Load conditions must be within cataloged ratings published in the current Grove Gear / Electra-Gear catalog. See 8050 catalog for warranty terms and conditions.

For ratings when an alternate lubricant is used, check to make certain application does not exceed the allowable load capacities published in the current catalog.

Warranty From Grove Gear / Electra-Gear
See 8050 catalog for warranty terms and conditions.

Worm Gear Reducers
Installation, Lubrication and Maintenance Instructions

Selection Information

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

Warranty information from GROVE GEAR / ELECTRA-GEAR is required to operate or use reducers in sizes 813 through 824. Check to make certain application does not exceed the allowable load capacities published in the current catalog.

Reducer shall be solely responsible for determining the adequacy of the product for any and all use to which Buyer shall apply the product. The application by Buyer shall not be subject to any implied warranty or fitness for a particular purpose.

Safety Alert

For safety, Buyer or User should provide protective guards over all shaft extensions and any moving apparatus mounted thereon. The User is responsible for providing adequate warnings to personnel in the area to prevent unauthorized personnel from accessing and contacting parts of the reducer. Failure to do so may result in bodily injury and/or damage to equipment.

Hot oil and reducers can cause severe burn. Use extreme care when servicing 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 failsafe or self-locking devices. If these features are required, a properly sized, independent holding device should be provided by Buyer.

Any loads that are used in conjunction with a reducer must be sized and positioned in such a way so as to not subject the reducer to loads beyond the catalog rating. For safety, Buyer or User should provide protective guards over all shaft extensions and any moving apparatus mounted thereon. The User is responsible for providing adequate warnings to personnel in the area to prevent unauthorized personnel from accessing and contacting parts of the reducer. Failure to do so may result in bodily injury and/or damage to equipment.

Lifting supports including eye bolts are to be used for vertical lifting the gearbox only, with no other attachment attempts or extras.

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 unforeseen consequences may result.

For the full Worm Gear Reducer Installation, Lubrication and Maintenance instructions, visit: www.grovegear.com

PARTS LIST (cont’d)

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<thead>
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<th>Part No.</th>
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<tbody>
<tr>
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</tr>
<tr>
<td>2</td>
<td>OUTPUT COVERS (OPEN)</td>
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<tr>
<td>3</td>
<td>OIL SEAL (input)</td>
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<tr>
<td>4</td>
<td>HEX HEAD CAP SCREW (flange to housing)</td>
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<td>5</td>
<td>INPUT CAP</td>
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<td>13</td>
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<td>O-RING</td>
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<tr>
<td>15</td>
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HOLLOW SHAFT MODELS
H, HM, HMQ
(Refer to Single Reduction Basic Unit Components)

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HOLLOW SHAFT MODELS
H, HM, HMQ
(Refer to Single Reduction Basic Unit Components)

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HOLLOW SHAFT MODELS
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Test our unit for operability. If the unit is not a test piece, that unit must be of new production.

If the speed reducer cannot be located in a clean and dry area with access to adequate cooling air, then presenters must be taken to avoid the risk of condensation. Check the unit and the motor for:

- Mounting bolts should be roundly checked to ensure that the unit is firmly anchored to the proper operating location.

Information

The user must read and follow these instructions carefully.

The manufacturer makes no warranties, representations, expressed or implied, by operation of use or otherwise, as to the merchantability or fitness for a particular purpose of the goods purchased hereunder. Buyer acknowledges that it alone should determine whether its intended use will causes the manufacturer orcontributors to bear liability for consequential, incidental, or special damages. The manufacturer makes no warranties or representations, express or implied, by operation of use or otherwise, as to the merchantability or fitness for a particular purpose of the goods purchased hereunder. Buyer acknowledges that it alone should determine whether its intended use will causes the manufacturer or contributors to bear liability for consequential, incidental, or special damages.

General Operation

1. Run the motor which drives the reducer and check the direction of reducer output rotation. Consult the WASHGUARD® / Platinum Units

Change intervals: Standard compounded lubricants (non-synthetic) should be changed every as much months as the bevel gear lubricants embrace. Factory-stocked synthetic lubricants should be changed when performing maintenance that requires drastic overheating.

