June 2026 Newsletter – Avoiding Heat Shrink Butt Splice Woes

Photo Essay: Avoiding Heat Shrink Butt Splice Woes

Butt splices are ubiquitous, the average 50-foot vessel contains scores, perhaps even a hundred or more of them. Ideally, few butt splices would be required for a well-designed, new build, however, inevitably, there will be places where butt splices are unavoidable.

In cases where these are in wet locations, bilge pumps, chain lockers and cockpits for instance, it's best to use the self-sealing, heat shrink variety. While this appears straight forward on the face of it, there is a wrinkle associated with these splicing devices. In many cases, the crimping tool's dies are slightly sharp; that's typically not an issue for a common crimp terminal, however, the insulation used on heat shrink butt splices is more supple than the average PVC or Nylon insulation, and as such it is susceptible to being pierced by a sharp die. In other cases, the incorrect die is used, one designed for uninsulated crimps; these are far more aggressive than those used with insulated terminals.

In the accompanying image, of a yet to be heated heated heat shrink butt splice, it's possible to see an example of pierced insulation, the result of using a crimping die designed for uninsulated terminals. The metallic barrel is visible through the void, and if exposed to water, it will corrode. When using heat shrink butt splices, be sure to use the correct crimping die, and one whose design incorporates rounded,

smooth edges. More on crimp terminal installation here.

Ask Steve

Please submit questions for the Ask Steve column to asksteve@stevedmarine.com.

Hello Steve,

I have a 50 ft sailing vessel that originally came with a Westerbeke 63 four (2002), that I'm going to replace. I've been looking at the following: Nanni (N4.80), Beta 60, and Yanmar (4JH80); I think the dealers for each install are very reputable and would do a good job. I plan to cruise the boat in the Bahamas, Caribbean, and Mediterranean.

That all said, I'm struggling with what makes the most sense. The Yanmar concerns me a bit with its Common Rail technology, especially with the clean fuel requirements and difficulty to do any real troubleshooting if there's a problem BUT you do have name brand recognition, parts availability and Yanmar dealers/mechs all over the world (albeit expensive). The Beta seems pretty straightforward and people seem to love these engines for their simplicity and ability to work on them yourself. Nanni is kind of in the middle for me with its turbo/intercooler plugged into this model. I've heard people say Nannis are good engines but parts are difficult to get.

Lastly, I do plan to upgrade the alternator (going lithium) and would like the engine to stay under warranty. So, to the question: what engine would you pick (or rank order) based off your experience, and considering reliability, serviceability, and potential resale value of the boat down the road?

One last fun fact, I don't consider myself super handy and

doubt I'll be diving too deep into the mechanics if it's beyond the basics (oil filter changes, impellers, etc.).

Thank you in advance.

Regards,

Matt Schramm

Matt:

I'm afraid I can't tell you which engine is best, at least not here in the Ask Steve column. However, I can say that common rail diesel engines have been used in the recreational marine market for over 25 years, with near-universal success, they are both efficient and reliable, and from a reputable manufacturer like Yanmar I'd have no concerns. Turbos and after coolers do add complexity, and if the after cooler is seawater cooled, that becomes a very important maintenance item, as a corrosion-induced failure, with the resultant ingestion of seawater, can destroy the engine.

You say you think the dealers for each are reputable and would do a good job. Have you tested that, have you called or emailed each with technical questions, to see how responsive they are, how well will they support the repower project, will they provide guidance on propeller selection, and will they inspect the installation when complete to ensure it is fully compliant with their installation requirements? Is technical literature available, technical service (not just the owner's manual) and parts manuals?

