



WORM GEAR REDUCER

INSTALLATION AND MAINTENANCE MANUAL

107 W. Railroad Street, Verona, WI 53593

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WORM GEAR REDUCER INSTRUCTION MANUAL

SELECTION INFORMATION

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

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.

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 Ellis Manufacturing.

GENERAL OPERATION

1. Run the motor, which drives the reducer, and check the direction of reducer output rotation. Consult motor nameplates 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.

CAUTION: 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.

RUN-IN PERIOD

The maximum efficiency of worm reducers is obtained after a "Run-In" period. The length of time required will depend on the load applied and may be two to four hours at rated load and will be considerably longer at lighter loads. Overloading will not decrease the "Run-In" time but will cause severe wear and damage to the unit. During "Run-In", higher than normal motor current and temperatures along with lower efficiency and output torque can be expected.

WARNING: 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. 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.

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

CAUTION: 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.

CAUTION: 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 AND VENTILATION

Ellis Manufacturing right angle worm reducers under continuous operation require ventilation of the oil bath in order to relieve excessive pressure build up due to normal operating temperatures. Units are supplied with a plastic breather that allows free exchange of air between the oil chamber and the outside environment.

Note: Some gear lubricants contain EP additives that can be corrosive to gear bronze. Avoid lubricants that are compounded with sulfur and/or chlorine. For temperature ranges not shown, contact factory. For lubrication requirements of helical reducers of helical/worm combinations, contact the factory.

OIL CAPACITIES (FLUID OUNCE)

Mounting Position	MODEL NO.	
	RA-GR838	RA-GR612-1
Worm Under	28	31

16 floz = 1 pint
2 pints = 1 quart
4 quarts = 1 US gallon

SYNTHETIC LUBRICANTS

All RA-GR838 reducers ordered from the factory are shipped with Mobil SHC 632 or equal synthetic oil. All RA-GR612-1 reducers ordered from the factory are shipped with Mobil SHC 634 or equal synthetic oil. Synthetic lubricants provide the potential for numerous benefits including wider operating temperature range and increased interval between changes. Use of synthetics can cause problems if they are not compatible with the seals or conventional lubes they replace. The synthetic lubrication provided with the reducer is good for ambient temperature ranges of -10° F to 105° F and is compatible with standard compounded oil. If the ambient temperature will be outside the range for the lubricant installed, contact the factory.

Note: Some gear lubricants contain EP additives that can be corrosive to gear bronze. Avoid lubricants that are compounded with sulfur and/or chlorine. For temperature ranges not shown, contact factory.

Change Intervals: Synthetic lubricants should be changed every two years or 6000 hours, whichever comes first.

CAUTION: Oil should be changed more often if reducer is used in a severe environment. (*i.e. dusty, humid*)

MAINTENANCE

Your Ellis Manufacturing reducer has been tested and adjusted at the factory. Dismantling or replacement of components must be done by Ellis Manufacturing to maintain the warranty.

Frequently check the oil level of the reducer. If oil level is low, add proper lubrication through the filler plug until it comes out the oil level plug.

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

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

Seals: The Ellis Manufacturing line of speed reducers utilizes premium quality Viton® seals which are the state-of-the-art in sealing technology. Seals are, however, a wear item and eventually need to be replaced. Seal kits are available and contain all the necessary seals, O-rings, and shims for a given reducer size based on style. Refer to the parts list for available kits. Replacement of the seals 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.

CLASS OF SERVICE

All capacity ratings are based on American Gear Manufacturers Association (AGMA) Standards. Load conditions must be within cataloged ratings published in the current Ellis Manufacturing Catalog (available upon request).

LONG-TERM STORAGE (6 MONTHS UP)

Units must be stored indoors, in a dry, warm temperature.

Completely fill the unit with oil.

Rotate the input shaft so that the output shaft rotates at least one revolution per month.

Completely cover the input and output shaft with grease.

At the time of start up, drain the storage oil, install the breather, and fill to the proper oil level with correct lubricant for the operating condition.

WARRANTY (LIMITED)

