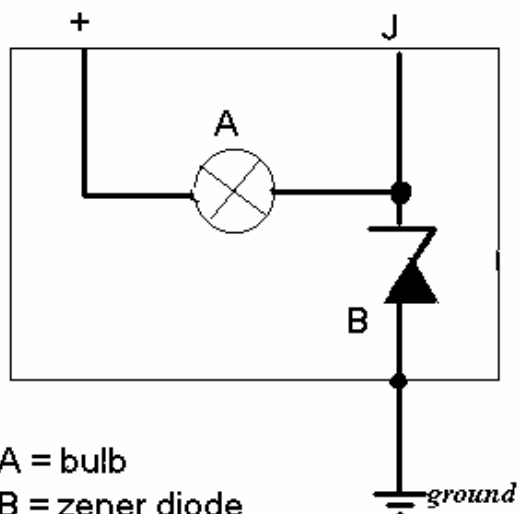


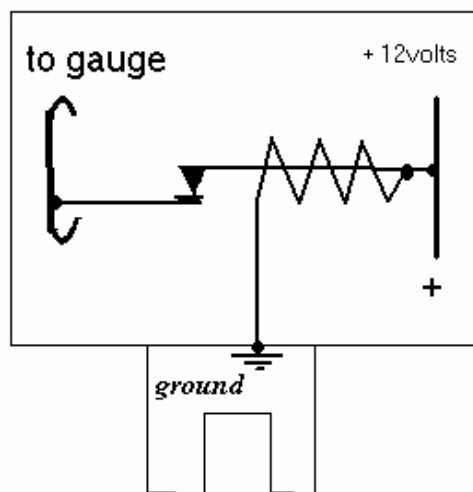
Fuel Gauge Troubleshooting ('73-'77 Type 2)

by Jamie Rivers



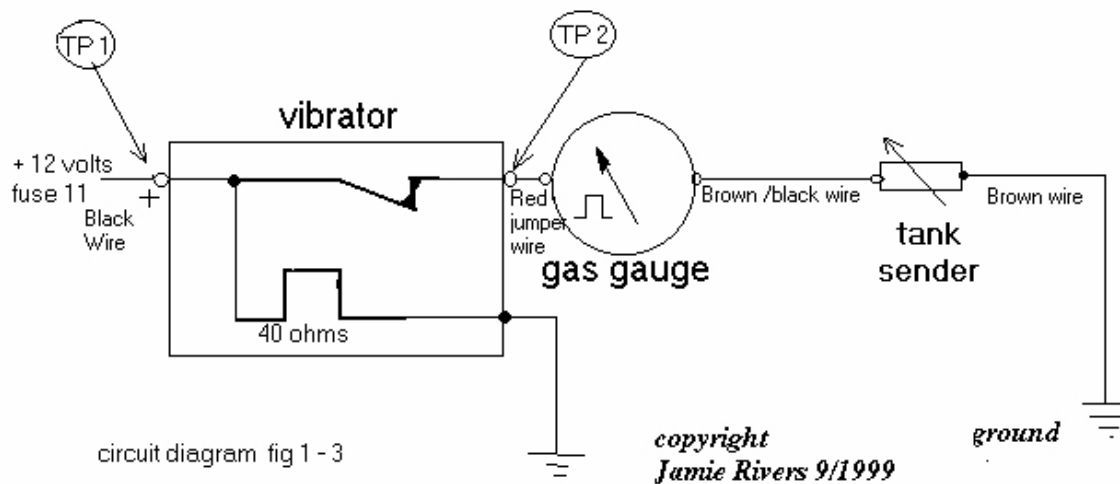
Zener diode voltage stabilizer
- circuit diagram

fig1-1



Bi-metallic Vibrator

fig 1-2



Procedure for checking 1973 - 1978 gas gauge and circuit

This procedure does not require removal of the dash. The terminals can be accessed from under the dash, behind the gauge. If you have the gauge cluster out and want to test it, connect the battery to ground connection first! It might be wise to turn the key off, remove the "+" (positive) wire from the ignition coil and secure it away from ground.

