LASER®

Part No. 8206

Vehicle Battery Tester

12V

Instructions

www.lasertools.co.uk

Introduction

The Laser Tools 8206 vehicle battery tester is a compact unit that accurately tests battery state, cranking voltage and charge voltage. Simply enter the battery details from the battery label and run the chosen test. The results are displayed on the LCD screen. The CCA (cold cranking amps) figure can be used to predict the lifetime of the battery. The unit has no internal battery and is mounted in a protective rubber cover.

Specifications

Function:	CCA testing: SAE, DIN, EN, IEC, CA
	Battery voltage when engine is starting
	Charging voltage when engine is running
Test ranges (Range of cold cranking amps):	SAE: 200-950
	DIN: 105-600
	EN: 185-900
	IEC: 125-710
	CA (MCA): 250-1190
Resolution:	Voltage: 0.01V
	CCA: 1CCA
Accuracy:	Voltage: ± 0.05V
Battery type:	12V (9-15V) Normal lead-acid battery; Sealed maintenance-free battery; Maintenance-free battery; EFB – enhanced flooded cell battery; AGM – absorbent glass mat battery. Note: not suitable for Lithium batteries.
Reverse polarity protection:	Reverse polarity protection <20V DC
Operating temperature:	0°C - 50°C (32°F - 122°F)
Storage temperature:	-30°C - 70°C (-22°F - 158°F)
Display:	LCD with background light

Notes:

CCA (Cold Cranking Amps): This is the rating to define a battery's ability to start an engine in cold temperatures (it is easier to start an engine in a warm environment than in a cold one). The rating refers to the number of amps a 12V battery can deliver at 0°F (-18°C) for 30 seconds while maintain a voltage of at least 7.2V. The higher the CCA rating, the greater the starting power of the battery. Battery starting power deteriorates as the battery ages; replacement batteries should equal or exceed the OE battery in ratings.

CA or MCA (Marine Cranking Amps): This marine cranking test is based on SAE CCA requirement but carried out at the higher temperature of 32°F (0°C), usually indicated on batteries as CA (Cranking Amps) or MCA (Marine Cranking Amps) rather than CCA (Cold Cranking Amps). The cranking current (CA/MCA) is typically 25% higher than the corresponding SAE CCA marked battery, because of the higher temperature of the test.

Testing standards:

SAE:	CCA standard for the United States.
DIN:	CCA standard for Germany.
EN:	CCA standard for Europe.
IEC:	CCA standard for International Electrotechnical Commission.
CA (MCA):	CA / Marine Cranking amps.

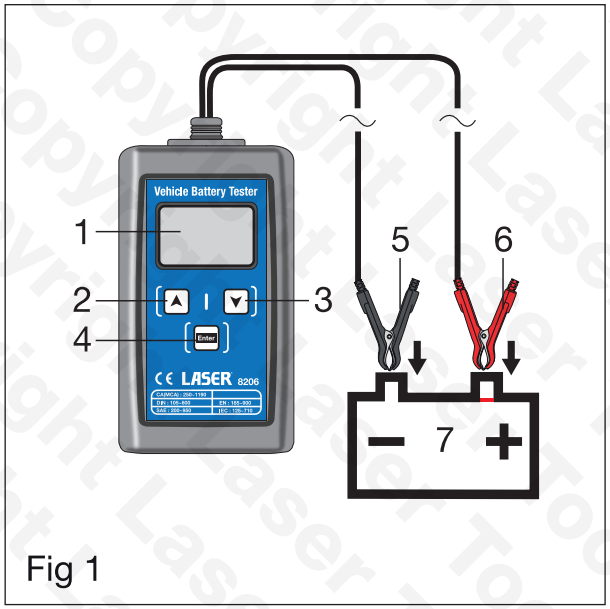


Fig 1

Ref.	Description
1	LCD display screen
2	Increase button
3	Decrease button
4	Enter button
5	Negative battery clip
6	Positive battery clip
7	Vehicle battery

