Catalina TECHNICAL SECTION
MAINSHEET

SUPPLEMENT TO CATALINA MAINSHEET MAGAZINE

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Catalina Mainsheet is published quarterly by Eagle Ltd., 3649 Foxfire Place, Martinez, GA 30907, Phone&Fax (706) 651-0533 e-mail. jholder@mainsheet.net. For advertising information, contact Jim Holder, Eagle Ltd.

Direct questions and comments to your class technical editor.

Technical information is provided by Technical Editors from each class of Catalina. For subscription information, see Join and Renew page.

TECHNICAL CONTENTS:

No material received from classes not listed.

TECHNICAL NOTES

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The C 470 list on Sailnet.com has become a very active site for discussion among owners about maintaining and equipping a Catalina 470. I encourage everyone to join the list and take a look. There is no charge for participation. Go to www.sailnet.com, and look at the site index on the left side. Click "Join E-mail List" under the Member's Center section of the index. Then click "Display All Active Lists", then click the "C 470 Discussion List" and fill out the brief form to join. You will from then on receive copies of all mail sent to the list by C 470 owners and will also be given instructions on how to submit mail to the list. Most of the information in this issue of Tech Notes came from comments or questions by owners participating in the lists. Here are many of the items discussed recently.

CO Detector Problems

Many owners have mentioned the carbon monoxide detectors going off under various conditions when no engines or stoves were operating, so that there was unlikely any carbon monoxide accumulation actually present. The most common circumstance cited by many owners is when the boat is completely closed up with the battery charger operating. My boat will alarm both detectors under this circumstance. Others have cited it occurring in high humidity with the boat open or when the internal parts of the detectors accumulate dust. I have read extensively on this now, and it appears that CO detectors do false alarm on battery fumes and also fiberglass fumes leaching out of the hulls of closed up boats. Apparently, the electronic type of detectors cannot accurately distinguish various hydrocarbons. A chemical type, which is now difficult to find, apparently will only react with carbon monoxide and false alarms less. The disadvantage of this type is that the chemical strip is depleted with time and the detector becomes ineffective. Therefore, the two major brands now sold for marine use are the electronic type. I have tried both, the one supplied by Catalina as well as the Fireboy by Xintex, and both false alarm. In fact, the Xintex false alarms faster than the one supplied with the boat. I also tried new ones of the type supplied by Catalina and they still false alarm.

This brings up the problem that all of us who run the generator when sleeping for air conditioning or have crew sleeping below while motoring must face: What do you do when the detectors go off? Do you believe them, ignore them, shut them off, cut the wires as some owners have? Well, my opinion has evolved. At first I disconnected them after getting tired of hearing them alarm. However, after developing an exhaust leak in my generator hosing and having crew get sick from CO accumulation one night, I no longer do that and highly advise against not using the detectors when someone is sleeping below. I have since done as several owners have, which is wire them to an unused breaker switch on the panel so that they can be shut off when alarming until the boat is aired out, and I shut them off when off the boat. (They come from the factory wired always hot with in line fuses so they can't easily be turned off). I find that if I leave the companionway hatch open about two inches and one of the aft stateroom hatches open a couple inches, enough air circulates to avoid a false alarm. If there is no rain in site, a safer way is to leave the forward head hatch open an inch or two along with an aft stateroom hatch, as there is better flow through and less chance of a venturi-like suction of generator or engine exhaust from the dodger/bimini combination cover-

ing our cockpit. One must be most careful when opening hatches aft of the generator exhaust in light air that generator exhaust is not coming in the aft hatches or being sucked in through the cockpit.

The second thing I do now is frequently test all exhaust connections and hoses with a spray of soapy water while the generator or engine is running. This combined with always operating the detectors when someone is sleeping below with engine or generator running, with sufficient flow through ventilation to keep the detectors from false alarming, gives me comfort that we are taking adequate precautions while reducing the false alarms. There are articles in the safety section of the West Marine Catalog as well as a back issue of Practical Sailor that discuss the problem extensively. It is clearly a problem with all electronic sensors and not just the ones supplied by Catalina. If I do find an available chemical sensor, I'll post the brand name and location in future issue or on Sailnet. *-Glen*

Starting Problem Fix

Many owners have asked about the problem of the Yanmar engine starting first time, but not wanting to restart after sailing awhile. We experienced this on Latitude Adjustment. The fix for the starter problem to add a relay to assist the starter solenoid as described below. The neutral safety switch on the shifter is sometimes blamed, but has not seemed to be a problem on the C 470, and I don't recommend bypassing it.