Tools required

- Volt/ohmmeter capable of measuring 12v (preferably with a needle, not digital), or a test light.
- It is best to use alligator clips on the leads or small electronic test leads with alligator clips
- 10 ohm 1/4 watt resistor
- 22 ohm 1/4 watt resistor

- 47 ohm 1/4 watt resistor

Before testing it is necessary to find out which vibrator is installed. The zener diode type has 2 lugs that can be pressed together and remove the back, to service the lamp. I have included a diagram above (fig1-1).

1. To test the zener diode type, fig 1-1, remove the wire from terminal "J", switch on the ignition, and measure the voltage at "J". Zero voltage indicates a faulty stabilizer. Remove the lid, take out the bulb and replace it if required. To check the diode, use an ohmmeter, disconnect the leads from terminal "+" and "J". Connect the ohmmeter from "J" to the ground (speedometer head). Read the resistance, it will be either low or high. Flip the meter leads and test again. The reading should be the opposite as the last reading. If the reading is the same, the diode is faulty.
2. Test for power at the vibrator, set the voltmeter to read 12 volts DC, clip your voltmeter negative "-" lead on the dash ground (best place as this proves that the dash IS grounded: check it!). It is VERY IMPORTANT that there is a ground to the vibrator/dash chassis for correct operation, so if you are doing this out of the vehicle, make sure you connect a ground to the dash. You can use a chassis ground, but make sure that the dash is grounded. Have I said that enough? Clip the voltmeter positive "+" lead on the vibrator terminal marked "+" (black wire) marked "TP1" on fig. 1-3. Make sure the leads are only touching the appropriate terminals. Turn on ignition key. The meter should read approx. 10 - 13 volts. This is good. Go to step 3 (alternately, you can substitute a test light for the voltmeter, clip the test light on the chassis ground, and touch the probe to the "+" terminal (TP1 on fig 1 - 3) on the vibrator. The light should be on, stay on, and be bright).

If you do not get 10-13 volts or no light here, make sure the key is on! Make sure you have good ground. Do not continue until you find the fuse (try fuse 11 for a 73- 76, and fuse 12 for others) and make sure you have power here. It is usually the second fuse from the right.

If you're running into problems at this point , it might be wise to turn the key off, remove the "+" wire from the ignition coil and secure it away from ground; put a piece of tape on it for now. This prevents you from damaging the ignition circuit. When you locate the fuse and make sure there is power at the vibrator terminal, come back here.

3. Test for bi-metallic vibrator operation (you can measure the resistance from "TP1" on fig 1-3 to ground on the vibrator and should get about 30-60 ohms). Move the voltmeter "+" lead clip or test light probe, to the other terminal on the vibrator ("TP2" on fig 1-3). The light will blink and the voltmeter needle should "hop" or bounce up to about 3-5 volts. The bounce should be even, and about 1 sec up then 1 sec down. This is why a digital meter is hard to use here. The numbers will just jump all over as the voltage here is pulsating. If the needle "hops" or bounces then the vibrator is working fine, if the light is blinking then the vibrator is fine. If it is a different result the vibrator is defective, if the light stays on, the vibrator is defective and it is likely that the gauge is burned out as well.

If you get no light or meter movement, it is likely that the vibrator is defective...or you are not testing at the right terminal.

4. Test for gauge operation. If test 1 and 2 are fine, you have power and the vibrator is working. Remove the wire from the sender side of the gauge and connect a jumper cable here, at "TP2" on fig 1-3. Connect a 10 ohm resistor to the jumper cable. Connect another jumper cable from the resistor to the chassis ground. With the key "on", the gauge should read 1/1 or close. Substitute a 22 ohm resistor and the gauge should read 1/2. Substitute a 47 ohm resistor and the gauge should read in the "R" zone.
5. Fuel gauge sender unit test. Make sure that the gauge and the vibrator is working. And the connecting wires and grounds are in good working order! The brown/black wire that is on the

vibrator at "TP 2", fig 1-3, can be "ohm'd out". Remove the brown/black lead, put an ohmmeter from ground to the brown/black wire. You should measure about 10-70 ohms depending on how much gas is in the tank. You can also check with a voltmeter, re-connect the brown/black to the vibrator and turn on the key, and check for pulsating voltage here. Best to do that right at the sender terminals as that will "prove" the wire from the front of the bus is good.

1. Make sure the ground from the chassis to the sender is in good working order. Turn the key off, re-attach the "+" wire to ignition coil. Put the dash back to normal.

