





## WORM GEAR Installation, Maintenance, & Operation Manual

### INSTRUCTIONS

**This is an instructional manual which provides general installation, operation, and maintenance for Advanced Industrial Technologies' s manual worm gear operators.**

AIT worm operators are designed to be used on ball, butterfly, plug, and damper applications; generally for 90 degree applications. AIT operators are designed to transmit the rated output torque by transmitting input force through the input shaft by the handwheel or other input device.

### INSTALLATION

**Verify that mounting patterns and output bore have been machined correctly. Check for burrs on valve stem and inside gear to ensure easy installation.**

1. Make sure that both the valve and gear are in the same position (Open or Closed)
2. Removing the gear indicator will make it easier to install the gear and line up input bore with the valve stem.
3. Line up stem shaft on the valve with the output bore of the gear. Reassure that both gear operator and valve are in the same open or closed position. Carefully lower gear operator over the valve stem onto the valve mounting pad.



*Make certain your hands and fingers are clear between the gear operator and mounting pad.*

4. Align the mounting holes on the bottom of the gear operator with those on the mounting pad or bracket on the valve.



*If the holes are not aligned you might need to rotate the handwheel clockwise or counterclockwise until you reach the proper alignment.*

5. recommends grade 5 or better bolting when securing the gear operator to the valve mounting pad and or bracket. If the operator is provided with tapped holes in the base, fasten the operator to the valve by passing bolts through the mounting flange of the valve into the base of the operator.
6. Reinstall gear indicator ensuring the arrow on the indicator corresponds with the proper position of the valve.



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### SETTING ADJUSTMENT SCREWS

1. Rotate the handwheel to move the valve to the fully closed position. Set the adjustment screw by turning it clockwise until you feel it hit the segment inside the gear then lock the adjustment screw by using the lock nut provided.
2. Rotate the handwheel to move the valve to the fully open position.



*If the valve is installed and you cannot see if the valve is fully open, you can count the number of rotations of the handwheel to make sure you reach 90 degrees.*

*Ex: (if your gear has a 100:1 ratio. You would rotate your handwheel 25 times to reach 90 degrees)*

3. Set the adjustment screw by turning it clockwise until you feel it hit the segment inside the gear. Lock the adjustment screw by using the lock nut provided.

**Note: Due to the differences in individual valves, the indicator may not line up exactly with the open/closed markings on the cover. Proper settings must be determined by the position of the valve disc, ball, plug, etc.**

### SAFETY & OPERATION



**Do not use handwheels, cheater bars, or motors devices larger than recommended by the factory. This could cause damage to the gear operator or possibly the valve and will void the manufactures warranty.**

Gear operators are sized based on torque information provided by valve manufactures. Over time some applications will cause the valves can become stuck or more difficult to operate. If the operator becomes more difficult to operate make check the following:

- ❖ Does the gear have proper lubrication? Some valve applications like plug valves also need lubrication if this is the case also check that the valve has proper lubrication.
- ❖ Make sure the valve is clear of any obstructions.
- ❖ Check to see if the pressure across the valve has changed. This could have an adverse effect on the valve torque.



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### STORAGE

AIT operators don't have a "shelf life" but ensure that the gears are ready when you are, AIT recommends they be stored in a clean, dry area protecting the input shafts and output bores from getting damaged.

### MAINTENANCE

Moving mechanical parts are lubricated with special grease that ensures safe operation. AIT recommends that you inspect your gear annually for any wear that may occur, check gears and bearings for lubrication and add if necessary.



*Please keep in mind that some gears may need to be inspected more often depending on application and environment.*

In order to inspect the gear housing you will have to remove all the bolts that secure the indicator and housing cover. Once these bolts are removed you can remove the indicator plate and cover to inspect the inside of the gear.

AIT operators are lubricated for life in most application instances. Depending on the environment and application some additional lubrication may be required.

**Below you will find AIT standard gear requirements suitable for most applications:**

- ❖ NLGI Grade 2
- ❖ Operating Temperature: -10 to 350 degrees F
- ❖ Timken Load (lbs) 65 or better



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## WORM GEAR ASSEMBLY

