

IRONHORSE® WORM GEAR INSTALLATION AND MAINTENANCE



USER MANUAL OVERVIEW

OVERVIEW OF THIS PUBLICATION

The IronHorse Worm Gearbox Installation and Maintenance guide describes the installation, operation, and preventative maintenance of IronHorse Worm Gearboxes.

WHO SHOULD READ THIS MANUAL

This manual contains important information for people who will install, maintain, and/or operate any of the IronHorse Worm Gearboxes.

TECHNICAL SUPPORT

Our technical support group is glad to work with you to answer your questions. Please call the technical support group if you need technical assistance, or visit our web site. Our website contains technical and non-technical information about our products and our company.

By telephone: (770) 844-4200 (Mon – Fri, 9:00 am – 6:00 pm ET)

On the Web: www.automationdirect.com

SPECIAL SYMBOLS



NOTE: When you see the “notepad” icon in the left-hand margin, the paragraph to its immediate right will be a special note which presents information that may make your work quicker or more efficient.



WARNING: WHEN YOU SEE THE “EXCLAMATION MARK” ICON IN THE LEFT-HAND MARGIN, THE PARAGRAPH TO ITS IMMEDIATE RIGHT WILL BE A WARNING. THIS INFORMATION COULD PREVENT INJURY, LOSS OF PROPERTY, OR EVEN DEATH (IN EXTREME CASES). ANY WARNING IN THIS MANUAL SHOULD BE REGARDED AS CRITICAL INFORMATION THAT SHOULD BE READ IN ITS ENTIRETY.

IRONHORSE® WORM GEARBOX INTRODUCTION

PURPOSE OF WORM GEARBOXES

Gearboxes, also known as enclosed gear drives or speed reducers, are mechanical drive components that can control a load at a reduced fixed ratio of the motor speed. The output torque is also increased by the same ratio, while the horsepower remains the same (less efficiency losses). For example, a 10:1 ratio gearbox outputs approximately the same motor output horsepower, but motor speed is divided by 10, and motor torque is multiplied by 10.

Worm gearboxes contain a worm-type gear on the input shaft, and a spur-type mating gear on the output shaft. Worm gearboxes also change the drive direction by 90 degrees. IronHorse worm gearboxes are manufactured in an ISO9001 certified plant by one of the leading and most internationally acclaimed gearbox manufacturers in the world today. Only the highest quality materials are tested, certified, and used in the manufacturing process. Strict adherence to and compliance with the toughest international and U.S. testing standards and manufacturing procedures assure you the highest quality products.

We offer right-angle worm gearboxes with aluminum frames and with cast-iron frames. The output shafts are perpendicular to the inputs, and change the drive direction(s) by 90°. Our gearboxes utilize C-face mounting interfaces for C-face motors.

Our cast-iron gearboxes feature right-hand and dual (both right and left) output shafts, and with hollow-bore outputs (all the way through from one side to the other). We also offer optional gearbox mounting bases for ease of installation of these cast-iron gearboxes.

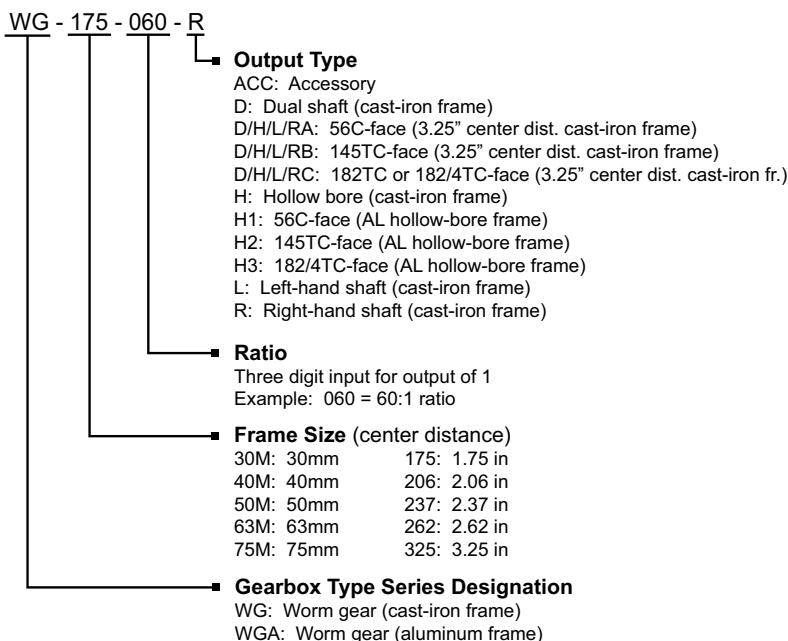
Our aluminum gearboxes feature hollow-bore outputs (all the way through from one side to the other). We also offer optional single and double output shafts, output flanges, torque arms, and output covers.

