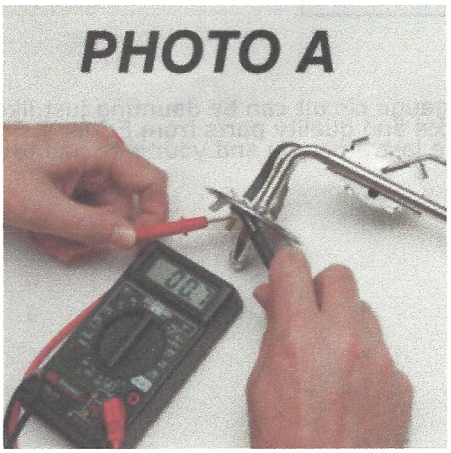
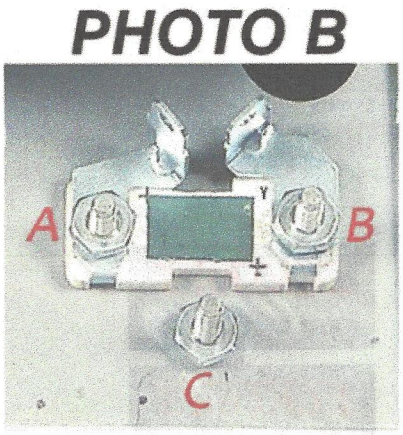
The GM Fuel Gauge Mystery 1965 & Newer

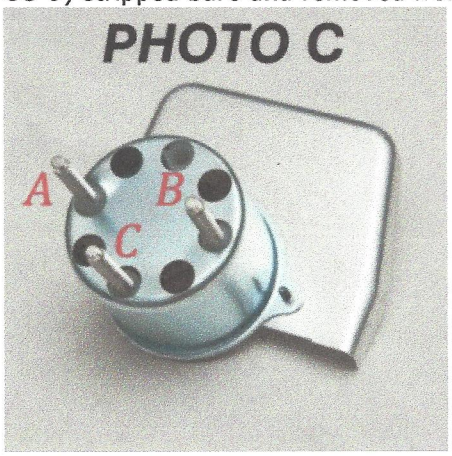
Diagnosing a problem with a GM fuel gauge or sending unit can be very frustrating and part of this frustration comes from not knowing the theory behind what makes that little needle swing back and forth in your dash or console. And, there are a lot of enthusiasts out there who are deathly afraid of the "wiring monster" that lives behind the dash. If provoked, the monster will jump out and bite them. The fuel gauge is not one to be afraid of and most problems can be solved with the proper ammunition! We have received many calls on fuel gauge issues we thought it would be a good idea to provide our readers with the basic knowledge of the fuel level circuit and testing procedures.



Ohms You Say?
From 1965 up to the late 1990's, GM decided to change the Ohm (Ω) reading coming out of the fuel sender from 0 – 30Ω to 0 – 90Ω (0 empty – 90 full) which allows the gauge to be a little more accurate. That's right, the fuel sender produces an ohm signal. It is not a "hot" lead as that could lead to an explosive condition! The fuel sender is easy to test with a multi-meter set to 200Ω. **See Photo A** – touch the black lead to the sender housing and the red lead to the sender post and move the float up and down to see what the ohms are on empty and full. If you do not have the sender out of the fuel tank, GM used a tan wire from the tank to the fuse box and the signal can be picked up there. Do not confuse the tan wire with the light brown wire GM used for the license plate lamp. You will get strange readings that obviously have nothing to do with the fuel circuit. If you get anything other than between 0 – 125Ω, you will need to replace the sending unit. Reproduction fuel sending units can register around 125Ω when the tank is full. This usually makes the gauge read a little past full and is a non-issue.

Fuel Gauges In Disguise
Did you know during the same 1965-1990's period the back of the fuel gauge is exactly the same? You read that correctly. GM used the same three-terminal gauge for almost 40 years. That being said, the gauge in your Chevy may look a little different with all of the terminals connected to it. It may be turned sideways, upside-down or have an additional ground. But, it is the exact same gauge. **Photo B** – shows the console gauge assembly's (CG-68A) fuel gauge in a 1969 Camaro with the terminals and resistor attached. **Photo C** – shows the same gauge (our part # CG-9) stripped bare and removed from the housing.





The terminal connections are as follows:
Terminal A: Fuel sender from the tank (usually a tan wire)
Terminal B: Switched ignition hot (usually a pink wire)
Terminal C: Ground

Don't Resist Using The Resistor
For some unknown reason, folks do not like to put the resistor on the back of the gauge; maybe because they lost it or they do not think they need it. Believe me, you WILL need it! **Photo B** shows the resistor (our part # CG-60) as the white ceramic piece with the green rectangle connecting terminals A & B. This type of ceramic shunt-type resistor was phased in to replace the wire-wound resistor and wafer board found on earlier models. The wafer board isolated the resistor from the gauge housing. They both do the same thing by controlling how fast the needle sweeps across the gauge. Think of taking a turn in your Chevy and the needle moving every time! This makes it tough to get an accurate fuel level reading. If the resistor is not in place on an original or AC Delco replacement gauge, the gauge will not operate properly. To make it a little more challenging, some reproduction companies making fuel gauges have been putting carbon-fixed resistors inside the gauge housing so there is no need for the external resistor. You will need to contact the manufacturer of the gauge before you proceed any further.

Tell Me How To Fix It!
Now it's time to give you that ammo to figure out what is going on with the fuel gauge in your GM car when it reads funny or stops working altogether. It is VERY rare for a fuel gauge itself to be bad. The rule of thumb is if the gauge is or was moving at some point, it is good. Below is a table of common fuel gauge symptoms and their causes.

Symptom	Cause
Needle pegs Full or goes past Full (Infinite Ω)	Terminal A. Break in fuel sender wire or ground wire slipped off of sending unit at the tank during installation.
Needle pegs Empty or goes past Empty	Terminal C. Break in the ground between the gauge and the chassis.
Needle does not move at all	Terminal B. 12V switched is not working. Think of turning the ignition off and the fuel gauge stays at the last point.
Needle only goes to ¼ tank when full	Resistor. Wire-wound resistor is bad or it is grounded to the gauge housing. Check connections if bad replace with ceramic shunt-type resistor.

That's it in a nutshell and the wiring monster didn't attack you! The fuel gauge circuit can be daunting just like other wiring issues. But with a little bit of know how, Eckler's Tech Services and quality parts from Eckler's, you can have your fuel gauge reading correctly in no time. Remember the last time you and your wife had to walk halfway home from a cruise night? Don't let it happen to you again!