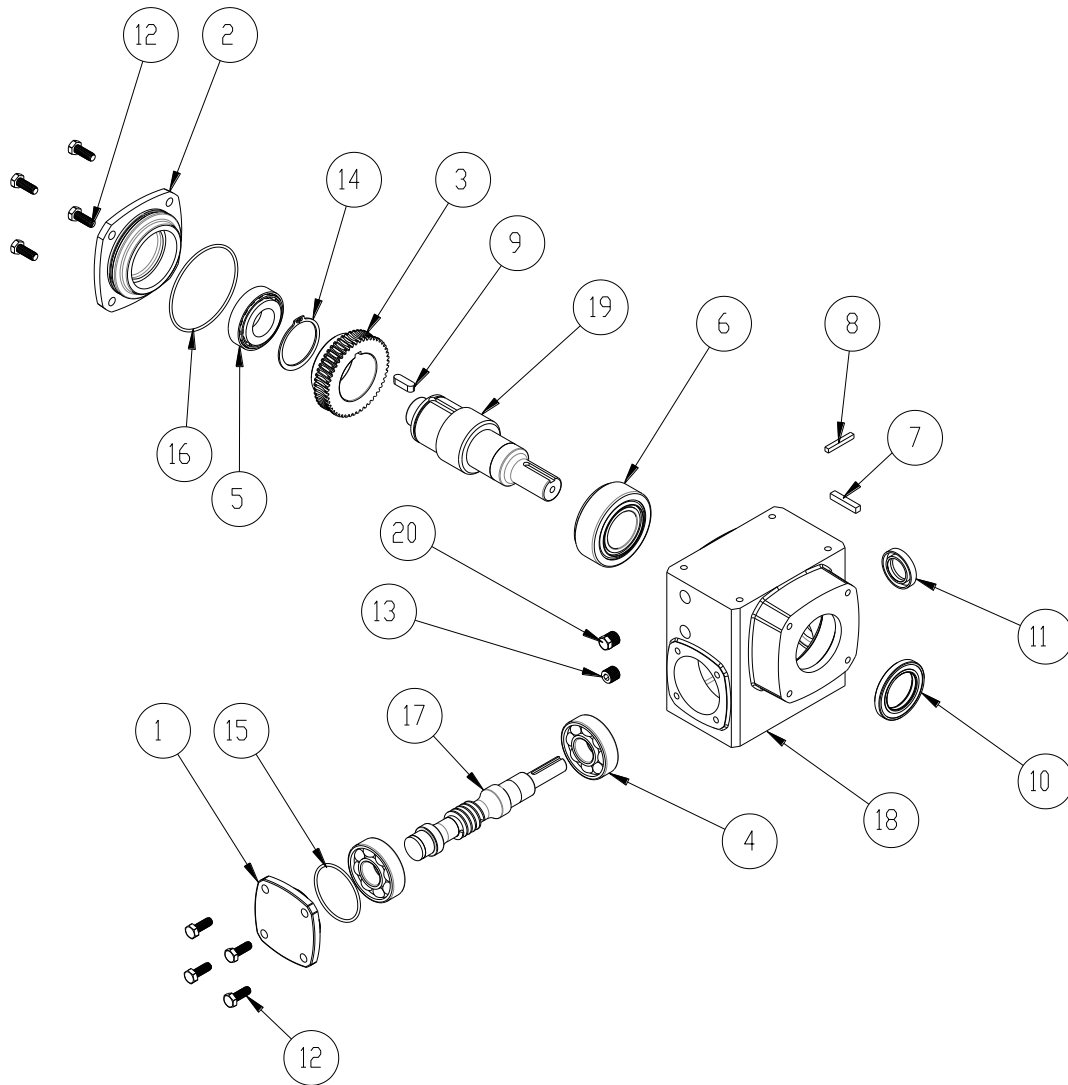
The warranty will cover all of the parts in the reducer unit for 12 months from the date of shipment.

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.

