Fuel Pump & Sending Unit Repair

If your C4's fuel gauge reads full regardless of how much fuel you actually have, the sending unit in the tank is most likely at fault. If you have priced a new sending unit, you realize that they run well over $300. In many cases, however, they can be repaired in about an hour with very little expense. This repair is relatively simple if you have decent mechanical aptitude, and doesn't require any special tools. I did this repair on my '84, but the procedures should be similar for all C4's.

Synopsys:

Fuel pump swap is one of the easier things to do on these cars. You have to open the gas lid, remove the 4 screws. Pull the lid off and remove the gas cap and rubber filler neck. Make sure to block off the gas hole so no trash falls in. After the rubber filler neck is out, put the cap back on and use compressed air to blow the trash away. You will see three lines, a three wire connection and nine bolts holding the fuel pump assembly down.

The top right line is the fuel feed line; disconnect it and plug off the ends. The bottom right line is the fuel return line...do the same. The left line is the EECS or vapor canister line; do the same and disconnect the wiring. The use a 10mm socket, 6" extension, and 3/8" ratchet and remove the 9 bolts. The bolts have o-rings on them...replace if needed. After you pull on the fuel pump assembly you will see a gasket on the tank; replace it. The whole assembly pulls out with a little twisting. From there it should be self explanatory. Reverse for installation.

You should purchase a new fuel tank gasket prior to beginning. They run about $15 at any Chevrolet dealership. Also, have a fire extinguisher handy just in case. Here is how to proceed:

1. First, you must bleed the pressure out of the fuel system prior to removing any fuel lines to avoid being sprayed with fuel. Remove the fuel pump fuse from the fuse box, and crank the car. If it starts, allow it to run until it dies. The fuel pump fuse is clearly marked. On the 84, it is the bottom fuse in the fourth column of fuses.

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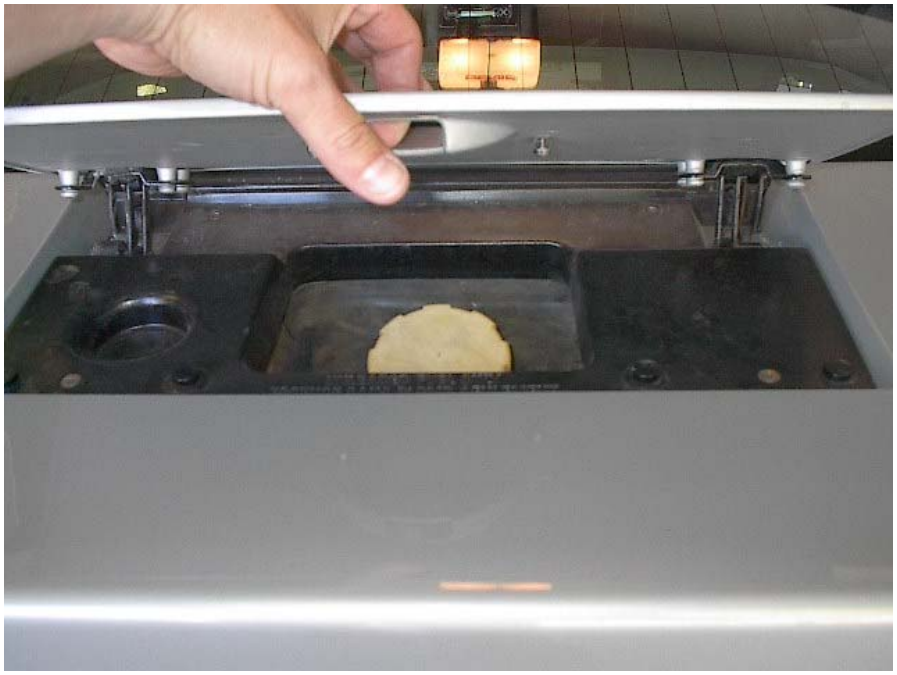
2. The second step is to remove the fuel filler door. There are 4 Phillips screws holding it to the body of the car. Once the door is removed, remove the gas cap and the rubber boot surrounding the filler tube. It has a drain hose that slides off as well. The boot is held in only by pressure, there are no screws or fasteners. You now have access to the fuel lines, wiring, and the fuel tank cover.



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3. There are 3 fuel lines. The upper line is the pressure line that runs to the throttle bodies (crossfire) or fuel rail (TPI). The lower right line is the return line, and the lower left runs to the charcoal canister. Clamps hold on each fuel line. Loosen the clamps and remove the hoses.

