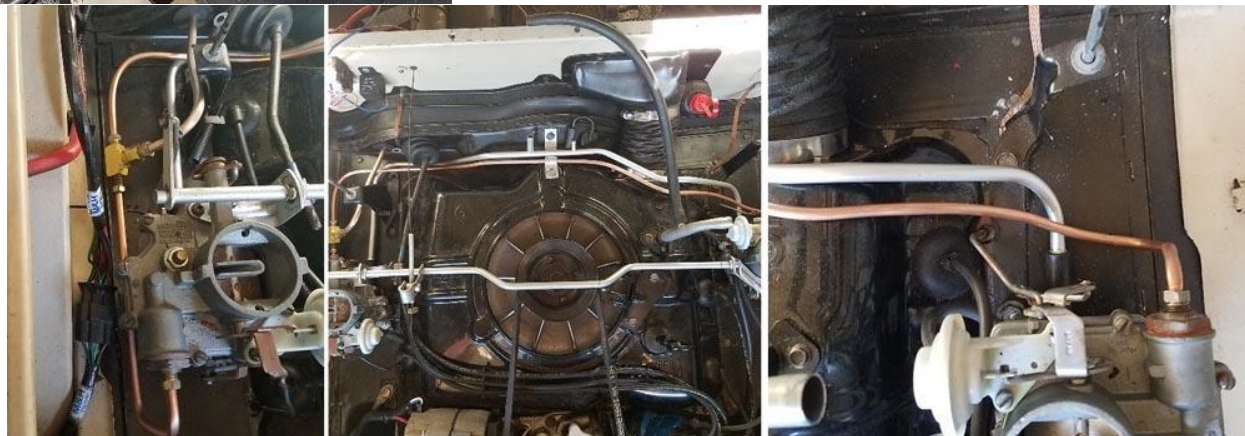


One of my repairs on our Greenbrier was to address PO's report of a fuel leak when filled over ½ full. We removed the tank with a bit of a pain due to the old hoses. We did not see any evidence where it had been leaking. Since this was a manual shift van at one time, I had to remove the shifter tube and the plastic duct it ran through at front of tank. Those parts, shifter tube and its related pieces, along with clutch pedal, mounting and the cable did not go back in the van when I finished tank installation. Original tank was filled with water during hot weather spell in Georgia. That and 3 psi of air pressure proved tank was good after 8 hours in the sun. The tank I picked up from Caveman Pete as a replacement was also tested in same manner and was leak free.

New fuel lines were made and installed. The new lines accommodated a GF-99 filter on the support behind the tank (see photo), an electric fuel pump on the left frame rail (see photo), and a standard fuel filter before the engine compartment. Instead of a 30" rubber hose from the sender, we made a 5/16" Cunifer line down to the support behind the tank (see photo). Engine fuel lines were also reworked to have them in front of the fan (see photo). Tank was installed using the Clark's Ultimate Gas Tank Kit C12903N with the C12802 sender. More on that later. Gates Barricade fuel hose was used at the sender, inlet side of first fuel filter, both sides of electric fuel pump and both sides of second fuel filter.



When we were able to apply power to the van, I noted then the gas gauge read ½ but was empty. I mentioned it to Rick, who was helping me get it ready for a run. He said gauge was probably bad. All tasks needed to get engine running and also get van registered on the road were done. But gas tank still read ½ with 5 gallons in it. Several test runs were made in it to check things out and fix as needed. I added another 5 gallons and made 3 more short runs. 2 weeks after first starting it up, I took it to Goodyear 26 miles away to have new tires put on. On the way home, it ran out of gas 3 miles from the house. I guess I should have added more fuel. Donna was behind me with the Silverado, so she went got another 5 gallons to get me home.

The saga of the fuel gauges, tanks and sender units thus began. I was not going to be left stranded again. First up, remove the instrument panel to test fuel gauge. I got the panel on the bench and attached the battery ground to it. Then I connected 12 volt lead to gauge's 12v terminal and then to the battery's positive terminal. Gauge swung past full as expected. I attached another wire to the panel's ground and then to gage sender terminal. It slowly went to empty as expected. So it appears

gauge is good. I had access to 2 other EM gauges, so I tested them. One did the same response to power and ground. The other just swung to full. No response to sender terminal being grounded. Trash that one.

Onto the van to test both gauges with the tank sender unit. Hooked them both up in turn and both read $\frac{1}{2}$ full. Ohm'd the sender wire to tank to ground and it had 14 ohms. Connected a long wire to the sender ground wire and brought it to meter to connect to meter ground. Still 14 ohms. So it is a sender unit issue.

Time to remove tank. Jacked up van and supported it to get clearance for tank removal. We removed the tank and set it on bench for inspection and tests. Connected ohmmeter to sender terminal and tank structure and still read 14 ohms. Grounded sender ground wire to tank structure and meter ground and still 14 ohms. Using flashlight, I was able to look inside through filler port and see float arm resistor. Float arm was in almost mid position (see photo).



