

**REPLACEMENT INSTRUCTIONS
PTW & ETW SECOND STAGE GEAR CARRIER**



L4170 Rev. B 9/18

English (EN)

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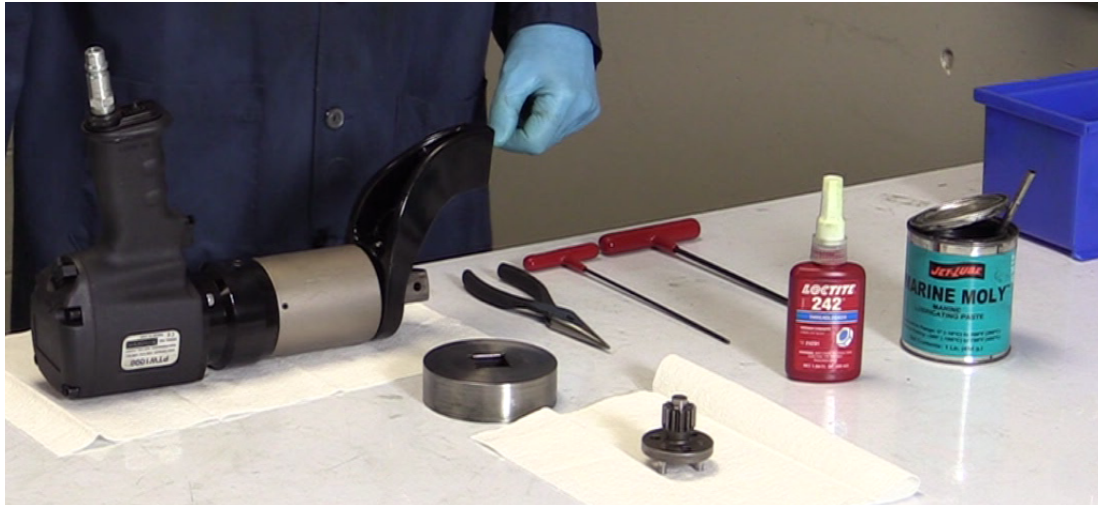
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1: Introduction

This bulletin provides an overview of the procedure and equipment required to replace the second stage gear carrier of an Enerpac PTW-Series Pneumatic Torque Wrench. This process may also be used on the ETW-Series Electric Torque Wrench, as these two types of tools feature the same gear boxes.

2: Required Tools, Supplies and Parts



The following tools and supplies are required to perform this procedure:

- Square drive socket, 3/4" for the TW1000-75, 1" for the TW1000, TW2000 and TW3000 units, or 1.5" for the TW6000 unit
- Needle nose pliers
- 1/8" Allen® wrench
- 3/16" Allen® wrench
- Thread locking fluid (Red Loctite® 242)
- Molybdenum disulfide grease (Jet Lube Marine Moly™ or equivalent)
- Small bin or cloth for catching bearings while disassembling tool

A replacement second stage gear carrier is also required (Part No. will vary):

- Gear carrier, second stage, TW1000: Part No. DD5445600SR
- Gear carrier, second stage, TW2000: Part No. DD5455600SR
- Gear carrier, second stage, TW3000: Part No. DD5467600SR
- Gear carrier, second stage, TW6000: Part No. DD5480600SR

3: Tool Disassembly



Position the wrench with the top facing down. Remove the reaction arm using a 1/8" Allen® wrench to unscrew the set screw.



Remove the gear box by unscrewing the set screw on the bottom of the adapter housing with a 3/16" Allen® wrench.



Allow the 35 rotary joint balls to fall out of the adapter through the set screw hole by holding the tool in a horizontal working position and rotating and oscillating to get the balls to drop out. Applying axial forces while rotating can aid this process.



With the balls removed, the gear box will separate from the adaptor. Be sure to hold the gearbox with the output end angling down to prevent the gear stages from falling out.



With the gearbox standing on the output end (A drive socket can be used as a fixture to support the gearbox: use a 3/4" socket for the TW1000-75; use a 1" socket for the TW1000, TW2000 and TW3000; use a 1.5" socket for the TW6000). Use a needle nose pliers to lock on to two of the three holes spaced evenly between the planets in the first stage carrier. Pull the carrier assembly upward out of the gear housing.



Carefully set the first stage carrier onto a clean towel. Note that the planet gears are not retained axially, and can slide off.



Repeat the previous step to remove the second stage carrier. Note that the second stage planet gears need to be removed, as they will be reused. The second stage gear carrier is the part to be replaced.