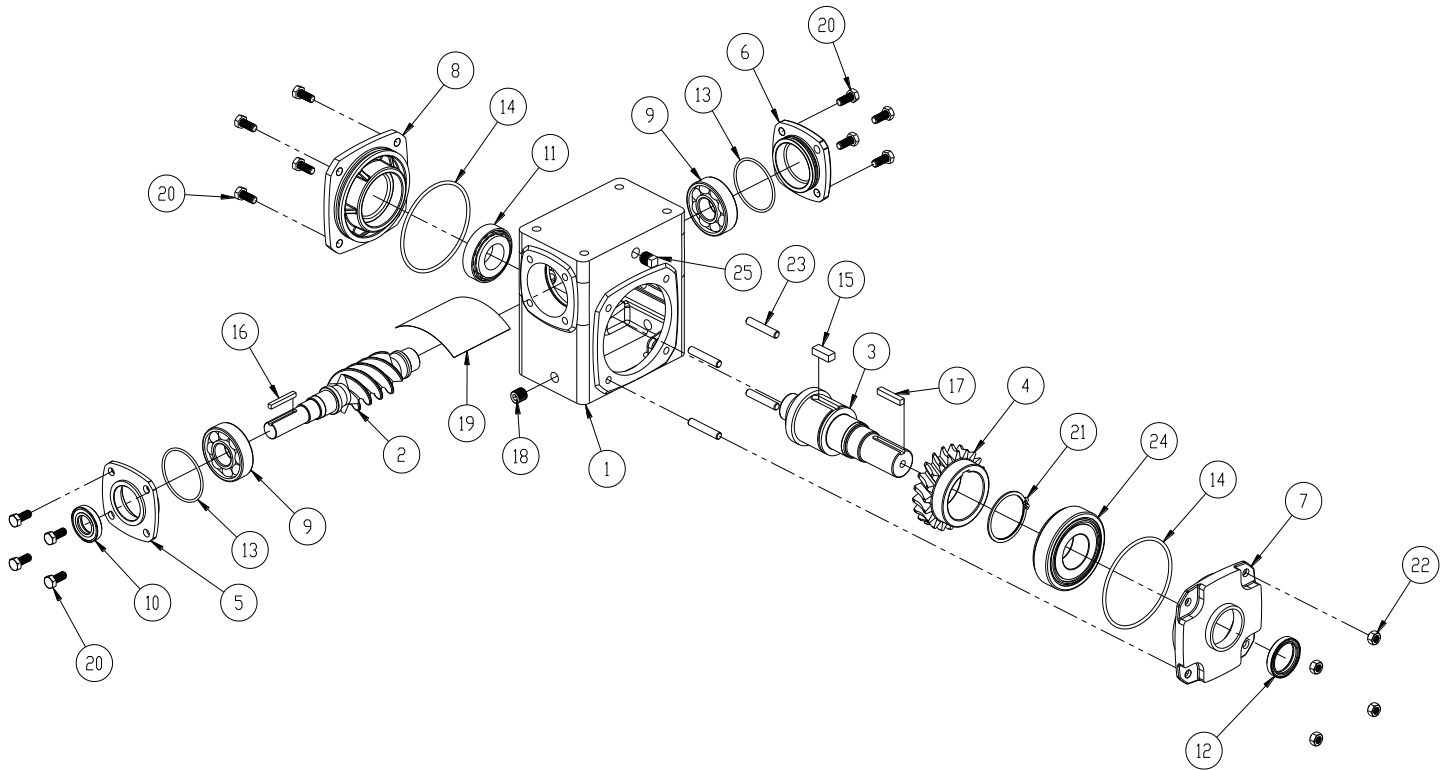
All dimensions designs and specifications are subject to change without notice.

Parts List – Model RA-GR838



Item No.	Part No.	Description	Qty	Item No.	Part No.	Description	Qty
1	212 0248 2	ODE Solid Input Cap	1	11	404 0288 2	25 x40 x 7 Viton Seal	1
2	212 0245 5	ODE Solid Output Cap	1	12	418 0211 1	5/16-18 x 7/8 Hex Cap Screw	8
3	2206-50-HG	Worm Wheel	1	13	499 0388 3	1/4 NPT Plug	2
4	400 0495 5	6305 Bearing	2	14	499 0414 2	5100-196 External Snap Ring	1
5	400 0500 0	30206 Bearing	1	15	499 2531 9	AS568-140 O-Ring	1
6	400 0553 7	32208 Bearing	1	16	499 2535 5	AS568-152 O-Ring	1
7	402 0034 7	1/4 x 1/4 x 1-3/8 Key	1	17	2206-50-SW-ELR2	Worm Shaft	1
8	402 0027 4	3/16 x 3/16 x 1-3/8 Key	1	18	210 0339 1	Cast Iron Housing	1
9	402 0312 8	8 x 7 x 25 Metric Key	1	19	220 6489 1	Output Shaft	1
10	404 0293 7	40 x 62 x 7 Viton Seal	1	20	499 2561 9	Breather Plug	1

Parts List – Model RA-GR612-1



Item No.	Part No.	Description	Qty	Item No.	Part No.	Description	Qty
1	210 0338 2	Cast Iron Housing	1	14	499 2536 4	AS568-241 O-Ring	2
2	2238-40-SW	Worm Shaft	1	15	402 0313 7	10 x 8 x 25 Metric Key	1
3	220 6316 4	Output Shaft	1	16	402 0028 2	3/16 x 3/16 x 1-1/2 Key	1
4	2238-40-HG	Worm Wheel	1	17	402 0034 7	1/4 x 1/4 x 1-3/8 Key	1
5	212 0479 1	DE Input Cap	1	18	499 0388 3	1/4 NPT Plug	4
6	212 0248 2	ODE Solid Input Cover	1	19	499 2558 2	Splash Guard	1
7	212 0478 2	DE Output Cap	1	20	418 0211 1	5/16-18 x 7/8 Hex Cap Screw	12
8	212 0250 0	ODE Solid Output Cover	1	21	499 2284 4	5102-215 External Snap Ring	1
9	400 0495 5	6305 Bearing	2	22	418 0123 9	5/16-18 x Hex Nut	4
10	404 0287 3	22 x 40 x 7 Viton Seal	1	23	418 1727 3	5/16-18 x 1-3/4 Stud	4
11	400 0500 0	30206 Bearing	1	24	400 0552 8	30308 Bearing	1
12	404 0331 9	35 x 45 x 7 Viton Seal	1	25	499 2561 9	Breather Plug	1
13	499 2531 9	AS568-140 O-Ring	2				

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