

SFBANTA Member's Maintenance Experiences

This is the place to share your maintenance experiences and suggestions. Sharing this info with each other can ease the pain of doing things wrong and let you bask in the glory of maintaining your tug with minimum heartbreak. Send your experiences, good or bad, to info@sfbanta.org

Bow Thruster Maintenance - By Jim Moore...

For over a year I have experienced reduced bow thruster performance. Suspecting the battery was not being fully charged I replaced it and found improvement for the first couple times I operated the thruster. Soon, the performance began to drop and ultimately operated at no more than 30% effectiveness and would cause the thermal overload breaker to actuate.

Fearing a failure in the lower gear leg I called Imtra, US representatives for Side Power thrusters and they suggested it was probably dirty brushes on the DC motor - cleaning of the brush/commutator area with compressed air would probably remedy the poor performance. A quick inspection of the area around the unit showed numerous black spots, evidence of carbon particles thrown off the armature. I called Matt Carver, formerly associated with Paul Klaer and he responded quickly to remove the motor and clean it up at his shop. Re-installation soon thereafter confirmed the diagnosis - it works perfectly.

Three items of note:

- (1) I believe the problem was caused by the manner in which I operated the thruster. I preferred not to use it when back and fill maneuvering would suffice, using the thruster only in emergency and in very short bursts. I now operate it whenever it can be of assistance and in much longer bursts, say rotating the vessel 90 degrees, a 7-10 second burst.
- (2) In addition to possible motor and gear leg failures there are two others which, though unlikely would be simple to repair. On the motor housing on Side Power thrusters there is a replacement "shear pin." You might want to inspect the equipment inside the hull to locate the shear pin on the upper part of the gear leg. Also, the device connecting the motor to the upper gear leg is a semi-rigid rubberlike tube which might deteriorate with age. It is available as a replacement part. Go to imtra.com and they can be very helpful.
- (3) It is not necessary to remove the mattress from the forward stateroom but with the amount of carbon dust involved I think it is a good idea despite the fact it is a real pain. Any SFBANTA officer or director should be delighted to assist. Presidents and past presidents should be your first resource.

Jim Moore
RILEY 37085

Tale of the impeller - By Irwin "Scotty" Scott...

This is the content of an email sent by Scotty to Jim Moore a couple of years ago...

Hi Jim,

I checked my watch yesterday afternoon as I opened the engine room hatch - 3:00 pm.

Got tools out, shut off seacock, loosened hose clamps for the short tube coming out of the pump and on the cooler tube so it could pivot out of the way. Removed the top hose flange bolts and the impeller cover plate. All a bit hard to get to, but no real problems. The impeller, a Cummins replacement part, didn't have a threaded hub so I had to use the impeller puller which was a bit difficult to find the correct position (first time I haven't had a threaded hub impeller to remove) but got it ready within a couple of minutes.

Tightening the puller started the impeller moving! Within a couple of minutes the impeller came out of the pump, followed by a TINK, TINK, TINKLE, and a very audible "Oh S__t!". The keyway was at 6 o'clock position and the key fell out, found the intake port, and proceeded down the intake hose. Time is now 3:45 pm. Determined to figure out the best way to recover the errant key, I immediately proceeded to the refrigerator and found some Keyway Removal From Hidden Locations Fluid (KRFHLF). It sure helped during the removal of the hose from the strainer out port and using a hammer and hose manipulation to coax the wayward key out into the bilge. After reattaching the hose a time check indicated that I had just spent 45 minutes in the chase.

Now was the time to start putting the new impeller into the pump, but before beginning that I decided to take the puller off the old impeller. I hadn't looked at it until now as I was preoccupied with the key hunt so I was surprised to see an impeller with three missing blades and two blades half gone! Wow! This whole effort is not for naught!

The new impeller, a Sherwood which I bought from Outboard Motor Shop has a threaded hub so the next change ought to go easier. Zip tied the blades into the correct direction (I had made a drawing of this on the impeller cover last time), lubed it up with silicon grease so it would slide in easily and could run dry initially, slide it in, and put everything back together - it's now 5 pm. I drained two buckets of water out of the bilge with a sponge, put tools back, opened a KRFHLF, and started the engine. With the engine running, I checked below for any leaks and then went to the exhaust and noticed a very healthy flow of water. (Mr. Cummins does not have an enlarged prostate.)

Lessons Learned:

- Last time I replaced the impeller was at 633 hours during August 2004. I am now at 1,215 hours. Just short of 600 hours and four years. I'm going to change this schedule to biannual which would cut this interval in half.
- After removing the impeller cover, remove the belt guard and using a wrench manually turn the engine until the keyway is at the 12 o'clock position.

Successes realized:

- Adequate stock of KRFHLF on hand.
- Installation of exhaust temp alarm was almost proven to be an engine saver.

Next - clean the impeller debris out of the intercooler.

Scotty
Three Jeans (37-063)

Heat Exchanger Failure by Jim Moore...

