Hollister-Whitney

A VANTAGE Company

Bulletin #1197
GT-Series Geared Traction Machine Shaft Retrofit Manual

*Rope Gripper® not included

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1/5/2024

⚠ WARNING

This retrofit manual is intended for the use of qualified and authorized elevator personnel ONLY. For your safety and the safety of others, do not attempt ANY procedure that you are not qualified and authorized to perform. Recommended procedures must be done in accordance with the applicable rules of the latest edition of the National Electrical Code; the latest edition of ASME A17.1; and all governing local codes. Every attempt has been made to ensure that this manual is accurate and up to date. Hollister-Whitney Elevator Co. LLC assumes no liability for consequences resulting from any error or omission. Please notify Hollister-Whitney Elevator Co. LLC regarding any difficulties with this manual.

Contents

Section

1

1 Introduction

1.1 Description

The following manual is a step-by-step guide for installing the shaft retrofit kit for the GT-series of machines. Every effort has been made to ensure that each step in this manual is as clear and understandable as possible. If there are questions regarding the installation of the GT-series shaft retrofit kit, please contact Hollister-Whitney technical support at (217) 222-0466.

A video for the installation of the retrofit kit is also available on YouTube. If you have not received access to this video, please contact Hollister-Whitney technical support.

1.2 Applicable Machine Models

This manual applies to the GT11 and GT31 Overhead machines as well as the GT11 and GT31 Basement Set and Overhead Deflector machines. The first part of Section 4 of the manual illustrates the step-by-step instruction on a GT11 overhead machine. The process will be the same for the GT31 overhead machine which is not shown in the manual.

Furthermore, the first part of Section 4 is applicable for general disassembly and reassembly of basement set and overhead deflector machines as well. However, additional process steps will be required such as removing the overhead deflector and overhead deflector stands. If you have questions on how to disassemble basement set or overhead deflector machines, please contact Hollister-Whitney technical support.

1.3 General Warnings

- Always Wear proper PPE (Personal Protective Equipment).
- Inspect tools to ensure they are in good condition and proper working condition.
- Read and understand all instructions prior to proceeding.
- Follow standard elevator industry and governing safety requirements.

1.4 Kits and Tools Required for Shaft Replacement

The following kits and tools will be needed for shaft replacement:

1. The model specific shaft retrofit kit which is supplied by Vantage.
    a. The retrofit kit will come with a drawing of the components inside a box inside the crate. Please inspect the contents of the crate to ensure that all the components on the drawing are included in the kit. If a part is missing, contact Hollister-Whitney technical support for any missing parts.
    IMPORTANT NOTE: There may be some components which will not be used but are supplied as backup material if necessary (set screws, stand shims, eccentric shims, etc.)
    b. See the Appendix for a list of components which are included with the kit by model type.
2. A retrofit tool kit which is supplied by Vantage
    a. The retrofit tool kit will come with a drawing of the components inside the box. Please inspect the contents of the box to ensure that all the components on the drawing are included in the kit. A retrofit tool kit is not supplied for each machine. A retrofit tool kit will be supplied to each affected customer based on field office requirements. If a part is missing, contact Hollister-Whitney technical support for any missing parts.
    b. See the Appendix for a list of components which are included with the kit.
3. The following required tools are not supplied by Vantage:
    a. ½” Drive Impact Driver – Used for removing and reinstalling fasteners
    b. Deep Well Socket Set– Used for removing and reinstalling fasteners
    c. Small Pry Bar – Used for lifting the outboard stand
    d. Emery Cloth – Used for removing burrs and cleaning surfaces
    e. 1-1/8” Wrench – Used for removing and reinstalling fasteners
    f. ¾” Wrench - Used for removing and reinstalling oil plug
    g. Adjustable Wrench – Used for removing and reinstalling fasteners
    h. Torque Wrench – Used for tightening fasteners
    i. Flat Tip Screwdriver or Small Chisel – Used for the bending tabs on shaft lock washer
    j. Paper Towels or Rags – Used for cleaning components
    k. Bucket – Used for holding the machine gearbox oil
    l. Four Short Hoisting Straps – Used for hoisting various components
    m. Hoisting Device – Capable of Hoisting at least 600 lbs.
    n. Putty Knife – Used for removing silicone caulk
    o. Brass Hammer – Used for tapping components into position
    p. Propane Torch with Rosebud Head – Used for heating up bronze gear and traction wheel hub
    q. Operating Fire Extinguisher
    r. Other – Any tool which may be required for job specific site conditions

Section

2

2 Safety Precautions

Read this section before any work is performed on elevator equipment.

✱ IMPORTANT –**The procedures contained in this manual are intended for the use of qualified elevator personnel. In the interest of your personal safety and the safety of others, do NOT attempt ANY procedure that you are NOT qualified to perform.**

All procedures must be done in accordance with the applicable rules in the latest edition of the National Electrical Code; the latest edition of ASME A17.1; and any governing local codes.

2.1 Terms in This Manual

CAUTION: Caution Statements identify conditions that could result in damage to the equipment or other property if improper procedures are followed!

WARNING: Warning Statements identify conditions that could result in personal injury if improper procedures are followed!

2.2 General Safety

Specific warnings and cautions are found where they apply, and DO NOT appear in this summary.

2.3 Electrical Safety

All wiring must be in accordance with the National Electrical Code and must be consistent with all state and local codes.

2.4 Electrical Hazards

Electric shocks can cause personal injury or loss of life. Circuit breakers, switches and fuses may NOT disconnect all power to the equipment. Always refer to the wiring diagrams. Whether the A/C supply is grounded or not, high voltage will be present at many points.

2.5 Mainline Disconnect

Unless otherwise suggested, always turn OFF. Lock and tag out the mainline disconnect to remove power from the equipment.

2.6 Test Equipment Safety

Always refer to manufacturers' instruction book for proper test equipment operation and adjustments.

Megger testing, or buzzer type continuity testers, can damage electronic components. Connection of devices such as voltmeters on certain low-level analog circuits may degrade electronic system performance. Always use a voltmeter with a minimum impedance of 1M Ohm/Volt. A digital voltmeter is recommended.

2.7 When Power Is On

Dangerous voltages exist at several points in some products. To avoid personal injury, do NOT touch exposed electrical connections or components while power is On.

2.8 Product Specific Warnings

WARNING

Hang the elevator car before removing ANY bolts. Failure to do so may result in severe injury and equipment damage. Follow your company-specific procedures and protocols for hanging the car, landing the counterweight, etc.

WARNING

There are several critical reassembly steps in this manual. Please take great care in taking those steps. If there are questions or concerns, please reach out to Hollister-Whitney technical support at (217) 222-0466.

Section

3

3 Arrival of the Retrofit Kit

3.1 Receiving

Immediately upon arrival of the retrofit kit, visually inspect the entire contents of the crate for any external damage. If any damage incurred in transit is found, make notice of the claim in the presence of the carrier, and notify HWEC.

3.1.1 Inspect Crate Contents

Inventory the contents of the crate to ensure that ALL the components of the retrofit have been shipped with the shaft assembly. The contents for each retrofit kit are detailed in Section 5 – Appendix at the end of the installation manual.

If any components are missing, please contact Hollister-Whitney immediately so that any missing components can be sent out immediately.

3.2 Handling

Depending on the model, the crate will weigh between 200 lbs. and 400 lbs. Be sure to have the proper material handling equipment available for moving the crates at the job site. The crates containing the retrofit kits can be stacked a maximum of two crates high.

The retrofit kit will be delivered in a wooden crate with an integral pallet. The kit can be moved with a standard fork truck or pallet jack.

Take care not to drop the crate while handling as it could damage the components contained in the crate.

Section

4

4 Retrofit Kit Installation Process

4.1 Initial Prep-Work for Disassembly for All Models

First, check the backlash of the machine using the dial indicator (Figure 4-1) supplied in the tool kit. Install the dial indicator as shown. Rotate the traction wheel clockwise and counterclockwise to determine the total backlash as shown by the dial indicator. Typical backlash is 0.005” to 0.009”.

Figure 4-1: Backlash Check

Record the backlash on the outboard stand rope retainer plate mounting surface (Figure 4-2). This measurement will be used for reference at the end of the reassembly process.

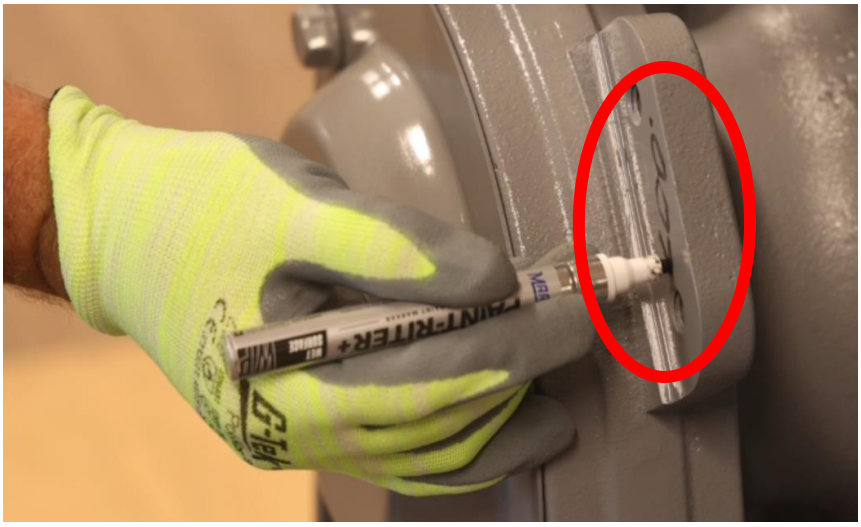


Figure 4-2: Record Backlash on Tab

Next, mark the position of the notch feature on the outer diameter of the flange of the non-traction wheel side eccentric (Figure 4-3) relative to the upper and lower housing assembly as shown. Be sure the mark is across both the eccentric and the upper and lower housing assembly. This mark will be used as a reference during the reassembly process.

Figure 4-3: Mark Position of Notch In Eccentric onto Lower Housing

Now, mark the location of the outboard stand shims relative to the outboard stand and machine base (Figure 4-4 and Figure 4-5). Be sure the marks are such that they are easily identified between the left and right shim packs and cover the outboard stand, shims, and machine base. These marks will be used as a reference during the reassembly process.

Figure 4-4: Mark Position of Shim Packs

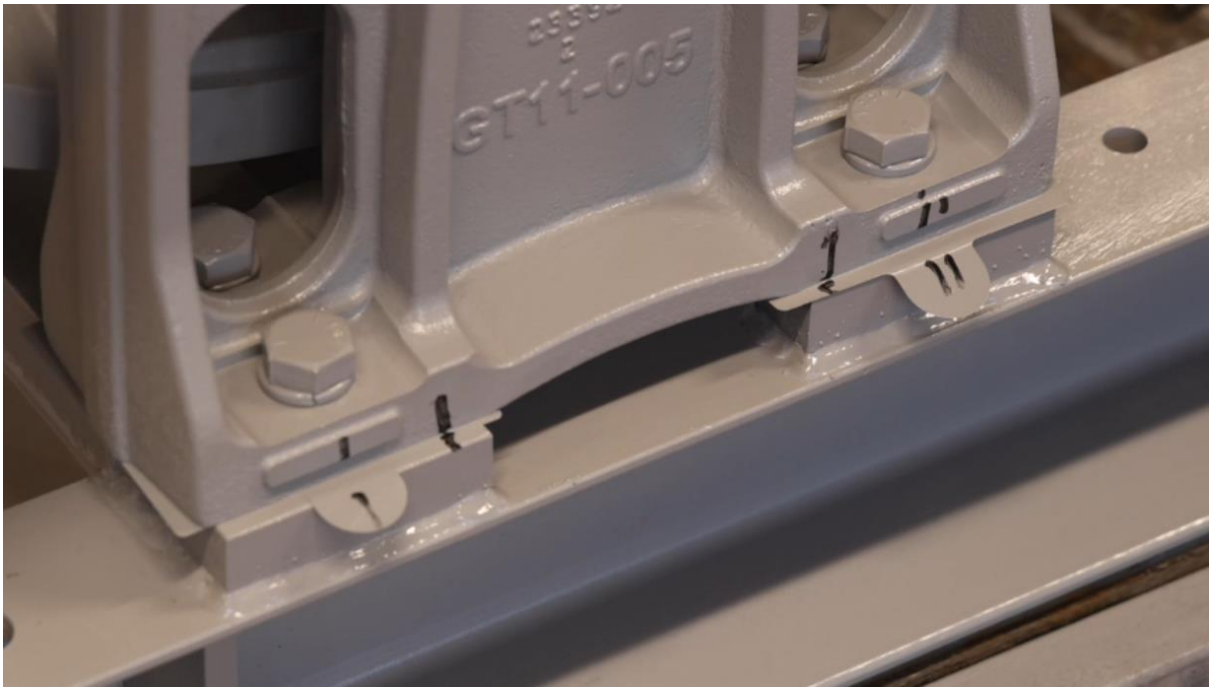


Figure 4-5: Marked Positions of Shim Packs After Marking

Next, using a wrench loosen the oil drain plug (Figure 4-6) and drain the oil from the machine into a clean bucket (Figure 4-7). Make sure to retain the oil as it will be reused. A quart of oil is included in the retrofit kit in case some of the oil is spilled during the draining process.

Figure 4-6: Loosen Oil Drain Plug

Figure 4-7: Drain Oil into Clean Bucket

4.2 Outboard Stand Disassembly

The next step is to disassemble the outboard stand from the machine.

Start by removing the shaft cover from the outboard stand by removing the three bolts that secure it to the outboard stand (Figure 4-8).

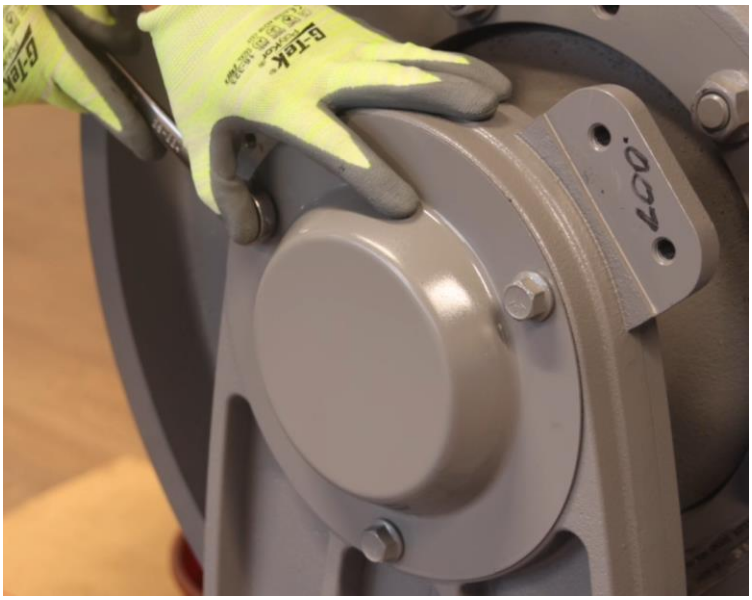


Figure 4-8: Removal of Three Cover Bolts

Removing the shaft cover exposes the shaft lock nut, shaft lock nut washer and bearing retainer plate which will now be removed (Figure 4-9).

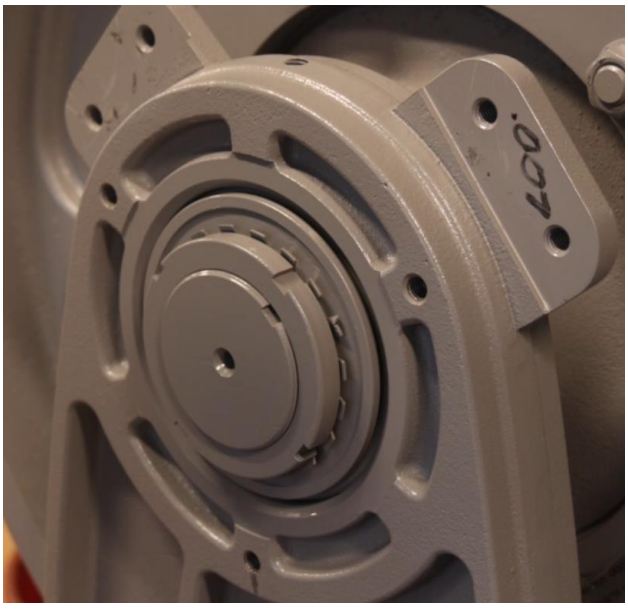


Figure 4-9: Exposed Lock Nut, Lock Nut Washer, and Bearing Retainer

Using a flat tip screwdriver or small chisel, bend back any shaft lock nut tabs which have been previously bent over (Figure 4-10).

Figure 4-10: Bend Lock Tab Out of Slot in Lock Nut

Then, using the shaft lock nut spanner wrench provided in the retrofit tool kit, remove the shaft lock nut and shaft lock nut washer (Figure 4-11 and Figure 4-12).

Figure 4-11: Remove Shaft Lock Nut

Figure 4-12: Remove Shaft Lock Nut Washer

Now remove the bearing retention plate (Figure 4-13). Flip the bearing retention plate around so that its outside diameter touches the outer race of the bearing when reinstalled (Figure 4-14).

Figure 4-13: Remove Retainer Plate

Figure 4-14: Flip and Reinstall Retainer Plate

Next, reinstall the shaft lock nut and tighten until snug (Figure 4-15 and Figure 4-16). This process will prevent the bearing seals from becoming disengaged when removing the outboard stand.

Figure 4-15: Reinstall Lock Nut

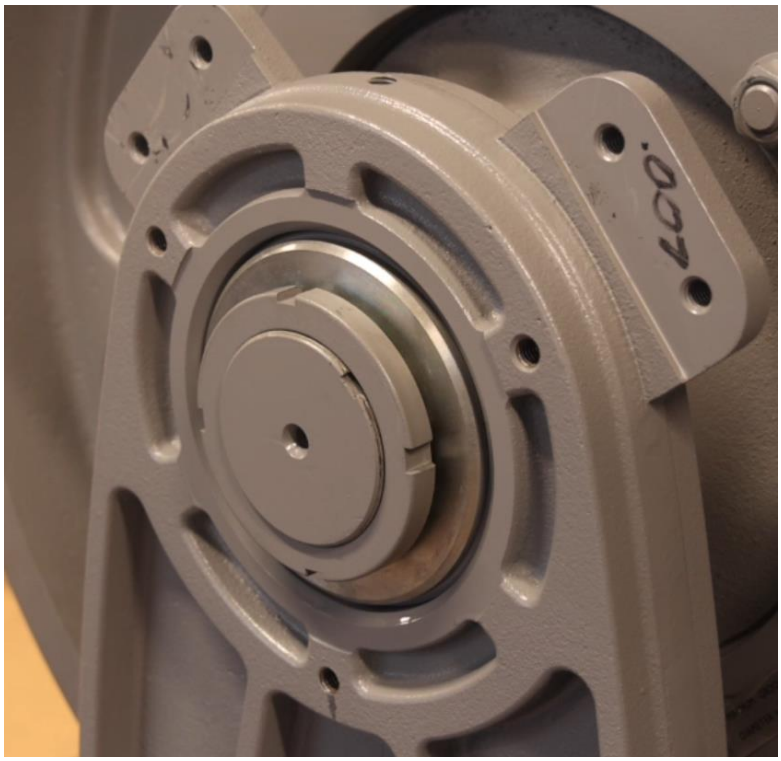


Figure 4-16: Lock Nut and Retainer Plate Reinstalled

Next, remove the four bolts which secure the outboard stand to the machine base (Figure 4-17) and remove the shims. It may be necessary to slightly pry up on the outboard stand to remove the shims (Figure 4-18). The shims will be reused with the retrofit kit.

Figure 4-17: Remove Four Bearing Stand Bolts

Figure 4-18: Remove Shims

Once the shims have been removed, insert one of the eyebolts provided in the tool kit into the threaded hole on top of the outboard stand. Use a hoisting device to take the pressure off the outboard stand bearing so that the outboard stand can be pulled off straight and level with minimal effort (Figure 4-19). The outboard stand bore to bearing outside diameter is a slip fit and should not require excessive force or a pulling device.

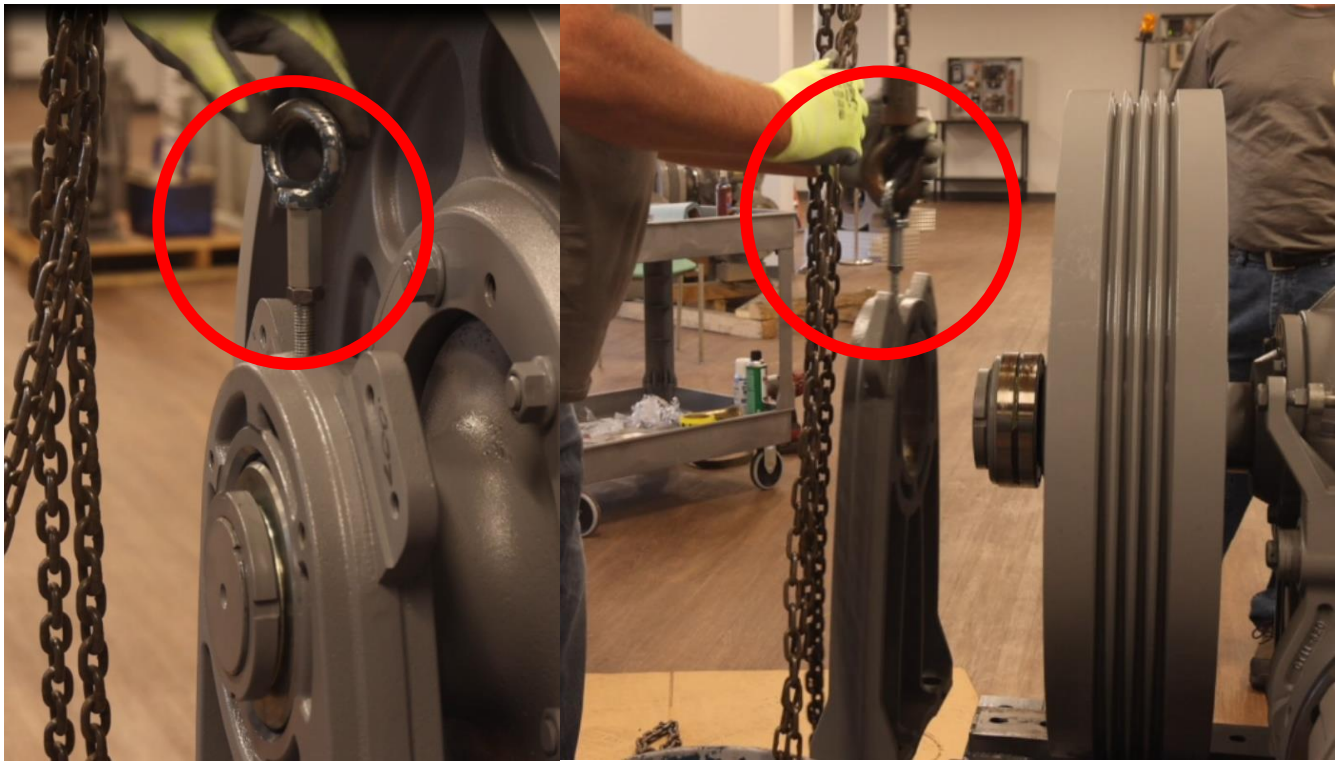


Figure 4-19: Install Eyebolt, Hoist and Disasemble Outboard Stand

4.3 Traction Wheel and Traction Wheel Hub Disassembly

The next step is to disassemble the traction wheel and traction wheel hub assembly.

First, remove the shaft lock nut, bearing retainer and the outboard stand bearing (Figure 4-20). Take care not to displace the seal of the bearing during the removal process. The bearing to shaft interface is a slip fit and should slide off from the shaft easily. However, in some cases, the outboard stand bearing may be difficult to remove due to rust. If the bearing is difficult to disassemble, then use the traction wheel puller provided in the tool kit to remove both the traction wheel and outboard stand bearing simultaneously. If the provided puller assembly does not work, then an actual bearing puller may be required. The shaft lock nut, shaft lock nut washer, bearing retention plate and the outboard stand bearing will be reused with the retrofit kit.

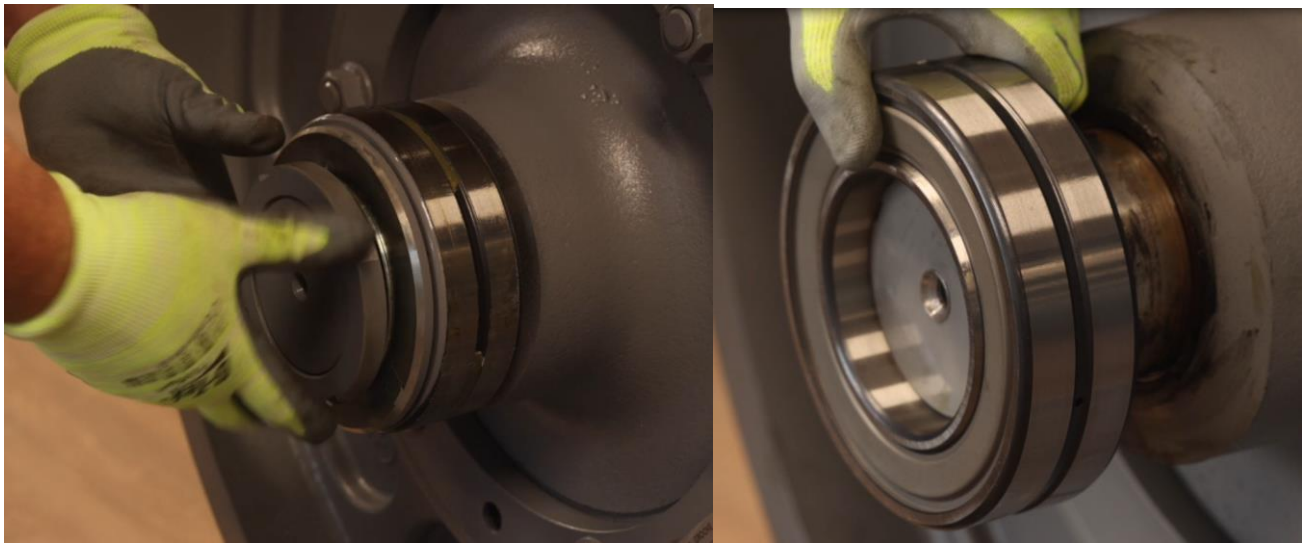


Figure 4-20: Remove Shaft Lock Nut, Retainer Plate and Bearing

To remove the traction wheel and traction wheel hub assembly, place the two threaded rods into the two threaded holes in the traction wheel as shown (Figure 4-21). The threaded rods, puller, puller nuts and puller washers are provided in the retrofit tool kit. Next, place the puller over the two threaded rods so that the puller engages with the traction wheel shaft. Apply the two puller nuts and two puller washers to the threaded rods and tighten until snug.

Figure 4-21: Install Traction Wheel Puller Assembly

Now, remove the top body bolt (Figure 4-22) which holds the traction wheel to the traction wheel hub and run a strap through the hole (Figure 4-23). The bolt hole may have sharp edges, a means to protect the hoist strap may be required. Use the hoisting device to support the traction wheel and hub assembly for removal.

