

INSTALLATION, MAINTENANCE, AND LUBRICATION



CHAPTER

3

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IRONHORSE® SHAFT MOUNT GEARBOX INSTALLATION

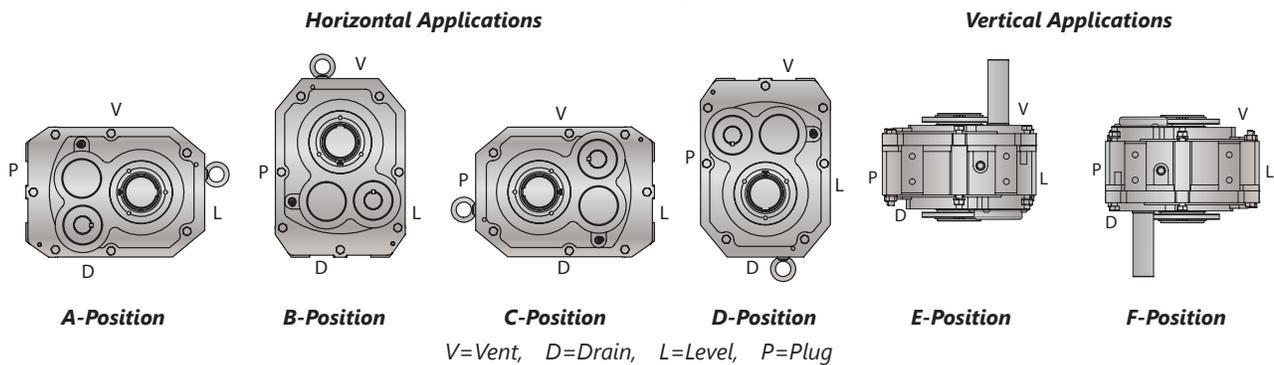


NOTE: Satisfactory performance depends on proper installation, lubrication and maintenance. Therefore, it is important that the instructions in this manual are followed carefully.

INSTALLATION INSTRUCTIONS

- 1) Use eyebolts or lifting lugs to lift reducer.
- 2) Determine the running positions of the reducer (see *Figure 1*). *Note:* The reducer is supplied with four plugs around the sides and one on each face for vertical installations. These plugs must be arranged relative to the horizontal running positions as follows: the bottom one is the magnetic drain plug (D). Install the brass vent plug (V) in the topmost hole. Of the three remaining plugs on the sides of the reducer, the lowest one is the minimum oil level plug (L). The running position of the reducer is not limited to the six positions shown in Figure 1. However, if running position is over 20 degrees from the position shown in sketches (B) or (D) or over 5 degrees from the position shown in sketches (A) or (C), then the oil in level plug cannot be used safely to check the oil level, unless during the checking, the torque arm is disconnected and the reducer is swung to within 20 degrees for position (B) and (D) or 5 degrees for position (A) or (C).

Figure 1 – Mounting Positions



NOTE: Below 15RPM output speed, oil level must be adjusted to reach the highest oil level plug (P).

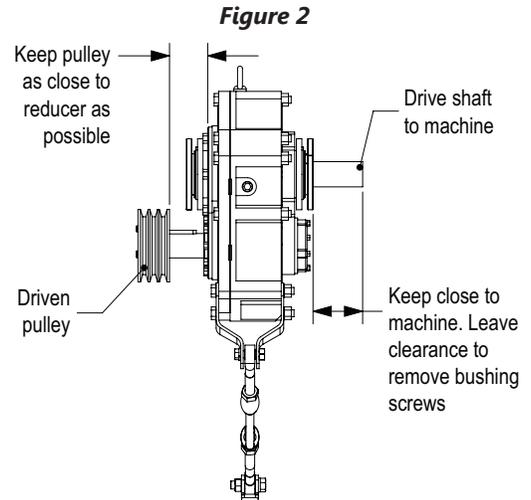
Because of the many possible positions of the reducer, it may be necessary or desirable to make special adaptations using the lubrication filling holes furnished along with other standard pipe fittings, stand pipes and oil level gauges as required.