Just prior to our departure for Half Moon Bay with SFBANTA group, I did a routine engine room check and found dried salt crystals on the deck around the house battery bank and saltwater in the bilge. When I started the engine a stream of saltwater about 1/16" shot out of the aft end of the heat exchanger on to the starboard battery deck. An inspection of the aft portion of the heat exchanger showed what appeared to be a fine crack about 1/8" long in the heat exchanger body just below the saltwater outlet elbow. I pushed it with my finger and found it to flex indicating the metal underneath was gone. The location precluded any emergency repair with 2 or 3 large hose clamps over a pliable patch.

I called Cummins West for a quote on a replacement, Cummins Part # 4020101 and was quoted \$1104, I believe. None in stock, no estimated availability. So I went online to various replacement parts sources and found the same part at Boatman's inetmarine.com for \$591. I was advised it would involve a 2-3 day shipping. Sure enough, the part was shipped at the end of the 2nd day and had been fabricated by Seakamp Engineering in Bellingham, WA.

While waiting I removed the heat exchanger and had it repaired at a local radiator repair shop. When I asked for a quote on the cost of repair the proprietor asked me if it came from a boat. I wanted to say it came from my lawnmower because I could see the ka-ching, ka-ching reflection in his eyes but I nodded in the affirmative and he quoted \$275 to solder a patch over the hole and clean the tubes, a \$75 job in the eyes of this expert.

Upon receipt I installed the new part stamped #4020101 but the outlet fitting was a forged copper fitting instead of a casting as on the original. (The entire unit is made of copper or cupric nickel.) The 1/4" greater rise and reach of the part was not compatible with the limited clearance between the outlet and the saltwater inlet fitting on the exhaust elbow. Any NT-37 model 2004 or later (prox) will not find this problem due to the use of an exhaust riser. I called Seakamp engineering, explained the problem, they sent a pick-up tag for UPS, the part was returned on Monday, modifications and return shipment were completed on Wednesday. I requested an "overnight" return shipment at my expense and the part was received on Thursday. Chuck's Marine did the final inspection spotting my one faulty hose connection. That is after this expert dumped \$65 worth of new coolant in the bilge with a different bad connection.

'Tis an ill wind that blows no good. I would recommend Seakamp Engineering without reservation. I have fresh coolant in the engine, new zincs, new hoses on the saltwater and coolant system and a spare heat exchanger in the event of an emergency. As to the cause, I have to conclude it was electrolysis. *The replacement part has a terminal to connect the heat exchanger directly to the block of the engine (ground).* I believe I allowed the zincs to exceed their effective life. 50% depletion is recommended replacement, I let them go to 75% or better. Coincidentally, I learned of another NT-37 owner in the East who had exactly the same failure just prior, same place, same size hole, etc.

Photos are available - tugs4me@comcast.net

Jim Moore

RILEY 37085

Do It Yourself Oil Change by Bud Sheble

Jim:

Thanks for the new word to add to my vocabulary. I could have used it last week when I changed the oil in Eternity.

I wanted to be a full maintenance owner, and learn as I go. Well, it started off with purchasing a small pump (kit) that I could operate from my battery drill. It included a hose and connections for connecting it to the outlet hose that comes from under the oil pan. All was set to go, and when I turned on the drill the hose collapsed and only a trickle of oil could get through. **Futch!!!** So I went to the store and bought a firmer hose the same size....so firm that it would not go on to the connectors. **Futch!!!**

I abandoned the idea of a different hose and began sitting for an hour to fill the container with the collapsing hose. When the container was full, but only with half of the boat's used oil, I lugged it up to the oil depository at the marina. I requested a key to get in to dump the oil, but I was turned away due to a problem they were having with the oil depository. **Futch!!!** But they said I could leave the container with them and they would dump the oil when all was fixed. But that left me with no container to capture the remaining half of the used oil.

So I again went to the store. I bought an oil container that is normally used for changing the oil in autos. This container had a handle on one end for carrying it, and the dumping outlet on the other end.....in other words, when you pick up the container by the handle, the dumping outlet was at the bottom of the container. The only thing keeping the oil from dumping while carrying it was a cheap plastic cap on the outlet. You guessed it..... when I picked it up by the handle**FUTCH!!!**

After an hour or so of cleaning, I was able to change the oil filter with no problems. Then, that causing me to feel so accomplished, I began to fill the engine with new oil. I went to great pains to carefully use a funnel and carefully make sure I didn't pour the oil at a rate that would overflow the top of the funnel. I'm smart that way. However, what I didn't know was that the engine could not accept the oil at the rate the funnel was delivering to it. **FUTCH!!!!** At least one quart of new oil had overflowed down both sides of the engine, and not discovered by me until I emptied the first 4 quart container of oil. So I went to the store again and bought absorption rags, and then spent the remaining hours of the day cleaning the engine and bilge.

-Bud