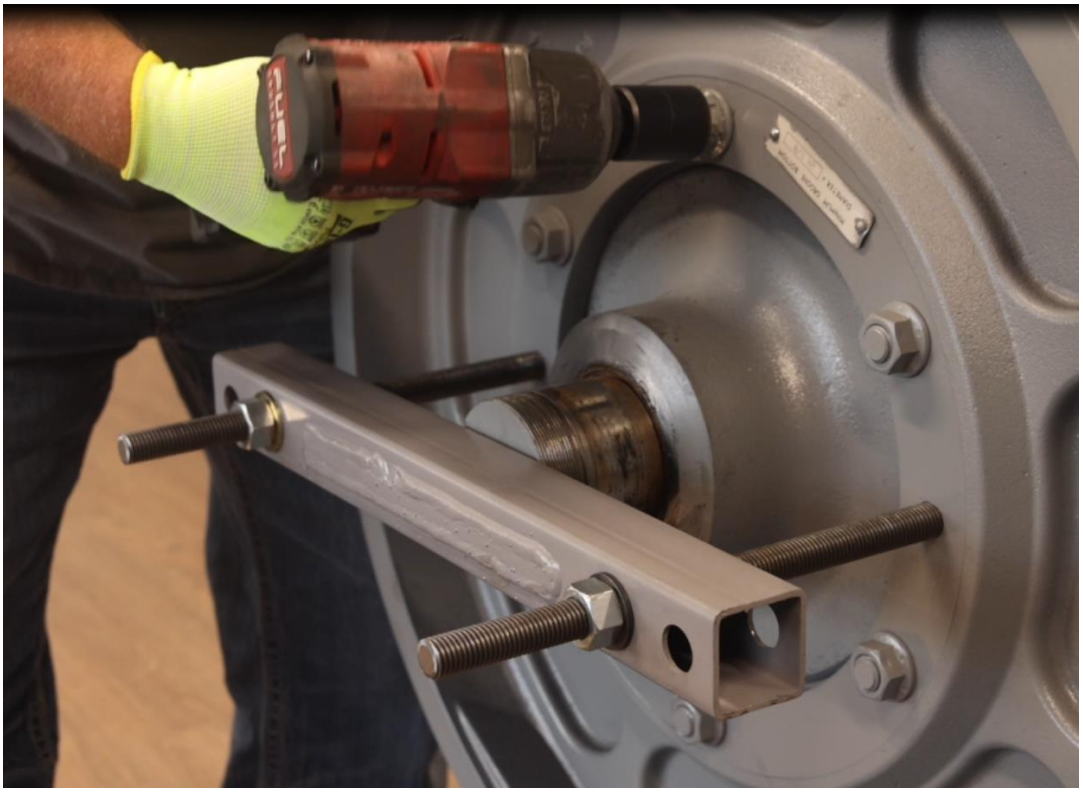


Figure 4-22: Install Traction Wheel Puller Assembly

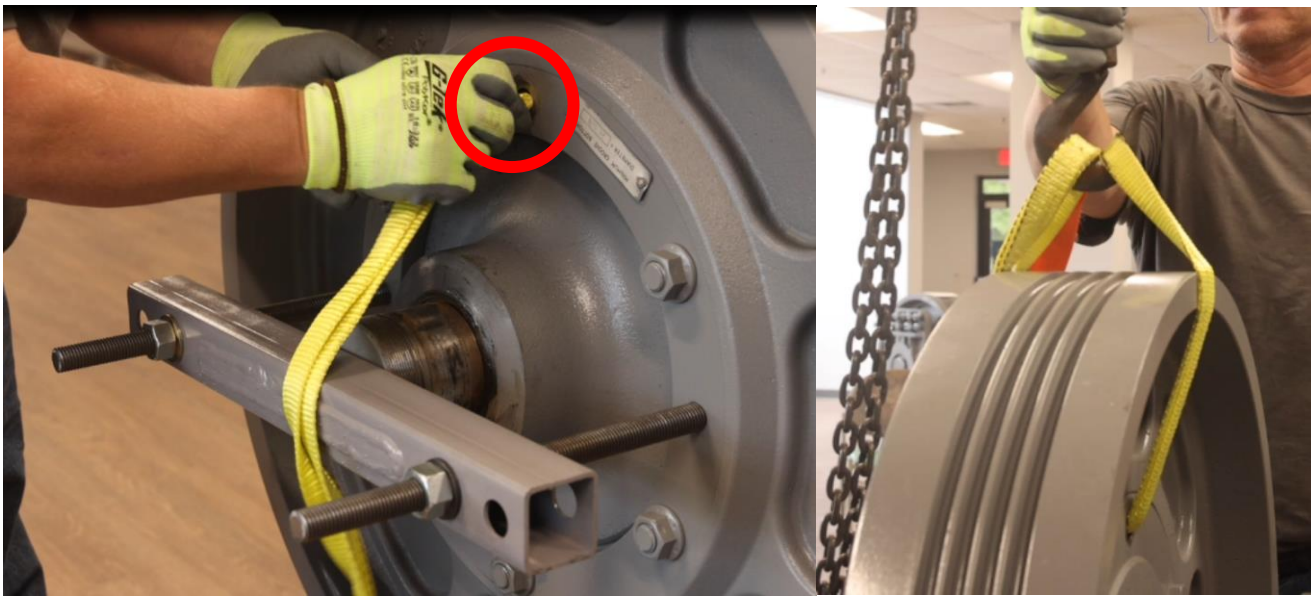


Figure 4-23: Run Hoisting Strap Through Hole and Support With Hoist

Next, tighten the traction wheel puller nuts alternating back and forth between the nuts until the traction wheel and hub assembly becomes disengaged from the tapered traction wheel shaft (Figure 4-24). Heat may need to be applied to the traction wheel to aid in the removal process.

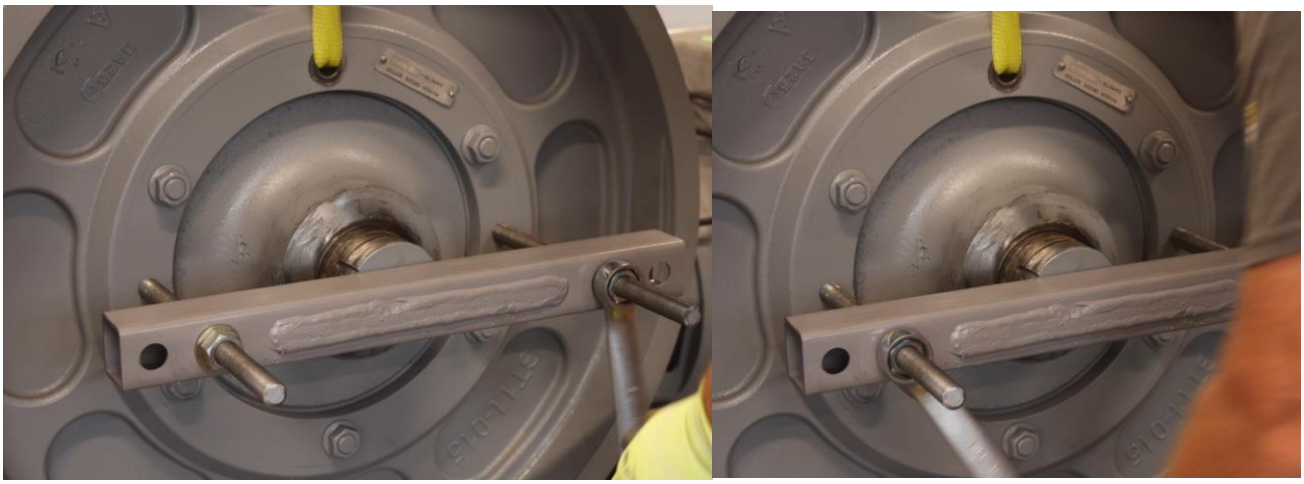


Figure 4-24: Use Puller Assembly To Disengage Traction Wheel Hub from Shaft

After the traction wheel and traction wheel hub have come free from the tapered shaft, remove the traction wheel puller threaded rods and puller bar (Figure 4-25).

Figure 4-25: Remove Puller Assembly

Using the hoist, fully remove the traction wheel and traction wheel hub assembly and place on the floor with the outside of the assembly laying on the floor as shown (Figure 4-26). The traction wheel will be used as a fixture for the center assembly reassembly later in the process.

Figure 4-26: Remove Traction Wheel From Shaft and Lay On Floor In Orientation Shown

With the traction wheel assembly removed, mark the position of the notch feature on the outer diameter of the flange of the traction wheel side eccentric relative to the upper and lower housing assembly as shown (Figure 4-27).

Figure 4-27: Mark Position of Eccentric Notch Relative to Lower Housing

4.4 Upper Housing Disassembly

The next step is to disassemble the upper housing.

First, remove all four of the traction wheel side eccentric bolts (Figure 4-28). Note that there are no shims under the traction wheel side eccentric bolts.

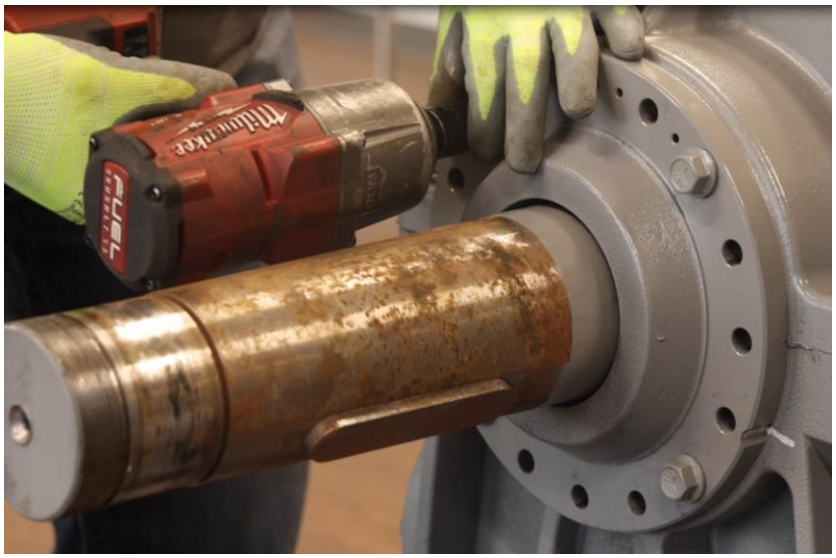


Figure 4-28: Remove All Traction Wheel Side Eccentric Bolts

Next remove the non-traction wheel side eccentric bolts. Please note that there are shims under these bolts. Remove the bolts with shims and then temporarily reinstall the shims on the opposite side of the bolts and insert them back into the threaded holes in the eccentric as shown (Figure 4-29).

Figure 4-29: Remove Bolts and Shims and Reinstall in Threaded Holes As Shown (with shims)

Now, remove the eight bolts which are used to hold the upper housing to the lower housing (Figure 4-30).

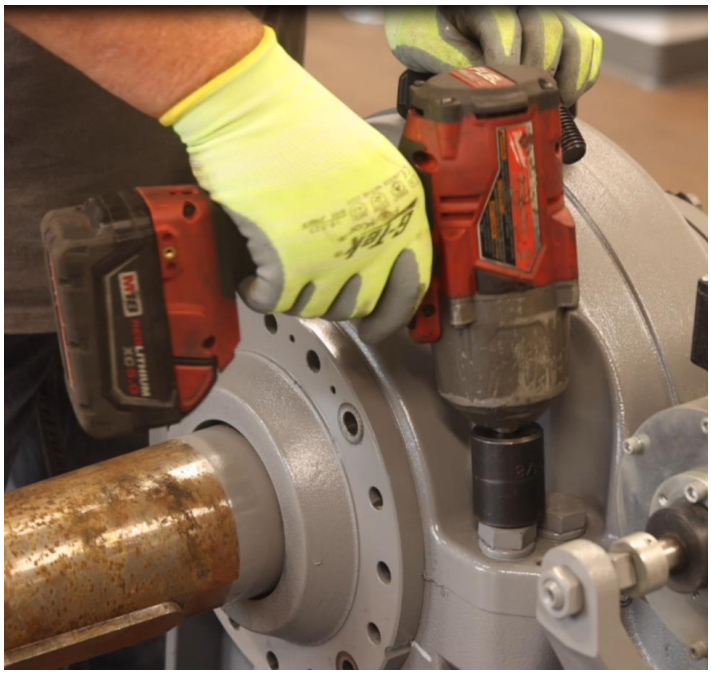


Figure 4-30: Remove the Eight Upper Housing to Lower Housing Bolts

Using the eccentric bolts which were removed from the traction wheel side eccentric, place the bolts into the threaded holes located at two corners of the upper housing as shown (Figure 4-31).

Figure 4-31: Insert Jack Bolts into Upper Housing Threaded Holes

The bolts will be used as jack bolts to help separate the upper housing from the housing because the two are sealed together using silicone (Figure 4-32). A small pry bar may be necessary to complete the separation of the upper and lower housing (Figure 4-33).

Figure 4-32: Use the Jack Bolts to Separate the Upper and Lower Housing

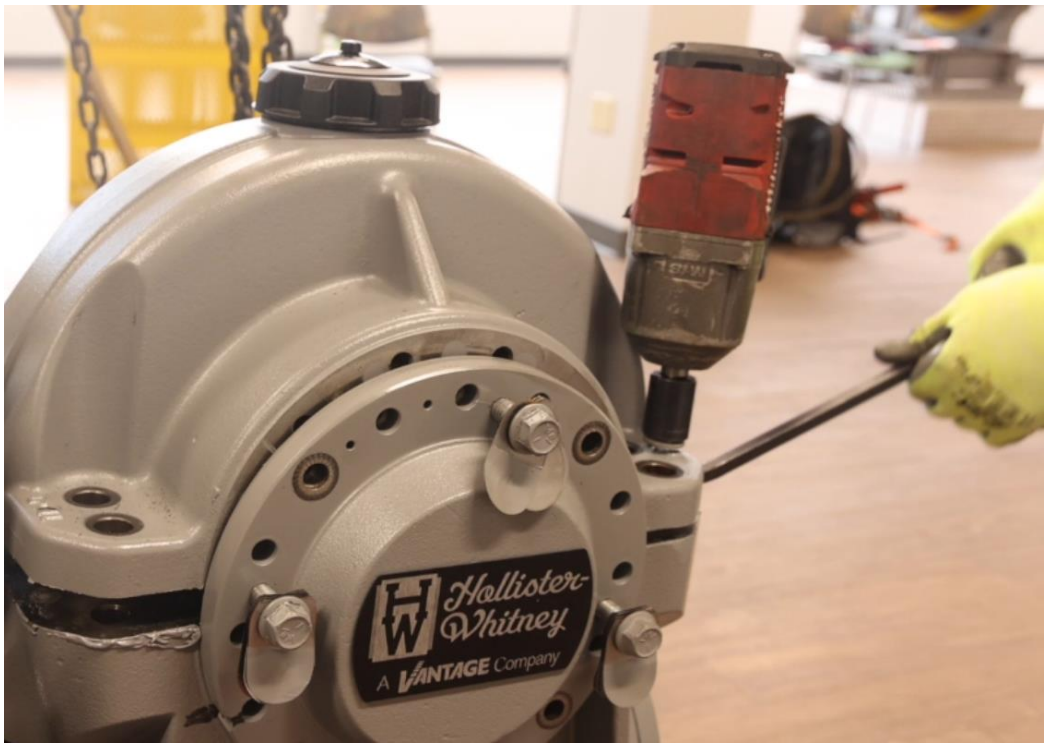


Figure 4-33: Pry Bar To Aid In Upper Housing Removal

Remove the two jack bolts once the upper and lower housing seal has been broken (Figure 4-34) so that the upper housing can be removed from the assembly.

Figure 4-34: Use the Jack Bolts to Separate the Upper and Lower Housing

Next, use two of the eyebolts which were provided with the tool kit and run a strap through the eyes. Ensure that the upper housing is separated from the lower housing far enough to clear the alignment pins with the jack bolts or pry with a bar then remove the upper housing. Now, hoist the upper housing from lower housing (Figure 4-35).

Figure 4-35: Install Eyebolts and Hoist Upper Housing from Lower Housing

4.5 Center Assy Disassembly from the Gear Box

The next step is to disassemble the original center assembly from the gear box.

First, attach a strap on each side of the gear hub as shown and using the hoist, slightly lift the center assembly from the gear box. With the original center assembly slightly elevated, remove the traction wheel side eccentric and set to the side (Figure 4-36).

Figure 4-36: Place Hoist Straps As Shown, Remove Pressure, Remove Eccentric

Once the traction wheel side eccentric has been removed, hoist the center assembly from the gear box and place the assembly on the floor (Figure 4-37).

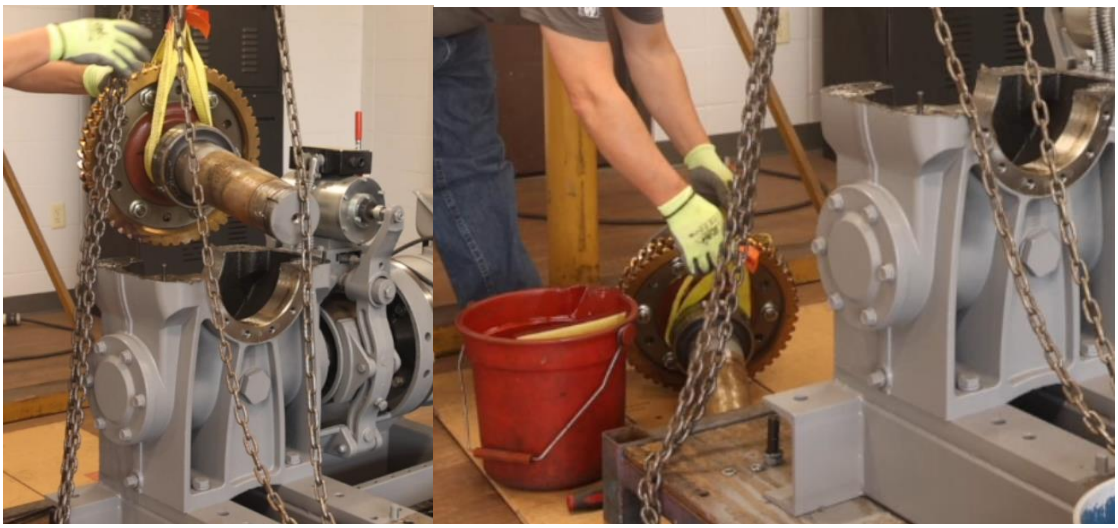


Figure 4-37: Hoist Center Assembly and Lay on Floor

With the center assembly on the floor, rearrange the straps as shown so that the center assembly can be hoisted into an upright position from the floor (Figure 4-38).

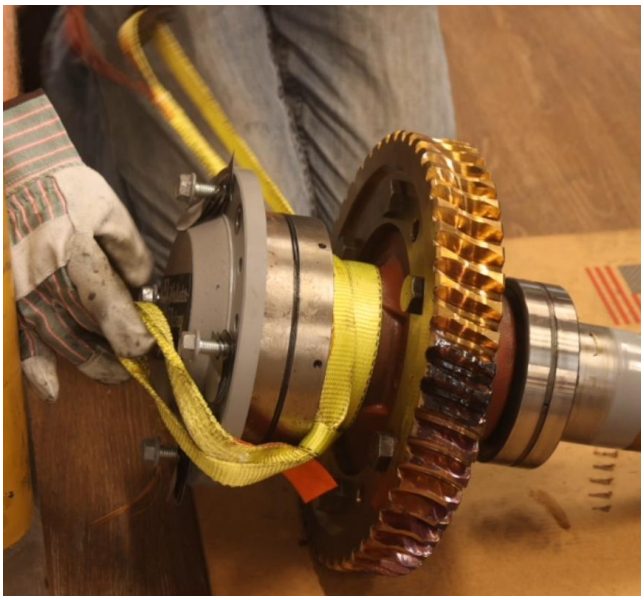


Figure 4-38: Place Hoist Straps Onto Center Assembly As Shown

Next, place the tapered end of the center assembly into the traction wheel (Figure 4-39).

Figure 4-39: Place Center Assembly Into Traction Wheel Hub

The traction wheel will be used as a fixture for holding the center assembly for removal of the eccentric and bronze gear. Prior to fully setting the center assembly into the traction wheel, remove the shaft key (Figure 4-40). A small chisel may be required to remove the shaft key. Then, fully seat center assembly into hub (Figure 4-41). The key will be reused with the retrofit kit.

Figure 4-40: Remove Shaft Key

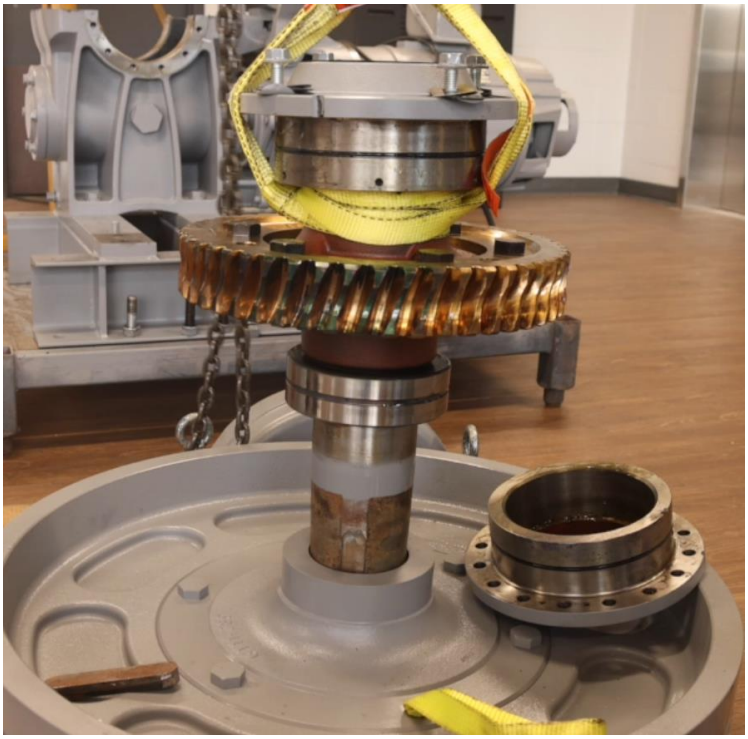


Figure 4-41: Fully Seat Center Assembly Into Traction Wheel Hub

4.6 Original Center Assy Eccentric and Gear Disassembly

The next step is to disassemble the non-traction wheel side assembly eccentric and bronze gear.

With the original center assembly held safely by the traction wheel in the upright position, remove the hoisting straps. Next, back the six cone point set screws out from the non-traction wheel side eccentric using the t-handle hex key supplied in the retrofit toolkit. The six cone point set screws do not need to be fully disassembled from the eccentric as shown (Figure 4-42). Once all six cone point set screws have been backed out, remove the non-traction wheel side eccentric, and set aside. The non-traction wheel side eccentric will be reused with the retrofit kit.

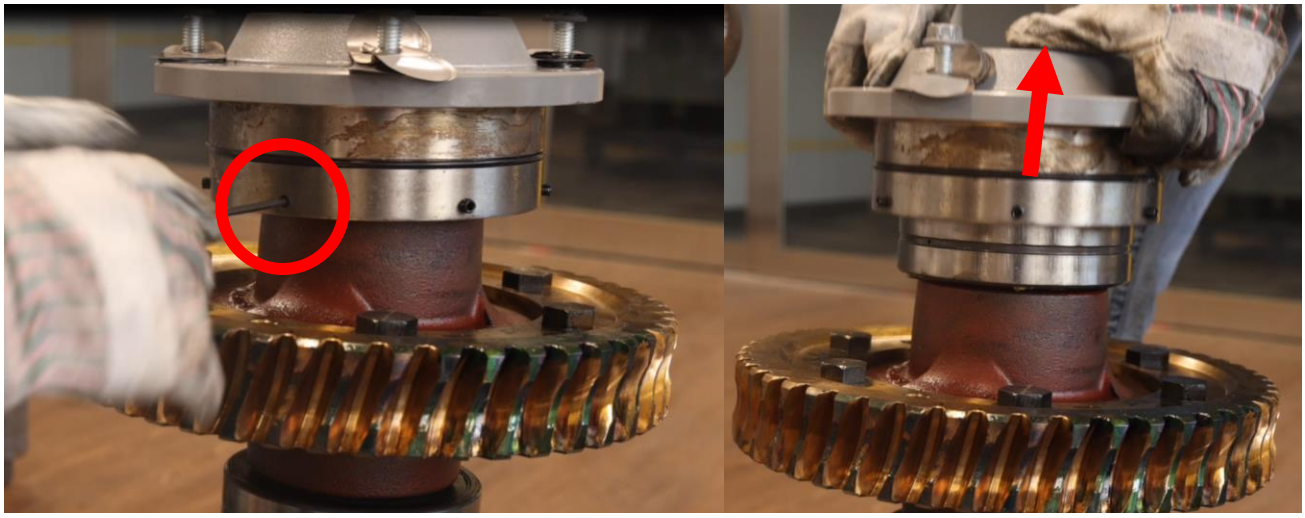


Figure 4-42: Partially Back Out All Set Screws and Remove Eccentric

Now that the non-traction wheel side eccentric has been removed, remove the bolts and nuts which hold the bronze gear to the gear hub as shown (Figure 4-43).

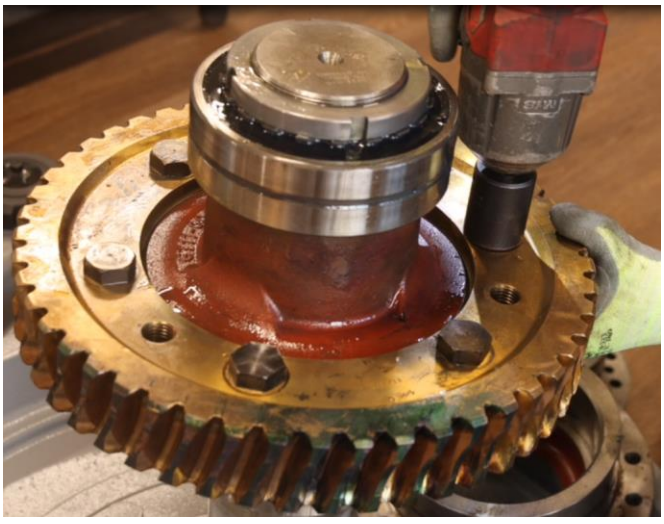


Figure 4-43: Remove Bolts and Nuts From Gear

The bolts will need to be fully removed by gently tapping on the threaded end of the bolt with a brass hammer (Figure 4-44).

