

Task 1: Measuring the battery and the alternator voltage

Materials:

- demonstration car (12V installation)
- digital voltmeter (multimeter)

Task 1.A
Idle battery voltage

Conditions:

- ignition off
- accessory power users off

With the aid of the digital voltmeter, measure the battery voltage

This reads: V

Task 1.B
The battery voltage while discharging

Conditions:

- lights on

With the aid of the voltmeter measure the battery voltage.

This readsV

The measured difference with task 1.A isV

Please explain this difference

Task 1.C
Battery voltage during ignition

Conditions:

- switch off as many accessory power users as possible
- ensure that the engine cannot start, for example by removing the petrol pump fuse

Measure the battery voltage during ignition.

This reads:.....V

Task 1.D
Measuring voltage loss (1)

Conditions

- switch off as many accessory power users as possible
- ensure that the engine cannot start, for example by removing the petrol pump fuse

Place the voltmeter on the positive cable (this cable usually runs from the battery's positive pole to the starter motor).

Start the engine and measure the voltage across the positive cable.

This reads:V

Describe exactly what you have measured.

**Task 1.E
Measuring voltage loss (2)**

Conditions

- switch off as many accessory power users as possible
- ensure that the engine cannot start, for example by removing the petrol pump fuse

Place the voltmeter across the negative pole of the battery and the grounding point

Start the engine and measure the voltage

This reads :V

Give an indication of the measureable voltage if there is a poor ground connection

**Task 1.F
Measuring the alternator voltage (1)**

Conditions:

- allow the engine to run on idle (500-900 t/min.)
- check if there are any accessory power users on.

Measure the battery voltage.

The charged voltage is:V

**Task 1.G
Measuring the alternator voltage (2)**

Conditions:

- allow the engine to run at fast idle (1500-2000 rpm)
- check if there are any accessory power users on.

Measure the battery voltage.

The charged voltage is:V

**Task 1.H
Conclusions**

Now fill in the following:

The correct idle battery voltage is approximatelyV

We have measured:V

Our conclusion is:

The correct charged battery voltage during ignition is approximatelyV

We have measured:V

Our conclusion is:

The correct alternator voltage is approximatelyV

We have measuredV

Our conclusion is

Question:

What could be the cause of fluctuation in the voltmeter display in the measurements in F and/or G?