PACKAGE CONTENTS

After receiving the IronHorse Worm Gearbox, please check for the following:


- *Make sure the package includes the speed reducer and the vent plug.*
- *Inspect the unit to insure it was not damaged during shipment.*
- *Make sure that the part number on the gearbox nameplate is the same as the part number that you ordered.*

PART NUMBER EXPLANATION




NAMEPLATE INFORMATION

WG Cast-Iron Gearbox

<p>Gearbox Model #</p> <p>Gearbox Serial #</p>	 <p style="text-align: center;">SPEED REDUCER WWW.AUTOMATIONDIRECT.COM</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="font-size: small;">Model NO.</td> <td style="font-size: small;">SIZE: 175</td> <td style="font-size: small;">RATIO: 60</td> </tr> <tr> <td colspan="3" style="text-align: center;">WG-175-060-R</td> </tr> <tr> <td style="font-size: small;">MFG NO.</td> <td style="font-size: small;">70606827</td> <td style="font-size: small;">Made in Taiwan</td> </tr> </table>	Model NO.	SIZE: 175	RATIO: 60	WG-175-060-R			MFG NO.	70606827	Made in Taiwan	<p>Gearbox Frame Size (center distance) & Gearbox Ratio</p> <p>Country of Origin</p>
Model NO.	SIZE: 175	RATIO: 60									
WG-175-060-R											
MFG NO.	70606827	Made in Taiwan									

WGA Aluminum Gearbox

<p>Gearbox Model #</p> <p>Gearbox Serial #</p>	 <p style="text-align: center;">SPEED REDUCER</p> <p style="text-align: center;">IRONHORSE</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="font-size: small;">MODEL</td> <td style="font-size: small;">WGA-63M-020-H1</td> </tr> <tr> <td style="font-size: small;">M.F.G.:</td> <td style="font-size: small;">140607652</td> </tr> </table> <p style="text-align: right; font-size: x-small;">Made in Taiwan</p>	MODEL	WGA-63M-020-H1	M.F.G.:	140607652	<p>Country of Origin</p>
MODEL	WGA-63M-020-H1					
M.F.G.:	140607652					

IRONHORSE® WORM GEARBOX INSTALLATION

Read these instructions thoroughly before installing or operating the gearbox.

INSTALLATION INSTRUCTIONS

- *Leave the protective shaft sleeves in place for safe handling of the gearbox during installation.*
- *Add or partially drain oil as needed depending upon the mounting orientation. (Refer to the lubrication section of this chapter for more information.)*
- *Install the vent plug.*
- *Align all shafts accurately, since improper alignment can result in premature failure. Use flexible couplings to compensate for slight misalignment.*
- *For hollow-bore output gearboxes – Use anti-seize compound when inserting the load shaft into the hollow output shaft. It is preferable to size the load shaft with sufficient length to allow complete insertion through the hollow output shaft of the gearbox. This allows equal support of the load shaft by both of the output shaft bearings, and permits the use of the output shaft setscrews to lock the two shafts together on both sides of the gearbox. At minimum, the load shaft should be inserted at least half way into the hollow output shaft, and secured with the setscrews on the insertion end of the gearbox.*
- *Mount the gearbox to a rigid foundation, and use the maximum possible bolt size. Periodically inspect the mounting bolts. (Do NOT mount WG series gearboxes vertically with input shaft pointing downward. Refer to the lubrication section of this chapter for allowable mounting orientations.)*
- *Optional gearbox and motor mounting bases are available for ease of mounting and alignment.*
- *Mount auxiliary drive components such as sprockets, gears and pulleys on the gearbox shaft as close to the housing as possible in order to minimize the effects of overhung loads. Avoid force fits that might damage bearings or gears.*
- *Check and record gear backlash at installation and again at regular intervals. This should be done by measuring the rotary movement of the output shaft, rotating the shaft alternately clockwise and counterclockwise at a suitable radius while holding the input shaft stationary. The gearbox should be replaced when the backlash exceeds four times the measurement taken at installation.*
- *Gear drives are rated for 1750 input rpm and Class I Service (Service Factor 1.0), using Mobil synthetic lubricant. Units manufactured with first 4 serial numbers up to 2108 filled with Mobil SHC634 synthetic oil. Units manufactured with first 4 serial numbers from 2109 are filled with SHC632 synthetic oil.*
- *Initial operating temperatures may be higher than normal during the break-in period of the gear set. For maximum life, DO NOT ALLOW THE GEARBOX TO OPERATE CONTINUOUSLY ABOVE 225°F at the gear case. In the event of overheating, check for overloads or high ambient temperatures. Keep shafts and vent plugs clean to prevent foreign particles from entering seals or gear housing.*