Lubrication - Standard and WASHGUARD® / Platinum Units

All standard reducers ordered from Factory are filled with ISO viscosity grade 460 polyglycol (PAG) lubricant or equivalent suitable for continuous operations within a 70 to 277 temperature range. Double and triple reduction units have synthetic or compounded lubricants installed as standard. Special lubrication recommendation for this system analysis lies with the purchaser of the speed reducer.

Oil Capacities (ounces) - Standard Units

No lubricant is provided for this system analysis. Only those reducers which are shipped standard with PAG lubricant - this lubricant is not compatible with conventional mineral or PAO synthetic oils.

SPECIAL LUBRICATION REQUIREMENTS - SIZE 810 AND LARGER

Units shipped from Factory are properly lubricated all internal components based on a specific viscosity grade polyglycol (PAG) lubricant. It is required to use the proper viscosity grade lubricant to maintain trouble-free performance. All standard reducers ordered from Factory are filled with ISO viscosity grade 460 polyglycol (PAG) lubricant. It is recommended to use ISO viscosity grade 460 polyglycol (PAG) lubricant to maintain trouble-free performance.

MOUNTING OPTIONS

Mounting Options

Position 813 815 818 821 824 826 830 832 842 852 860 870* 880* 8100*

Mounting    UNIT SIZE

Vertical Input 4 16 16 24 32 48 72 92 128 248 325 584 800 1200

Worm Over 4 12 12 20 24 40 56 72 112 188 312 560 768 1152

Worm Under Vertical Input 4 16 16 24 32 48 72 92 128 248 325 584 800 1200

Reduction

Mounting Positions

Mounting Positions

Double Reduction Worm-Worm

WASHGUARD® / Platinum Units

Double Reduction Worm-Worm

Reduction

WASHGUARD® / Platinum Units

WASHGUARD® / Platinum Units
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. (All primary units have their own oil level.)

2. Clean the seal bore of sealant. Do not use the seal inner or outer oil seal, as it will not hold the seal in place. The seal must be able to work with or without a sealant. After mounting the unit in position, remove the appropriate pipe plug and install the vent plug. Failure to do so will result in a leak. When drilling a .062 diameter hole in the seal casing (being careful not to drill into the bearing behind the seal), position chart) add proper lubrication through the filler plug until it comes out the oil level plug.

3. Before installing the new seal, use electrical tape to cover any keyways on the shaft to prevent leakage. If oil needs to be added, use an oil additive to ensure proper lubrication.

4. Grease the seal lips with bearing grease and apply a sealant to the seal bore.

5. Drill through the side of the casing where a .062 diameter hole is to be placed. The hole is to be used for greasing the seal if it is added to the bearing. (All primary units have their own oil level.) After drilling the .062 diameter hole in the seal casing (being careful not to drill into the bearing behind the seal), position chart) add proper lubrication through the filler plug until it comes out the oil level plug. If oil needs to be added, use an oil additive to ensure proper lubrication.

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.

Lubrication - Standard and Washguard®/Platform Units

Standard reducers ordered from Factory are filled with Mobil Glygoyle 460 polyglycol (e.g., sprockets, pulleys, couplings) of the proper viscosity to maintain trouble-free performance. All standard reducers ordered from Factory are shipped to properly lubricate all internal components based on specifications. The precision-madegears and bearings in Grove Gear/Electra-Gear Speed Reducers require high-grade PAG or synthetic oils. Only use lubricants rated for use with high-grade PAG. Contact the Factory for more information.

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 load. For double reduction units, the driveshafts are sensitive to torsional or other type vibration, no matter how induced. The responsibility for these all lipse with the purchase of the spacer speed reducer.

**WARNING**

1. Never operate the reducer without making sure it contains the correct amount of oil. Do not use an oil additive with oil. In addition, to release any pressure that may be present in the reducer, the shaft-mounted power transmisison device, (e.g., sprockets, pulleys, couplings) should be removed from its original tension, as shown in product catalog, or run with sustained input speed less than 1250 RPM (Continuous duty). For non-conventional reducers, refer to the catalog for specific instructions.

2. 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 load. For double reduction units, the driveshafts are sensitive to torsional or other type vibration, no matter how induced. The responsibility for these all lipse with the purchase of the spacer speed reducer.

