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Clean Up Your Act!

For clean fuel you need a clean tank... Peter Caplen discusses the best way to achieve this.

Fuel problems are the most common cause of breakdowns when at sea. The blame for this can usually be placed directly at the boatbuilder's feet. Fuel tanks are often barely accessible and many have no drain cock, while inspection hatches to allow proper cleaning are even rarer. I have always been a firm believer in keeping my fuel tank clean and free from water in the bottom of the tank as the first and most important part of engine reliability.

Until now, the only way to keep the tank, and therefore the fuel, clean was via an inspection hatch to allow sediment to be cleaned out. I performed this task every three years using a fine sieve drawn across the bottom of the tank to collect any muck, and water was drained from the service tank every few months into a bucket. This was an ideal tank set-up that I installed myself and would be rare on any production boat.

For the boat I am currently rebuilding, I have taken a different route and installed a 'Diesel Dipper' tank cleaning system from Marine 16, who are well known for their fuel additives and bug removers and preventers. Although it is called the 'Diesel Dipper', it will work equally well with petrol and is particularly effective at removing water from the tank while also dealing with sludge.

As we know, diesel bug can only thrive when water is present in the tank, usually from condensation but occasionally from contaminated yard fuel tanks. The Dipper removes both water and sediment from the tank by using a pump that runs constantly whenever the engine is running. This means that when caught out in a blow and the fuel is being sloshed violently around the tank, stirring up sediment to block the engine filters, the Dipper is running to remove the sediment from the fuel before it is drawn into the filters. Sediment and water are collected in a specially designed separator/collector tank before the fuel is returned to the tank.

Ideally the Dipper wants to be in a convenient location to make draining easy...

Obviously, if the tank has not been cleaned for years, then the amount of sediment and water being removed may require the collector tank to be drained several times before the fuel tank is clean. However, where the tank is new, as in my case, the Dipper should ensure that the problem of dirty, watery fuel should never occur.

Having a clean tank also means that the fuel should never need 'polishing', which is only another name for straining the microscopic particles out of fuel that has previously suffered from diesel bug. Furthermore, keeping the tank clean will greatly improve filter life. The Dipper itself costs little more than the price of professional polishing of a couple of tanks of fuel, and installation is well within the capabilities of the average DIY owner.

Considering that the Dipper is probably the biggest step forward in fuel cleanliness and therefore engine reliability since the introduction of the fuel filter, it is a very simple concept.

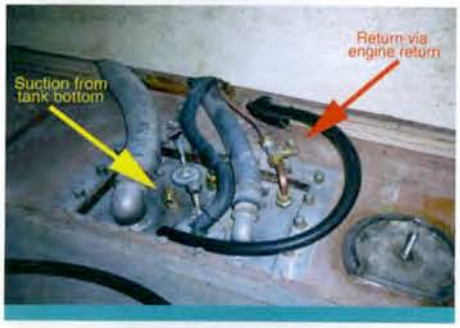
Considering that the Dipper is probably the biggest step forward in fuel cleanliness and therefore engine reliability since the introduction of the fuel filter, it is a very simple concept. The heart of the unit is the 'tank separator' (patent pending), which allows water and sludge to separate from the fuel and drop to the bottom of the tank for later draining, while the clean fuel passes out of the top of the tank and, after being further filtered, is then returned to the fuel tank. Due to the efficiency of the separator, the final filter should very rarely need cleaning unless the separator becomes overwhelmed with sludge due to not being drained. The filter itself is a washable stainless steel mesh and should never need replacing.

INSTALLATION

This will vary slightly depending on the location chosen for fitting and the position of the tank in the boat. Ideally the Dipper wants to be in a convenient location to make draining easy, but it doesn't need to be in the engine compartment, so if there is space near the tank, that will be the ideal position. On this boat the tank is directly behind the engine compartment bulkhead beneath the mid-cabin bed, so in this case I chose a position in the engine compartment on the bulkhead itself.

The Dipper is quite a compact package at 37cm (H) x 15cm (W) x 18cm (D). The plumbing is straightforward and requires either a fitting into the fuel drain valve on the bottom of the tank or, if there is no drain, a suction tube can be installed that carries on right down to the bottom of the tank to suck up the sludge and water. A return line to the tank is also required, and this can be tee'd into the engine return line. The various methods of installation are entirely up to the owner.

The tank fittings required for the installation can be standard compression - if there is access to the inside of the tank. If not, then Marine 16 can supply 'Dip Tube' fittings that do not require access inside the tank. These may be either top or side fitting depending on whether the top or side of the tank is the easiest to access.



For this installation I used a standard compression tank fitting for the suction and a compression tee into the engine fuel return line.

The Dipper was bolted to previously prepared mounts on the bulkhead that were screwed and epoxy-bonded in position. Note the quick connect fittings and an inline fuse for the electrical connections.

The Dipper comes with straight hose connectors, but I changed them for 90-degree elbows for a neater installation. The connectors are standard hydraulic fittings and are available from your local hydraulics supplier. Marine 16 can also supply them on request.

As this is a new build, I decided not to use the inline fuse and quick connectors as there is a spare breaker in the main box and it was sensible to use crimp terminals to keep everything uniform.

The Dipper can be connected to the ignition switch so that the pump runs whenever the engine is running, but I decided to switch it directly from the helm position with a warning light to show when it is running. This allows me to additionally run the Dipper when the engine is stopped so I can clean the tank at any time, particularly after refuelling.

The pipework was run using the same Vetus fuel hose as used for the engine feed and return. The hoses run from the Dipper down the bulkhead and through into the aft cabin where they are connected using hose tails screwed into the compression fittings with two clips on each connector to ensure a reliable connection.

Inside the tank - the Dipper pickup is arrowed. Note the angle cut on the bottom end of the tube and that the tube is tight against the bottom of the tank, well below the level of the engine and Eberspacher fuel pickups.

As my own addition, I added a 'T' valve into the return to the tank so that I can also drain the tank using the Dipper, which is a useful additional feature.

In use, the Dipper needs no attention unless the filter becomes blocked by excessive sludge. Cleaning is simply a matter of unscrewing the clear filter container, removing the element and washing it in clean fuel. The on-off switch can be used to switch off the Dipper when working on it or draining the collector tank.

The bypass valve mounted at the top of the unit needs to be opened prior to draining to allow the collector to drain freely.

Draining then only requires the drain valve to be opened once a receptacle has been placed beneath. The collector holds about a litre of fuel, so a large jar is ideal.

So does it work? With my brand-new shiny clean tank, I poured a glass of water into the 30 gallons of diesel already in there ...

... And thankfully it does! The water can be clearly seen in the bottom of the jar after being drained from the Dipper. PBR

INSTALLATION TIME
5 hours in total (not including curing time for epoxy)

TOOLS REQUIRED
Basic plumbing and electrical tools

COST
Only the Dipper: £714 (incl. VAT)

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