

# HUB CITY WORM GEAR SPEED REDUCERS

## LUBRICATION & INSTALLATION INSTRUCTIONS SINGLE & DOUBLE REDUCTION

**CONGRATULATIONS...** Your decision to purchase a Worm Gear Speed Reducer from HUB CITY will provide you with many years of trouble free service if the following lubrication and installation instructions are adhered to.

### IMPORTANT SELECTION INFORMATION

Read **ALL** instructions and safety precautions prior to operating unit. Injury to personnel or unit failure may be caused by improper installation, maintenance, or operation.

Check to verify that the application does not exceed the capacities published in the current catalog. Written authorization from HUB CITY is required to operate or use gear units in man lift or people moving devices.

The system of connected rotating parts must be free from critical speed, torsional, or other type vibration, regardless of how induced. The responsibility for this system analysis lies with the purchaser of the gear unit.

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

HUB CITY WORM GEAR SPEED REDUCER — These instructions apply to all HUB CITY Worm Gear Speed Reducers.

### LUBRICATION

#### CAUTION

**ALL HUB CITY WORM GEAR SPEED REDUCERS ARE SHIPPED DRY. OIL MUST BE ADDED PRIOR TO OPERATION.**

Do not operate the unit without making sure it contains the correct amount of oil. Do not overfill or underfill with oil, or injury to personnel, unit, or other equipment may result.

All HUB CITY Worm Gear Speed Reducers are splash lubricated. The unique design of the reducers permits nearly universal mounting by placing a fill, drain and oil level plug at the proper location for mounting positions. See Mounting Position Figures that follow.

#### CAUTION

Review the approved mounting positions and lubrication levels identified in the **Mounting Position Figures** on page 3 of this document. Do not deviate from the mounting positions or lubrication levels shown without contacting the factory.

After selecting the position that the unit will be mounted but before operating: Remove Fill and Breather Plug (1X) and Oil Level Plug (2X). Clean threads on the removed plugs and the plug holes with degreaser. Fill gear box with an approved lubricant (see information this page) until lubricant starts coming out of Oil Level Plug (2X) hole. Install plugs securely in gear case. Note — Plug with Breather (1X) must always be installed in the top of gear case, opposite Drain Plug (3X).

**VARIATIONS FROM NORMAL CONDITIONS** — Input speeds higher than 1,800 RPM may require an adjustment in oil level. For vertical input, factory modifications may be required, or review vertical shaft lubrication specification included with vertical shaft mounting kit. For vertical output, factory modifications (grease pack and nilos ring) may be required, or review vertical shaft lubrication specification included with vertical shaft mounting kit.

**LUBRICANT** — Use only lubricants which are recommended for enclosed Bronze Worm Gears, with ISO viscosity Grade 460, or AGMA 7. (Extreme ambient or operating temperatures may require different viscosities. Consult the factory for recommendations.) Choose conventional oil, PAO Synthetic oil, or PAG Synthetic oil, depending on the application.

**CHANGING LUBRICANT** — After the first 100 hours of operation, drain out initial oil, flush out the gear case with an approved nonflammable, non-toxic solvent, such as Whitmore's Flushing Oil (#06802030) or Medallion™ Flushing Oil Kosher (#06812010), and refill. Thereafter, oil should be changed at least every 2500 operating hours or every 6 months — whichever occurs first.

#### WARNING

Oil, housings, and other components can reach high temperatures during operation, and can cause severe burns. Use extreme care when removing lubrication plugs and vents while servicing the unit.

#### CAUTION

Oil should be changed with greater frequency if unit is used in a severe environment such as dusty or humid.

#### APPROVED LUBRICANTS — WORM GEAR REDUCERS

HUB CITY GEAR LUBRICANT	GL-460	SYNTHETICS
AMBIENT TEMPERATURE °F	40 to 100	-10 to 125
°C	4 to 38	-23 to 52
OPERATING TEMPERATURE °F	To 225	To 225
°C	To 107	To 107
AGMA NUMBER	7 COMP.	7
ISO-ASTM VISCOSITY GRADE	460	460

#### HUB CITY WORM GEAR LUBE GL-460

HUB CITY GL-460 is a premium quality, heavy bodied lubricant formulated and recommended for enclosed worm gear drives. It is suitable for splash lubrication of worm gearing at moderate to high speeds and temperatures. Lubricants of this type and meeting the above specifications may be substituted where HUB CITY LUBRICANTS are recommended. Lubricant selected must be compatible with bronze gear materials and viton rubber seals. For ambient temperature above 100°F (38°C) or operating temperature above 225°F (107°C) consult the factory.

