AeroStar MARINE CORPORATION

DETAILED BLADE CHANGING INSTRUCTIONS

for the POWER PITCH® and SWITCH BLADE® PRO Marine Propeller Transmissions

CHANGING BLADES

To change or replace the propeller blades you must remove the transmission from the drive shaft, then remove the return spring so that the mechanism can be manually placed in the high pitch position. To accomplish this, you will need to remove the large snap ring on the hub inner slide shaft aft of the set point control knob. This snap ring retains the return spring and there is a significant preload (40-80 lbs) so be careful when removing the snap ring. It is best to have someone help by pushing down on the metal cap at the aft end of the spring to relieve the load on the snap ring while you remove the snap ring with a pair of snap ring pliers, then slowly relax the spring. Once the spring is fully relaxed, you can remove the aft cap retainer (metal), the spring, and then the inner cap retainer (plastic) located inside the control knob cavity.

To access the blade shank attachment screws, which are in the front end of the blade counterweight arms, the blades must be in the high pitch position and, for this the mechanism slide module must be positioned fully out (aft). Because the black shift point control knob will extend past the end of the hub slide shaft, you will need to insert the special drive shaft nut in the end of the hub to act as a spacer. Now place the propeller vertically, forward end up and resting on the aft end of the drive shaft nut. With the mechanism now resting in the high pitch position, you can access the hex socket head (Allen) set screws in the blade arms using a 3/16 inch Allen wrench.

For each blade you wish to replace, locate the screw access hole in the blade's corresponding attached counterweight arm. There are two set screws in each hole. First remove the short locking set screw, then loosen the blade attachment screw and turn it out a minimum of 10 turns so it is completely retracted from its mating cavity in the blade shank. If you are changing all blades, remove the locking screw and back out the attachment screw in all blade arms. The blades should now be loose and easily removed by pulling out on each blade; however, to prevent the counterweight arms internal thrust washers from falling out, it is best to first position the hub horizontally, with one blade vertically up, pull this blade out and insert the new blade. Then rotate the hub to position the next blade vertically and replace this blade. Then do the same for the last blade. When inserting the blade shanks, make sure the holes in the counterweight arm and the thrust washer are properly lined up with the holes in the hub bushings. Also, take care when inserting the blade shanks not to damage the hub bushings.

If the blades do not pull out easily, insure that the screws are properly backed out. If the blade still cannot be removed by hand, there may be a small burr on the shank screw cavity and you may need to gently pry the blade out. You can do this by using two large flat bladed screw drivers and insert the ends of the screw drivers between the hub and the blade on opposite sides of the blade shank. This will provide the needed leverage to pry the blade out, but be careful not to damage or scratch your hub.

If the blade counterweight arm thrust washers fall out they can be easily repositioned. To do this remove the blade from the arm missing the thrust washer and position the hub horizontally with this shank hole up. Then with your fingers or a small pair of pliers, insert the thrust washer between the counterweight arm outer surface and hub inner surface. It is easiest to insert the washer from the aft end of the hub.

With the new blades now installed and all thrust washers in their proper positions, you can reposition the hub vertically with the aft end resting on the drive shaft nut so that you can again, access the attachment screws. First, fully engage each of the attachment screws into their mating blade shank cavities by

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CHANGING BLADES (continued)

tightening these screws securely (16 to 20 ft.-lbs). When tightening the attachment screws, you should feel that the screws "bottom out" in the blade shank cavity. If the screws continue to rotate slightly while you are tightening them, then this is an indication that the screws are not fully engaged, thus you will need to continue tightening, provided you do not exceed the screw torque limit. If the screw still does not seat properly, remove the suspect screw and inspect for the cause of the screw not becoming fully engaged into the shank cavity. After you have secured all of the attachment screws and are confident they are fully engaged, you can reinstall the short locking screws. These screws should also be torqued securely.

As a word of CAUTION: IMPROPER SCREW ENGAGEMENT OR TIGHTENING MAY ALLOW THE BLADES TO BE THROWN OUT OF THE HUB DURING OPERATION RESULTING IN POSSIBLE SERIOUS INJURY, *so please, for your safety as well as the safety of others, insure all screws are properly installed.*

You should be able to manually cycle the mechanism between high and low pitch by simply pulling or pushing the control knob which is attached to the internal mechanism slide module. Check to insure that the sliding motion and blade rotation are free and easy.

You are now ready to reinstall the return spring. To reassemble the return spring components first slide the plastic spring cap onto the hub aft slide shaft. Note that the channel or groove in the cap should face aft. Next, slide the return spring over the hub shaft and insert or push the forward end of the spring into the groove in the plastic cap. Then slide the metal cap on the hub shaft and over the aft end of the spring. Finally, with someone's assistance, push the spring and cap assembly in (forward) sufficiently to expose the snap ring groove in the hub slide shaft, and, with a pair of snap ring pliers, install the snap ring. Note that as a resulted of the manufacturing process, most snap rings have one edge that is sharper than the other and it is best to install the snap ring with the side having the sharper edge facing aft.

You are now ready to reinstall the propeller on your boat.