

# DEZURIK CYLINDER OPERATOR T-SERIES ACTUATOR

Instruction **D10135**  
August 2012

## Instructions

These instructions are for use by personnel who are responsible for the installation, operation and maintenance of DeZURIK valves, actuators or accessories.

## Safety Messages

All safety messages in the instructions are identified by a general warning sign and the signal word CAUTION, WARNING or DANGER. These messages indicate procedures to avoid injury or death.

Safety label(s) on the product indicate hazards that can cause 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).

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### **⚠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 product has been packaged to provide protection during shipment; however, items can be damaged in transport. Carefully inspect the unit for damage upon arrival and file a claim with the carrier if damage is apparent.

## Parts

Replaceable wear parts are listed on the assembly drawing. These parts can be stocked to minimize downtime. Order parts from your local DeZURIK sales representative or directly from DeZURIK. When ordering parts please provide the following information:

**If the valve has a data plate:** please include the 7-digit part number with either 4-digit revision number (example: 9999999R000) or 8-digit serial number (example: S1900001) whichever is applicable. The data plate will be attached to the valve assembly. Also, include the part name, the assembly drawing number, the balloon number and the quantity stated on the assembly drawing.

**If there isn't any data plate visible on the valve:** please include valve model number, part name, and item number from the assembly drawing. You may contact your local DeZURIK Representative to help you identify your valve.

## DeZURIK Service

DeZURIK service personnel are available to 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 [DeZURIK.com](http://DeZURIK.com).

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# DeZURIK

## Cylinder Operated T-Series Actuator

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### Description

The Cylinder Operated T-Series Actuator is an economical actuator capable of providing a long-lasting, dependable means of valve operation. Scotch yoke-series actuators are available in three sizes: Size 3, Size 5 and Size 7. The actuator has been sized to achieve optimum performance from your valve.

Figure 1 and Table A provide the information needed to identify your actuator.

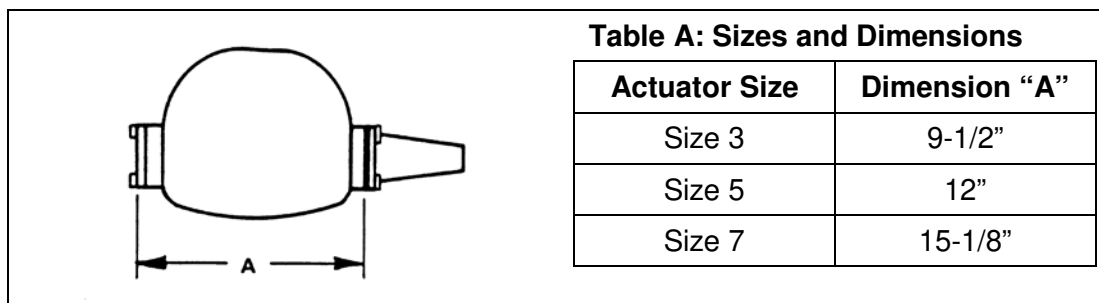


Figure 1 - Actuator Sizes and Dimensions

### Air Supply

Application of sufficient air (100 psi maximum) to the cylinder port closest to the actuator housing will close the valve. Application of sufficient air to the port at the opposite end of the cylinder will open the valve.

### Lubrication

Scotch yoke actuators do not require lubrication as regular maintenance. If this actuator is disassembled, the parts described below must be lubricated during reassembly with EXXON Unirex EP 2 Premium lubricant (**recommended**) or Petro-Canada Precision XL EP 2 (alternate). See the assembly drawing for parts identification.

- The threads in the yoke nut.
- The threads in the stop nut.
- The slots in the yoke.
- The sides of the yoke bearings.
- The side of the guide rail.

After the actuator is fully assembled, a layer of lubricant approximately 1/2" thick should be applied to the surfaces described above, which are accessible and inside the housing.

### Closed Position Stop Adjustment

The closed position stop is made by turning the set screw in the end of the cylinder.