#### HUB CITY SYNTHETIC 634 LUBRICANT

HUB CITY SYNTHETIC 634 LUBRICANT is a premium gear box lubricant which is recommended for worm gear drives in most applications, especially those subject to low start up temperatures and/or high operating temperatures. This lubricant is a synthesized hydrocarbon based material which provides longer lubrication intervals because of its increased resistance to thermal and oxidative degradation. This decreases maintenance costs. Further economy is realized because of the increased efficiency of units lubricated with HUB CITY SYNTHETIC 634 LUBRICANT. This lubricant can be operated at temperatures considerably above 225°F (107°C). However, the factory should always be contacted prior to operating at high temperatures as damage may occur to seals or other components. Lubricant manufacturer and HUB CITY should be contacted when substituting a premium lubricant where HUB CITY SYNTHETIC 634 is recommended.

#### HUB CITY PAG 460 H1 SYNTHETIC LUBRICANT

HUB CITY PAG 460 H1 Synthetic Lubricant is recommended gear drives in most applications. This lubricant provides the ultimate efficiency and thermal capacity, and wide operating temperature range, excellent for low start-up temperatures and high operating temperatures. Hub City PAG 460 H1 is approved for USDA/NSF H1 use in food processing facilities where there is the possibility of incidental contact with food. This fully synthetic polyglycol lubricant has high thermal and oxidative stability for longer lubrication intervals, and is well suited for lubed-for-life applications. The high efficiency reduces operating costs, and the increased life reduces maintenance costs. PAG Synthetic Lubricants are not compatible with any other lubricants, and must never be mixed. Topping off with the wrong lubricant could cause unit failure.

PAG Synthetic Lubricants absorb more water than other lubricants, so extra care should be taken not to expose the PAG lubricants to excessive moisture.

Food grade lubricants must always be stored separately from non-food grade lubricants, to prevent the possibility of using the wrong lubricant. Separate pumps and containers must always be used with food grade lubricants, to prevent contamination.

#### CAUTION

Do not mix nonsynthetic and synthetic oil in the unit. Do not mix PAG synthetic with any other oil type.

#### CAUTION

If unit is used in the food or drug industry (including animal food) consult the petroleum supplier or HUB CITY for recommendations of lubricants which meet the specifications of FDA, USDA and/or other authoritative bodies having jurisdiction. Standard lubricants are not suitable for these applications or these industries. Hub City PAG 460 H1 is approved for USDA/NSF H1 service.

# HUB CITY WORM GEAR SPEED REDUCERS

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### ▲ CAUTION

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#### APPROXIMATE OIL CAPACITIES — WORM GEAR REDUCERS SERIES 130 THRU GW100

SERIES	MOUNTING POSITION	NOTES	QUANTITY (Pints)		
			Shaft Output	Hollow Bore Output	Drop Bearing
130	Worm Top		0.44	0.44	N/A
	Worm Bottom		0.38	0.38	N/A
	Vertical Input		0.31	0.31	N/A
	Vertical Output	---	0.31	0.31	N/A
W150	Worm Top		1.50	1.44	N/A
	Worm Bottom		1.00	1.00	N/A
	Vertical Input		1.00	1.00	N/A
	Vertical Output	---	1.00	1.00	N/A
180	Worm Top		.88	.81	N/A
	Worm Bottom		0.81	0.75	N/A
	Vertical Input		0.63	0.63	N/A
	Vertical Output	---	0.63	0.63	N/A
210	Worm Top		1.50	1.38	N/A
	Worm Bottom		1.25	1.12	N/A
	Vertical Input		1.00	1.00	N/A
	Vertical Output	---	1.12	1.00	N/A
W240	Worm Top		3.00	2.88	N/A
	Worm Bottom		2.50	2.50	N/A
	Vertical Input		2.00	2.00	N/A
	Vertical Output	---	2.00	2.00	N/A
260	Worm Top		3.00	2.75	N/A
	Worm Bottom		2.38	2.25	N/A
	Vertical Input		2.00	1.88	N/A
	Vertical Output	---	2.12	1.88	N/A
300	Worm Top		7.00	6.50	N/A
	Worm Bottom		5.25	5.25	N/A
	Vertical Input		4.25	4.25	N/A
	Vertical Output	---	4.50	4.50	N/A
320	Worm Top		4.75	4.00	7.50
	Worm Bottom		4.00	3.63	5.50
	Vertical Input		3.12	2.75	4.50
	Vertical Output	---	3.12	2.75	5.00 Vertical Down 3.00 Vertical Up
380	Worm Top		7.38	6.50	8.50
	Worm Bottom		6.38	6.12	7.00
	Vertical Input	***	4.63	4.38	5.75
	Vertical Output	---	4.38	4.12	6.00 Vertical Down 4.00 Vertical Up
W420	Worm Top		7.00	7.00	12.00
	Worm Bottom		9.50	9.50	12.00
	Vertical Input	***	8.00	8.00	12.00
	Vertical Output	---	8.00	8.00	12.00
450	Worm Top		7.00	5.20	9.00
	Worm Bottom		4.80	4.00	5.70
	Vertical Output	---	3.80	3.00	5.80 Vertical Down 3.80 Vertical Up
520	Worm Top		10.60	7.30	14.50
	Worm Bottom		7.50	5.10	9.30
	Vertical Output	---	5.50	3.80	9.40 Vertical Down 5.50 Vertical Up

