



**APCO** | WILLAMETTE

DeZURIK G-SERIES  
ACTUATORS  
FOR USE WITH MOTOR OPERATOR

# DeZURIK

## G-Series Actuators for use with Motor Operator

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### Instructions

These instructions provide information about G-Series Actuators. They are for use by personnel who are responsible for installation, operation and maintenance of G-Series Actuators.

### Safety Messages

All safety messages in the instructions are flagged with an exclamation symbol and the word Caution, Warning or Danger. These messages indicate procedures that 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 G-Series Actuator has been packaged to provide protection during shipment; however, it 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

Recommended spare parts are listed on the assembly drawing. These parts should be stocked to minimize downtime.

Order parts from your DeZURIK sales representative, or directly from DeZURIK. When ordering parts, please include the 7-digit part number and 4-digit revision number (example: **9999999R000**) located on the data plate 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.

### 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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### Description

The G-Series Actuator is designed to operate a quarter turn valve using a motor operator for input torque. This actuator is available in three sizes: Size 6, Size 12 and Size 16. See Figure 1 to identify which unit you have.



#### CAUTION!

This actuator can be furnished with either cast iron or ductile iron gears.

**The ductile iron gear is necessary for submerged or buried service valves or when a 2" operating nut is installed on the input shaft. Breakage of the gear teeth will occur if cast iron gears are torqued above 200 ft-lb's.**

Cast Iron & Ductile Iron are similar in appearance: To determine if the gear material is ductile iron, remove the cover as described in the ACTUATOR DISASSEMBLY Section. Size 6 gears have "M199" cast in raised letters on the round surface opposite the teeth. Size 12 & Size 16 gears have "M199" cast in raised letters on either the top or under side of the web between the hub and the teeth, removal of the gear is necessary to see the marking. If there is no "M199" on the gear, the material is cast iron.

