



DeZURIK MANUAL
G-SERIES ACTUATORS
FOR USE WITH PTW & PFW TAPERED PLUG VALVES

Instruction D10192
June 2011

Instructions

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

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.

Inspection

Your Manual 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.

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Description

The Manual G-Series Actuator is designed to operate PTW and PFW Tapered Plug valves.

Note: Valves equipped with this actuator **do not** provide dead-tight shutoff.

Operation

To operate the actuator, turn the operator (handwheel or chainwheel) to rotate the plug to the desired position. Clockwise rotation of the operator moves the valve plug in the clockwise direction.

Tools Required

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

Lubrication

This unit requires no additional lubrication unless disassembled. If disassembled, apply a medium aluminum complex based lubricant to the bearings, gear sector teeth and worm gear 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)

Stops

Valves ordered for 360° plug rotation (Combination Number 0) are not furnished with stops.

Valves ordered for 90°, 180° or 270° plug rotation (Combination Numbers 1 thru 4) have stops to limit valve travel in both the Clockwise and counterclockwise directions. These stops have been adjusted at the factory to coincide with the Combination Number specified on the purchase order and do not require adjustment unless the Combination Number is changed, or if the actuator has been disassembled. See the STOP ADJUSTMENTS Section of this Instruction for details on adjusting the stops.

Stop Adjustments

The two stops are spacers and screws located in the actuator cover. When the pointer contacts one of the stops, the valve quits traveling in that direction.

The two stop adjustments are directly related; changing one stop will change the other stop the same amount. To adjust the stops, follow these steps.

1. Loosen -DO NOT REMOVE - the four screws holding the cover dial in place.
2. Turn the operator until the pointer pushes against the stop, then continue turning the operator until the desired stop position is obtained. The pointer should be either perpendicular or parallel with the pipeline.

Stop Adjustments *(continued)*

Note: If the operator does not turn easily when pushing on the stop, the cover has rusted to the housing. Use a hammer and chisel to move the cover until the desired stop setting is obtained.

3. Tighten the four screws loosened in Step 1.
4. Check the stop settings by turning the operator on the side of the actuator until the pointer contacts each stop; ensure the valve plug position is correct at both stop settings.

Plug Clearance Adjustment

See the ADJUSTMENTS Section of the Valve Instruction for details on adjusting seat/plug clearance.

Actuator Removal**WARNING!**

When a tapered plug valve is mounted in a vertical pipeline—or mounted in a horizontal pipeline with the plug stem horizontal—gravity can cause the plug to swing to a lower position in the valve body when the actuator is removed. Place the plug in the lowest position before removing the actuator.

1. Discontinue system flow and relieve pipeline pressure.
2. Scribe a line on the valve bonnet and actuator adaptor to use for alignment during actuator installation.
3. Unscrew the nut from the top of the wrenching square.
4. Take out the four socket head screws and remove the wrenching square.
5. Note the position of the pointer, then remove the two socket head screws and slide the pointer off the actuator.
6. Unscrew the plug-adjusting nut from the stud and slide the bearing washer off the stud.
7. Note the stampings in the top of the valve plug stem. These stampings correspond with the plug face as shown in Figure 1. It is important that the plug position be noted to ensure it is in the correct position during ACTUATOR INSTALLATION.
8. Remove the screws fastening the adaptor to the adaptor plate (2" thru 4" valves) or to the valve bonnet (5" thru 16" valves), then lift the actuator and adaptor off the valve.

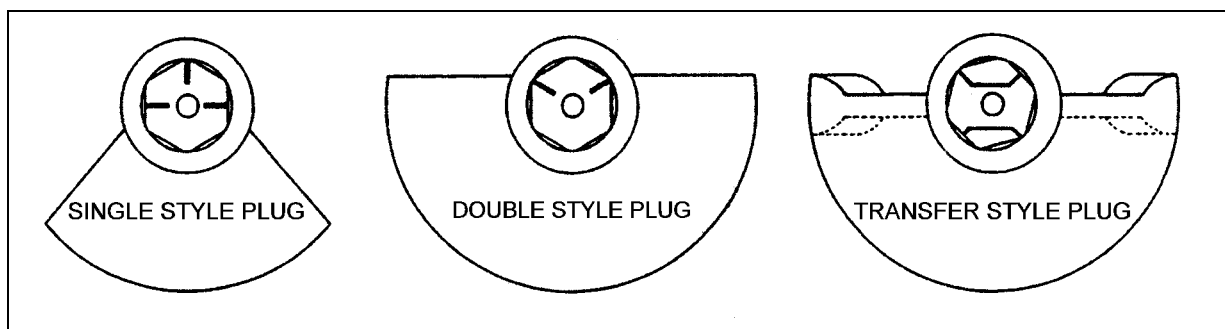


Figure 1— Plug Stem Stampings

Actuator Installation

1. Place the valve plug in the position noted in ACTUATOR REMOVAL.
2. Line up the scribe marks made during actuator removal, then set the actuator on the valve so the valve shaft slides into the actuator gear sector. Fasten the actuator to the valve.
3. Slide the bearing washer down the stud sticking out the top of the actuator, then screw the plug adjusting nut down the stud until it touches the bearing washer.
4. Turn the plug adjusting nut clockwise until there is .010" clearance between the plug face and the body seat. If the valve is used for paper stock, the clearance should be .030".