SERIES	MOUNTING POSITION	NOTES	QUANTITY (Pints)		
			Shaft Output	Hollow Bore Output	Drop Bearing
GW60	Worm Top		19.50	19.50	27
	Worm Bottom		20.50	20.50	27
	Vertical Output	---	20	20	27
GW70	Worm Top		35	35	40
	Worm Bottom		32.75	32.75	40
	Vertical Output	---	20.75	20.75	40
GW80	Worm Top		48	48	63
	Worm Bottom		51.25	51.25	63
	Vertical Output	---	28.75	28.75	63
GW100	Worm Top		72	72	102
	Worm Bottom		80	80	102
	Vertical Output	---	40	40	102
W300	Worm Top		N/A	0.70	N/A
	Worm Bottom		N/A	0.40	N/A
	Vertical Output	---	N/A	0.40	N/A
W50B	Worm Top		N/A	3.20	N/A
	Worm Bottom		N/A	2.00	N/A
	Vertical Output	---	N/A	3.50	N/A
W516	Worm Top		5.25	5.25	N/A
	Worm Bottom		2.75	2.75	N/A
	Vertical Output	---	2.60	2.60	N/A

\*\*\* This quantity of oil will fill the unit to the centerline. Factory modifications required to provide sealed top bearing. No modifications needed on Series 380 if quill-type C-Flange is mounted up.

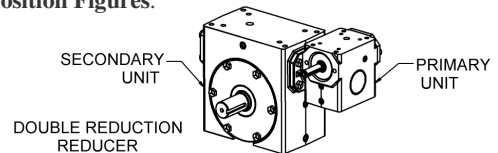
--- This quantity of oil will fill the unit to the centerline. Factory modifications required to provide grease pack and Nilos ring at top bearing.

### ▲ CAUTION

Always check for proper oil level after filling. Capacities vary somewhat with model and mounting position. Oil should rise to bottom edge of Oil Level Plug (2) hole. Do not overfill.

#### SPECIAL INSTRUCTIONS FOR DOUBLE REDUCTION REDUCERS:

The Primary Unit and the Secondary Unit each have independent oil reservoirs. Each unit must be filled to the specified level of oil as noted in **Mounting Position Figures**.



If the final mounting position of the Double Reduction Reducer is such that either the input shaft of the Primary Unit or the Input (High Speed) shaft of the Secondary Unit is in a vertical position, consult the factory for special lubrication instructions.

