



OHIO GEAR

ELECTRIC MOTORS, GEARMOTORS AND DRIVES

Speed Reducers Installation, Lubrication and Maintenance Instructions

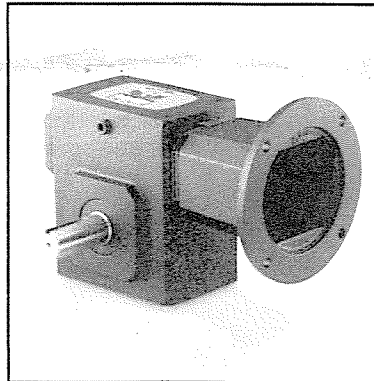
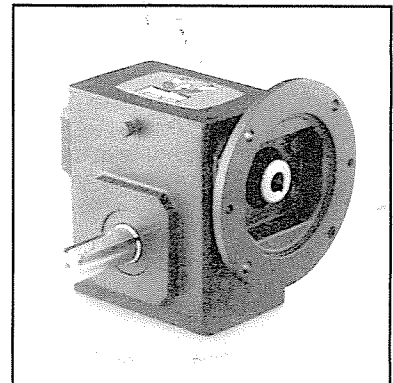
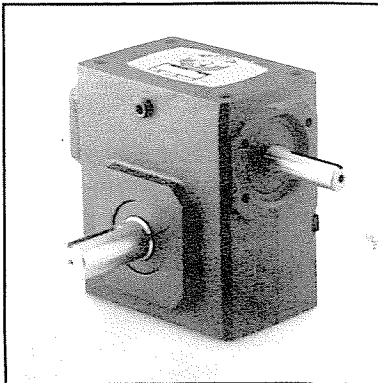


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Instruction Manual



Selection Information

Read ALL instructions prior to operating reducer. Injury to personnel or reducer failure may be caused by improper installation, maintenance or operation.

Safety Alert

WARNING

- Written authorization from LEESON ELECTRIC is required to operate or use reducers in man lift or people moving devices.
- Check to make certain application does not exceed the allowable load capacities published in the current catalog.
- Buyer shall be solely responsible for determining the adequacy of the product for any and all uses to which Buyer shall apply the product. The application by Buyer shall not be subject to any implied warranty of fitness for a particular purpose.
- For safety, Buyer or User should provide protective guards over all shaft extensions and any moving apparatus mounted thereon. The User is responsible for checking all applicable safety codes in his area and providing suitable guards. Failure to do so may result in bodily injury and/or damage to equipment.
- Hot oil and reducers can cause severe burns. Use extreme care when removing lubrication plugs and vents.
- Make certain that the power supply is disconnected before attempting to service or remove any components. Lock out the power supply and tag it to prevent unexpected application of power.
- Reducers are not to be considered fail safe or self-locking devices. If these features are required, a properly sized, independent holding device should be utilized. Reducers should not be used as a brake.
- Any brakes that are used in conjunction with a reducer must be sized or positioned in such a way so as to not subject the reducer to loads beyond the catalog rating.
- Lifting supports including eyebolts are to be used for vertically lifting the gearbox only and no other associated attachments or motors.
- Use of an oil with an EP additive on units with backstops may prevent proper operation of the backstop. Injury to personnel, damage to the reducer or other equipment may result.
- Overhung loads subject shaft bearings and shafts to stress which may cause premature bearing failure and/or shaft breakage from bending fatigue, if not sized properly.

CAUTION

- Test run unit to verify operation. If the unit tested is a prototype, that unit must be of current production.
- If the speed reducer cannot be located in a clear and dry area with access to adequate cooling air supply, then precautions must be taken to avoid the ingestion of contaminants such as water and the reduction in cooling ability due to exterior contaminants.
- Mounting bolts should be routinely checked to ensure that the unit is firmly anchored for proper operation.

Important Information

In the event of the resale of any of the goods, in whatever form, Resellers/Buyers will include the following language in a conspicuous place and in a conspicuous manner in a written agreement covering such sale:

The manufacturer makes no warranties or representations, express or implied, by operation of law or otherwise, as to the merchantability or fitness for a particular purpose of the goods sold hereunder. Buyer acknowledges that it alone has determined that the goods purchased hereunder will suitably meet the requirements of their intended use. In no event will the manufacturer be liable for consequential, incidental or other damages. Even if the repair or replacement remedy shall be deemed to have failed of its essential purpose under Section 2-719 of the Uniform Commercial Code, the manufacturer shall have no liability to Buyer for consequential damages.

Resellers/Buyers agree to also include this entire document including the warnings above in a conspicuous place and in a conspicuous manner in writing to instruct users on the safe usage of the product.

This instructions manual should be read together with all other printed information such as catalogs, supplied by LEESON ELECTRIC.

