

IMPORTANT INSTALLATION INSTRUCTIONS for **AUTOSTREAM 3000 Series** Shaft Drive Propellers

Please read and follow these instructions precisely, failure to do so may result in unsatisfactory results, additional slipping costs, and loss of propeller or voiding warranty.

Our experience has shown virtually all problems stem from faulty installation – avoid frustration and extra expense and read on.

Pre installation points

1. Before disassembling the propeller note which is the leading and trailing edge of the blades when feathered.
2. Note how freely the blades rotate.
3. Note that the propeller is the same hand in forward and reverse positions.
4. Points 1 to 3 **must** be the same after installation. Marking the blade positions with a felt tip pen prior to disassembly may help.
5. Check that the correct hand has been ordered. The letter R or L in the serial number denotes left or right hand rotation. Right hand rotation requires clockwise rotation of the propeller shaft (when viewed from astern) to drive the boat forward. Vies versa for left hand.

6. Tools required for installation:-

5mm Hex key	supplied with propeller
2.5mm Hex key	supplied with propeller
Valvoline Val Plex M grease	supplied with propeller
262 loctite	supplied with propeller
242 loctite	supplied with propeller
6mm Hex key	supplied with propeller – only required if removing blades
Grease gun	
Flat blade screwdriver	may be required for pitch adjustment
½" A/F ring spanner	may be required for pitch adjustment
Suitable socket for propeller nut	
Soft-faced hammer	

To dismantle the propeller to machine the taper into main gear:-

1. Undo 3 screws 'A' **only** using the 5mm hex key supplied. Position blades in the feathered position. Grasp the main body and with a soft face hammer tap the leading edge of the blades to remove the blade assembly. See fig 1.
2. Remove first Delrin ring by prising with a small screwdriver.
3. Push the main gear back to remove the second Delrin ring by prising with a small screwdriver.
4. Rotate and juggle main gear forward to remove it from the body.

5. When re-assembling ensure parts are clean and greased. The gear must rotate freely after re-assembly.
6. Proceed to step 2 of the assembly instructions.

Machining the taper

It is recommended where possible the SAE standard be adhered to. Details of SAE tapers are available on request.

- A. The hub will accommodate shaft tapers 25mm – 38mm diameter (1"-1 ¼")
- B. Maximum keyway width 10mm (3/8")
- C. The maximum size for the propeller shaft thread that will allow a standard nut and socket to be used is ¾ UNC. A 316 stainless steel nyloc nut and suitable washer is recommended.
- D. Key way to be positioned to pass through the stop lug of the main gear.
- E. When clamping the main gear for machining purposes take care not to damage or distort it.

Assembly instructions for propellers already taper bored.

1. Undo 3 screws 'A' **ONLY** using 5mm hex key supplied. Position blades in feathered position. Grasp the main body and with a soft-faced hammer gently tap the leading edge of the blades to remove the blade assembly. **DO NOT** lever with a screwdriver or similar in the joint face as this may damage the faces. See figure 1.
2. Check that the taper is matching correctly by gently sliding the main body and gear assembly onto the shaft, without the key, and feeling for any miss match of the taper. Any miss match must be rectified. Mark the propeller shaft with a felt pen or similar at the forward end of the propeller hub. **Note:** The propeller shaft thread must not protrude past the end of the main gear.
3. Remove the propeller hub assembly. Fit the key to the shaft and refit the propeller hub assembly to the shaft. The hub must still go up to the mark on the shaft. If not the key is fouling and will have to be re-machined correctly. The most common problem is the key sitting too high out of the shaft.
4. Check that the propeller nut screw on the shaft freely. Damaged threads must be rectified. Forcing a stainless steel nut may result in the nut seizing onto the shaft, a very difficult problem to rectify.
5. If not using nyloc nuts apply several drops of loctite to both the shaft thread and nut. Fit the propeller hub assembly to the shaft and key. Fit the washer and nut, tightening firmly to the correct torque for the thread size.

