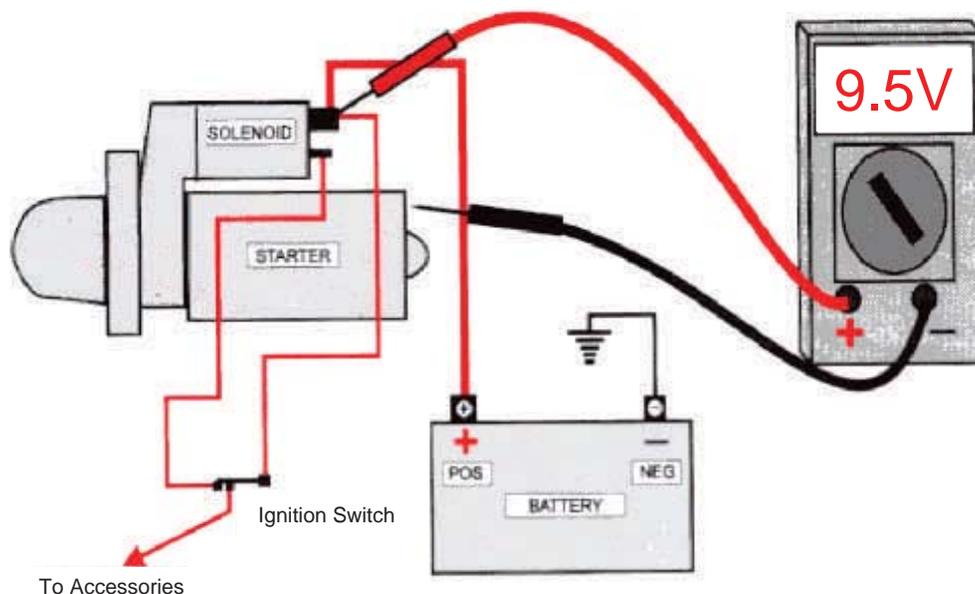


Testing the Starter

Once the battery is determined to be in good working condition, **always test the voltage at the starter regardless of how well the engine turns over.** A starter must have at least **9.5 volts** terminal voltage under load to operate properly. Other than water damage, low voltage is the number one culprit to a starter's life expectancy. **Low voltage** causes excessive heat to build up in the starter. It can also cause the contacts in the solenoid switch to weld together, in which case, the end result will be a blown apart starter. Low voltage will also cause a heavy load on the battery and charging system.

Connect the positive voltmeter lead to the starter terminal where the battery cable is attached. (See diagram below.) Connect the negative voltmeter lead to the starter case making sure you have good contact with the metal. (Also see below.) This will insure that the positive and negative circuits will be tested.



Crank the engine for about 10 seconds while observing the voltage reading. **A reading of 9.5 volts or more would indicate there is sufficient voltage being supplied to the starter to operate properly.** If the starter does not function like it should, chances are the starter is defective or the engine has a problem, causing it to be difficult to turn.

A voltage reading below 9.5 volts would indicate a voltage loss between the battery and the starter. Let's say, for example, we had a reading of 10 volts at the battery, while cranking the engine, and we had a reading of 8.0 volts at the starter terminal. This would indicate there is a 2 volt drop in the circuit. **The maximum drop allowed in the starting circuit is .5 volts.** Corroded battery cables, dirty connections, or insufficient wire size would be the problem here. This could be any connection in the positive or negative circuit. (Refer to Pg.9)