I find that most repowers go awry because of installation flaws rather than from issues with the engine itself. It is critical to make certain all of the manufacturer's guidance is followed, particularly where exhaust system design is concerned. While you are at it, check on the cost and availability of common parts from each of the manufacturers, raw water pumps, exhaust elbows (if you are using one of their

off the shelf versions, and not one that is custom made), and fuel lift pumps for instance. If using the engine manufacturer's exhaust elbow, what is it made from, cast iron (short-lived), stainless steel, or a more exotic alloy? Also, ask what the limitation is for each of these engines regarding maximum alternator size/current. Do all of these engines use serpentine belts, which is generally a plus, as they are less likely to slip, most are self-tensioning, and they can usually handle added alternator load. Get all of your answers to these questions in writing, and ideally with technical literature back up where appropriate.

You might find these two articles of interest, please click here and here.

Hi Steve,

First, thank you profoundly for your dedication to helping us all with the practicalities and technicalities of maintaining and improving our boats. Please continue this unique and valuable service.

My question relates to flushing the raw water-cooling circuit in my twin Cummins 6BTA engines powering my Westcoast 46 trawler. I make a habit of doing this if I intend to leave the boat unused for more than a couple of weeks. And I do not use the boat during our winter in the moderate Pacific Northwest climate so the engines remain inert for 4 to 6 months during this time. I 'bump' the engines periodically during this time to move the impellers and valve gear. And I keep heat in the engine room to maintain the temperature between 5 to 12 degrees Celsius to prevent freezing. Our dock water is turned off during the winter so I am unable to run the engines and then re-flush them.

However, I am questioning whether this is a good idea. Would it be better for the engines to be run up to operating

temperature, say monthly, and left with salt water in the cooling circuit in between?

I would value your expert advice on this matter.

Best wishes

Chris Sherlock

Chris:

Thank you for your comments, it’s always nice to know when something I’ve written has resonated with readers.

Your initial instincts are correct. The problem with the periodic dockside run up is, without any load, a diesel engine will not generate enough heat to cook off moisture that accumulates in the crankcase from normal piston ring blow by. Unless you could get the oil (far more important than the coolant) and exhaust up to loaded operating temperature, then this “cold” running will do little good.

Having said that, if the engines are to remain idle, with the exception of the occasional bump over, I would add a few steps. If you haven’t already done so, stabilize the fuel in the tanks, and then run all engines long enough to circulate this through them and all filters. I’m partial to annual impeller replacement, the cost savings of eking out two or three seasons just isn’t worth the risk in my opinion. Doing this will also allow you to inspect the inside of the cover plate and the cam for wear. Finally, rather than fresh water, you might consider running non-toxic anti-freeze through your engine’s raw water circuits, as it includes rust inhibitors, and it won’t have any negative effects on pencil zincs. Zinc, when exposed to fresh water, will develop a coating that essentially causes it to go dormant.

Steve,

I purchased a 2004 Sabre 36 last June with two Yanmar 6LYP-STP 370hp engines with 450 hours on them. On the survey I was impressed with oil pressure, 80 psi at 2500 rpm on both. Several months ago, one engine started pegging the oil pressure meters, and I found pressures of 88 psi at 1500 rpm using a mechanical gauge. We changed the oil and oil filters twice and have Delo 15-40 in there, which is Yanmar recommended, but no joy.

I am now considering changing the oil pressure relief valve and (sacre bleu!) the oil pump, which has some kind of relief valve in it.

Changing the oil pump would mean dropping the pan, which means lifting the engine (double sacre bleu).

Any ideas appreciated.

Bruce Adornato

Bruce:

For this engine, 75-82 psi is typical, when running 15w40, at high rpm or WOT. Pegging the gauge at 1,500 rpm is unusual. Are you using Yanmar OEM filters or a high-quality equivalent (I’m partial to WIX and Donaldson)?

Here are a few things you can check…

- Check the oil pressure relief valve in the housing on the side of the block (this is tough to access, since it is nestled in behind the fuel pump, charge air cooler, and oil cooler).
- Check the oil cooler (if this hasn’t been cleaned or serviced, I’d recommend servicing it in case there is a restriction somewhere inside it that can’t be seen).
- Check the flexible oil lines between oil pressure regulator, oil cooler, and oil filter housing (if one of them has collapsed internally, it may be causing a

restriction that is raising the pressure in the system).