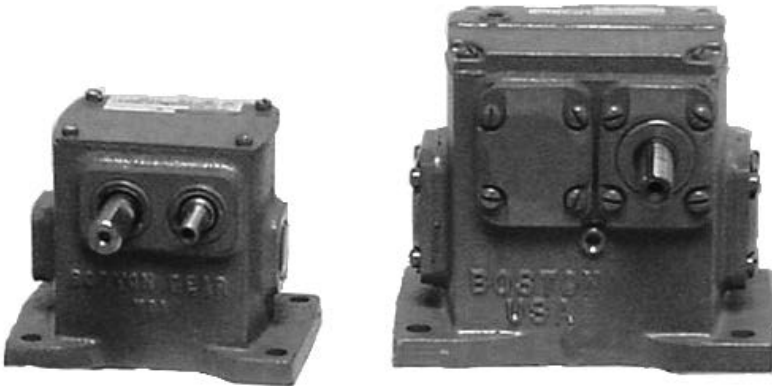


# 309 and TW Series Worm Gear Speed Reducers

Installation and Operation Manual

P-3006-BG  
Doc. No. 19362



 **Boston**<sup>®</sup>  
Gear

An **Altra Industrial Motion** Company

**⚠ California Proposition 65 Warning:**  
The Bronze gear and wear debris found inside any worm gearbox contains lead, a chemical known to the state of California to cause cancer, birth defects or other reproductive harm.

## General Instructions

1. Align all shafts accurately. Improper alignment can result in failure. Use of flexible couplings is recommended to compensate for slight misalignment.
2. When mounting, use maximum possible bolt size and secure reducer to a rigid foundation. Periodic inspection of all bolts is recommended.
3. Auxiliary drive components (such as sprockets, gears and pulleys) should be mounted on the shafts as close as possible to the housing to minimize effects of overhung loads. Avoid force fits that might damage bearings or gears.
4. Check and record gear backlash at installation and again at regular intervals. This should be done by measuring the rotary movement of the output shaft (rotating alternately clockwise and counterclockwise) at a suitable radius while holding the it shaft stationary. Gears should be replaced when the backlash exceeds four times the measurement taken at installation.
5. Initial operating temperatures may be higher than normal during the break-in period of the gear set. FOR MAXIMUM LIFE, DO NOT ALLOW THE SPEED REDUCER

### ⚠ CAUTION

- For safe operation of any gear drive, all rotating shafts and auxiliary components must be shielded to conform with applicable safety standards. You must consider overall operational system safety at all times.
- When using a speed reducer to raise or lower a load, such as in hoisting applications, provision must be made for external braking. Under no conditions should a speed reducer be considered self-locking.
- Mounting of speed reducers in overhead positions may be hazardous. Use of external guides or supports is strongly recommended for overhead mounting.

TO OPERATE CONTINUOUSLY ABOVE 225°F AT THE GEAR CASE. In the event of overheating, check for overloads or high ambient temperatures. Keep shafts and vent plugs clean to prevent foreign particles from entering seals or gear housing.

## Instructions For Flange Models

### F (Quill Type Input)

1. Assemble the key to the motor shaft and coat the shaft with anti-seize compound. Insert the motor shaft into the reducer input shaft.
2. Rotate the motor to proper position and firmly secure to flange with four hex-head cap screws.

**⚠ CAUTION** If the motor does not readily seat itself, check to determine if key has moved axially along motor shaft causing interference. Staking of the keyway adjacent to the motor key will facilitate this procedure.

## Lubrication Instructions

The table indicates the type and viscosity of lubricant suitable for reducers operating at various temperatures. It is important that the proper type of oil be used since many oils are not suitable for the lubrication of gears. Various types of gearing require different types of lubricants.

The lubricant must remain free from oxidation and contamination by water or debris, since only a very thin film of oil stands between efficient operation and failure. To assure long service life, the reducer should be periodically drained (preferably while warm) and refilled to the proper level with a recommended gear oil. Under normal environmental conditions oil changes are suggested after the initial 250 hours of operation and thereafter at regular intervals of 2500 hours or every 6 months.

Synthetic lubricants will allow extended lubrication intervals due to its increased resistance to

### ⚠ WARNING

- Boston Gear speed reducers are normally shipped without lubricant. They must be filled to the proper level with the recommended lubricant for your application before operation.
- Speed Reducers which have been pre-lubricated at the factory will not have the vent plug installed, remove solid plug and install the enclosed vent plug before operating.

thermal and oxidation degradation. It is suggested that the initial oil change be made at 1500 hours and, thereafter, at 5000 hour intervals.

During the initial period of operation, higher than normal operating temperatures may be seen. This is due to the initial break-in of the worm gear set. The temperature of

| Ambient (Room) Temperature    | Recommended Oil (or equivalent)  | Viscosity Range S&S @ 100°F | Lubricant AGMA # | ISO Viscosity Grade No. |
|-------------------------------|----------------------------------|-----------------------------|------------------|-------------------------|
| -30° to 225°F (-34° to 107°C) | Klubersynth* UH1 6-460 SYNTHETIC | 1950/2500                   | —                | 480                     |
| -30° to 225°F (-34° to 107°C) | MOBILE SHC634 SYNTHETIC          | 1950/2500                   | —                | 320/480                 |

Double Reduction Worm Gear Reducers may reach 160°F and Single Reduction Worm Gear Reducers approximately 225°F.

## Recommended Lubricants

| Type      | Klubersynth** UH1 6-460 | Mobile SHC634 |
|-----------|-------------------------|---------------|
| Size      | Quart                   | Quart         |
| Item Code | 65159                   | 51493         |

### ENCLOSED WORM GEAR REDUCERS

### WORM GEAR LUBRICANTS AVAILABLE FROM BOSTON GEAR

#### Order By Item Number

**▲CAUTION** Relubricate more frequently if drive operated in high ambient temperatures or unusually contaminated atmosphere. High loads and operating temperatures will also require more frequent lubrication.

\*Synthetic recommendation is exclusively for Klubersynth UH1 6-460

+Other lubricants corresponding to AGMA/ISO numbers are available from all major oil companies.

\*\*The Klubersynth UH1 6-460 lubricant will perform at temperatures considerably higher than 225°F. However, the factory should always be consulted prior to operating at higher temperature as damage may occur to oil seals and other components.

All 309 models are pre-lubricated for life with Klubersynth UH1-6-460.

TW113 models require approximately 1/2 pint of oil and should be checked to assure proper level for angular operation.

# Warranty Policy

Boston Gear warrants that products manufactured or sold by it shall be free from defects in material and workmanship. Any products which shall within one (1) year of delivery, be proved to the Company's satisfaction to have been defective at the time of delivery in these respects will be replaced or repaired by the Company at its option. Freight is the responsibility of the customer. The Company's liability under this limited warranty is limited to such replacement or repair and it shall not be held liable in any form of action for direct or consequential damages to property or person. THE FOREGOING LIMITED WARRANTY IS EXPRESSLY MADE IN LIEU OF ALL OTHER WARRANTIES WHATSOEVER, EXPRESS, IMPLIED AND STATUTORY AND INCLUDING WITHOUT LIMITATION THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS.

No employee, agent, distributor, or other person is authorized to give additional warranties on behalf of Boston Gear, nor to assume for Boston Gear any other liability in connection with any of its products, except an officer of Boston Gear by a signed writing.



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