

# Photo Essay – April 2015

## Bilge Pump Plumbing

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'A menagerie of disparate plumbing components' would be an apt caption for this photo. What, however, is really going on here, and what lessons are there to be learned?

I hung my head into this bilge and looked at this arrangement for some time before I was able to decipher the intent of its installer(s). It is cluttered and fouled with oil, however, try to see past that detail. If you look carefully, and follow the clear PVC hoses, you can see a T fitting slightly to the left of the center of the image. Below the T fitting a bilge pump is visible. Slightly above and to the right of the T fitting you can see a hint of red, the body of a second identical bilge pump. Both pumps are plumbed to the T fitting, and from there, eventually, via more clear hose, overboard. Buried in there are a couple of check valves as well.

Bilge pumps represent a first line of defense against flooding, albeit not for significant flooding and not for very long. For the most part, even the most robust submersible electric bilge pumps won't keep up with a serious ingress of water. A good bilge pump will remove incidental water accumulation, as well as buying a vessel's crew time, a few minutes may be all that's needed, to find and deal with a real flooding. In short, don't expect too much of your bilge pumps. That, however, doesn't mean they are unimportant or unworthy of the proper design and installation attention.

This image illustrates a few serious, always to be avoided flaws. Foremost, discharge plumbing from multiple pumps should never be paralleled, doing so simply reduces, often by more than half, a pump's capacity, diminishing the value of a dual pump installation. Additionally, check valves should never be relied upon to prevent back flow through bilge pumps (this is an ABYC compliance requirement). Pumps that are plumbed into a vessel's common overboard manifold may also face this challenge.

That's not to say check valves are prohibited all together, one simply needs to understand the risks and drawbacks (the simple presence of a check valve can reduce flow by up to 50%). Using a check valve to reduce short cycling of pumps located in low volume bilge wells is acceptable, with the noted caveats. Personally, because of the reduction in flow they impart, I avoid using check valves in bilge pump plumbing unless absolutely unavoidable. Bilge pump check valves are also notorious for lodging in the open or closed position. When open, they simply can't check the flow of water, and when closed, that's obvious enough; pumps simply agitate water, which can be misleading as it gives the appearance of pumping if one doesn't look for the telltale overboard discharge, rather than sending it overboard. Finally, neither of these pumps is properly secured, they are retained by their plumbing alone.

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