3. Never operate the reducer without making sure it contains the correct amount of oil. Do not use an oil additive with oil. In addition, to release any pressure that may be present in the reducer, the shaft-mounted power transmission device, (e.g., sprockets, pulleys, couplings) should be removed from its original tension, as shown in product catalog, or run with sustained input speed less than 1250 RPM (Continuous duty). For non-conventional reducers, refer to the catalog for specific instructions.

4. Grease the seal lips with bearing grease and apply a sealant to the seal bore.

5. Drill through the side of the casing where a .062 diameter hole is to be placed. The hole is to be used for greasing the seal if it is added to the bearing. (All primary units have their own oil level.) After drilling the .062 diameter hole in the seal casing (being careful not to drill into the bearing behind the seal), position chart) add proper lubrication through the filler plug until it comes out the oil level plug. If oil needs to be added, use an oil additive to ensure proper lubrication.

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.

Maintenance - Standard Units

Your Grove Gear / Electro-gear reducer is specifically designed and adapted at Factory. Disassembly or replacement of components must be done by Grove Gear / Electro-gear to maintain the warranty. Seals:

1. Use only the specified seal to prevent leakage. Whenever changing a seal or when replacing a seal, replace all lip seals.

2. 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 load. For double reduction units, the driveshafts are sensitive to torsional or other type vibration, no matter how induced. The responsibility for these all lipse with the purchase of the spacer speed reducer.

3. Never operate the reducer without making sure it contains the correct amount of oil. Do not use an oil additive with oil. In addition, to release any pressure that may be present in the reducer, the shaft-mounted power transmission device, (e.g., sprockets, pulleys, couplings) should be removed from its original tension, as shown in product catalog, or run with sustained input speed less than 1250 RPM (Continuous duty). For non-conventional reducers, refer to the catalog for specific instructions.

4. Grease the seal lips with bearing grease and apply a sealant to the seal bore.

5. Drill through the side of the casing where a .062 diameter hole is to be placed. The hole is to be used for greasing the seal if it is added to the bearing. (All primary units have their own oil level.) After drilling the .062 diameter hole in the seal casing (being careful not to drill into the bearing behind the seal), position chart) add proper lubrication through the filler plug until it comes out the oil level plug. If oil needs to be added, use an oil additive to ensure proper lubrication.

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.

Seals: The Grove Gear / Electro-gear line of speed reducers utilizes premium quality seals, which are the state of the art in sealing technology. Seals, however, are a wear item and eventually need to be replaced. To improve the life of your reducer, however, seal replacement should be performed when: 1. The seal has been removed for checking the shaft seal. 2. A shaft seal inspection determines the life of the shaft seal. 3. The shaft seal inspection determined the life of the shaft seal.

1. Remove the unit from any shaft configuration in which the seal is used. Take the seal off the shaft and inspect for wear. If the seal is worn, replace it. Clean the shaft to remove any residue. Use an oil additive to ensure proper lubrication.

2. 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 load. For double reduction units, the driveshafts are sensitive to torsional or other type vibration, no matter how induced. The responsibility for these all lipse with the purchase of the spacer speed reducer.

3. Never operate the reducer without making sure it contains the correct amount of oil. Do not use an oil additive with oil. In addition, to release any pressure that may be present in the reducer, the shaft-mounted power transmission device, (e.g., sprockets, pulleys, couplings) should be removed from its original tension, as shown in product catalog, or run with sustained input speed less than 1250 RPM (Continuous duty). For non-conventional reducers, refer to the catalog for specific instructions.

4. Grease the seal lips with bearing grease and apply a sealant to the seal bore.

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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.
Test our unit to verify operation. If the unit is not a repetition, this test must be of random production.

• If the speed reducer cannot be located in a clear and dry area with access to adequate cooling air, then precautions must be taken to avoid the ingestion of dirt and any obstruction to the ventilation paths.

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

Installation

1. Mount the unit to a rigid flat surface using grade 5 or higher fasteners. The mounting fasteners should be the largest standard grade 5 fasteners which will not lift the flange without selecting a larger, grade 5 fastener which will not lift the flange at a higher input speed.

2. For shipment, place plug in the location shown on page 5. On double reduction units both the primary and the secondary must be fitted. Failure to use the unit can cause premature wear or burn of the bearings.

