

IRONHORSE® STAINLESS STEEL WORM GEARBOX INSTALLATION AND MAINTENANCE

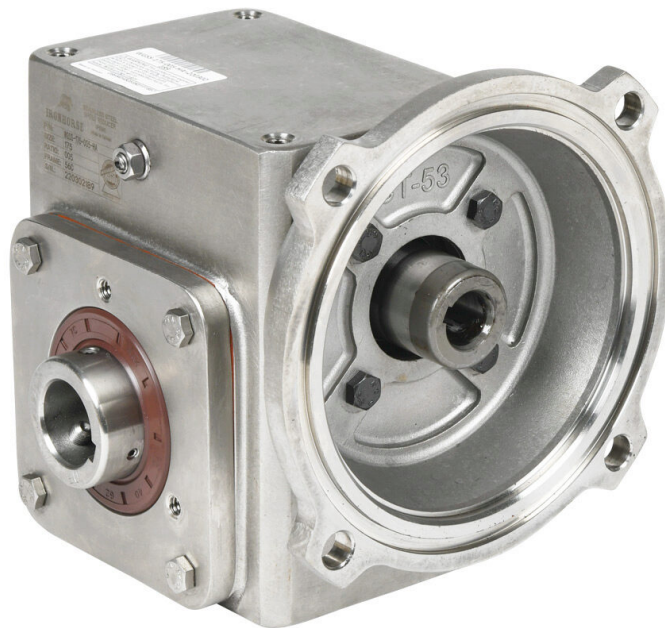


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USER MANUAL OVERVIEW

OVERVIEW OF THIS PUBLICATION

This guide describes installation, lubrication, operation and preventative maintenance for IronHorse® stainless steel 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 Stainless Steel 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.

INTRODUCTION

PACKAGE CONTENTS

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

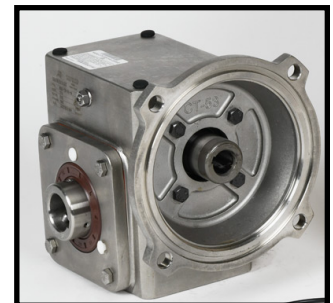
- Make sure the package includes: 1 gearbox, 1 O-ring, and 2 shaft keys.
- Inspect the unit to ensure it was not damaged during shipment.
- Make sure that the part number on the gearbox nameplate is the same as the part number that you ordered.



WARNING: IF THERE ARE LARGE AMOUNTS OF OIL INSIDE THE PACKAGING OR SOAKED INTO THE BOX, DO NOT USE AND RETURN TO AUTOMATIONDIRECT FOR FULL REFUND OR REPLACEMENT.

