THE PREVENTIVE MAINTENANCE SERIES

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Gas Gauge Diagnosis

Gas gauges for early models, late models and FC vehicles all operate essentially the same; they vary only in the resistances involved. A 12 volt power supply is provided to one side of the dashboard meter and a variable resistance to ground is provided by the in-tank rheostat to the other side of the meter. This varies the magnetism that locates the gauge needle.

Use of a quality ohm meter would be a very useful tool; a cheap unit will not read accurately in the range you need, which is 0-100 ohms. The early model and FC units are a 0-30 ohm resistance and the late model units are 0-90 ohms. Note: there can be a variance of a few ohms when checking sending units, including new ones.

Quick Check

With the key on, you can check your dashboard meter movement by removing the output wire at the tank; your meter should read over full (On FC models you would have to cut the wire coming from the tank since you cannot reach it). Ground that wire and your meter should read empty. Keep in mind that late model dash boards can lose their ground either at the screw attachment or at any of the ground strap connections behind the dash. The dashboard meter will read overfull.

After performing the quick check test which confirms that your dashboard meter works properly, the following information may be useful.

The majority of the problems will come from one of the following: a missing ground between the tank's sending unit and the body, a float that has sunk, or a bad rheostat or wire on the tank sending unit. There are several tests that can help you determine where the problem is before you start replacing parts.

If your dashboard meter reads overfull, the dashboard ground is good and the dashboard meter passed the quick check: There is an open circuit between the dashboard meter and the sending unit or between the sending unit and a good ground.

1. To check the sending unit (except FC which requires pulling the tank unless you cut the wire to test it), you would disconnect the wire on the tank sending unit and check the resistance between the stud on the sending unit and the sending unit flange. Your ohm meter should indicate some resistance on the 0-100 scale depending on early or late. If not, then the open is in the sending unit rheostat or the in-tank connection. You might be able to repair the problem but replacing the sending unit, float, pickup filter and seal would be the permanent solution. Stainless steel units are now available.

2. If you register the correct resistance at the tank, then next check the ground for the tank. The ground wire must have a good connection where it is attached to the body. If the ground is good, then you must have an open in the wire from the tank's sending unit to the dashboard meter (the quick check above would have shown this).

If you have another sending unit available, hook it up under the car with a long jumper wire connected to the sending unit wire you have pulled off. With the key on, ground the unit and move the float to observe your meter movement.

If the dashboard meter reads empty all the time and the meter passed the quick check, then proceed to the following:

1. The float has a hole in it and has sunk to the bottom. Attach your ohm meter to the output stud at the sending unit and to ground. You would read either 0 or only a few ohms, confirming the float is on the bottom.

2. The wire from the sending unit to the dashboard meter is grounded. It could have a screw grounding it or the insulation scraped off around the tunnel pan area or if it is an FC the wire may be pinched between the tank and the body.

Other possible causes of erroneous meter readings (I have experienced all of these):

The wrong year sending unit has been installed, the bottom of the tank has been attacked by a floor jack, or a rusty tank has had a liquid liner applied inside without proper cleaning. The liner came off and is under the float like a wadded up newspaper.

It is not uncommon to find that those before you have altered wiring for some modification or repaired wiring with non-soldered connections that corroded.

One final note: Before installing a replacement sending unit, use a long jumper and a ground to remotely move the float up and down while observing the dashboard meter. You can adjust the arm movement slightly to get closer to the full or empty mark if necessary.