Gori 3-blade Saildrive propeller installation instructions

Please read these instructions before installing your propeller.

Warning ~ do not remove the blades from the blade housing when installing or removing the propeller from the shaft!!!!
To remove blades – the center Fixing Bolt “MUST” be removed first!!!!

Installing the Propeller

The propeller is delivered assembled. This ensures that at the factory the propeller has been checked, and balanced prior to shipping.

Take apart the retaining cap (1). To do this ... First remove the 3 x allen head bolts (item #5) holding the retaining cap (1) in place.

Now undo the retaining cap using the C-Spanner (16). The thread on the blade housing assembly (6), is a standard right to tight and left to loose. You may use a hammer with care, to tap the C-Spanner to get the retaining cap started as it is a firm, tight fit.

You will now have the retaining cap and blade housing assembly (6), (with blades installed) separate.

Check the shaft nut (3) & the nut-locking bolt (4.1) with the output shaft threads.

Remove the inner hub (2), flexible bushing (2.2), and PEEK bushings (2.1-2.3) from the blade housing (6).

Slide the retaining cap (1), PEEK bushing (2.1), inner hub (2), flexible bushing (2.2), and PEEK bushing (2.3) on to the saildrive shaft, matching the splines on the output shaft with those in the inner hub (2). Lightly Smear splines & shaft with waterproof lubricant.

Apply Loctite to shaft threads, fit the nut (3), and tighten to 72ft/lb(88-98Nm) of torque for saildrive shaft. Use a light smear of Loctite blue on shaft thread.
It is very important to always use the Gori supplied propeller nut for the installation. An incorrect nut can lead to loss of the propeller, part of the propeller or cause an electrical connection between the propeller and the saildrive.

Smear locking glue (Loctite 243) on the thread of the nut-locking bolt (4.1). Place the washer (4) into the shaft hut and then thread the nut-locking bolt (4.1) using a 5mm allen key (19). Typically tighten to 9-10 ft/lbs(15NM) of torque.

Slide the complete blade housing assembly (6 thru 17.1), onto the flexible bushing (2.2), so that the 2 x security cams slide into the grooves of the flexible bushing (2.2). Wet the bushing to allow it to slide in easily. Do not use Oil. Water, silicone, soap liquid ok.

Continue to slide the blade housing onto the assembly until the thread of the retaining cap (1), and the blade housing (6) are touching. Smear threads of housing & retaining cap with waterproof lubricant.
Screw the retaining cap (1) RH or clockwise onto the blade housing assembly (6). Using the C-spanner (16) tighten until the 3 x holes in the retaining cap are aligned with the 3 x half circle cutouts in the blade housing assembly.

Now using the Loctite-243 (21), re-install the 3 allen head bolts (5) using the 5mm allen key (19), into the holes and tighten firmly.
Check that the blades will move freely from fwd to reverse and that the tip clearance with the hull is ok.

**Removing the propeller**

*Warning ~ DO NOT remove the blades from the blade housing when removing the propeller from the saildrive leg.*

First remove the 3 x allen head bolts (5), from the retaining cap

Now using the C-Spanner (16), undo the retaining cap so that it separates from the blade housing assembly (6). This is a right hand thread... simple right is tight...left is loose.

Carefully remove the blade housing assembly, by pulling off from the flexible bushing (2.2) and inner hub (2). These two items along with the bushings (2.1-2.3) will remain on the output shaft. Water, silicone or soap liquid (No Oil) can be used to lubricate the flexible bushing (2.2) to facilitate removal.

Unscrew the nut-locking bolt (4.1) and also remove the washer (4) using a 5mm allen key (19).

Unscrew the shaft nut (3). It will be necessary to lock the output shaft when undoing the shaft nut.

Pull the inner hub (2), flexible bushing (2.2), end bushings (2.1 & 2.3), and retaining cap (1) off the output shaft.

**Replacing the Aft Zinc**

This should be done if more than 50% of the zinc (7), has been eroded away.

Undo the allen head bolt (8) and remove the old zinc (7) ... if not gone completely.

Clean the propeller surface so as to ensure a clean strong bond with the new zinc.

Replace the zinc with new zinc, align the zinc with the end of the hub & the alignment hole with the pin in the end of the hub.

Use the new allen head bolt supplied ... smear with loctite 243 also supplied, before re-installing the new bolt. Check that the blades will swing freely from fwd thru to reverse. If not and there are tolerance issues it may be necessary to realign or lightly file the sides of the zinc.

**Replacing the Fwd Collar Zinc**

This should be done if more than 50% of the zinc (17), has been eroded away.

