More Joys of a Lofrans Tigres Owner

As I mentioned in the last article, servicing my Lofrans Tigres had become a bit of a priority as my previous neglect had led to a few issues.

In a nutshell, these included:

- Galvanic corrosion due to dissimilar metals in the windlass.
- A runaway anchor episode (the windlass failed to stop when the button to raise the anchor was released), probably due to corrosion in the solenoids in the control box.
- The anchor chain skipped on the gypsy.
- The windlass intermittently failed to work.

In a booklet entitled, *Tigres; Mounting, Operation and Maintenance Instructions*, Lofrans recommends washing the windlass every month, disassembling the gypsy and drum every six months, and removing the windlass from the deck (to rinse underneath it) every year. They don't advise how often to change the oil and seals, but I read elsewhere that 3-4 years is reasonable.

As we hadn't changed the oil or seals in the five years we had owned *Taurus*, we were past due. With Cara back in New Zealand and *Taurus* safely tied up to a dock in Hobart there were no excuses to further delay a service.

After my recent ministrations, the windlass practically fell apart in my hands as I disassembled it. The previous battle, which involved levers, gear pullers, copious amounts of CRC and brute force, was evidence of how far I had allowed things to deteriorate. It would seem Lofrans has a point when they recommend stripping the machine every six months.

Before going crazy, I decided to only strip the windlass to the point where I could see the markings on the oil seals and bearings. I wanted to make sure that I could source these items before I destroyed them in the disassembly process, only to then find that a replacement was made of 'unobtanium' or unknown outside of France. Fortunately, the Prince of Wales Marina, where I was staying whilst Cara was away, is adjacent to all manner of industrial and marine related stores. One of these is 'Tas Bearing and Chain' where a good guy called Chris, who also happens to be a 'yachtie,' works. Friendly, knowledgeable, and interested people can make or break a project, and a helpful discount and opportunity to chat doesn't hurt either!

Happily, all the seals, bearings, and O-rings turned out to be common items and in stock.

If you're planning a similar exercise, the seals either side of the gypsy and drum are 25x42x7TC, the inner bearings were 6005LLU, and the large O-ring that sits inside the cover on the drum side was coded BS247.

Rather than scar the housing whilst trying to remove the seal, I find drilling a small hole and screwing in a self-tapping screw allows the seal to be pulled out (fairly) easily.

Of course, when I got past the point of my last tear down things started getting a little harder to take apart. The situation everyone dreads is the bolt or machine screw that refuses to budge. The cover on the drum side has six machine screws, so it was inevitable that one would refuse to play ball. This particular screw's allen key socket rounded off oh so easily, and I was left to contemplate how much of a PITA my ham-fistedness was going to create. After trying other bits to see if any would grip, I had little choice but to drill the head off the screw. Amazingly, this was a straight forward exercise, and with the head removed I was able to take off the plate and remove the remaining piece of screw with mole grips. Of course, oil will start to leak out as soon as the seal is disturbed, so have a container ready. Feeling fortunate that the machine screw hadn't snapped off inside the aluminum housing, I decided to replace all the screws and clean the housing's threads with a tap.

A rounded off machine screw. Luckily, I was able to drill out the head and remove the remainder with mole grips.

Escaping oil, a broken machine screw, and mole grips to the fore. A typical day at the office.

At this point of disassembly, I was able to drift the lateral shaft out from the gypsy side. You can see that I used a piece of scrap plywood to protect the end of the shaft from the gentle ministrations of my lump hammer.

Tap the shaft out.

Due to the interaction between the gear on the shaft and the worm gear that runs fore and aft there is some resistance to the shaft being tapped out. I was loath to use brute force to overcome this — but, having read other peoples' accounts, scratched my head, and come up with no better plan, a bit of force seemed the only way to proceed. Fortunately, the shaft came out fairly easily.

With the shaft out I tapped free the bearings and could finally see clearly into the windlass' interior.

I used the gypsy below the housing to help ease the bearing out.