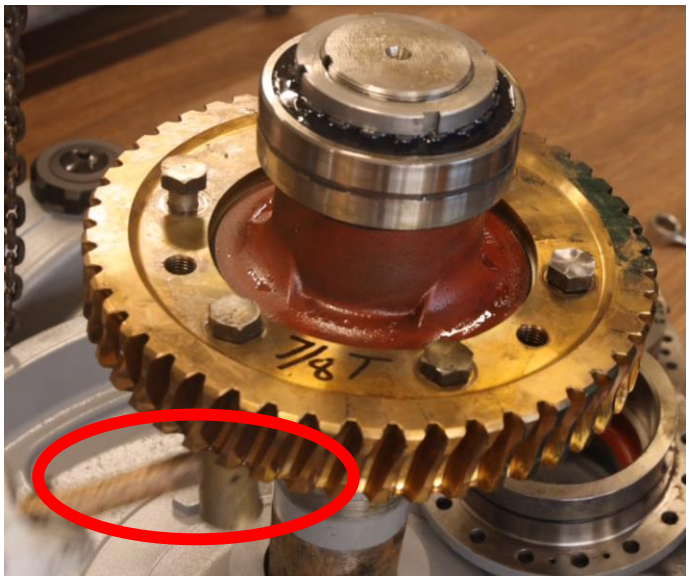


Figure 4-44: Remove Bolts and Nuts From Gear

With the body bolts removed, heat the gear until it expands enough to spin freely on the gear hub and remove the gear (Figure 4-45).

Figure 4-45: Heat Bronze Gear For Removal

It may be necessary to lightly tap around the gear with blocking and a hammer to aid in its removal and set the bronze gear aside. Be sure to wear appropriate gloves while removing the bronze gear from the gear hub as the gear will be extremely hot (Figure 4-46). The bronze gear and gear body bolts will be reused with the retrofit kit.

Figure 4-46: Remove Bronze Gear From Gear Hub

4.7 Removal of Original Center Assy from Traction Wheel

The next step is the removal of the original center assembly from the traction wheel.

First, place three of the eyebolts which were provided with the tool kit into the hub flange as shown. Next, place hoisting straps through the eyebolts and hoist the old center assembly out of the traction wheel (Figure 4-47). This assembly will not be re-used.

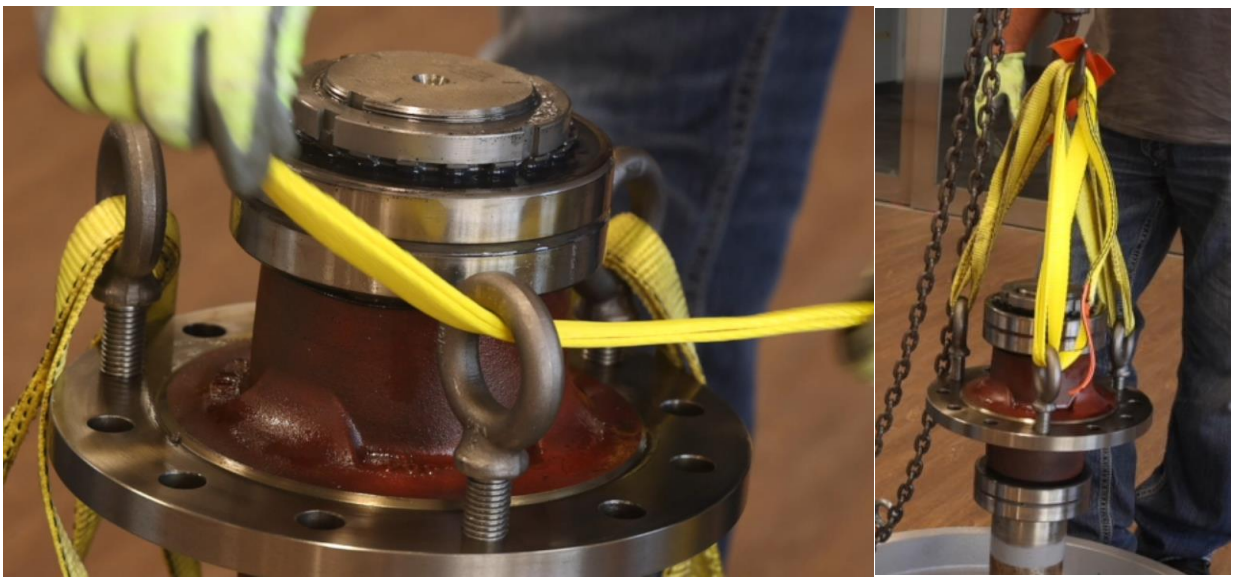


Figure 4-47: Install Eyebolts and Hoisting Straps and Hoist From Traction Wheel

4.8 Reassembly of the Center Assy with New Shaft

The next step is to assemble the original bronze gear and the original eccentric to the new shaft and hub assembly.

First, remove the three eyebolts from the original center assembly and thread them into the hub flange of the new center assembly (Figure 4-48).

Figure 4-48: Remove Eye Bolts from Old Center Assembly and Install on New Center Assembly

Run straps through the eyebolts as shown and hoist the new center assembly over to the traction wheel (Figure 4-49).

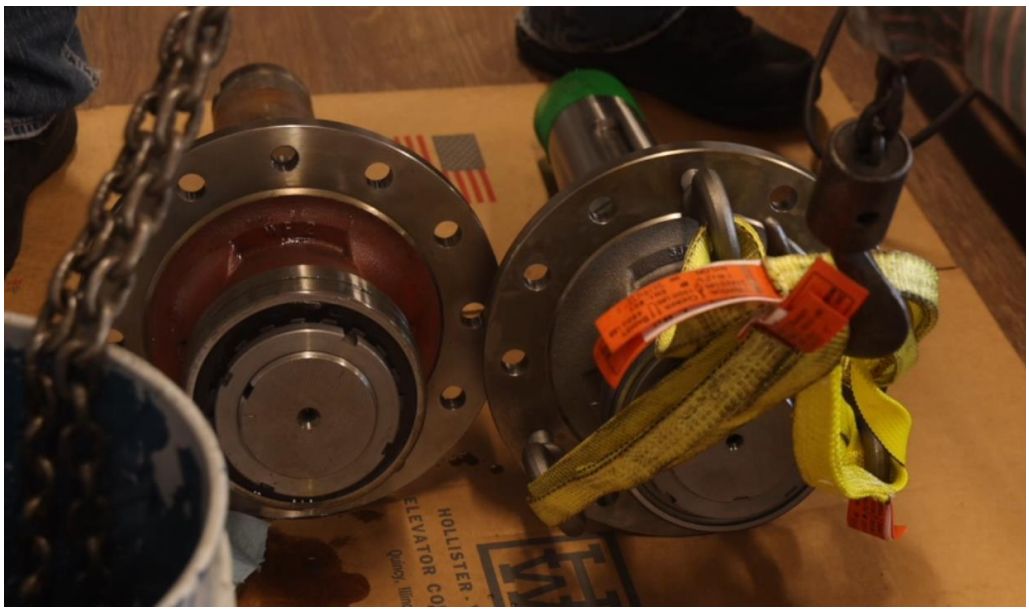


Figure 4-49: Place Hoisting Strap on New Center Assembly

Next, gently place the new center assembly into the traction wheel. Be careful not to damage the threads on the end of the shaft when placing the new center assembly into the traction wheel. Then, place the new center assembly in the traction wheel and remove the straps and the three eyebolts (Figure 4-50).

Figure 4-50: Place New Center Assembly into Traction Wheel

Next, thoroughly clean the gear hub flange, removing all burrs to ensure that the bronze gear will seat completely flush to the hub flange when reassembled (Figure 4-51).

Figure 4-51: Clean and Deburr Gear Hub

Next, thoroughly clean the inner gear flange, remove all burrs to ensure that the bronze gear will seat completely flush to the hub flange when reassembled. Emery cloth will likely need to be used for cleaning both the hub flange and gear flange (Figure 4-52).

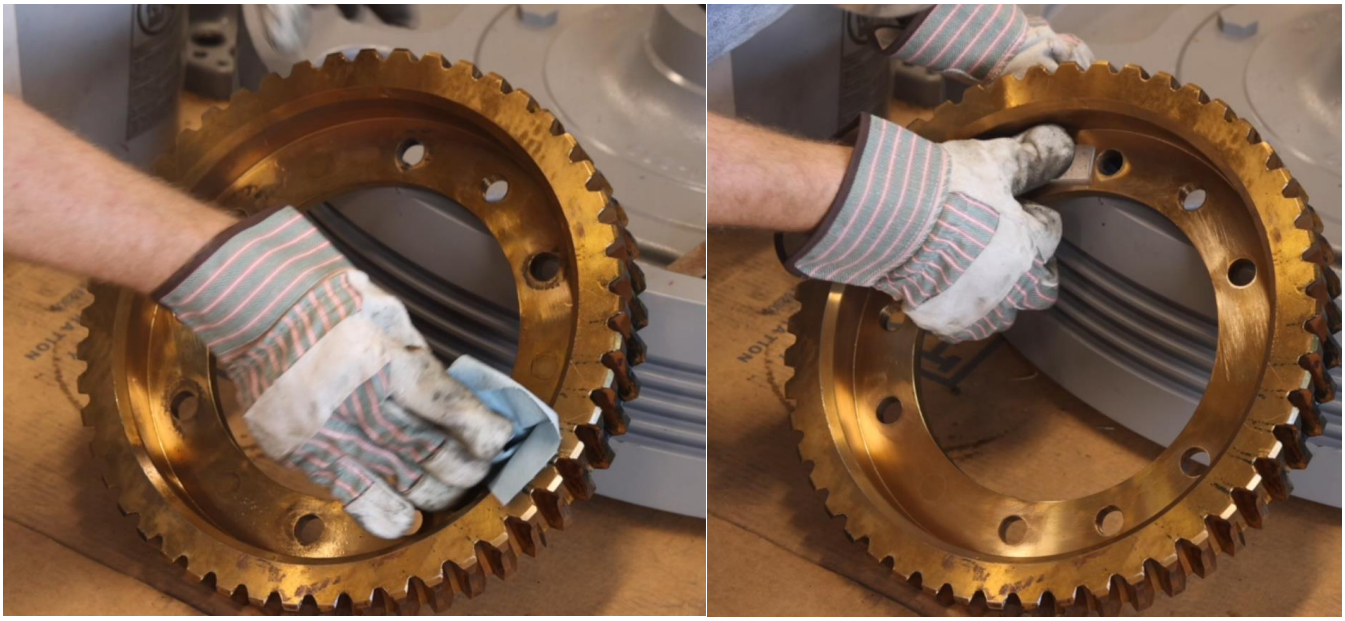


Figure 4-52: Clean and Deburr Gear Hub

For this next step, be sure to wear heat protective gloves as the bronze gear will be heated and will become extremely hot. Place the bronze gear onto the gear hub (Figure 4-53).

Figure 4-53: Place Bronze Gear on Gear Hub

Now, apply heat in a circular pattern until the bronze gear has expanded enough to be able to be seated into place (Figure 4-54).

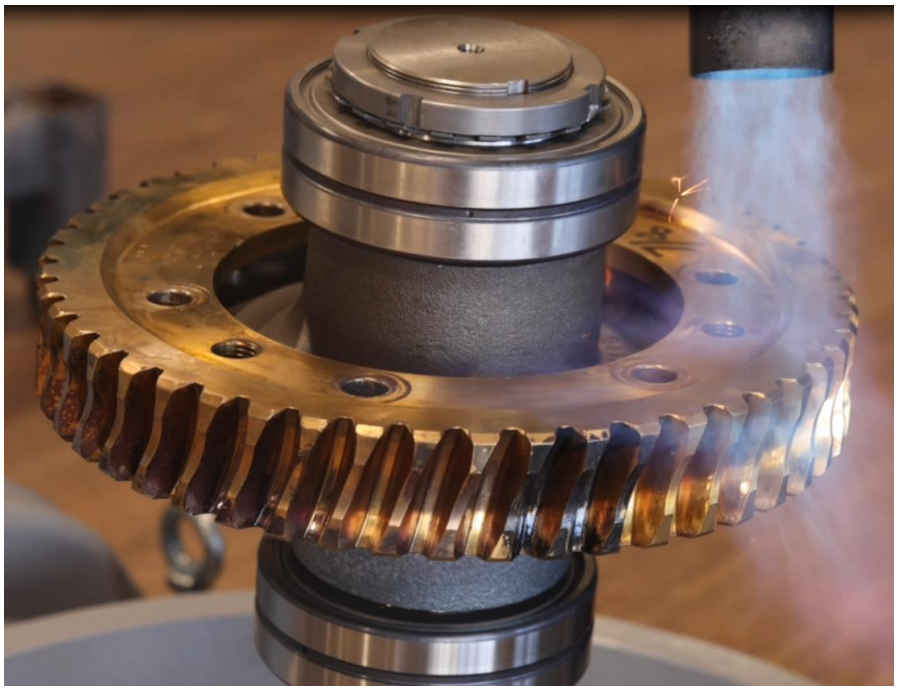


Figure 4-54: Heat Bronze Gear Until Seated

As soon as the bronze gear is drops into position and is mounted flush to the gear hub, rotate the gear so that the bolt holes in the bronze gear align with the bolt holes in the gear hub (Figure 4-55).

Figure 4-55: Rotate Gear to Align Unthreaded Holes

Next, temporarily install the two bolts provided with the retrofit kit. These two bolts will be used temporarily to hold the bronze gear to the hub for the next step. Let the gear cool until it is at a manageable temperature (Figure 4-56).

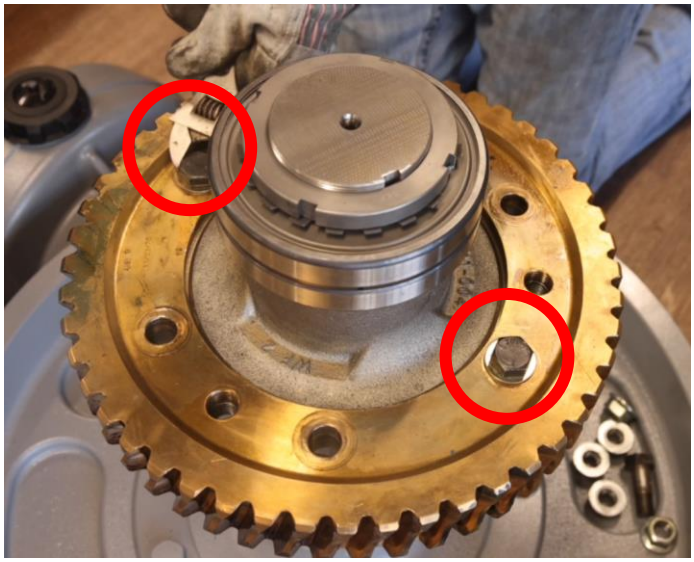


Figure 4-56: Insert Two Bolts Into Two Bolts Holes

After the gear has cooled to a manageable temperature, ream the four bolts holes which do not have the temporary bolts with the ¾" reamer and 12-point socket which are supplied with the retrofit toolkit (Figure 4-57).

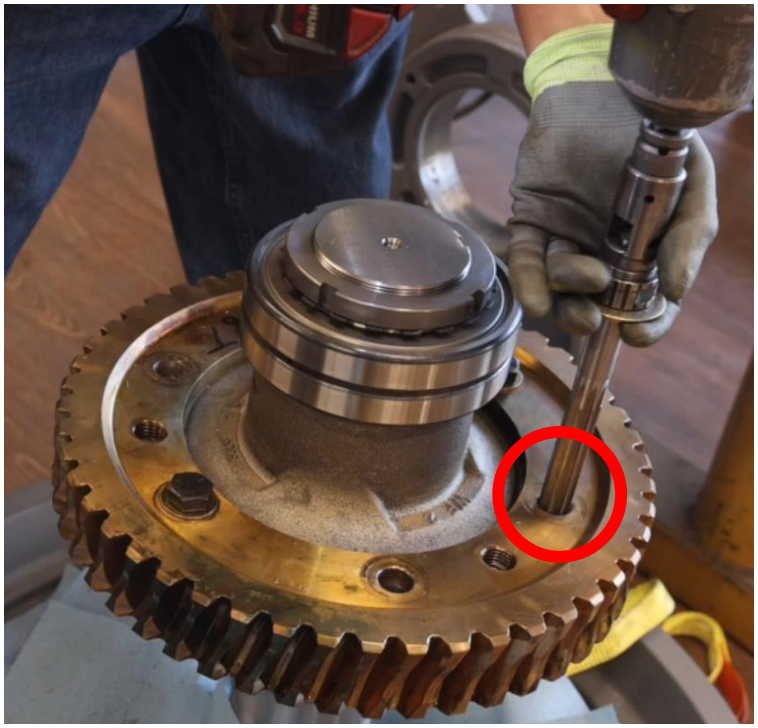


Figure 4-57: Ream the Remaining Four Unthreaded Bolt Holes

After reaming the holes, be sure to clean the gear and remove any burrs which may have been generated during the reaming process.

Next, using an impact driver, install four of the original body bolts and nuts such that the nut is on the traction wheel side of the assembly as shown. A cross-pattern should be used when tightening the bolts and nuts (Figure 4-58). Torque each bolt to 200 ft*lbs.

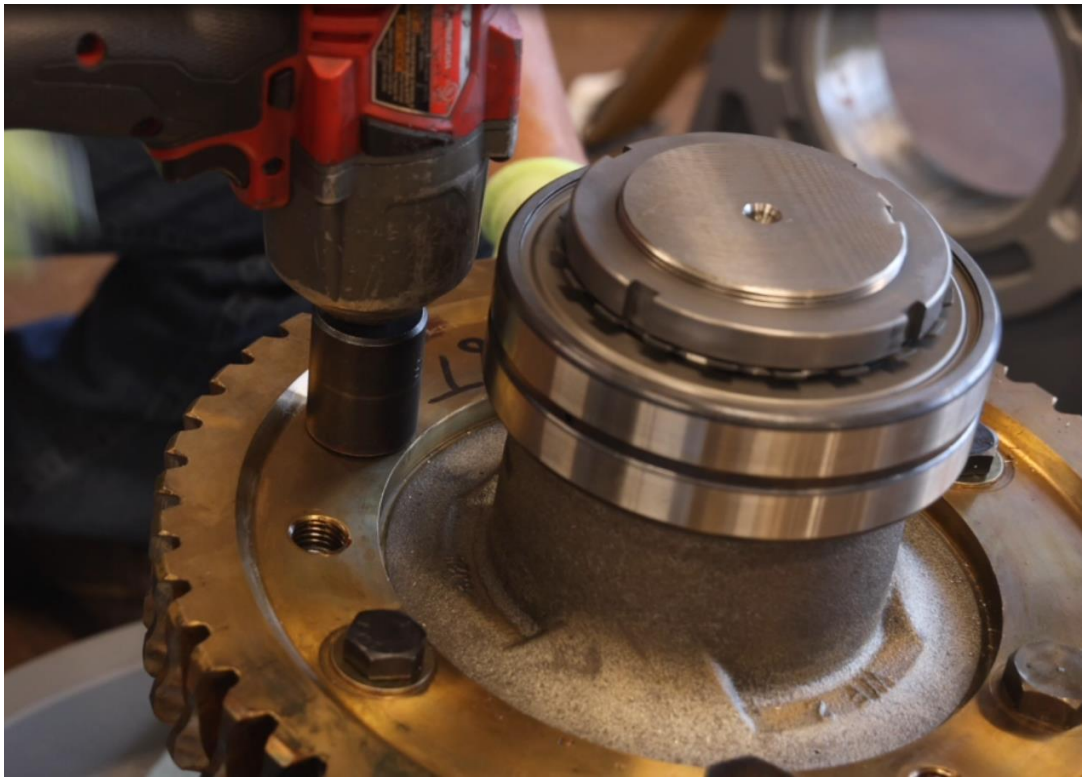


Figure 4-58: Install Four of the Original Nuts and Bolts – Torque to 200 ft*lbs.

Next, remove the two temporary bolts and ream the remaining two holes. After reaming the holes, be sure to clean the gear and remove any burrs which may have been generated during the reaming process (Figure 4-59).

Figure 4-59: Remove the Temporary Bolts and Remove Any Burrs

Now, install the remaining two body bolts and nuts using the impact driver (Figure 4-60). Torque each bolt to 200 ft*lbs.

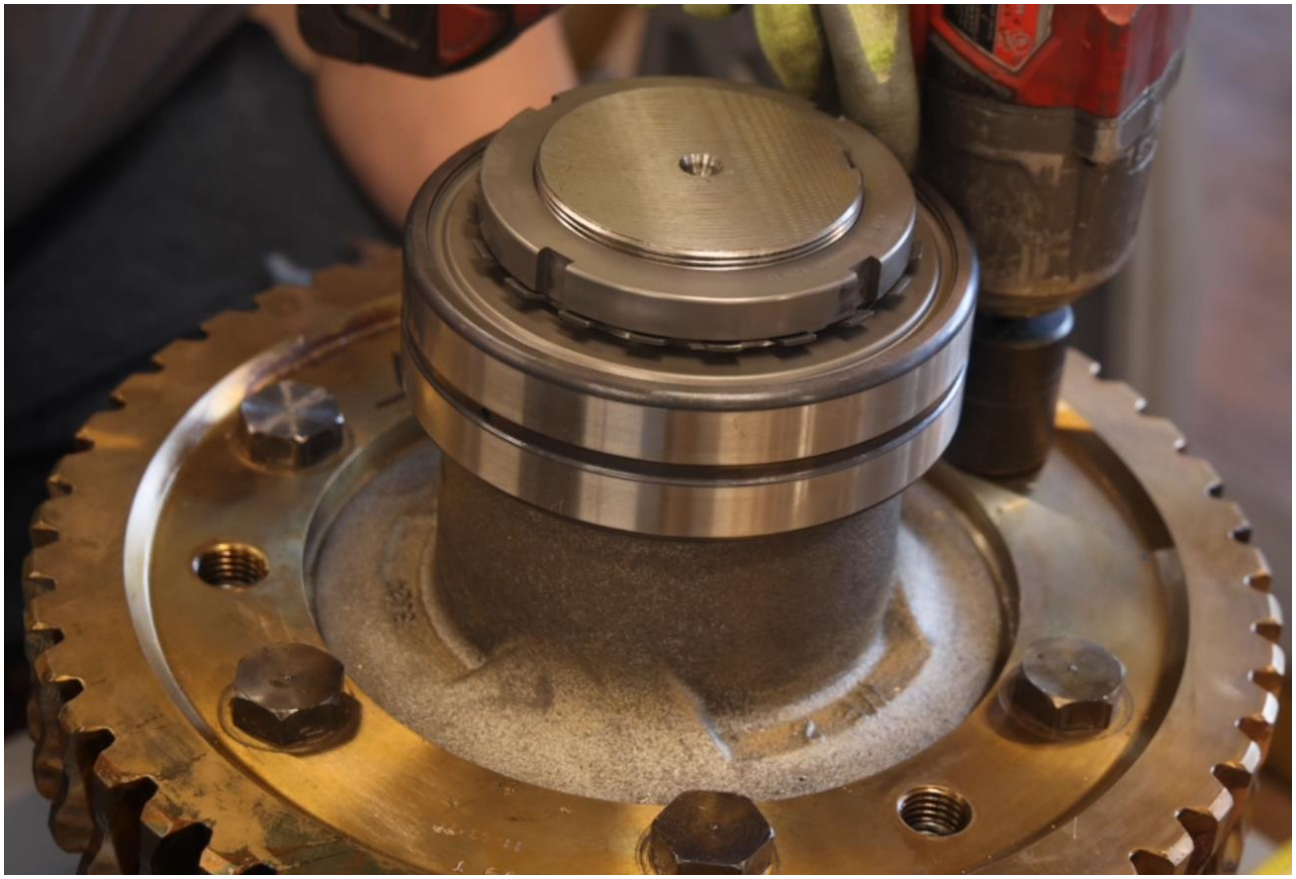


Figure 4-60: Install the Remaining Two Bolts – Torque to 200 ft*lbs

Next, inspect and clean the inner bore and outer diameter of both eccentrics. Verify that the O-ring on both eccentrics is not damaged (Figure 4-61). If the O-ring is damaged, remove and replace the damaged O-ring with a new O-ring which is supplied in the retrofit kit.

Figure 4-61: Clean Both Eccentrics and Inspect for O-Ring Damage

Next, install the original non-traction wheel side eccentric over the bearing (Figure 4-62). A gentle tap from a hammer may be necessary to fully seat the eccentric over the bearing (Figure 4-63).

Figure 4-62: Install the Eccentric

Figure 4-63: Gentle Tapping With a Tool May Be Required

Next, using the t-handle hex key, back out each of the six cone point set screws from the eccentric one at a time (Figure 4-64). Extra set screws are included in tool kit if necessary.

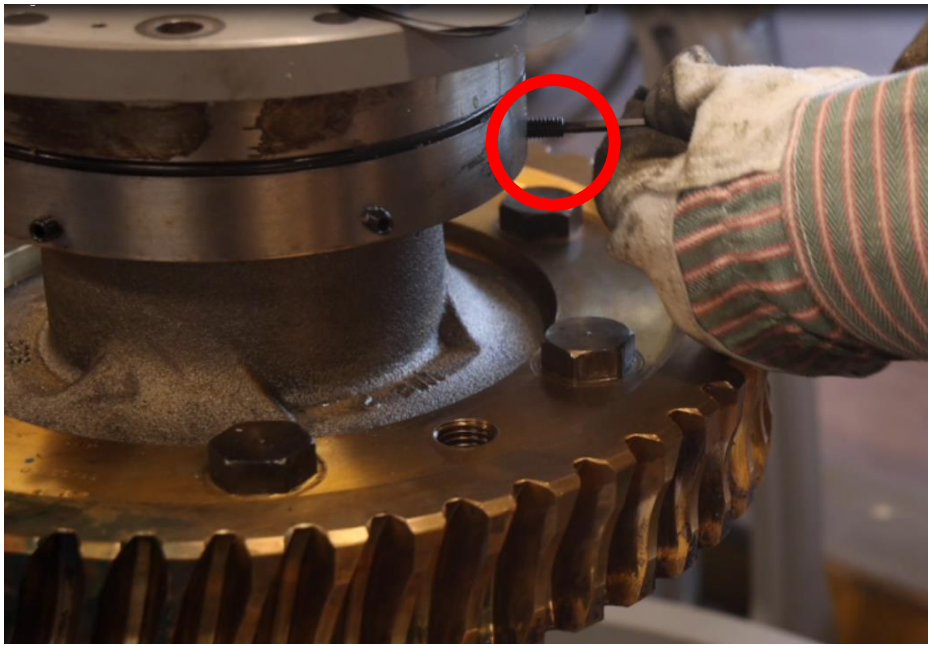


Figure 4-64: Remove Each Set Screw Individually

Before reinstalling each cone point set screw, dip the set screw into Loctite 243 as shown (Figure 4-65). The Loctite 243 is provided with the tool kit.

Figure 4-65: Dip Set Screw in Loctite

Then, using the t-handle hex key, which is supplied with the retrofit kit, fully reinstall each coated set screw and tighten (Figure 4-65B). Remove any Loctite which may have leaked out of the screw hole during the tightening process.