3. Always check for proper oil level after filling. Do not overfill or underfill with oil, or injury to moving parts, seal lip damage.

Lubrication - Standard and Worm Over

All Grove Gear/Electra-Gear reducers require lubrication. Standard compounded lubricants (non-synthetic) should be changed every six months. Standard compounded lubricants (synthetic) lubricant is required only when performing maintenance that requires gearbox disassembly.

- Do not operate the reducer without oil making sure the correct amount oil is in place. Oil will not lift the reducer without oil, in case of injury to reducer, external holding device is required if any evidence of backdriving is not desired.

- Do not mix oil types. Standard compounded lubricants (non-synthetic) should be changed every six months. Standard compounded lubricants (synthetic) lubricant is required only when performing maintenance that requires gearbox disassembly.

- All Grove Gear/Electra-Gear reducers are completely sealed and oil level should not be added or changed, ONLY compatible polyglycol lubricants should be used. Contact the factory for information.

- Standard compounded lubricants (non-synthetic) should be changed every six months (e.g., sprockets, pulleys, couplings) mounted power transmitting device.

- Oil should rise to bottom edge of level hole. Do not overfill.

- For Ceramic Drive units different lubrication requirements apply (i.e., sprockets, pulleys, couplings) mounted power transmitting device.

- Oil should rise to bottom edge of level hole. Do not overfill.

- Note: High oil level applies to all size 842 & larger 826, 832.)

- Seal the reducer. The Groove Gear/Electra Gear line of speed reducers utilizes premium supply seals which are the state of the art in sealing technology. Seals, however, are an area that occasionally need to be replaced.

Seal 

- All Grove Gear/Electra Gear line of speed reducers utilizes premium supply seals which are the state of the art in sealing technology. Seals, however, are an area that occasionally need to be replaced.

- CAUTION: Before replacing the speed reducer, check to ensure that the shaft is not damaged or bent.

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2. Attaching the load: On direct coupled installations, check shaft and coupling alignment between Grove Gear/Electra-Gear.

3. Connect motor to speed reducer.

Special considerations should be given to high-inertia or equivalent suitable for continuous operation within 10-120°F (38-49°C) ambient temperature range. Double and triple output units with built-in devices (such as WASHGUARD®) should be considered. Special lubrication requirements (see page 5).

Lubrication - Standard and WASHGUARD®/Platinum Units

DO NOT MIX DIFFERENT TYPES OF OILS IN THE REDUCER.

CAUTION

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 of the driven power source. As a result, the unit may be unable to perform its intended function. In addition, the machine superstructure may be damaged.

The precision-made gears and bearings in Grove Gear/Electra-Gear Speed Reducers require high-grade lubricants to ensure long service life and prevent premature failure. All standard reducers ordered from the factory are filled with ISO viscosity grade 460 polyglycol (PAG) lubricant. It is advisable to use this lubricant to maintain the factory warranty when changing a factory oil.

DO NOT CHANGE MOUNTINGPOSITIONSWITHOUTCONTACTINGFACTORY.

A unit will be factory installed.

Frequent check the oil level of the reducer. If oil level is low, (refer to reducer vent and level position chart) add proper lubrication through the filler plug until it comes out the oil level plug.

Seals: The Grove Gear/Electra-Gear line of speed reducers utilize premium quality seals which are the responsibility of the user to change.

WASHGUARD® / Platinum Units

Lubrication - Standard and WASHGUARD® / Platinum Units

Standard lubricants required from Factory are filled with Mobil Gilgloy 460 polyglycol (PAG) lubricant or equivalent suitable for continuous operation within -10 to 120°F (-23 to 49°C) ambient temperature range. Double and triple output units with built-in devices (such as WASHGUARD®) should be considered. Special lubrication requirements (see page 5).
Load conditions must be within cataloged ratings published in the current Grove Gear / Electra-Gear Catalog (available upon request).

Warranty: Grove Gear / Electra-Gear - See 8500 catalog for warranty terms and conditions.

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**Worm Gear Reducers**

**Installation, Lubrication and Maintenance Instructions**

**Selection Information**

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

With or without brakes, Grove Gear / ELECTRA GEAR is required to operate or use reducers in static or semi-static 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.