Note: The holes in the bearing washer must line up with the tapped holes in the top of the gear sector.

5. Set the pointer on the bearing washer so it fits down over the plug adjusting nut, then turn it until it is positioned as noted during ACTUATOR REMOVAL. Fasten the pointer to the gear sector with the two shorter socket head screws.
6. Set the wrenching square on the pointer and fasten it to the gear sector with the four remaining socket head screws.
7. Screw the nut on the stud until it contacts the wrenching square. Tighten the nut to lock the assembly into place.
8. Check the stop settings and readjust if necessary. The correct adjustment procedure is described in the STOP ADJUSTMENTS Section of this Instruction.
9. Pipeline flow and pressure may now be restored.

Bearing and Seal Replacement

As with any rotating seal, the seals in this actuator are subject to wear and will require replacement should leakage occur. At the time of seal replacement it is also recommended that the gear sector bearing also be replaced.



WARNING!

When a tapered plug valve is mounted in a vertical pipeline—or mounted in a horizontal pipeline with the plug stem horizontal—gravity can cause the plug to swing to a lower position in the valve body when the actuator is removed. Place the plug in the lowest position before removing the actuator.

1. Discontinue system flow and relieve pipeline pressure.
2. Scribe a line on the valve bonnet and actuator adaptor to use for alignment during actuator installation.
3. Unscrew the nut from the top of the wrenching square.
4. Take out the four socket head screws and remove the wrenching square.
5. Note the position of the pointer, then remove the two socket head screws and slide the pointer off the actuator.
6. Unscrew the plug adjusting nut from the stud and slide the bearing washer off the stud.

Bearing and Seal Replacement *(continued)*

7. Remove the cover screws and cover from the actuator.

Note: It may be necessary to drive a chisel between the cover and actuator housing to loosen the cover.

8. Lift the gear sector out of the actuator.
9. Remove the screws fastening the adaptor to the adaptor plate (2" the 4" valves) or to the valve bonnet (5" thru 16" valves), then lift the actuator and adaptor off the valve.

10. Remove the gear sector seals from the top cover and the adaptor.

11. Drive the bearings out of the top cover and the adaptor.

12. Scrape the old gasket material from the top cover and actuator housing.

13. Grease the new bearings, then press them into the top cover and the adaptor.

14. Grease the new seals and press them into the top cover and adaptor.

15. Line up the scribe marks made earlier, then fasten the adaptor to the valve.

16. Pack the gear sector teeth with Keystone Zeniplex-1 and slide the gear sector down the valve stem.

17. Place a new gasket on the actuator housing, then fasten the cover in place.

18. Slide the bearing washer down the stud sticking out the top of the actuator, then screw the plug adjusting nut down the stud until it touches the bearing washer.

19. Turn the plug adjusting nut clockwise until there is .010" clearance between the plug face and the body seat. If the valve is used for paper stock, the clearance should be .030".

Note: The holes in the bearing washer must line up with the tapped holes in the top of the gear sector.

20. Set the pointer on the bearing washer so it fits down over the plug adjusting nut, then turn it until it is positioned as noted when the actuator was disassembled. Fasten the pointer to the gear sector with the two shorter socket head screws.

21. Set the wrenching square on the pointer and fasten it to the gear sector with the four remaining socket head screws.

22. Screw the nut on the stud until it contacts the wrenching square. Tighten the nut to lock the assembly into place.

23. Check the stop settings and readjust if necessary. The correct adjustment procedure is described in the STOP ADJUSTMENTS Section of this Instruction.

24. Pipeline flow and pressure may now be restored.

Changing Actuator Mounting Positions

The actuator can be mounted in 30° increments around the valve stem. The procedure to change actuator mounting positions is dependent upon the mounting position desired. Refer to the valve Installation Drawing for a view showing all possible mounting positions.

60°, 120°, 180°, 240° and 300° Mounting Positions

1. Remove the actuator from the valve as described in the ACTUATOR REMOVAL Section of this Instruction.
2. Rotate the actuator to the desired position.
3. Install the actuator on the valve as described in Steps 3 thru 9 of the ACTUATOR INSTALLATION Section of this Instruction.

90° and 270° Mounting Positions

1. Follow steps 1 thru 8 of the BEARING AND SEAL REPLACEMENT Section of this Instruction.
2. Take out the four screws fastening the actuator housing to the adaptor, then turn the housing to the desired new position.
3. Reinstall the four screws to fasten the housing to the adaptor.
4. Follow steps 16 thru 24 of the BEARING AND SEAL REPLACEMENT Section of this Instruction.

30°, 150°, 210° and 330° Mounting Positions

1. Follow steps 1 thru 8 of the BEARING AND SEAL REPLACEMENT Section of this Instruction.
2. Remove the screws fastening the adaptor to the adaptor plate (2" thru 4" valves) or to the valve bonnet (5" thru 16" valves).
3. Turn the actuator and adaptor clockwise until the next set of screw holes line up, then fasten the adaptor to the valve.
4. Take out the four screws fastening the actuator housing to the adaptor, then turn the housing to the desired new position.
5. Reinstall the four screws to fasten the housing to the adaptor.
6. Follow steps 16 thru 24 of the BEARING AND SEAL REPLACEMENT Section of this Instruction.