6. **Check** that the propeller body still rotates freely from the pitch stop to pitch stop ie: forward to reverse.
7. Align marks on the main gear and propeller body. See figure 3.
8. Apply 1 drop of loctite to each of the 3 threaded holes and to threaded end of screws 'A'.
9. With all blades in feathered position (as in fig 3) **carefully** fit the blade assembly to the main body with No.1 blade aligned with the No.1 on the main body, as in fig 1.
10. Check that alignment marks (fig 3) are still aligned when the blades are feathered.
11. Lightly tighten screws 'A'
12. Check that the propeller blades rotate freely from forward to reverse. It should be as free as the pre-installation check. If not, the propeller will have to be dismantled and inspected for dirt or damage to the gears, which will most likely be the problem.
13. Tighten screws 'A' to 9.5Nm (7ft/lbs) torque. Fit 3-5mm grub screws around the circumference of body, applying loctite (242 loctite supplied) to both the threaded hole and grub screws. Using 2.5mm hex key supplied tighten grub screws.
14. Grease the propeller with Val Plex M or equivalent, through the grease nipple at the end of the anode until grease appears at the blade bearing journals.
15. To remove the anode, undo the locknut at the grease nipple and slide the anode off. **NOTE** It is not necessary to dismantle the blade assembly (fig 1) unless replacing the blade bearings.

To replace blade bearings:- Remove the tail cone anode and 3-12mm grub screws using the 6mm hex key supplied. Then remove the 3 cap screws underneath. Position blades in the feathered position (as in fig 1) remove end cap leaving blades behind. When re-assembling clean screws and threaded holes of old loctite and re apply loctite as supplied. Tighten screws to 9.5Nm (7ft/lbs) torque. Blade bearings bores are numbered on all parts and must correspond.

General Notes:

If not using a torque wrench for tightening screws and nuts:- All screws should be done up very tight. You will break the screws before you strip threads in the bronze.

Anti-fouling of the propeller

Modern self-abating anti-fouls will not last very long if the boat is used under motor power. We suggest if the boat is moored for long periods, especially in high fouling areas, that the propeller is anti – fouled.

If the boat is mainly used in clean ocean water then anti-fouling is not required. If anti-foul is used on the propeller:-

1. **Do not** allow paint to run into the blade journals and restrict the ease of blade movement.
2. **Do not** paint the tail cone anode or grease nipple.

Sea trials

The propeller pitch is generally preset using the information supplied when the propeller was ordered. However fine-tuning may be required to achieve optimum performance. The correct pitch is achieved when the engine just reaches max rpm under flat-water conditions. Over revving is not enough pitch, black smoke or under revving is too much pitch. The pitch adjustment screws are marked F and R for forward and reverse adjustment. Half a turn of the screw will make about 150rpm alteration on most installations.

To increase the pitch ahead screw 'F' in.

To increase the pitch astern screw 'R' out and vice versa

Reverse rarely needs adjustment and is set at a finer pitch than forward.

NOTE AUTOSTREAM propellers are much more efficient in reverse than other types of propellers, take care reversing in confined areas as you may be doing 3 to 4 times the speed for the same rpm that you were previously.

