

DIY

boat owner

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A-Z of PLUMBING FUEL SYSTEMS

A properly designed fuel system and a few simple precautions go a long way in preventing engine failure and major problems.

[BY LARRY BLAIS]

Diesel engines require an uninterrupted supply of clean fuel. Without it, they will not run well, or for very long.

For starters, the fuel that you pump into your tank should be as fresh and pure as possible. Always buy fuel from a source that sells a lot of it. If the fuel is not used right away, add a fuel stabilizer to unused fuel that will be stored in your tank for a long time. When taking on fuel from a questionable source, use a multi-stage filter funnel to help detect contamination. Stop filling and go to another supplier if you suspect poor quality fuel.

Contaminated diesel fuel can quickly clog fuel filters and damage expensive engine injection system

components. Dirt, corrosion by-products and other debris can come from the air or from the fuel dealer's piping and storage tanks. Your own boat's tank may be corroding internally, adding to the mix. Water in fuel usually comes from condensation but a leaky fuel tank deck fill cap or a poorly positioned tank vent (especially in sailboats) can also be the source. Microorganisms like bacteria and fungus are often airborne and, once they get into the tank, they thrive at the boundary between the fuel and any water in the tank, creating a slimy sludge. Add biocides to kill these organisms. **If you want to avoid using these toxic chemicals, magnetic flux technology, such as Algae X, may be the answer but fuel must be flowing through these units to be effective.** When sludge has built up in the tank, fuel polishing by a professional with special filtration equipment may be required to remove it and return the diesel to a usable condition.

System Maintenance

Low sulfur diesel fuels and some winter blends may lack the lubricity needed to keep internal injection parts properly lubricated. Check with your engine's manufacturer to see if a lubricant additive should be used. Never use anything containing alcohol (e.g. methanol), as it damages

TIP CALCULATING FUEL FLOW

The general rule of thumb for a 4-cycle diesel engine is:

$$* \text{Horsepower} \times 0.18 = \text{Gallons per hour fuel flow}$$

*This could be much more, depending on the engine. Check your service manual for specifications. — LB

fuel system components. Gasoline in a diesel fuel system can be disastrous on many levels, including the high risk of explosion in a non-ignition protected engine space. The fuel fill should be clearly labeled "Diesel," not just "Fuel" and certainly not



Dual head (duplex) filter arrays allow one filter to be serviced while continuing to operate through the other. Note the sender/switch teed into the vacuum gauge. It's wired to an indicator on the bridge.