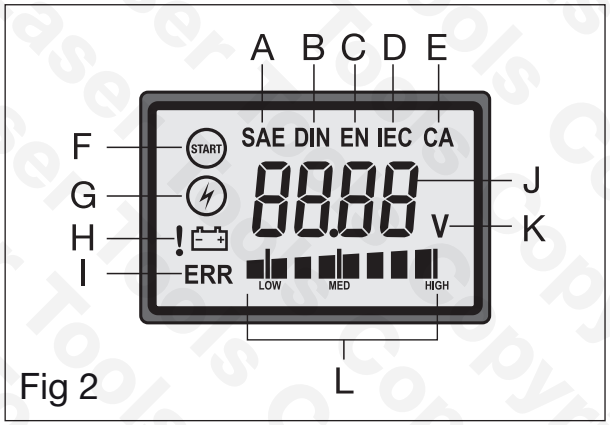


Fig 2

Ref.	Description
A	SAE symbol
B	DIN symbol
C	EN symbol
D	IEC symbol
E	CA (MCA) icon
F	Engine START voltage
G	CHARGING voltage
H	Battery power warning
I	ERROR symbol
J	Voltage display
K	Value for voltage or CCA
L	CCA level bar indication

Operation:

Before testing a battery in a vehicle, ensure ignition is switched OFF and all electrical equipment is OFF. Close all doors, tailgate, etc. Ensure battery terminals are clean.

Refer to **Figure 1:** Connect the battery tester to the battery: the red clip (**6**) is connected to the battery's positive (+) terminal, the black clip (**5**) to the battery's negative (-) terminal.

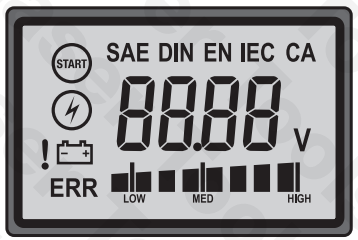


Fig 3

The LCD display screen will light up if the battery has been connected correctly and there will be a short beep. The full symbol set (**Figure 3**) will be displayed for about two seconds, then the tester will measure and display the battery voltage. The voltage and the battery power symbol will be displayed (**Figure 4**):

Fig 4

Battery Test:

Note: A freshly charged battery will show a higher than normal voltage; if this is the case, switch on the headlights for two or three minutes to allow the voltage to stabilise.

The battery tester can be used in 8 modes:

1. Battery voltage measurement
2. SAE test
3. DIN test
4. EN test
5. IEC test
6. CA (MCA) test
7. Engine start voltage
8. Charging voltage

Refer to **Figure 1**: Once the tester is connected to the battery, the mode is selected by pressing either the increase button (**2**) or the decrease button (**3**). Press the enter button (**4**) to select the desired mode. For example: Select the SAE test. SAE will show on display (**Figure 5**):

Fig 5

Press enter button (**4**) to enter SAE mode and then enter the CCA value of the battery. A short press of the increase or decrease button will vary the value by 1. Hold the button for faster operation.

Instructions

The CCA value of the battery can be found on the label on top of the battery (for example 760 SAE/GS) or from the battery manufacturer's web site if you know the battery model number. If the wrong CCA value is entered, the displayed CCA level bar indication will be incorrect. Once entered, the CCA value will be displayed (**Figure 6**):

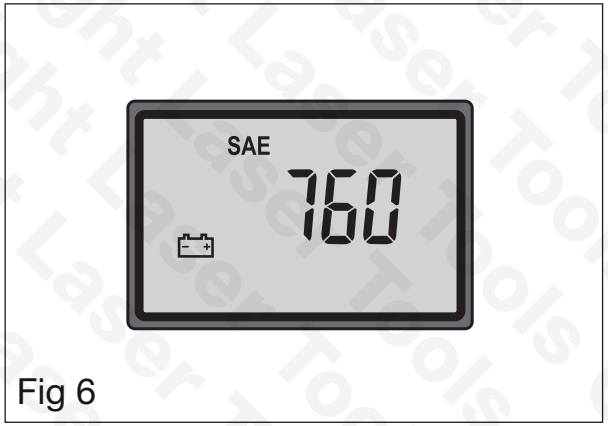


Fig 6

Press enter button (**4**) to begin the test. After a few seconds the measured CCA value will be displayed. The condition of the battery will be shown by the CCA level bar indication (**Figure 7**):