Carrier Replacement and Reassembly Process



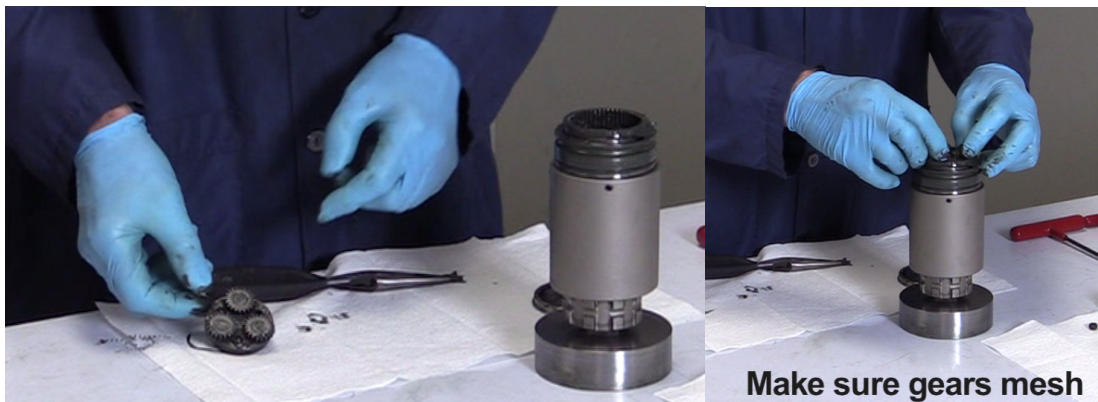
Discard the old second stage gear carrier, then take the new second stage carrier, and apply black Marine Moly™ grease (or similar) generously to the gear teeth, and apply a light coating onto the same face and onto the outside diameter.



Lower the new second stage gear carrier into the gear housing. Rotate while lowering the carrier to get the sun gear to mesh with the third stage planet gears. Insert the carrier as far as it will go, while ensuring that the sun and planet gears align properly.



Add grease generously to the three pins on the upper side of the carrier and coat the remaining surface. Slide the planet gears onto the pins of the second stage gear carrier. **Important Note:** The gears are not symmetric. There is a step down diameter on one end. The step down diameter should be away from the carrier (facing up) when sliding on to the pins.



Install the 1st stage carrier in a similar manner. When finished, the planet gear surfaces should be flush or below the top rim of the gear housing.



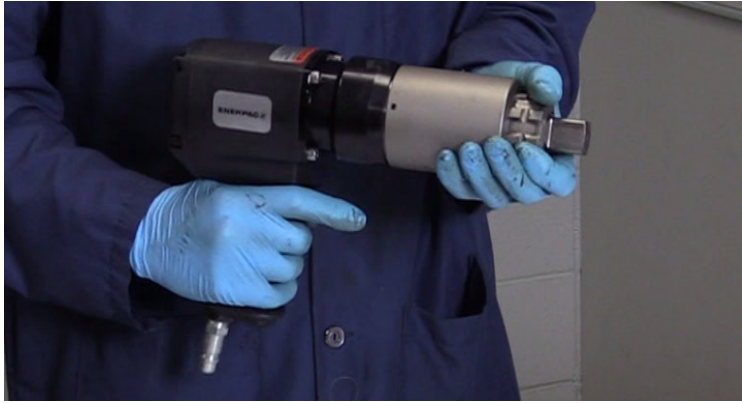
Place the motor adaptor housing over the gear housing and rotate to aid axial assembly. This should be done with the tool in a horizontal working position to avoid the gear stages from coming out of the gearbox, or the washer from coming out of the motor adaptor. First, align the teeth of the sun gear to the first stage planet gears, then seat the O-ring into the adaptor. Observe the ball groove through the set screw hole to verify that the parts are completely joined together.



Insert the 35 balls through the set screw hole; occasionally rotate the gear box to get the balls to drop, or hand-press the balls if necessary.



After installing all 35 balls, push the balls to either side of the hole using an Allen Wrench so that there is an open space under the set screw. Apply a drop of Loctite[®] 242 to the set screw, and fasten down the set screw in until it contacts the ball race. Then back out the set screw a quarter turn.



Confirm that the joint rotates freely.



Reattach the reaction arm using a 1/8" Allen wrench to tighten the set screw just far enough that it catches the shoulder of the spline. Do not overtighten.

Conclusion

At this point the second stage gear replacement is complete. Based on the amount of usage the wrench has experienced prior to the replacement, it may be appropriate to calibrate the wrench. If so, have the wrench calibrated by an Authorized Enerpac Service Center. For questions concerning recalibration, contact Enerpac.