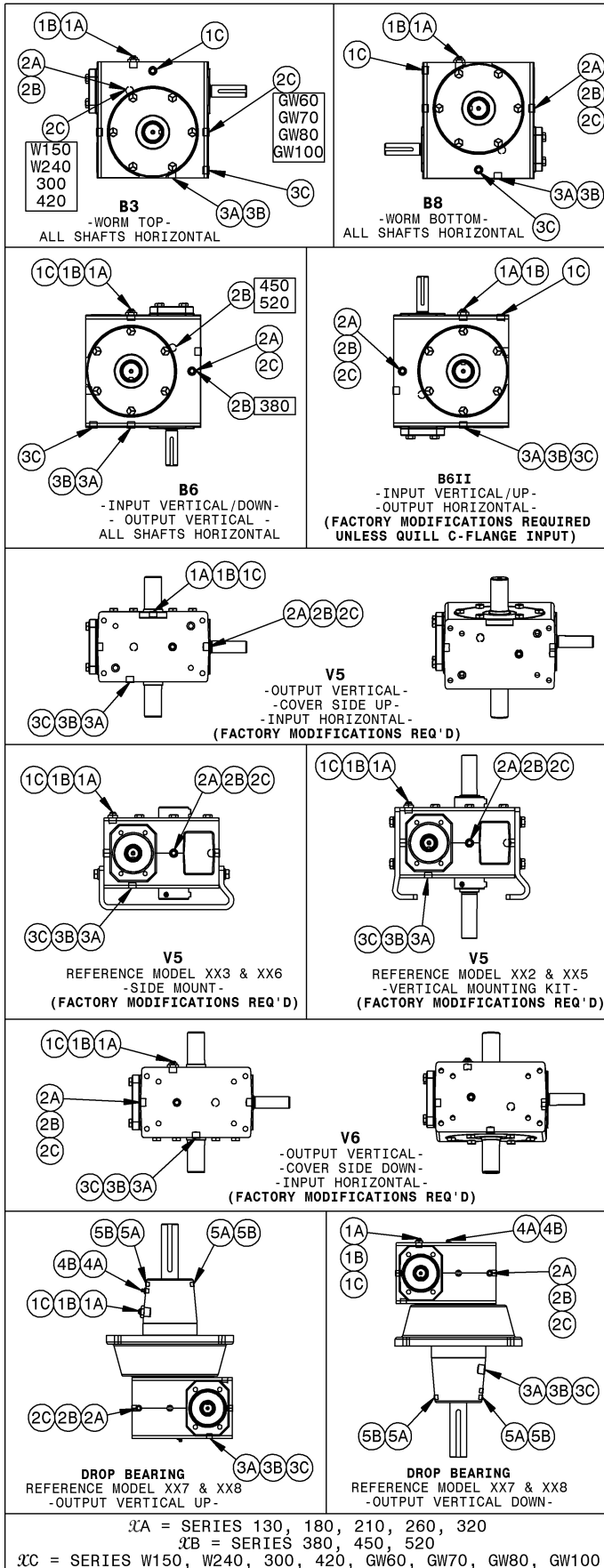
#### SPECIAL INSTRUCTIONS FOR DROP BEARING REDUCERS:

When Drop Bearing unit is positioned Output Vertical-Up or Output Vertical-Down an adequate amount of lubrication must be supplied to the upper Bearing through Grease Fitting (4X). All Drop Bearing units are equipped with Double Seals on the Output Shaft. Periodically the Pipe Plugs (5X) should be removed, a Grease Fitting inserted in one hole, and enough grease injected to purge all of the old grease from between the seals.

# HUB CITY WORM GEAR SPEED REDUCERS

## LUBRICATION & INSTALLATION INSTRUCTIONS SINGLE & DOUBLE REDUCTION

### MOUNTING POSITION FIGURES FOR HUB CITY WORM GEAR SPEED REDUCERS, SERIES 130 THRU GW100



### ▲WARNING

Wear protective clothing and eye shields when installing or maintaining unit and machine.

### ▲WARNING

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, or by any shaft mounted power transmitting device such as sprockets, pulleys, or couplings.

### ▲WARNING

Units **ARE NOT** to be considered fail safe or self-locking devices. If these features are required, a properly sized, independent holding device must be utilized. Reducers are not to be used as a brake.

### ▲WARNING

Any brakes that are used in conjunction with a unit must be sized or positioned in such a way so as to not subject the unit to loads beyond the capacities published in the current catalog.

### ▲WARNING

Make certain that all tools and other items are clear from rotating parts before starting machine. Stand clear, and start machine slowly to be sure all components are secure and operating properly.

### ▲WARNING

Make certain that the power supply is disconnected before attempting to service or install the unit, or remove or install any components. Lock out the power supply, and tag it to prevent unexpected application of power.

**OPERATING POSITIONS** — Normal Speed Reducer positions are shown in the Mounting Position Figures on this sheet. For special applications, mounting position may be inclined. However, if position varies more than 15°, it may be necessary to make some adaptations to maintain a sufficient oil level. Contact your local distributor or HUB CITY for recommendations. Input rotation of Speed Reducers can be either clockwise or counterclockwise.

### ▲CAUTION

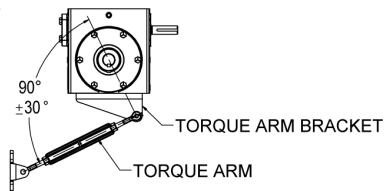
Exterior threaded or through holes on this drive are for mounting the drive or drive accessories (couplings, sprockets, etc.). They are not to be used for lifting the drive or any driver/driven equipment.

### ▲CAUTION

Inspect shafts and components for paint, burrs, or other imperfections before installing components. Do not use excessive force or pounding to install components onto unit shafts, as this may cause damage to shafts, bearings, or gears.

**SHAFT MOUNT UNITS** — The Torque Arm Bracket can be attached to any of the four available mounting surface locations of the unit.

