

Replacing the Fuel Feed Pump on a 3GM30F

During an investigation to find an oil leak on Wonky Dog, a 1998 Catalina 320 manufactured in late 1997, Hull #514. I found that my Yanmar 3GM30 fuel feed pump gasket was leaking. The fuel feed (lift) pump is bolted to the starboard side of the engine by two bolts, **FIGURE 1**. A couple of years ago I had a minor fuel leak from this pump that I was able to fix by simply tightening the four screws on the top of the pump that hold the pump body together. If you experience a small amount of diesel in your engine tray this is something to think about. You can see two of those screws in the picture. The other two are hidden behind the pump body in this photo. The way to tighten these screws is to use bent screwdrivers that work more like allen wrenches than screwdrivers. I had always figured this was a temporary repair and that I would eventually have to rebuild the pump.

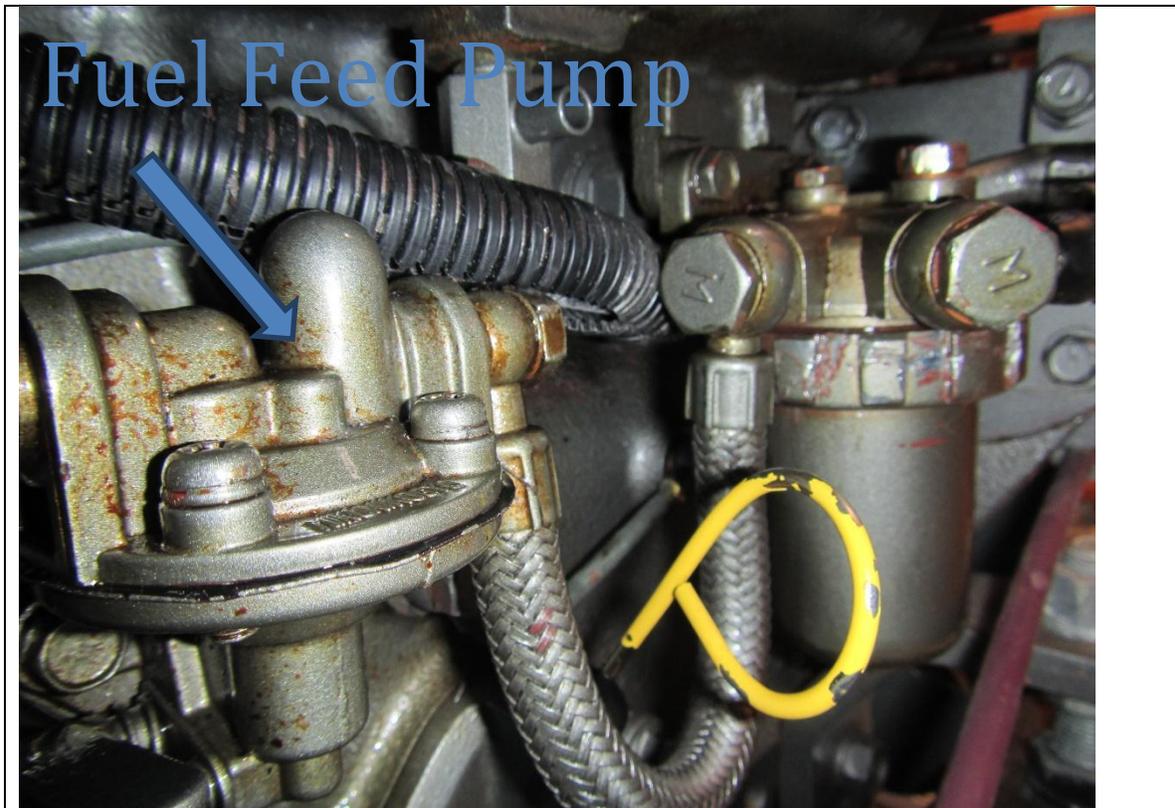


Figure 1 Fuel Feed Pump

It turns out, you can't get a rebuild kit for this pump. Makuni manufactures this pump for Yanmar and if the diaphragm goes, the recommended repair is to replace

the pump. You cannot even purchase this pump from Makuni (the OEM). Given the history of my pump and the need to replace the gasket for sure, I opted to treat this as a wise preventative maintenance item and go ahead and replace the pump.