VENT PLUG INSTALLATION

All IronHorse Worm Gearboxes are tested and filled with Mobil synthetic lubricant prior to shipment. All vent openings are plugged by the manufacturer to prevent the loss of lubricant in shipment. The vent plug is shipped loose in the package with all gearboxes. Cast iron gearboxes require a vent plug be installed prior to placing the gearbox in operation. Vent plug use with aluminum gearboxes is not required, but is optional. If a vent plug is used for the aluminum gearbox, the gearbox mounting position is restricted to position “A” for WGA-30M through WGA-50M and position “A” and “C” for WGA-63M through WGA-75M gearboxes.

- *The vent plug should be installed in the uppermost position.*
- *For all mounting positions where the vent plug is located in a horizontal plane, the vent hole must point upward.*
- *For all mounting positions where the vented plug is located in a vertical plane, the vent hole must point toward the center of the gearbox housing.*
- *Failure to properly install the vent plug can lead to pressurization of the gearbox housing as operating temperature rises, resulting in leakage at the shaft seals.*

IRONHORSE® WORM GEARBOX LUBRICATION & MOUNTING ORIENTATIONS

Lubricant selection is important to all gearboxes, and it is particularly critical for the worm gear type. An oil with special characteristics and a relatively high viscosity is required due to sliding action between the gear teeth where they mesh. Aside from improper gearbox selection, inadequate lubrication is the greatest factor contributing to premature worm gearbox failures. Improper lubrication also causes reduced gearbox performance.

LUBRICATION INSTRUCTIONS

IronHorse Worm Gearboxes are shipped to you filled with Mobil synthetic oil. Oil must be added or partially drained depending upon your mounting orientation, as shown in the Lubricant Capacities table.

Since many oils are not suitable for worm gears, it is very important to use the proper lubricant type. It is also very important to keep the oil free from oxidation and contamination by water or debris. For longer service life, the gearbox should be periodically drained (preferably while warm) and refilled to the proper level with a recommended gear oil. Non-synthetic oils should be changed every 6 months or 250 hours of operation under normal operating conditions. However, synthetic lubricants have increased resistance to thermal and oxidation degradation, and do not need to be changed as frequently.

Synthetic lubricant should be changed every 6,000 hours of operation or every two years, whichever ever comes first.



WARNING: SOME LUBRICANTS CONTAIN NON-CORROSIVE EXTREME PRESSURE ADDITIVES. DO NOT USE LUBRICANTS THAT CONTAIN SULPHUR AND/OR CHLORINE, WHICH ARE CORROSIVE TO BRONZE GEARS. ALSO, SOME EXTREME PRESSURE LUBRICANTS CONTAIN MATERIALS THAT ARE TOXIC. AVOID THE USE OF THESE LUBRICANTS WHERE HARMFUL EFFECTS CAN OCCUR.

