

## NEGATIVE CIRCUIT CHECK FOR PROPER GROUND CONNECTION

To check the negative side of the circuit, the ground connection is just as important as connections in the operating voltage side of the circuit. High current ground connections are especially prone to develop unwanted resistance which develops a voltage drop in the ground connection. The resistance is caused by corrosion or a loose connection. Cleaning up the corrosion and tightening the connection gets rid of the resistance (voltage drop disappears) and restores normal operation to the ground circuit.

Follow these guidelines when checking the ground connections. Refer to Figure 1.

**1. LOW CURRENT GROUNDS:** It is not recommended to use an ohmmeter to check ground connections except for low current grounds carrying less than 1.0 amp. Remove operating voltage from the circuit before checking ground path continuity with ohmmeter. If the ohmmeter is used on high current grounds it will verify that the ground is connected to the chassis but it cannot tell if the ground is good when passing normal circuit current.

**2. HIGH CURRENT GROUNDS:** High current grounds are the engine ground and the accessory ground. The starter ground, frequently made to the engine, is important for starting. The accessory ground is needed for normal accessory and dash panel operation. Check all high current grounds by voltage drop measurement.

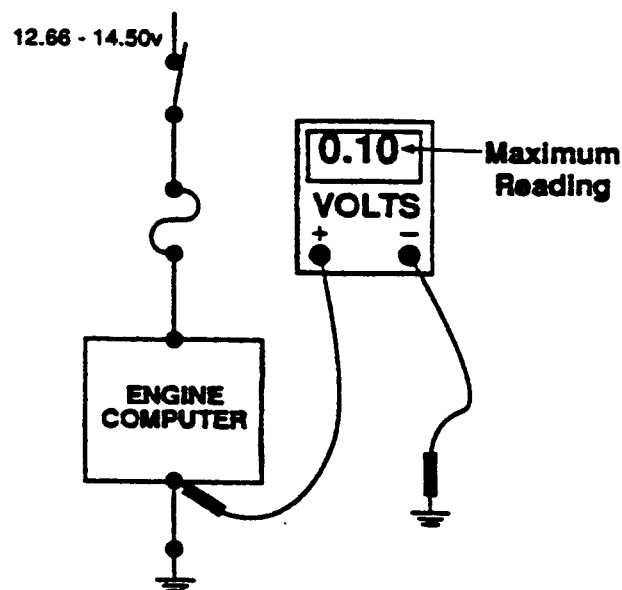


Fig.1

**3. TIPS ON CHECKING HIGH CURRENT GROUNDS:** Use a DVOM set to DC volts, on the 2.0 volt range. This will display the voltage drop measurement in thousandths of a volt, (0.000 volt) for precise indications of how good the ground is. Normal ground connection voltage drop should not exceed 0.100 volts. If the ground voltage drop is above 2.0 volts the DVOM will read out an "over voltage" indication. The next higher range of the DVOM must then be used (20.00 volt range). Before certifying that the voltage drop problem has been corrected check again with the 2.0 volt range. Make sure high current is flowing during the time the voltage drop measurement is made.

In Figure 2 note the position of the two DVOM test leads. They are connected directly across the entire ground connection, measuring between the ground wire itself and the metal chassis. This checks the entire ground connection, even where the ground wire is crimped in the ground lug.

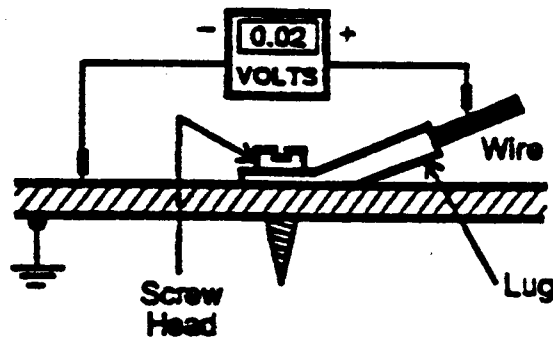


Fig. 2

**4. TWO COMMON ERRORS CHECKING GROUNDS:**

**A. DO NOT** - check high current grounds with an ohmmeter. They will usually check good with an ohmmeter even when bad.

**B. DO NOT** - use self-powered test light to verify ground connections. It is not accurate and could damage sensitive circuits containing solid-state components.

After these two basic circuit conditions, operating voltage and ground connection, have been verified, then check for the needed input or the desired output from the circuit. Ignoring the first two basic checks will cause problems in the positive and negative sides of the circuit to be overlooked.