

STERLING
ELECTRIC, INC.

2000HG[®]

HELICAL GEAR REDUCER

INSTALLATION AND MAINTENANCE MANUAL

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Irvine, California (800) 654-6220
Indianapolis, Indiana (800) 866-7973
Hamilton, Ontario (905) 547-2345

e-mail: sales@sterlingelectric.com
www.sterlingelectric.com

INSTALLATION AND MAINTENANCE

Read ALL instructions prior to operating reducer. Improper maintenance or operation may cause injury to personnel or reducer failure.

Written authorization from Sterling 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. Information contained in this manual is considered correct at the time of publication and is subject to change without notice.

SAFETY ALERT

WARNING: For safety, purchaser 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.

WARNING: Hot oil or reducers can cause severe burns. Use extreme care when removing lubrication plugs and vents.

WARNING: 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.

WARNING: 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.

WARNING: Any brakes that are used in conjunction with a reducer must be sized or positioned in such a way as to not subject the reducer to loads beyond the catalog rating.

CAUTION: Test run unit to verify operation. If the unit tested is a prototype, that unit must be of current production.

CAUTION: 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. Reducers located in confined spaces may require forced air-cooling.

CAUTION: Any indications from normal operating conditions, (increased temperature, noise, vibrations, power consumption etc.) suggest a malfunction, inform maintenance personnel immediately.

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 warranty or representations, expressed or implied, by operation of law or otherwise, as to the merchantability or fitness for a particular purpose of the good 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 manufacturer be liable for consequential, incidental or other 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 instruction manual should be read together with all other printed information such as catalogs, supplied by Sterling Electric.

GENERAL INFORMATION

The following instructions will help you achieve a satisfactory installation of your 2000HG series unit, ensuring the best possible conditions for a long and trouble free operation.

All units are tested and checked prior to dispatch, a great deal of care is taken in packing and shipping arrangements to ensure that the unit arrives at the customer in the approved condition.

FITTING OF COMPONENTS TO EITHER THE UNIT INPUT OR OUTPUT SHAFT

Shaft diameters below 1.5 inches are held to limits of +0.0000 -0.0005

Shaft diameters of 1.5 and above are held to limits of +0.001 -0.001

Items (such as gears, sprockets, couplings, etc.) should not be hammered onto these shafts since this would damage the shaft support bearings.

The item should be pushed onto the shaft using a screw jack device fitted into the threaded hole provided in the end of the shaft.

Items being fitted may be heated to 177 / 212 °F (80 / 100 °C) to aid assembly further.

WEATHER PROTECTION OF UNIT

All 2000HG units are provided with protection against normal weather conditions. Where units are to operate in extreme conditions, or where they are to stand for long periods without running, e.g. during plant construction, we should be notified when ordering so that arrangements for adequate protection can be made.

INSTALLATION

GEARMOTORS AND REDUCERS (SIZES 03 thru 09)

Gearmotors and Reducers of sizes 03 thru 09 are supplied ready filled with the appropriate amount of lubricant for the mounting position identified in the original order. (If the unit is to be mounted in a different position to that originally intended then the amount of lubricant in the unit will require amending. See LUBRICATION for the revised quantities.

Sizes G05 thru G09 have several oil fill and drain plugs for mounting in various positions. See TABLE 3.

NOTE: If an assembly position is not specified, assembly position 1 is assumed when providing units filled with lubricant.

GEARMOTORS AND REDUCERS (SIZES 10 thru 14)

Gearmotors and Reducer of sizes 10 to 14 are shipped less oil, for the customer to fill on site once installed. There are several oil fill and drain plugs for mounting in various mounting positions as indicated in TABLE 3. See LUBRICATION for the appropriate oil fill quantities.

FIXING TO CUSTOMER EQUIPMENT

Fixing gear unit flange facings or feet to the customer's equipment use screws to ISO grade 8.8 or SAE Grade 5 minimum.

Torque tightens to: -

Screw Size		Tightening Torque			
		Holding Down Bolts / Output Flange Bolts		Motors to Gearhead	
Metric	English	lb-in	lb-ft	lb-in	lb-ft
M6	1/4	88	7.3	88	7.3
M8	5/16	220	18.3	160	13.0
M10	3/8	450	37.5	325	27.0
M12	1/2	750	62.5	570	47.0
M16	5/8	1770	147.5	1330	110.0
M20	7/8	3100	258.3	2300	190.0
M24	1	5400	450		
M30	1-1/4	10800	900		
M36	1-1/2	19000	1585		

MOTOR CONNECTIONS

TO POWER SUPPLY

A qualified person should make connection of the electric motor to the main power supply. The current rating of the motor will be identified on the motor plate, and correct sizing of the cables to electrical regulations is essential.

MOTOR TERMINAL CONNECTION

Circuit diagrams for the correct wiring of the motor terminal box are located on the motor nameplate. Alternatively, if the motor is supplied separately or if fitted with a motor from a different manufacturer, then this should have appropriate documentation provided with it.

FOOT-MOUNTED UNITS

The following procedure is recommended for all foot mounted units.

Foot mounted units are supplied either as free standing units, or if required, mounted on a standard baseplate with a foot mounted motor correctly aligned and connected by a flexible coupling.

Clean shaft extensions and ventilator when fitted.

Secure unit or baseplate if fitted to a rigid foundation using heavy duty bolts to ISO grade 8.8 or SAE Grade 5 minimum.

Ensure baseplate is not distorted

Note: Units not supplied on baseplates should if possible be mounted on the same bedplate as the prime move.

Align unit.

Note: It is important to ensure when aligning unit on baseplate that all machined mounting points are supported over their full area.