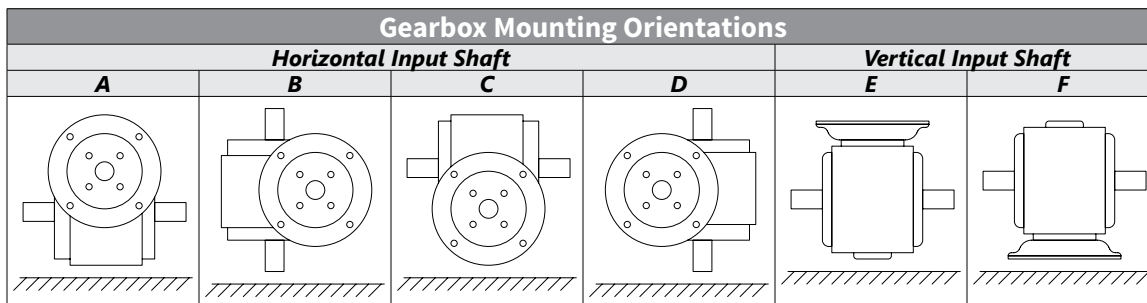
LUBRICANT CAPACITIES AND MOUNTING ORIENTATIONS



WARNING: TOO MUCH OIL WILL CAUSE OVERHEATING, AND TOO LITTLE OIL WILL RESULT IN GEAR FAILURE. CHECK OIL LEVEL REGULARLY. MORE FREQUENT OIL CHANGES ARE RECOMMENDED WHEN OPERATING CONTINUOUSLY, AT HIGH TEMPERATURES, OR UNDER CONDITIONS OF EXTREME DIRT OR DUST.

IronHorse Aluminum Worm Gearbox Lubricant Capacities						
Gearbox Mounting Orientation	A	B	C	D	E	F
Gearbox Part Number	Approx Capacity (fl oz)					
WGA-30M-xxx-xx	1.35	1.18	1.01	1.18	1.69	
WGA-40M-xxx-xx	2.71	2.37	2.03	2.37	3.38	
WGA-50M-xxx-xx	3.38	2.87	2.54	2.87	4.23	
WGA-63M-xxx-xx	8.45	7.44	6.43	7.44	10.48	
WGA-75M-xxx-xx	16.91	14.54	12.51	14.54	20.97	
Position "A" only if vent plug is used for WGA-30M through WGA-50M. Position "A" and "C" only if vent plug is used for WGA-63M through WGA-75M. *Gearboxes are shipped filled with oil sufficient for mounting orientation "A". Oil must be added to gearboxes installed in other mounting orientations.						

IronHorse Cast-Iron Worm Gearbox Lubricant Capacities						
Gearbox Mounting Orientation	A*	B	C	D	E	F
Gearbox Part Number	Approx Capacity* (fl oz)					
WG-175-xxx-x	11.64	18.74	18.74	17.24	15.14	Not Allowed
WG-206-xxx-x	19.41	28.41	28.41	26.71	21.81	
WG-237-xxx-x	24.07	35.17	35.17	33.77	29.67	
WG-262-xxx-x	34.55	48.25	48.25	45.85	41.05	
WG-325-xxx-xx	73.75	102.55	102.55	97.75	88.05	
*Gearboxes are shipped filled with oil sufficient for mounting orientation "A". Oil must be added to gearboxes installed in other mounting orientations.						



IRONHORSE® WORM GEARBOX SEAL SIZES**ALUMINUM WORM GEARBOX INPUT AND OUTPUT SEAL SIZES**

Aluminum Worm Gearbox Seal Sizes		
Model #	Input Seals (mm)	Output Seals (mm)
WGA-30M-xxx-xx	25 x 62 x 7	25 x 47 x 7
WGA-40M-xxx-xx	25 x 35 x 7	30 x 40 x 7
WGA-50M-xxx-xx	30 x 47 x 7	40 x 62 x 8
WGA-63M-xxx-xx	35 x 52 x 8	45 x 65 x 10
WGA-75M-xxx-xx	45 x 60 x 10	50 x 72 x 8

CAST-IRON WORM GEARBOX INPUT SEAL SIZES

Cast-Iron Worm Gearbox Input Seal Sizes			
Gearbox Sizes	WG-xxx-xxx-D/H/L/R	WG-xxx-xxx-D/L/R	WG-xxx-xxx-H
	Input Seals (mm)	Output Shaft Seals (mm)	Output Hollow Bore Seals (mm)
175	30 x 42 x 8	24 x 45 x 8	40 x 62 x 9
206 (56C input)		30 x 47 x 6	45 x 68 x 10
237		35 x 55 x 8	50 x 72 x 12
262 (56C input) (182/4TC input)	45 x 62 x 8		60 x 82 x 12
325	(56C input)	40 x 55 x 8	70 x 95 x 13
	(145TC input)		
	(182/4TC input)		