

Century Drive Systems Inc.,

Instructions for installing and adjusting Front Tapered Bearing, and installation of Speedy Ring and Seal on a Counter Rotating Upper Assembly

DEATH OR SERIOUS INJURY MAY OCCUR WHEN WORKING ON OR AROUND MOVING PARTS!

Note: Be sure to turn off master battery switch or disconnect batteries prior to beginning maintenance on your drive unit. Also remove all tools loose objects from engine area prior to testing.

- 1.) We recommend that you drain the oil at this time by removing the magnetic drain plug on the bottom of the upper assembly.

Note: It would be helpful to have the nose of the boat lowered to have the oil inside the shaft move toward the front of the boat.

- 2.) Carefully remove the rear propeller. Mark each of the blades location and pitch prior to unbolting.
- 3.) Remove the center locking bolt with a 2" inch wrench. This bolt has a standard right hand thread. The propeller hub is on a 1 in 12 taper and can be tapped off with a small dead blow hammer.
- 4.) Mark position and pitch of the front propeller and carefully remove it.
- 5.) Remove the seal in the face of the secondary shaft. Be extra careful when removing so you do not scratch the shaft area where the seal rides.

- 6.) You will now see (4) socket head screws in the face of a ring nut. These were loctited when installed and could be difficult to remove. After they are out we recommend using (4) new screws as the hex is usually in bad shape by then.
- 7.) Using the spanner wrench provided, remove the outer ring nut turning counter clockwise.
- 8.) Using the same spanner wrench provided, remove the inner ring nut by turning counter clockwise.
- 9.) With (2) small hooks get a hold of the bearing and pull it out of the case over the shaft. This bearing is a .001" clearance fit and was installed with loctite on the shaft.
- 10.) Clean any remaining hardened loctite from the shaft area inside the housing, wipe shaft and bearing race clean. Use paint thinner to remove any oil film to allow the loctite to adhere to the shaft and threads.
- 11.) Clean the balance of the entire exposed shaft. Stuff some paper towels in next to the bearing race to keep out the dirt while cleaning the shaft, you may have to use a light emery cloth on the shaft to remove any rust or sharp areas that could cut the new seal when being installed. Also with paint thinner clean the tapered area of the shaft and inside of the tapered propeller hub plate to remove any old loctite or oil film. Also be sure to clean any old loctite or oil film out of the threads on the inside of the shaft with paint thinner. Remove paper towels and wipe entire shaft and seal area clean.
- 12.) With a small paint brush apply a coat of 670 loctite to the shaft area just below the threads where the bearing will be located.
- 13.) Install a new #L507949 Timken tapered bearing. Push in place until seated on the bearing race.
- 14.) Put 3 or 4 drops of 670 loctite on the threads just above the bearing that you just installed.
- 15.) Clean with paint thinner, dry and reinstall the inner ring nut until tight against the bearing. Spin the shaft by rolling the engine through with the starter, **but**

do not start the engine and re-tighten again. Repeat this step until you are sure the bearing is seated. You can spin the shafts by hand as you are tightening the nut to seat the bearing, if the unit is apart and is out of the main case.

- 16.) Back the inner nut off about 1/8" of a turn only then re-spin the shafts by hand, or turn the engine through (2) revolutions with starter if still together.
- 17.) Try to lightly tighten the inner nut again. **Do not try to apply heavy force or spin the shafts when tightening this time.**
- 18.) Put 3 or 4 drops of loctite on the threads of the shaft just above the inner nut area of the threads.
- 19.) Clean with paint thinner, dry and then install the outer ring nut over the shaft until it lightly touches the inner nut then back it out at least (1) full turn to (1 1/4)turns until the (4) bolt holes line up. Be sure that the inner ring nut stays in place and does not back off with the outer ring nut.
- 20.) Install with loctite on the threads (4) 1/4 - 20 x 1/2" low profile socket head cap screws this is to tighten the (2) ring nuts together locking them in place on the threads of the shaft.
- 21.) Apply a thin film of loctite on the shaft area 3/4 of an inch wide just above the (4) screw heads. With a 2 1/2" OD x 15" long piece of aluminum tubing tap the speedy ring over the shaft until it bottoms against the screw head. Wipe off any excess loctite near the speedy ring.
- 22.) Oil lightly the large diameter of the shaft only with ATF type oil. Be sure not to get any oil on the prop hub tapered area of the shaft. Slide the O-Ring over shaft and half way over the speedy ring so it is in the middle of the speedy ring.
- 23.) Wipe clean the recess where the seal will seat and apply a thin film of silicone sealant around the inside of the recess.
- 24.) Install seal # 21950 by putting some oil on the rubber portion of the seal and carefully start the seal over the shaft. Be very careful to get the lip seal over the speedy ring by pushing the seal back and forth around the shaft to get (1)

side at a time past the edge. Finish installing the seal flush to the surface of the secondary shaft.

- 25.) Install the front propeller as it was.
- 26.) Make certain no oils are on the tapered shaft area. Be sure the woodruff key is seated in the keyway and coat the tapered shaft area as well as the inside of the prop flange with 670 loctite. Have your 1 1/4" centering bolt cleaned, free of oils, and ready with loctite on the threads and a 1/4" bead of silicone under the bolt head at the base of the threads. Tighten this with a 2" wrench as tight as possible or to at least 120 lbs. Tap the prop flange lightly with a dead blow hammer and re-tighten.

WARNING: IT IS VERY IMPORTANT THAT YOU CAREFULLY FOLLOW ALL DETAILS OF THESE INSTRUCTIONS AND THAT PRESERVATIVES ARE REMOVED AND LOCTITE IS PROPERLY APPLIED.

- 27.) Install rear propeller as it was.
- 28.) Take out the top fill plug and install the bottom magnetic plug, then fill with 62 oz. (just shy of 2 full quarts) of synthetic automatic transmission fluid. We recommend **Pennzoil 159920 ATF**. When pipe plug is put back in place be sure to use silicone sealant provided on the threads.
- 29.) Depending on your belt adjustment, the sight glass window may be rotated too high or too low to give you a visual oil level. Please note the oil level if in the window after you start and stop your unit for a few minutes for future reference. If at a later time you are unsure of your oil level, drain your oil into a clean container and measure the volume of oil. You should have 60 ounces as about 2 ounces will be retained in the secondary shaft compartment. If you have less than 60 ounces, put in a full 62 ounces.
- 30.) Put in oil fill plug clear all tools or foreign objects and test your unit out.
- 31.) The first oil change should be done after 20 hours of breaking time and then we recommend changing your unit oil every 6 months or 100 hours of use.

NOTE: The bottom plug is magnetic and will attract fine metallic materials as your unit breaks in or as it wears over its lifetime.

- 32.) Please remember your lower bearing still needs (2) pumps of high temp bearing grease every 16 - 20 hours of operation. **DO NOT OVER GREASE!**
- 33.) Propellers must maintain a 1 ½" minimum clearance between the trailing edge of the front prop and the leading edge of the rear propeller.
- 34.) If you must take your unit off of the boat, first drain your counter rotating upper assembly oil. **Also note: that the vent in the rear of the center shaft could leak remaining residual oil if stood up on the pulley.**
- 35.) During handling or assembly of the boat, be sure to set the unit on foam pad (or like material) to protect the aluminum pulley teeth from damage.

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**If you have any questions or need technical assistance,
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