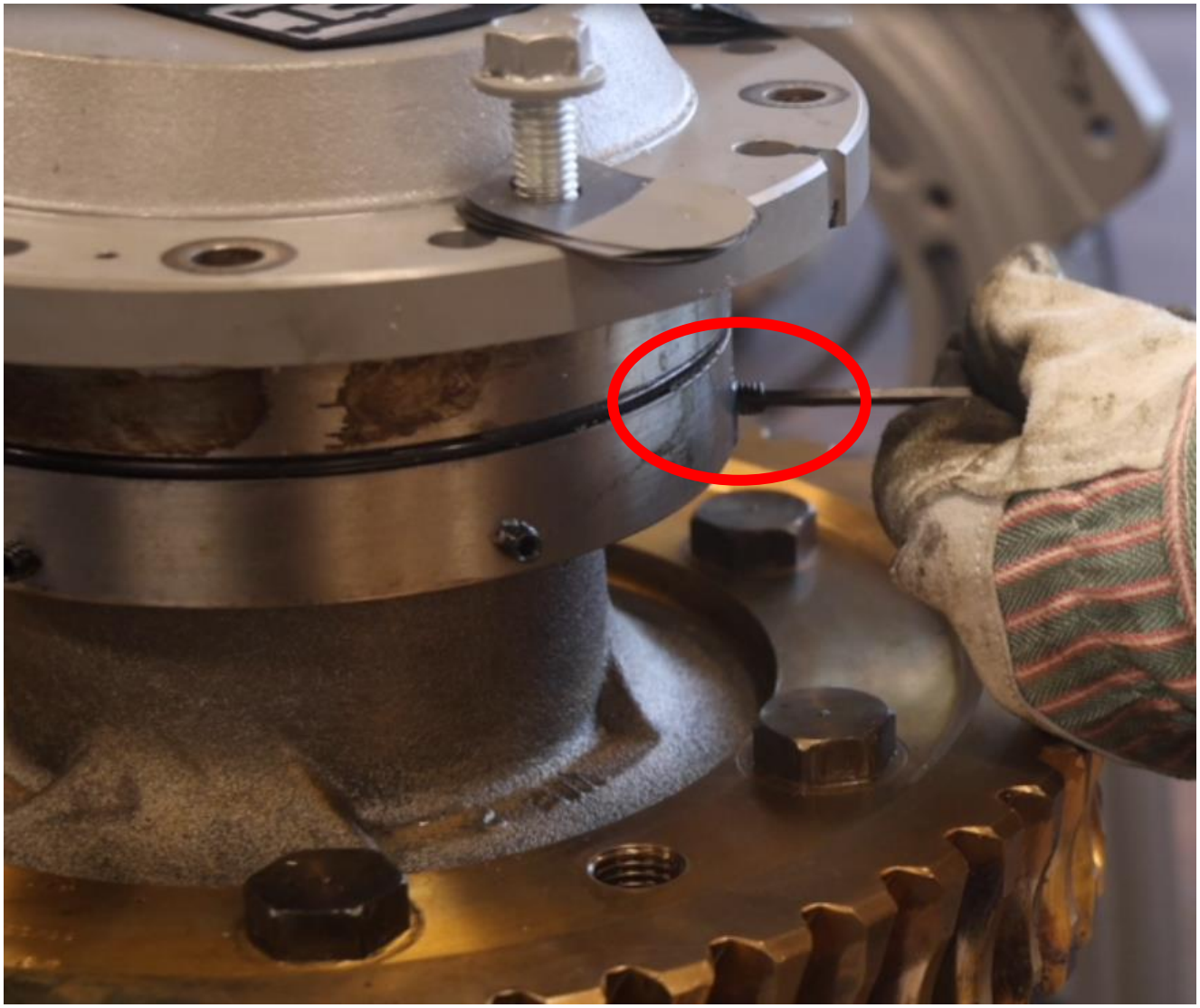


Figure 4-65B: Reinstall the Set Screws which Have Been Coated wih Loctite

4.9 Reassembly of New Center Assy Into Gearbox

The next step is to reassemble the new center assembly into the gearbox.

First, remove any old silicone, dirt, and debris from the lower housing as well as the eccentric bore of the lower housing (Figure 4-66).

Figure 4-66: Thoroughly Clean Lower Housing

Now, assemble the three eyebolts into the bronze gear as shown. Run straps through the three eyebolts then hook the ends of the straps with the hoisting device, remove the new center assembly from the traction wheel and set it on the floor (Figure 4-67).

Figure 4-67: Assemble Three Eyebolts and Hoist Straps

Next, remove the three eyebolts and hoisting straps from the center assembly so that the hoisting straps can be reconfigured for placing the center assembly into the gearbox. Then, take two hoisting straps and wrap them around either side of the gear hub as shown (Figure 4-68). The center assembly is now able to be hoisted in a horizontal orientation so that it can be placed into the gearbox.

Figure 4-68: Reconfigure the Hoisting Straps

Using the hoisting device, gently lower the new center assembly into the lower housing and remove the hoisting straps (Figure 4-69).

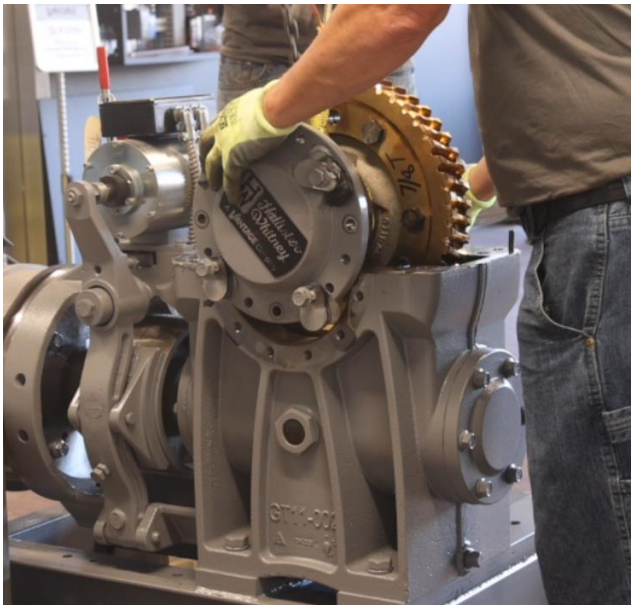


Figure 4-69: Hoist Center Assembly Into Lower Housing

Next, install the traction wheel side eccentric being sure to not damage the original O-ring. This process will likely require two people – one person to slide the eccentric over the bearing and the other person to slightly elevate the end of the drive shaft (Figure 4-70). Please note that if the original O-ring was damaged during removal, the retrofit kit includes two new O-rings if needed.

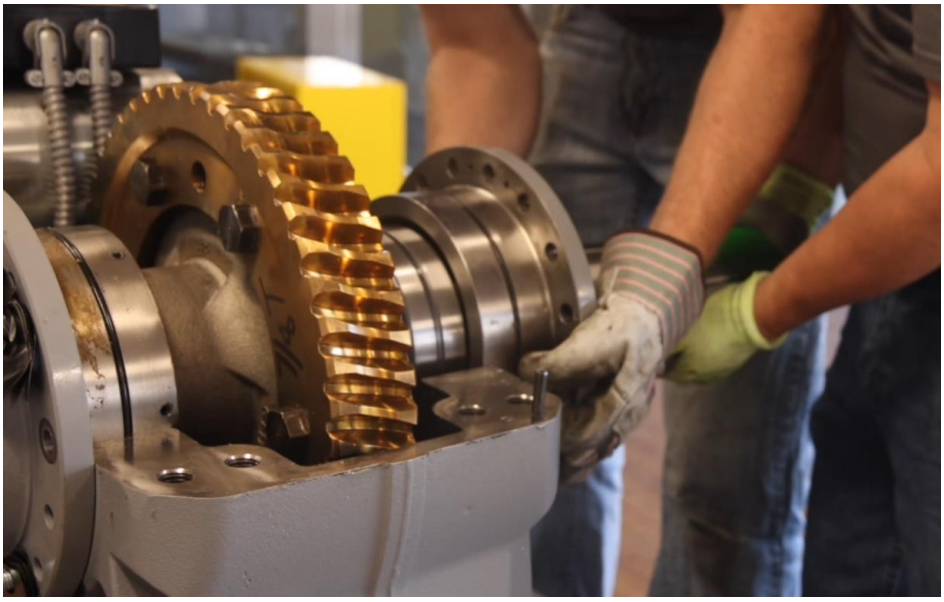


Figure 4-70: Reinstall Traction Wheel Side Eccentric

At this point, rotate both eccentrics back to their original positions using the indicator lines which were marked during the initial disassembly process (Figure 4-71).

WARNING –

If eccentric marks are not at approximately the same angle (directly across from each other), the upper housing has likely been previously removed for initial installation and likely misassembled. Please contact Hollister-Whitney Technical Support for additional instruction.

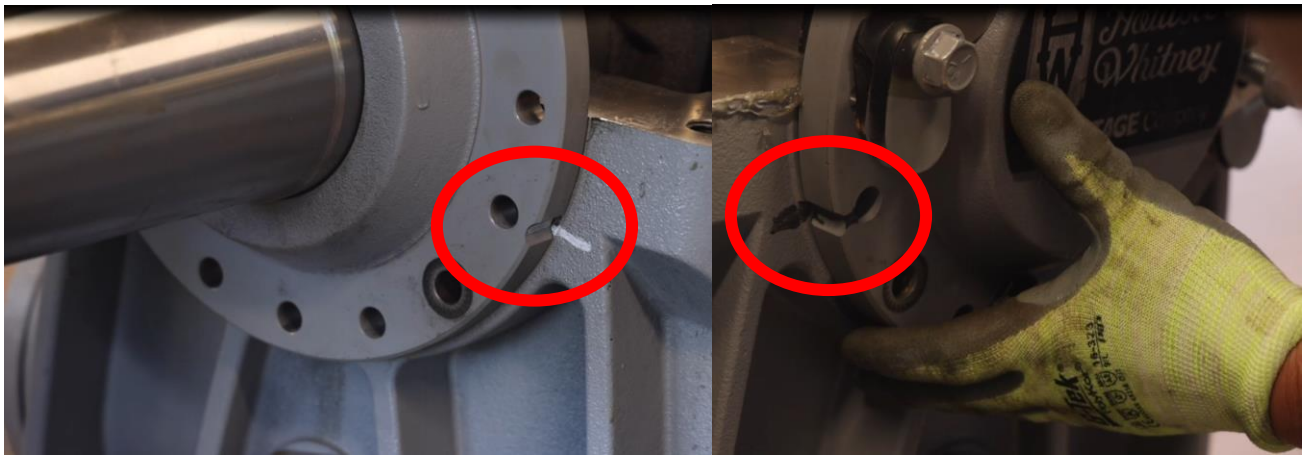


Figure 4-71: Align Eccentric Marks

4.10 Upper Housing Reassembly to Lower Housing

First, thoroughly clean the upper housing to lower housing mating surface on the upper housing. Remove all old silicone, dirt, and debris to ensure a proper fit between the upper housing, lower housing, and eccentrics (Figure 4-72).

Figure 4-72: Thoroughly Clean Upper Housing

Next, using the tube of silicone, which is included in the retrofit kit, apply a bead of the silicone caulk to the lower housing to upper housing mating surface on the lower housing. Apply the silicone caulk in a pattern as shown (Figure 4-73) on both sides of gear. Be sure to apply a generous amount of caulk between the lower housing bore and the outside diameter of the eccentric (Figure 4-74).

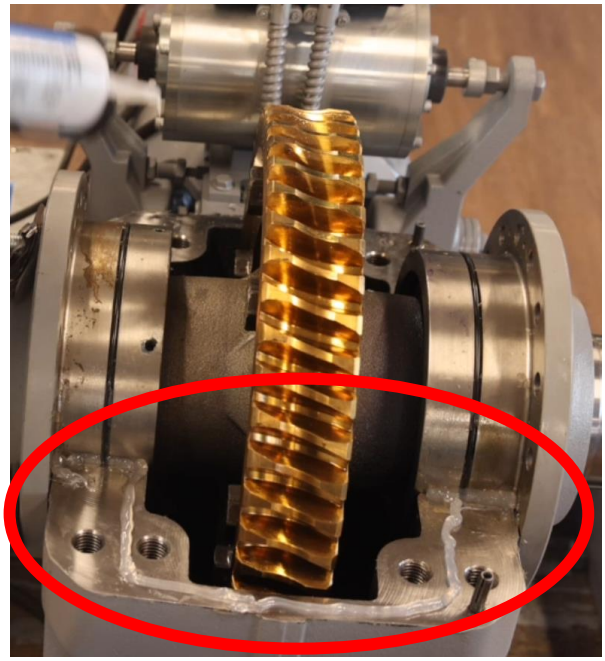


Figure 4-73: Apply a Bead of Silcone On Both Sides in the Pattern Shown

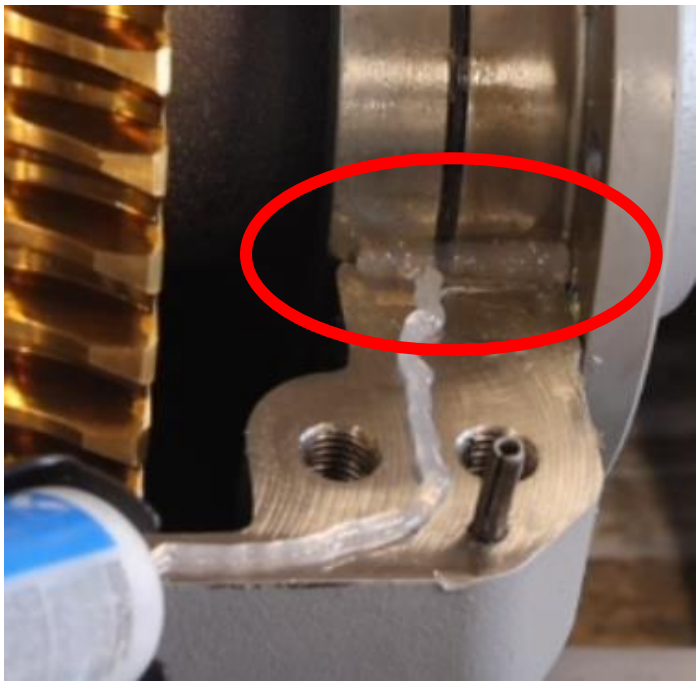


Figure 4-74: Apply Silicone Generously Between Eccentric and Lower Housing in All Locations

Now, thread two of the eyebolts into the upper housing and apply the hoisting straps (Figure 4-75).

Figure 4-75: Install Eyebolts and Straps to Upper Housing

Hoist the upper housing and gently lower onto the lower housing and center assembly. Be careful not to damage the O-rings as this operation is performed (Figure 4-76). In addition, be careful not to damage the alignment pins which are located on the lower housing. A gentle tap with a brass hammer may be necessary to fully seat the lower housing to upper housing.

Figure 4-76: Lower Upper Housing Onto Lower Housing

Next, partially reinstall the eight upper housing to lower housing bolts (Figure 4-77). Do not fully seat the bolts at this point as you will be required to slightly move the two eccentrics to install the eccentric bolts and shims.

Figure 4-77: Partially Reinstall Upper Housing to Lower Housing Bolts – Do Not Tighten

Next, partially thread the four bolts on the traction wheel side eccentric (Figure 4-78).

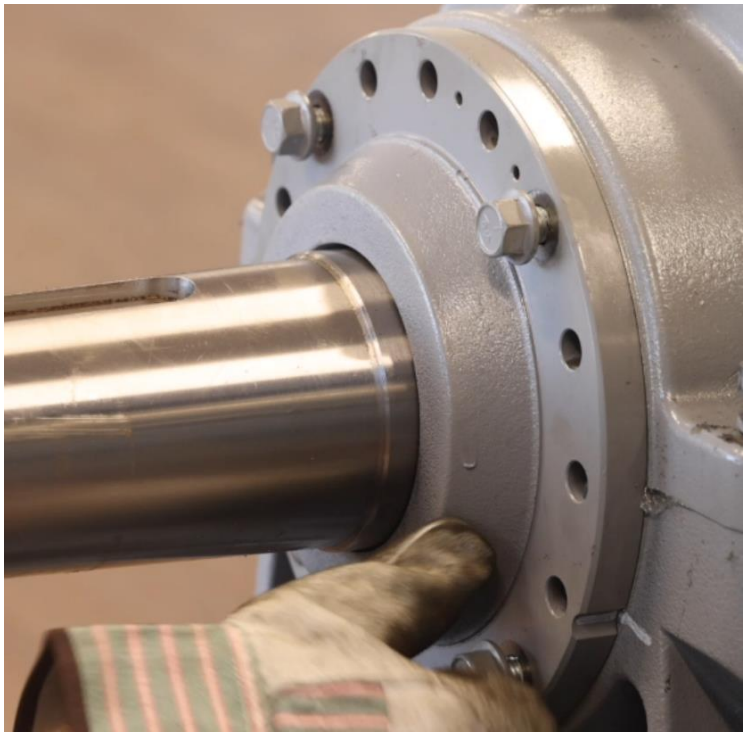


Figure 4-78: Partially Thread Traction Wheel Side Bolts

Now, remove the non-traction wheel side bolts and shims and partially thread them back into their original position in the non-traction wheel side eccentric as shown. Be sure to use the same shims. Additional shims are included in the retrofit kit if necessary for pattern setting later in the process (Figure 4-79).

Figure 4-79: Remove Bolts/Shims From Temporary Position to Original Position

Next, using an impact driver, fully seat the eight upper-to-lower housing bolts (Figure 4-80). Torque each bolt to 200 ft*lbs.

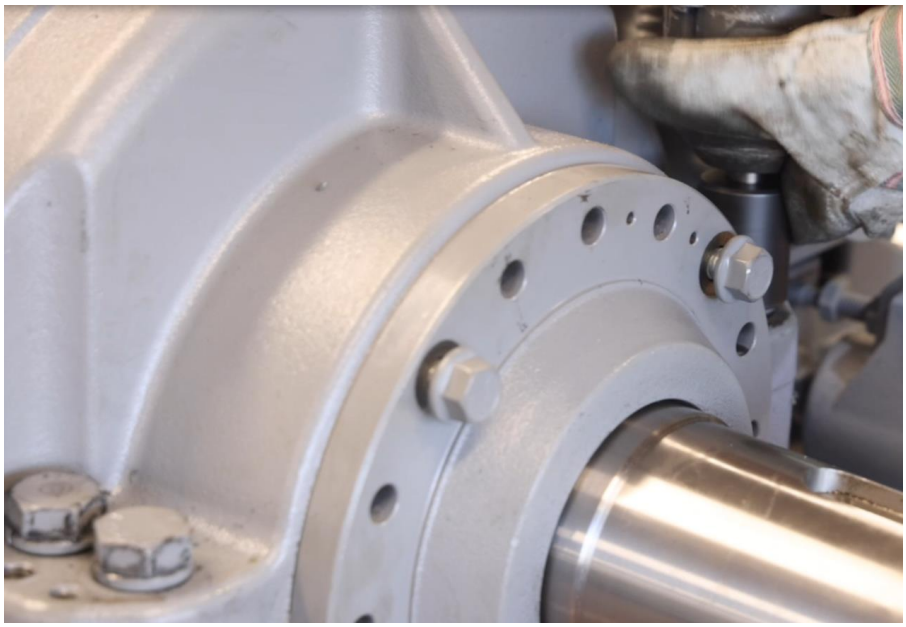


Figure 4-80: Fully Seat All Eight Upper to Lower Housing Bolts – Torque to 200 ft*lbs.

Now, using the impact driver fully seat all the bolts for BOTH eccentrics (Figure 4-81). Torque each bolt to 57 ft*lbs.

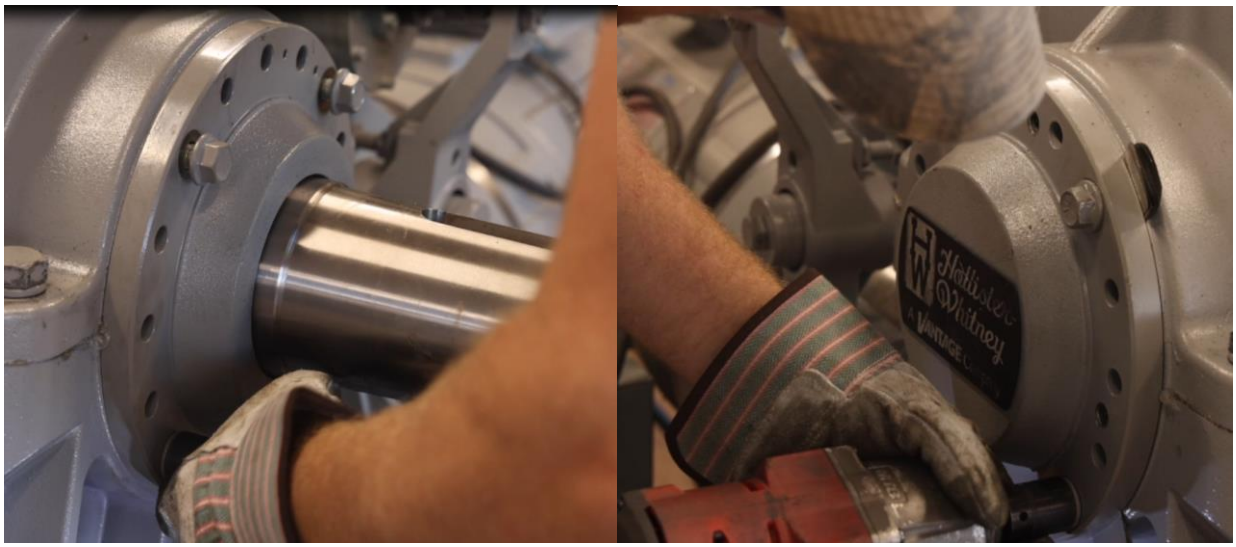


Figure 4-81: Fully Seat Both Eccentric Bolts (Quantity of 8 Bolts) – Torque to 57 ft*lbs.

Next, clean all the silicone between the upper and lower housing (Figure 4-82)

Figure 4-82: Thoroughly Clean Upper to Lower Housing Interface

4.11 Checking/Setting the Worm and Gear Contact Pattern

The next step is to check the worm and gear contact pattern.

First, using the ratchet strap supplied with the retrofit tool kit, attach the ratchet strap to the shaft and machine base as shown (Figure 4-83). The ratchet strap is meant to apply a small amount of drag to the system to aid in the bluing wipe between the worm and the gear. The ratchet strap should only be tightened enough to apply minimal drag to the system.

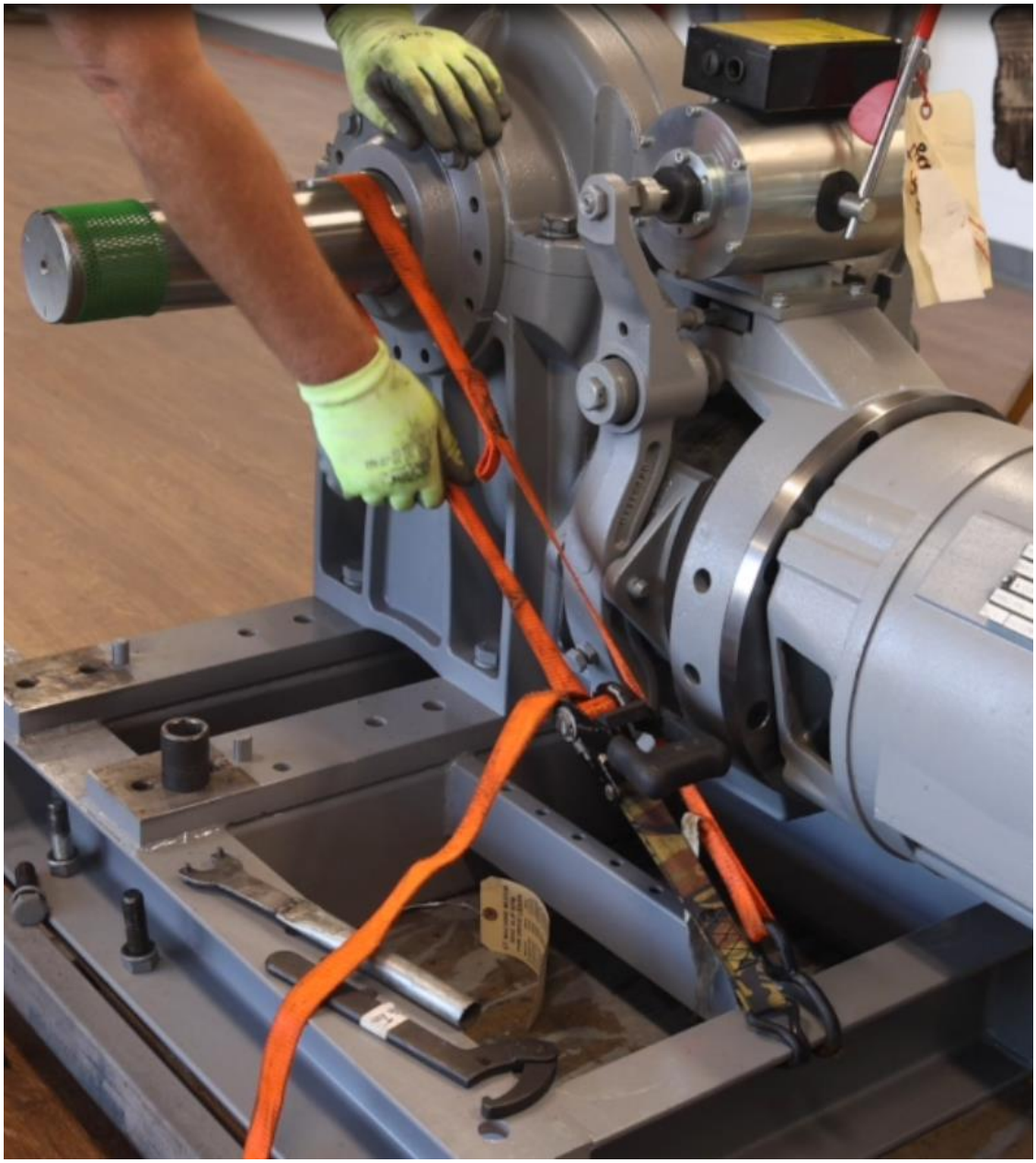


Figure 4-83: Appy Ratchet Strap as a "Drag" Device

Next, remove the oil cap so that the bronze gear can be seen (Figure 4-84). Remove any oil from the gear teeth with a rag.

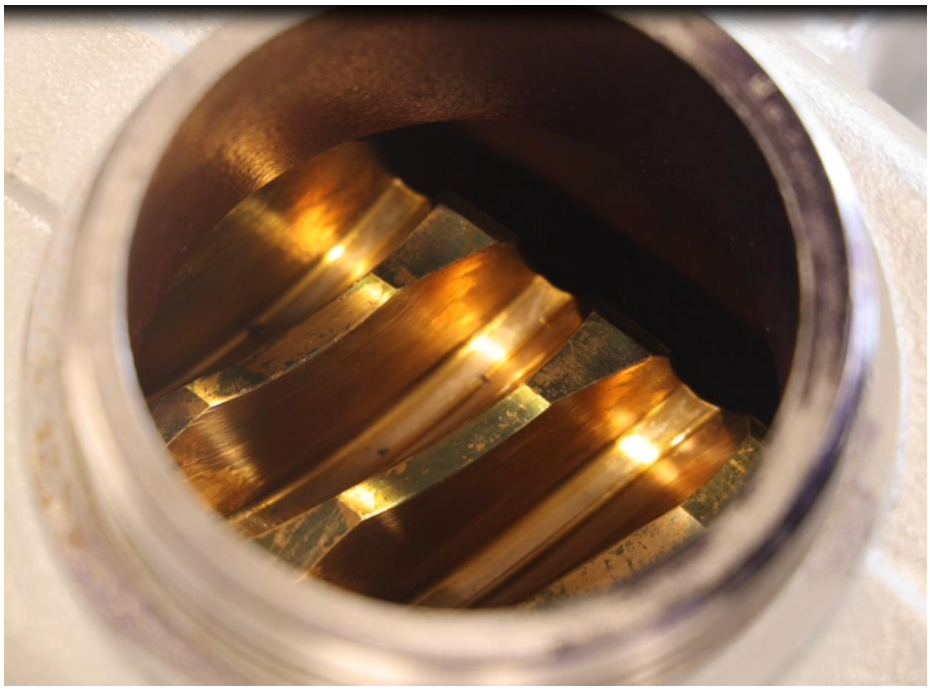


Figure 4-84: Remove Oil Cap To Expose Bronze Gear

Then, using the aerosol bluing supplied with retrofit kit, spray bluing onto the exposed bronze gear teeth (Figure 4-84B).