If steel packings are used these should be placed either side of the foundation bolt as close as possible. During the finale bolting ensure the unit or baseplate is not distorted this will cause strains in the gear case resulting in errors of alignment of shafts and gearing

For units mounted on bedplates after alignment select any two diagonally opposite feet, drill ream and dowel in position.

Fit guard in accordance with local, state, and federal safety requirements.

Check motor wiring for correct direction of rotation. This is important when a backstop device is fitted.

Fill gear unit with oil (if not factory filled) as detailed in LUBRICATION.

REPLACEMENT OF OIL SEALS

Clean and drain the unit

Remove any equipment from the output shaft such as couplings and remove the output key.

Remove the old seal

Smear oil seals with grease (NLGI Grade 2 grease)

Fit replacement seal on a seal guide, slide it along the shaft and press the seal into the housing.

Fill with the correct amount of an approved lubricant. See LUBRICATION.

LUBRICATION

LUBRICATION

Gear units 03 thru 09 will be supplied filled with a quantity of EP mineral oil (TPT Grade 6E) appropriate to the intended mounting position (see TABLE 3). However if, as requested, the unit is supplied without lubricant then the oil quantity required is obtained from TABLE 2. Gear units 10 thru 14 are supplied without lubricant. Recommended lubricants are listed in TABLE 1.

NOTE: If an assembly position is not specified, assembly position 1 is assumed when providing units filled with lubricant.

PERIODIC INSPECTION

Check oil level every 3000 hours or 6 months whichever is sooner on sizes 04 thru 14. If necessary top up with the recommended grade of lubricant.

OIL CHANGES

Sizes 03 units are lubricated for life.

All other sizes of 2000HG reducers will require an oil change:

- 10,000 hours for mineral oil
- 20,000 hours for synthetic oil

TABLE 1 TEMPERATURE LIMITATIONS

The standard lubricant is suitable for operation in ambient temperatures of 32° to 95° F (0° to 35°C). Outside of this consult TABLE 1 or Power Transmission Application Engineers.

LUBRICANT	AMBIENT TEMPERATURE RANGE					
	Type E 23°F to 68°F (-5°C to 20°C)		32°F to 95°F (0°C to 35°C)		68°F to 122°F (20°C to 50°C)	
	Type H -22°F to 68°F (-30°C to 20°C)					
	AGMA Grade	ISO Viscosity Grade	AGMA Grade	ISO Viscosity Grade	AGMA Grade	ISO Viscosity Grade
EP Mineral Oil (Type E)	5E	220	6E	320	7E	460
Polyalphaolefin based Synthetic with EP additive (Type H)	5H	220	5H	220	6H	320

GREASE LUBRICATION

Where re-greasing points are provided add 2 shots monthly of NLGI 2 grade grease.

VENTILATOR

For unit sizes 04 and larger, a ventilator plug is supplied loose with each unit. Remove the filler plug as indicated in TABLE 3 and fit the ventilator plug.

TABLE 2 LUBRICANT QUANTITY (Liters)

Oil quantities are approximate, fill gearbox until oil escapes from level plug hole.
Do not overfill as excess lubricant may cause overheating and leakage.

SINGLE REDUCTION				
Mounting Position	Unit Size			
	G0512	G0612	G0712	G0812
1	0.3	0.6	1.2	2.5
2	0.3	0.6	1.2	2.5
3	0.3	0.6	1.2	2.5
4	0.4	0.7	1.5	3.5
5	0.4	0.6	1.2	2.5
6	0.5	1.0	2.0	4.1

DOUBLE REDUCTION									
Mounting Position	Unit Size								
	G0302	G0402	G0602	G0702	G0802	H0902	H1002	H1302	H1402
1	0.75	0.75	1.5	2.6	3.7	10.5	11.0	17.0	24.0
2	0.75	0.75	1.8	3.1	6.2	12.0	22.0	31.0	49.0
3	0.75	0.75	1.6	2.8	5.4	12.0	22.0	31.0	49.0
4	0.75	0.75	1.9	3.3	7.3	12.0	19.0	28.0	41.0
5	1.45	1.45	1.9	3.2	6.4	19.8	32.0	47.0	72.0
6	1.45	1.45	2.7	4.9	9.1	16.4	26.0	38.0	65.0

CONVERSION: Liters to US Gallons = Liters x 0.26

STARTING UP

PRIOR TO STARTING UP

Ensure ventilator is fitted (G04 & above).

Check oil level (G04 & above) top up if necessary.

Ensure all safety devices are in place (ie guards fitted).

Remove any safety devices fitted to prevent machine rotation.

Starting up should be preformed or supervised by suitably qualified personnel.

NOISE

The 2000HG product satisfies a noise (sound pressure level) of 85 dB (A) or less when measured at 1 meter from the unit surface. Measurements taken in accordance with AGMA 299.01 (B.S.7676 Pt1: 1993) (ISO 8579-1:1993).

CLEANING

With the drive stationary periodically clean ant dirt or dust from the gear unit and the electric motor cooling fins and fan guard to aid cooling.

Any further information or clarification required may be obtained by contacting Sterling Electric.

WARRANTY (LIMITED)

The warranty will cover all of the parts in the gearmotor or reducer unit for 12 months from the date of shipment.

The warranty is only for parts and labor. In no event shall our liability exceed the original price of the unit, nor does it cover cost of on site repair, installation, or freight.

Contact the service department for a complete explanation as to the full warranty policies and conditions of sale.

All dimensions designs and specifications are subject to change without notice.

TABLE 3 MOUNTING POSITIONS