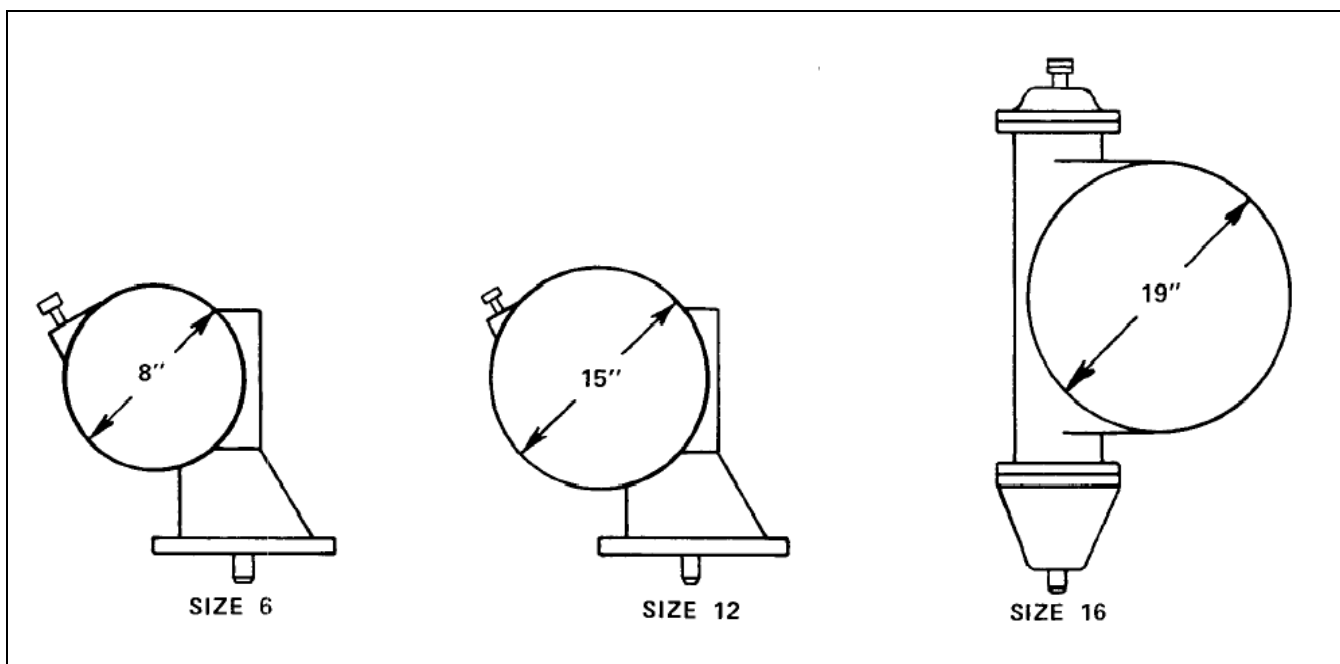


Figure 1— G-Series Actuator Identification

## Operation

Rotating the actuator input shaft clockwise closes the valve. To actuate the valve from full open to full closed (or vice-versa), the Size 6 requires 13 revolutions, the Size 12 requires 19 revolutions and the Size 16 requires 33 revolutions of the operator.

## Required Tools

This actuator is assembled using only SAE fasteners. To service this unit, you should have a full set of combination wrenches, Allen wrenches, a flat tipped screwdriver, a pin punch and a dead blow hammer.

## Lubrication

The G-Series actuator has been lubricated at the factory and requires no routine maintenance lubrication. If the actuator is disassembled, apply a liberal amount of lubricant to the gear sector, bearings and worm gear (size 6 and Size 12) or the rack (Size 16) using one of these lubricants:

- Keystone Zeniplex-1 (**recommended**)
- Amoco Amolith Grease #1-EP (alternate)
- Amsoil GHD (alternate)
- Mobil Mobilux EP 1 (alternate)
- Petro-Canada Vultrex MPG EP 1 (alternate)
- Shell Alvania EP 1 (alternate)
- Texaco Multifak EP 1 (alternate)
- Petro-Canada Vultrex MPG EP 1 (alternate)

**Size 6 and Size 12 Actuators** - Apply lubricant to the bearings, gear sector teeth and worm gear.

**Size 16 Actuators** - Apply lubricant to the bearings, gear sector teeth, rack teeth. Drive shaft and rack guide.

### Stop Adjustments

Adjust the Open Position Limit Switch in the motor to stop actuator travel when the valve is in the desired open position. Depending on system factors, the desired open position may not always be the full open position.

Adjust the Closed Position Limit Switch in the motor to stop actuator travel when the valve is in the closed position. The valve closed position is described in the valve Instruction Manual.

**Note:** The Closed Position Limit Switch in the motor must trip before the Closed Position Stop in the G-Series actuator is contacted. If the actuator stop is contacted first, the torque switch in the motor will stop motor operation. See the motor manufacturers Instruction Manual for detailed procedures on adjusting the limit switches and torque switch.

### Actuator Removal

1. Discontinue flow and relieve pipeline pressure.
2. Close the valve.
3. Scribe corresponding lines on the valve and actuator to be used for alignment during actuator installation.



#### **WARNING!**

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

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4. Disconnect and lock out the electrical power to prevent accidental operation of the actuator..
5. Remove the lock nut, spring washers, wrenching nut and pointer from the plug stud.
6. Note the motor wiring connections, then disconnect the wiring and connectors from the motor operator.



#### **WARNING!**

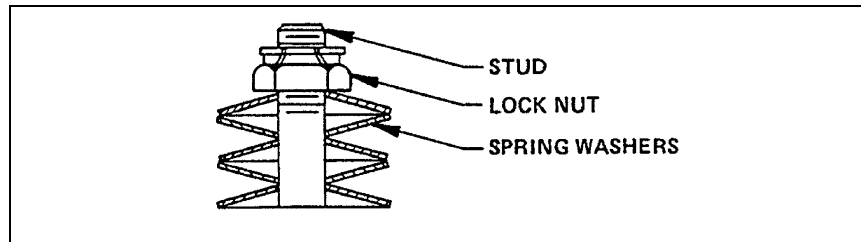
**The valve is a pressure vessel. Pressure must be completely released before removing the bonnet bolts on the 4", 5", 6" and 10" valves.**

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7. Remove the 6 screws fastening the adaptor to the valve.
8. Lift the actuator and adaptor off the valve.