First remove the 4 x allen-head bolts (17.1) and remove what is left of the zinc

Clean the surface of the propeller hub to ensure a good clean contact between the hub and the new zinc
Install the new zinc (17) using the Loctite 243 (supplied) on each of the 4 x allen-head bolts

**Replacing Flexible Stops**

These can be replaced *without removing* the blades.

Using a flat screw driver ... pry out the old or worn Flexi-stops (15)

Push or tap the new flexi-stops in place. It may be necessary to swivel the blades open and closed to obtain the best angle for re-installing the new ones. Remember they are flexible.

**Removal of blades from the Blade Housing**

*To remove blades – the center Fixing Bolt “**MUST**” be removed first!!!!*

*This must only be done when cleaning and a full service of the propeller is required.*

**NOTE: Blades are not removed for the installation and removal of the propeller**

Remove the zinc centre bolt (8) and the zinc anode (7), using a 5mm allen key (19).

On propellers 18.0” and larger it will also be necessary to remove the threaded pin (9) using a 6mm allen key (20) ... then remove the fixing bolt (10) using a 5mm allen key (19).

*Failure to remove all these pins (8-9-10) first, will result in damage to the internal threads of the blade pins (11) & blade housing.*

Disassemble the blade pins (11 & 11.1) from the blade housing using a 6mm allen key (20). 
Note that blades, pins and the housing are matched and numbered. They should only be reassembled in the correct location ... that is #1 - # 2 - # 3.

Remove the blades.

Remove the gear-wheel (13) and the spacer (14).

Remove the flexible stops (15) using either a flat blade screw driver or pliers.

When re-mounting the blades and gears to the housing it is important to apply loctite-243 to ... blade pins & lock bolts (11 +11.1), fixing lock pin (10), threaded pin (9), zinc bolt (8).

The lock bolt (10), fixing bolt (8) & aft zinc bolt (8) are the very last items to be reassembled. Item 9 & 10 on 18-20” dia. only. Item 8 in place of 9 & 10 on 15”-16.5” dia.

Be sure that all components fit back together and that the blade pins (11) are located as before removal, as they are indexed inside the hub to lock bolts (10 +8).

**Note:**
- If more than 50% of either of the zinscs (7-17) has been eroded away they should be replaced.
- If the gear wheel (13) has been damaged or worn...it should be replaced
- If the flexible stops (15) have been damaged or worn...they must be replaced.
Operating Instructions

The Gori 3-blade propeller has the possibility of two distinct pitch settings in the fwd direction ... standard and “overdrive”

Standard fwd is the pitch setting that the propeller will be designed to, and will allow the engine to perform to the required RPM just as a fixed pitch propeller or any other propeller would.

In “overdrive” the pitch setting in fwd, is increased changing the engine RPM between 300~600 RPM less. The boat will attain the same boat speed at lower RPM in the “overdrive” position ... as it is a pitch increase.

Ahead:
The propeller will operate in the standard fwd setting when the blades open due to the centrifugal force of the shaft when in gear.

Should you have backed out of your slip and then engaged fwd while the boat was in fact still moving aft you may well be in “overdrive” without knowing it. To go back to standard fwd, gear simply move the shift lever into neutral for several seconds ... (allowing the blades time to fold together), and then go back into fwd. You will soon learn the difference between standard and “overdrive” by checking boat speed and engine RPM/sounds.

When maneuvering around the marina you may well remain in “overdrive”. Therefore when leaving the marina and beginning your trip always check that you are in the drive position you want be it standard or “overdrive”

Astern:
In the reverse position the blades swivel 180° opposite the forward position which ensures the same blade shape and leading edge to the water ... resulting in higher efficiency. This will also greatly reduce or even eliminate prop-walk when maneuvering in reverse in the marina. If the boat has not been used for sometime, it is wise to shift cautiously between

Torque settings for shaft nuts:

<table>
<thead>
<tr>
<th>40Nm or 30ft/lb</th>
<th>60Nm or 45ft/lb</th>
<th>70N/m or 50ft/lb</th>
<th>100Nm or 75ft/lb</th>
<th>125Nm or 75ft/lb</th>
</tr>
</thead>
<tbody>
<tr>
<td>M14 X 2.0</td>
<td>M16 X 2.0</td>
<td>M16 X 1.5</td>
<td>M20 X 2.0</td>
<td>M20 X 2.5</td>
</tr>
<tr>
<td>M14 X 1.5</td>
<td>5/8” BSW</td>
<td>5/8” BSF</td>
<td>¾ BSW</td>
<td></td>
</tr>
<tr>
<td>½” UNC</td>
<td>5/8” UNC</td>
<td>5/8” UNC</td>
<td>¾ BSW</td>
<td></td>
</tr>
<tr>
<td>½” BSF</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>135Nm or 100ft/lb</th>
<th>160Nm or 115ft/lb</th>
<th>225Nm or 165ft/lb</th>
</tr>
</thead>
<tbody>
<tr>
<td>M20x1.5</td>
<td>7/8” UNC</td>
<td>M24 x 2.0</td>
</tr>
<tr>
<td>¾” BSF</td>
<td>1” BSF</td>
<td></td>
</tr>
<tr>
<td>¾” UNC</td>
<td>1” UNF</td>
<td></td>
</tr>
</tbody>
</table>
fwd and reverse a few times before going out sailing in order to clean the teeth of the blades and the gears from further fouling.
In the reverse position the pitch on the blades is at a greater angle then when in standard fwd. This is done purposely as many transmissions have higher ratios in reverse then fwd and so require a greater pitch to take into account the slower shaft rpm when in reverse.