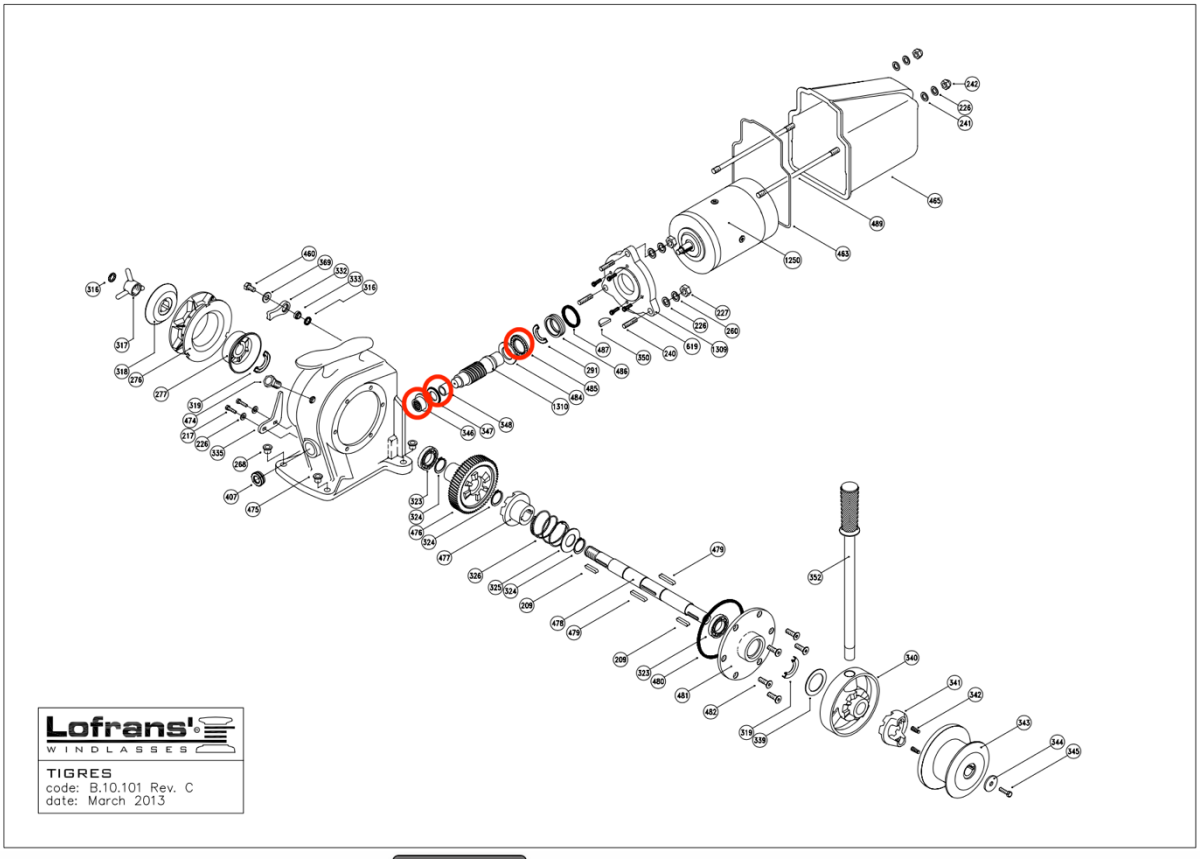
There is plenty of empty space inside the housing so it's difficult to know why I struggled to get a tube down through the filler cap. I forgot to check at the time, and am currently sailing on a friend's boat so can't check, but presumably the filler cap is directly above the gear. Perhaps more persistence would have allowed the tube to pass by it. However, when I tried to pump out the oil through the now enormous hole in the side of the windlass I still struggled. The oil was simply too viscous for my pump to handle. If you can find a decent pump, with a decent bore, you might avoid a good deal of cussing. The experience taught me that there was no way I would have been able to drain the oil via the filler cap — which is not to say that you shouldn't give it a go. Your oil may be thinner, but don't be surprised if you need a Plan B.

Shaft free. Note the worm gear still in the housing. I've started to strip the shaft. The spring creates some tension on the circlip, but not a great deal. Make sure it doesn't fly overboard!

With the main shaft out I decided to remove the worm gear. To do this you have to first remove the electric motor which is held on by three bolts. The motor can then be withdrawn. Take care not to lose the woodruff key that allows the worm gear to be turned by the motor.

With the motor removed you will be able to see a spacer in the housing (photo below). I was able to take out the worm gear shaft by pulling it rearwards via the now removed inspection cover, the spacer popping out with it. BE AWARE if you take this step (I only did mine because the oil inspection glass was so dirty that I couldn't see through it) that there are three thrust bearings on the shaft with rollers that are not caged. As you remove the shaft they will try to escape!

The spacer in the rear of the housing.



Note the position of the uncaged bearings that may spill…

With the shaft removed, and roller bearings recovered, you should note that the spacer is made up of three parts: an O-ring, an oil seal, and a chunk of aluminium that houses them. The O-ring and seal are coded BS222 and 25x35x7TC respectively.

Here I'm tapping the oil seal out of the spacer with the help of the side cover.

After cleaning and greasing everything lightly the re-installation is the opposite of the strip down. The exploded diagram Lofrans provides (see above) is helpful, and it's a good idea to follow it carefully because if you forget one of the circlips everything has to come apart again (believe me, I know).

One other major cockup was narrowly averted. I replaced the gypsy and rope drums before replacing the electric motor. When I tightened the wingnut that sets clutch tension, the gear turned and pushed on the worm gear. Without the motor to restrain it, the shaft shot out of the rear of the housing like a mouse out of its hole. I kicked myself, imagining all of those un-caged bearings flying free. Luckily, thanks to the grease I had used to keep them in place during reassembly, they remained in place, and I didn't have to strip the entire windlass and start again.

I hadn’t replaced the motor because I wanted to measure the brushes. You may recall I was quoted A$250 for a set, and as accustomed as I am to spending mega dollars on boats, even I baulked at this daylight robbery.

The brushes are marked ‘C12G’ and measure 16mm by 9mm by 19.5mm (the latter including the wearing face). If anyone knows of a brush that might suit, please let me know!

One brush — A$62.50 worth.

Before calling it a day, remember to refill your windlass with 500mls of SAE 90-140 gear oil. Then relax, kick back, and look forward to another half decade of stress free anchoring. Fingers crossed!