

Victaulic® Series 250 Butterfly Valves

Series 250-S4 for the Victaulic® Original Groove System (OGS)

Series 250-SE for the Victaulic® Original Groove System (OGS)

Series 250-ST for the Victaulic® **STRENGTHIN™100** System

Series 250-P for the Victaulic® **PGS-300** System

Series 250-C for the Victaulic® Copper Connection System



⚠ WARNING



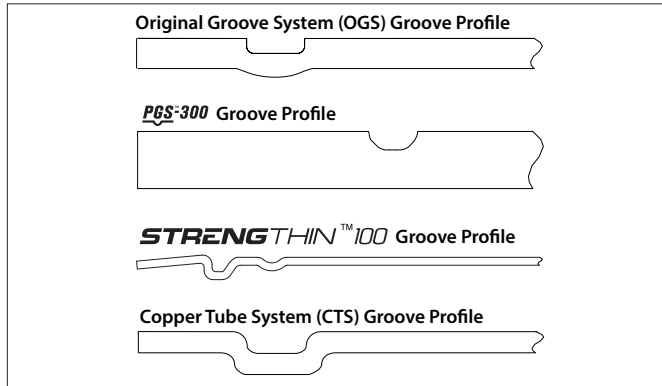
- Read and understand all instructions before attempting to install any Victaulic products.
- Always verify that the piping system has been completely depressurized and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.
- Confirm that any equipment, branch lines, or sections of piping that may have been isolated for/during testing or due to valve closures/positioning are identified, depressurized, and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.
- Wear safety glasses, hardhat, and foot protection.

Failure to follow these instructions could result in death or serious personal injury and property damage.

IMPORTANT INFORMATION

Series 250 Butterfly Valves are designed with grooved ends for use with Victaulic grooved pipe couplings. Refer to the instructions, supplied with the Victaulic coupling or *Vic-Flange Adapter*, and the notes in this section for installing Series 250 Butterfly Valves into the piping system.


Always verify that the correct groove profile is being used. There is a significant difference between the Original Groove System (OGS) groove profile, **STRENGTHIN™100** groove profile, **PGS-300** groove profile, and Victaulic® Copper Connection System groove profile.



Valve Series	Compatible Victaulic Groove Profile	Victaulic Groove Specification Publication*
250-SE	OGS	25.01
250-S4	OGS	25.01
250-ST	STRENGTHIN™100	25.13
250-P	PGS-300	25.18
250-C	Copper Tubing Roll Groove Specifications	25.06

* All publications can be downloaded at victaulic.com

⚠ WARNING




- ALWAYS VERIFY THAT MATING COMPONENTS WITH THE CORRECT GROOVE PROFILE ARE BEING USED WITH THE VALVE.
- DO NOT ADJUST, LOOSEN, OR TIGHTEN HARDWARE WHEN A VALVE IS PRESSURIZED.

- The system designer is responsible for verifying suitability of mating component materials with the intended fluid media.
- Valve bodies, discs, and other wetted components shall be compatible with the material flowing through the piping system. Refer to the current Victaulic product publication for the applicable valve, or contact Victaulic for details.
- The effect of chemical composition, pH level, operating temperature, chloride level, oxygen level, and flow rate on mating component materials shall be evaluated to confirm system life will be acceptable for the intended service. Selection or installation of the valve with incompatible materials will void the Victaulic warranty.

Failure to follow these instructions will cause improper assembly and joint failure, resulting in death or serious personal injury and property damage

⚠ DANGER



- When directly connecting a Victaulic End Cap to a Victaulic Butterfly Valve, use only a tapped end cap with a ball valve that can be opened to verify if the system is depressurized.