Install and position Torque Arm at 90° ± 30° to the plane (a line drawn) between the center of the output hollow bore and the bolt that attaches the Torque Arm to the Torque Arm Bracket of the unit. The Torque Arm should be positioned to be in tension, NOT compression, based on output rotation of the gear drive.



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### ▲ CAUTION

Excessive setscrew torque may cause damage to the output sleeves in hollow bore units. Please refer to the following table for recommended tightening torque.

SIZE	RECOMMENDED TORQUE
1/4 NC	87 LB. - IN.
5/16 NC	165 LB. - IN.
3/8 NC	290 LB. - IN.

### ▲ WARNING

For safe operation and to continue the unit warranty, when installing, reinstalling, or replacing a factory installed fastener for servicing purpose, or to accommodate the mounting of guards, shields or other light load imposing devices, or for mounting the unit, it becomes the responsibility of the purchaser or user to properly determine the quality, grade of fastener, thread engagement, load carrying capacity, tightening torque, and the means of torque retention.

**COUPLINGS** — Flexible couplings to input and output shafts are recommended because they minimize bearing and gear wear caused by slight misalignment. Follow coupling manufacturer's recommendations for installation and shielding.

**SHEAVES AND SPROCKETS** — When mounting sheaves or sprockets, the center of the load should be located as close to the reducer as possible. Excessive overhung loading could result in early failures of bearing or shaft. Refer to the general catalog or contact your local distributor for overhung load ratings. Follow manufacturer's recommendations for installation and shielding.

### ▲ CAUTION

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

**RUN-IN PERIOD** — A new unit will not operate at maximum efficiency during the run-in period. Increased current draw or heat rise may be seen during this time.

**PREVENTATIVE MAINTENANCE** — Keep shafts and vent plug clean to prevent foreign particles from entering seals or gear case. Inspect periodically for oil leaks.

### ▲ CAUTION

Mounting bolts, coupling fasteners, and other power transmitting devices should be routinely checked to ensure that all parts of the unit are firmly anchored to provide proper operation (loose fasteners can cause alignment problems and excessive wear). Check end play in shafts. Noticeable movement might indicate service or parts replacement is necessary.

### ▲ CAUTION

If the unit cannot be located in a clear and dry area with access to an adequate cooling air supply, then precautions must be taken to avoid ingestion of contaminants such as water, and to avoid a reduction of cooling ability due to exterior contaminants.

HUB CITY has Sales Offices and a network of Industrial Power Transmission Distributors that can serve your needs world wide. Check the Yellow Pages for one near you or contact the factory sales office.

### IMPORTANT INFORMATION:

In the event of the resale of this Worm Gear Speed Reducer (unit), 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, 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 manufacturer be liable for consequential, incidental, or other damages.

Resellers/buyers agree to include this entire document, including the warnings and cautions listed herein, in a conspicuous place and in a conspicuous manner to instruct users on the safe usage of the product

## ELECTRIC MOTOR AND HYDRAULIC MOTOR AND PUMP INSTALLATION INSTRUCTIONS

### For "C" Flange and Hydraulic Flange Units

1. Be sure all of the paint and masking have been removed from the face and pilot of the flange. Check the bore (input or output) to be sure it contains an adequate amount of anti-seize compound, which is normally installed at the factory. This compound will inhibit fretting corrosion between the motor or pump shaft and the unit bore.
2. Install the key (if round bore) to the maximum depth of the keyway provided in the bore.
3. Align keyways or splines of motor or pump and bore of unit and install motor or pump into frame.
4. **CAUTION:** HUB CITY "C" flange reducers and Hydraulic Flange Reducers are designed to accept motors with shafts that do not exceed the maximum specified by the N.E.M.A. or SAE standards. If the motor or pump shaft bottoms out before the motor or pump flange seats against the reducer flange face, the motor or pump shaft length must be adjusted to N.E.M.A. or SAE standards.
5. Secure the motor or pump to the unit. Capscrews and lockwashers are provided with "C" flange units.
6. Tightening torques for mounting bolts are provided in the chart below.

<b>CAPSCREW TIGHTENING TORQUE</b>				
Grade 5 Capscrews (dry, without lubricant)				
Capscrew Size	Tightening (Ft. - Lbs.)		Capscrew Size	Tightening (Ft. - Lbs.)
1/4 NC	8		1/2 NC	71
5/16 NC	16		5/8 NC	143
3/8 NC	29		3/4 NC	251

A Parts List and Print for your Drive is available upon request. To obtain the proper Parts List and Print, you must accurately furnish the Assembly Number, Model Number, Ratio, Style and Shipping Code as shown on the tag attached to the Gear Drive.

For assistance, phone or write your Industrial Power Transmission Distributor, or the Factory Sales Office.

