

June 2017 Newsletter

Text and photos by Steve D'Antonio

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Photo Essay: Battery Lugs

Reliably connecting batteries to their associated cables sounds easy. In practice, however, it can be fraught with potential for failure. The preferred approach utilizes batteries that rely on 'flag terminals', which are essentially square or rectangular plates that protrude from the top of the battery, to which ring terminals are attached using a through bolt. Flags are either lead or copper, they are robust and reliable. Smaller batteries sometimes use a hex head cap screw post, which is also desirable.

In other cases, however, batteries use the familiar cylindrical 'automotive' post, onto which a lug or adapter is clamped. Posts, which are typically lead, are imperfect in that the lugs attached to them are, thanks to the metal's malleability, prone to loosening.

Lugs are available in several different designs and in a range of quality. Those that use a through bolt, compression type arrangement are the most reliable (you can see an example in [this link](#), in the third image down).

If you walk into your local auto parts store you are likely to see a row of inexpensive replacement battery lugs for sale, attached to a single sheet of retail cardboard, often on display somewhere near the counter. Typically, these utilize a lead semicircle clamp, into which a stud has been cast; it serves as the attachment point for the battery cable ring terminal(s). Under light load, these may be reliable, however, attach one or more heavy, stiff marine battery cables

to them and they are likely to fail, which is precisely what's happened to the one shown in the accompanying image. This is a failure mode I've encountered on several occasions.

Choose batteries that utilize flag or threaded fastener terminals. For batteries equipped with posts, which by necessity require a lug, avoid the cast in place stud variety. While they may be suitable for light duty automotive use, they have no place in marine applications, particularly with large gauge cables.

Ask Steve

Steve,

I love your writing! I was recently given a half gallon of Rotella T6 synthetic 5W-40 Diesel engine oil. The gentleman who gave it to me said I could mix synthetic with other oils? What's your thought on mixing that with either Delo SAE30 or 15W-40? Any help would be appreciated.

Keep up the great work!

Cameron Vawter

Cameron:

Mixing oil is typically frowned upon by lubrication professionals. However, if the two oils are of the same weight or viscosity, i.e. both are 5W-40, and the oil to be added carries the appropriate ratings for your engine, then there's little likelihood of harm being one. In your case the two oils are not of the same weight, and I suspect your engine manufacturer does not approve the use of 5W-40 oil. Therefore, I wouldn't use the gift oil in this engine.

Steve,

I have a Searay 400 sedan with gas engines. I noticed this weekend the port engine shaft seal has a small leak on the bellows. Does the boat have to be out of the water to repair? And also can I replace bellows without replacing complete seal setup?

Thanks

Curt Foltz

Curt:

Because you mention a bellows my assumption is this is a PSS PYI dripless shaft seal, if so, the following is applicable. If the bellows itself is leaking, that's serious and should be corrected immediately. Regardless of its condition, I recommend replacing the bellows every six years, if you are beyond that point, it's time no matter the condition.

If the leak is occurring at the seal, at the interface between the stainless steel rotor and the carbon graphite stator, then the cause should be ascertained before any parts are replaced. If the tension is too high or low, that can cause a leak, that should be checked, or if the water supply is or has been interrupted, the seal can overheat and leak. That too should be checked.

Replacement of the bellows or rotor require the shaft to be separated from the coupling, and the vessel needs to be hauled to replace any of these components. If the set-up is over five years old, unless they have very low hours and are in pristine condition, I would strongly recommend replacing all of the parts, rather than just the bellows. The labor is the roughly the same and you wouldn't want to be faced with pulling the shaft again in a year or two if a failure occurred. Additionally, installing a new bellows and carbon seal with an old rotor is not recommended.

When these parts are replaced, make absolutely certain you, or

whomever you entrust with this task, follows the installation instructions to the letter. If you rely on someone else to do this, you should read and familiarize yourself with the instructions to ensure they are being followed. Many of the dripless stuffing boxes I encounter are installed incorrectly, leading to leaks or premature failure.

Steve,

Phosphoric acid has been suggested to clear a/c lines of barnacles. Do you know anything about it or is Barnacle Buster the only way to go.

Marcia Low

Marcia:

Phosphoric acid has been used to descale raw water plumbing and marine cooling systems for some time. In short, it does work, however, I prefer Barnacle Buster for a few reasons. Primarily because Barnacle Buster is proven, it works well and is specifically designed for marine cooling systems. When used in accordance with the manufacturer's instructions, it's guaranteed not to harm the systems in which it's used; I've used it for years with very good results. The dilution rate of phosphoric acid, on the other hand, hasn't been established by any one manufacturer, making that a bit of a guess. The primary difference is cost, and in my opinion that difference isn't nearly enough to warrant the risk of using phosphoric acid. Barnacle Buster, used with the manufacturer's purpose made circulating pump, works extremely well on air-conditioning, engine, generator and other system heat exchangers. If you are looking to economize you could make your own circulator pump system. Whichever approach you decide to take, be sure to follow all safety precautions, even the "safe" products are acid, and you should therefore wear eye and skin protection when working with them.

Hi Steve,

The bilge pump article was excellent: I have already flagged it on the Valiant site as the issue is being discussed presently. Always a pleasure to hear your thoughts and suggestions so well expressed

Pump activation counters can provide valuable information, especially for boats which are for periods unoccupied (an owner can tell at a glance how active his/her bilge pumping has needed to be and compare to prior history). For all boats, however, I would suggest an alarm which sounds every time the "everyday" bilge pump is activated (my larger "emergency/flooding" pump is manually activated). For Alchemy and many, maybe most, vessels any bilge pump activation is cause to check the cause. I do not like to count on my memory to check regularly a bilge pump activation counter: far rather be provoked into awareness by an un-ignorable alarm.

I loved the aside about 1 1/8 inch exits on the pumps. I have wondered/been annoyed about their existence for years. What a world we live in when companies make decisions which make the buyers life more difficult solely to make more \$\$\$.

Lastly, I thought the Whale Gulper design was especially less sensitive to debris as it was designed (or used often as) in fishing boat tanks to circulate water which may have fish scales etc. in it. In any case, I chose it years ago to pump out my galley sink water containing much debris from dish/pots washing/cooking etc. and have had good luck.

My best,

Dick Stevenson

Dick:

Thank you for sharing these valuable thoughts, particularly

from someone with as much cruising experience as you. The idea about triggering an audible alarm every time the standard bilge pumps operates is intriguing, and one of which I approve. As you say, these days, unless the vessel is timber or equipped with a conventional stuffing box, most bilges are pretty dry, and thus if the pump runs there's probably something wrong. I too am a fan of the Whale diaphragm pump's ability to digest debris.