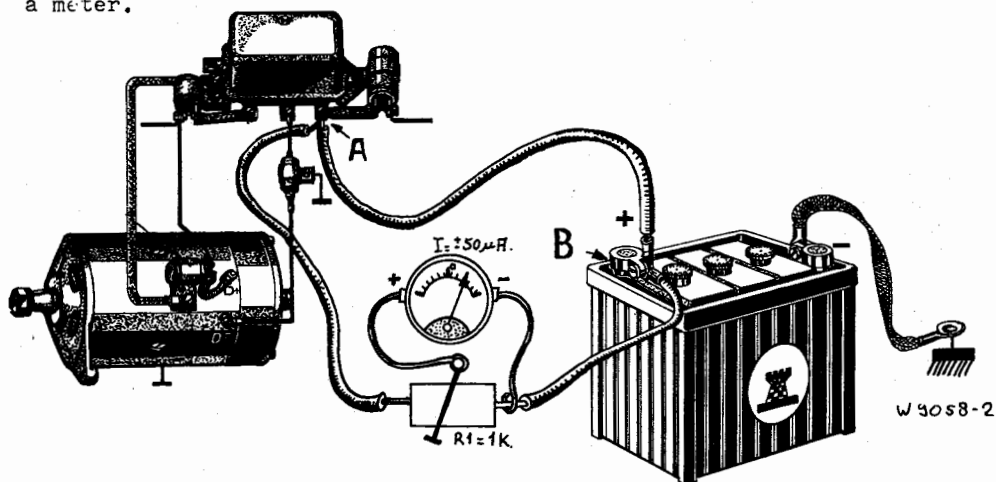


AMMETER (H. Gohlisch)

In cars, the conventional indication of an electrical system failure is the warning light (In America, fondly called an 'idiot lamp'). This is a somewhat crude device at best, since it only does its job after the system has failed.

A much better indicator is an ammeter connected in series with the battery. The big drawback with most of these is the necessity of routing large cables around the inside of the car. Furthermore, the resultant voltage drop across this additional length of wire can cause problems.

A much simpler solution is to measure the voltage drop across the existing battery cables. Points A and B in the circuit diagram are the ends of the battery cable; the voltage across these two points is directly related to the current flowing through the cable. To measure this voltage drop, all that is needed is a 1k preset pot and a meter.



The meter should have a sensitivity of, say, $50\mu A$. Less sensitive meters can also be tried, but how well they work will depend on the voltage drop across the battery cable. A good type of meter to use is one with a centre zero, so that the pointer can deflect in different directions for discharge and charge conditions.

To protect the meter and the wiring from accidental shorts to common (earth, ground, chassis), it is advised to insert fuses in the leads to the meter very close to connecting points A and B. These fuses should be of the lowest current rating available.

To calibrate the meter, disconnect the negative battery cable and connect a multimeter - switched to the highest current range - in series with it. Turn on the parking lights and read off the current on the multimeter; now adjust the 1k pot so that the ammeter gives the same reading in the discharge direction.