



EQP-114 – Battery & Electrical System Tester

QUICK START GUIDE



For testing all 12V automotive starting batteries rated in CCA, SAE, DIN, JIS#, IEC, EN and CA. Also for testing vehicle Electrical System.



Caution: Never lay tools on the battery top. You may short the terminals together causing harm to yourself, the tools or the battery. Always follow Battery Council International safety recommendations.



Warning: Battery terminals contain lead compounds which is hazardous to our body if consumed. **Please wash your hand immediately after handling.**

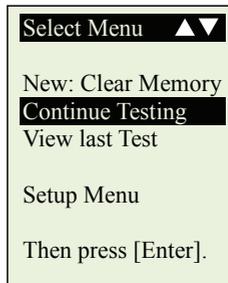
had switched OFF, let the battery rest for at least 1 minute to recover before testing commences.

The car engine and all other accessory loads must be **OFF** during test in order to have an accurate result. When attaching the analyser clips, make sure that the battery posts were not oxidized or badly corroded. Clean them first before clamping to it. Do not clamp onto the steel bolts directly which may give inaccurate and inconsistent results.

Testing on stand-alone batteries:

Clean the battery posts with a wire brush prior to testing. For side- post batteries, install stud adaptors. Do not use steel bolts for better results.

1. Connect the tester clamps to the battery posts, Red to the positive (+) terminal and Black to the negative (-) terminal. Rock each clamp back and forth for better contact.
2. It will run through a self-test and when completed it displays the Main Menu as shown below:



New: Clear Memory

Selecting this item will allow the tester to clear the last tested results stored in its memory and begin a new test.

Continue Testing

Selecting this item will allow you to continue the last test on the same car from where you had stopped.

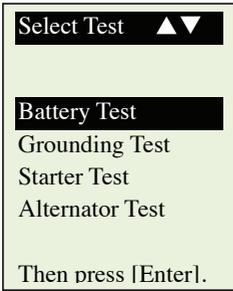
View Last Test

Review the test results of the last tested car

After you have made your choice, selecting "New: Clear Memory" or "Continue Test..." press  key will proceed to the display below:

Performing Battery Test while it is still in the car:

Vehicle that was running has to have its engine OFF first and then switch ON the headlights for 30 seconds to remove the surface charge. After the headlights

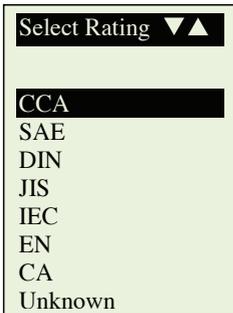


BATTERY TEST

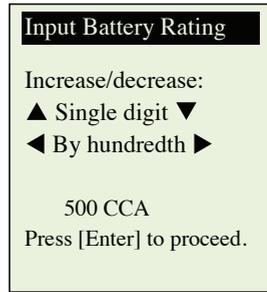
3. Pressing  again will proceed to Battery Test as shown below.



4. Select the rating system: CCA, SAE, DIN, JIS#, IEC, EN, CA; according to the battery rating. If you cannot find its rating then select Unknown.



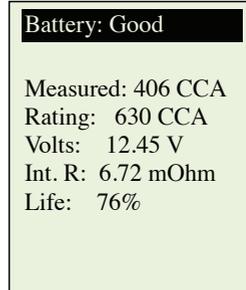
5. If the battery is rated in JIS#, refer to the conversion list provided to convert to CCA rating before keying into the Analyser.
6. Once you had the system rating in mind, select and press  key and the display will show:



Key in the battery rating values using the ◀◀ or ▶▶ key for increase or decreases the values by step of 100 units. For double digits increase or decrease, use the ▲ or ▼ key by step of 5 units each press.

Ensure the correct battery is fitted to the vehicle with a suitable rating

7. Once the rating is confirmed, press  key will start the testing process and will display the result in less than 5 sec.



RESULTS: Good

'Good' indicates the battery in good condition. 'Replace' indicates that the battery needs to be replaced.

Voltage: 12.45V

This indicates the tested battery voltage (12.45V). It depends on the stage of charge on the battery:

CCA (Cold Cranking Amps): 406 CCA

CCA rating is being used here. If other rating (SAE or DIN or JIS# or IEC or EN or CA) then it will base on the selected respective rating to calculate the results.