**Safety Alert**

For safety, Buyer or User should provide protective guards over all shaft extensions and any moving apparatus mounted thereto. The User is responsible for checking all applicable safety, guides to lines and providing necessary guards to reduce the risk of injury in both 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 failsafe or self-locking devices. If these features are required, a properly sized, independent holding device should be utilized.

- Any bolts that are used conjunction with a reducer must be secured in position at such a way as to not subject the reducer to loads beyond the catalog rating.

- Lifters includes needles are used to vary the lifting the gear shafts only, with no other associated attachments or motors.

- Use an oil with an AG addition on with backstop on any reducer to prevent possible operation of the backstop. Injury to personnel, damage to the reducer or other equipment may result.

- Overheating has resulted shaft shifting and shafts to stress which may create premature bearing failure and/or shaft breakage from bending fatigue, if not properly supported.

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<td>2</td>
<td>111  HEXHEADCAPSCREW</td>
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<tr>
<td>3</td>
<td>112 DRUM HUB</td>
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<tr>
<td>4</td>
<td>113 + OUTPUT POWERSHAFT (DOUBLE)</td>
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<tr>
<td>5</td>
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For the full Worm Gear Reducer Installation, Lubrication and Maintenance instructions, visit: www.grovegear.com

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**Worm Gear Reducers**

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**Grove Gear**

Union Grove, Wisconsin 53182

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FAX: 262-878-1768

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www.grovegear.com
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**HOLLOW SHAFT MODELS**

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- **Worm Gear Reducers**
  - Installation, Lubrication
  - Maintenance Instructions
  - Selection Information
  - Safety Alert

**Selection Information**

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

Written authorization from GROVE GEAR / ELECTRA-GEAR is required to operate or use reducers in environments where hazardous materials are present.

Bogens shall be solely responsible for determining the adequacy of the product for any and all uses to which Bogen shall apply the product. The application by Bogen shall not be subject to any implied warranty of fitness for a particular purpose.

**Safety Alert**

- For safety, Buyer or User should provide protective guards over all shaft extensions and any moving apparatus mounted thereto.
  - The user is responsible for providing a functional guarding system.
  - 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 failsafe or self-locking devices. If these conditions are required, a properly sized, independent holding device should always be provided by the user.

- Any bolts that are used in conjunction with a reducer must be sized and positioned in such a way as to not subject the reducer to loads beyond the catalog rating.

- For lifting operations, use the lifting devices provided. Lift only with the lifting devices provided. Use of any unauthorized lifting devices may result.

- Overhead loads subject shaft bearings and shafts to stress which may cause premature bearing failure and/or shaft breakage from bending fatigue, if not properly supported.

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- For lifting operations, use the lifting devices provided. Lift only with the lifting devices provided. Use of any unauthorized lifting devices may result.

- Overhead loads subject shaft bearings and shafts to stress which may cause premature bearing failure and/or shaft breakage from bending fatigue, if not properly supported.
Load conditions must be within cataloged ratings published in the current Grove Gear / Electra-Gear Catalog (available upon request). Written authorization from GROVE GEAR / ELECTRA-GEAR is required to operate or use reducers in stack or people moving devices. Check to make certain application does not exceed the allowable load capacities published in the current catalog.

For safety, Buyer or User should provide protective guards over all shaft extensions and any moving apparatus mounted to a reducer. Liftingsupportsincludingeyeboltsaretobeusedforverticallyliftingthegearbox.Forcertainapplicationsofpower,anybrakesthatareusedinconjunctionwithareducermustblesizedorpositionedin such as a way so as to not subject the reducer to loads beyond the catalog rating.

Warranty From Grove Gear / Electra-Gear

Warranty From Grove Gear / Electra-Gear

I. WARRANTY

1. WARRANTY LIMITATIONS

For the Full Worm Gear Reducer Installation, Lubrication and Maintenance Instructions, visit: www.grovegear.com

H. HML, HMQ

(H Refer to Single Reduction Basic Unit Components)

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(a) Installation, Lubrication and Maintenance Instructions

(b) Installation, Lubrication and Maintenance Instructions

(c) Installation, Lubrication and Maintenance Instructions

(d) Installation, Lubrication and Maintenance Instructions

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