

Ask Steve – September 2015

Hello Steve,

I'm a long time reader, the first time was with PassageMaker about 14 years ago. I have a question, can I put a shortened shaft bearing (1 ½" long) right after the stuffing box? I got it there to start the alignment, but now I wonder if I could keep it there...

Thank you very much,

Gilles Philippin

Gilles:

It's not uncommon to use a half-length shaft bearing at the forward end of the shaft log, just aft of the stuffing box. Whether it's needed or not is another matter. While there are mathematical calculations to determine where shaft supports are needed, the industry rule of thumb calls for bearings every forty shaft diameters. Therefore, a two inch diameter shaft should be supported roughly every eighty inches.

If your shaft support already meets that criteria, and you have no shaft whip issues, then I wouldn't add the bearing. Bearings installed in this location often require supplemental water injection for lubrication, and cooling and they can impede water flow to the stuffing box, causing it to overheat. Additionally, alignment becomes more challenging as the shaft now has to be aligned with the engine and two bearings. Slight misalignment between a shaft and the aft bearing can often be tolerated, while even slight misalignment with a forward bearing represents a more acute problem, it can lead to bearing overheating and shaft wear.

Steve,

I always enjoy reading your well-written and informative articles. In the Feb/March Professional Boatbuilder articles on bilge pump systems you provided a very thorough discussion of 12-volt systems, but did not address the use of 110-volt A/C power.

During his pre-purchase survey of the boat, a well-known and highly regarded surveyor here in Annapolis advised me to install a high capacity 115-volt pump in my 42' Grand Banks Motoryacht, the reasoning being that an 8kw genset can provide a significant margin of safety and reduce reliance on batteries. I'd be very interested in your opinion on this approach.

Thanks in advance.

Regards,

Robert Mullins

Bob:

The option of using 120 volts to power bilge pumps is a viable one under some circumstances, they are common aboard vessels over 65-feet. Several major bilge pump manufacturer offer 120 volt models, some of which come equipped with a standard receptacle type plug.

There is, however, the obvious risk of electrocution for such an installation, necessitating that the pump be wired with the benefit of a GFCI receptacle or circuit breaker. That alone would not be a reason to discard this concept. However, the logic behind using a 120 volt pump, as a preference over a DC model, aboard a small recreational vessel of this sort, is one

I question. Furthermore, if the GFCI receptacle were to trip, as they so often do, while you were not aboard, the pump would not work.

While battery power, and a charge source for it, the main engine's alternator, is almost certainly always available aboard a vessel like yours, a 120 volt pump relies on a power source whose reliability far is far from certain and for which there is no reserve, particularly in a flooding scenario. If the generator doesn't start, the pump won't work, period, however, if the main engine or generator is operational, a charge source for the batteries, and thereby a DC-powered pump, remains available, affording the DC option greater redundancy and flexibility. The range of AC-powered pumps is small, while scores of DC pump styles and sizes are available. Furthermore, while dockside, should shore power fail, the 120 volt pump becomes useless, while a DC pump would operate from the batteries for some time. Finally, there's no difference in capacity between the two, DC pumps are available in the same size and capacity range of comparably sized AC pumps. Thus, I see no advantage, and several disadvantages, to the AC-pump approach.

Steve,

Thanks for your thoughts. I should have been clearer...he was recommending the AC pump as an adjunct to, not a replacement for, the DC bilge pumps. Your observation re the need for GFCI protection is well taken.

Thanks again!

Bob

Bob:

I see, thanks for the clarification.

I still would opt for 12 volts, same capacity, same amount of

wiring except with primary and reserve energy sources. If the gen isn't running you have it, if the gen is running you have it as well. I just can't come up with a good argument for an emergency pump that relies on one piece of gear to operate.

Steve,

I (finally!) see your point...for some reason I was under the impression that AC pumps had significantly higher capacity, but if that's not the case then there appears to be little advantage.

I will stop measuring my bilge for a place to put the AC pump!

Thanks again for your prompt and well-articulated reply.

Bob

Bob:

Unless the surveyor has something else in mind, I'm missing the advantage...

- Rule offers one, an 1800 gph 120 volt model
<http://store.waterpumpsupply.com/rucoaususuwa.html>
 - It's 7.75" x 4.25". It weighs 8 lbs. \$160.
- They make a 2000 gph 12 volt model
<http://store.waterpumpsupply.com/runo12vodcbi5.html>
 - It's 6" x 4.25" It weighs 2 lbs. 15 oz. \$99
- For a crash pump I'd go even bigger, this 3700 gph 12 volt pumps is still pretty compact
<http://store.waterpumpsupply.com/runo12vodcbi6.html>

Steve,

We're in the yard right now and getting conflicting answers about certain things.

In general (I know each brand of paint is different), have you seen a huge difference in boats that have acid-etched and primed their bronze strainers, rudder brackets and struts compared to boats that just cleaned the bronze well and then put on bottom paint?

Not sure if it's worth the time and expense of priming when we have to bottom paint every year to year and one-half down here in the tropics anyway.

Thanks,

Walter Conner

Walter:

Most definitely, conventional anti-fouling paint simply will not adhere well to most underwater metals, particularly where there is turbulence. Areas that should be primed include hull strainers, struts, rudder logs, shafts and props (shafts and props are better served by a proprietary product such as PropSpeed). Through hulls seem to retain paint better and thus don't need the primer treatment. For any coatings, preparation is critical, metals should be cleaned until bright, and then profiled to provide the primer with "tooth" to which it can adhere. Before coatings are applied surfaces should be thoroughly de-waxed using a solvent such as mineral spirits or 3M General Purpose Adhesive Remover. I wrote a column on the subject of running gear anti-fouling, you might find [it](http://www.passagemaker.com/channels/anti-fouling-tlc-for-your-running-gear/) useful:
<http://www.passagemaker.com/channels/anti-fouling-tlc-for-your-running-gear/>.

The primer application is not required each and every time paint is applied, it should last for years, especially if you are using an ablative anti-fouling paint. Most important of

all, when using a primer, make certain the anti-fouling paint is from the same manufacturer (Interlux Micron Ultra and Interprotect 2000E for instance), and make certain the anti-foulant is applied within the primer's chemical adhesion window.