

August 2020 Newsletter

Text and photos © 2020 Steve D'Antonio Marine Consulting, Inc.

Photo Essay: Tools are Your Good Friends

"Tools are your good friends", those are the opening words of the US Navy's "Use of Tools" manual, first printed in 1945. It goes on to say, "Why? Because they make it possible for you to do hundreds of jobs that you couldn't do with your own hands. They are extra hands-and eyes-which give you countless new skills. If you treat the tools you use as FRIENDS, they'll always be ready to help you when you need them most". Truer words were never written.

I'll confess, and this probably comes as no surprise to readers; I'm a hopeless lover of tools of all sorts, I have a shop full of them, especially tools that are well designed, and well-made. There's a certain satisfaction to be gained from having close at hand, and being able to properly use, the right, high quality tool to complete a job, from ball peen hammers and combination wrenches, to soldering irons and multimeters, I have an affection for all of them.

Several years ago, while attending the Dusseldorf Boat Show, I was introduced to the Wera (pronounced Veera) line of tools. Wera is a German tool manufacturer that specializes in innovative tools for specialty work. My first Wera tool was an ice-hardened stainless steel, interchangeable bit screw driver set (among other things it has a selection of square bits, especially useful to me, as many boat builders use square or "Robertson" drive screws), housed in a handy, book fold type pouch. I was hooked from that moment on and have since invested in several other WERA tool kits, the latest being the Tool-Check Plus, shown here. It includes screw driver and

ratchet handles, a selection of 23 bits and seven sockets (available in metric and imperial, I have a set of each).

WERA tools aren't inexpensive, but good tools never are. What they are is durable, functional, versatile, and ideal for my traveling vessel inspection tool bag, where space and weight reduction are always at a premium. They represent nothing less than excellent value for one's money.

I have no financial or other connection with WERA, I'm simply a satisfied customer, and I purchased the kit shown here.

Ask Steve

Hi Steve,

I'm an older guy, long time sailor, who just switched and bought a 1983 30' Atlantic/Prairie trawler.

My question to you is about a battery bank I have on the boat that is isolated from all but the Heart Interface Freedom 25 inverter/charger. The inverter charges this bank only when we are plugged into shore power. When we are away from shore power, it gives us AC power. But this battery bank does not get a charge when we run the engine. I haven't used the boat too much yet, but I think it would be good to be able to charge this bank somehow when we run the engine. The engine is a 165HP Volvo TAMD40B with a 35 Amp. (I think) alternator that is self-regulating (I think). I can't find a voltage regulator anywhere on the boat. All the other battery banks (I have 3: engine start, house, & one forward for the bow thruster) are charged by a Statpower 20 True Charge, when plugged into AC, & the engine alternator when it's running. I have 1 - 4 position (1-2-both-off) battery switch.

1. What would be the best product (Battery combiner?) for me

to use for this?

2. Should I hook it up to draw from the house or engine start bank?

Another related question...

3. In an emergency, could I use the AC power from the Inverter to charge the engine start bank?

I find your articles very interesting and useful.

Thank you,

Bruce Hasnas

Bruce:

Stand-alone battery banks for inverters are frowned upon for a variety of reasons. Primarily, there's simply no advantage to having a house and inverter bank, a single larger house bank is preferred, and over the life of the bank it's likely you'll derive more amp hours from it, as opposed to two district banks.

Having said that, if the house and inverter banks are of different ages, then at this point I would not recommend connecting them. Ideally, however, at some point, this should become one bank.

You don't say what type of batteries you have, however, if they are AGM or gel, they would benefit from a multi-stage regulator. And, the 35 amp stock alternator, while better than nothing, sounds undersized (and it can't be externally regulated). If, on the other hand, you simply want to derive some benefit from it while underway, rather than looking for serious recharging of a deeply discharged bank, it won't hurt to use its output for the purpose charging the inverter (soon to be the house) bank.

There are several ways to share charge output from an alternator. You could use one of the [Blue Sea Systems Automatic Charge Relays](#) connected between the house and inverter banks. There are others, including Magnum Energy's SBC, Balmar's DuoCharge or a Mastervolt DC-DC converter.

