Ask Steve – November 2015

Please note, our first two questions are in regard to a previous Photo Essay: http://stevedmarineconsulting.com/photo-essay-october-2015/.

Steve,
I agree with your advice for grounding electronic equipment, but no one ever says which ground. Personally, I ground radios and electronics to my bonding ground which is connected directly to the ocean via a ground plate on the outside of the keel. Is this what you mean or do you advise the ground to be battery negative distribution bus?
I did experience a lightning strike in Oyster Bay many years ago. The Oyster Bay Marine launch driver told me the boat two moorings away from me took a direct hit and I should check out my boat. All seemed perfect when I went aboard but a few minutes into the sail I realized several electronic devices had blown out. With no apparent evidence where the hit occurred I assumed it came in through the water via the ground connections or maybe a side flash from the other boat.
Thanks for the article. Always learning something new.
Regards,
Rich Cassano

Hi Steve,
Your grounding photo essay of October 2015 was great, but missed one point. I've had lots of conflicting advice about what wire goes to that grounding lug, from the green wire connecting all my thru hulls and zincs, to the battery negative. Can you provide the right answer?
Thanks
Jonathan Quigley

Rich and Jonathan:
It’s important to remember that all of the vessel’s ground systems, bonding, DC negative, AC safety ground and electronics, are common and should be at the same potential. Therefore, it technically should not matter where your electronic gear is grounded, provided sound, low resistance connections are made. Having said that, my practice is to dedicate a bus bar at the helm area, to electronic component bonding, via a dedicated bus bar. That bus bar is then connected to the remainder of the vessel’s grounding system, which again should be common with all of the vessel’s grounding and bonding systems. The attached diagram, from the National Marine Electronics Association (NMEA) manual, details this guideline.
Electronics installers who belong to the NMEA, which should be considered a prerequisite for electronics techs, have access to this invaluable manual.

Steve,

I need some advice on water hose, PSI, etc.

We have had two failures of the 1” hose going from the water pump manifold to the cold water distribution manifold. The first failure was the original hose installed by the builder. There was a small hole, behind the port panel which is at the back of the shelf with the second water maker and water pump. While we were sleeping, our entire fresh water tank drained down to zero.


TEC K7130 POLYMIR


KURIYAMA

We were near Los Suenos, Costa Rica, and they replaced the hose (about a month and a half ago) with this hose:

This sprung a leak last evening, and we dropped 150 gallons in a very short time before noticing the issue.

Please help me understand PSI. The Headhunter pump specs say its maximum output is 66 PSI. Does this number change/increase as it is pushed into this 1” pipe?

It seems that we need to source a higher quality/higher PSI hose than what we have.

And, I am concerned that there is lots of this same 1” Kuriyama hose in the bow which should all be replaced with something higher quality.

And, I’m reviewing my hose situation—I have next to nothing on board in terms of spares.

What would you recommend I carry onboard for spare hose?

Thanks,

Ann Evans

Dear Ann:

Your potable water system leaks are disconcerting, and a bit curious. While the original hose appeared to be rated for the system’s working pressure, it never the less failed.

There are a few possibilities. The maximum working pressure of the hose is rated at 70°F. When hotter, the working pressure will be lower. The water pressure is not affected by restrictions per se, that will have no effect.

While unlikely, it’s possible the Headhunter pump is malfunctioning, its pressure regulating mechanism may have malfunctioned, causing it to cycle until a higher pressure is reached. If you have a pressure gauge plumbed into the system, or can obtain and plumb one into any part of the potable water system, which would confirm if this is the problem. Does the water pressure seem higher? You’d want to know the answer to this question before replacing the hose. By the way, on your vessel there is a pressure regulator after this hose, at the manifold.

I don’t know the pressure rating for the replacement hose. It appears to be this, http://kuriyama.thomasnet.com/viewitems/food-grade-10/tatic-di

ssipative-material-handling-hose-1 which is only rated to 50 psi, making its failure predictable.

It's possible the first failed hose section was simply defective, or it had been damaged upon installation, and the second hose was simply under-rated.

My choice for hose in these applications would be either a proprietary polyethylene potable water tubing, such as Uponor PEX http://www.uponor-usa.com/Residential-Plumbing/Homeowner/PEX-Explained.aspx (this requires some special tools for installation), or Sea Tech PEX tubing http://www.seatechinc.com/Products/Inch_Size_Fittings_Manifolds_Valves_and_Tubing/Tubing (no special tools required).

Alternatively, you could use a high quality, appropriately rated potable water hose, a direct replacement of sorts. Options include Trident #161 http://www.tridentmarine.com/stage/potable.htm and Headhunter Banzai Pipeline hose http://headhunterincstore.com/Banzai-Pipeline-1-inch-25mm-I.D./M/B00286G1NY.htm The latter is super heavy duty, wire and filament reinforced, NSF 61 compliant (any hose used for potable water should be NSF 61, FDA or "Potable Water" rated and marked accordingly) it's the Cadillac of potable water hose, it can even be used for raw water, and has a pressure rating of 225 psi.

Spare hose should concentrate on key systems such as fuel, raw, potable and black water, as well as hydraulics.

Your boat is equipped with Parker FR221 armored fuel hose in a variety of sizes. This hose is virtually failure proof, so carrying spare lengthy probably isn't critical. Leaks are rare, other than when it was damaged by some other gear. It also uses proprietary end fittings. While these can be installed in the field, they are much more complex and time

consuming to install than a simple hose clamp, and you need an installation mandrel assemble them.

Beyond that, I would carry a selection of diameters of J2006R-rated raw water hose, in common sizes such as ¾, 1” and 1.5”, in lengths of 8 feet.

Your vessel is equipped with an extensive hydraulic system, for stabilizers, thrusters, windlass and steering. Failures of these hoses are pretty rare. If you want to be able to repair or replace them, that “kit” has to be pretty substantial, with pre-made lengths in various sizes, made up by a hydraulic hose shop. You might wish to keep high pressure caps and plugs in stock so you can plug or cap off a hose that has failed. These need to be steel rather than bronze or brass.

Your water plumbing uses polyethylene tubing. Keep a few lengths of about 6 feet in all the diameters you have, which shouldn’t be too many. If I recall, yours is the Uponor brand, which requires a special expansion tool for installation. However, you can effect temporary repairs with hose clamps and short sections of clear reinforced PVC hose.

Then you need a “junk drawer” of sorts for hoses, a variety of diameters of clear reinforced PVC hose for small repairs, chafe protection needs etc, everything from ½” through 1.5” in lengths of about 3-4 feet.

With this spare hose store, you should be able to deal with most problems.

I wrote an article on spare parts, click here and here, you may find it useful as well.