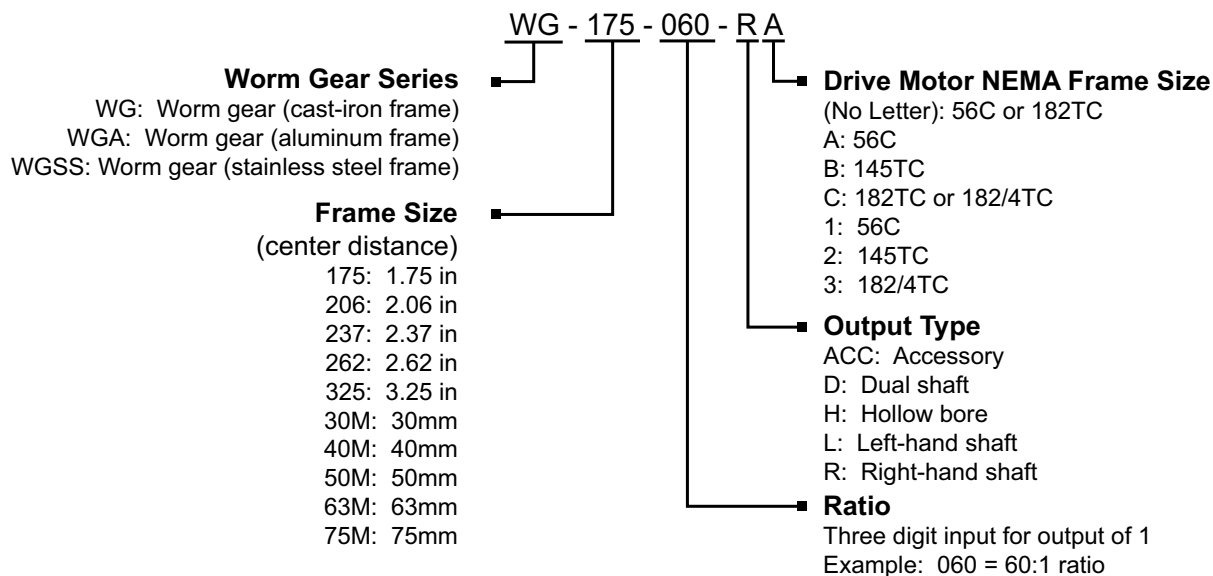


The gearbox has silicone dust-proof plugs in the threaded mounting holes (shown to the right). Four black plugs on the top of the gearbox and 3 white plugs on the side of the gearbox. These can be removed as needed to expose the threaded mounting points.





CAUTION: WORM GEAR 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 USED.

PART NUMBER EXPLANATION



NAMEPLATE INFORMATION

Laser etched on housing

		STAINLESS STEEL SPEED REDUCER IP69K Made In Taiwan
IRONHORSE®		
P/N:	WGSS-206-005-HA	
SIZE:	206	
RATIO:	005	
FRAME:	56C	
S/N:	XXXXXXXXXX	
		

INSTALLATION

Read these instructions thoroughly before installing or operating the gearbox.

INSTALLATION INSTRUCTIONS

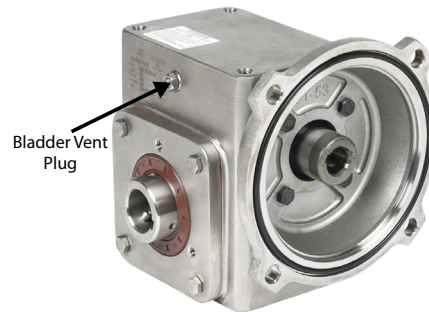
- Depending on the final installed mounting orientation, add or partially drain oil as needed. (Refer to the lubrication section of this chapter for more information.) The Gearboxes are pre-filled for mounting position A.
- For hollow-bore output gearboxes, use anti-seize compound when inserting the 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.)
- 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 oil. Stainless Steel gearboxes are filled with Mobile CIBUS 460 H1 food grade lubricant.
- 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 clean to prevent foreign particles from entering seals or gear housing.

BLADDER VENT PLUG

The bladder vent plug is fixed/non-adjustable from the factory for all suitable mounting positions.

To ensure leak free operation do not adjust bladder vent nut. The nut maintains positive pressure against the O-ring to prevent oil from leaking.

Bladder functions as a breather and effectively expels heat out but also prevents leaking or moisture/particle entrapping caused by traditional open air breather plug designs.



ATTACHING A NEMA FRAME MOTOR TO THE GEARBOX

GEARBOX PREP

- 1) Wipe clean the O-ring groove on the gearbox and ensure it is free of debris.
- 2) Moisten the O-ring with a food grade lubricant in preparation for installation.
- 3) Orient the gearbox, flange up, and place the O-ring into the O-ring groove.

NEMA FRAME MOTOR PREP

- 1) Apply a food grade anti-seize compound to the motor shaft and key (supplied with motor).
- 2) Install the key into the motor shaft keyway.

