

Propane Systems

July 7, 2011

By Mort Caplan – TSC Safety Afloat Officer

This month I want to make a few comments about propane Systems.

This article isn't intended to be comprehensive, or a do-it-yourself guide, but is just some of my own observations and opinions that I believe might serve to help prevent some potentially serious problems if you consider blowing up your boat and being propelled a significant distance up in the air as serious.

I had a potential client who did that one time, although he managed it not with the propane system, but by not sniffing the bilge and turning on the blower before starting the engine after refueling. As I recall it ruined his whole weekend I can't remember who he wanted to pay him for his own carelessness, but you can be sure it was someone besides himself or he wouldn't have been in my law office.

On a cruising boat of any size, which is a deliberately vague statement, a permanently installed propane system is the most practical way to go for cooking. Propane burns with a hot flame, is easily controllable, and large amounts of energy can be stored in a relatively small space, which is also one of its dangers. Pressurized and un-pressurized alcohol, diesel fuel, liquefied natural gas; wood and coal all have their proponents. However, I would be willing to bet that propane is the overwhelming favorite, at least on this side of the Atlantic.

I have been told that in Europe butane use is common, but I believe that if you can burn one you can burn the other, and there is no difference in the systems or the necessary safety precautions. I base this on having seen European cruisers who told me they usually burned butane, filling their tanks with propane, although they had to use adaptors because the fittings on the fill hoses were different.

Note that I said above that propane was the most practical for cooking. Heating is a different story. If you intend to cruise in cold climates, which are incomprehensible to me, in my opinion, a diesel heater is a superior

way to go. It burns the same fuel as your engine, avoids running gas lines with their potential leaks around the boat, and a spill or leak, while messy, is not particularly dangerous. I had a Force 10 diesel cabin heater on a cruising ketch I owned, and was completely satisfied with it.

For cooking on a small weekender, I would use a camp stove with an attached propane bottle, an alcohol stove, or whatever else turns you on; anything that didn't need a permanently installed propane system.

The technical stuff

Propane installations on boats should meet the standards set forth by the American Boat and Yacht Council in their publication Standards and Technical Information Reports for Small Craft. Here are a few highlights.

The storage tanks should be kept in a separate, sealed, locker, with an overboard drain in the bottom. The vent hose should not have any low spots, and should be kept above the waterline at all points. On some older wooden cruising boats that don't have built in storage lockers, you will frequently see propane tanks mounted on the foredeck in the open air or in a wooden box, near the mast. This works – leaking propane can't get below.

There should be a remotely controlled solenoid shut-off valve mounted to the tank. In the event of a leak or other problem, this permits you to shut off the propane from below with a minimum of delay. This should be a fail-safe valve, which requires electrical current to keep it open. We lost electrical power one time off the Atlantic coast of Costa Rica because of mismatched pulleys on the engine and alternator, and after using up all our spare belts and running the batteries down, had to eat uncooked food. Still, I consider a fail-safe solenoid operated shut-off valve an important requirement.

Keep the tank shut off when you are not using any of the gas appliances. Check for leaks every so often by pressurizing the gas lines by opening and closing the tank shut off valves with all appliance valves closed, and watching the pressure gage. It should hold steady. Use a certified tank, a

pressure gauge, and a regulator, all of which should be in the scaled locker, and ABYC approved hoses, tubing and fittings.

On my ketch we didn't have any hoses, except in the locker. Everywhere else we used copper tube. It corroded over a period of time, at least on the surface, which made me think that maybe approved hoses would have been a better idea. Lastly, don't use a cabin heater or use the stove for cabin heating without adequate ventilation. A friend of mine did this, when staying overnight on his boat in the marina, and later told me he recalled waking up in an ambulance and hearing an attendant say: "Hurry up I'm losing him."