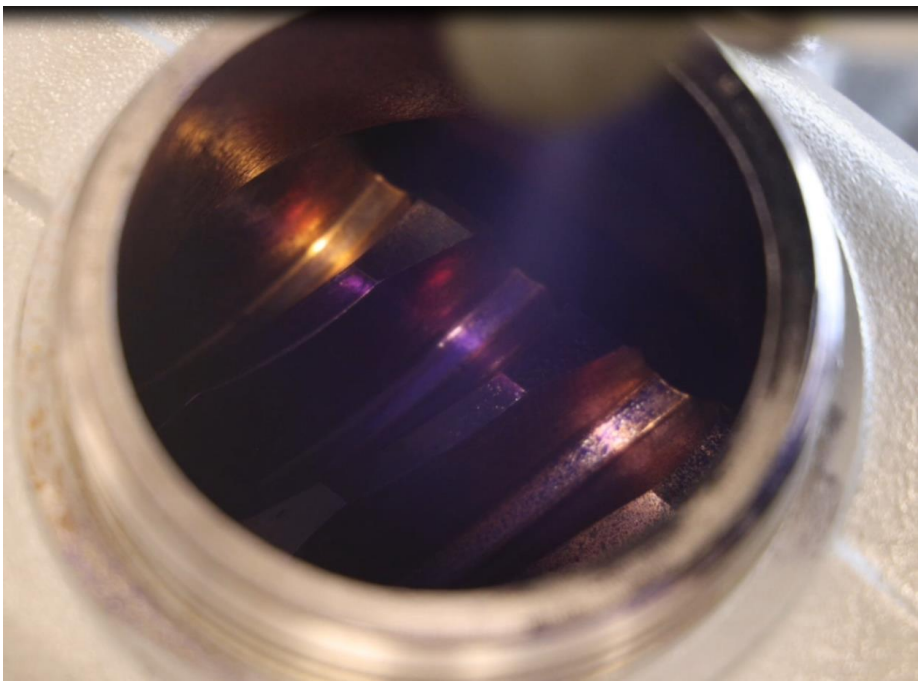


Figure 4-84B: Spray Bluing On Exposed Gear Teeth

Next, rotate the sheave in both directions and stop the gear where the blued section is visible. Next, visually check the pattern (Figure 4-85).

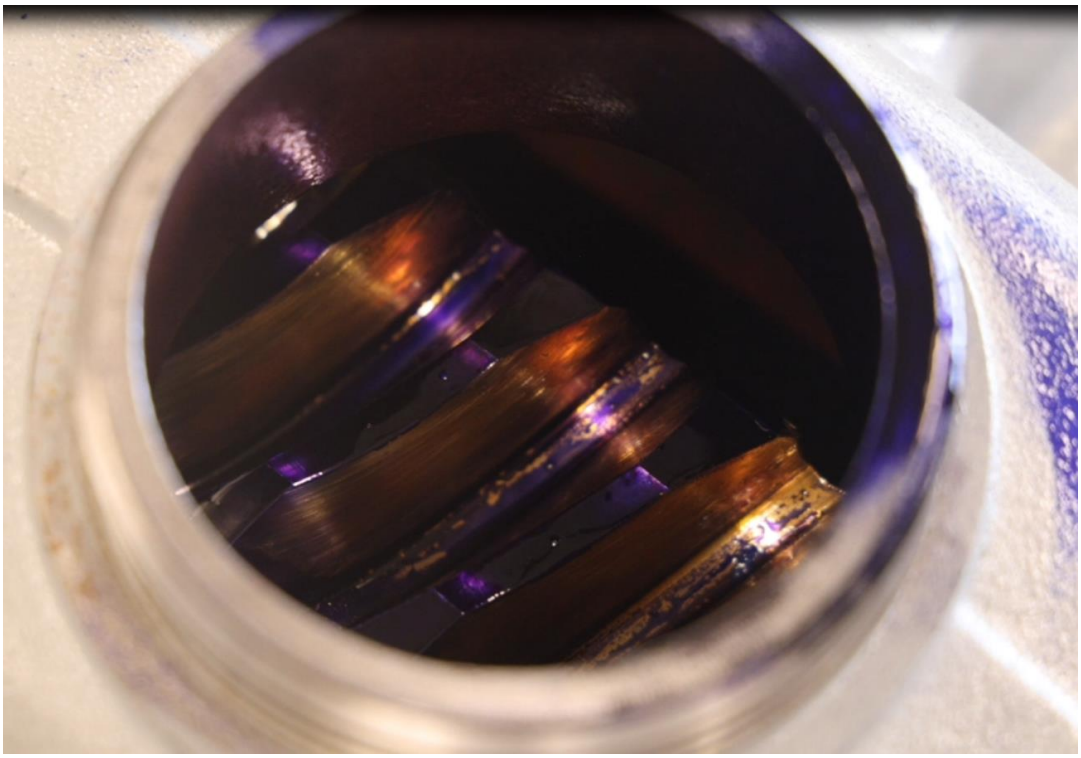


Figure 4-85: Pattern Revealed By Rotating the Gear in Both Directions

The ideal pattern is a center pattern on both flanks of the gear tooth as illustrated. For an additional visual representation of an ideal pattern, refer to Bulletin 1187 on the technical support section of the Hollister-Whitney website. The pattern should be acceptable without any adjustments. However, if the pattern needs to be adjusted, please go to the Hollister-Whitney YouTube channel, and go to the 11:20 mark of the GT Machine Disassembly and Reassembly video for instructions on how to set the pattern. The video will be slightly different because the upper housing is shown removed, but the adjustment principle remains the same. The following QR code will take you to the video.

FOR OD AND BS MACHINES GO TO STEP 4.14
FOR OH MACHINES CONTINUE TO NEXT STEP

4.12 OH Traction Wheel Reassembly to Drive Shaft

The next step is to reassemble the traction wheel and hub assembly to the drive shaft.

First, place a hoist strap through the bolt hole in the traction wheel and hoist the traction wheel from the floor (Figure 4-86).

Figure 4-86: Place Hoist Strap Through Bolt Hole and Hoist

Next, remove the protective sleeve from the end of the shaft and then thoroughly clean the traction wheel drive shaft (Figure 4-87).

Figure 4-87: Thoroughly Clean End of Shaft

Next, thoroughly clean the tapered bore in the traction wheel (Figure 4-88). If there is rust present in the hub bore, be sure to use emery cloth to remove the rust.

Figure 4-88: Throughly Clean Bore of Traction Wheel Hub

Next, reinstall the original shaft key onto the shaft (Figure 4-89). If necessary, use a small amount of silicone which was provided with the retrofit kit to hold the key in place for assembly.

Figure 4-89: Reinstall Original Shaft Key

Now, hoist the traction wheel over to the shaft (Figure 4-90). Take care not to damage the threads on the end of the shaft.

Figure 4-90: Hoist the Traction Wheel to the Shaft

It may be necessary to rotate the drive shaft to align the drive shaft key to the keyway in the traction wheel hub. To rotate the drive shaft for alignment, disengage the brakes using the manual brake release handle and rotate brake drum as shown. Rotating the brake drum clockwise or counterclockwise will rotate the drive shaft and align the key and keyway (Figure 4-91).

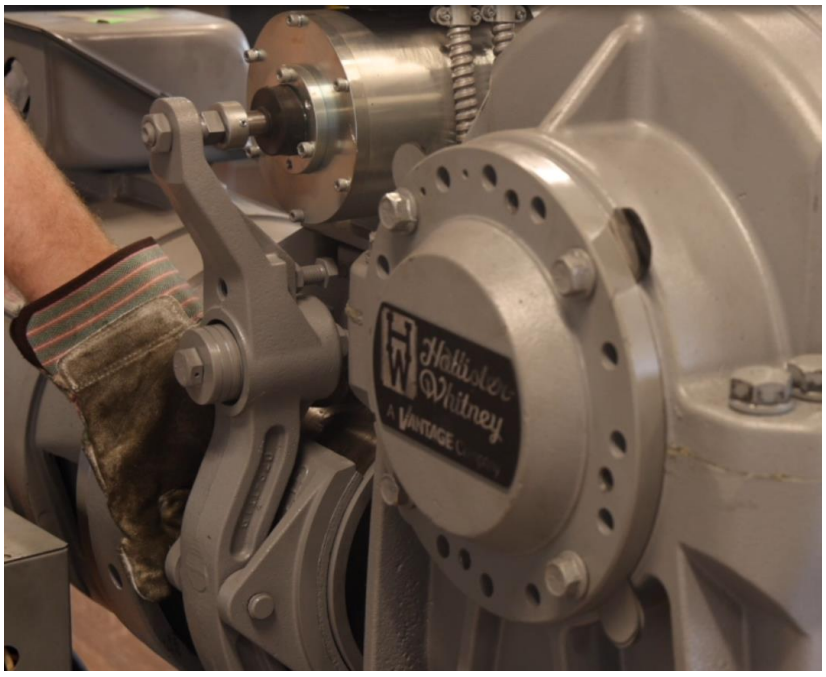


Figure 4-91: Rotate Drum By Hand While Holding the Brake Open With Manual Release Handle

Once the key and keyway have been aligned, slide the traction wheel over the shaft and push the traction wheel as far up the shaft as possible (Figure 4-92).

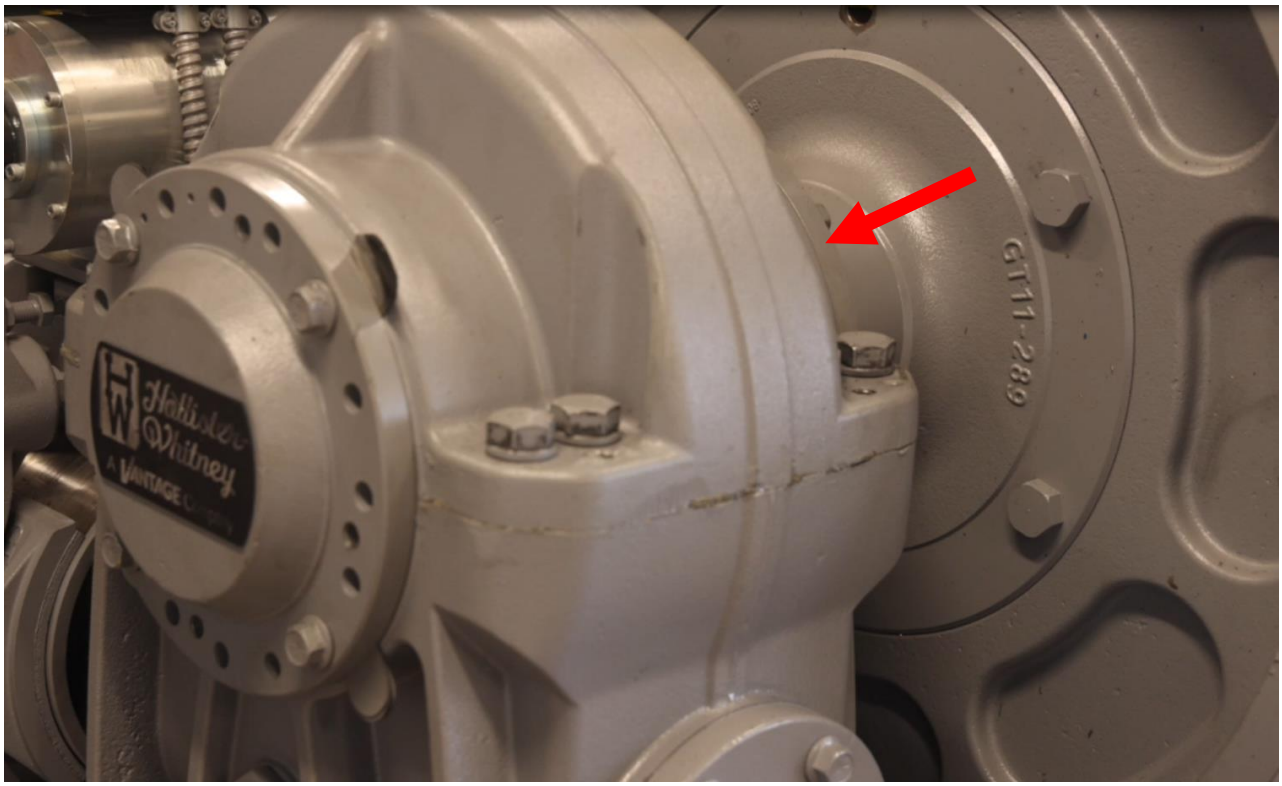


Figure 4-92: Push Traction Wheel Towards Gear Box

Next, remove the hoisting strap from the traction wheel and reinstall the traction wheel hub to traction wheel body bolt which was previously removed (Figure 4-93).

Figure 4-93: Remove Strap and Reinstall Orginal Wheel Body Bolt

4.13 OH Outboard Stand Reassembly

The next step is to reassemble the outboard stand to the machine assembly.

First, slide the outboard stand bearing onto the exposed end of the drive shaft (Figure 4-94). Then, assemble the bearing retainer onto the shaft (Figure 4-95). The orientation of the bearing retainer must be as shown with the outer ring of the bearing retainer butting up against the outer race of the bearing. This will prevent the bearing seal from becoming disengaged when reinstalling the outboard stand.

Figure 4-94: Reinstall Original Outboard Stand Bearing

Figure 4-95: Reinstall Original Outboard Stand Bearing In This Orientation

Next, assemble the bearing lock nut onto the threaded end of the shaft and tighten against the bearing retainer plate until snug (Figure 4-96).

Figure 4-96: Install Shaft Lock Nut Until Snug

Next, hoist the outboard stand to the machine and slide the outboard stand over the bearing (Figure 4-97).

Figure 4-97: Install Outboard Stand Over Bearing

A gentle tap with a brass hammer may be necessary to fully seat the outboard stand against the dowel pins which are located at the bottom of the machine base (Figure 4-98). Please note there will be a slight gap between the bottom of the outboard stand and the machine base.

Figure 4-98: Tap the Outboard Stand Into Location Using Brass Hammer

Next, loosely reinstall the four bolts used to retain the outboard stand to the machine base (Figure 4-99). As shown, do not tighten the four bolts at this point as shims will be added in the next process step.

Figure 4-99: Loosely Install the Four Outboard Stand Mounting Bolts

Next, remove the hoisting eyebolt from the outboard stand (Figure 4-100).

Figure 4-100: Remove Hoisting Eyebolt from Outboard Stand

WARNING

The following process steps are critical to the safe operation of the machine. Please use a great deal of care when following these steps. If you have questions or concerns, please contact Hollister-Whitney technical support at (217) 222-0466.

Using the dial indicator provided with the retrofit tool kit, place the dial indicator on the top of the traction wheel as shown (Figure 4-101) and zero out the indicator (Figure 4-102). Leave the indicator in place throughout the process. There will be a small gap between the bottom of the outboard stand and the machine base which requires shims.

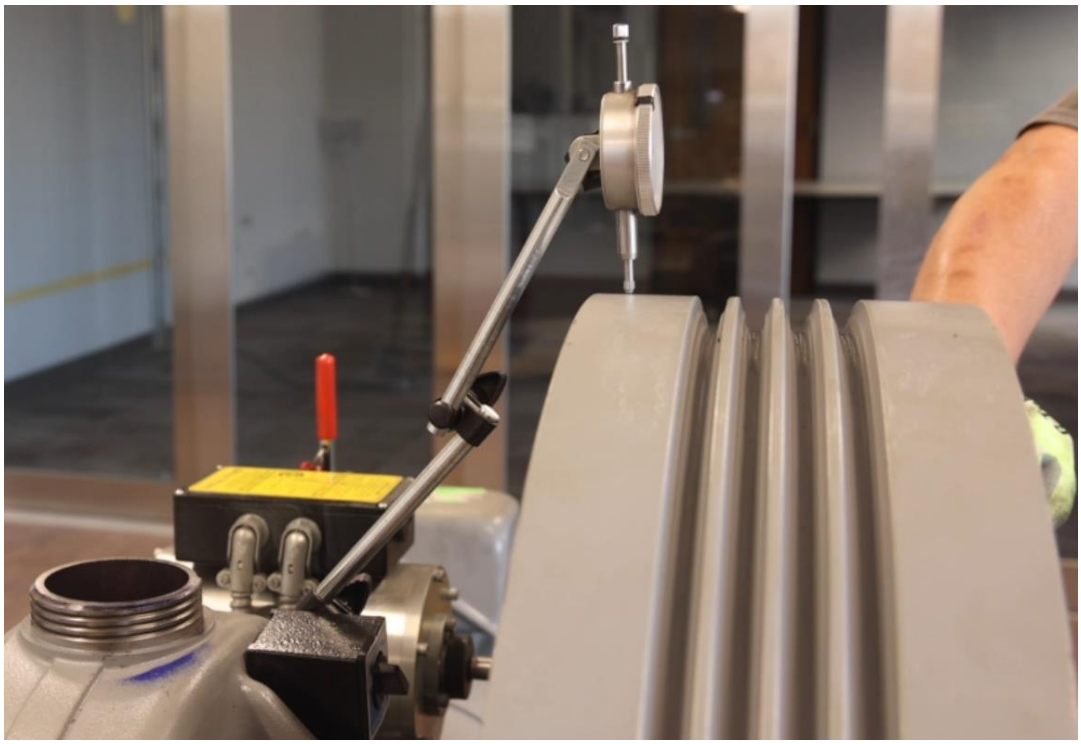


Figure 4-101: Install the Dial Indicator

Figure 4-102: Set Indicator to Zero

Next, pry up on the outboard stand and note the amount of displacement from the dial indicator (Figure 4-103). This will consume the “free play” in the system. Whatever the reading is, the target value for the final position of the dial indicator after all adjustments have been made will be ½ of that value.

For example, if when pried up the indicator registered 0.008”, then the final indicator value after all adjustments have been made will be 0.004” (Figure 4-104).

Figure 4-103: Pry Up on the Outboard Stand

Figure 4-104: Read Dial Indicator and Record Value

Next, add shims under the outboard stand. Start by inserting as many shims as possible into the gap between the outboard stand and machine base (Figure 4-105). The shims will likely be a combination of original shims and new shims which are provided with the retrofit kit. The shims come in 0.005”, 0.010”, and 0.032” thickness. You may need to gently pry up the outboard stand to get the final shim in place.

Figure 4-105: Insert Shim Packs Between Outboard Stand and Machine Base

Next, if necessary, gently pry the outboard stand with a pry bar to remove the shims (Figure 4-106).

Figure 4-106: Gently Pry On Outboard Stand to Remove Shim Packs

Next, add the correct quantity of shims (Figure 4-107) to the initial shim pack to attempt to register ½" of the original value indicated on the dial indicator as shown Figure 4-104. There should be an equal number of shims and thicknesses in each shim pack.

Figure 4-107: Add More Shims to Shim Pack To Achieve Required Indicator Reading

Next, use a small pry bar to lift on the outboard stand to fit the now thicker shim pack between the outboard stand and the machine base (Figure 4-108) and check the dial indicator (Figure 4-109).

Figure 4-108: Pry Outboard Stand Up to Insert Thicker Shim Pack

The dial indicator should read ½" the original value shown in Figure 4-104. In this example, it should register 0.004" since Figure 4-104 registers 0.008". This process may take several attempts of adding various thickness shims to achieve the desired indicator reading (Figure 4-109).

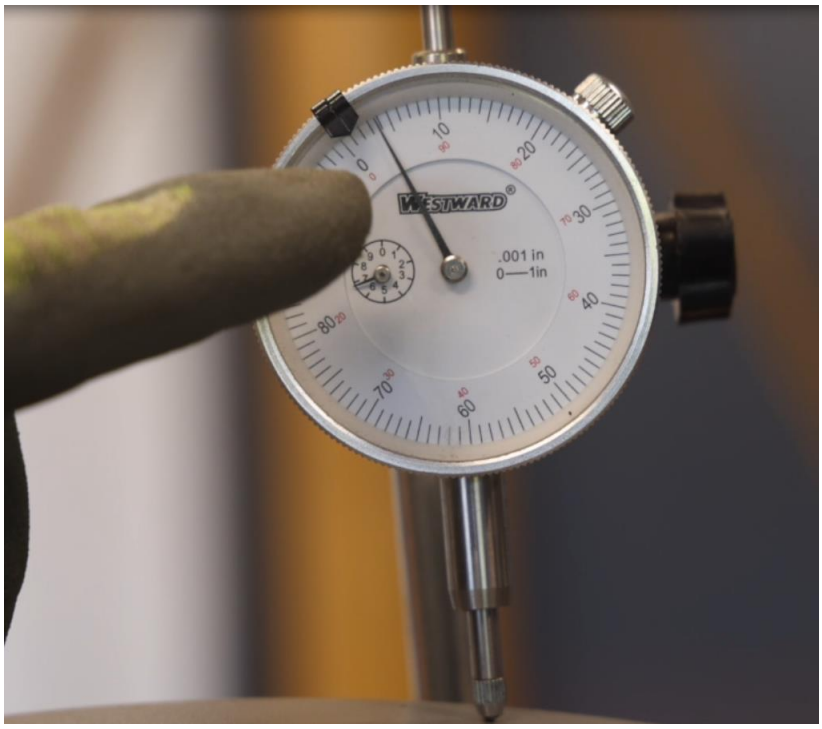


Figure 4-109: Add Enough Shims to Get Appropriate Dial Indicator Reading

Next, check to make sure that the bottom of the outboard stand is fully seated against the dowel pins at the bottom of the base (Figure 4-110).

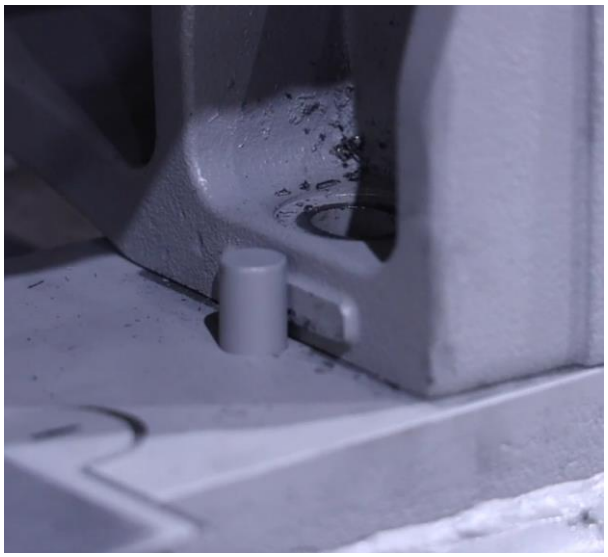


Figure 4-110: Both Dowel Pins In Base Should Be Against Outboard Stand

If it is not fully seated, gently tap the bottom of the outboard stand with a brass hammer (Figure 4-111). After fully seating the outboard stand against the pins, ensure the dial indicator remains in the required range.

Figure 4-111: Gently Tap Bottom of Outboard Stand to Align Dowel Pins to Outboard Stand

Next, tighten the four outboard stand bolts and check the dial indicator (Figure 4-112). The dial indicator reading will likely decrease by several thousandths of an inch due to the tightening of the outboard stand bolts. The alignment is acceptable if the dial indicator does not go below zero.

Figure 4-112: Tighten the Four Outboard Stand Bolts and Check Dial Indicator

Next, if the original tightening is acceptable, fully tighten the four outboard stand bolts to 200 ft*lbs. using a torque wrench (Figure 4-113). After tightening, check to make sure the dial indicator did not drop below the zero mark.

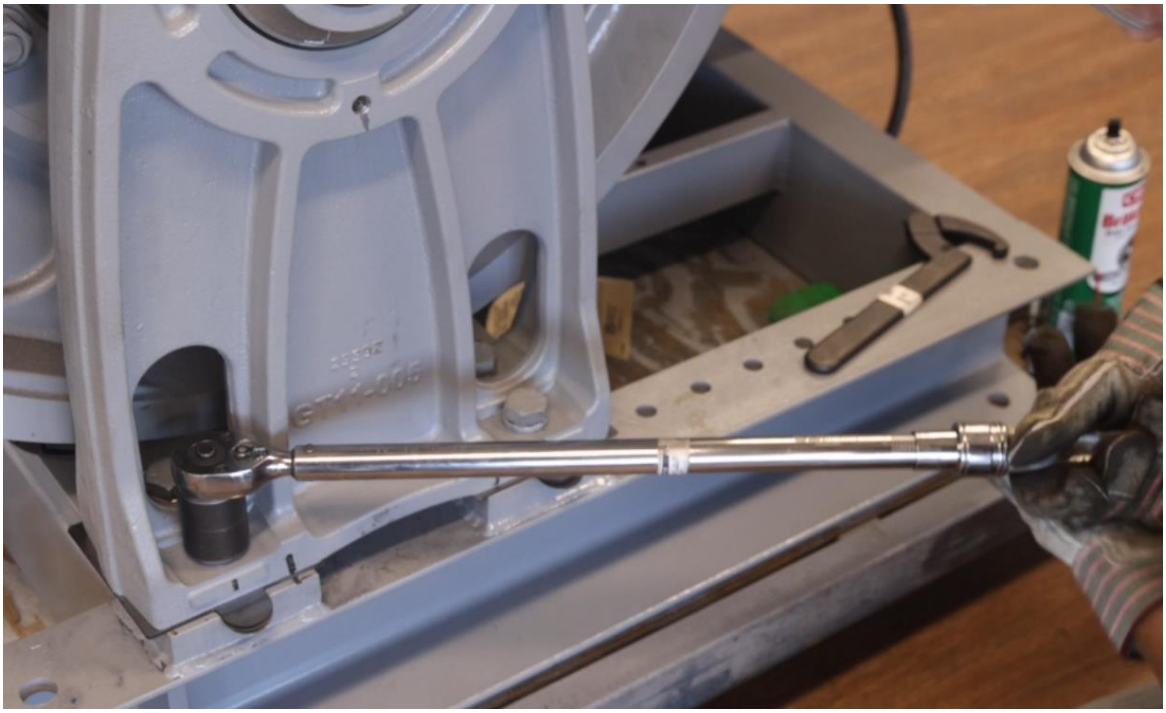


Figure 4-113: Torque Four Outboard Stand Bolts to 200 ft*lbs

Next, remove the shaft lock nut and bearing retainer plate as shown (Figure 4-114).