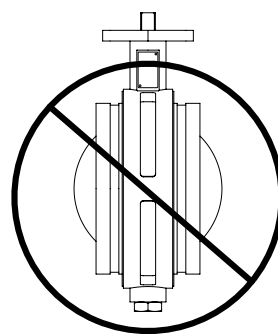
- Pressure shall be vented through the end cap's ball valve before attempting to remove the cap.
- Use caution when opening the ball valve. Be sure the ball valve opening is clear of obstructions.
- Keep face and other body parts away from the ball valve's outlet when attempting to test the system.
- Do not tamper with the ball valve. The user is responsible for verifying that the test cap assembly is not damaged and is in proper working condition prior to use.
- Always refer to the **I-ENDCAP**, Victaulic End Cap Installation Safety Instructions and publication **24.07**.

Failure to follow these instructions could result in death or serious personal injury and property damage.

NOTICE

- To prevent Victaulic Butterfly Valves from rotating in the system, Victaulic recommends installing the valve with at least one Victaulic Rigid Coupling. If two Victaulic Flexible Couplings are used, additional support may be required to eliminate joint deflection or valve rotation at the coupling connection to the piping system.
- FOR ONE-TIME FIELD TEST ONLY, (BEFORE START-UP), the test pressure may be increased to 1.1 times the maximum working pressure with disc closed, and 1.5 times with the valve in the open position. **THIS ONE-TIME SYSTEM TEST SHALL BE PERFORMED AT AMBIENT CONDITIONS.**

- When installing a Victaulic Butterfly Valve into the piping system, follow the instructions in this handbook for the applicable coupling (refer to the next page for additional installation notes).
- Victaulic Butterfly Valves can be installed in either the horizontal or vertical orientations.



DO NOT INSTALL BUTTERFLY VALVES INTO THE SYSTEM WITH THE DISC IN THE FULLY-OPEN POSITION. Exposed disc may be damaged and prevent proper function of the valve.

Verify that no part of the disc protrudes beyond the end of the valve body.

Inspect all components for any damage or wear. If any damage or wear is present, use a new Victaulic-supplied valve assembly.

- When using Victaulic Butterfly Valves for throttling service, Victaulic recommends positioning the disc no less than 30 degrees open. For best results, the disc should be between 30 and 70 degrees open; this is dependent on the flow requirements/ characteristics for the piping system. High pipeline velocities and/ or throttling with the disc less than 30 degrees open may result in noise, vibration, cavitation, severe gasket erosion/abrasion, and/ or loss of control. The system designer is responsible for determining the effects of throttling on service life of a Victaulic Butterfly Valve.

- Victaulic recommends limiting the flow velocities for water service to 13.5 feet per second/4 meters per second. When higher flow velocities are necessary, contact Victaulic. When dealing with flow media other than water, consult the system designer and/or contact Victaulic.
- Victaulic recommends good piping practices by installing the butterfly valve five pipe diameters downstream of sources of irregular flow, such as pumps, elbows, and control valves. If not practical due to space constraints, the system should be designed to locate and orient the valve to minimize the impact of dynamic torque on valve life.
- Victaulic Butterfly Valves and connected piping shall be supported properly to prevent the joints from being subjected to bending loads, shear loads, or any other external loads. Hanger spacing shall comply with the following, applicable section:

For stainless steel piping, follow either the “Rigid System - Pipe Support Spacing” section of the [I-100](#) or the “Pipe Support Requirements During Construction Phase” section of the [I-E497 Installation Instructions](#).

For CPVC/PVC piping, follow the “Maximum Recommended Hanger/Support Spacing” section of the I-350 Field Installation Handbook. The Series 250-P valve installed with PVC or CPVC piping shall be independently supported to prevent axial rotation of the valve after installation.