1. If the actuator is powered, disconnect and lock out the pneumatic, hydraulic or electrical power to prevent accidental operation of the actuator.



#### **WARNING!**

**Accidental operation of power actuator can cause personal injury or equipment damage.  
Disconnect and lock out power to actuator before servicing.**

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### **Closed Position Stop Adjustment** *(Continued)*

2. Pressurize the cylinder so the valve is in the closed position.
3. Loosen the lock nut on the set screw in the cylinder cap.
4. Turn the set screw in or out until the desired closed position is attained.
5. Make sure the thread seal is in place, then tighten the lock nut.
6. If the actuator requires power, reconnect power to the actuator.

### **Open Position Stop Adjustment**

The cylinder must be mounted on the actuator to perform this adjustment.

1. Cycle the valve to determine the need for stop adjustment.
2. If the actuator is powered, disconnect and lock out the pneumatic, hydraulic or electrical power to prevent accidental operation of the actuator.



#### **WARNING!**

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Disconnect and lock out power to actuator before servicing.**

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3. Remove the pointer.
4. Remove the actuator cover.
5. Guide Rails.  
**Sizes 3 and 5:** Loosen the guide rail screw closest to the cylinder and remove the other screw.  
**Size 7:** On the guide rail held by two screws; loosen the screws.
6. Move the valve to mid-stroke, then turn the stop nut to adjust the actuator stroke length.
7. Open the valve to check the adjustment; readjust the stop if necessary.
8. Tighten the guide rail screws.
9. Install the cover gasket and cover.
10. Install the pointer.
11. If the actuator requires power, reconnect power to the actuator.

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## Cylinder Operated T-Series Actuator

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### Removing Actuator

1. Discontinue pipeline flow.
2. If the actuator is powered, disconnect and lock out the pneumatic, hydraulic or electrical power to prevent accidental operation of the actuator.



#### **WARNING!**

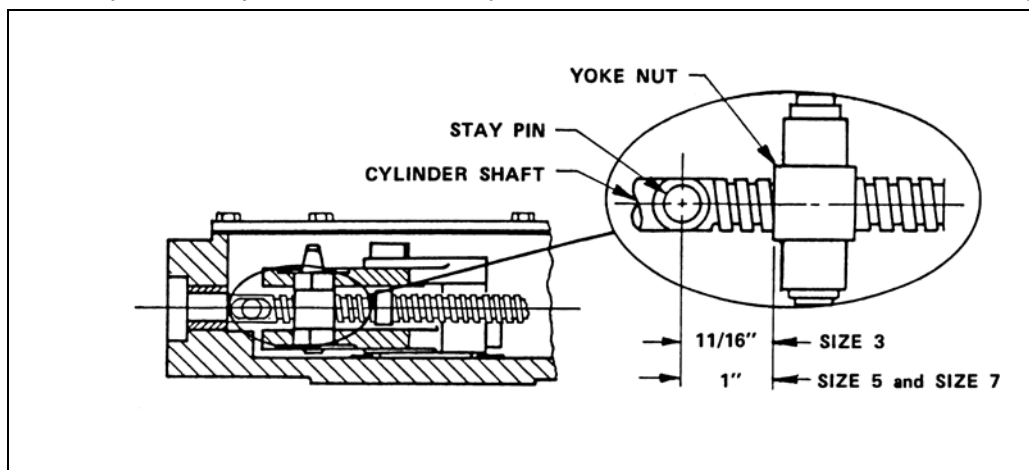
**Accidental operation of power actuator can cause personal injury or equipment damage. Disconnect and lock out power to actuator before servicing.**

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3. Place the valve in the closed position.
4. Remove the pointer.
5. Remove the cover screws and cover.
6. Loosen the screw clamping the yoke onto the valve shaft.
7. Remove the four screws securing the actuator to the bracket, then separate the actuator from the bracket.

### Installing Actuator

1. Close the valve.
2. Apply a thin layer of Permatex sealant to the machined bottom of the actuator housing.
3. Position the yoke so it points toward the cylinder end of the actuator as shown in Figure 2.