General Operation

1. Run the motor which drives the reducer and check the direction of reducer output rotation. Consult motor nameplate for instructions to reverse the direction of rotation.
2. Attaching the load: On direct coupled installations, check shaft and coupling alignment between speed reducer and loading mechanism. On chain/sprocket and belt/pulley installation, locate the sprocket or pulley as close to the oil seal as possible to minimize overhung load. Check to verify that the overhung load does not exceed specifications published in the catalog.
3. High momentum loads: If coasting to a stop is undesirable, a braking mechanism should be provided to the speed reducer output or the driven mechanism.



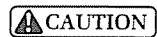
The system of connected rotating parts must be free from critical speed, torsional or other type vibration, no matter how induced. The responsibility for this system analysis lies with the purchaser of the speed reducer.

Installation

1. Mount the unit to a rigid flat surface using grade 5 or higher fasteners. The mounting fasteners should be the largest standard size that will fit in the base mounting hole. Shim as required under flange or base feet which do not lie flat against the mounting surface.
2. For shipment, pipe plugs are installed in the unit and a vent plug is packed separately. After mounting the unit in position, remove the appropriate pipe plug and install the vent plug in the location shown on page 5. On double reduction units both the primary and the secondary must be vented. Failure to vent the unit can cause premature seal wear or loss of seal and oil. These conditions are not covered by warranty. Check for correct oil level. Contact the factory for level and vent recommendations on non-standard mounting positions. **WASHGUARD® (BISSC)** units with Enviro-Seal do not use vents. See (Enviro-Seal) under **Lubrication** for further information.
3. **WASHGUARD® (BISSC)** units include synthetic oil and an Enviro-Seal pre-installed at the factory. It is not necessary to vent these units, and they can be used as supplied from the factory. Do not loosen the nut holding the stem of the Enviro-Seal, and do not block the hole in the stem. Do not blow pressurized air into the hole, and avoid spraying washdown chemicals directly into the hole.
4. Connect motor to speed reducer.



Depending upon gear geometry and operating conditions worm gear reducers may or may not backdrive. Special consideration should be given to high inertia loads connected to the output shaft. Consult the factory for further details.



DO NOT CHANGE MOUNTING POSITIONS WITHOUT CONTACTING FACTORY.
Altering the mounting position may require special lubrication provisions which must be factory installed.



Do not operate the reducer without making sure it contains the correct amount of oil. Do not overfill or underfill with oil, or injury to personnel, reducer or other equipment may result. **WASHGUARD®** units are lubed and sealed for life, so in most applications it will not be necessary to drain or re-fill the unit.



A unit cannot be used as an integral part of a machine superstructure which would impose additional loads on the unit other than those imposed by the torque being transmitted either through a shaft-mounted arrangement, and any shaft mounted power transmitting device. (e.g., sprockets, pulleys, couplings)



For safe operation and to maintain the unit warranty, when changing a factory installed fastener for any reason, it becomes the responsibility of the person making the change to properly account for fastener grade, thread engagement, load, tightening torque and the means of torque retention.

Lubrication - Standard Units

All standard reducers ordered from the factory are filled with synthetic lubricant to operate within a -10° to 105° F ambient temperature range. Double reduction units have separate oil sumps and must be filled/checked independently. Prior to startup, verify that the oil is at the level shown on the drawings on page 5.

Enviro-Seal: WASHGUARD® (BISSC) and stainless steel reducers come standard with an Enviro-Seal and synthetic oil pre-installed at the factory. It is not necessary to vent these reducers, and they can be used as supplied from the factory.



In the Food and Drug Industry (including animal food), consult the lubrication supplier for recommendation of lubricants which are acceptable to the Food and Drug Administration and/or other authoritative bodies having jurisdiction.



Do not mix different oils in the reducer. Oils should be compatible with Viton® seal material.



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Lubrication



The reducer is properly filled at the factory with sufficient lubricant per customer specified mounting position. If position is not specified by customer, reducer will be filled to level in mounting position 1 (worm over) Reducer ordered with a "MOD" will be filled based on the factory assumed mounting position, mounting position should be specified with order to assure proper lubrication.

Factory Assumed Mounting Orientation	Applicable Unit Styles*	
Worm Over	B, T, F, H, FH, C D, DT, DF, DH, DFH DX, DXT, DXH, DXFH	Single Reduction Double Reduction Worm-Worm Double Reduction Helical-Worm
Worm Under	U DU	Single Reduction Double Reduction Worm-Worm
Vertical Output	VL, VH DVL, DVH DXVL, DXVH	Single Reduction Double Reduction Worm-Worm Double Reduction Helical-Worm
Vertical Input	J DJ DXJ	Single Reduction Double Reduction Worm-Worm Double Reduction Helical-Worm

* INCLUDES MOTORIZED COUPLING AND QUILL INPUT VERSIONS OF ALL STYLES LISTED

All standard IRONMAN™ BY OHIO GEAR Worm Reducers are factory filled with MOBIL SHC-634 lubricant, a synthesized hydrocarbon formulated for long life and wide operating temperature range (-25°F to +220°F). Change oil only when performing maintenance that requires gearbox disassembly.

