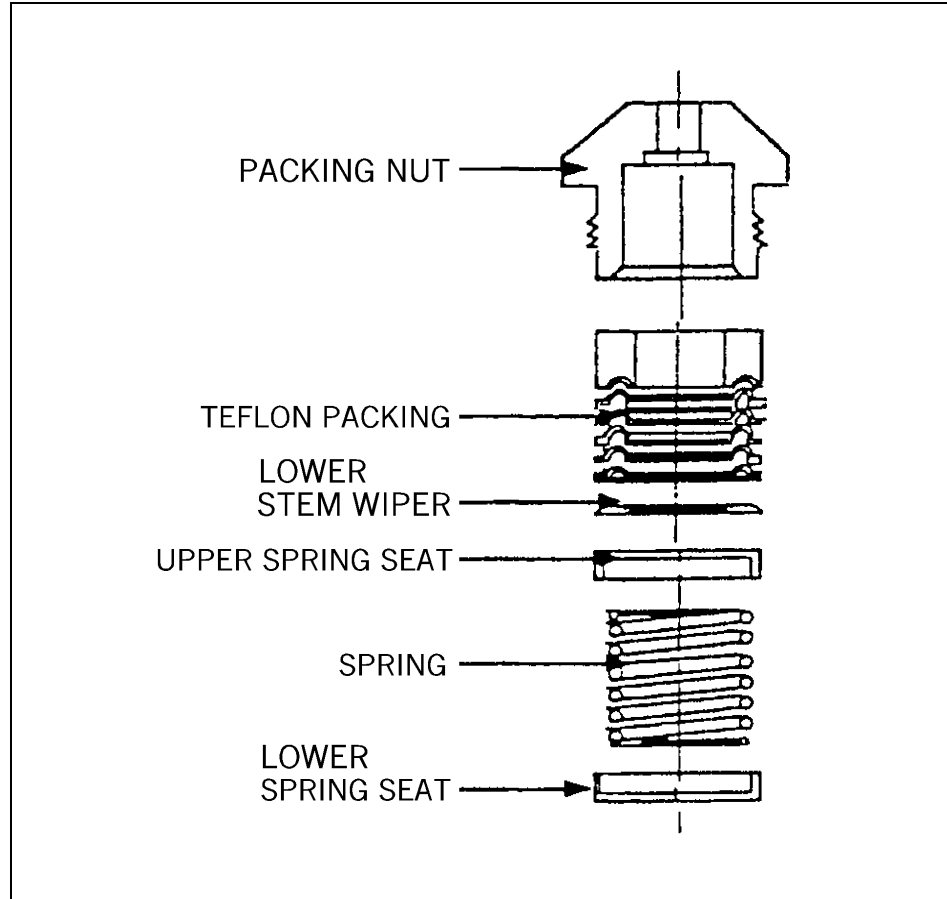
**Moving parts from accidental operation of power actuator can cause personal injury or equipment damage. Disconnect and lock out power to actuator before servicing valve.**

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See Figure 7 for Spring-Loaded Teflon packing identification.

1. Unscrew packing box nut.
2. Slide old Teflon packing, lower stem wiper, upper spring seat, packing spring and lower spring seat off valve stem.
3. Clean lower stem wiper, upper spring seat, packing spring, lower spring seat, packing well and valve stem.
4. Place a small amount of Plasti-Lube #2 on the Teflon rings, the upper half of the valve stem and the packing box nut.
5. Replace lower spring seat, spring, upper spring seat and lower stem wiper.
6. Insert new Teflon packing into packing chamber. Be careful not to scratch or tear the Teflon rings while sliding over the valve stem.
7. Replace packing box nut. Turn the packing box down tight on the bonnet.
8. Mount actuator on valve and reconnect power. Turn on system and check valve for leaks.

### Valve Overhaul (Continued)



**Figure 7: Spring-Loaded Teflon Packing**

### Mounting Actuator

**NOTE:** Refer to nameplate to determine actuator and valve combination. See Figure 8 for pneumatic actuator mounting. See Figure 9 for stem connection.

#### Air-to-Close (Direct Acting) Actuator

1. Screw locknut onto actuator stem.
2. Place stem connector onto stem head.
3. Mount actuator onto bonnet and lock in place with hex socket head cap screw.
4. Insert travel indicator and raise valve stem to contact actuator stem.
5. Screw stem connector onto actuator stem until stem head is tight against actuator stem.
6. Hold stem connector with wrench and tighten locknut against travel indicator and stem connector.



