

Grove Gear Frequently Asked Questions

- **When do you use an inline gear reducer versus a worm gear reducer?**

Worm gear reducers offer the highest torque-to-dollar value with high ratios in the smallest package. Worm reducers are right angle reducers, where the input/output shafts of an inline reducer are parallel to each other. Inline reducers are used in higher horsepower applications where long-term operational efficiency is more important than initial cost.

- **When should I use a C-face quill input and when should I use a C-faced coupled style reducer?**



Motorized C-Flange Quill Input



Motorized C-Flange Coupling Input

The quill style reducer is used because it's a compact design and simple to install. Nearly 85-90% of all reducers sold are quill input style. This design is not recommended where continuous reversing service or system jams or stalls are apparent.

The coupling style reducer should be used for applications where the system is subjected to continuous reversals, stalls or jams. This design is available on Grove and Electra worm reducers and utilizes a longer "flower pot" input flange design.

- **What is meant by "shaft hand" of the worm gear reducer? Can this shaft hand be changed?**

The shaft hand refers to the orientation of the output shaft. If you are looking into the input shaft and the output shaft is on the right, this is a right handed reducer and vice-versa for the left handed reducers. A double output will have output shafts on both sides. It is possible to change the handedness of our 800 series reducers; refer to the Cast Iron (GR Series) link under the "Products" tab on the Grove Gear website for a video explaining how to change the handedness of a worm gear (<http://www.grovegear.com/products/worm-gear-reducers/gr/>).

- **Do I need to perform annual examination of my gearbox?**

Wear and tear is common in gear reducers, so inspection of basic functions is encouraged. Frequently check the oil level of the reducer. If oil level is low add proper lubrication. Inspect the vent plug often to insure it is clean and operating. Always check for proper oil level after filling. Do not mix different oils in the reducer. Mounting bolts should be routinely checked to ensure that the unit is firmly anchored for proper operation.

- **What is a “Service Factor” for gearing?**

A method of adjusting a reducer’s published mechanical rating to reflect the applications load characteristics. These service factors ensure that the reducers are being used in a manner that will not result in the reducer failing, so it important to pay attention to as a failing reducer is obviously a safety issue. AGMA (American Gear Manufacturer’s Association) has established standardized service factors by application as shown in the Engineering section of catalog 8050 (page 644 and shown on the next page). Service factors are usually between 1.0 and 2.0.

SERVICE FACTOR TABLE

Duration of Service (Hours per day)	Uniform Load	Moderate Shock	Heavy Shock	Extreme Shock
Occasional 1/2 Hour	x	x	1.00	1.25
Less than 3 Hours	1.00	1.00	1.25	1.50
3-10 Hours	1.00	1.25	1.50	1.75
Over 10 Hours	1.25	1.50	1.75	2.00

*Unspecified service factors should be 1.00 or as agreed upon by the user and manufacturer.

Lube or Oil Information

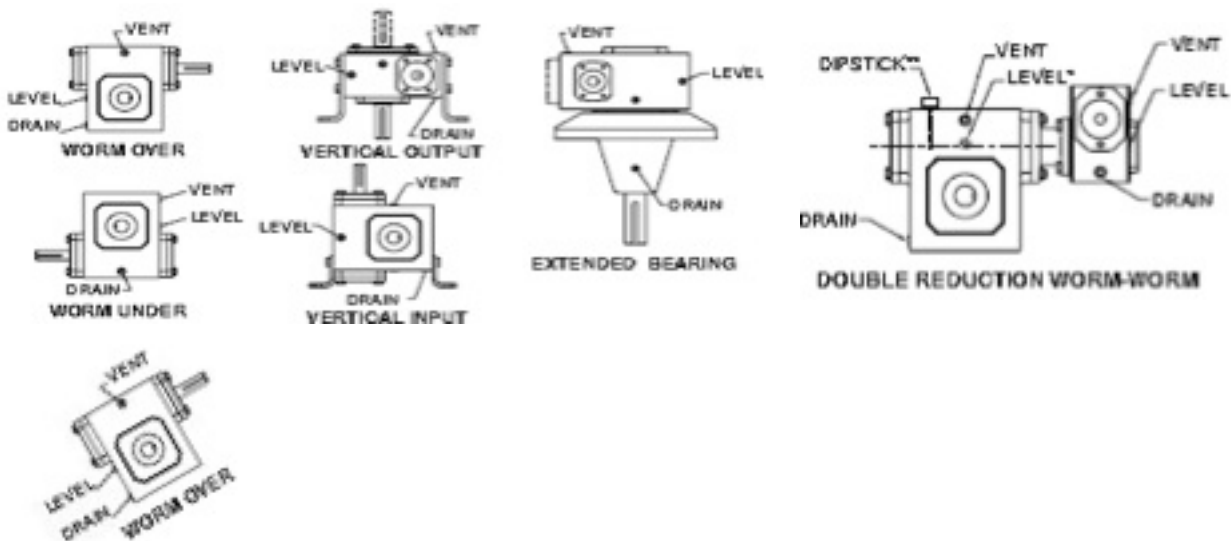
Here's a list of common concerns that have to do with gearbox oil and lubricant.