FINAL ASSEMBLY

- 1) Insert the motor shaft into the gearbox input bore and align the key.
- 2) Gently insert the motor shaft all the way until the motor flange and gearbox flange touch.
- 3) Inspect the O-ring to ensure it is still in the groove, and not pinched, all the way around.
- 4) Rotate the motor and align the mounting bolt holes with the gearbox bolt holes.
- 5) Loosely install the 4 bolts (supplied with gearbox).
- 6) Slightly tighten each bolt in a criss-cross pattern.
- 7) Inspect the motor and gearbox flanges to ensure they are fully seated together, all the way around with no gaps
- 8) Fully tighten each bolt in a criss-cross pattern.

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 Stainless Steel gearboxes are filled with Mobile CIBUS 460 H1 food grade lubricant. 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.

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 RECOMMENDATIONS

Mobil SHC Cibus™ series lubricants or SHELLCASSIDA™ 460,H1 Food Grade Lubricating Oils are recommended for use in a wide variety of hydraulic, compressor, gear and bearing applications within food and beverage processing, packaging and pharmaceuticals. Cibus™ series lubricants are effective in many areas, including those where the maintenance costs of component replacement, system cleaning, and lubricant changes are high.

Mobil SHC Cibus™ 32, 46 and 68 are high performance fluids intended for hydraulic, circulating, compressor and vacuum pump applications

Mobil SHC Cibus™ 100, 150, 220, 320 and 460 are intended for gear, bearing and circulating systems

A suitable used oil program, such as Signum from ExxonMobil, can help monitor the concentration of wear metals and provide information on appropriate actions.

Incidental Food Contact Only per FDA 21CFR 178.3570. Mobil SHC Cibus™ series lubricants are registered to the requirements of NSF H1 for incidental food contact only which indicates a limitation of 10ppm oil in finished food product. Mobil SHC Cibus™ series lubricants are not to be used as direct food contact lubricants.

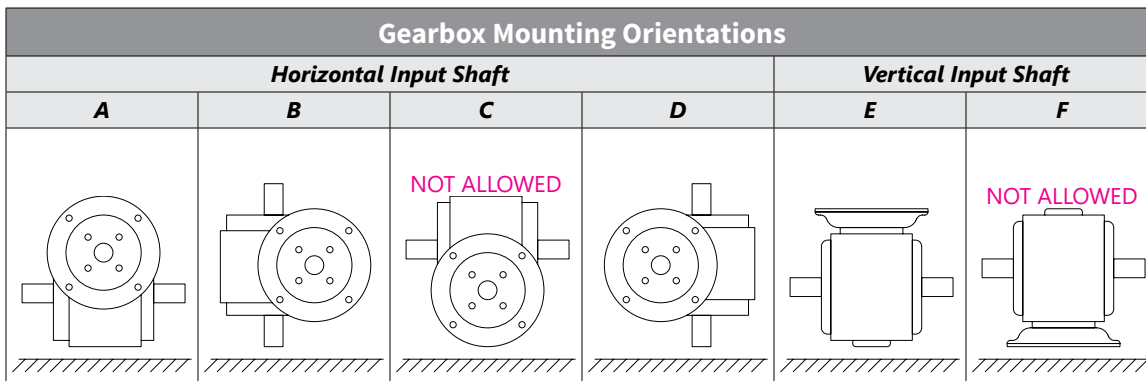
Mobil SHC Cibus™ 460		
ISO Grade	460	
Viscosity, ASTM D455	cSt @ 40°C	458
	cSt @ 100°C	43.6
Viscosity Index, ASTM D 2270	148	
Specific Gravity @ 15.6°C, ASTM D 4052	0.856	
Copper Strip Corrosion, ASTM D 130	1B	
Rust Characteristics Proc. A, ASTM D 665	Pass	
Pour Point, °C, ASTM D 97	-42	
Flash Point, °C, ASTM D 92	294	
FZG, DIN 51354, Fail Stage	>13	