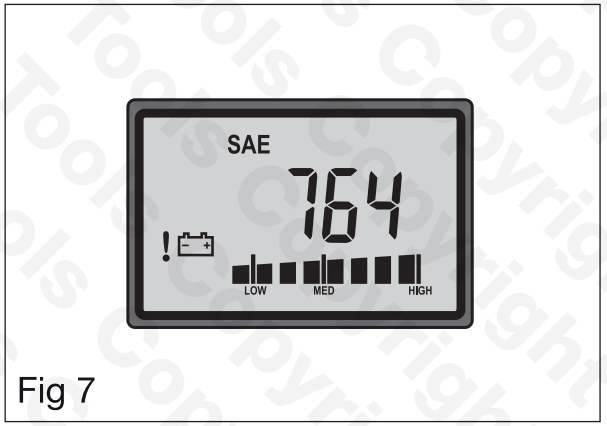


Fig 7

The tester will take the measured CCA figure and compare this to the entered factory CCA figure. It uses this data to calculate the state of health of the battery. This is indicated by the CCA level bar indication on the display (**L** in **Figure 2**). There are 8 levels (bars) of indication. If the CCA measured from the battery is 0, the level bar indication will not appear. To achieve an accurate bar indication, the correct factory CCA must be entered.

Instructions

In this example, the battery CCA SAE figure from the label on top of the battery has been entered into the tester (760). The test figure is confirmed as 764 CCA and the CCA level bar indication is showing the high reading. So this battery is in very good condition.

Engine start voltage test:

Due to the starter motor current, the battery voltage will drop. The tester measures the minimum voltage during the engine start.

Select the Engine Start Voltage mode by pressing either the increase button (**2**) or the decrease button (**3**). The Engine START voltage symbol and "test" figures will be displayed (**Figure 8**):

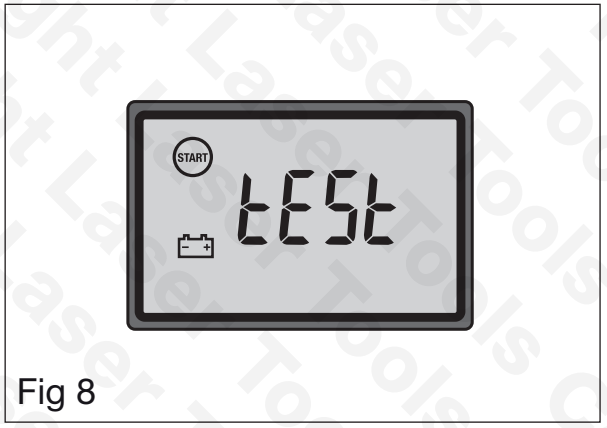


Fig 8

Press enter button (**4**) to begin the test. The display will initially show the measured voltage (**Figure 9**):

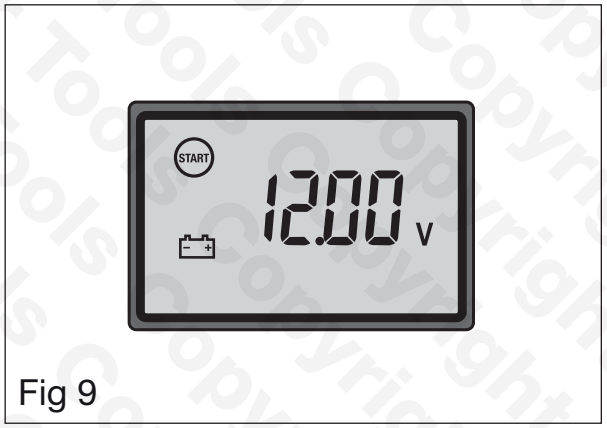


Fig 9

Now start the engine. (Make sure gear is in neutral and hand brake is applied.)

The voltage displayed will decrease until the lowest voltage is measured.

Charging Voltage Test:

Battery voltage increases when the engine is running as the alternator is charging. For a 12V battery the voltage will rise to 14 to 14.5 when charging. If the voltage is too low, the battery will not be fully charged. If the voltage is too high, the battery can be damaged.