3) Mount reducer on drive shaft as follows:



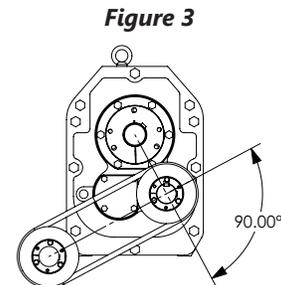
WARNING: TO ENSURE THAT THE MOTOR CONNECTED TO THE GEARBOX IS NOT UNEXPECTEDLY STARTED, TURN OFF AND LOCK OUT OR TAG THE POWER SOURCE BEFORE PROCEEDING. REMOVE ALL EXTERNAL LOADS FROM DRIVE BEFORE REMOVING OR SERVICING REDUCER OR ACCESSORIES. FAILURE TO OBSERVE THESE PRECAUTIONS COULD RESULT IN BODILY INJURY.

4) Install pulley on gearbox input shaft as close to the reducer as possible and mount reducer on driven shaft as close to bearing as practical (maintain minimum distance to remove tapered bushing screw) (see *Figure 2*). Failure to do this will cause excess loads on the input shaft bearings and output bearings and could cause premature failure.

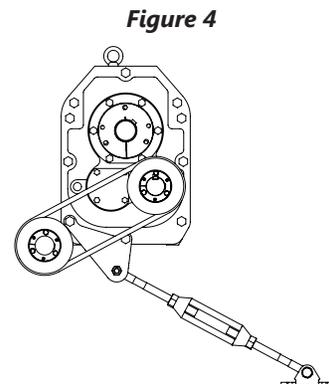


5) Install motor and wedge belt drive with the belt pulley at approximately 90° to the centerline between driven and input shafts (see *Figure 3*). This will allow tensioning of the v-belt drive with the torque arm which should preferably be in tension. If output hub runs counterclockwise, torque arm should be positioned to the right (see *Figure 4*).

- Belt drive may be located in any convenient position. If the torque arm is to be used to tighten the belts, the drive should be at about 90 degrees to the line between the input and output shafts.
- Belt drive may be located to the right if desired.

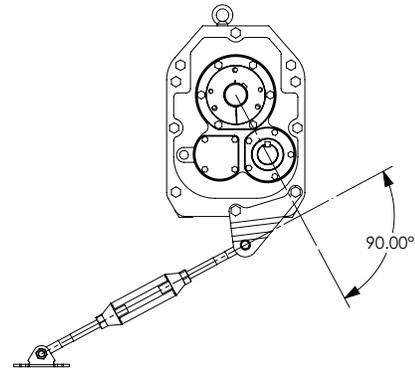


- If the output hub rotates clock-wise, relocate the belt drive and torque arm in opposite direction to that shown in the illustration.



- 6) Install the torque arm fulcrum on a rigid support so that the torque arm will be at approximately 90° to the centerline through the driven shaft and the torque arm case bolt (see Figure 5). If output hub rotates clockwise, belt drive and torque arm in opposite direction to that shown in the illustration.

Figure 5



- Torque arm and belt may vary up to a take-up.
- Torque arm may be mounted to the right if desired.
- The angle shown should be a right angle, but may vary up to a maximum of 30 degrees either way.



CAUTION: ALL IRONHORSE® SHAFT MOUNT REDUCERS ARE SHIPPED WITHOUT OIL. EVERY IRONHORSE SHAFT MOUNT REDUCER MUST BE FILLED WITH A RECOMMENDED GEAR OIL. FAILURE TO OBSERVE THESE PRECAUTIONS COULD RESULT IN DAMAGE TO OR DESTRUCTION OF THE EQUIPMENT. FAILURE TO LUBRICATE THE SHAFT MOUNT REDUCER WILL VOID THE MANUFACTURER'S WARRANTY.



CAUTION: FAILURE TO INSTALL THE VENT PLUG MAY RESULT IN GEARBOX OVERHEATING AND WILL PREMATURELY CAUSE THE OIL SEALS TO LEAK. FAILURE TO INSTALL THE VENT PLUG IN THE SHAFT MOUNT REDUCER WILL VOID THE MANUFACTURER'S WARRANTY.