For copper tubing, follow the “Support Spacing for Victaulic Copper Connection Systems” section of the I-600 Field Installation Handbook

- DO NOT use a Victaulic Butterfly Valve as a support for the piping system.
- Welding to Victaulic Butterfly Valves is not permitted and will void the Victaulic warranty.
- The maximum allowable corrosion allowance is 0.8 inch/2 mm.
- When directly connecting a Victaulic End Cap to a Victaulic Butterfly Valve, use only a tapped end cap with a ball valve that can be opened to verify if the system is depressurized. If the butterfly valve is opened and then closed unknowingly while the end cap is attached, the space between the disc and end cap will be filled and pressurized. A sudden release of energy can occur if the end cap is removed while the space behind it is pressurized. **PRESSURE SHALL BE VENTED THROUGH THE END CAP'S BALL VALVE BEFORE ATTEMPTING TO REMOVE THE CAP. NOTE: Due to disc clearance dimensions, an end cap directly connected to a Butterfly Valve may prevent the disc from reaching the fully “OPEN” position. Reference “DANGER” on the previous page.**
- Series 250 Butterfly Valves are designed for use with up to 2 inches/51 mm of insulation.

VIC-FLANGE ADAPTER NOTES

If flange connections are required, refer to the following notes regarding *Vic-Flange* Adapter applications.

- Style 741/841 *Vic-Flange* Adapters can be used on all sizes of Series 250-S4 and 250-SE Butterfly Valves.
- Style 641 *Vic-Flange* Adapters can be used on all sizes of Series 250-C Butterfly Valves.

PREVENTION OF STAINLESS STEEL AND ALUMINUM BRONZE PRODUCT CONTAMINATION

These recommendations are provided as a general guideline to help prevent surface contamination of stainless steel and aluminum bronze products.

Handling and Storage

1. Handle products only with non-contaminating apparatus (i.e. nylon straps or apparatus protected with a non-contaminating buffer material).
2. If carbon steel straps are used, a buffer material shall be placed between the strap and the product. Common non-contaminating buffer materials include wood, cardboard, paper, canvas, and other stainless steel material.
3. Products shall be stocked on non-contaminating racks or skids.
4. Products shall be stocked in an area separate from iron or carbon steel products.
5. Do not climb on or stand on Victaulic products.
6. In storage areas where salt is present in the air, products shall be covered with a plastic tarp.

Shipping

1. Products shall be shipped with new, non-contaminating and non-damaging packing materials.
2. Product markings shall have a water-soluble chloride content less than 50 parts per million (ppm). The chloride content shall be measured upon drying of the marking.
3. Identification tags and connectors, if required, shall be constructed from non-contaminating materials.
4. Stainless steel and aluminum bronze products shall be shipped separately from iron or carbon steel products. If stainless steel or aluminum bronze and iron or carbon steel products are shipped together, care shall be taken to separate the dissimilar materials completely by using a non-contaminating buffer.

WARNING

- The system designer is responsible for verifying suitability of stainless steel and aluminum bronze materials with the intended fluid media.
- The effect of chemical composition, pH level, operating temperature, chloride level, oxygen level, and flow rate on stainless steel and aluminum bronze materials shall be evaluated to confirm system life will be acceptable for the intended service. Selection or installation of the valve with incompatible materials will void the Victaulic warranty.

Failure to follow these instructions could cause product failure, resulting in serious personal injury and property damage.

LEVER LOCK HANDLE REMOVAL

⚠ WARNING



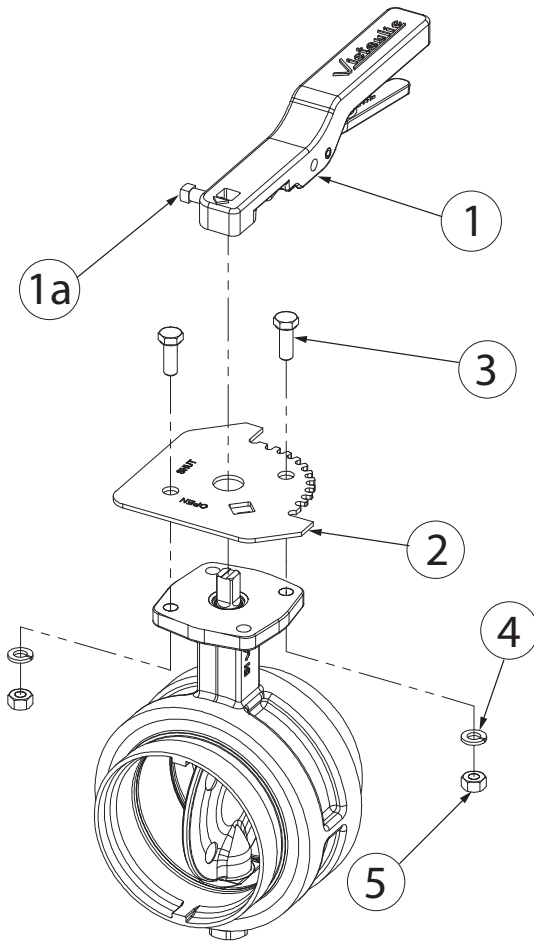
- Read and understand all instructions before attempting to perform the Lever Lock Handle removal procedure.
- Prevent flow from passing through the valve, and place the disc in the “shut” position during the following procedures.



