



Plug Into Fire Safety — What you need to know

Shore power connections to help reduce fire risks.

As pleasure boats have become more complex, onboard electrical safety has become more important. Although this may be something boaters don't think about very often, here is a critical thought to consider: A major percentage of fires on pleasure boats are electrical in origin.¹

A likely place an electrical fire can start is at the boat's inlet receptacle. The inlet receptacle is the fixture on the side of the boat, with the hinged cap, where you connect the shore power cable. Since it is often exposed to the elements, the inlet receptacle's condition can deteriorate.

The receptacle can be damaged in a number of ways, including the simple action of plugging the cord into it. Over the years, the clips in the cord that contact the prongs in the receptacle wear out, which can result in a loose connection. If the cord end feels loose when you plug in to the receptacle, it may be time to buy a new cord.

If the receptacle is in a location where it gets wet, corrosion often occurs, especially if the locking ring on the cord end is missing, or if it isn't properly attached to the receptacle. If rain, saltwater or washdown water gets into the connection, the metal parts will corrode and that corrosion will cause resistance, which results in heat that can melt the insulation and lead to a disastrous fire. That locking ring is important. If your cord doesn't have one, get one and use it! If you can't find a ring for your cord, get a new cord.

You can't depend on circuit breakers to provide protection against this kind of damage. A corroded, loose, worn-out receptacle can generate enough heat to start a fire with very little current flowing. In one case, where a receptacle fire destroyed a nice 44-foot motor yacht, the cord and fixture were part of a standard 30-amp shore power connection, and only 12 amps were actually flowing at the time of the fire — less than half the rating of the breakers on the boat and on the dock!

How can a boater protect against this type of risk? The first, and most important, step is **inspection**. Every time you unplug and plug in your boat, take a good look at the inside of the receptacle, under the cap. The three prongs protrude from a plastic base, and in most newer boats, the base is white. If a prong has been overheating, the plastic around the base of the prong will discolor from the heat, turning light brown at first and darkening over time.

Some boaters will disconnect the shore power cord from the dock and leave it connected to the boat, especially when leaving the dock for day cruises. An entire boating season may pass, and they never see that vulnerable connection — and miss an opportunity for inspection — because they never disconnect the cord. Not a good idea! The cord end should be disconnected from the boat so the receptacle can be inspected, and the other end of the cord should be disconnected on the dock, so both receptacles and both ends of the cord can be inspected, as often as possible. The boat you save may be your own!

The second step in the process is **replacement**. If you ever see *any* sign of darkening around the base of one of the prongs, replace the damaged parts immediately! It's not good enough to just clean the corrosion from the prongs. Corrosion is often the culprit, but it may be a worn-out cord end that's causing a loose connection, or a loose connection at the back side of the receptacle, where the boat's wiring connects. The electrical loads on boats tend to change as thermostatically-controlled devices, like water heaters, block heaters and electric space heaters, turn on and off. Overheating that begins due to corrosion, and then goes through countless cycles as components turn on and off, will cause metal parts to expand and contract, which can lead to loose connections. This means that a minor problem can lead to a major catastrophe if enough time and cycles pass.

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In addition to keeping a close eye on that cord-to-receptacle connection and making certain the locking ring is always properly secured, here are some other suggestions to help reduce the risk of electrical fire aboard your boat:



Make sure all heat-generating devices are plugged into permanently-installed receptacles; never use extension cords.



Do not use reflector-type heat lamps on board, and never use spring-clamp-style bulb holders that can fall off whatever they're clamped to and potentially start a fire.



Keep electrical loads to a minimum when not aboard. Turn off the water heater!



Never use thermostatically-controlled heaters in gasoline engine or tank spaces. Thermostats can produce sparks. It's not only unsafe, it's also a violation of Federal law.²



If using block heaters on a twin-engine boat, set them up so only one is on at a time. If the boat is gas-powered and the block heaters are on timers, the timers must not be in the engine space!



If the boat has a propane system, be sure the control switch is off and the valves on the propane tanks are closed when there is no one aboard the boat.



If electric heaters must be used on board, their number should be kept to a minimum and they should each have a "no-freeze" setting that will turn them on only on the coldest days. Heaters should be secured against tipping or sliding against any flammable surface. Be especially careful if using oil-filled radiators, since they can tip over easily. If heaters are necessary, consider using the simple "air-dryer" type without thermostats. They draw very little current, and they may provide enough air movement to prevent mold and mildew, depending upon your vessel.



Be certain that any electrical work done on your boat is done right! Insist on an electrician who is certified by ABYC, the American Boat & Yacht Council. If you prefer to do your own work, get the "electrical compliance guideline" booklet by going to the ABYC website, <http://www.abycinc.org> and clicking on "ABYC's SHIPS STORE."



For more fire prevention tips, get a free Fire Extinguisher brochure from ACE Recreational Marine Insurance® at www.acemarineinsurance.com. Click on the Safety & Loss Prevention link, then click on "Fire Extinguishers" to download and print a copy.

Fire aboard a boat, especially in a crowded marina with covered moorage, can result in an enormous disaster. Vessels, marina property and lives are all at risk. Do your part to keep your boat safe, and your marina's management will thank you for it. In fact, many marinas are establishing electrical safety and inspection programs. Good for them!

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Sources

¹ Mike Higgins, K-Chem Labs, "Investigating Boat Fires: A Primer," Technical Information Exchange For Marine Professionals, April 2000.

² Code of Federal Regulations references are 33CFR183.401 (applicability to gasoline-powered vessels) and 33CFR183.410 (ignition protection test standard).