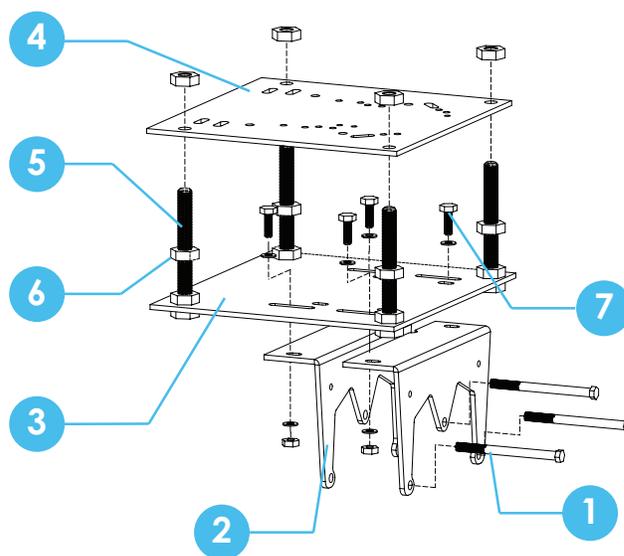
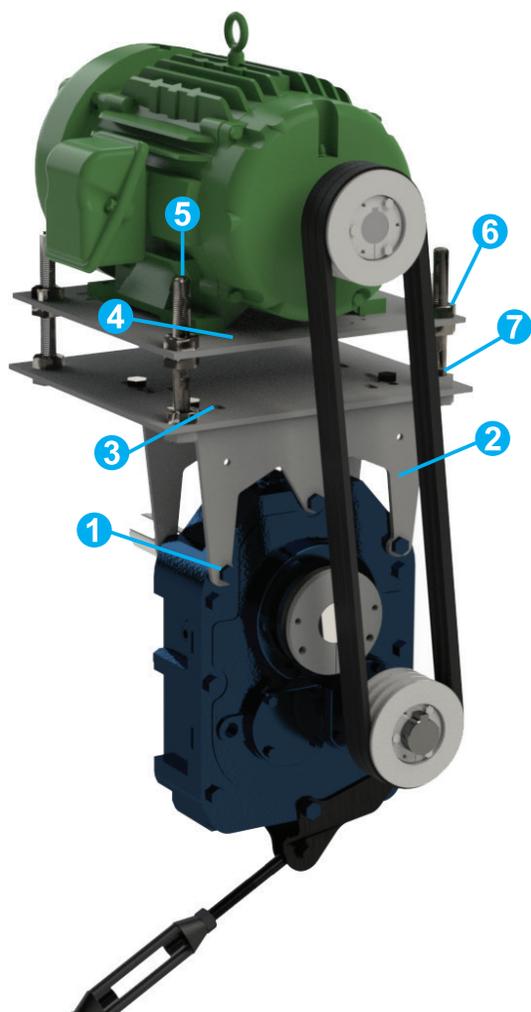
MOTOR MOUNT INSTALLATION



WARNING: TO ENSURE THAT THE DRIVE IS NOT UNEXPECTEDLY STARTED, TURN OFF AND LOCK OUT OR TAG THE POWER SOURCE BEFORE PROCEEDING. REMOVE ALL EXTERNAL LOADS FROM DRIVE BEFORE REMOVING OR SERVICING THE GEARBOX OR ACCESSORIES. FAILURE TO OBSERVE THESE PRECAUTIONS COULD RESULT IN BODILY INJURY.

Note: Refer to photo (below) for positions of all parts before installation

- 1) Remove the two or three bolts required for mounting the motor mount from the reducer housing. Install the front and rear supports (2) using the new reducer bolts (1) supplied with the motor mount. Make sure support flanges face output side of reducer. Tighten bolts securely.
- 2) Mount bottom plate (3) on supports with bolts supplied. Insert bolts (7) from top through slotted holes. Add flat washer, lock washer, and nut. Hand tighten.
- 3) Thread two nuts (6) on each threaded stud (5) leaving approximately 1" of stud protruding at one end. Insert threaded stud with 1" of threads through corner holed of bottom plate. Thread a hex nut (6) on the studs and tighten securely.
- 4) Slide top plate (4) over the threaded stud, making sure the center handling hole is positioned opposite input side of reducer. Thread a hex nut (6) on the studs and tighten securely.
- 5) Locate the proper position for the motor and bolt it to the top plate. Tighten bolts securely.
- 6) Install motor sheave and reducer sheave as close to motor and reducer housings as possible. Accurately align the motor and reducer sheave by sliding bottom plate in relation to supports. Tighten bolts (7) securely.
- 7) Install V-belts and tension belts by alternately adjusting nut (6) on the threaded studs (jackscrews). Make certain that all bolts are securely tightened, the V- belt drive is properly aligned and an appropriate belt guard is installed before operating the drive.