**Mounting Actuator**  
(Continued)

**Air-to-Open (Reverse Acting) Actuator**

1. Push valve stem down and seat plug.
2. Screw locknut onto actuator stem.
3. Place stem connector onto stem head.
4. Mount actuator onto bonnet.
5. Insert travel indicator and screw stem connector onto actuator stem until stem head is tight against actuator stem. **Note:** Be sure there is clearance between bottom of yoke and top of bonnet.
6. Tighten locknut against travel indicator and stem connector.
7. Apply air pressure to raise stems and permit actuator to seat on bonnet.
8. Lock actuator in place with hex socket head capscrew in yoke collar.

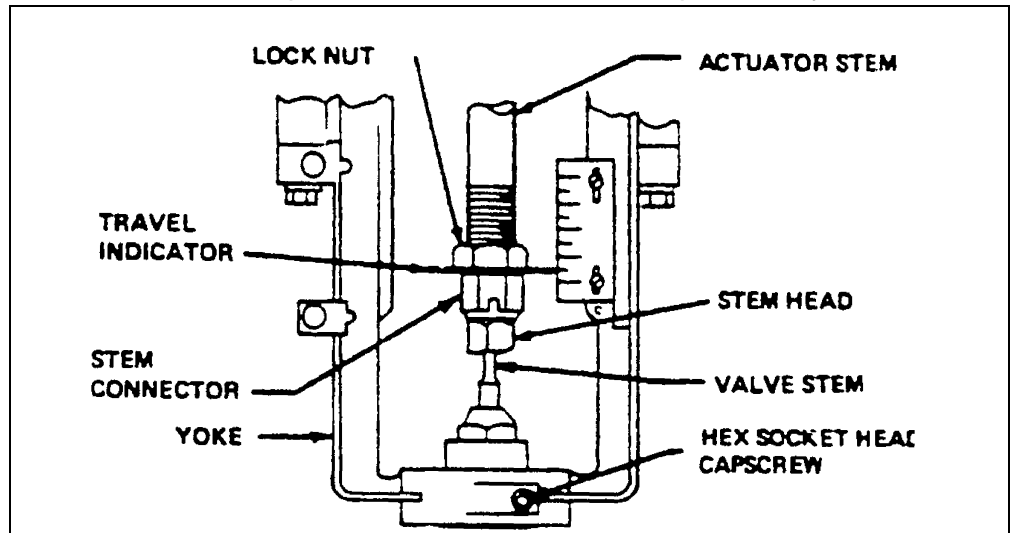


Figure 8: Actuator Mounting (Pneumatic Actuator)

