July 2020 Newsletter

Photo Essay: Battery Box Installation

Battery installations aren't sexy; once installed years can go by without anyone setting eyes on them, especially if they are maintenance-free AGMs, or gel. While even these batteries should be inspected regularly, for terminal security and corrosion, the real issue with most batteries is the initial installation technique. Too few meet even the minimum guidelines established in ABYC Standard E-10, 'Storage Batteries', which in part dictates that…

10.7.4 Batteries, as installed, shall be restrained to not move more than one inch (25mm) in any direction when a pulling force of twice the battery weight is applied through the center of gravity of the battery as follows:

10.7.4.1 vertically for a duration of one minute, and

10.7.4.2 horizontally and parallel to the boat's centerline, for a duration of one minute fore and one minute aft, and

10.7.4.3 horizontally and perpendicular to the boat's centerline for a duration of one minute to starboard and one minute to port.

As John Adey, ABYC's president is fond of saying, "ABYC Standards should be thought of as the floor, rather than the ceiling", in other words, they are the minimum, boat yards, contractors and builders are always free to exceed this lower bar. Maximum allowable battery movement is one of my favorite examples where this guidance is concerned; in my opinion, once installed, battery movement should be zero.

The Standard goes on to say, “Fasteners for the attachment of battery boxes or trays shall be isolated from areas intended to collect spilled electrolyte.” Simply put, this means battery boxes cannot be screwed down from within the box, as is shown in the accompanying image, particularly in the case of flooded batteries, which are prone to electrolyte spills and leakage, which in turn could attack the screw heads. It is for this reason that no ABYC-compliant battery boxes are designed to have fasteners driven through their bottoms; and if they are (screwed from within) it’s possible that when stressed they could be pulled over the screw heads.

The preferred method of securing battery boxes is by an external clamp mechanism, or a strap, albeit a sturdy one, preferably of the ratcheting variety.

Inspect your battery installation, make certain batteries are secure and will remain that way even when stressed using the above-mentioned ABYC criteria, and then continue to inspect them on a regular basis.

Ask Steve

Steve,

In light of the most recent accident where two men were electrocuted and died, and a woman was left badly burned (all in fresh water), how far from docked boats is it safe to swim?

And does the potential for danger change in salt vs. fresh water?

Thank you and Best,

Barry Shapiro

Barry:

The tragedy to which you refer, detailed here, is yet another text book example of Electric Shock Drowning or ESD, a case in which the electric current in the water, while not necessarily enough to cause electrocution directly, causes muscular paralysis, which in turn leads to drowning. In this case, early reports indicate the electrical system of the vessel belonging to one of the victims had been modified to bypass an electrocution safety device, making this tragedy an avoidable one.

The general consensus among those who study ESD and its effects, is to remain a minimum of 150 feet from docks, bulkheads, and boats that are energized with AC utility power. This would include any dock equipped with shore power and vessels that are plugged into that dock's shore power system.

While the vast majority of ESD cases occur in fresh water, there is no guarantee it cannot occur in salt water, and in many places the salinity of the water fluctuates with tide and seasonal run off. The bottom line is, it's best to avoid swimming around any dock/boat that is equipped with utility mains power.

You can learn more about ESD here and here.

Hi Steve,

We have a question about raw water hoses for the head. Do people ever use braided 316 stainless hose?

The hose would be odor proof, but I fear a corrosion failure might be catastrophic. Our boat is steel with welded in place, 316 stainless through hulls.

Best regards,

Wendell Gallagher

Wendell:

While durable, I believe stainless steel braided hose, with threaded ends, would be overkill, and the hose, while seemingly very durable, does not have a permeation rating for effluent.

My preference would be for PVC schedule 80 pipe for plumbing runs other than those connected to through hulls, i.e. where a failure would not lead to flooding, and heavy EPDM hose, such as Trident 101 series (it has a 10 year permeation warranty), for below the water line and seacock connections.

You might find this article on the subject useful.

Dear Steve,

I have read with interest your review and advice on seacocks.

I am about to change all seacocks on my 33ft yacht and am looking for a product that would be high quality and reliable. Since I also race, I would like to find a flush design that additionally has a way of closing the outside opening so as to minimize water turbulence. I shall appreciate your advice.

With best wishes,

Jan Komorowski

Jan:

If weight and drag are a concern you might consider Forespar’s Marelon series of seacocks. These are non-metallic and thus immune to corrosion, as well as being light. They do offer a flush through hull option as well.

Forespar’s seacocks are also ABYC compliant in that they are designed to withstand application of 500 lbs. of weight applied for 30 seconds to their most inboard end.

Hi Steve,

I am having difficulty finding a source for aluminum pencil anodes for my heat exchanger (for a Ford Lehman 120).

Do you have any recommendations?

Thanks

Richard Gicking

Richard:

While I’m an advocate of aluminum anodes, I don’t recommend using the pencil variety in heat exchangers. In the normal course of their operation, aluminum anodes often generate a surface foam or froth. The material does not hinder the anode’s effectiveness, however, it can make it difficult to remove for pencil anodes for inspection. Unless you are operating strictly in fresh water, I would recommend sticking with zinc for these applications.

It’s important to remember, the anodes used in engine, genset and other inboard heat exchangers are effectively in a different body of water than those on the hull, and as such there is no interaction between, or cross protection of, the two even when bonded. You can safely use aluminum hull anodes and zinc heat exchanger anodes. While mixing anodes in the same body of water is not recommended, it too is not harmful per se, as the aluminum anodes tend to protect the zinc anodes until the former are depleted.

One source for aluminum anodes is Performance Metals.