Parts List

Fuel Feed Pump Assembly (see Figure 44 and 49 of the Yanmar 3GM30 parts catalog)

129301-52020 Pump Assembly Fuel Feed	Qty 1	~\$85
121520-01851 Gasket, (non-asb)	Qty 1	~\$3
23414-080000 Washer (8mm copper)	Qty 2	~\$1 ea.

Here are the recommended steps for this repair:

- 1) Start your engine and allow it to warm up a little but not so hot as to make it difficult to work on the fuel pump. Then shut down the engine. See step 19.
- 2) Shut off the fuel at the tank
- 3) Drain your Racor
- 4) Close off the Racor
- 5) Open the priming relief nut on top of the fuel filter on the engine
- 6) Allow the fuel to drain back into the Racor
- 7) Put down a lot of towels and have paper towels on hand
- 8) Slowly unbolt the pump from the engine first, pay close attention as you unbolt the pump. **If the pump pops out a little it means that the pump lever was engaging the cam. If you can rotate the cam a little you will supposedly have an easier time re-installing the pump.** I didn't have this happen, so I can't verify that it actually helps. Others have told me that it is not easy to simply turn the cam using the larger pulley at the front of the engine unless you remove the belt, I am glad I was able to skip that step.
- 9) Once you have the pump away from the engine block it will be easy to get a socket wrench on the fuel line banjo bolts. Unbolt the fuel lines from the pump. Try to keep the fuel lines in a vertical position above the fuel filter so that residual fuel isn't dripping into your engine tray.
- 10) Remove the old gasket from the engine. It is unlikely to come off in one piece. Get as much off as you can without tools, then switch to a plastic scraper to remove the rest. After you get it mostly scraped off it will look like **Figure 2**. This is not sufficiently clean that black gunk toward the bottom had to go. **You need to use a clean cloth and acetone or some other degreaser to clean up the surface back to a smooth shiny condition.** Elbow grease may be required.