The mechanic who did my repair is a Yanmar reseller who installs Yanmars and services them in many different boats. He says it is a common problem an many models. It turns out that the Yanmar manual describes the problem and the fix if the wiring run is too long in the starting circuit. I have had no problems since the fix, so here it is:

The Problem: The starter solenoid on the C 470 gets its activating power from a long small diameter white wire which reaches it after a wire run coming from battery to starter panel to throttle safety switch back to starter panel and then finally to the activator post on the starter solenoid. The run is so long that the voltage often drops well below 12V in the small guage wire, and there is not enough power to activate the starter solenoid. Thus, when you first start with full batteries, you usually get a start. But after sailing an hour or two with refrigerators and other energy hogs running, the long wire run drops the voltage too much to trigger the solenoid.

The Fix: An additional "relay", sometimes called a "helper solenoid". There are several choices on obtaining it: Yanmar now produces one called a "relay starter", part number 129490-77910 for another engine model, 4JH3, which does the job. Bosch and Onan also make one, and it is called a 12V, 30 amp relay. Apparently you can also buy them at Radio Shack. It is about a $12.00 part. I understand that Catalina now also supplies one.

Installation: Mount it on any bulkhead in the engine compartment near the starter solenoid. It does not have to be near, but the nearer it is, the less likelihood of the existing wiring harness being too short. Access to the starter solenoid is through the galley cabinet adjacent to the port side of engine- there is an access panel. Using a good size wire (say 8 guage), run a wire from the main battery tap on the starter motor to the power in tap on the new relay. Take the white activator wire coming to the existing starter starter solenoid from the start panel and transfer it to the activator tap on the new relay. Take the output tap of the new relay and connect it to the activator tap that you just removed the white wire from on the existing solenoid.

Now you have the starter panel activating the new relay instead of the original solenoid. The relay then takes power directly from the battery tap on the starter and uses it to activate the starter solenoid.

Why it works: apparently this relay is more easily activated and less sensitive to voltage drops than the starter solenoid. Bill Martinelli provides very nice drawings and descriptions as well as very nicely done pictures of mainsheet run, boom brake, and other pictures at the following web site: http://www.martinellistudios.com/html/mainsheet.html. Thanks to Bill Martinelli and Ian Durrell for sending in information to the Sailnet list on this problem as well as Mike at Yacht Power in St. Petersburg. *-Glen*

Bermuda Race Measurement

I underwent an IMS measurement for my race to Bermuda. It is a computerized laser measurement fed into a program for US Sailing Association. The boat is measured naked! No canvas or sails or any personal gear onboard and empty water tanks. If fuel was in tanks they had to be full so that weight would be taken into account. Only gear that is safety equipment and permanent in nature is allowed during measurement. Weight was 36,573 pounds with washer/dryer, thruster, 3 zone climate control, three 8D house batteries, a group 27 starter battery, generaor with a group 24 battery, all electric winches, and a custom radar arch. Draft was established at 6.15 feet. As far as seaworthy; the AMERICAP righting angle calculation for stability index was 136.5, well within the acceptable limit. *-Stan Walsh, Makin' Progress, #32, from his Sailnet submission*

Lewmar Winch Maintenance

Awhile back I noticed one of my # 66 winches making an odd noise. So over the Labor Day holiday we sailed 2 days and did stuff on the third day. I decided that taking apart the offending winch might be a good idea. It was such a good idea that I did all of them! There was nothing wrong with that winch or any of the others except that they were dirty and the grease had gotten gunky. I was really surprised how dry and little lubricant was in the electric winch. Our winches all have covers and are always covered but had collected 2 1/2 years of dirt. Lewmar has a service kit with oil, grease, springs, brush and service manual. West Marine carries it. You can go to www.lewmar.com/support/support_dloads.asp and download Service manuals and Spares/Parts manuals. I found the Spares/Parts manual to be a great help in that you get exploded views. The service manual provides photos that show how to clean and service, but really doesn't give you close-ups of the assembly order. What I really notice now is how much quieter all the winches are. The electric winch had I not serviced it would have eaten up the 4 sets of bearings in a while and I am sure Lewmar doesn't give them away. To service all four winches took about half a day and was fairly straight forward, the easiest was the electric winch and only took about 5-10 minutes. *-Bill Martinelli, Voyager, #11, from his Sailnet submission*