Int. R (Internal Resistance): 6.72mΩ

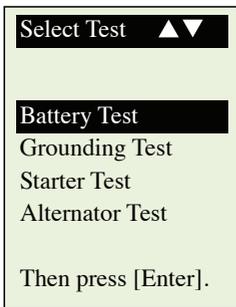
Internal resistance should fall between
2.0mΩ ~ 15.0mΩ for normal condition.

LIFE: 76%

Indicates the battery life expectancy in percentage.

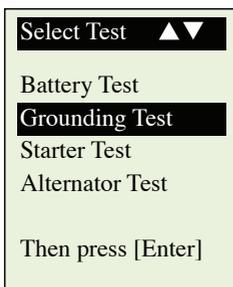
*If the reading is greater than 45%,
 RESULT will display Good. Anything less
 than 45%, RESULT display Replace.*

8. Press  key will return to the Main Menu as shown below:



Grounding Test

9. Pressing  key once will scroll down to the "Grounding Test"

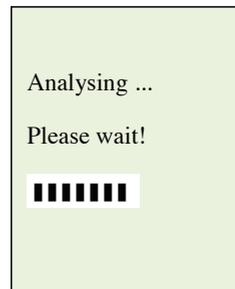


10. Press  key will proceed to the display as follows.

Grounding Test

Clip the Black clip to engine body or the car chassis and the Red clip to the battery [+] post.

11. Now transfer the BLACK tester clip from the battery [-] terminal to a suitable position on the engine or chassis body leaving the RED clip still attached to the battery [+] terminal.
12. Now press  key again and it will start analysing.



13. Once it has finished analysing, it will prompt you with an instruction stating that you should unclamp the Black tester clip from the engine or chassis body and transfer to the battery negative [-] terminal within 20 seconds time limit if not the testing procedure has to be repeated again as the gathered data will be lost.

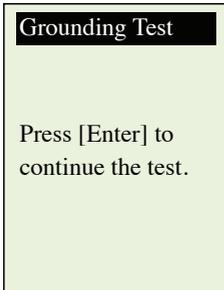
Grounding Test

Now transfer the Black clip to the battery [-] post.

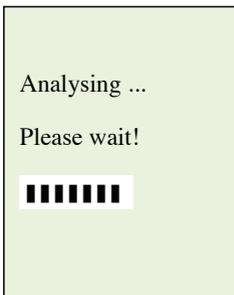
The time limit given is 20 seconds before the memory is lost.

NOTE: 20 seconds is given to establish the contact to the battery [-] post failing which the data obtained earlier will be lost. Then you need to repeat the whole testing procedure again.

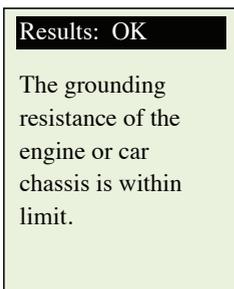
14. Once the Black clip is clamped onto the battery [-] terminal, the Analyser display will light up as shown.



15. Now you need to press  key to proceed and the display will show as follows



16. If the measured resistance reading is within limits, then it will display as follows:



17. If the measured resistance reading has gone beyond the limits, then it will display the screen as follows:

Results: High Ohms

The grounding resistance of the engine or car chassis is high.
Clean the cable contacts or replace cable if necessary.

Note:

The above indicates that the ground contact from the engine body to the battery is bad. Check for rusted or corroded point of contacts. If found, dismantle it for cleaning or replace before fixing back. Repeat the test again after fixing.

18. If you did not follow the right procedures during the testing, it will display the results as follows:

Results: Not detected

Wrong procedures.

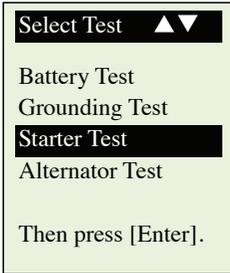
Try again and follow the step by step instructions given.