Failure to follow these instructions could result in death or serious personal injury and property damage.

Removal of the Lever Lock Handle can be performed without removing the valve from the piping system. **Prevent flow from passing through the valve during removal of the Lever Lock Handle.**

LEVER LOCK HANDLE ASSEMBLY DRAWING, PARTS LIST, AND REMOVAL INSTRUCTIONS



Item No.	Qty.	Description
1	1	Lever Lock Handle
1a	1	Set Screw of Lever Lock Handle Assembly
2	1	Plate
3	2	Hex Cap Screw
4	2	Lock Washer
5	2	Hex Nut



1. Using the Lever Lock Handle, place the valve in the fully “shut” position.
2. Loosen the set screw on the side of the handle.
3. Remove the Lever Lock Handle from the plate.
4. Remove the hex nuts, lock washers, and two hex cap screws from the plate.
5. Remove the plate from the valve body mounting flange.
6. The valve is now ready for conversion to a Gear Operator.

⚠ CAUTION

- **DO NOT** attempt to operate a Series 250 Butterfly Valve without a handle or gear operator installed.
- Failure to follow this instruction will cause improper valve operation and damage to the stem.

GEAR OPERATOR INSTALLATION

⚠ WARNING

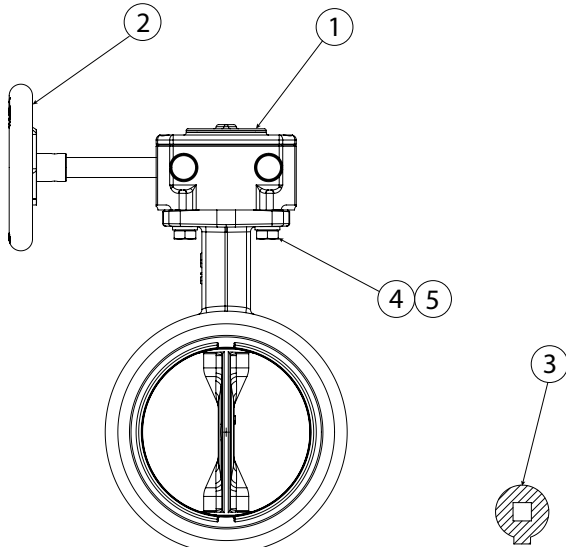



- Read and understand all instructions before attempting to install the gear operator.
- Prevent flow from passing through the valve, and verify that the disc is in the “shut” position during the following procedures.

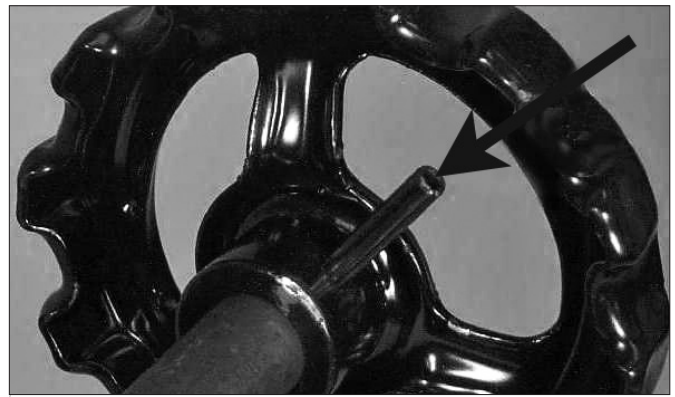
Failure to follow these instructions could result in death or serious personal injury and property damage.

