



# **Chesapeake Tartan 30 Association**

## **REFRIGERATION ON A T-30**

Steve Ylvisaker, *T-30 #577, Chicane*, August 1997\*

We have been asked how we were able to put refrigeration on our aft galley T-30. It was not a simple task. The original ice box was not suitable for mechanical refrigeration, so a major galley restructure was necessary. But I hate ice and wet ice boxes and I love gadgets. One winter I decided to take the plunge and purchase the smaller model of Adler-Barbour ColdMachine, vertical (for top-loading iceboxes). I had no idea of the ordeal I was about to take on.

The T-30 is an incredible design and will never be duplicated. Aside from its inherent inability to track in reverse, the design is brilliant. Mid engine for added ballast and open space under the cockpit, and speed through the water without the contemporary fin-and-spade “steer till you drop” design. However, it is certain that no one intended for the T-30 to have mechanical refrigeration.

There were a few things going against the concept. The original ice box in the aft galley model had too many doors, and one of them was a side door which let hot air fill the box every time the door was opened. Additionally, the ice box was only marginally insulated and, for its day, was absolutely huge. To make life even more difficult, the only practical installation location for a compressor was under the starboard cockpit bench in the open space just forward of the lazarette. A small platform was built there to support the compressor. Unfortunately, this is a full 20 feet from the midship port side location of the batteries, which gives an incredible line drop on a 12 volt system.

Naively, we drove on and made the installation into the original ice box. The system wouldn't run with the size cable normally used for a ColdMachine, so we had to install #4 cable from the remote battery location just to make it start. Once underway, it ran constantly for 3 to 4 hours and then quit because of a low battery. Not a good situation. After several years of frustration and a few jump starts to get back to the marina, we finally decided to either get serious or give up on mechanical refrigeration. So we did the following:

1. We determined that if refrigeration on our T-30 was to be, it would need its own battery to free the house and starting batteries to perform their main functions. We built a platform inside the starboard lazarette (attached to its forward bulkhead) specifically for the battery that runs the compressor. It is out of the way and really creates no serious hardship. Located there, it is only two feet from the compressor, and the line drop problem is averted.

2. We purchased a Guest 3-bank battery charger. That way one bank can be dedicated to the refrigeration compressor. Additionally, we installed #4 cables and a second battery switch allowing us to connect the new battery to the alternator for charging when under power (not a frequent occurrence on Lake Pepin in Minnesota, since we only burn about seven gallons of gasoline during a season)

3. Next, we abandoned the original ice box and turned it into dry storage. We fabricated a proper drop-down insulated ice box in the galley area. This was tricky. First we rotated the range top 90 degrees so the burners were front-to-back instead of side-to-side. The sink was made deeper but given a smaller foot print and moved farther starboard. This gave us a small but usable space on the galley top for a drop-down ice box. We fabricated it with West System epoxy and gave it two inches of insulation on the sides and three inches on the bottom. A solid teak door gave it a nice finish. This provides a refrigerated space that is about one and a half feet wide (athwartships), about two feet long (forward to aft) and about two feet deep. The bottom angles down to match the contour of the hull, and had to be very carefully measured during construction.

4. Finally, we hired a refrigeration professional to “tune up” the system. The ColdMachine is delivered pre-charged, and compromises are made to mechanical efficiency to accommodate ease of user installation. Our mechanic replaced the delivered refrigerant with the current environmentally correct (and more efficient) stuff. Next, he installed nipples on both the low and high side of the compressor. This allowed him to attach monitoring equipment to tune the system for maximum efficiency.

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\* Originally published in *The Hook*, newsletter of the Chesapeake Tartan 30 Association

As a result, we have a system that will run for three days and nights without recharging the battery, keeping beer cold and Heidi's ice cream frozen. Additionally, we increased the food storage space significantly by adding the dry storage locker where the original ice box used to be. We also increased counter space in the galley. But washing dishes *is* somewhat of a pain in the smaller sink further from the center line.

A refrigeration installation project should not be taken lightly, but our result has been very satisfactory.