Closed Circuit Current Draw Testing

Increased closed-circuit currents may occur permanently or intermittently and cause the battery to discharge prematurely. The increase in closed circuit current may be caused by a faulty control unit or by the installation of a non-approved accessory.

In a situation where a vehicle has broken down due to a discharged battery, for diagnostic purposes it is important not to disconnect the battery. The control unit may reset if the battery is disconnected. Following a reset, a faulty control unit may start functioning correctly again, making accurate diagnosis impossible.

Tools Needed

- Closed Circuit Current Measurement Adapter
- MoDiC Adapter
- DISplus, MoDiC or DVOM

To correctly measure closed-circuit current, measurement adapter 61 2 300 (P/N 90 88 6 612 300) should be used. This tool provides a bridge to ground, before the negative battery terminal is disconnected, and this prevents the control units from being reset.

The additional use of MoDiC adapter 61 2 310 (P/N 90 88 6 612 310) provides a method for current measurements over an extended period of time.

The measuring device needed depends on the situation.

The DISplus may be used in situations of suspected high current draw. The 1000 amp probe measures AC and DC current from 0 to 1000 amps. It is a self calibrating inductive pick-up. (Use this pick-up with current draws over 10 amps)

The DISplus, through MFK 1 is capable of measuring up to 2 amps.

The MoDic is particularly suitable for extended measurements and provides a graphical readout of recorded measurements over time. It is recommended for the situations where the use of a multimeter provided insufficient information for problem diagnosis.

The DVOM may be used for measurements up to 10 amps either with the measurement adapter or alone.

Note:
It is extremely important that the battery is NOT disconnected during the installation of test equipment. Disconnection of battery may cause faulty component to function normal.
Performing Closed Current Draw Test

- Select proper measuring device (DISplus, MoDic or DVOM)
  - Remember amperage draw in excess of 10A will damage DVOM.
  - Use inductive amp probe of DISplus when amperage draw is high.
  - When using DISplus inductive probe, clamp on negative battery cable with arrow pointing away from battery. Switch off all consumers.
  - (It is not necessary to disconnect B from body when using inductive probe)

- Connect (-) test lead to negative battery terminal and (+) test lead to a known good ground.

- Ensure all systems are OFF!

- Be sure DVOM is on and set in proper mode.

- Disconnect battery ground lead from body.

- Observe meter reading, wait for vehicle to enter sleep mode.

- Identify faulty circuit by disconnecting fuses, relays, control modules or connectors, observing meter readings.

- Defective circuit is found when current is below maximum closed current for vehicle being tested.

<table>
<thead>
<tr>
<th>Maximum closed current by vehicle</th>
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<tbody>
<tr>
<td>E31  50mA</td>
</tr>
<tr>
<td>E32  50mA</td>
</tr>
<tr>
<td>E34  40mA</td>
</tr>
<tr>
<td>E36  30mA</td>
</tr>
<tr>
<td>E38  50mA</td>
</tr>
<tr>
<td>E39  40mA</td>
</tr>
<tr>
<td>E46  40mA</td>
</tr>
<tr>
<td>E52  50mA</td>
</tr>
<tr>
<td>E53  40mA</td>
</tr>
<tr>
<td>Z3   30mA</td>
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Note:
Refer to SIB 61 08 00 for complete instructions to perform closed circuit current measurement using measurement adapter and MoDic adapter.