Technical Pull–Out

Q&A FOR YOUR CATALINA THAT'S BEEN FACTORY APPROVED FOR ACCURACY

Catalina 470 National Association

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Windlass Downs & Ups

The windlass (Maxwell 1200 or 1500) is an unsung hero on the Catalina C470, quietly doing its job – almost in the background – just reliably there. Aboard *Onward* where about 200 or more nights a year are spent at anchor, it is one of the more critical components necessary to allow me to sail safely and comfortably singlehanded. It is almost taken for granted until it is not able to do its job. That is an eye-widening experience when it occurs and potentially hazardous. A lot of posts on the C470 owners website attest to this. So here is a summary of important issues.

Routine Maintenance

One of the most important parts of a routine maintenance schedule is the cleaning and lubrication of the windlass gypsy/capstan clutch cones. At least once a year and twice if you anchor as much as *Onward* does, the gypsy/capstan unit should be disassembled, cleaned, and the surfaces of the clutch cones burnished to a smooth and uniform finish. A coating of anti-seizing grease should be applied to the mating surfaces of the cones and other moving parts before reassembly. The cone friction should be set to the minimum necessary to raise the rode and anchor under light loading conditions. The idea is - the clutch should slip under any load that might damage the gear drive train or overstress the electric motor.

The transmission unit has a plastic fill port/sight glass to check for lubricant level. It is important to check that the fluid level is visible and add the recommended lubricant if low.

While you are at it, check the two screws that fasten the chain stripper to the windlass base to see that they are tight. The infamous anchor rode twist problem that I wrote about in a previous Tech Note will put a lot of strain on the stripper and cause the screws to loosen. I strongly recommend replacing the slot-headed screws with 6-mm hex-socket screws because it is much easier to properly tighten the latter.

Chain Rode Distribution in the Anchor Locker

The chain distribution in the locker is important as I have found there needs to be a gravity fall of about 18" for the rode to come cleanly off the gypsy/stripper and stow itself in the locker without piling up.

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Remote Operation

Setting up the windlass for remote operation as on *Onward* is simple and I highly recommend it. A two-conductor wire must be run between the +12V up and down activation terminals of the windlass solenoid box in the bow and the starboard helm station where a single-pole double-throw momentary switch is installed. A separate +12 V feed line to this switch should be run from the DC power panel (*Onward* uses a dedicated circuit breaker for this).

Rode Counter

Maxwell offers a digital rode counter, the AA150, which is handy to have. For years I found that it took about 6 seconds for the windlass to deploy 10 feet of chain and about 8 seconds to retrieve 10 feet. The strips of rip stop nylon I tie every 10 feet are a good visual marker. Recently I added the rode counter and this required a small cable to be run from the bow to the starboard helm station where the display could be wired into the remote operation switch connections. The 1500 is ready to use the rode counter with a magnet already built into the gypsy and a sensor access hole predrilled in the mounting plate. It was necessary to drill a hole through the deck to mount the sensor in the windlass base and then connect to the cable running to the display. Neat! Between the remote switch and the rode counter, the Captain will get smiles from the foredeck Admiral.

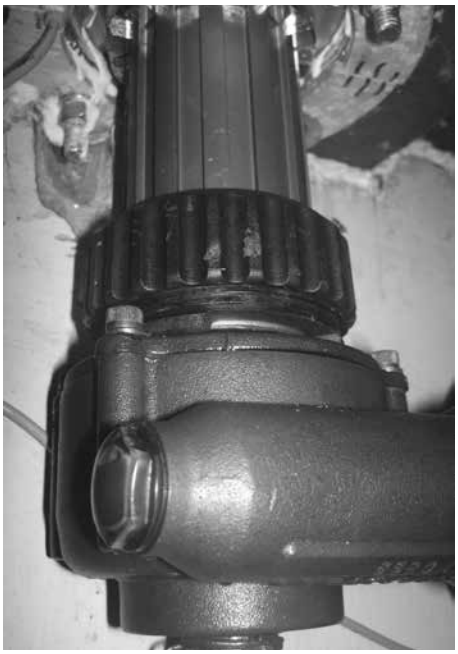
Troubleshooting

Solenoids: It is a good idea to carry a spare 12V solenoid switch in case either the Up or Down solenoid should give up the ghost. The symptoms of this are that the windlass will operate completely normally in one direction but not the other. [Note: if, say, the more critical Up solenoid should die, you can switch the motor +12V feed wires to the working solenoid's terminal in an emergency.]