Select the Charging Voltage mode by pressing either the increase button (**2**) or the decrease button (**3**). The CHARGING VOLTAGE symbol and “test” figures will be displayed (**Figure 10**):

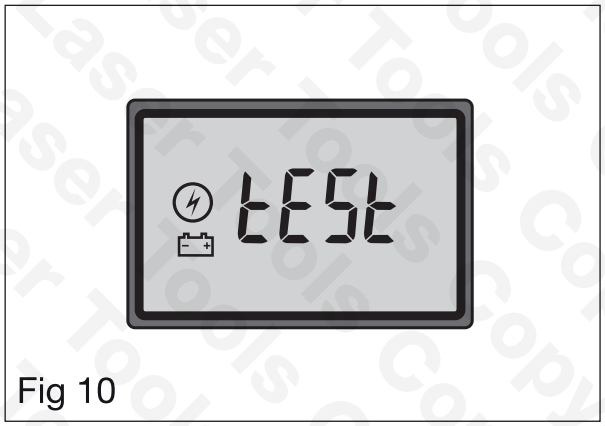


Fig 10

Press enter button (**4**) to begin the test. The display will initially show the measured voltage (**Figure 11**):

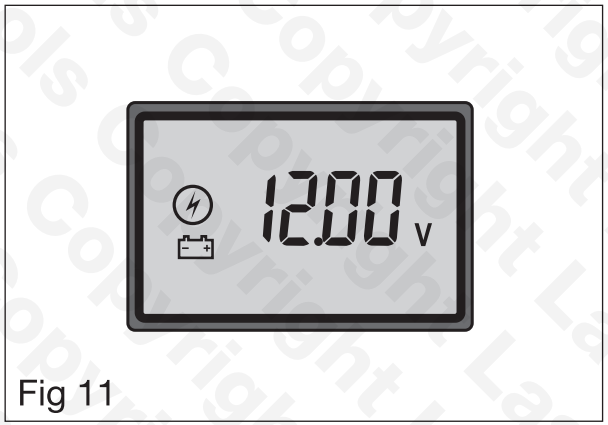


Fig 11

Now start the engine. (Make sure gear is in neutral and hand brake is applied.)

Increase engine speed to 3000-4000 RPM for 3-5 seconds; the voltage will increase until the highest voltage is measured. With all electrical loads switched off, the highest voltage should be in the range 13.5-14.2V.

Turn engine off and remove the test clamps from the battery posts after test is completed.

Error Messages:

Under some conditions an error message may be displayed (**I** in **Figure 2**):

ERR: There is a problem with connection (the tester is not recognising that a battery is connected to it).

OL: Indicates that the value is above the measurement range of the tester. The battery capacity may be too large — check the specification of the battery and ensure its capacity is within the set up range of the tester.

LO: The value is too low to be measured. The battery may be old and/or almost completely discharged. Recharge the battery and wait for at least half an hour after it’s fully recharged before testing again. If, after charging, **LO** is still displayed, the battery is not accepting charge and needs to be replaced.

HI: This symbol appears if the measured voltage is higher than 16V. The tester will stop the test and the display background light will dim to protect the tester. Check the specification of the battery. Check the alternator, it may be overcharging. The maximum voltage measurement of the tester is 15V. The tester is suitable for 12V vehicle systems only.

CONN: The connection between the tester and battery is loose or the battery terminals are dirty. Check the connection, the clips must be fitted tightly. Clean the battery posts with a wire brush if necessary. Red clip to positive (+), black clip to negative (-) ground.

Common Euro-specification Batteries

These are listed for information purposes only. Always follow the information on the battery label, or the battery manufacturer's web site, to determine the accurate CCA figure for the battery before entering this figure into the tester.

MODEL	EQUAL MODEL		DIN	EN
52805	52815		180	240
53517			175	300
53520	53521	53522	150	240
53625	53638	53836	175	300
53646	53621	88038	175	300
53653	53624	53890	175	300
54038	54039		175	300
54232			175	330
54313	54324	54464	220	360
54317	54312	88146	210	360
54437	54466	54459L	210	360
54469	54449	54465	210	360
54519	54533	54612	210	360
54523	54524		210	300
54537	54545	54801	220	300
54551	54580		190	300
54533	54577		220	300
54584	54578	54579	220	300
54590			220	330
54827			210	360
55040	88056		240	450
55041	55042		265	360
55044	55414	88056	220	450
55046			265	510