GEARBOX LUBRICATION AND MOUNTING ORIENTATIONS

Lubricant selection is important to all gearboxes. 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 gearbox failures. Improper lubrication also causes reduced gearbox performance.

LUBRICATION INSTRUCTIONS

IronHorse® Shaft Mount Gearboxes are *shipped without oil*. *Oil must be added* depending upon your mounting orientation, as shown on the following page.

Since many oils are not suitable for shaft mount gearboxes, 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.

For Best Results

- 1) Fill with recommended gear oil and operate for two weeks.
- 2) Drain after two weeks and flush with light oil.
- 3) Wipe any metal shavings from the magnetic drain plug and re-install.
- 4) Refill with recommended gear oil and continue.
- 5) Repeat every 2,500 hours to maximize unit life.



CAUTION: EVERY IRONHORSE® SHAFT MOUNT REDUCER MUST BE FILLED WITH A RECOMMENDED GEAR OIL. FAILURE TO OBSERVE THESE PRECAUTIONS COULD RESULT IN DAMAGE OR DESTRUCTION OF THE EQUIPMENT.



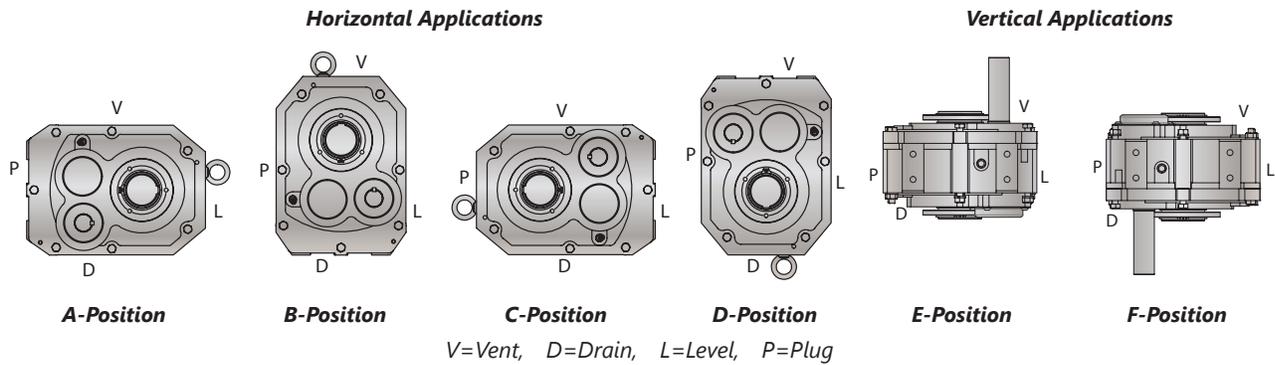
CAUTION: TOO MUCH OIL WILL CAUSE OVERHEATING AND TOO LITTLE WILL RESULT IN GEAR FAILURE. CHECK OIL LEVEL REGULARLY. MORE FREQUENT OIL CHANGES ARE RECOMMENDED WHEN OPERATING CONTINUOUSLY, AT HIGH TEMPERATURES OR UNDER CONDITIONS OF EXTREME DIRT OR DUST.