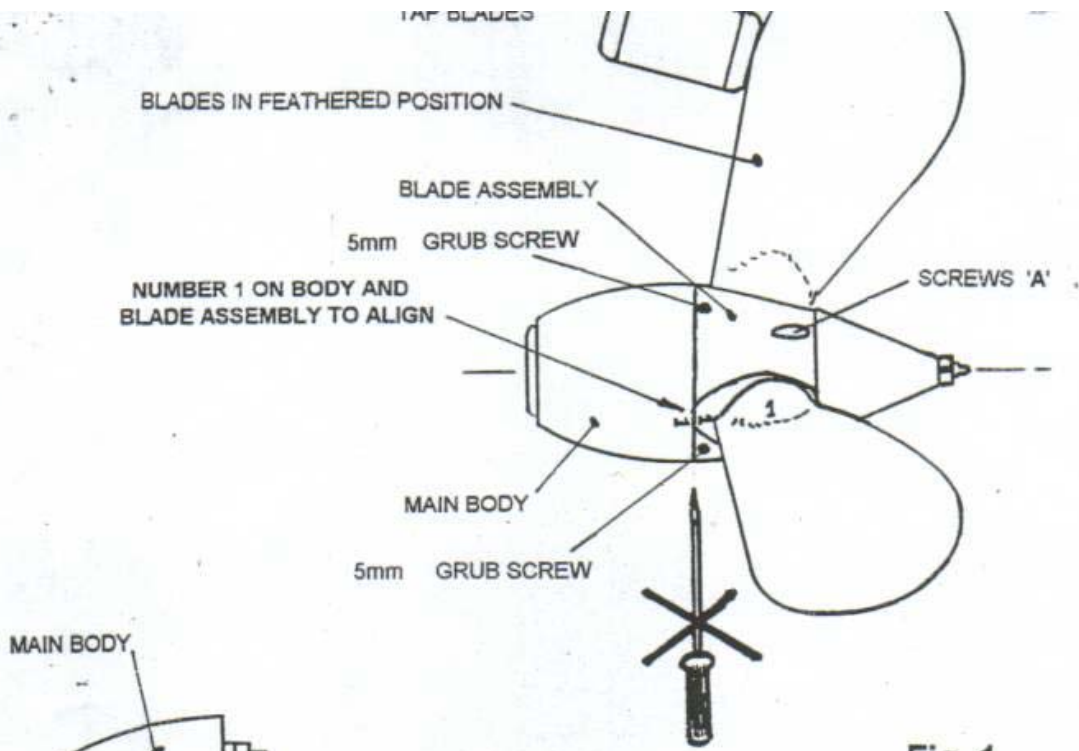


Fig. 1

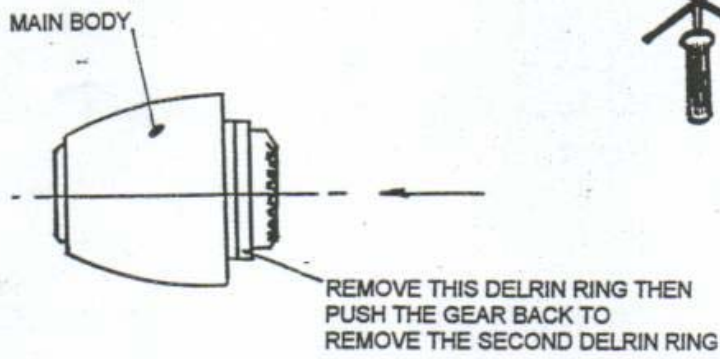


Fig. 2

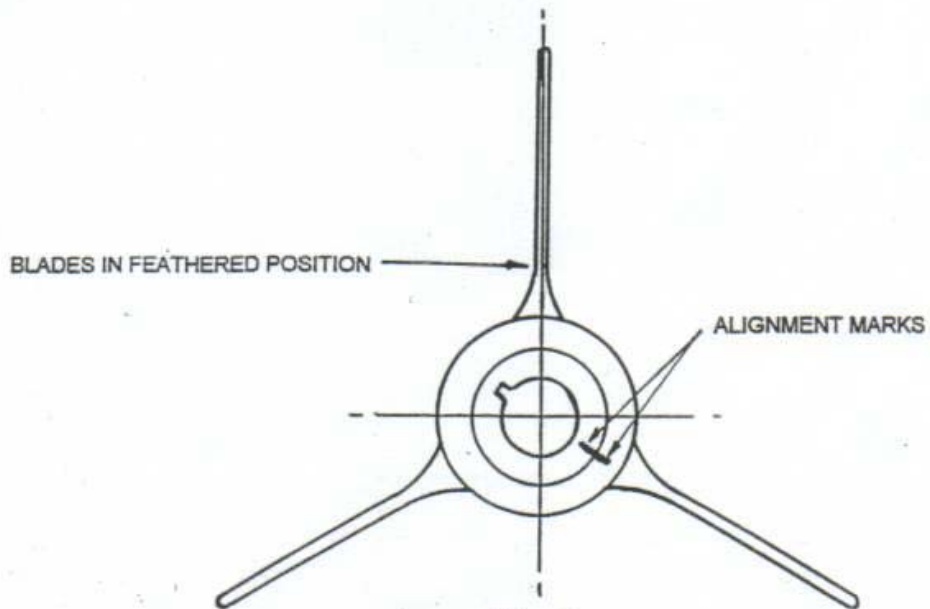


Fig. 3