I removed the sender and float arm was now in empty position. I did a continuity check and meter showed 0.0 ohms at empty and 37.6 ohms at full. An ohm check when I slowly moved it from full to empty then back to full showed a steady reading going down from 37.6 to 0.0 and back up to 37.6. I put sender back in the tank and float arm was confirmed at empty position. Ohm meter showed 0.0 ohms. I used a wooden dowel and slowly moved float arm up. It stopped at mid-range. Ohm meter showed 14.3 ohms. I pulled dowel out and float arm dropped to empty. Ohm meter showed 0.0 ohms. The tank is restricting sender float arm from going to a full tank position. Somehow on handling tank after sender installation during tank installation, float got jammed in tank. But I couldn't see anything in the tank that could jam it. I checked the other tank and it was same tank style as the van's tank (see photo). Time to call Rick in for some help.



I gathered all my senders together to see what I had and if there were any differences (see photo). The sender I took out of the van's tank was the same as the new Clark's sender. But it never registered over half on the gauge and when I pumped fuel out, I got 5 gallons. There was about 2 gallons still in it when it was dropped. The sender I removed from the tank I bought from Caveman Pete was a totally different style. Top 2 senders in photo read 0 to 37 range when ohm checked. The old sender from Pete's tank is non-operable as the resistor read infinity.



Rick stopped by to look over the situation. The van's old sender is also the same design as the new one from Clark's. It has same issue as the new sender. So it appears, it is a design issue or an improper manufacturing issue. Rick looked at the original van sender and the old sender from Caveman Pete's tank. He decided the van's old sender was usable, if a modification to the tube was done. Modification would be to bend tube so float, float arm and sender resistor are rotated about 30 degrees to allow float to swing in an arc from bottom right to upper left. Just like the original sender from Caveman Pete's tank (see photo).



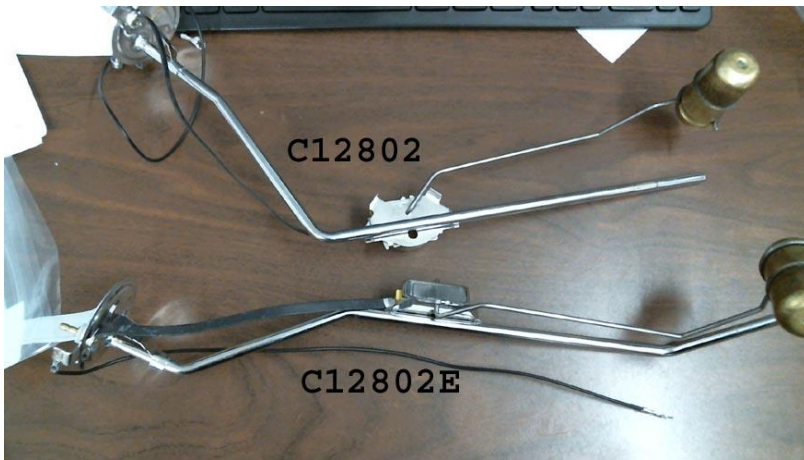
Modification was done and float arm is now positioned over tube like Pete's tank sender (see photo). Float had to be swapped to stay off tank bottom. The modified old van sender was put back in tank and an ohm meter connected to check resistor throw readings. A stiff wire was used to manipulate the float arm from empty to full position. Float never touched tank in its swing. Ohm meter showed full throw (0 to 37 ohms) and contacting resistor stops as needed. Modification was repeated on the new Clark's sender and tested. It was difficult to bend the new Clark's sender tube as it is made with stainless steel, unlike the older senders. Both modified senders work properly in the tank and on the gauge.



Tank was reinstalled and fueled up. 50 gallons later, no issues with gauging system.

So if you have to order a kit or sender for a FC Tank like the ones I have with the shifter hole, order the one with the C12802E sender. Not the 12802 sender. SEE PHOTO

Even if you have a 64 or 65 FC with a tank with no hole, verify the installation and movement of the C12802 sending unit in your tank before you install your tank. Clark's says the C12802 fits the 64 & 65 FC tanks, but I sincerely have my doubts. It may save you the grief of another removal, if you check sender movement with a meter just for peace of mind.



Note: If anyone is interested in parts for the electric fuel pump circuit or its schematic, you can contact me through Steve or Corvaircenter.com

We have for sale signs on it, if anyone is interested. We are located in Georgia outside Savannah. Come visit when it is cool.

This is the link for all the work I have done on the Greenbrier since I got it 4 years ago. I bought the parts supply the PO had and got the van as part of the deal.

<http://corvaircenter.com/phorum/read.php?1,876082,page=1>