LUBRICATION SCHEDULE

Lubrication Schedule				
Model Number	15° to 60°F (-9° to 16°C)		50° to 125°F (10° to 50°C)	
Mobil	Mobil SHC 629	Mobil SHC 630	Mobil SHC 630	Mobil SHC 632
AGMA Rating	4	5	5	6
ISO Grade	150	220	220	320
SMR2-xx	N/A	1-140 RPM	N/A	1-140 RPM
SMR3-xx	N/A	1-140 RPM	N/A	1-140 RPM
SMR4-xx	126-140 RPM	1-125 RPM	126-140 RPM	1-125 RPM
SMR5-xx	101-125 RPM	1-100 RPM	101-125 RPM	1-100 RPM

MOUNTING ORIENTATIONS

Figure 1 – Mounting Positions



LUBRICANT CAPACITIES



WARNING: TOO MUCH OIL WILL CAUSE OVER HEATING, 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.

Approximate Oil Capacity – Quarts [Liters]						
Position	A	B	C	D	E	F
SMR2-xx	0.81 [0.77]	0.70 [0.66]	0.70 [0.66]	0.81 [0.77]	1.05 [0.99]	1.16 [1.10]
SMR3-xx	1.36 [1.29]	1.59 [1.50]	1.59 [1.50]	1.36 [1.29]	1.46 [1.38]	2.31 [2.19]
SMR4-xx	1.39 [1.32]	1.63 [1.54]	1.63 [1.54]	2.09 [1.98]	1.63 [1.54]	3.72 [3.52]
SMR5-xx	2.32 [2.20]	3.49 [3.30]	3.49 [3.30]	2.43 [2.30]	3.49 [3.30]	4.42 [4.18]

BEARING SIZES

IronHorse® Shaft Mount Gearbox Bearing Sizes						
Gearbox Model	Input Shaft		Intermediate Shaft		Output Hub	
	Input Side	Output Side	Input Side	Output Side	Input Side	Output Side
SMR2-xx	6206	6305	6305	6305	6013	6013
SMR3-xx	32007	33205	30305	30305	32015	32015
SMR4-xx	32208	30306	32206	32206	32017	32017
SMR5-xx	32210	30308	32208	32208	32019	32019

Note: "Input Side" refers to the side of the gearbox with the input shaft.

SEAL SIZES

IronHorse® Shaft Mount Gearbox Oil Seal Sizes		
Gearbox Model	Input Shaft Seal (1 required) Size [mm]	Output Shaft Seal (2 required) Size [mm]
SMR2-xx	62 x 30 x 8	90 x 65 x 10 & 100 x 65 x 10
SMR3-xx	52 x 35 x 8	90 x 75 x 10
SMR4-xx	62 x 38 x 7	100 x 85 x 9
SMR5-xx	75 x 50 x 12	125 x 95 x 12

GUIDELINES FOR LONG TERM STORAGE

During periods of long storage, or when waiting for delivery or installation of other equipment, special care should be taken to protect a gear reducer to have it ready to be in the best condition when placed into service. By taking special precautions, problems such as seal leakage and reducer failure due to lack of lubrication, improper lubrication quality, or contamination can be avoided. The following precautions will protect gear reducers during periods of extended storage.

PREPARATION

- 1) Drain the oil from the unit. Add a vapor phase corrosion inhibiting oil in accordance with followed table:

Quantities of Vapor Phase Oil				
Frame Size	2	3	4	5
Liters	0.1	0.1	0.2	0.3

- 2) Seal the unit airtight. Replace the air vent plug with a standard pipe plug and wire the vent to the unit.
- 3) Cover the shaft extension with a waxy rust preventative compound that will keep oxygen away from the bare metal.
- 4) The instruction manuals and lubrication tags are paper and must be kept dry. Either remove these documents and store them inside or cover the unit with a durable waterproof cover which can keep moisture away.
- 5) Protect reducer from dust, moisture, and other contaminants by storing the unit in a dry area.
- 6) In damp environments, the reducer should be packed inside a moisture-proof container or an envelope of polyethylene containing a desiccant material. If the reducer is to be stored outdoors, cover the entire exterior with a rust preventative.

WHEN PLACING THE REDUCER INTO SERVICE

- 1) Assemble the vent plug into the proper hole.
- 2) Clean the shaft extensions with petroleum solvents.
- 3) Fill the unit to the proper oil level using a recommended lubricant. (See [page 3-6](#) for lubrication instructions) The vapor phase corrosion inhibiting oil will not affect the new lubricant.
- 4) Follow the installation instructions provided in this manual.