19. To exit the program, pressing the  key at any moment will exit and return back to main menu screen

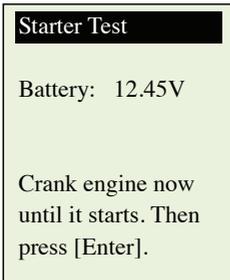
Starter Test

Note: *Before performing this test, make sure that the battery is fully charged and in good condition.*

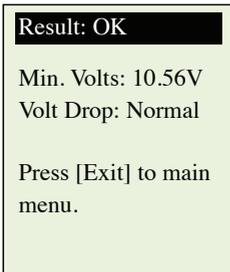
20. With engine OFF, place the vehicle transmission in NEUTRAL for Manual and PARK for Automatic then apply the parking brake.
21. Pressing  key once will scroll down to the "Starter Test"



22. Press  key to continue and the display will show as follows:



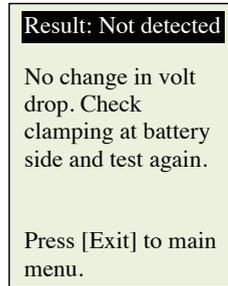
23. Switch the ignition key to ON and start cranking the engine until it starts. Immediately after that press  key and the results will show as follows:



24. If the voltage drop is too great during the cranking, the tested results will display as follows and will prompt you to check the starter system.



25. During cranking when it detects that there is no drop in voltage, it will display the following screen:

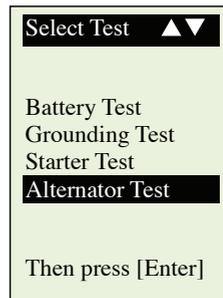


26. To exit the program, pressing the  key at any moment will exit and return back to the main menu screen.

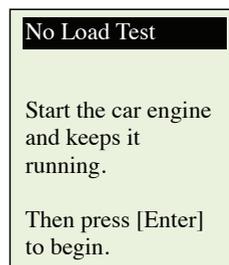
Alternator Test

No load testing at 3000 RPM:

27. With engine OFF, place the vehicle transmission in NEUTRAL for Manual and PARK for Automatic and apply the parking brake.
28. Pressing  key once will scroll down to the "Alternator Test"



- Press  key to continue and the display will show:



29. Starts the engine then press  key again and the screen will prompt you as shown below:

No Load Test

Make sure all electrical loads are turn OFF.
Rev the engine to 3,000 rpm. Press [Enter]. Hold on to this 3,000 rpm for 10 seconds and release the pedal.

30. After that press  key again and it show as below:

No Load Test

At 3,000 rpm:

Av Volts: 14.2V
<15.0V: Max. 14.6V
>13.3V: Min. 13.8V

Press [Enter] for results.

31. Press  key will show the results of the test:

Results: Good

At 3,000 rpm,
No load Test:
Average Charging
Volts: 14.2V

Press [Enter] to continue to Loading Test.

32. If either minimum or maximum charging volts are not within the voltage range limits then it will display one of the screen as below (Fig. 1 & Fig. 2) and it will prompt you to check the alternator system for the fault.

Results: Low charge

At 3,000 rpm,
No load Test:
>13.3V: Min 13.2V

Check for loose belt and the alternator.

Fig.1

Results: High charge

At 3,000 rpm,
No load Test:
<15.0V: Max. 15.6V

Check alternator and the regulator.

Fig.2

Testing with load at 2,000 RPM:

This test is to check the alternator's behavior during loading.

33. Continue from the previous test, proceed to the next step by pressing  key will enter to the display as follows.

Loading Test

Switch ON all electrical loads. Rev engine up to 2,000 rpm. Press [Enter]. Hold on to this 2,000 rpm for 10 seconds and release the pedal.

34. You need to switch ON all loads (Headlights Radio, Air-Conditioner, Heater, etc) and press  key and it shows as below:

Loading Test

At 2,000 rpm:
Av. Volts: 13.3V
>13.5V: Max. 13.8V
>12.5V: Min. 12.8V

Press [Enter] for results.

35. Press  key again and the result will be shown as below:

Results: Good

At 2,000 rpm,
Loading Test:
Average Charging
Volts: 13.3V

36. If either minimum or maximum charging volts are not within the voltage range limits then it will display one of the screens as below (Fig. 3 & Fig. 4) and it will prompt you to check the alternator system for the fault.

Results: Low charge

At 2,000 rpm,
Loading Test:
>13.5V: Max.
13.3V

Check for loose belt
and the alternator.