If oil must be replaced, use only MOBIL SHC-634

Do not confuse MOBIL SHC-634 with MOBILGEAR 634. MOBILGEAR 634 is an EP type gear oil NOT suitable for use in the IRONMAN™ BY OHIO GEAR worm gear reducers.

SPECIAL LUBRICATION REQUIREMENTS - Size 830 & Larger

Please specify mounting position *with order* if any of the following applies:

- 1- Reducer is mounted with input or output shafts vertical
- 2- Input speed is less than 900 RPM
- 3- Reducer is mounted in inclined position

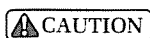
NOTE: The reducer may require modifications to assure proper lubrication in these applications.

For lubrication requirements of helical reducers (primaries of helical/worm reducers and ratio multipliers), contact factory.

Oil Capacities (ounces) - Standard Units

Mounting Position	UNIT SIZE										
	813	815	818	821	824	826	830	832	842	852	860
1-Worm Over	4	12	12	20	24	40	56	72	112	188	312
2-Worm Under	8	16	20	28	40	60	84	108	152	304	328
3-Vertical Output	4	16	16	28	32	48	68	88	128	248	320
4-Vertical Input	4	16	16	24	32	48	72	92	128	248	325
5-Worm Over on Secondary Unit of Double Reduction	—	—	—	N/A	N/A	N/A	N/A	192	308	320	485

16 OZ.	=	1 PINT
2 PINTS	=	1 QUART
4 QUARTS	=	1 GALLON
1 GALLON	=	128 OZ.



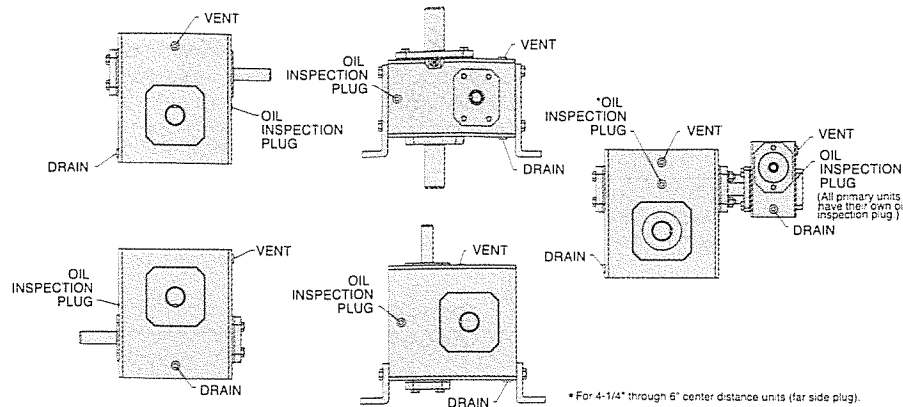
Always check for proper oil level after filling. Capacities vary somewhat with model and mounting position. Oil should rise to bottom edge of level hole. Do not overfill.



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Standard Speed Reducer Mounting Positions & Vent Plug, Level and Drain Locations



Maintenance - Standard Units

Your IRONMAN™ BY OHIO GEAR reducer has been tested and adjusted at the factory. Dismantling or replacement of components must be done by LEESON to maintain the warranty.

Inspect vent plug often to insure it is clean and operating.

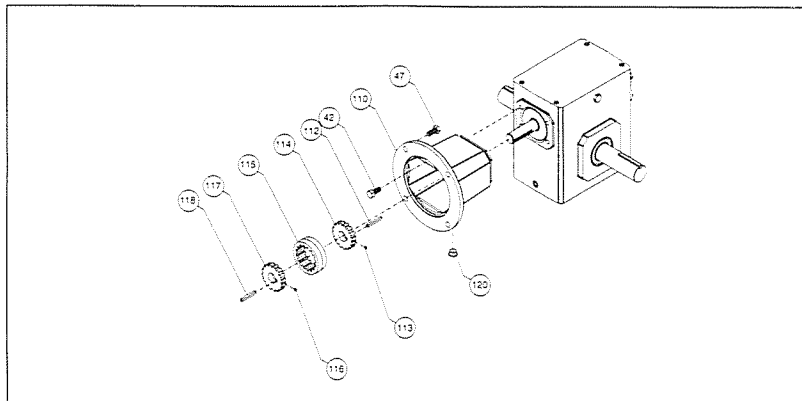


Mounting bolts should be routinely checked to ensure that the unit is firmly anchored for proper operation.