As an aside, four battery banks, inverter, house, thruster and start, is far too many for a vessel of this size (it's too many for a vessel twice this size). You only need a house and start, everything except the engine could operate from a properly sized and cabled house bank.

If I understand correctly, you want to know if you can use the inverter's AC output to charge the start bank. In short, no, AC power cannot be used to charge a battery. You could use the inverter to operate a battery charger, which could then be used to charge the start battery. It would be inefficient, but it would work for as long as the inverter bank held a charge. However, it would be far easier and more efficient to simply use one of the charge device like those mentioned above, the SBC, DuoCharge or DC-DC converter.

Hi Steve,

Your June 2017 [article](#) on Alternator Charge Regulation was just excellent. I've been running an externally regulated stock alternator, and even if I throttle-down the maximum charging rate by adjusting the Balmar regulator down to 70%, the alternators still don't last.

My existing stock alternator is rated at 130 amps, so in regular use it is putting out about 75 amps. And it has to put out that all day while we are cruising, to keep up with the house demand. The main house bank is an 800 amp bank, and actually I am happy with the charging rate from the existing alternator. I know that does not follow your 25% rule, but for our style of cruising it works just fine. However, I do

want to change the alternator, and put a "high capacity, continuous duty" alternator, something which will have a longer life. And I want to do that without having to make modifications to the mounting. The current alternator is on a Detroit 8- v92, and it is driven by double 3/8 belts; the alternator has a double mounting foot.

Here's the question: I've spent a good deal of time looking at alternators, both on the Balmar and Leece Neville sites, and it seems impossible to tell which of their alternators (or that of any other brand) are truly "high capacity, continuous duty" alternators.

The Balmar site Series 9 Large Frame lists those alternators as "Mid Duty." The XL Frame lists those as "Heavy Duty Cycle".

The Leece- Neville site lists their alternators as "Heavy Duty." It is all very confusing, and in a way deceptive.

So Steve – what specific brands & models of alternators do you feel fit the definition of high capacity & continuous duty?

Thanks for your excellent work, and superb articles and advice.

Greg Allard

Greg:

Thanks for posing an excellent question.

Broadly speaking, the larger an alternator's case is, the more likely it is to be capable of continuous high output. Heat dissipation is the issue, these big units are better able to dissipate heat when working hard.

Having said that, for retrofits there are often size and mounting foot limitations, which must be taken into account. This becomes your starting point. Given enough space, larger

cases are preferred. For Leece Neville/Prestolite alternators, which are reasonably priced, and with which I've had very good success, you might peruse [this site](#). You'll see the headings for each category, which include "Fire Truck and Emergency Vehicles". These alternators are typically designed for extreme working conditions of high, continuous output, high ambient temperature and the need for high reliability.

Balmar (now owned by CDI Electronics) of course is well-known for their broad selection of high output alternators as well as their easy to use website. Again, the size and mounting options will likely drive your decision. Where possible select the larger case size. Balmar's website is user-friendly and geared toward boat owners in making a selection.

Based on your description, I would classify your application as mid-duty, making the Balmar 9 series suitable. The XL series (some of these, such as this one, are rebranded Leece Nevilles), while formidable, is probably over-kill for your goals.

Steve,

Interesting, (as always!) [article](#). One question:

Although now in a trawler, once upon a time I repowered my sailboat. The engine was the lowest point in the hot water system. Next "up" was the hot water tank (water being heated by the engine). I wanted to install an expansion tank, thought it needed to be above both hot water tank and engine. Otherwise, how does one fill the whole system? The yard thought otherwise. But, my boat...my way. They had no problem doing it my way. Just said that it was unnecessary. But they couldn't answer how when filling the system, they could get the coolant to flow "uphill" to avoid leaving an airlock in the hw tank.

I understand that, without a hot water tank, the expansion tank can be at any height relative to the engine. One just fills at the higher fill point, the higher cap.

Which brings up another point... the ratings of the two caps to each other...

Hold course and speed,

Larry Moynihan

Larry:

Remote expansion tanks; a very important subject. In your sailboat case you were of course correct, the fill point must be the highest in the system, necessitating a remote expansion tank.

The pressure cap on the remote tank would be the original cap, the one supplied with the engine. The one installed on the engine would then be increased to the highest available, thereby ensuring it essentially never opens.