- We fill most of our boxes with Mobile Glygoyle 460 polyalkalene glycol (PAG) lubricant.
- Mobil PAG 460 is H1 Food Grade approved lube.
- The high efficiency helical inline, helical bevel, and helical parallel reducers are filled with Mobilgear 600XP 220 oil.
- The high efficiency helical worm reducers are filled with Mobil 600W cylinder oil.
- The stainless steel helical inline and helical bevel units use Lubriplate FMO-900 AW oil.
- If a customer wants to use different oil than was used at the factory make sure they choose an oil with the same viscosity rating (the PAG 460 has an ISO viscosity grade of 460).
- Two procedures for changing oil:
 - o If the customer is changing to a different oil other than the what the box was originally filled with, they should first drain all the oil that is in the gearbox, fill the gearbox with the new oil to the proper level, let the gearbox run for 30 min to 1 day, drain the oil, then fill the gearbox with the new oil a second time. The purpose of doing this is to make sure all of the Mobil PAG oil is drained out of the gearbox.
 - o If switching between a PAG (polyalkalene glycol) type oil and a PAO (polyalpha-olefin) type oil a di-ester should be used to flush the reducer of the PAG. A good product to use for this is Mobil Rarus 827 or 829. Flush once with the Rarus 827/829 and then a second flush with the fluid that they are converting to. The second flush should not be used as the final charge, but can be used in flushing additional units.
- The Mobil PAG 460 oil has a recommended temperature rating of -10° F to 105° F ambient for continuous duty, note that it is common for the internal temperature of the reducers to rise 80-100° F above ambient. Depending on the application, the customer may be able to use the Mobile PAG 460 oil at ambient temps up to 120° F; if you run into this gather info about the application and contact the factory.
- Reducers size 870 and above are shipped without lubricant.
- As long as the gearbox is run within the correct temperature range there is no need to change the synthetic oil unless performing maintenance requiring disassembly per the Grove Installation, Lubrication, and Maintenance Instructions included with the unit.
- Cold weather applications use Nitrile seals, we consider "cold" to be between -40° F and -10° F, cannot offer options below -40 F.
- SHC 634 oil can be used in ambient temperatures down to -30° F, SHC 629 and lower viscosity to -40° F.

Oil Capacities (Ounces) - Standard Units

Mounting Position	UNIT SIZE													
	813	815	818	821	824	826	830	832	842	852	860	870*	880*	8100*
Worm Over	4	12	12	20	24	40	56	72	112	188	312	560	768	1152
Worm Under	8	16	20	28	40	60	84	108	152	304	328	524	820	1280
Vertical Output	4	16	16	28	32	48	68	88	128	248	320	332	460	640
Vertical Input	4	16	16	24	32	48	72	92	128	248	325	584	800	1200
Extended Bearing	N/A	N/A	N/A	N/A	N/A	N/A	N/A	128	142	272	432	640	1008	1632
Worm Over on Secondary Unit of Double Reduction	N/A	N/A	N/A	N/A	N/A	N/A	N/A	192	308	320	485	805	1114	1716
Stainless Steel and Washguard- All Mounting Positions	6	14	18	26	32	78	78	98	N/A	N/A	N/A	N/A	N/A	N/A

*Shipped Dry



- Questions on oil fill levels or vent plug locations on high efficiency units refer to 8050 catalog or contact factory.
- If reducer is at an angle, make sure to specify if the input/output is angled up or down so vent plugs can be installed appropriately.
- Bravo, Quadro, and Lecentric units are sealed for life (don't need to worry about vent plugs).