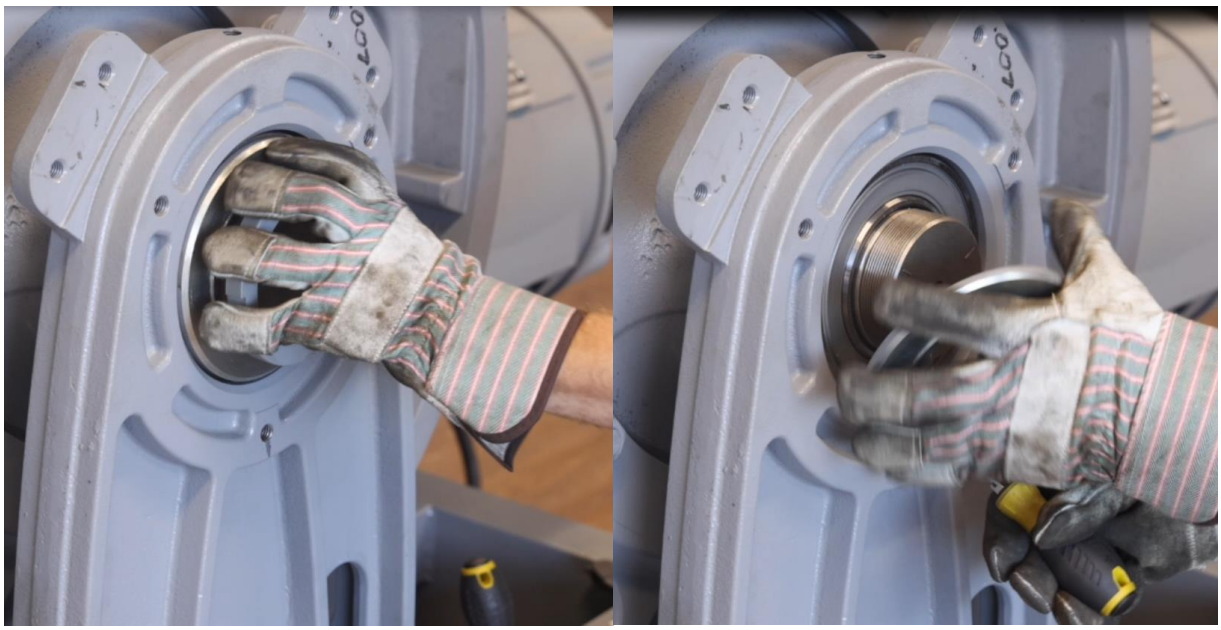


Figure 4-114: Remove Shaft Lock Nut and Bearing Retainer

Then, flip the bearing retainer plate around so that the inner diameter of the bearing retainer plate engages the inner bearing race of the bearing. Then, reinstall the bearing lock nut washer followed by the bearing lock nut (Figure 4-115).

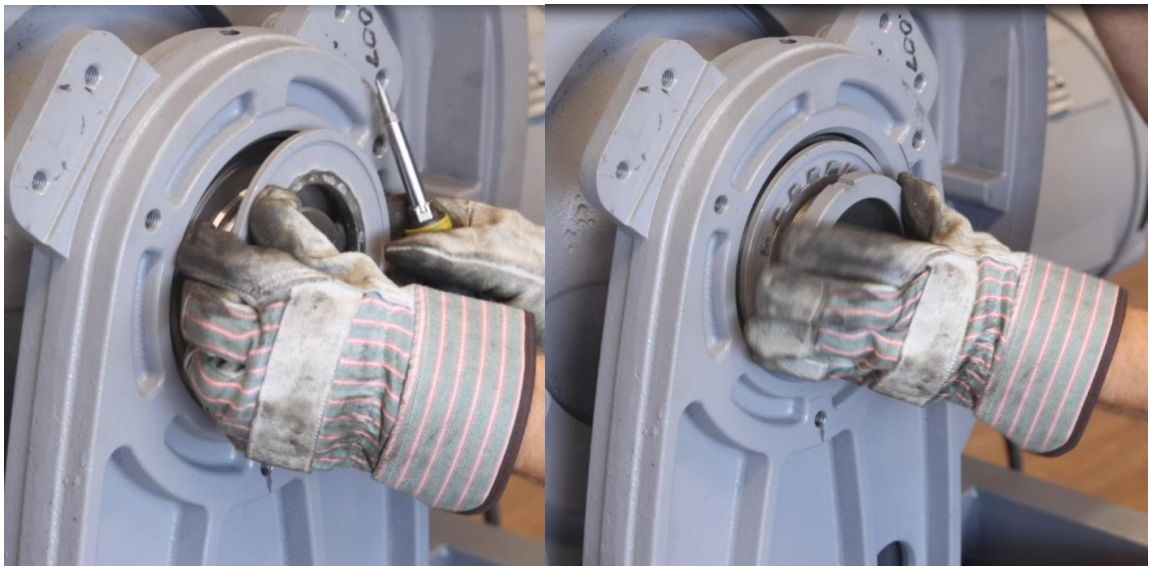


Figure 4-115: Flip Retainer Plate and Reinstall, Install Lock Washer, and Lock Nut

Using the spanner wrench supplied with the retrofit tool kit, tighten the bearing lock nut as much as possible (Figure 4-116). A brass hammer will be required to tighten the bearing lock nut fully and to align a shaft lock nut washer tab to a slot in the bearing lock nut washer (Figure 4-117). **ALWAYS TIGHTEN TO GET TAB TO SLOT ALIGNMENT - DO NOT LOOSEN.**

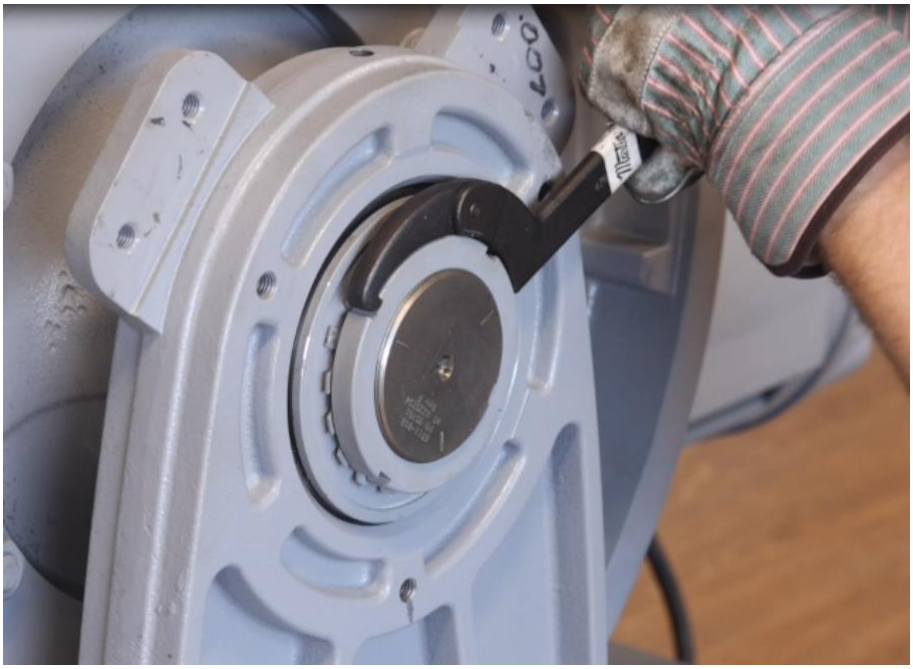


Figure 4-116: Fully Tighten Shaft Lock Nut

Figure 4-117: Hit with Brass Hammer to Ensure Lock Nut is Tight

Next, bend a washer lock tab into a slot in the lock washer (Figure 4-118).

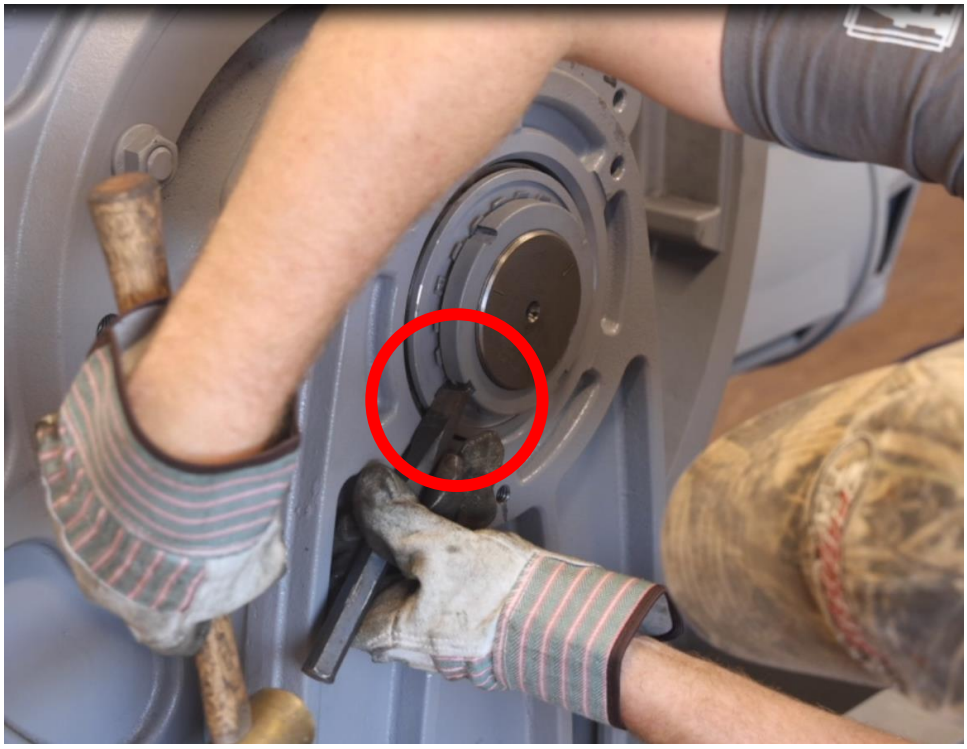


Figure 4-118: Bend Washer Lock Tab into Slot in Lock Nut

Next, reinstall the bearing cover using the original three bolts (Figure 4-119).

Figure 4-119: Reinstall Bearing Cover and Bearing Cover Bolts

FOR OH MACHINES CONTINUE TO STEP 4.15

4.14 OD/BS Inner Stand, Wheel, Outer Stand Reassembly

WARNING

The following process steps are critical to the safe operation of the machine. Please use a great deal of care when following these steps. If you have questions or concerns, please contact Hollister-Whitney technical support at (217) 222-0466.

Next, hoist the outboard stand to the machine and slide the outboard stand over the bearing (Figure 4-120).

Figure 4-120: Hoist the Outboard Stand to the Inner Bearing

Using the dial indicator provided with the retrofit tool kit, place the dial indicator on the top of the shaft as shown (Figure 4-121) and zero out the indicator (Figure 4-121). Leave the indicator in place throughout the process. There will be a small gap between the bottom of the outboard stand and the machine base which requires shims.

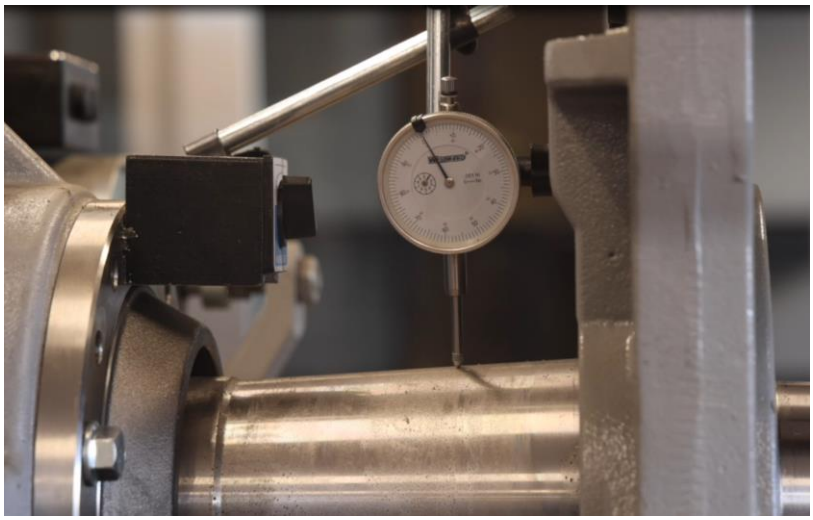


Figure 4-121: Place Dial Indicator on Shaft as Shown and Zero Indicator

Next, lift the end of the shaft by hand and note the amount of displacement from the dial indicator (Figure 4-122). This will consume the “free play” in the system. Whatever the reading is, the target value for the final position of the dial indicator after all adjustments have been made will be ½ of that value.

For example, if when lifted up the indicator registered 0.012”, then the final indicator value after all adjustments have been made will be 0.006” (Figure 4-122).

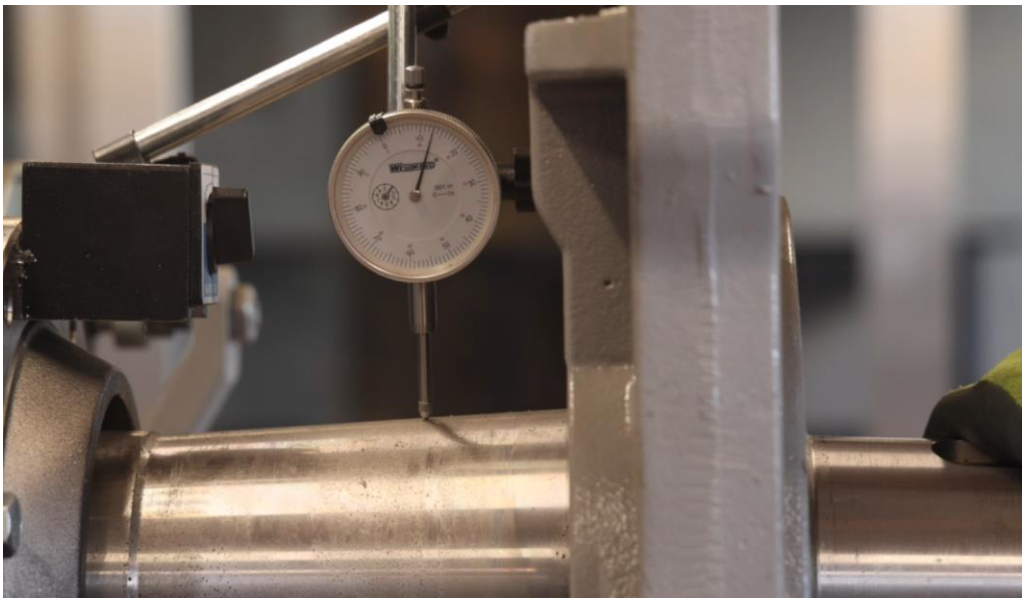


Figure 4-122: Record the Displacement While Lifting Up by the End of the Shaft

Record the displacement value on top of inner outboard stand (Figure 4-123).

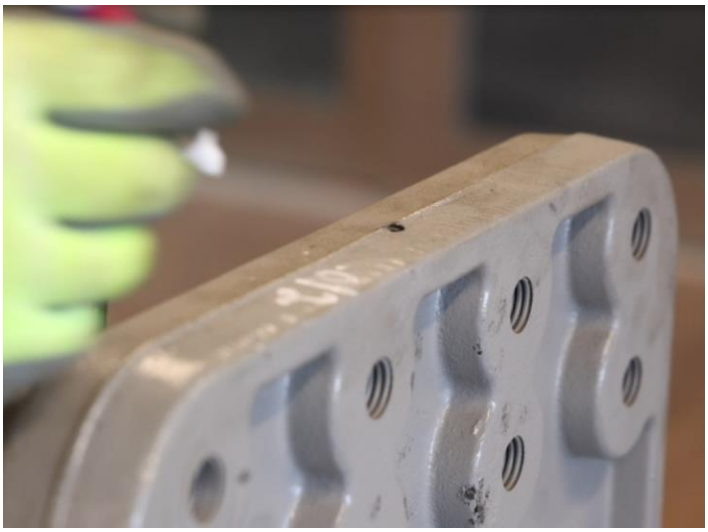


Figure 4-123: Record the Displacement

Next, loosely reinstall all four of the inner outboard stand bolts. The bolts should remain loose so that shims can be placed under the inner outboard stand. Ensure the dowel pins are in contact with the bottom of the inner outboard stand (Figure 4-124)

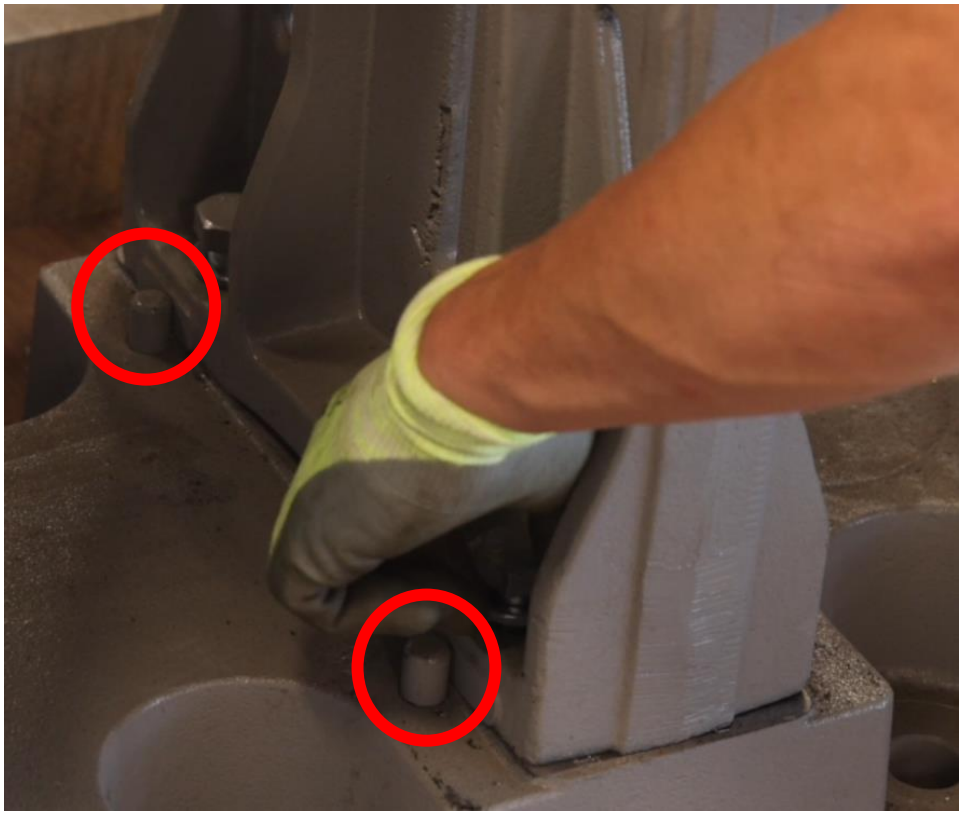


Figure 4-124: Loosely Reinstall Four Inner Outboard Stand Bolts

Next, add shims under the inner outboard stand on both sides. Start by inserting as many shims as possible into the gap between the inner outboard stand and machine base (Figure 4-125). The shims will likely be a combination of original shims and new shims which are provided with the retrofit kit. The shims come in 0.005”, 0.010”, and 0.032” thickness. You may need to gently pry up the outboard stand to get the final shim in place. The inner outboard stand will “wobble” until the appropriate number of shims is finally in place.

Figure 4-125: Insert Shim Packs Between Outboard Stand and Machine Base

Next, add the correct quantity of shims (Figure 4-126) to the initial shim packs to attempt to register ½” of the original value indicated on the dial indicator as shown Figure 4-122. There should be an equal number of shims and thicknesses in each shim pack.

Figure 4-126: Add More Shims to Shim Pack To Achieve Required Indicator Reading

Next, use a small pry bar to lift on the inner outboard stand to fit the now thicker shim packs between the outboard stand and the machine base (Figure 4-127) and check the dial indicator (Figure 4-122).

Figure 4-127: Pry Outboard Stand Up to Insert Thicker Shim Packs

The dial indicator should read ½" the original value shown in Figure 4-122. In this example, it should register 0.006" since Figure 4-122 registers 0.012". This process may take several attempts of adding various thickness shims to achieve the desired indicator reading (Figure 4-128).

Figure 4-128: Add Enough Shims to Get Appropriate Dial Indicator Reading

Next, check to make sure that the bottom of the inner outboard stand remained fully seated against the dowel pins at the bottom of the base (Figure 4-129). If it is not fully seated, gently tap the bottom of the outboard stand with a brass hammer. After fully seating the inner outboard stand against the pins, ensure the dial indicator remains in the required range.

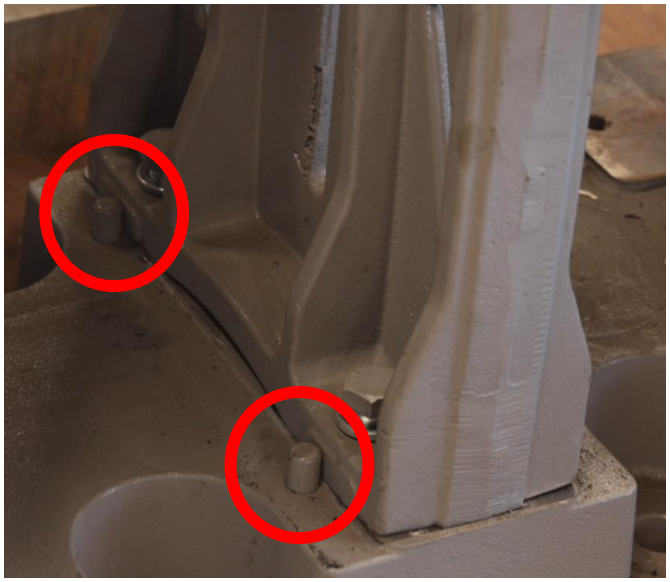


Figure 4-129: Both Dowel Pins In Base Should Be Against Outboard Stand

Next, tighten the four outboard stand bolts (Figure 4-130) and check the dial indicator (Figure 4-122). The dial indicator reading will likely decrease by several thousandths of an inch due to the tightening of the outboard stand bolts. The alignment is acceptable if the dial indicator does not go below zero.

Figure 4-130: Tighten the Four Inner Outboard Stand Bolts

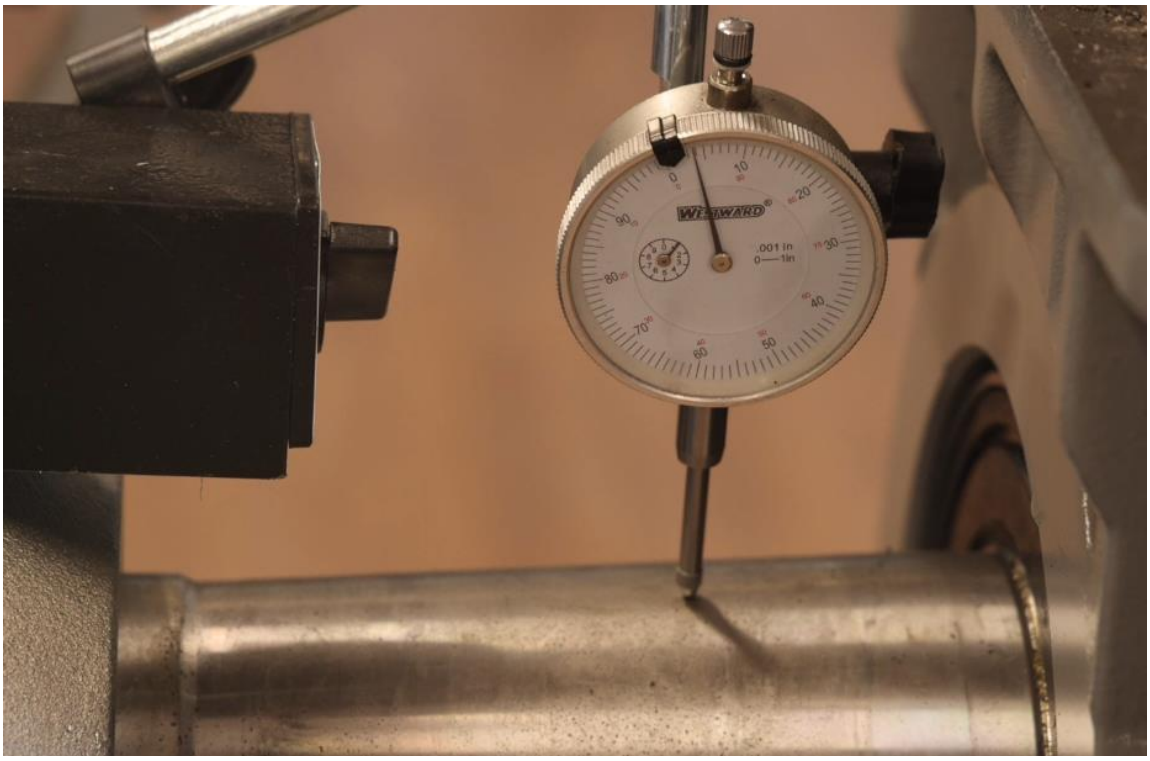


Figure 4-131: After Tightening Bolts Ensure Dial Indicator Still Reads Above Zero

Next, fully tighten the four outboard stand bolts to 200 ft*lbs. using a torque wrench (Figure 4-132). After tightening, check to make sure the dial indicator did not drop below the zero mark.

Figure 4-132: Torque Four Outboard Stand Bolts to 200 ft*lbs

The next step is to reassemble the traction wheel and hub assembly to the drive shaft.

First, place a hoist strap through the bolt hole in the traction wheel and hoist the traction wheel from the floor (Figure 4-133).

Figure 4-133: Place Hoist Strap Through Bolt Hole and Hoist

Next, place hoisting strap through the empty bolt hole in the traction wheel assembly and hoist the traction wheel assembly from the floor (Figure 4-134).

Figure 4-134: Hoist Traction Wheel Assembly To Machine

Next, reinstall the original shaft key onto the shaft (Figure 4-135). If necessary, use a small amount of silicone which was provided with the retrofit kit to hold the key in place for assembly.

Figure 4-135: Reinstall Original Shaft Key

Next, thoroughly clean the traction wheel drive shaft (Figure 4-136).

Figure 4-136: Thoroughly Clean Exposed End of Shaft

Next, thoroughly clean the tapered bore in the traction wheel (Figure 4-137). If there is rust present in the hub bore, be sure to use emery cloth to remove the rust.

Figure 4-137: Throughly Clean Bore of Traction Wheel Hub

Next, hoist the traction wheel assembly (Figure 4-138).

Figure 4-138: Hoist Traction Wheel Assembly and Align To Shaft

It may be necessary to rotate the drive shaft to align the drive shaft key to the keyway in the traction wheel hub. To rotate the drive shaft for alignment, disengage the brakes using the manual brake release handle and rotate brake drum as shown. Rotating the brake drum clockwise or counterclockwise will rotate the drive shaft and align the key and keyway (Figure 4-139).

Figure 4-139: Rotate Drum By Hand While Holding the Brake Open With Manual Release Handle

Once the key and keyway have been aligned, slide the traction wheel over the shaft and push the traction wheel as far up the shaft as possible (Figure 4-140).

