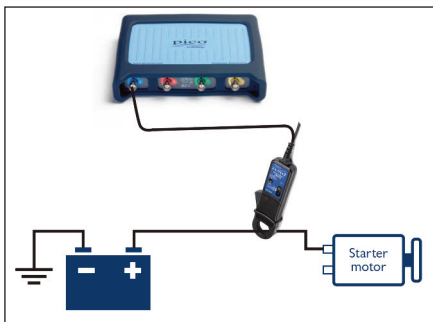


# Fundamental Scope tests

An oscilloscope is a versatile tool that can be used in a variety of ways. PicoScope has details on some of these diagnostic tests, where a scope can be used to help you in everyday tasks.

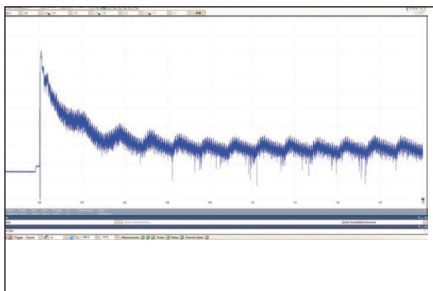
## Relative Compression Test

Used to check suspected compression problems in an engine. Guided Test AT004.



Connect the 2000A Current Clamp around the positive battery cable. Make sure that the orientation of the clamp is correct, with respect to the current flow away from the battery. The timebase on the scope should be set to 200 ms per division.

Crank the engine and view the waveform, that shows the amperage needed to crank the engine, usually between 80 and 200 amps.



Once the engine has overcome the initial friction and inertia, the waveform should settle down to a consistent 'sawtooth' pattern – zoom and rulers can help evaluate here, although a drop in cylinder compression is often quite obvious.

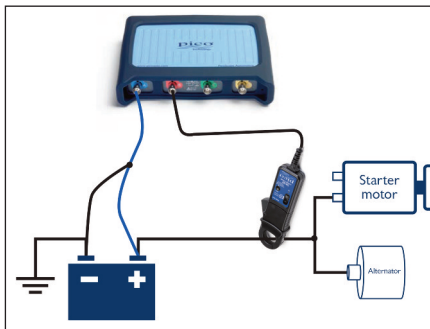
If the waveform confirms a cylinder is losing compression, further testing with a low amp current clamp, connected to an injector or ignition coil, will help to identify the offending cylinder.

Using the PicoScope WPS500X pressure

transducer will highlight any mechanical issues requiring further attention.

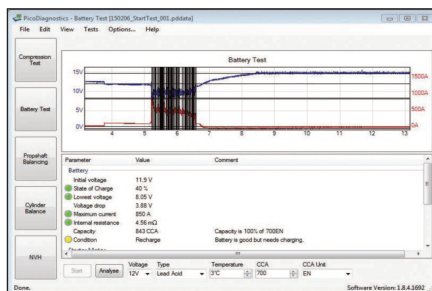
## Battery, Alternator and Starting Test

Used to check the starting and charging circuits.



Connect a BNC cable from Channel A on the PicoScope to the positive battery terminal, and a ground point on the vehicle. Then connect a 2000 A current clamp to Channel B and position it around the starter motor feed cable.

Follow the setup wizard in our PicoDiagnostics software to run the test.



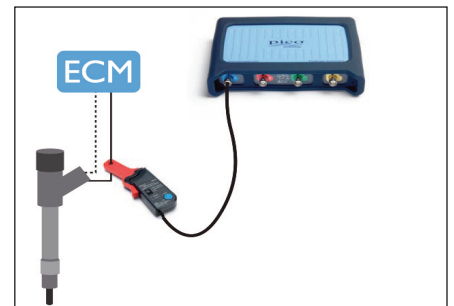
Remember to put the correct data in the drop-down boxes (temperature, type of battery and the battery specifications: CCA, EN, DIN). The test result will be displayed in a simple traffic light system, and covers all the starting and charging components.

This result can be printed out as a report for your customer. This report can be customised with your workshop details and logo, as well as your customer's information.

## Diesel injectors Test

Used to check suspected injector problems in an engine. Guided Test AT039.

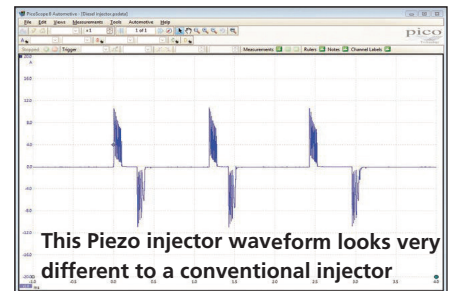
Connect using a 20A/60A current clamp,



connect to Channel A on your PicoScope and place the clamp around the fuel injector supply wire. You may need to connect to each wire in turn to identify the correct one.

It may also be necessary to pull back some of the loom's outer shielding to fit the current clamp.

Run by pressing the start button or the space bar to capture the waveform (the engine must be running).



Read Each injection event will be visible and will include: pilot, pre-, main and post injection to confirm the fueling strategy under all test conditions. You can create a reference waveform to quickly compare multiple injectors on the screen. The comparison is made easy with the rulers integrated in the software. PicoScope software contains Guided Tests for all common injector makes.