Fig.3

Results: Low charge

At 2,000 rpm,
Loading Test:
>12.5V: Min. 12.4V

Check for loose belt
and the alternator.

Fig.4

37. To exit the program, pressing the  key at any moment will exit and return back to the main menu screen.

HELP KEY

38. Selecting this key will help you familiarise with the analyser by explaining the various functions and the results.

To access to this function, just press the  key during the wakeup and the display:

Battery Test ▲▼

How to operate

Voltage
Battery ratings
Internal R.
LIFE

Press [Help] to read
[Exit] to menu.

39. Use the ▲ or ▼ key to scroll to the item you need and then press .

How to operate ▲▼

Operation:
Engine must be OFF.
Locate the battery.
Clamp Tester to
Battery [+] and [-]
posts. Check battery
rating [CCA, SAE, JIS,
DIN, IEC, EN,
CA].Key the rating
values. The Tester will

40. Press >> key to scroll to next page.

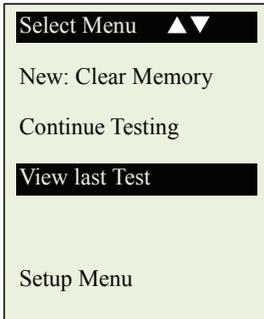
posts. Check battery
rating [CCA, SAE,
JIS, DIN, IEC, EN,
CA].Key the rating
values. The Tester will
lead you through the
whole
testing process.

[Exit] to menu.

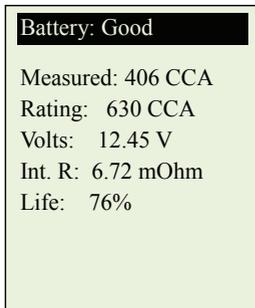
- To exit this function, just press the  key will return back to the main menu display.

PRINTING THE LAST TEST RESULTS

41. Printing of the Last Test Results can only be done while in this View Last Test mode. This is to ensure that the results printed will be the final ones as every test redone will be updated in its memory.



42. Press  key will proceed to display the last test results depends on the type of test you had performed earlier. (Fig. below)



Important:

The tester has to be connected to a 12V battery in order to work with the mobile printer. This is because it needs higher current (amps) to operate which the PC USB output is unable to provide.

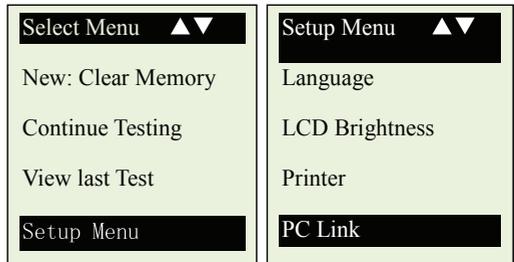
To print just press  key on the EQP-114 Tester the mobile printer will start printing.

PC LINK

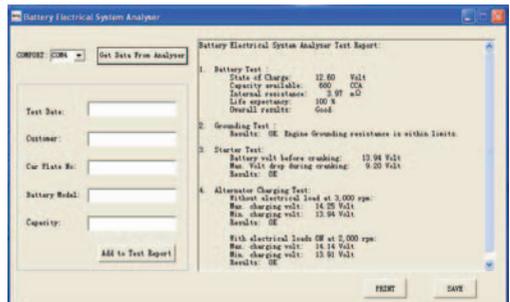
43. The PlusQuip EQP-114 is also designed to link with a PC for data storage, and printout through normal PC printer. To do so, the required PC operating system driver and software has to be installed in order to operate.
44. To download the software files visit the website www.plusquip.com.au/downloads Select the EQP-114 software link.
45. Unzip and open the downloaded files. Install the operating system driver (Suitable for Windows XP, Vista and 7 only) by double clicking on the Driver Installer icon.
46. Now double click on the EQP-114 Setup file icon. Follow instructions on screen to install the EQP-114 software.
47. Now link up the EQP-114 with your PC. In the Setup Menu display press  key to highlight "PC Link" and then press  key to activate.



Refer to the EQP-114 Full User Manual (available from www.plusquip.com.au/downloads) for additional information about the use of this software.



48. To confirm if there is communication: click on [Get Data From] tab and the Last Test Result will appear. See example below.



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