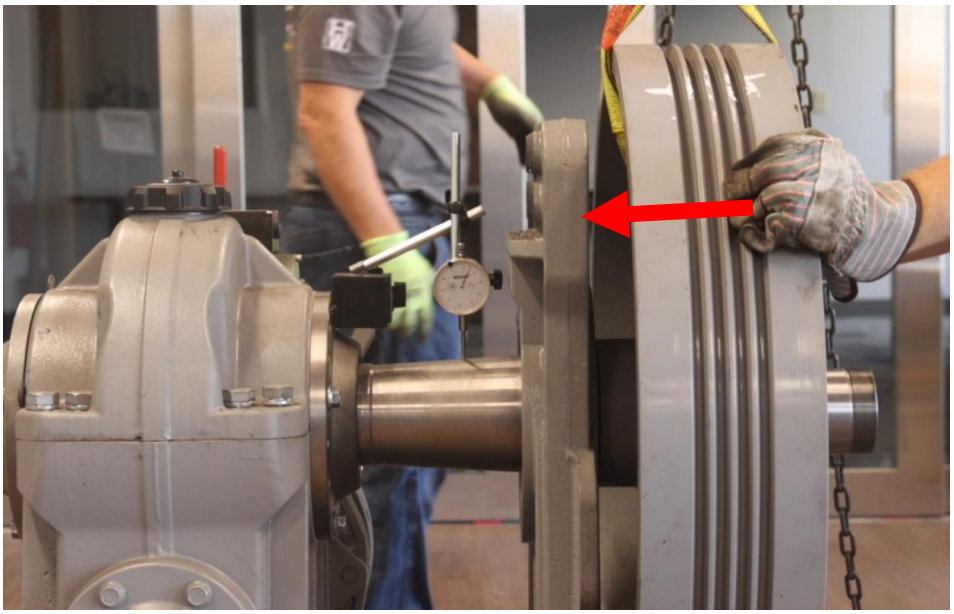


Figure 4-140: Push Traction Wheel Towards Gear Box

The next step is to reassemble the outboard stand to the machine assembly.

First, slide the outboard stand bearing onto the exposed end of the drive shaft (Figure 4-141). Then, assemble the bearing retainer onto the shaft (Figure 4-142). The orientation of the bearing retainer must be as shown with the outer ring of the bearing retainer butting up against the outer race of the bearing. This will prevent the bearing seal from becoming disengaged when reinstalling the outboard stand.

Figure 4-141: Reinstall Original Outboard Stand Bearing

Figure 4-142: Reinstall Original Outboard Stand Bearing

Next, assemble the bearing lock nut onto the threaded end of the shaft and tighten against the bearing retainer plate until snug (Figure 4-143).

Figure 4-143: Install Shaft Lock Nut Until Snug

Next, remove the hoisting strap from the traction wheel and reinstall the traction wheel hub to traction wheel body bolt which was previously removed (Figure 4-144).

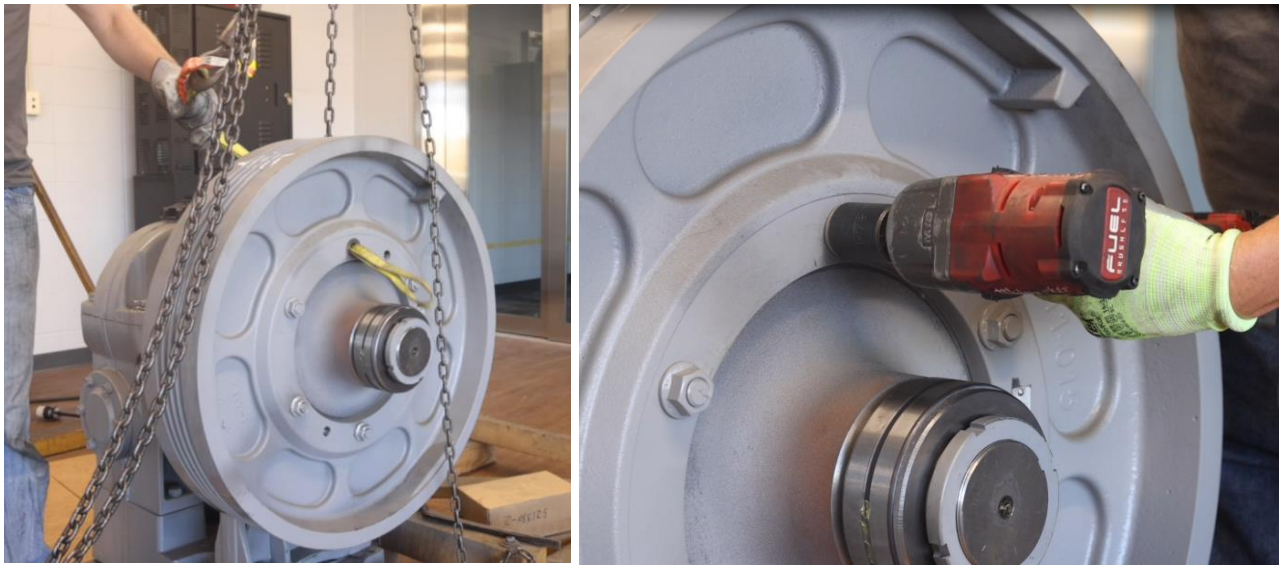


Figure 4-144: Remove Strap and Reinstall Orginal Body Bolt

Next, hoist the outer outboard stand to the machine and slide the outer outboard stand over the bearing (Figure 4-145).

Figure 4-145: Install Outer Outboard Stand Over Bearing

Next, loosely reinstall all four of the outer outboard stand bolts. The bolts should remain loose so that shims can be placed under the outer outboard stand. Ensure the dowel pins are in contact with the bottom of the inner outboard stand (Figure 4-146).

Figure 4-146: Loosely Reinstall Four Outer Outboard Stand Bolts

Next, remove the shaft lock nut and bearing retainer plate as shown (Figure 4-147).

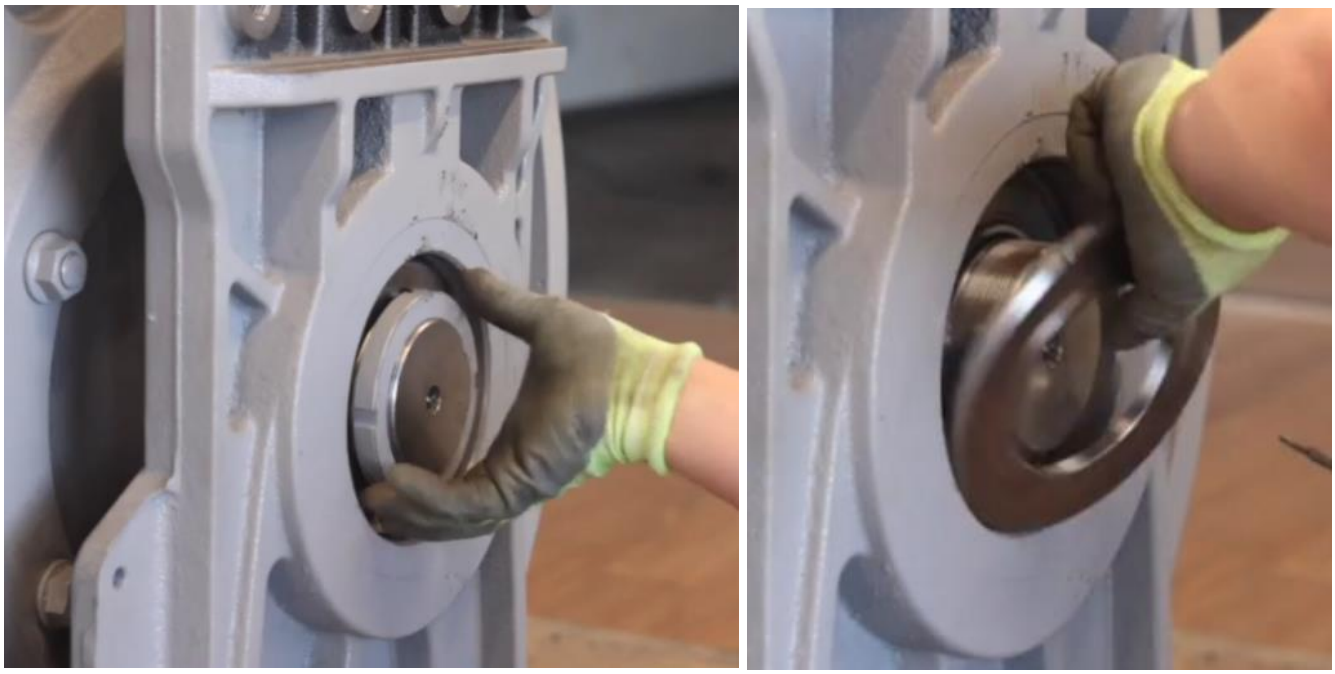


Figure 4-147: Remove Shaft Lock Nut and Retainer Plate

Then, flip the bearing retainer plate around so that the inner diameter of the bearing retainer plate engages the inner bearing race of the bearing. Then, reinstall the bearing lock nut washer followed by the bearing lock nut (Figure 4-148).

Figure 4-148: Flip Retainer Plate and Reinstall, Install Lock Washer, and Lock Nut

Using the spanner wrench supplied with the retrofit tool kit, tighten the bearing lock nut as much as possible (Figure 4-149). A brass hammer will be required to tighten the bearing lock nut fully and to align a shaft lock nut washer tab to a slot in the bearing lock nut washer (Figure 4-150). **ALWAYS TIGHTEN TO GET TAB TO SLOT ALIGNMENT - DO NOT LOOSEN.**

Figure 4-149: Fully Tighten Shaft Lock Nut

Figure 4-150: Hit with Brass Hammer to Ensure Lock Nut is Tight

Next, bend a washer lock tab into a slot in the lock washer (Figure 4-151).

Figure 4-151: Bend Washer Lock Tab into Slot in Lock Nut

Next, place the dial indicator on top of the traction wheel as shown (Figure 4-152).

Figure 4-152: Place Dial Indicator on Traction Wheel

Next, zero the dial indicator (Figure 4-153).

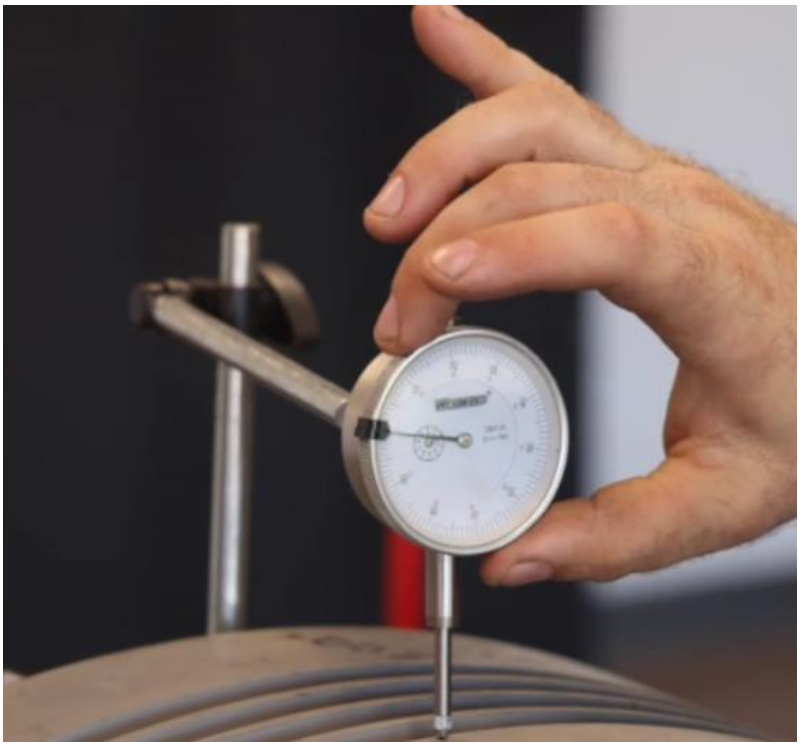


Figure 4-153: Zero Dial Indicator

Next, gently pry up on the outer outboard stand (Figure 4-154) and measure the total deflection using the dial indicator. In this example, the deflection would be 0.012” (Figure 4-155).

Figure 4-154: Pry Up on Outer Outboard Stand

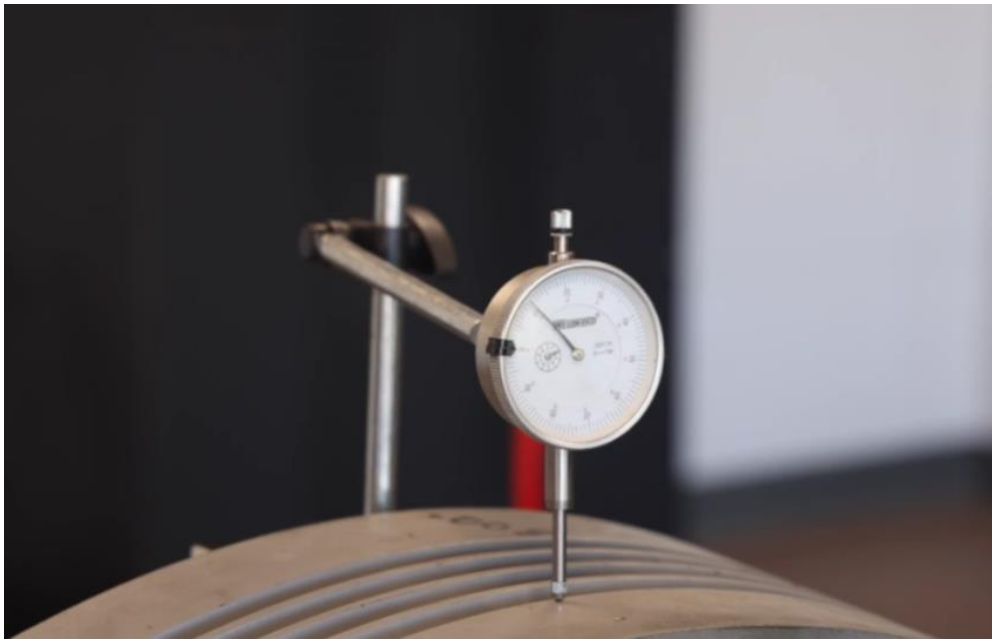


Figure 4-155: Check Displacement

Next, add shims under the inner outboard stand on both sides. Start by inserting as many shims as possible into the gap between the inner outboard stand and machine base (Figure 4-156). The shims will likely be a combination of original shims and new shims which are provided with the retrofit kit. The shims come in 0.005”, 0.010”, and 0.032” thickness. You may need to gently pry up the outboard stand to get the final shim in place. The inner outboard stand will “wobble” until the appropriate number of shims is finally in place.

Figure 4-156: Insert Shim Packs Between Outboard Stand and Machine Base

Next, add the correct quantity of shims (Figure 4-157) to the initial shim packs to attempt to register ½" of the original value indicated on the dial indicator as shown in Figure 4-155. There should be an equal number of shims and thicknesses in each shim pack.

Figure 4-157: Add More Shims to Shim Pack To Achieve Required Indicator Reading

Next, use a small pry bar to lift on the inner outboard stand to fit the now thicker shim pack between the outboard stand and the machine base (Figure 4-158) and check the dial indicator (Figure 4-155).

Figure 4-158: Pry Outer Outboard Stand Up to Insert Thicker Shim Packs

The dial indicator should read ½" the original value shown in Figure 4-155. In this example, it should register 0.006" since Figure 4-104 registers 0.012". This process may take several attempts of adding various thickness shims to achieve the desired indicator reading. Furthermore, when enough shims are installed, you should not be able to easily rock the outer outboard stand back and forth (Figure 4-159).

Figure 4-159: Shim Pack Should Be Tight Enough So That There is No Rocking Back and Forth

Next, tighten the four outboard stand bolts (Figure 4-160) and check the dial indicator (Figure 4-161). The dial indicator reading will likely decrease by several thousandths of an inch due to the tightening of the outboard stand bolts. The alignment is acceptable if the dial indicator does not go below zero.

Figure 4-160: Tighten the Four Inner Outboard Stand Bolts

Figure 4-161: After Tightening Bolts Ensure Dial Indicator Still Reads Above Zero

Next, fully tighten the four outboard stand bolts to 200 ft*lbs. using a torque wrench (Figure 4-162). After tightening, check to make sure the dial indicator did not drop below the zero mark.

Figure 4-162: Torque Four Outboard Stand Bolts to 200 ft*lbs

4.15 All Models Final Reassembly of Remaining Components

Next, as was done in the first step, check the backlash of the gear to ensure it is acceptable (Figure 4-163).

The backlash should be within +/-0.002” of the original backlash recorded on the outboard stand rope retainer plate mounting surface. If the backlash is greater or less than +/-0.002”, contact Hollister-Whitney technical support at (217) 222-0466.

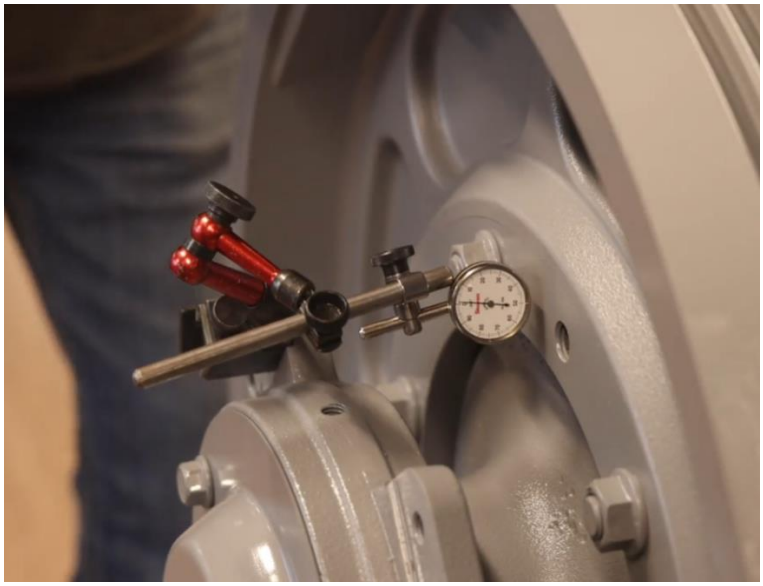


Figure 4-163: Check Backlash with Dial Indicator

The next step is to reassemble the remaining components.

Next, reinstall the oil plug (Figure 4-164) and add the original oil back into the gear box (Figure 4-165).

Figure 4-164: Reinstall Oil Plug and Tighten

Figure 4-165: Fill Gearbox with Original Oil

Fill the gear box with the original oil until the oil level is at the mid-line of the oil sight glass. A quart of oil has been provided with the retrofit kit in case additional oil is required. The oil level should be between 1/8” of an inch from the top of the oil sight glass to 1/8” above the bottom of the oil sight glass (Figure 4-166).

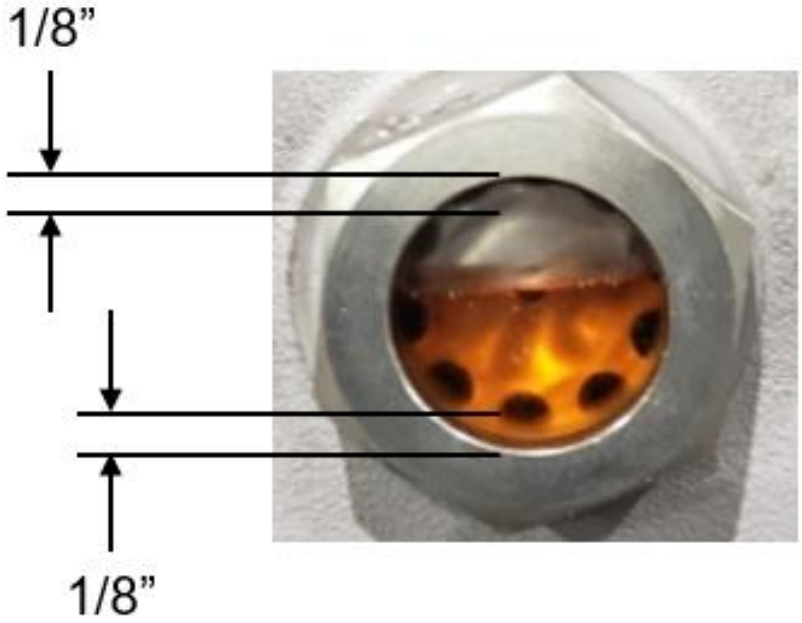


Figure 4-166: Proper Oil Level

Next, screw the oil cap back onto the upper housing (Figure 4-167).

Figure 4-167: Reinstall Oil Cap

Next, using the tamper paint supplied in the tool kit place tamper marks across ALL outboard stand bolts (Figure 4-168).

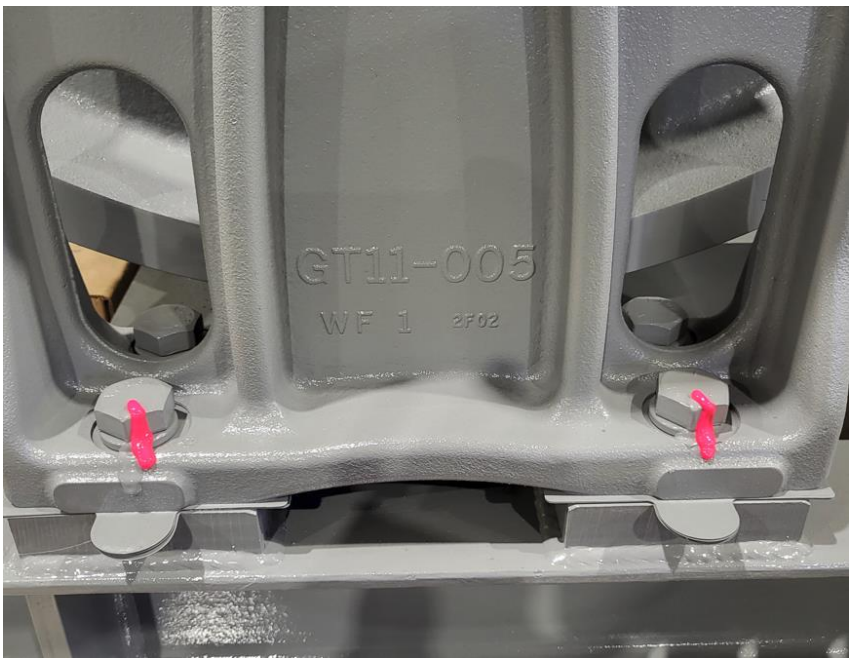


Figure 4-168: Place Paint Mark Across All Outboard Stand Bolts

Finally, place the orange warning label onto the outboard stand as shown (Figure 4-169).

Figure 4-169: Add Orange Warning Label Where Shown

The machine is now ready to be placed back in service.

If there are any questions or issues, please contact Hollister-Whitney technical support at (217) 222-0466.

Section

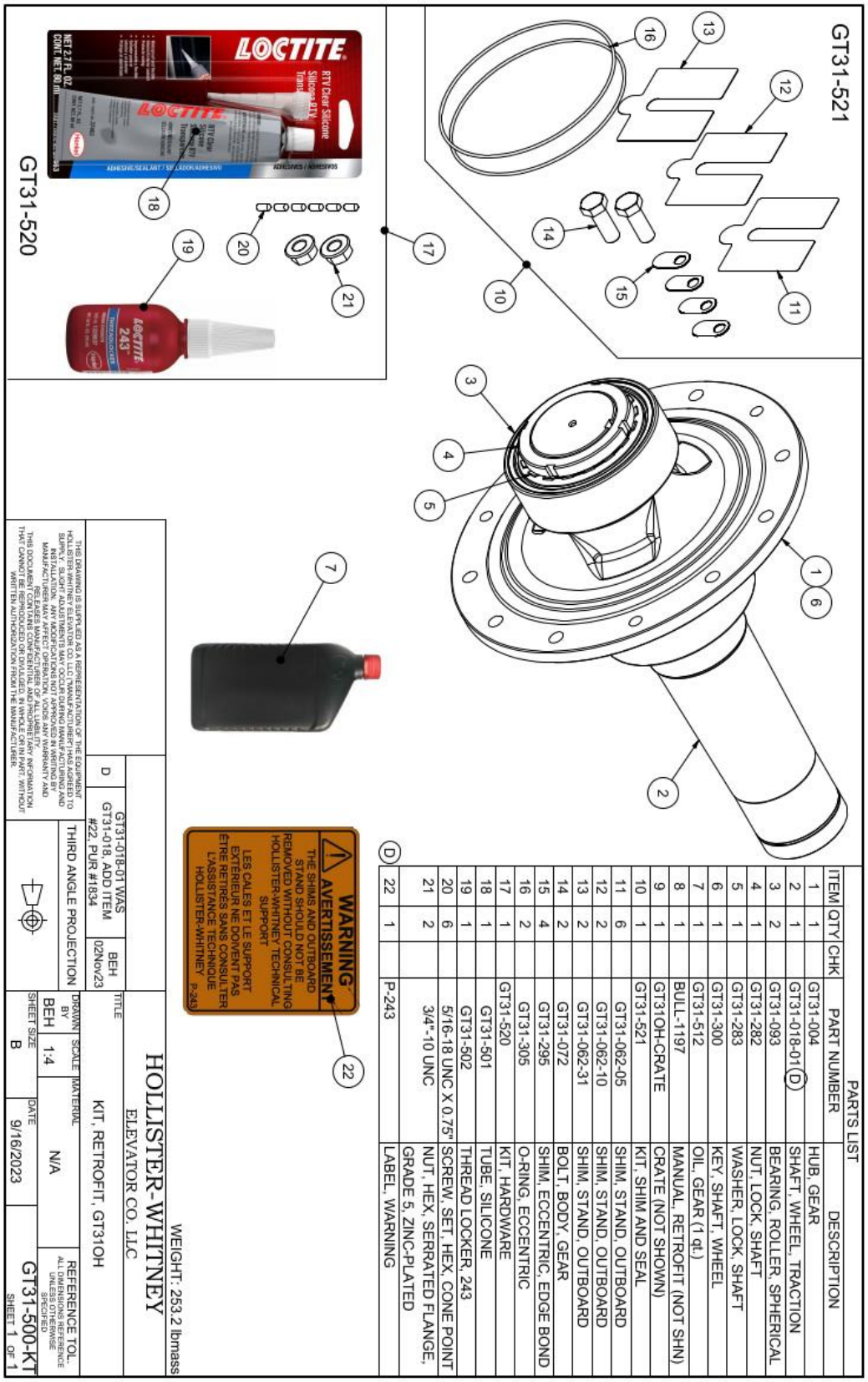
5

5 Appendix

5.1 Retrofit Kit Drawings

The kit will come in a crate packed similarly to the following image.