Switches: Check the waterproof switches regularly for degradation of the rubber covers. Replacement waterproof covers and the microswitches that they protect can be purchased very inexpensively. (*Onward* carries spares).

Windlass Mounting Integrity: This summer while cruising Maine, *Onward's* Maxwell 1500 windlass began to behave abnormally. I had carefully performed the routine cleaning and lubrication maintenance before the start of the cruise. Remotely operating the windlass to set or retrieve the rode is an easy and routine activity aboard *Onward*. The windlass normally has no problem bringing the heavy Manson Supreme anchor aboard but suddenly it seemed to lack the oomph. I thought the clutch was slipping so I tightened it up a bit and this seemed to work – until the next time I retrieved the anchor. I found that letting the rode out a couple of feet and then bringing it back aboard seemed to work. Then I needed to try this a couple of times in succession to be effective. Then the circuit breaker started popping off when I did this – something it had virtually never done before.

This culminated on a windy night at Hadley Harbor after Merlin, a buddy boat, had rafted to *Onward's* port side and we realized I needed to re-anchor the raft a bit farther away from another raft for their psychological comfort. This is normally an easy thing. I had Ed at the Helm of *Merlin* with engine running but in neutral while I gently powered forward to retrieve the anchor and move it. Then the windlass circuit breaker kept flipping off. Tina, Admiral of *Merlin*, came aboard to keep flipping the breaker back on until I managed to re-anchor. That accomplished, I first declared that *Onward* wasn't moving from this anchorage until the windlass problem was diagnosed and fixed if possible, then I lit the cocktail hour light to reduce the stress of all involved.



Under-deck components of Maxwell 1500 vertical windlass.

By 0615 the next morning, I had already checked all the power connections from battery to motor for the windlass and found no problem with a loose or dirty connection whose increased resistance could have caused the windlass power draw to increase and activate the breaker. Next I took the chain off the gypsy to see if having no load would make a difference when I tried to operate the windlass. At this point, Ed came aboard and stationed himself in the bow where he could see underside of the windlass. At first the windlass worked fine in both directions – like there was no problem at all. So I put some loose chain on the gypsy and ran it back and forth and it still worked fine. Then I put a length of rope from a bow cleat around the rope capstan so I could pull on it to vary the load on the windlass. The first time I did this, Ed yelled "Stop!" When I stuck my head through the hatch he said he thought he had found the problem. And he had!

I, like many other C470 owners, had replaced the original Maxwell 1200 windlass with a newer design Maxwell 1500 that had the same physical and electrical mounting characteristics while providing more power. In this design, the motor and transmission unit is attached at a right angle to the windlass base unit via a large knurled ring that tightly couples them together and allows for horizontal rotation of the motor and transmission unit to accommodate the mounting compartment. The transmission unit is split horizontally in two sections that are held together with four large hex-socket SS screws.

Somehow, these screws had loosened with use and this allowed the top and bottom sections of the transmission housing to shift slightly when loaded. It had gotten to the point where they could shift just enough to cause the vertical shaft gear to bind against the horizontal worm gear resulting in a very high load and current draw that would activate the breaker. The fix was quick and simple: tighten the four hex-socket screws (see photo).

Checking the windlass on a periodic basis (every couple of months) is now part of the maintenance schedule for *Onward*. Check: power connections for tightness and cleanliness; the four hex-socket screws on transmission unit for tightness; the knurled knob that connects the motor to windlass base for tightness; for any signs of seawater leaks around windlass base, mounting ring and bolts; for signs of transmission lubricant level and leakage. Note: it is worth learning how to get behind the washer/dryer or forward shower cabinet to get to the windlass for these periodic checks and service.