**Figure 2 – Detailed View of Yoke Nut and Cylinder Shaft**

4. Set the actuator on the valve so the valve shaft engages the yoke, then secure the actuator to the shaft with four screws.
5. Tighten the screw to clamp the yoke onto the valve shaft.
6. Stroke the valve to determine if stop adjust is necessary; readjust the stops if necessary.
7. Install the cover gasket, then fasten the cover in place.
8. Install the pointer.
9. Pipeline flow may now be restored.
10. If the actuator requires power, reconnect power to the actuator.

## Disassembling Actuator

1. Discontinue pipeline flow.
2. If the actuator is powered, disconnect and lock out the pneumatic, hydraulic or electrical power to prevent accidental operation of the actuator.



### **WARNING!**

**Accidental operation of power actuator can cause personal injury or equipment damage.  
Disconnect and lock out power to actuator before servicing.**

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3. Place the valve in the closed position.
4. Remove the pointer.
5. Remove the cover screws and cover.
6. Remove the four screws securing the cap to the housing, then remove the cap and gasket.
7. Remove the guide rail screws and guide rail(s).
8. Remove the stay pin.
9. Remove the four screws securing the cylinder to the actuator housing, then unscrew the cylinder from the yoke nut and the stop nut.
10. Loosen the screw clamping the yoke onto the valve shaft.
11. Pull the yoke from the valve shaft. It may be necessary to use a wheel puller.
12. Remove the four screws securing the actuator to the bracket, then separate the actuator from the bracket.

## Reassembling Actuator

1. Close the valve.
2. Apply a thin layer of Permatex sealant to the machined bottom of the actuator housing.
3. Set the actuator housing on the valve, then secure it in place with the four screws.
4. Lubricate the actuator components as described in the LUBRICATION Section of this Instruction.
5. Install the yoke, yoke nut, upper yoke guide and lower yoke guide. Position the yoke so it points toward the cylinder end of the actuator as shown in Figure 2.
6. Tighten the screw to clamp the yoke onto the valve shaft.
7. Move the valve to mid-stroke.
8. Screw the cylinder into the yoke nut and stop nut. Figure 2 shows the correct distance from the stay pin hole to the yoke nut.
9. Move the valve to the closed position.
10. Secure the cylinder to the housing with four screws.
11. Install the stay pin.
12. Install the guide rail(s) and secure in place.

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## Cylinder Operated T-Series Actuator

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### Reassembling Actuator *(Continued)*

13. Perform the Open and Closed Position Stop Adjustments as described in the appropriate Section of this Instruction.
14. Fasten the gasket and cap to the housing.
15. Apply a layer of lubricant approximately 1/2" thick to the appropriate surfaces described in the LUBRICATION Section of this Instruction.
16. Install the cover gasket, then fasten the cover in place.
17. Install the pointer.
18. If the actuator requires power, reconnect power to the actuator.

### Changing Mounting Positions

The actuator may be mounted in 90-degree increments around the valve shaft. To change actuator mounting positions, remove the actuator from the valve, position it in the desired position, then reinstall it on the valve. Detailed removal and installation procedures are described in this manual.



## Limited Warranty

DeZURIK, Inc. ("Seller") manufactured products, auxiliaries and parts thereof that we manufacture for a period of twenty-four (24) months from date of shipment from Seller's factory, are warranted to the original purchaser only against defective workmanship and material, but only if properly stored, installed, operated, and serviced in accordance with Seller's recommendations and instructions.

For items proven to be defective within the warranty period, your exclusive remedy under this limited warranty is repair or replacement of the defective item, at Seller's option, FCA Incoterms 2020 Seller's facility with removal, transportation, and installation at your cost.

Products or parts manufactured by others but furnished by Seller are not covered by this limited warranty. Seller may provide repair or replacement for other's products or parts only to the extent provided in and honored by the original manufacturer's warranty to Seller, in each case subject to the limitations contained in the original manufacturer's warranty.