The gear operator can be installed without removing the valve from the piping system. **Prevent flow from passing through the valve during gear operator installation.**

GEAR OPERATOR ASSEMBLY DRAWING, PARTS LIST, AND INSTALLATION INSTRUCTIONS

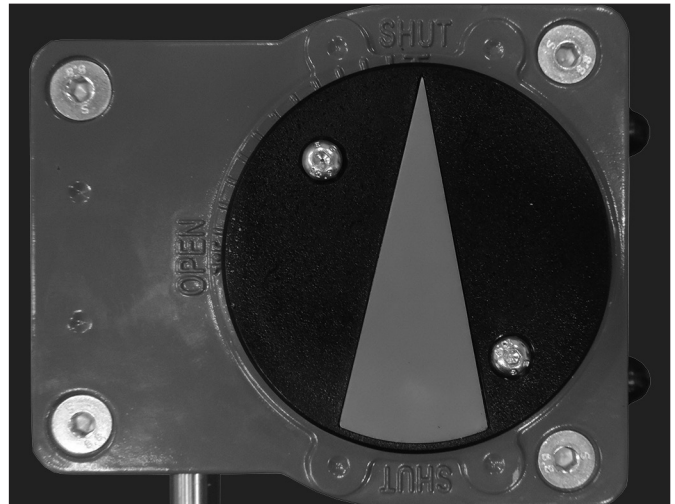


Item No.	Qty.	Description
1	1	Gear Operator
2	1	Handwheel
3	1	Drive Bushing
4	4	Lock Washer
5	4	Hex-Head Screw

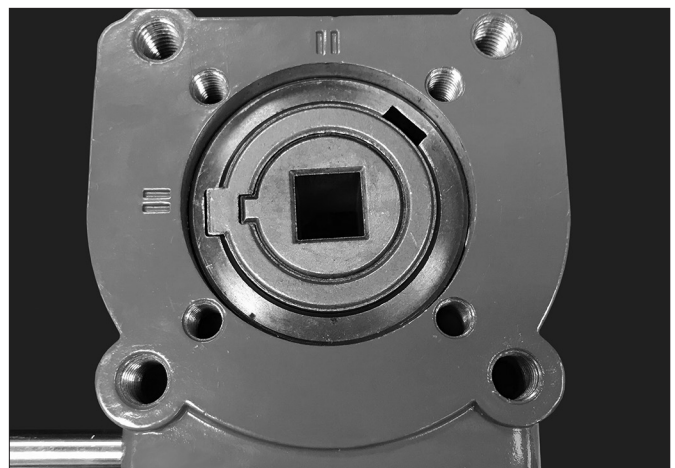


NOTE: For 10-inch/DN250 and 12-inch/DN300 Series 250 Butterfly Valves, the handwheel is not attached to the shaft. To attach the handwheel to the shaft, align the holes in the handwheel with the holes in the shaft. Drive the roll pin (provided/taped to handwheel) completely into the handwheel and shaft.

1. Verify that the valve is in the fully “shut” position. **NOTE:** Reference the position indicator on top of the stem.

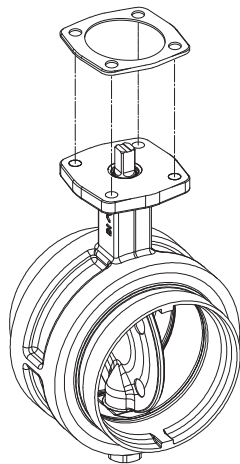


2. Turn the handwheel of the gear operator until the arrow on the indicator cap is pointing toward the “shut” position, as shown above.