## Actuator Installation

1. Close the valve. Clockwise rotation of the valve shaft closes the valve.
2. Make sure the actuator gear sector is in the fully clockwise position.
3. Line up the scribe marks on the valve and actuator made during actuator removal, then set the actuator on the valve so the valve shaft slides into the actuator gear sector.
4. Fasten the actuator adaptor to the valve with the six screws removed during Actuator Removal.
5. Slide the pointer and wrenching nut down the plug stud so it rests on top of the gear sector. Make sure the pointer is pointed at the SHUT marking on the cover.
6. Place the spring washers on the plug stud as shown in Figure 2.



**Figure 2—Spring Washer Stackup**

7. Screw the lock nut down the plug stud until it is tight and the spring washers are completely compressed, then back the nut off one full turn.
8. Connect the wiring to the motor operator.
9. If the actuator is a power actuator, reconnect power to the actuator.
10. Pipeline flow may now be restored.

## Actuator with Floor Stand Installation

1. Drill and pin the drive shaft to the plug stem.
2. Close the valve. Clockwise rotation of the valve shaft closes the valve.
3. Make sure the actuator gear sector is in the fully clockwise position.
4. Fasten the actuator adaptor to the floor stand or adaptor plate.
5. Slide the pointer and wrenching nut down the plug stud so it rests on top of the gear sector. Make sure the pointer is pointed at the SHUT marking on the cover.
6. Place the spring washers on the plug stud as shown in Figure 2.
7. Screw the lock nut down the plug stud until the spring washers are completely compressed, then back the nut off until the washers return to their normal unstressed shape.
8. Connect the wiring to the motor operator.
9. If the actuator is a power actuator, reconnect power to the actuator.
10. Pipeline flow may now be restored.

### Recommended Spare Parts Replacement

As with any rotating seal, the seals in this actuator are subject to wear and will require replacement should leakage occur.

1. Discontinue flow and relieve pipeline pressure.
2. Close the valve.
3. Scribe corresponding lines on the valve and actuator to be used for alignment during actuator installation.



#### **WARNING!**

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

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4. Disconnect and lock out the electrical power to prevent accidental operation of the actuator.
5. Remove the lock nut, spring washers, wrenching nut and pointer from the plug stud.
6. Note the motor wiring connections, then disconnect the wiring and connectors from the motor operator.
7. Remove the cover screws and cover from the actuator.
8. Note the position of the gear sector in relationship to the valve stem, then lift the gear sector out of the actuator.



#### **WARNING!**

**The valve is a pressure vessel. Pressure must be completely released before removing the bonnet bolts on the 4", 5", 6" and 10" valves.**

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9. Remove the 6 screws fastening the adaptor to the valve.
10. Lift the actuator and adaptor off the valve.
11. Pry the seals from the top cover and the adaptor.
12. Scrape the gasket material from the top cover and actuator housing.
13. Grease the new seals with a light grease, then press them into the grooves.
14. Line up the scribe marks made earlier, then fasten the adaptor to the valve.
15. Pack the gear sector teeth with lubricant, then slide the gear sector down the valve stem in the same position notes in step 8.
16. Place a new gasket on the top cover, then install the top cover on the actuator, secure in place with the screws removed earlier.
17. Slide the pointer and wrenching nut down the plug stud so it rests on top of the gear sector. Make sure the pointer is pointed at the SHUT marking on the cover.
18. Stack the spring washers on the stud as shown in Figure 2.
19. Screw the lock nut down the plug stud until the spring washers are completely compressed, then back the nut off until the washers return to their normal unstressed shape.

**Recommended Spare Parts Replacement** *(Continued)*

20. Connect the wiring to the motor operator.
21. If the actuator is a power actuator, reconnect power to the actuator.
22. Pipeline flow may now be restored.

## Changing Actuator Mounting Position

The actuator can be mounted in the standard position or 180o from standard as shown on the Installation Drawing. To change mounting positions, follow these steps.

1. Remove the actuator from the valve as described in the ACTUATOR REMOVAL Section of this Instruction.
2. Rotate the entire actuator 180°.
3. Install the actuator on the valve as described in steps 4 thru 9 of the ACTUATOR INSTALLATION Section of this Instruction.

**Note:** The scribe marks on the valve and actuator should now be 180o apart..