Battery Table 1

MODEL	EQUAL MODEL		DIN	EN
55056			300	540
55057	54827	88156	320	540
55068	55069	55548	320	390
55218			220	420
55414	55415	55421	255	450
55422	55546	55040	265	450
55428	55423	55427	265	510
55457			300	450
55529			265	360
55531	55545	5559L	220	4210
55559	55530	88056	255	420
55564	55552	55563	255	420
55564	55565	55548	255	420
55570	55567	55565L	255	420
56012			255	420
56048	56068	56069	230	390
56049	56069	56073	250	390
56077	56530		250	510
56091	55811		300	540
56111	55048		360	540
56218	56092		300	510
56219	56216		300	510
56220			280	510
56225	56323		300	510
56318	56312	56311	300	510

Battery Table 2

Common Euro-specification Batteries

MODEL	EQUAL MODEL		DIN	EN
56420	56322	88066	300	510
56530	56618	56638	300	510
56618	56619	56620	300	510
56633	56647	56641	300	510
56820	56821	56828	315	540
57024	57029		315	540
57113	57539		400	680
57114	56821	88074	400	680
57218	57219		420	720
57220	57217		420	720
27230			380	640
57412	57413	57412L	400	680
57512	57513	57531	350	570
58515	58424		450	760
58521	58513		320	540
58522	58514		320	540
58815	58821		395	640
58820	58515	58527	395	640
58827			400	640
58838	58833	88092	400	680
59040	59017	59018	360	600
59218	59219		290	480
59226	59215		450	760
59514			320	540

Battery Table 3

MODEL	EQUAL MODEL		DIN	EN
59518	59519		395	640
59615	59616		360	600
60018	60019		250	410
60026	58811		440	720
60044	60038		500	760
60527	60528		410	680
61017	61018		400	680
61023	62529		450	760
61047	61048		450	760
62034	62038	62045	420	680
63013			470	680
63545	63549		420	680
64020	64317	64318	325	550
64028	64035		520	760
64036			460	760
64317	64318	64323	540	900
65513			540	900
65514	65515		570	900
67043	67045		600	1000
68031	68034		600	1000
70029	70038	70027	630	1050
70036	68040	68021	570	950
71014	71015		700	1150
72512			680	1150
73011			740	1200

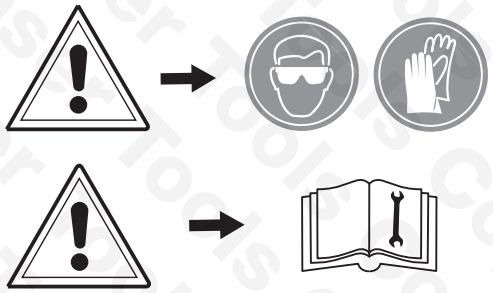
Battery Table 4

Precautions

- The tester is designed to test 12 volt automotive batteries only.
- A freshly charged battery will show a higher than normal voltage; if this is the case, switch on the headlights for two or three minutes to allow the voltage to stabilise.
- Always connect directly to the posts of the battery terminals; connection to a remote post or vehicle ground will affect test result.
- Working near a lead-acid battery is dangerous — a battery generates explosive gases during normal operation. These gases increase when the battery is being charged.
- You must wear approved safety eye protection when connecting or disconnecting battery / battery charger leads.
- Ensure the work area is well ventilated.
- Make sure that there is no possibility of these gases being ignited. There must be no naked flames, cigarettes, flame heaters, blowtorches, etc, near the battery or work area.
- The gases can be ignited by a stray spark — disconnect the charger from the mains before disconnecting the leads from the battery.
- Avoid touching your eyes while working with batteries.
- When working with or near a lead-acid battery make sure there is another person close enough to come to your aid if necessary.

Precautions

- If battery acid contacts skin or clothing, wash immediately with soap and plenty of water.
- If acid enters an eye, immediately flush eye with cool, clean water for at least 15 minutes and seek medical attention.
- When working with or near a lead-acid battery make sure to remove personal metal items such as watch straps, rings, bracelets, necklaces, etc. A short across the battery terminal from one of the above could cause severe burns.
- Always store the battery tester in a dry, secure area.
- Do not use the tool for tasks it is not designed for. Use the product correctly and with care. Failure to do so may cause damage and/or personal injury and will invalidate the warranty.



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