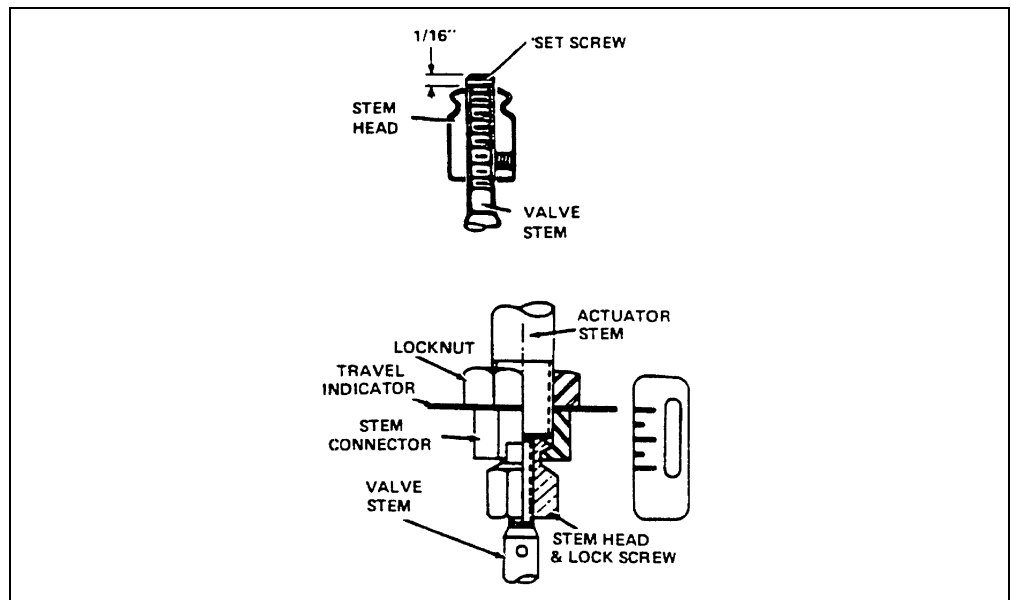


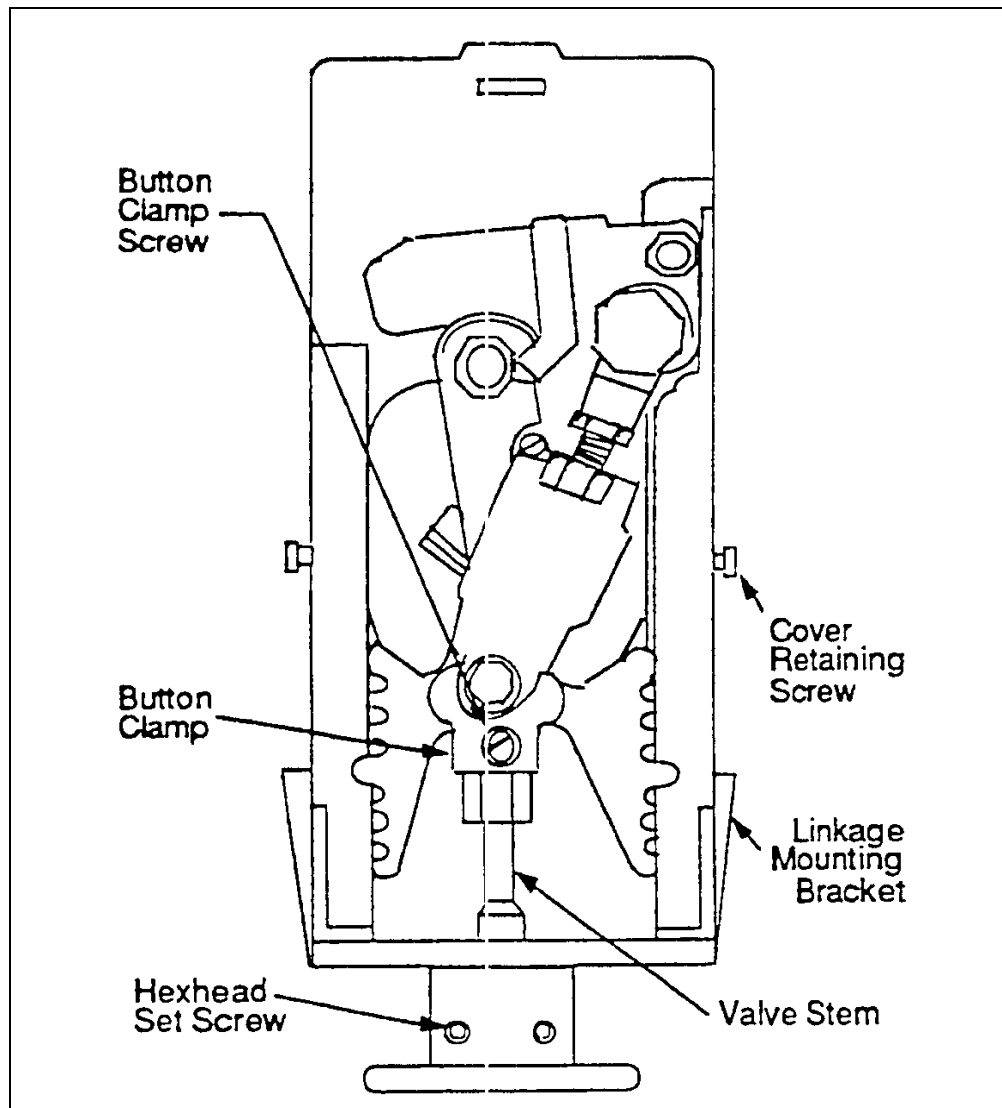
Figure 9: Stem Connection

### Mounting *Electric Motor Actuator*

**Actuator**  
*(Continued)*

See Figure 10 for mounting electric motor.

1. Slide motor and linkage assembly onto valve bonnet and attach button clamp to valve stem.
2. Tighten hex set screws in collar.
3. Tighten button clamp screw.
4. Replace linkage cover and tighten cover retaining screws.



**Figure 10: Mounting Electric Motor**

# **Nor' East**

## **2-1/2" – 6" Series 8100 Single Seated Cage Valves**

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### **Guarantee**

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### **Sales and Service**

Nor' East Controls representatives are located in major cities throughout the world.  
For the name of the representative nearest you, contact:

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