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 Stainless Steel Worm Gearbox Lubricant Capacities						
Gearbox Mounting Orientation	A*	B	C	D	E	F
Gearbox Part Number	Approx Capacity* (fl oz [cc])					
WGSS-175-xxx-x	12.51 [370]	14.88 [440]	Not Allowed	14.88 [440]	14.20 [420]	Not Allowed
WGSS-206-xxx-x	20.29 [600]	33.14 [980]		33.14 [980]	30.77 [910]	
WGSS-237-xxx-x	23.67 [700]	47.34 [1400]		47.34 [1400]	40.58 [1200]	
WGSS-262-xxx-x	37.20 [1100]	73.71 [2180]		73.71 [2180]	56.81 [1680]	
WGSS-325-xxx-xx	72.70 [2150]	129.51 [3830]		129.51 [3830]	69.32 [2050]	
<p>*Gearboxes are shipped filled with oil sufficient for mounting orientation "A". Oil must be added to or removed from gearboxes installed in other mounting orientations.</p>						



SEAL SIZES**OUTPUT SEAL SIZES**

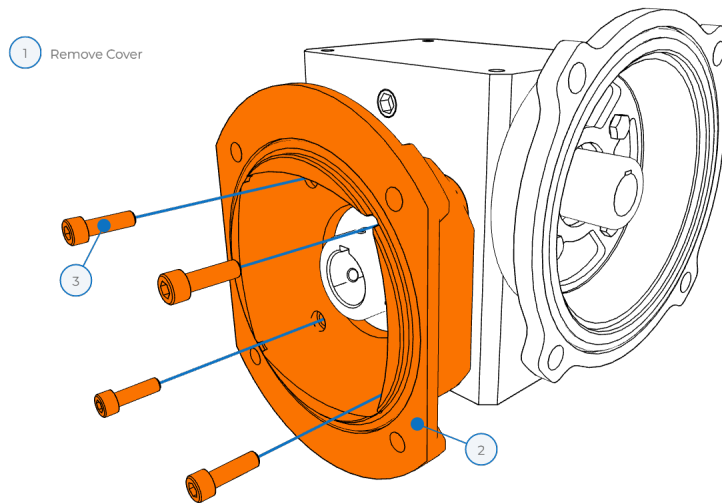
Gearbox Output Shaft Seal Sizes (Double Lipped VITON)	
Model #	Output Seals (mm)
WGSS-175-xxx-xx	40 x 62 x 8
WGSS-206-xxx-xx	50 x 68 x 8
WGSS-237-xxx-xx	50 x 72 x 12
WGSS-262-xxx-xx	65 x 88 x 12

O-RING AND KEY SIZES

O-Ring and Key Sizes		
Model #	O-Ring (mm)	Keys (in)
WGSS-175-xxx-xx	3.1 (wide) x 124.4 (ID)	0.25 x 0.25 x 1.63
WGSS-206-xxx-xx	3.1 (wide) x 124.4 (ID)	0.375 x 0.3125 x 1.625
WGSS-237-xxx-xx	3.1 (wide) x 124.4 (ID)	0.375 x 0.3125 x 1.625
WGSS-262-xxx-xx	3.1 (wide) x 124.4 (ID)	0.5 x 0.375 x 2.25

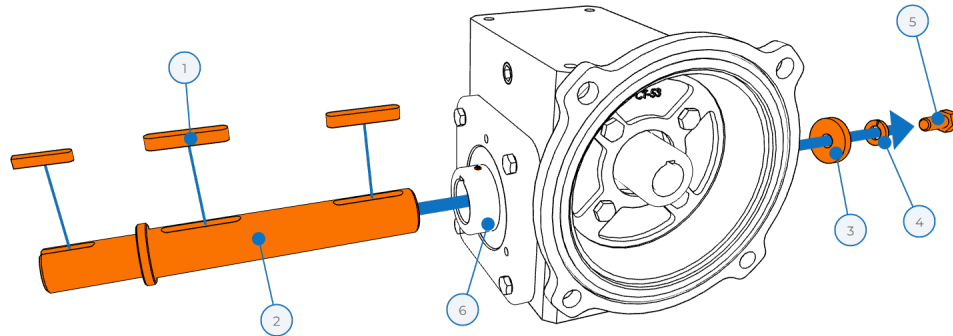
ACCESSORIES**FLANGE**

- 1) Remove the cover.
- 2) Remove the bearing race from the existing output cover.
- 3) Install the bearing race in the output flange.
- 4) Place the flange on the gearbox as shown.
- 5) Install SHCS and tighten.

