Battery capacity tester (model 1D)

Another smart instrument by RS Innovation

The instrument is designed to test the real battery capacity of deep cycle 6, 12 or 24V batteries by discharging the battery with a constant current to its lowest point.

We've included a 30s battery crank test to give a quick indication of the battery status when testing a normal car battery.

The discharge current can be selected between 1A and maximum for that battery voltage. Refer to the specification section below for details. The unit will log the battery voltage to a unique file on the SD card every minute. The filename is clearly displayed and it must be noted with that specific battery. Upon completion, the display will show the tested battery capacity in Ah.

Operation is very simple: connect the unit to battery, select the option capacity test or crank test. For discharge testing, select the discharge current and the voltage at which testing will stop. It's that simple!

The voltage at which the battery is deemed to be empty and the last used discharge current is remembered by the instrument for the next test. This is useful when testing several batteries of the same type.

When the temperature exceeds 55°C, the fan will come on. The fan remains on until the temperature drops below 40°C. The unit can thus be hooked up to a battery and left to test overnight.

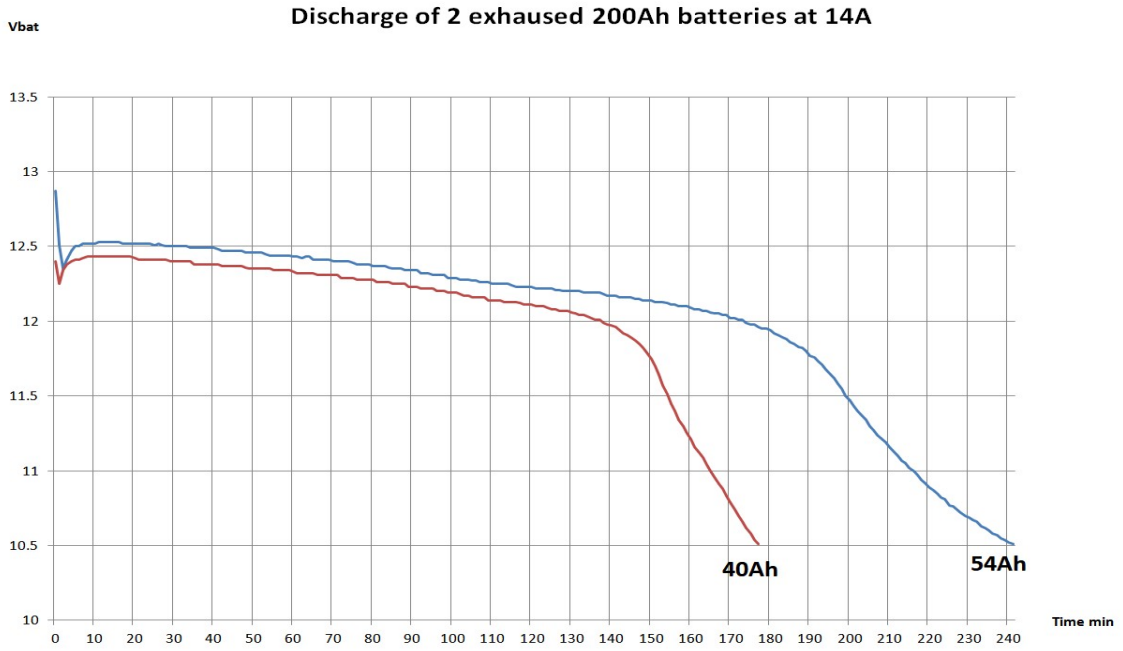
After completion of the test, simply disconnect the battery clamps.

When the unit measures the battery voltage, it compensates for the resistance of the lead cable and the glass fuses. Always use a copper multi-stranded cable of 4 to 6mm2, 900mm long.

The file on the SD card is stored in CSV format and is thus easily imported into Excel. Within a few mouse clicks, a graph like the one below can be shown.

