Battery Capacity Tester (model BCT1-60V FW 1.0)

Another smart instrument by RS Innovation



The instrument measures the real capacity of batteries up to 60V by discharging the battery with a programmable constant current to a programmable lowest voltage.

We've also included a 30s battery vehicle 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 up to 25A, depending on the battery voltage. Refer to the load curve in the specifications section. 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:

Power up the unit. When the display shows 'connect battery', connect the red and black clamps to the 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.

A cooling fan will automatically go ON when the unit becomes too warm and go OFF when the temperature falls below the safe level. The unit can thus be hooked up to a battery and left to test overnight.

After completion of the test, disconnect the battery clamps.

During the capacity test, the instrument compensates for the resistance of the lead cable.

The unit uses an external 9V power supply adapter to be able to discharge the battery to 0. Verify the battery specification if you can do so safely.

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

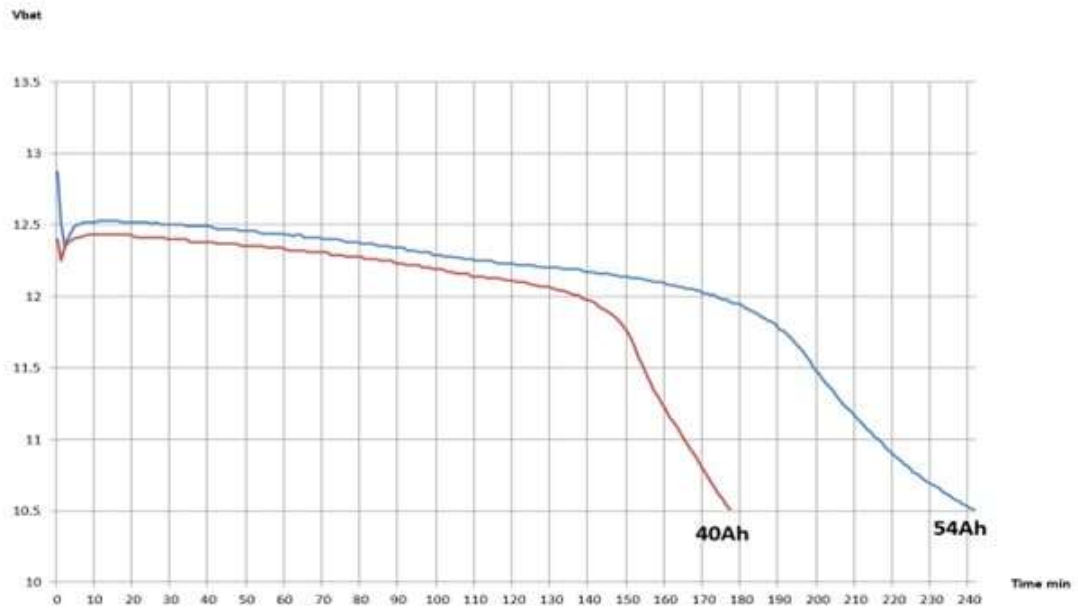


Fig1: Discharge of 2 exhausted 200Ah batteries at 14A

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.

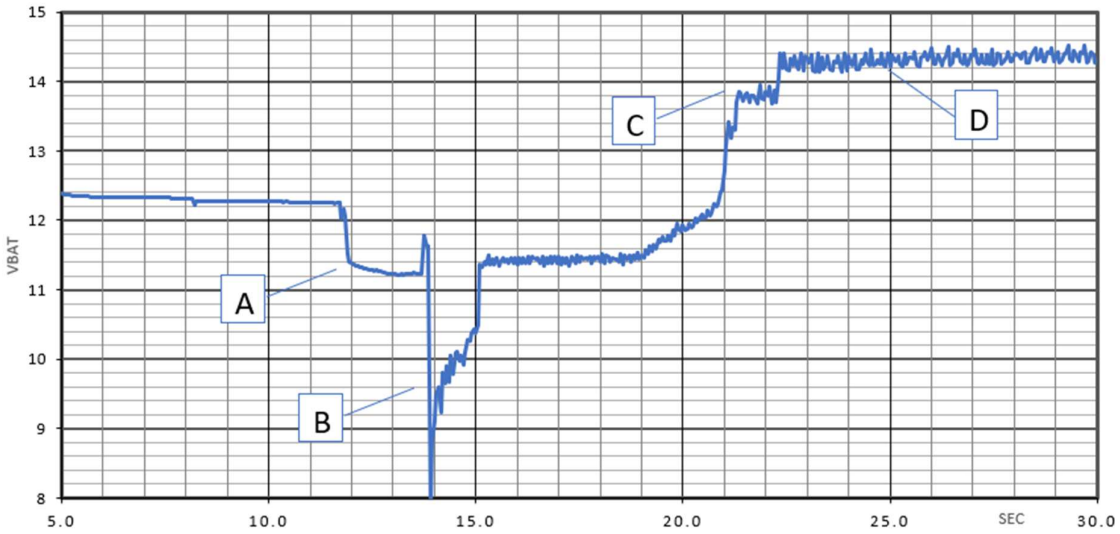


Fig2: Crank test on a Jeep Grand Cherokee 3.0 diesel with a Maxim 658 battery

A glow plugs activated **B** cranking **C** charging at 1500 RPM **D** charging at 2500 RPM

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.

Specifications

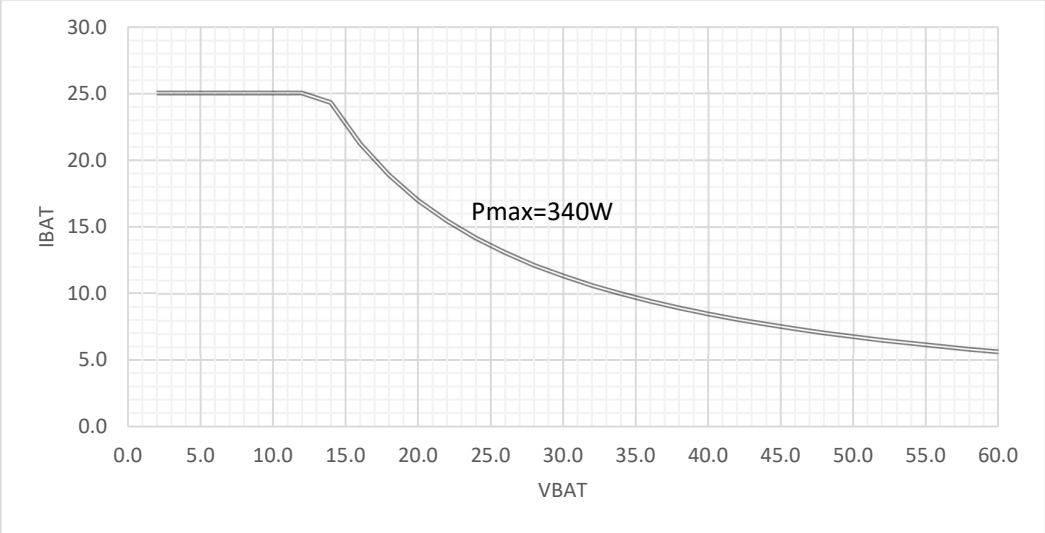


Fig3: Load curve

Battery voltage range:	0 to 61V
Voltage accuracy:	1%
Current accuracy:	2%.
External power supply adapter:	9V DC (1A min) *DO NOT USE A DIFFERENT ADAPTER*
Lead wires:	multi-stranded 4 to 6mm2, length 900mm. If using a different cable, the error on the measured voltage will increase.
Power consumption:	9W with the FAN 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:	YES

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