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Catalina 470

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This month's Tech Notes feature is submitted by Michael Yorke on SSB Installation. Thank you Michael! –Jim

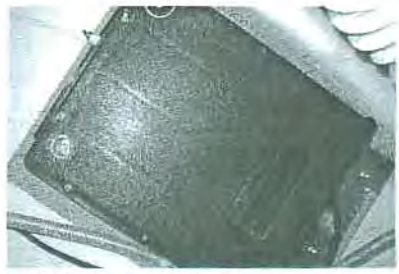
Installing an SSB radio aboard C470, #108, Certa Cito

As an occasional off-shore sailor and amateur radio operator (call-sign NT2R) I like to have SSB radio aboard my boat. I use it for marine safety, weather and communication purposes, and also for recreational amateur use utilizing voice and cw (morse) modes.

The FCC's marine radio regulations require that HF (SSB) equipment is type approved for use in the marine service. The amateur radio service does not require type approval. I chose the SGC 2000 PowerTalk radio for Certa Cito. It is type approved, and at the time I selected the radio it was the one that came closest to giving me the free tuning variable frequency control that is used by amateur radio operators. By contrast, marine service radios are typically channelized and do not normally allow for "vfo" type tuning.

The SGC 2000, like other marine radios, consists of three major components; the transceiver RF chassis, the automatic antenna tuner, and the control head. The control head is located at the operating position in the navigation station, the chassis is normally mounted out of the way somewhere and the antenna tuner is normally mounted as close to the feed point of the antenna as possible. In the case of Certa Cito, as shown on the photographs, the control head is mounted on top of the Raymarine RL70 chartplotter/radar, the transceiver is mounted on the aft shelf on the starboard side of the master cabin and the antenna tuner is mounted on


SGC 2000 PowerTalk Control Head


SGC 230 Tuner in Lazarette

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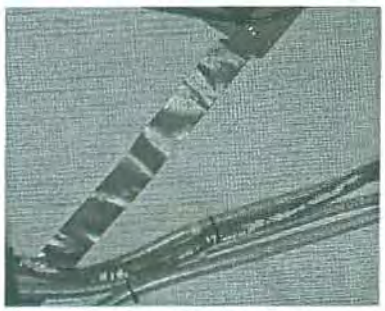

Copper Foil From Tuner to Grid

the side of the starboard lazarette in order to be close to the starboard backstay antenna. The top and bottom insulators were installed in the backstay by my dealer, Coneys, when the boat was commissioned in 2002.

In order to connect the antenna tuner output to the backstay antenna, a length of GTO15 cable runs from the tuner to the backstay above the bottom insulator. To prevent accidental contact with the GTO15, which will be radiating when the transmitter is transmitting, the GTO15 runs through a small diameter white pvc pipe that is secured to the backstay.

A consideration in mounting the various components is that of running the power and interconnecting control cables. The control cables run from the control head to the RF chassis and from the chassis to the antenna tuner. Aboard Certa Cito those cables have been routed behind the cabinetry on the starboard side. Access for running the cables is available by opening the AC panel and loosening the cabinets in the aft head. The power cables run from a dedicated 30 amp circuit breaker on the DC panel to the transceiver in the aft cabin and are large enough at 4 awg to minimize voltage drop to the transceiver. A piece of teak trim will be made and mounted to hide the transceiver chassis from view in the aft cabin.

In order for a high-frequency radio and its antenna to operate efficiently an effective RF (radio frequency) ground has to be present. Copper strapping connecting the transceiver chassis and the antenna tuner and then connected to a lead keel via a keel bolt is often used for this purpose, and that was my choice on Certa Cito. A good rule of thumb is the more copper strap surface area the better. The greater the copper strap surface area the more effectively the radio signal is radiated. Without going into radio theory, the RF ground forms "the other half" of the antenna.

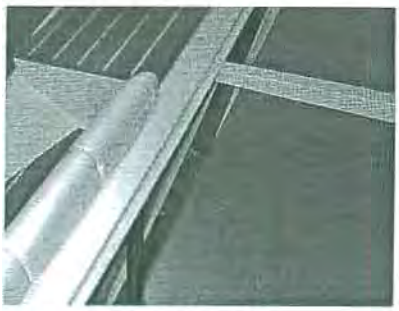
Transmission problems, that is to say not getting out well, are often caused by inadequate RF grounds. Some owners choose to use a Dynaplate bolted to the outside of the hull instead of the lead keel as a part of the RF ground. Since I previously had great success without a Dynaplate aboard my previous C42 I elected to do the same on my C470.

On Certa Cito, as can be seen from the photographs accompanying this article, copper strap was laid around the antenna tuner in the lazarette, connected to the transceiver chassis in the stateroom routed through to the fuel tank area and laid around both sides of the tanks, led forward under the engine and further forward to a keel bolt accessible in the bilge. Care was taken to route and secure the copper strap in such a way as to ensure that there is no possibility of chafing adjacent cables or pipes. A good finishing touch for the copper strapping is to cover it with epoxy and this is what was done on Certa Cito. It prevents the copper from tarnishing or corroding, which is not only unsightly but can also result in an unwanted electrical resistance.

I found that installing SSB aboard the C470 was not as easy as it was on


Copper Foil Runs Under Engine


Copper Foil Led to Keel Bolt


Copper Foil Around Fuel Tank