

311 Series
Manual Quarter-turn
Worm Gear Operators



**Installation, Maintenance,
Handling and Storage
Manual**



► Introduction

This instruction manual includes installation adjustment, operation, and maintenance for the Industrial quarter turn manually operated gear boxes.

► Description

This quarter turn gear box issued with butterfly, ball, plug and damper applications or any other 90 degree device. In the quarter turn Gearbox, torque is transmitted from the hand wheel through the hand wheel input shaft to a worm and gear sector.

The worm & worm wheel multiply the torque and transmit it to the valve shaft

The units with SR1 to SR9 have a spur gear reduction drive for increased torque capability.

► Installation

The gear box is normally shipped mounted on a valve body. If the gear box has been shipped separately for installation on a valve body, or if it was removed for maintenance, mount the gear box by following the instructions presented in this section before installing the valve body in the pipeline.

1. Rotate the valve disc or ball to the closed position.
2. Rotate the hand wheel to move the worm wheel to the position that is to correspond to the closed position of the valve disc or ball as follows: turn the hand wheel so that the worm wheel and travel indicator are rotated fully clockwise/anticlockwise depending on the gearbox shaft orientation.
3. Remove the travel indicator pointer by removing the machine screws.



4. Making certain that alignment is correct, slide the gearbox on to the valve shaft in the desired mounting position. Check to be sure the valve shaft is still aligned with the proper gear hub keyway, square or flats.
5. Check the alignment of the mounting holes with those in the bracket or valve body. If the holes are not aligned, rotate the hand wheel to allow for repositioning.
6. When hole alignment is correct, secure the gear box to the valve body with hex head cap screws.
7. For large size gear box, use chain pulley mounting is on the valve.
8. Making certain that the travel indicator pointer is aligned as it was prior to assembly, install the travel indicator.
9. Before installation the valve body with Gear box in the pipeline perform the procedures presented in the adjustment section of this.

► **Adjustment**

Perform the following steps to adjust the travel stops. Travel stops consist of two Stopper bolts and two hex locking nuts

1. Loosen the hex nuts and back out both set Stopper Bolts
2. Rotate the hand wheel to move the valve disc, plug or ball to the fully closed position.
3. With the valve disc, plug or ball closed; rotate the Stopper bolts that is to limit valve closing until this Stopper Bolts just hits the Sector gear. Lock the Stopper bolt with the hex nut.



4. Rotate the hand wheel until the open position is indicated by the pointer tip on the travel indicator dial. Rotate the remaining Travel stopper Bolt until it just hits the worm wheel .Lock the Stopper Bolt with the hex nut.
5. Install the valve body and Gear Box in the pipeline by following the instructions in the separate valve body instruction manual; then proceed to the operation section.

► Operation

After the Stopper Bolts have been adjusted and the control valve assembly installed, the gear box is ready for operation.

Do not use wrenches or other devices on the hand wheel or hand wheel shaft to increase operating force.

In the event of valve not completely closed/open do not apply excessive force on the hand wheel, refer adjustment section and realign the stopper bolts.

If the force required to rotate the hand wheel is excessive, check for the following conditions:

- Insufficient Lubrication.
- Seized Gearbox parts due to misalignment.
- Excessive pressure drop across the valve body.
- Obstruction to the valve body disc.

If the gear box does not seem to control the process media, then dowel pin may be sheared, or internal valve body parts may be broken.

Avoid personal injury or property damage from sudden release of pressure or uncontrolled process.

Before starting disassembly:

- Isolate the valve from the process
- Release all process pressure

▶ **Lubrication**

The interior parts should be lubricated whenever difficulty in hand wheel rotation indicates a need for lubrication.

To lubricate the Gear box, perform the following steps:

1. Note the location of the travel indicator pointer in relation to the indicator dial. Remove the Machine screws and the travel indicator pointer. When reassembling the Gear box, the travel indicator pointer must be returned to its original position.
2. Remove the cap screws which secure the gearbox cover plate and remove the gearbox cover plate.
3. Coat the worm, the worm wheel teeth, and the bearing surfaces of the gear box housing and Worm with NLGI-3 Standard lubricant.
4. Install the cover on the gearbox and secure it with the cap screws.
5. Attach the travel indicator pointer so that it indicates the same point of rotation as was before the pointer was removed. Secure the pointer with the machine screws.

▶ **Handling and Storage**

In the event gear box is not to be installed immediately on receipt. Then following procedure to be followed.

1. Ensure gear box is kept on a pallet and is placed on PCD side.
2. Gear box should be covered properly while storage.
3. Store the gear box in a clean environment.
4. Avoid contact of water or any liquid with gear box.
5. Ensure gear box shaft does not bend during handling/storage.

Q-Tork Automation Pvt. Ltd.

Manufacturers of

- Manual Gear Box • Manual Override
- Electrical Gear box • Multi-turn Bevel Gear Box



Works : Gat No. 1083/1B, Plot No. 29/7, Markal, Tal - Khed,
Pune - 410 105. Maharashtra, INDIA

- *cell:* +91 9130004642
- *email:* marketing@qtork.com / production@qtork.com
- www.qtork.com