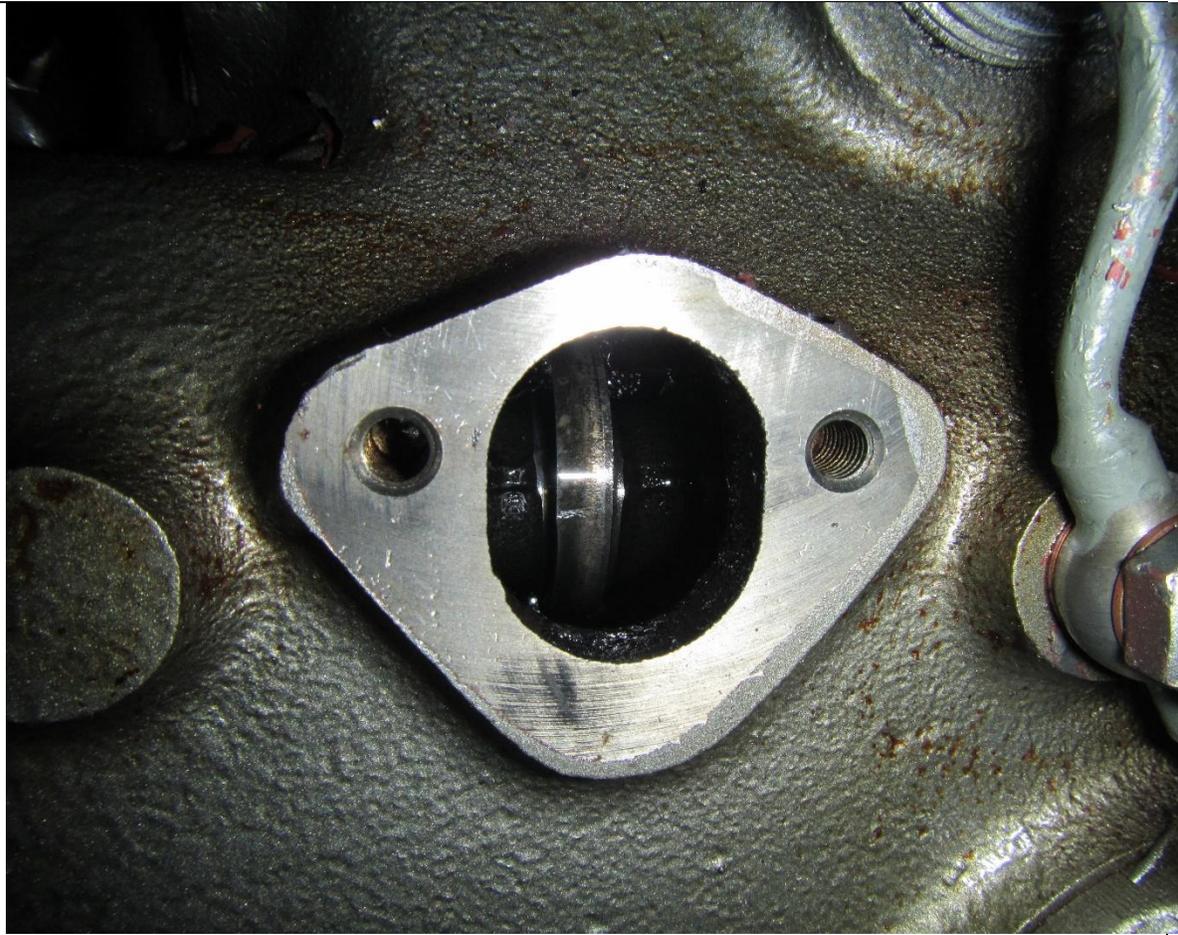


Figure 2 Fuel Feed Filter Flange (before cleaning)

- 11) Now you are ready to install the new pump. Go ahead and reinstall the fuel line that goes from the pump to the filter using new copper washers. Do not attempt to re-use these washers, they are one time use washers. **Be careful not to over tighten the banjo bolts.**
- 12) Put the bolts through the new pump with lockwashers in place and lay the new gasket over the pump and bolts in the proper orientation. **Ensure the pump lever is correctly mated with the camshaft.** Carefully attempt to get the pump and gasket installed against the flange and tighten the bolts while ensuring the gasket is properly seated. This may take a few attempts. **Do not strip the threads.** The bolts should go on easy. If you aren't sure how easy, install them without the pump so you have a feel for the amount of torque required. Once you get the pump on and the bolts are turning nicely go ahead and snug everything up. **Do not overtighten the bolts.**
- 13) Reattach the fuel line coming from the Racor.
- 14) Open the fuel line at the tank

- 15) Unscrew the thumbwheel screw at the top of the Racor, pull up. This is a pump.
- 16) Start pumping.... keep pumping.
- 17) The pump should refill the racor and the fuel lines. If you listen carefully, you may hear fuel pushing past the injector pump and coming back through the return line, you can stop pumping and screw down the pump.
- 18) You can attempt to use the pump lever on the fuel feed pump to get more fuel up into the filter (which you didn't drain). I've never found this to be all that effective or useful if you pump enough times with the Racor. Keep in mind that when your engine is operating the fuel feed pump actuates almost a thousand times per minute at idle to "offer" sufficient fuel to your injection pump to keep it happy.
- 19) Depending on the time of year, attempting to start a cold engine after it has been primed can involve more trouble than necessary. I like to begin with a warm engine. I feel that this helps a lot. Hence step 1 above. Is it really necessary? Probably not but it can't hurt and if it might potentially save the trouble of using the decompression levers and or bleeding at the injectors and then having to clean up the mess that creates.
- 20) Start the engine and inspect for leaks. Holding a small bit of paper towel near the newly installed gasket should if it is leaking.

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