5.1.1 GT31OH Retrofit Kit Drawing



ITEM	QTY	CHK	PART NUMBER	DESCRIPTION
1	1		GT31-004	HUB, GEAR
2	1		GT31-018-01(D)	SHAFT, WHEEL, TRACTION
3	2		GT31-093	BEARING, ROLLER, SPHERICAL
4	1		GT31-282	NUT, LOCK, SHAFT
5	1		GT31-283	WASHER, LOCK, SHAFT
6	1		GT31-300	KEY, SHAFT, WHEEL
7	1		GT31-512	OIL, GEAR (1 qt.)
8	1		BULL-1197	MANUAL, RETROFIT (NOT SHN)
9	1		GT31OH-CRATE	CRATE (NOT SHOWN)
10	1		GT31-521	KIT, SHIM AND SEAL
11	6		GT31-062-05	SHIM, STAND, OUTBOARD
12	2		GT31-062-10	SHIM, STAND, OUTBOARD
13	2		GT31-062-31	SHIM, STAND, OUTBOARD
14	2		GT31-072	BOLT, BODY, GEAR
15	4		GT31-295	SHIM, ECCENTRIC, EDGE BOND
16	2		GT31-305	O-RING, ECCENTRIC
17	1		GT31-520	KIT, HARDWARE
18	1		GT31-501	TUBE, SILICONE
19	1		GT31-502	THREAD LOCKER, 243
20	6		5/16-18 UNC X 0.75"	SCREW, SET, HEX, CONE POINT
21	2		3/4"-10 UNC	NUT, HEX, SERRATED FLANGE, GRADE 5, ZINC-PLATED
22	1		P-243	LABEL, WARNING

(D) GT31-018-01 WAS #22, PUR #1834 — BEH — 02Nov23

THIRD ANGLE PROJECTION

WEIGHT: 253.2 lbmass

HOLLISTER-WHITNEY ELEVATOR CO., LLC

TITLE: KIT, RETROFIT, GT31OH

DRAWN BY: BEH | SCALE: 1:4 | MATERIAL: N/A | REFERENCE TOL. ALL DIMENSIONS REFERENCE UNLESS OTHERWISE SPECIFIED

SHEET SIZE: B | DATE: 9/16/2023 | GT31-500-KT | SHEET 1 OF 1

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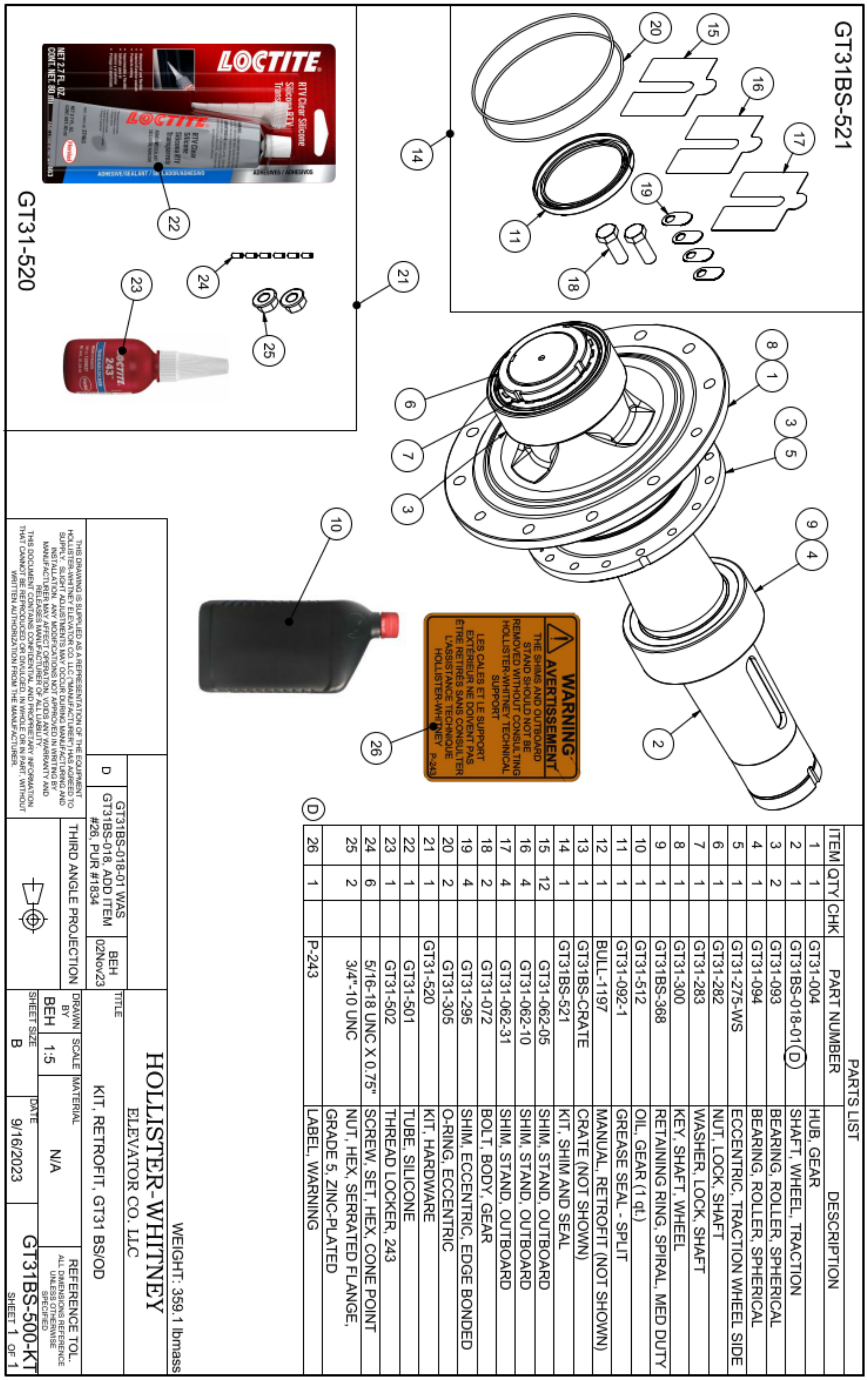
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION THAT CANNOT BE REPRODUCED OR DISCLOSED IN WHOLE OR IN PART, WITHOUT WRITTEN AUTHORIZATION FROM THE MANUFACTURER.

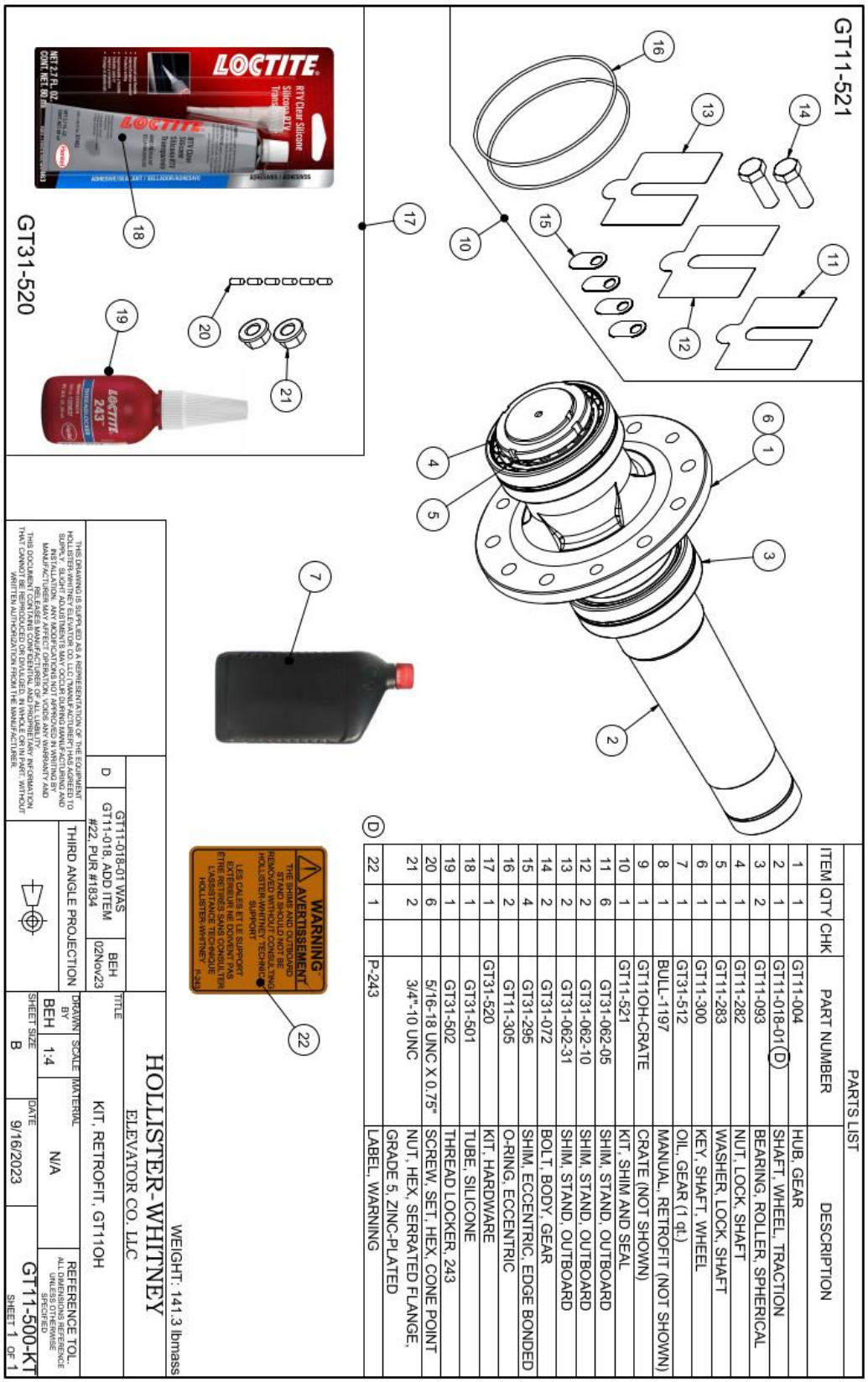
5.1.2 GT31BS and OD Retrofit Kit Drawing



PARTS LIST

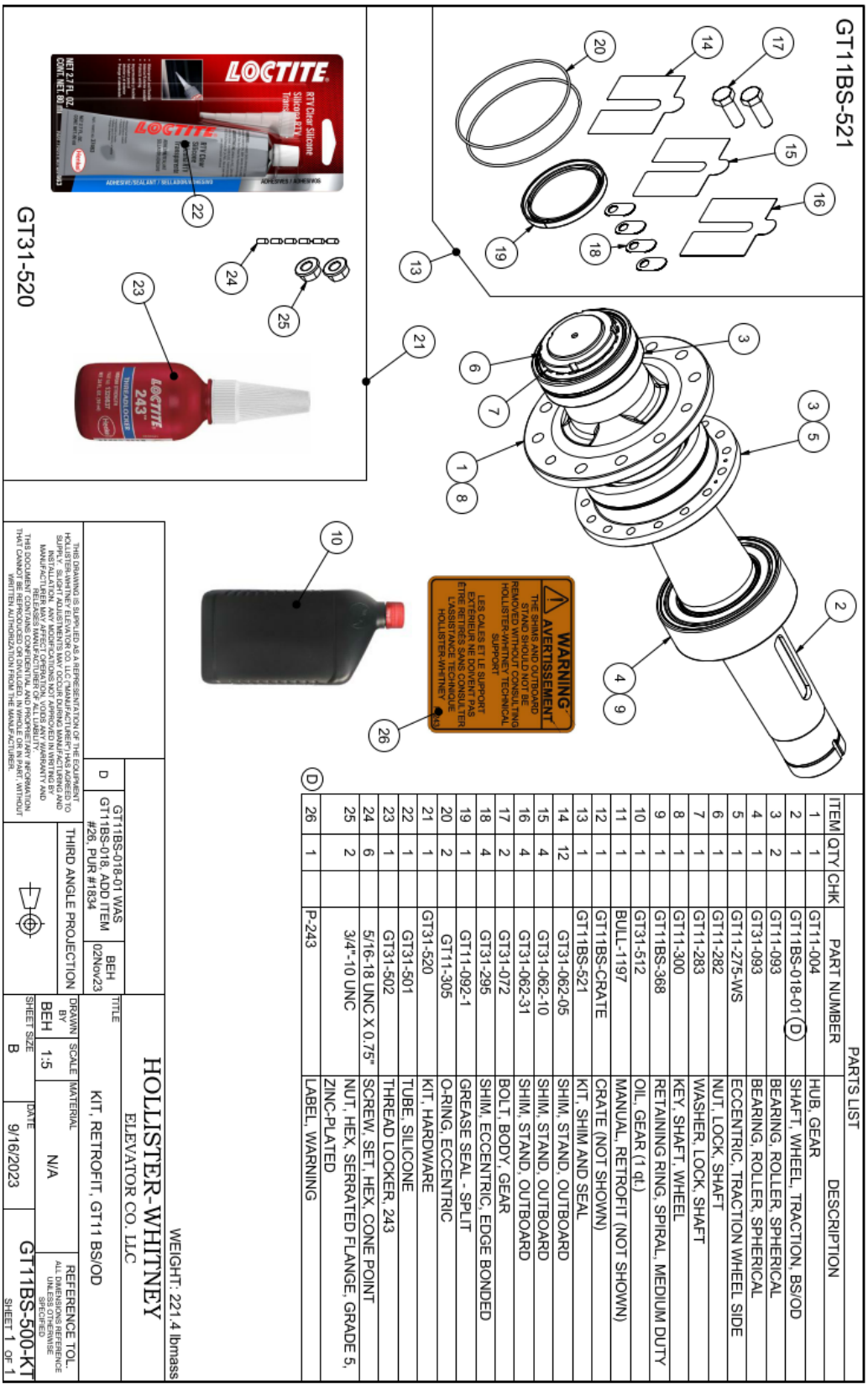
ITEM	QTY	CHK	PART NUMBER	DESCRIPTION
1	1		GT31-004	HUB, GEAR
2	1		GT31BS-018-01 (D)	SHAFT, WHEEL, TRACTION
3	2		GT31-093	BEARING, ROLLER, SPHERICAL
4	1		GT31-094	BEARING, ROLLER, SPHERICAL
5	1		GT31-275-WS	ECCENTRIC, TRACTION WHEEL SIDE
6	1		GT31-282	NUT, LOCK, SHAFT
7	1		GT31-283	WASHER, LOCK, SHAFT
8	1		GT31-300	KEY, SHAFT, WHEEL
9	1		GT31BS-368	RETAINING RING, SPIRAL, MED DUTY
10	1		GT31-512	OIL, GEAR (1 qt.)
11	1		GT31-092-1	GREASE SEAL - SPLIT
12	1		BULL-1197	MANUAL, RETROFIT (NOT SHOWN)
13	1		GT31BS-CRATE	CRATE (NOT SHOWN)
14	1		GT31BS-521	KIT, SHIM AND SEAL
15	12		GT31-062-05	SHIM, STAND, OUTBOARD
16	4		GT31-062-10	SHIM, STAND, OUTBOARD
17	4		GT31-062-31	SHIM, STAND, OUTBOARD
18	2		GT31-072	BOLT, BODY, GEAR
19	4		GT31-295	SHIM, ECCENTRIC, EDGE BONDED
20	2		GT31-305	O-RING, ECCENTRIC
21	1		GT31-520	KIT, HARDWARE
22	1		GT31-501	TUBE, SILICONE
23	1		GT31-502	THREAD LOCKER, 243
24	6		5/16-18 UNC X 0.75"	SCREW, SET, HEX, CONE POINT
25	2		3/4"-10 UNC	NUT, HEX, SERRATED FLANGE, GRADE 5, ZINC-PLATED
26	1		P-243	LABEL, WARNING

5.1.3 GT11OH Retrofit Kit Drawing



ITEM	QTY	CHK	PART NUMBER	DESCRIPTION
1	1		GT11-004	HUB, GEAR
2	1		GT11-018-01 (D)	SHAFT, WHEEL, TRACTION
3	2		GT11-093	BEARING, ROLLER, SPHERICAL
4	1		GT11-282	NUT, LOCK, SHAFT
5	1		GT11-283	WASHER, LOCK, SHAFT
6	1		GT11-300	KEY, SHAFT, WHEEL
7	1		GT31-512	OIL, GEAR (1 qt.)
8	1		BULL-1197	MANUAL, RETROFIT (NOT SHOWN)
9	1		GT11OH-CRATE	CRATE (NOT SHOWN)
10	1		GT11-521	KIT, SHIM AND SEAL
11	6		GT31-062-05	SHIM, STAND, OUTBOARD
12	2		GT31-062-10	SHIM, STAND, OUTBOARD
13	2		GT31-062-31	SHIM, STAND, OUTBOARD
14	2		GT31-072	BOLT, BODY, GEAR
15	4		GT31-295	SHIM, ECCENTRIC, EDGE BONDED
16	2		GT11-305	O-RING, ECCENTRIC
17	1		GT31-520	KIT, HARDWARE
18	1		GT31-501	TUBE, SILICONE
19	1		GT31-502	THREAD LOCKER, 243
20	6		5/16-18 UNC X 0.75"	SCREW, SET, HEX, CONE POINT
21	2		3/4"-10 UNC	NUT, HEX, SERRATED FLANGE, GRADE 5, ZINC-PLATED
22	1		P-243	LABEL, WARNING

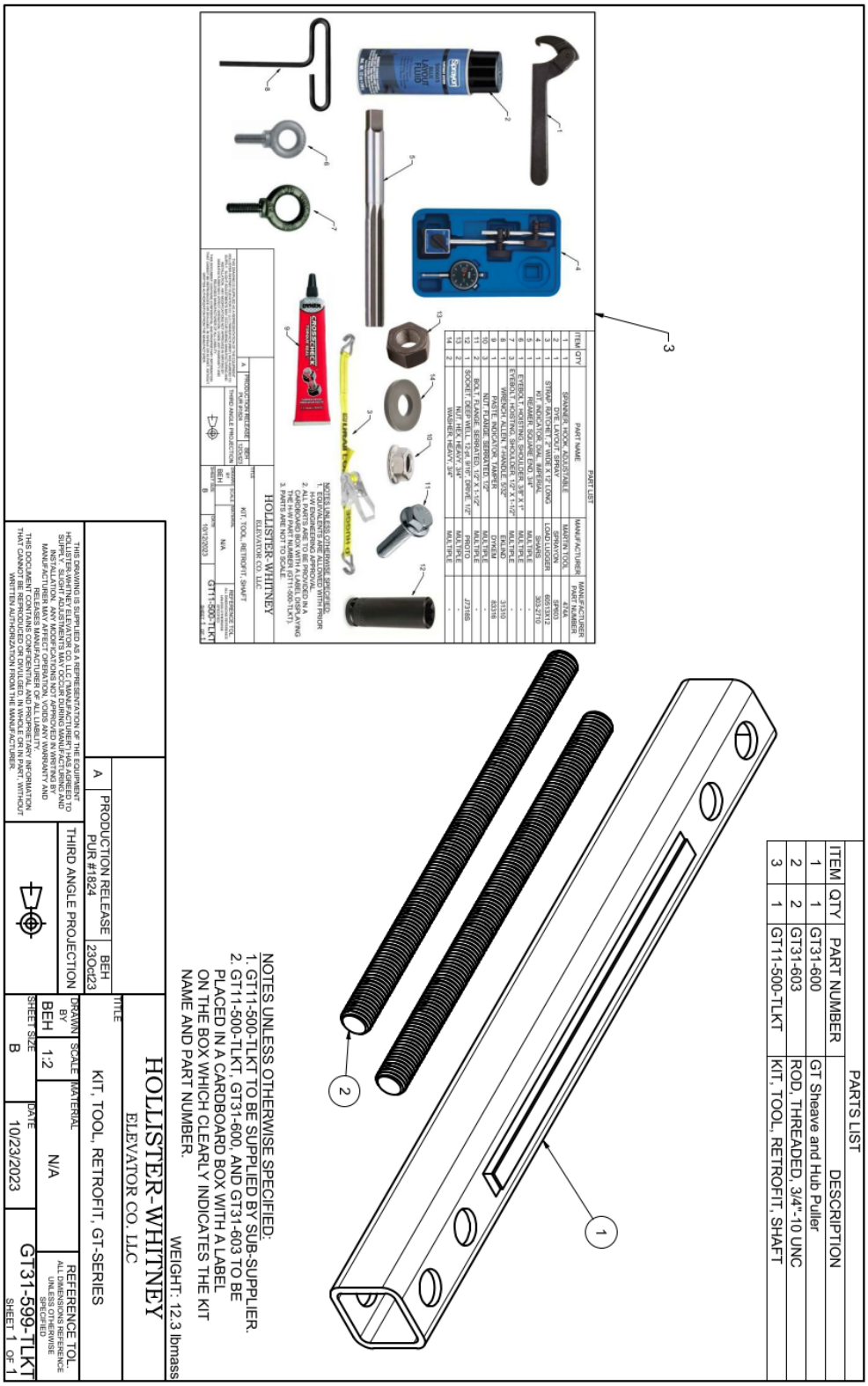
5.1.4 GT11BS and OD Retrofit Kit Drawing



ITEM	QTY	CHK	PART NUMBER	DESCRIPTION
1	1		GT11-004	HUB, GEAR
2	1		GT11BS-018-01 (D)	SHAFT, WHEEL, TRACTION, BS/OD
3	2		GT11-093	BEARING, ROLLER, SPHERICAL
4	1		GT31-093	BEARING, ROLLER, SPHERICAL
5	1		GT11-275-WS	ECCENTRIC, TRACTION WHEEL SIDE
6	1		GT11-282	NUT, LOCK, SHAFT
7	1		GT11-283	WASHER, LOCK, SHAFT
8	1		GT11-300	KEY, SHAFT, WHEEL
9	1		GT11BS-368	RETAINING RING, SPIRAL, MEDIUM DUTY
10	1		GT31-512	OIL, GEAR (1 qt)
11	1		BULL-1197	MANUAL, RETROFIT (NOT SHOWN)
12	1		GT11BS-CRATE	CRATE (NOT SHOWN)
13	1		GT11BS-521	KIT, SHIM AND SEAL
14	12		GT31-062-05	SHIM, STAND, OUTBOARD
15	4		GT31-062-10	SHIM, STAND, OUTBOARD
16	4		GT31-062-31	SHIM, STAND, OUTBOARD
17	2		GT31-072	BOLT, BODY, GEAR
18	4		GT31-295	SHIM, ECCENTRIC, EDGE BONDED
19	1		GT11-092-1	GREASE SEAL - SPLIT
20	2		GT11-305	O-RING, ECCENTRIC
21	1		GT31-520	KIT, HARDWARE
22	1		GT31-501	TUBE, SILICONE
23	1		GT31-502	THREAD LOCKER, 243
24	6		5/16-18 UNC X 0.75"	SCREW, SET, HEX, CONE POINT
25	2		3/4"-10 UNC	NUT, HEX, SERRATED FLANGE, GRADE 5, ZINC-PLATED
26	1		P-243	LABEL, WARNING

(D) GT11BS-018-01 WAS #26, PUR #1834, ADD ITEM — BEH 02Nov23

5.1.5 All GT-Machine Models Retrofit Tool Kit – All Tools Drawing



PARTS LIST

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	GT31-600	GT Sheave and Hub Puller
2	2	GT31-603	ROD, THREADED, 3/4"-10 UNC
3	1	GT11-500-TLKT	KIT, TOOL, RETROFIT, SHAFT

NOTES UNLESS OTHERWISE SPECIFIED:
1. GT11-500-TLKT TO BE SUPPLIED BY SUB-SUPPLIER.
2. GT11-500-TLKT, GT31-600, AND GT31-603 TO BE PLACED IN A CARDBOARD BOX WITH A LABEL ON THE BOX WHICH CLEARLY INDICATES THE KIT NAME AND PART NUMBER.

WEIGHT: 12.3 lbmass

ITEM	QTY	PART NAME	MANUFACTURER	MANUFACTURER PART NUMBER
1	1	SPANNER, HOOK, PULLEY/CABLE	MISUMI	HSPNR10-100
2	1	DYE, LAYOUT, SPRAY	SPRAYON	SP803
3	1	STRAP, RATCHET, 2" WIDE X 12' LONG	LOAD LUGGER	69513312
4	1	KIT, PULLER, BALL BEARING	MULTIPLE	-
5	1	REAMER, SQUARE END, 3/4"	MULTIPLE	303-2710
6	1	EYEBOLT, HOISTING, SHOULDER, 3/8"-X 1"	MULTIPLE	-
7	3	EYEBOLT, HOISTING, SHOULDER, 1/2"-X 1-1/2"	MULTIPLE	-
8	1	WRENCH, ALLEN, T-HANDLE, 3/8"	MULTIPLE	33139
9	1	PASTE, INDICATOR, TAPER	DYKEM	83316
10	3	NUT, FLANGE, SERRATED, 7/8"	MULTIPLE	-
11	2	BOLT, FLANGE, SERRATED, 1/2"-13 X 3.5"	MULTIPLE	-
12	2	SOCKET, FLANGE, SERRATED, 1/2"-13 X 1.25"	PTI USA	J731MS
13	2	NUT, HEX, HEAVY, 3/4"	MULTIPLE	-
14	3	WASHER, HEAVY, 3/4"	MULTIPLE	-

NOTES UNLESS OTHERWISE SPECIFIED:
1. MATERIAL: SEE INDIVIDUAL PART DRAWINGS
2. CARDBOARD BOX WITH A LABEL DISPLAYING THE KIT NAME AND PART NUMBER
3. PAINT: NONE REQUIRED

HOLLISTER-WHITNEY
ELEVATOR CO. LLC
KIT, TOOL, RETROFIT, SHAFT
SIZE: B | DWG NO: GT11-500-TLKT | REV: A
DATE: 10/12/2023 | SHEET 1 OF 1

REV	DESCRIPTION	BY	DATE
A	PRODUCTION RELEASE PUR #1824	BEH	23Oct23

THIRD ANGLE PROJECTION

THIS DRAWING IS SUPPLIED AS A REPRESENTATION OF THE EQUIPMENT HOLLISTER-WHITNEY ELEVATOR CO. LLC ("MANUFACTURER") HAS AGREED TO SUPPLY. IT IS NOT TO BE USED FOR INSTALLATION. ANY MODIFICATIONS NOT APPROVED IN WRITING BY MANUFACTURER RELEASES MANUFACTURER OF ALL LIABILITY AND WARRANTY AND THIS DOCUMENT CONTAINING CONFIDENTIAL AND PROPRIETARY INFORMATION THAT CANNOT BE REPRODUCED OR DIVULGED IN WHOLE OR IN PART, WITHOUT WRITTEN AUTHORIZATION FROM THE MANUFACTURER.

TITLE: KIT, TOOL, RETROFIT, GT-SERIES

DRAWN BY	SCALE	MATERIAL	REFERENCE TOL.
BEH	1:2	N/A	ALL DIMENSIONS ARE REFERENCE UNLESS OTHERWISE SPECIFIED

SHEET SIZE	DATE	GT31-599-TLKT
B	10/23/2023	SHEET 1 OF 1

5.1.6 All GT-Machine Models Retrofit Tool Kit Enlarged Drawing

5.2 Revisions

Rev A: 27Oct23

Initial Release

Rev B: 04Dec23

Page 1-2: Add hoisting device minimum hoisting load requirement

Page 1-2: Add fire extinguisher to list of required tools

Page 2-2: Update statement to include using company-specific procedures and protocols for hanging the car, landing the counterweight, etc.

Page 4-12: Add note regarding hoist straps and sharp edges from bolt hole

Page 4-30: Add torque specification for bronze gear body bolts

Page 4-31: Add torque specification for bronze gear body bolts

Page 4-42: Add torque specification for upper to lower housing bolts

Page 4-43: Add torque specification for eccentric bolts

Page 4-69: Drafting correction – “Figure 4-122” was “Figure 4-104”