

BOW THRUSTER OVERHAUL

AMEL SM HULL # 335 by Gary Silver 5-1-2007 Reprinted by Bill Rouse s/v BeBe 3/1/10

GENERAL POINTS.

1. Can be done in the water or on the hard.
2. The thruster foot assembly weighs only about 15 lbs (6 kg). It is mostly carbon fiber and fiberglass.
3. Tools and supplies needed:
 - a. Small quantity contact cement.
 - b. Small quantity RTV
 - c. 13 mm socket & ratchet
 - d. 6 mm Allen Wrench (Hex wrench)
 - e. Blade screwdriver & hammer
 - f. 90 wt gear oil (0.32 quarts)
 - g. Amel Special Tool for removal in the water if taking this route.

DEFINITIONS: See the pictures sections of the Yahoo site entitled "SM227" and "BOW THRUSTER SERVICE".

1. **THRUSTER TRUNK:** the rectangular shaft, fiber glassed into the hull of the boat, in which the bow thruster foot assembly rides up and down.
2. **THRUSTER FOOT:** the assembly consisting of the following;
 - a. "V" shaped FAIRING and its supports
 - b. propeller gear and seal support HUB
 - c. rectangular ANTI-TORQUE CAP
 - d. and the vertical cylindrical THRUSTER SHAFT HOUSING.
3. **BAND CLAMP:** The band that was retro-fitted by Amel at lower part of the motor to prevent the hex screws from loosening and the bow thruster shaft housing from dropping out due to repetitive wave motion. When the bow of the boat hobby horses without proper sealing or if the thruster foot drops out of the boat in rough water, water can slosh up through the thruster trunk and sink the boat.

PROCEDURE:

1. Place a large worm clamp (hose clamp) around the black bow thruster shaft housing as a safety measure to make sure the thruster foot doesn't fall out the bottom of the boat during the next few steps.
2. Lower the thruster 1-inch to take pressure off the seals.
3. Using a 13 mm socket and ratchet remove the special band clamp from the lower base of the motor. Be careful not to drop items into the bilge area. But if you do and can't see it, try removing the cover over the air conditioner.
4. Next remove the four hex headed screws and lock washers from the base of the motor. The screws come all the way out and when the last one is

- removed the thruster foot assembly will drop down out of the trunk so be ready to support it or hold on to it.
- a. At this point if you are doing this in the water fit the Amel special tool to the foot assembly shaft housing and be sure to apply some tape at the joint to seal it to prevent water entry as you lower it out of the trunk using the tool's rope.
 - b. If doing this on the hard, outside the boat, place a ladder or a person to support the foot assembly, then remove the previously placed safety worm clamp.
5. Drain the oil into a bucket by inverting the thruster.
 6. If water is present in the thruster, as indicated by milky appearing oil, repeatedly flush the thruster system with mineral spirits or Stoddard solvent until clear, and then allow it to drain for several hours.
 7. Remove the **inside foam seal** and the **two foam seals adhered to the top of the rectangular anti-torque cap.** (These are held in place by contact cement) **Note added by BeBe: the 1 "inside foam seal" is different from the "two foam seals." Examine the new foam seals carefully and you will see the difference. The two like foam seals go together.**
 8. To replace the **trunk lip seal**, remove the two screws and retaining washers from the top of the bow thruster trunk. Use a screwdriver to collapse this seal or try carefully prying it out. It is a very loose fit.
 - a. When installing the new lip seal, pack it with grease, press it into its recess using RTV to seal it and hold it. Replace the retaining screws and washers.
 9. To remove the **prop shaft lip seal** you need a slide hammer and very tiny screws. It is difficult to drill into this bearing with out the drill slipping off and damaging the fiberglass recess, so use a 1/16th inch drill and drill really slowly to avoid slipping off. Once two screws are threaded into this seal a slide hammer easily removes it.
 10. Seal this new seal into place with RTV as well. It is a tighter fit than the upper seal but still relatively loose compared to the main prop shaft seal.

<<<Added May 2012>>>

With the seal pushed in further now not even a hint of oil moisture coming through after 2.5 hrs with only the correct SAE90 gear oil in.

What we did is carefully but pretty firmly pressed the new seal in (with the flat edge of a file) so that it has **gone about 3mm beyond level with the outer edge.** In this position it cannot go any further in and it now has a perfect seal. Colin Streeter Island Pearl II - SM2k #332

11. Corrosion-treat any areas on the motor bottom that might need it.
12. Add 0.3 liters (about 9 ozs or 0.32 US quarts) of 90-wt gear oil Re-install the thruster and before testing make sure everything is clear beneath the boat.
13. The height that the bow thrust retracts, and thus the alignment of the retaining-pin-hole, will be somewhat different now due to the new thickness of the various seals (i.e. not compressed). **Note added by BeBe: To align the holes pull on the right front wire to compress the new foam seals and align the pin holes, then insert the pin.**