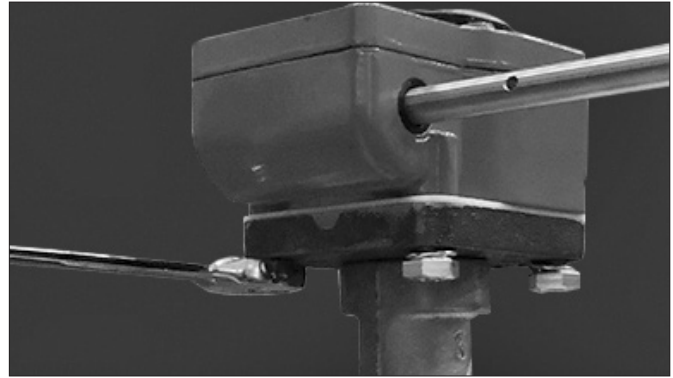
3. Insert the drive bushing into the gear operator, as shown above.

NOTICE



Exaggerated for clarity

- The thermal barrier kit can be installed at this time.
- The thermal barrier kit contains two gaskets. One gasket covers 2 – 6-inch/DN50 – DN150 valve sizes, and the other gasket covers 8 – 12-inch/DN200 – DN300 valve sizes. Verify that the correct gasket size is used for the corresponding valve size.



4a. Place the gear operator/drive bushing assembly onto the valve body mounting flange by aligning the four holes of the gear operator with the four holes in the valve body mounting flange/thermal barrier.

NOTE: In certain cases, the handwheel may need to be rotated to position the drive bushing/stem for alignment of the gear operator's and gear operator adapter plate's bolt hole patterns. If this is the case, loosen the hex lock nut and internal set screw of the "shut" travel limit stop to permit alignment (refer to the instructions on the following page).

4b. Thread a bolt with a lock washer up through each hole in the valve body mounting flange/thermal barrier and into the gear operator.

4c. Tighten the four bolts completely until the lock washers are flattened.

4d. Set the "shut" travel limit stops by following the steps in the following column; this is especially important if the handwheel was rotated in step 4a.

5. After setting the "shut" travel limit stops in step 4d, operate the valve to the fully "open" position (90° from the correctly-adjusted "shut" position). Set the "open" travel limit stops by following the steps on the next page.

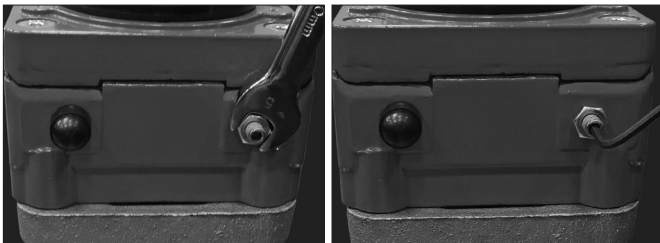
ADJUSTING THE TRAVEL LIMIT STOPS

Adjustment of the travel limit stops can be performed while the system is operational. **NOTE:** Cycling of the valve to test travel limit stop adjustments may affect downstream equipment. Refer to the detailed instructions on this page for how to adjust the travel limit stops.

ADJUSTING AND SETTING THE “SHUT” TRAVEL LIMIT STOPS OF THE GEAR OPERATOR



1. Remove the dust cap from the right side of the gear operator.

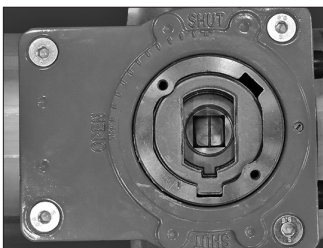


2a. Loosen the hex lock nut (counterclockwise) located on the right side of the gear operator.

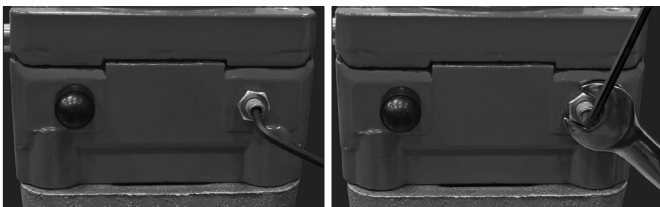
2b. Using a hex key wrench, loosen the internal set screw approximately three turns (counterclockwise).