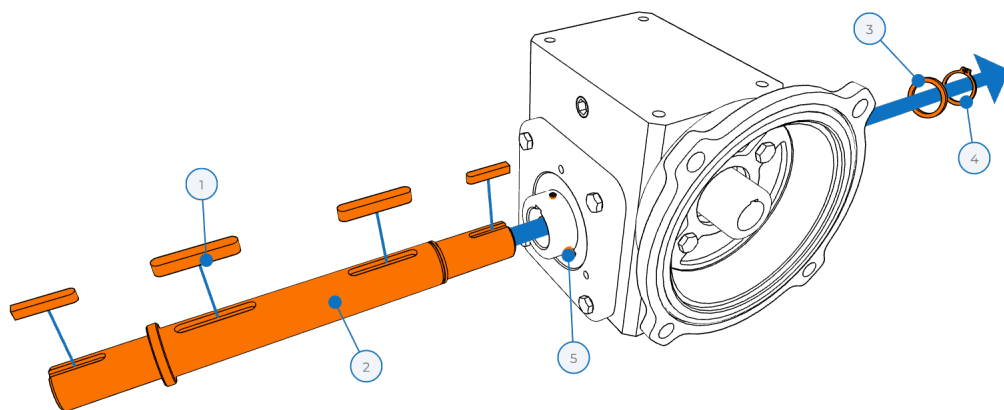


SINGLE SHAFT

- 1) Insert keys (included) into the shaft.
- 2) Insert the shaft into the gearbox, aligning the keys with the key slots.
- 3) Place the spacer (item 3) and lock washer (item 4) on the hex bolt (item 5).
- 4) Install hex bolt in the end of the shaft and tighten.
- 5) Tighten the set screws on both sides of the gearbox.

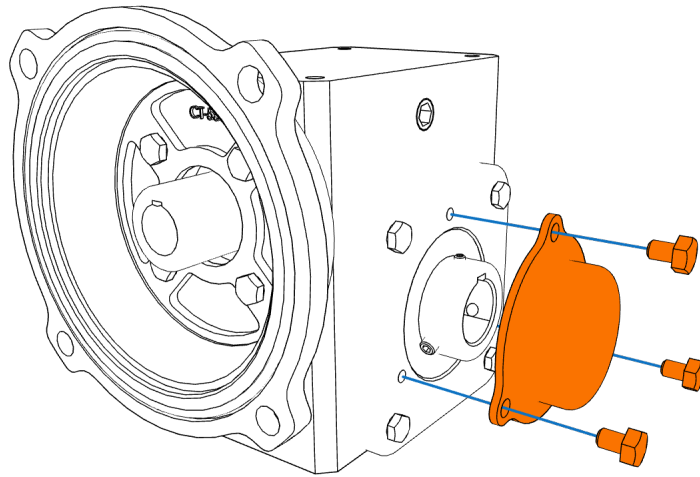
**DUAL SHAFT**

- 1) Insert keys (included) into the shaft.
- 2) Insert the shaft into the gearbox, aligning the keys with the key slots.
- 3) Slide the spacer (Item 3) over the shaft and secure in place using the provided clip (Item 4).
- 4) Tighten the set screws on both sides of the gearbox.



OUTPUT COVER

Install the output cover as shown below using the hex bolts provided.



OUTPUT BUSHING

- 1) Insert the key into the bushing.
- 2) Insert the tapered end of the bushing into the gearbox, aligning the key with the key slot.
- 3) Tighten the set screws on the gearbox to secure in place.
- 4) Repeat process for the other side.