No claim for transportation, labor, or special or consequential damages or any other loss, cost or damage is being provided in this limited warranty. You shall be solely responsible for determining suitability for use and in no event shall Seller be liable in this respect.

This limited warranty does not warrant that any Seller product or part is resistant to corrosion, erosion, abrasion or other sources of failure, nor does Seller warrant a minimum length of service.

Your failure to give written notice to us of any alleged defect under this warranty within twenty (20) days of its discovery, or attempts by someone other than Seller or its authorized representatives to remedy the alleged defects therein, or failure to return product or parts for repair or replacement as herein provided, or failure to store, install, or operate said products and parts according to the recommendations and instructions furnished by Seller shall be a waiver by you of all rights under this limited warranty.

This limited warranty is voided by any misuse, modification, abuse or alteration of Seller's product or part, accident, fire, flood or other Act of God, or your failure to pay entire contract price when due.

The foregoing limited warranty shall be null and void if, after shipment from our factory, the item is modified in any way or a component of another manufacturer, such as but not limited to; an actuator is attached to the item by anyone other than a Seller factory authorized service personnel.

All orders accepted shall be deemed accepted subject to this limited warranty, which shall be exclusive of any other or previous warranty, and this shall be the only effective guarantee or warranty binding on Seller, despite anything to the contrary contained in the purchase order or represented by any agent or employee of Seller in writing or otherwise, notwithstanding, including but not limited to implied warranties.

THE FOREGOING REPAIR AND REPLACEMENT LIMITED WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, OBLIGATIONS AND LIABILITIES, INCLUDING, BUT NOT LIMITED TO, ALL WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE OR OF MERCHANTABILITY OR OTHERWISE, EXPRESSED OR IMPLIED IN FACT OR BY LAW, AND STATE SELLER'S ENTIRE AND EXCLUSIVE LIABILITY AND YOUR EXCLUSIVE REMEDY FOR ANY CLAIM IN CONNECTION WITH THE SALE AND FURNISHING OF SERVICES, GOODS OR PARTS, THEIR DESIGN, SUITABILITY FOR USE, INSTALLATION OR OPERATIONS. NEITHER ANY PERFORMANCE OR OTHER CONDUCT, NOR ANY ORAL OR WRITTEN INFORMATION, STATEMENT, OR ADVICE PREPARED BY SELLER OR ANY OF OUR EMPLOYEES OR AGENTS WILL CREATE A WARRANTY, OR IN ANY WAY INCREASE THE SCOPE OR DURATION OF THE LIMITED WARRANTY.

## Disclaimer

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## Limitation of Liability

IN NO EVENT SHALL SELLER BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL, PUNITIVE, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO; DAMAGE TO OR LOSS OF OTHER PROPERTY OR EQUIPMENT, BUSINESS INTERRUPTION, COST OF SUBSTITUTE PRODUCTS, LOSS OF TIME, LOSS OF PROFITS OR REVENUE, COST OF CAPITAL, LOSS OF USE, OR DIMINUTION IN VALUE) WHATSOEVER, AND SELLER'S LIABILITY, UNDER NO CIRCUMSTANCES, WILL EXCEED THE CONTRACT PRICE FOR THE GOODS AND/OR SERVICES FOR WHICH LIABILITY IS CLAIMED. ANY ACTION FOR BREACH OF CONTRACT BY YOU, OTHER THAN RIGHTS RESPECTING OUR LIMITED WARRANTY DESCRIBED ABOVE, MUST BE COMMENCED WITHIN 12 MONTHS AFTER THE DATE OF SALE.

## Sales and Service

For information about our worldwide locations, approvals, certifications and local representative:

Web site: [www.dezurik.com](http://www.dezurik.com) E-Mail: [info@dezurik.com](mailto:info@dezurik.com)



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*Design features, materials of construction and dimensional data, as described in this manual, are provided for your information only and should not be relied upon unless confirmed in writing by DeZURIK, Inc. Certified drawings are available upon request.*