Seals: The IRONMAN™ BY OHIO GEAR line of speed reducers utilize premium quality seals which are the state-of-the-art in sealing technology. Seals are, however, a wear item and eventually need to be replaced. Replacement can be easily accomplished by following the steps below:

1. Remove the worn seal without damaging the shaft surface or the seal bore. This can be done by drilling a .062" diameter hole in the seal casing (being careful not to drill into the bearing behind the seal). Screw a #10 sheet metal screw into the hole and pry out the seal.
2. Clean the seal bore of sealant.
3. Before installing the new seal, use electrical tape to cover any keyways on the shaft to prevent seal lip damage.
4. Grease the seal lips with bearing grease and apply a sealant to the seal bore.
5. Slide the seal into the shaft being careful not to fold the inner lip over on any shaft steps.
6. Press the seal into its bore with a sleeve that presses on the seal casing, being careful to keep the seal square in its bore.

Installation Extended "C" Flange Adapter Kits With Flexible Couplings (BM Style)



These instructions must be followed for proper installation of "C" Flange Adapter and Motor onto IRONMAN™ BY OHIO GEAR Worm Reducers. These reducers have input ball bearings mounted directly in the housing, and no bearing cap on the input shaft side.

1. Make sure reducer pilot and face, and frame pilot and face are clean.
2. Install "C" Flange Adapter (ref. 110) onto reducer, being careful not to damage seal.
3. Install capscrews (ref. 42) and tighten to torque specified in tightening torque chart on page 6.
4. Install key (ref. 112) in the input shaft, key should be flush with shaft end. Install coupling hub (ref. 114) flush with end of reducer shaft.

5. Rotate input shaft of reducer to position the set screw (ref. 113) in line with access hole provided in the "C" flange adapter, tighten set screw (make sure key is properly in place under set screw).
6. Slide plastic sleeve (ref. 115) over reducer hub until it comes to a stop.
7. **Discard motor key** and install key supplied in kit (ref. 118) flush with motor shaft end. Install coupling hub (ref. 117) flush with end of motor shaft and tighten set screw (ref. 116), make sure key is under set screw.
8. Install motor by sliding hub into sleeve until it comes to a stop. Install capscrews (ref. 47) and tighten to torque specified on tightening torque chart.
9. **Install plastic plug (ref. 120) into the "C" Flange Adapter access hole.**

Items Included in "C" Flange Adapter Kit

- | | |
|--|--|
| 1. One "C" Flange Adapter (ref. 110) | 7. One coupling sleeve (ref. 115) |
| 2. Four capscrews (ref. 42) adapter to reducer | 8. One motor coupling hub (ref. 117) |
| 3. One reducer coupling hub (ref. 114) | 9. One motor shaft key (ref. 118) |
| 4. One reducer input key (ref. 112) | 10. One motor hub set screw (ref. 116) |
| 5. One reducer hub set screw (ref. 113) | 11. One access hole plug (ref. 120) |
| 6. Four capscrews (ref. 47), motor to adapter | |

Capscrew Tightening Torque Grade 5 Capscrews (dry, without lubricant)

Capscrew Size	Tightening Torque (lb.-in.)
1/4 UNC	75
5/16 UNC	155
3/8 UNC	275
1/2 UNC	780

Maintenance

Your **IRONMAN™ BY OHIO GEAR** reducer has been tested and adjusted at the factory. Dismantling or replacement of components must be done by **LEESON** to maintain the warranty.

Inspect the stem of the Enviro-Seal often to ensure it is clean and operating properly.

CAUTION Mounting bolts should be routinely checked to ensure that the unit is firmly anchored for proper operation.

Seals: The **IRONMAN™ BY OHIO GEAR** line of speed reducers utilize premium quality seals which are state-of-the-art in sealing technology. Seals are, however, a wear item and eventually need to be replaced. Replacement can easily be accomplished by following the procedure on page 5.

If seal leakage has resulted in the loss of a significant amount of oil, it may be necessary to add more lubricant. For normal ambient temperature conditions, **LEESON** recommends Mobil SHC 634 synthetic gear oil for worm drives, and Mobil SHC 150 for helical drives.

CAUTION Always check for proper oil level after filling. Do not overfill or underfill with oil, or injury to personnel, reducer, or other equipment may result.

CAUTION Do not mix different oils in the reducer.

Class of Service

All capacity ratings are based on proper application of American Gear Manufacturers Association (AGMA) service factors as given on page 174 of the **IRONMAN™ BY OHIO GEAR** 8050 Catalog. Load conditions must be within cataloged ratings published in the current **LEESON** Catalog (available upon request).

Warranty From LEESON Electric - See 8050 catalog pages 185-187 for warranty terms and conditions.



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