How to: *Select the first column by clicking on 'A', select the 'Data' menu. Select 'text to colums'. Select 'Delimited'. Select 'Space' and 'finish'. Then, select the time column data and the voltage data column, the select 'insert XY chart'. Done !!!*

BATTERY CAPACITY TEST

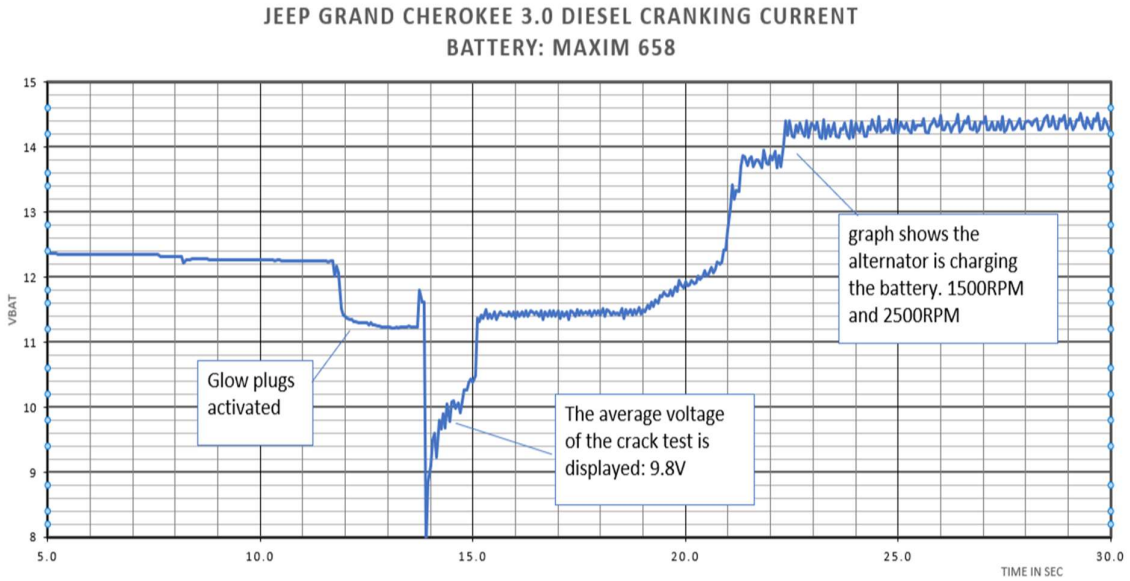


During the first 60s, a sample is saved every second, thereafter for the first 20min, every 10s and thereafter, every minute. For this reason, the time is stored as minutes with the seconds as a fraction. That way, an Excel XY graph will show a linear time axis. If the data is plotted as a line graph, the time line will be non-linear.

BATTERY CRANK TEST

During the crank test, the battery voltage is logged at a much faster rate. 20 samples per second are taken over a 30s time period. The graph below shows the fast samples taken. The files also contains a column with the average over 16 samples. It is the minimum value of that average which is displayed as the minimum cranking voltage.

After pressing the START button on the instrument, turn the ignition ON. Wait a few seconds prior to cranking the engine. With a diesel vehicle, wait until after the glow plug light goes out.



After the engine has started, it is useful to increase the engine's RPMs to observe the difference in the alternator/regulator performance, especially for older cars which have less sophisticated electronic battery charging methods. The graph above shows the alternator/regulator is operating correctly.

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Specifications

Battery voltage range: 0 to 29V

Accuracy of the measured voltage: 1%

Max current for batteries up to 13V: 1 to 25 Amps in 0.1A steps

Max current for batteries between 13 and 20V: 1 to 25 Amps in 0.1A steps

Max current for batteries higher than 26V: 1 to 8 Amps in 0.1A steps

Accuracy of the set current: 2%.

External power supply adapter: 9V (1A min) DO NOT USE A HIGHER VOLTAGE

Power consumption: 9W when the FAN is ON

Thermal cut-out: 90°C

Fuses: 20mm glass 10A (always replace with the same value as it will affect the voltage measurement calculation)

Reverse polarity protection

WARNING: Do not restrict the airflow of the fan. The unit can get fairly warm.