NOTICE

- When using a stem extension kit, additional adjustment may be required to achieve the fully “shut” position.



3. Verify that the valve is in the fully “shut” position. The fully “shut” position can be verified by removing the indicator cap from the top of the gear operator and checking the position indicator on top of the stem, as shown to the left. The position indicator line on top of the stem should be in-line with the “shut” position.



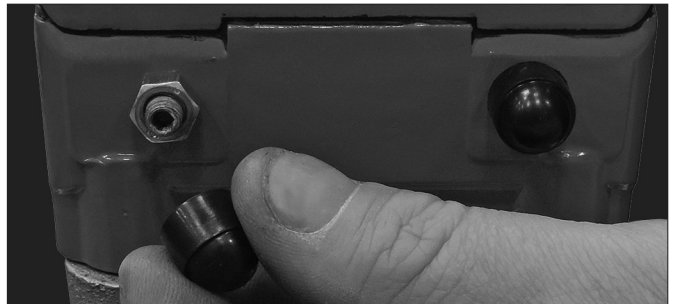
4a. Using a hex key wrench, tighten the internal set screw (clockwise) until it contacts the internal quadrant gear.

4b. While holding the internal set screw in position with the hex key wrench, tighten the hex lock nut (clockwise).

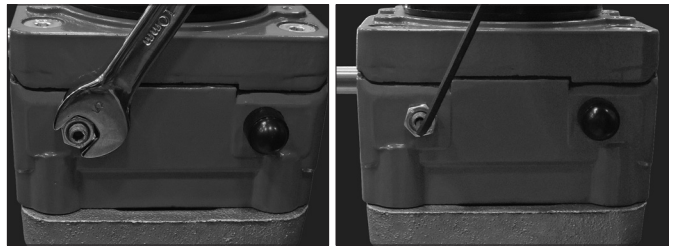
5. Verify proper operation of the gear operator by turning the handwheel. Repeat the prior steps of this procedure, if necessary.

6. Replace the dust cap, and follow the “open” travel limit stop adjustment procedure on this page.

ADJUSTING AND SETTING THE “OPEN” TRAVEL LIMIT STOPS OF THE GEAR OPERATOR

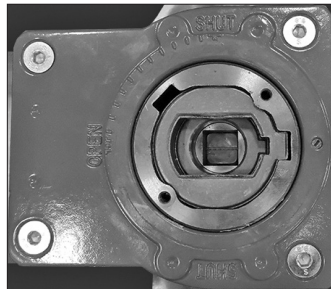


1. Remove the dust cap from the left side of the gear operator.

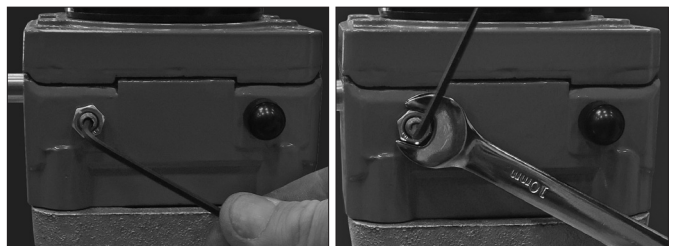


2a. Loosen the hex lock nut (counterclockwise) located on the left side of the gear operator.

2b. Using a hex key wrench, loosen the internal set screw approximately three turns (counterclockwise).



3. Turn the handwheel counterclockwise. Verify that the valve is in the fully “open” position by checking the position indicator on top of the stem, as shown to the left. The position indicator line on top of the stem should be perpendicular to the “shut” position.



4a. Using a hex key wrench, tighten the internal set screw (clockwise) until it contacts the internal quadrant gear.

4b. While holding the internal set screw in position with the hex key wrench, tighten the hex lock nut (clockwise).

5. Verify proper operation of the gear operator by turning the handwheel. Repeat the prior steps of this procedure, if necessary.

6. Replace the dust cap and indicator cap.

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