

# “Mustang How To”

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## Diagnosing fuel gage on a 1971 Mach I

The fuel gauge on Bob Loiselle 1971 Mach I would always read around half full no matter how much he drove the car or how much fuel he put in it. This can get one into trouble when traveling if you forgot to stop and get fuel. First thing I checked was to see if the fuel gauge was working properly. This is done by removing the wire from the tank sending unit and ground the wire to the cars body or frame. With the ignition in the on position only watch the gauge. It should move from empty to full. This would indicate that the gauge itself is working properly. In this case the gauge performed as it should. Thinking that the sending unit was the problem it was replaced. That done the gauge still read at the half mark.

As they say a little research goes a long way. Not knowing what to check next I went on line to try to find the answer. You should be aware that not all information in the forums is accurate. You really need to use common sense when doing your research. One forum I read said to check the fuel gauge operation was to just unplug the sending unit wiring and turn on the key to check the gauge. That of course is not true because nothing will happen if the circuit is not complete. Bob had purchased a Ford factory service manual set that has all the information you will need to check out any problems with your Mustang. Having the correct year books is definitely a plus.

The fuel gauge system is actually very simple. See diagram below along with testing instructions.

### 2 TESTING

#### FUEL GAUGE AND INSTRUMENT VOLTAGE REGULATOR (IVR)

Follow the instructions printed on the case of the Rotunda Fuel Gauge System Tester No. WRE 500-70. If a Rotunda tester is not available, use the following procedure.

Disconnect the fuel gauge lead from the terminal at the sender unit. Connect the lead of a 12 volt test light or the positive lead of a volt meter (20 volt scale) to the gauge lead that was disconnected from the sender unit (Fig. 4). Connect the other test lead to a suitable ground. With the ignition switch in the ON position, a flashing light or fluctuating voltage will indicate that the instrument voltage regulator is good and that the gauge circuit is not interrupted.

If a pulsating voltage is shown but the gauge is not accurate, perform the calibration test.

If the light stays on or the voltage reading is steady, replace the I.V.R.

If no voltage is indicated by the voltmeter or test light, check the I.V.R. for proper ground and check for an open circuit in the I.V.R., the gauge windings or the printed circuit.

Do not ground or spark either terminal of the instrument voltage regulator. This will burn out the dash wiring harness or the instrument voltage regulator or both.

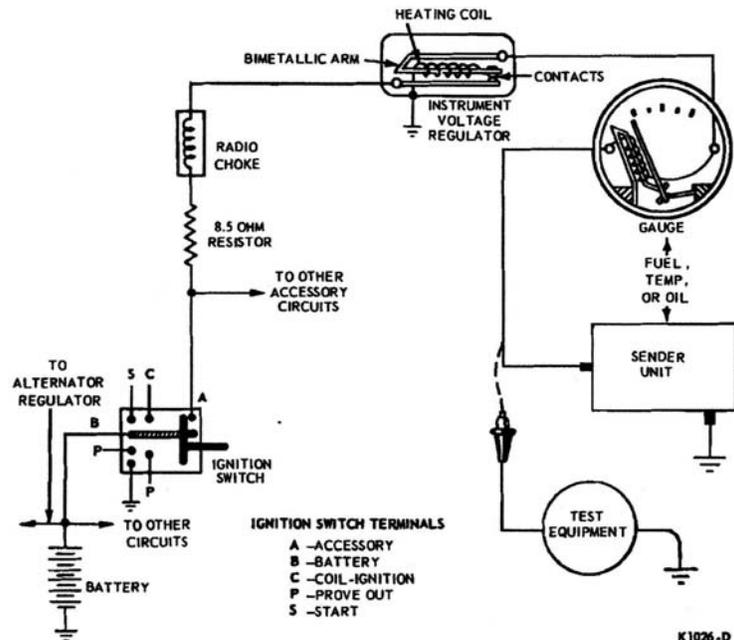


FIG. 4 Instrument Voltage Regulator and Fuel Gauge Test

*After reviewing the testing information in the Ford manual and testing the system, I determined that the instrument voltage regulator located on the back of the cluster was no longer working. I used a volt meter connected to the sending unit harness as instructed and got a steady reading of 11.4 volts. The volt meter reading should fluctuate around 5 volts to be working correctly. That being said I swapped the IVR out with another one Bob had for the same year car and it tested at the correct reading. At one point before this we also suspected the new sending unit. I tested both the original and new one and found them to both be working correctly. Below is the proper way to test the sending unit for this Mustang.*

### **FUEL SENDER**

There are two methods of testing the sending unit:

1. Drain or pump the fuel from the fuel tank. Disconnect the gauge lead at the sending unit and remove the sending unit from the tank. Using an ohmmeter, connect one lead to the metal housing of the sending unit and the other lead to the variable resistor terminal of the sending unit. The ohmmeter should read 8-12 ohms of resistance with the fuel sending unit float rod at the full end (up) of its travel and 60-86 ohms of resistance at the empty end (down). If the resistance is not within limits, replace the sending unit.

2. If the I.V.R./gauge calibration test shows that both the I.V.R. and the gauge are operating properly, replacement of the sending unit is indicated.

*Now Bob can drive his Mach I and know exactly how much fuel he has at all times. Always be sure to follow safety instruction in anything you do on your Mustang. If in doubt on a repair do your home work and don't go by the first thing you read in the forums. The more research you do the better the out come of your project. Remember that part of your research should always be to try to talk to people who may have the knowledge for your project.*