4. There is a single three wire harness that services the fuel pump and sending unit. There is a small, white plastic clip that must be removed prior to pulling the connectors apart. Compress it with a pair of needle nose pliers and remove it. Now

the harness will separate.

5. Remove the nine 10 mm bolts that hold the cover onto the tank. Carefully lift the fuel pump / sending unit assembly out of the tank. It is a good idea to clean any debris from the surrounding area prior to removing the assembly to prevent it from falling into the tank. Place some old rags over the painted surfaces of your car to protect it from any fuel that drips. You will need to gently maneuver the assembly back and forth to get it to clear the opening, but it will come out with relative ease. Here's what it looks like after you've removed it.

6. Gently lay the assembly on your workbench. Now use some duct tape strips to cover the opening of your fuel tank. Fumes can accumulate rapidly, so do this at the earliest opportunity. DO NOT use a rag to cover the opening. This makes an excellent Molotov cocktail out of your car. If you're working in a garage, keep the door open for safety!!

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Tank taped up….

Garage door open….

7. Now that you have the fuel pump / sending unit assembly on your bench, it's

time to disassemble the sending unit. It is basically comprised of two parts; 1) the float arm and contact, and 2) the body with the windings. It works like a potentiometer / variable resistor in that moving the arm changes resistance, thus telling the gauge how much fuel is in the tank. Malfunctions occur when either the contact or the windings become dirty, rusted, or otherwise don't make good contact. Once this is corrected, your gauge will once again read correctly.

To disassemble the sending unit, GENTLY pry the three small tabs back just enough to allow the cover with the windings to separate from the assembly. These can break easily, so use as little force as possible. Here is where the sending unit is on the pump assembly.

And a photo of the contact in the center of the quite rusty sending unit body…

8. Now that it's apart, use some 600 grit sandpaper and gently sand the CONTACT. DO NOT sand the windings or you will ruin them. The contact is mounted on a thin piece of springy metal, so use a finger behind it to support it as you sand. Sand it until it has a shiny, new surface. Next, soak a Q-Tip in WD-40 and GENTLY clean the

windings. Move the Q-Tip with, not against, the windings. They are very delicate, so use only very slight pressure. Here's what the windings look like…

9. Gently reassemble the sending unit and bend the tabs back into place using only necessary pressure. Ensure that the float arm moves smoothly and doesn't bind.

10. Connect an Ohm meter or multi-tester as follows: Using an alligator clip, attach the negative terminal to the metal body of the sending unit. Press the positive tip against the wire that leads from the sending unit to the top of the assembly. Move the float arm back and forth and note the changes in resistance. You should have somewhere in the neighborhood of 90 ohms resistance at full, and close to 0 ohms (no resistance) at empty. If you use an analog meter, you can watch the needle swing both ways as you move the float arm. If this happens, your sending unit is now functioning normally again. Time to put it back together again!

11. Use your new gasket on reassembly. You will notice a notch cut into the gasket. This notch goes in the upper right corner, and corresponds to a small ridge on the tank. The gasket will fit in the opposite direction, but it won't seal and you will have a nasty fuel odor (and safety hazard). Ensure that this gasket goes back in correctly. (NOTE: The Helms manual section 6C-4 indicates that the gasket goes in the LOWER right hand corner. Observe how yours comes apart and you will notice that the

gasket won't fit that way). Here is the gasket you will use.

And the new one and old one next to each other….

12. Position the assembly back into the tank with the new gasket. Again, you will have to do some gentle maneuvering to get it to go back in correctly, but it will slide back into place with relative ease. Ensure that the gasket lined up correctly, and put the bolts back in. Snug them down by hand, and then tighten in a star pattern to about 15-20 ft lbs.

13. Reconnect the wiring harness and remember to slide the plastic retainer back in.

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14. Reconnect the 3 fuel lines. Replace the fuel pump fuse, the gas cap, and start the vehicle and check for leaks.

15. Shut the car off. Remove the fuel cap, replace the rubber boot and reconnect the drain tube. Replace the fuel cap and the fuel door.

16. Enjoy once again having a working fuel gauge. Total cost less than $20 and about 2 hours of work.

I hope this helps a few Corvette owners keep their cars running and save a few dollars in the process. I'm certain that this article is a long way from perfect, so anyone having suggestions on how to improve this tech article is invited to submit them by either dropping me an PM or an email. PM Frizlefrak on Corvette Forum, or email me at Dcarson@elp.rr.com.

I will continue to revise it with new or corrected info, and keep the link updated.

Special Thanks are owed to Mike88Z51 on Corvette Forum for teaching me the procedure and suggesting the tech article.