**Overdrive:**
As mentioned above this position is obtained when the blades are set in the reverse position ... but the blades and shaft are rotating fwd. In this situation you will have a propeller with an increased pitch setting. Overdrive allows a lower cruising RPM for the same boat speed. It will be as much as 300~600 engine RPM lower than when in standard fwd.

**How to get into or out of “overdrive”?**

**Overdrive → standard drive:** Be sure that you are moving ahead at around 3~4kts ... now move your shift lever into the neutral position (if you have dual lever control then reduce RPM accordingly) ... wait several seconds, to allow the blades to fold to their sailing position or "bump" into reverse for a second or two ... now reengage fwd with the shift lever (and if necessary increase engine RPM with the second lever). You should now be in standard fwd and this will show with increased engine RPM for the same speed, which perhaps was not attainable, while in "overdrive".

On some larger vessels it has been found that to stop the shaft rotation even more quickly than as above ... simply put the shift lever into the reverse position momentarily, this will cause the shaft to stop its freewheeling more quickly than just relying on the water flow. Once the shaft has stopped re-engage fwd and increase engine RPM.

**Standard → overdrive:** Reduce RPM and move the shift lever into neutral ... now go into reverse and increase engine RPM to around 1000 RPM. This will set the blades into reverse. Now go from reverse to fwd position without hesitation ... you will now be in "overdrive". By moving the shift lever smartly from reverse thru to fwd the shaft and blades will not have the opportunity to stop and the water flow fold the blades as for sailing ... thereby remaining open in the reverse or "overdrive" position.

Do not press the engine to the max RPM when in “overdrive” as this will result in overloading – Stay approx. 600+ below continuous rpm.

Only use "overdrive" when motoring in clam weather or when motor-sailing.

*Gori propeller disclaims the responsibility for any damage caused by overloading the engine. In case of doubt about the engine loading, you should contact the authorized engine service agent and Gori propeller as well.*

**Sailing:**
When sailing the blades will fold and the shaft will stop spinning giving you less drag and more speed. With mechanical transmissions you should put the shift lever into reverse (this stops the propeller from rotating), and then back to neutral. Hydraulic transmissions will not rotate when under sail with the Gori propeller.

**WARNING!!!**

- Do not start the engine while the boat is out of the water
- The prop may have sharp edges... be careful not to cut yourself
- Make sure the blades do not open or close suddenly and trap your fingers
- Stop the engine before diving or swimming in the vicinity of the boat
- Propeller blades can cause considerable damage when rotating ... be careful.
• Do not remove fish nets, rope or similar from the prop with the engine running.
• Check that the prop works in both fwd and reverse before each trip.
• If any strange sounds or vibrations are noticed coming from the propeller stop the engine and investigate the reasons/solve the problem.
• In case of problems in connection with the mounting, use or other function of the propeller, contact Gori propeller or the local agent/importer.

### Parts List Item # & Description

1. Retaining Cap  
2. Inner Hub  
2.1 Peek Bushing - Fwd  
2.2 Flexible Hub Bushing  
2.3 Peek Bushing - Aft  
3. Shaft Nut  
4. Washer for nut-locking bolt  
4.1 Nut locking bolt  
5. Locking bolts for retaining cap  
6. Blade housing  
7. Aft Zinc anode  
8. Fixing bolt for zinc anode  
9. Threaded pin on 18-20” dia. only  
10. Fixing bolt for pins 18-20” dia. only  
11. Blade Pins (3 x each)  
11.1 Outside locking bolts for Blade pins  
12. Propeller blades (3 x each)  
13. Gear Wheel  
14. Spacer  
15. Flexible Stops (3 x each)  
16. C-Spanner  
17. Fwd Zinc ring anode  
17.1 Bolts for Fwd zinc ring anode  
18. Allen key 4mm  
19. Allen key 5mm  
20. Allen key 6mm  
21. Locking glue / Loctite 243
For any additional questions or assistance with the installation or removal of your Gori propeller please contact AB Marine, Inc at: