August 2022 Newsletter “Seacock Appendages”

Photo Essay: Seacock Appendages

It’s a scenario I encounter all too often, a “Christmas tree” of hard plumbing, T’s, nipples and other fittings, connected directly to a seacock. The installer often has good intentions, believing that plumbing fittings directly to the seacock reduces the risk of a hose failure and leak. In fact, it’s just the opposite, rigid plumbing fittings connected directly to seacocks pose a greater threat of failure, than seacocks that are plumbed with nothing but a section of hose, to which other fittings are then connected. The added rigid fittings provide leverage to the assembly, making it easier for a smaller load to lead to fracturing a fitting, usually a pipe nipple.

The American Boat & Yacht Council’s guideline for seacock installations, among other things, prescribes a durability standard; as installed a seacock assembly must be able to support 500 lbs. of static weight, applied perpendicularly to its inboard end, what ever that may be, for 30 seconds without failure. If that inboard-most end has been extended with additional fittings or components, its vulnerability is increased dramatically.

In the image shown here, which I’ve annotated, a pump has been attached directly to a seacock. The likelihood of that pump being able to endure a 500 lb. load is very small indeed, it will almost certainly fail, leading to significant water ingress, enough to sink the vessel rapidly if it’s unattended.

Ideally, the only component that should be connected directly to a seacock is a pipe to hose adapter, sometimes called a

tail-piece. From there a hose can be plumbed to other components, thereby isolating the seacock from loads.

Ask Steve

Hello Steve,

With much interest I read your articles.

Having acquired a Wauquiez Centurion 40 last year built in 1993 I discovered that nothing is bonded.

My question to you is, after having read your articles related to bonding and anodes, what to bond? Obviously the seacocks and engine, but what about the bow thruster, water and diesel tanks, keel studs, rudder shaft and so on?

Many thanks,

Frans Botman

Frans:

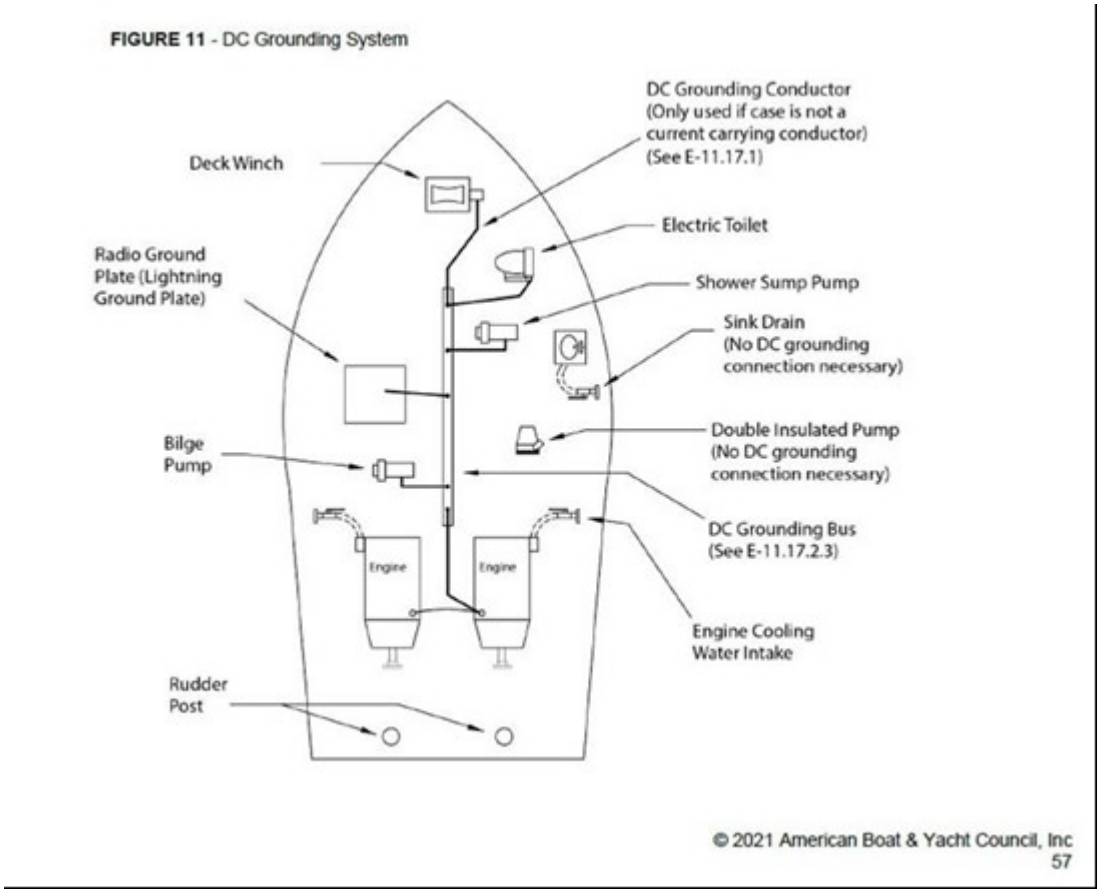
Bonding is optional, at least as far as the American Boat and Yacht Council is concerned. Having said that, in my opinion, the reasons to bond far outweigh the reasons why one may choose to not bond a vessel’s underwater metals, and interior metallic components.

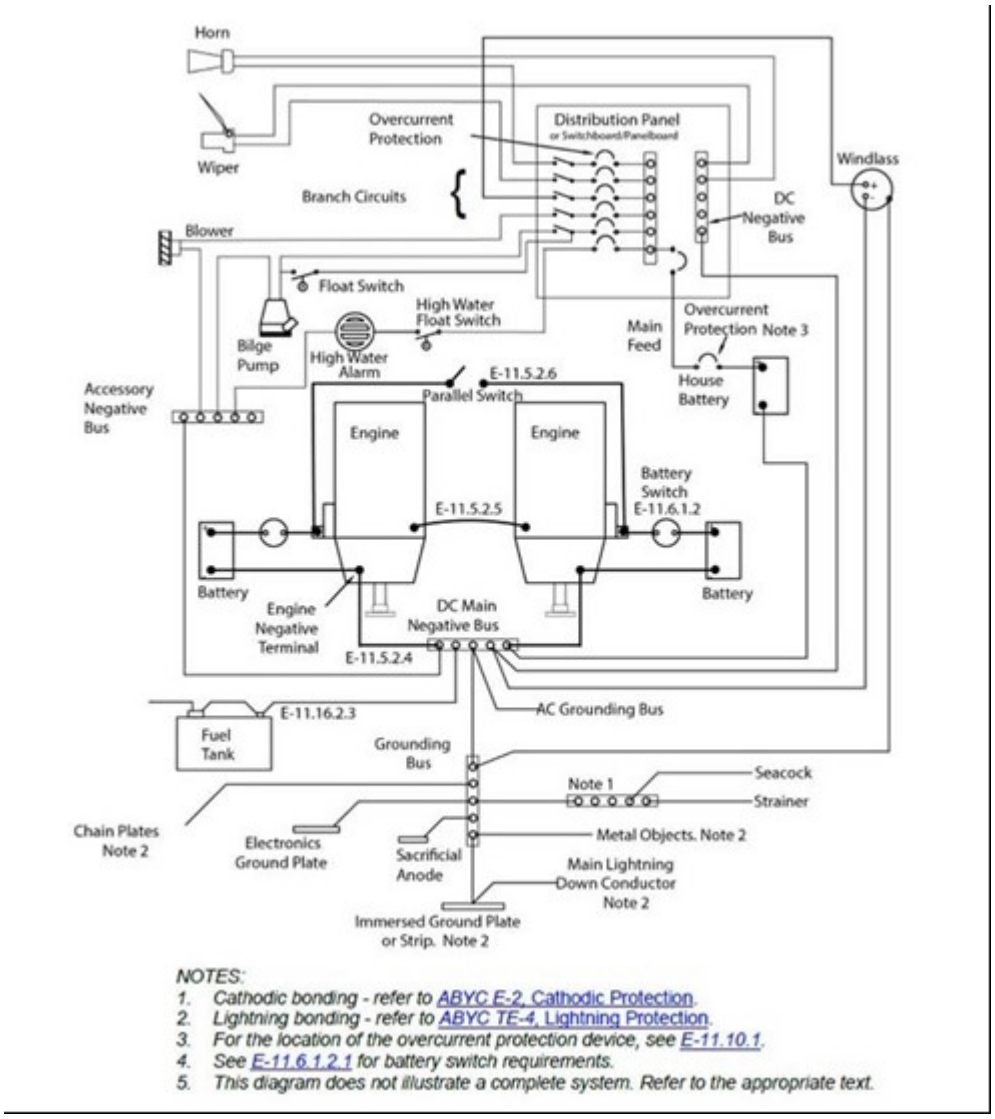
Internal components like tanks, chassis grounds, windlasses, stanchions etc. can be “grounded”, however, the bonding and grounding systems are essentially one in the same and are connected. Metallic tanks, and keel bolts should be bonded. All submerged metals should be bonded, including struts, stuffing boxes and metallic shaft logs. Some bow thruster manufacturers, Sidepower/Sliepner for instance, prohibit bonding of their thrusters. If there is no manufacturer

prohibition, then they benefit from bonding. Unless it is an especially ignoble metal, like aluminum, then the rudder shaft also benefits from bonding. Note, for vessels that are bonded, the blocks of engines and generators that use isolated ground starters and alternators, *should* be bonded, and that bonding wire must be large enough to carry full battery fault current. Engines and gensets whose block is a current carrier, i.e., the block is part of the starting and charging circuit, should *not* be bonded.

For a longer treatment on bonding see here.

These diagrams, from ABYC illustrate some of these connections.





Hi Steve,

I am buying a new 40’ Hallberg-Rassy and picking it up in Sweden. I plan to sail there for a couple of months and then put the boat on a ship for the transatlantic crossing. I would like to bring a basic set of tools to have with me in Sweden, but don’t want to carry a large tool box with me on the plane. Can you recommend some compact quality tool kits that I could bring with me on the trip?

Thanks,

Bob Frantz

Bob:

You can actually find some very good, comprehensive tool kits at Lowes, they have purchased the Craftsman brand. They aren't Snap On quality but they are very good none the less, and ideal for this application. These are available in blow-molded plastic cases, which makes storage easy and reduces corrosion (you should still spray them with a corrosion inhibitor). Tractor Supply also often runs sales on DeWalt tool kits, which are also very good, I keep them in my car and truck. More here and here. For a full complement of onboard tools, you'd need to add to any of these, but it will give you a start. You might find this article useful as well.

Hi Steve,

Here is the question concerning bonding and the one-point of vessel ground:

Question on bonding (just read your bonding article), for a Steel 56' with CAPAC impressed current system.

Over the course of a long renovation, I have taken pains to ground all electric to one point on the hull, and I have ground isolated everything, including bolt sleeves on case-grounded devices.

Now I come to bonding all my bronze thru-hulls (3), the keel-coolers (2), prop shaft, & AC raw water circuit pump, and bringing the bonding conductor ultimately to the primary ground bus (which is connected to that one point of ground on the hull)

It seems if all those thru-hulls are connected to the main ground bus, I now have *multiple* points of ground on the hull, but I thought the idea was to have only one point.

How is this contradiction dealt with? Am I misunderstanding the "one point of ground" rule? Would it be better to leave

the thru-hulls isolated? Surprised this isn’t a more common question, but cannot find it anywhere.

Thanks,

Mark Andrew

Mark:

Steel and aluminum alloy vessels do not have bonding systems for hull-mounted components such as seacocks and keel coolers. You either isolate these items (and cathodically protect individually, in the case of the keel cooler and shaft/prop, seacocks would typically remain isolated if bronze) or connect them to the hull and protect with hull anodes. The former is the most common approach, again on steel and aluminum alloy vessels.

Shafts are a special case; bonding them requires a high quality, silver slip ring shaft brush system *if you wish to bond them to the hull,* but that’s not something I’d recommend, and given the choice I’d use glass-reinforced Nylon non-metallic thru-hulls and seacocks, making isolation unnecessary. More on shaft brushes here.

Typically, the AC raw water pump is already bonded via the integral AC safety ground, which is common with the hull, and DC negative. Adding an additional bonding wire constitutes ‘double grounding’ which could in fact induce current flow, and corrosion, so it should be avoided unless the pump manufacturer specifically makes provisions for additional bonding.

The single point of connection between hull and DC negative/AC safety ground remains a desirable goal, to prevent the hull from becoming a current-carrying “conductor”.