

Battery System Detector

User Manual

V1.1.9



A



B

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Precautions

- There is no battery inside the instrument, and power is drawn from the battery under test.
- Do not use or store the instrument in high temperature, high humidity, flammable and explosive environments.
- Do not change the internal wiring of the instrument and the connection method of the wire clamp.
- If the instrument has malfunctions (such as damage, deformation and incomplete display), please stop using it immediately.
- Make sure that before using test clip insulation layer intact, no damage, exposed, broken and so on.
- The battery poles, terminals and accessories may contain lead, lead compounds or other chemical substances. Please wash them with water after touching them.
- The battery contains dangerous chemicals, which may cause burns or explosions. Please be careful when using it.
- Even if the voltage of the car battery is lower than the safe voltage, avoid touching the test clip during measurement to prevent the risk of electric shock.
- When testing or repairing the car, please wear qualified eye masks to prevent foreign matters from flying into the eyes from the engine.
- Please operate and maintain the car in a well-ventilated environment to prevent inhalation of toxic gases.
- If the car engine is running, please do not place the instrument next to the engine and exhaust pipe to avoid damage due to high temperature.
- When repairing the car, pay attention to the warnings, precautions and maintenance procedures of the car manufacturer.

1. Overview

This product is an instrument for testing the performance of car batteries in the car starting process, charging process and electrical load process. It can be used in car maintenance, battery production and other battery equipment testing or maintenance industries.

1.1 Characteristic

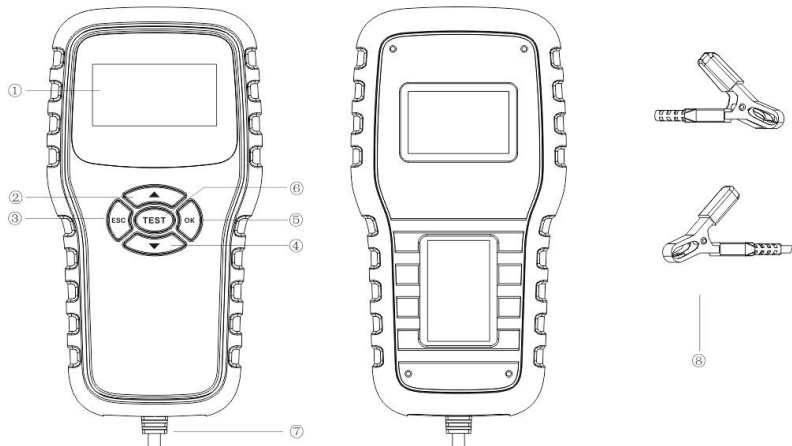
- Excellent design, convenient operation and complete functions
- Adopt dot matrix LCD screen and backlight display
- Use four-wire Kelvin test connection test
- It has protective measures to prevent reverse connection of input signal line and excessive voltage

1.2 Measuring Principle

With the increase of the use time, the battery will gradually age, the main reason is that the surface of the battery plate is vulcanized, corroded and the active material falls off, so that the effective chemical reaction can no longer be carried out. This is the main reason why most batteries can no longer be used.

The Institute of Electrical and Electronics Engineers (IEEE) regards the conductivity test method as one of the test standards for testing lead-acid batteries. The IEEE standard 1118-1996 clearly states: "The measurement of battery conductance is to add an alternating voltage of known frequency and amplitude to both ends of the battery, and then measure the generated alternating current. The AC conductance value is the ratio of the AC current component that is in phase with the AC voltage to the AC voltage". This product is developed based on this judgment basis.

2. Product Structure



Structure Description

Serial number	Description
①	Screen display area
②	▲ button (switch, page up, increasing value)
③	ESC button (return, cancel)
④	▼ button (switch, page down, decreasing value)
⑤	OK button
⑥	TEST button
⑦	Test clip cable
⑧	Test clip: red connect to positive pole(+), black connect to negative pole(-)

3. Technical Parameter

Type	A	B
Detect battery type	12V/24V start-up lead-acid battery AGM/EFB start-stop battery	12V start-up lead-acid battery AGM/EFB start-stop battery
Battery capacity	30~200Ah	
CCA measurement	100~2000	
Voltage measurement	9~35V	
Measurement method	Four-wire Kelvin test connection	
Operating temperature	-10~50℃	
Storage temperature	-20~60℃	
Protection level	IP40	
Dimensions	180*95*37mm	
Material	Shell: ABS; Protective case: TPU	
Weight	About 316g	

4. Cold Cranking Ampere Measurement Range

Standard	Description	Range
CCA	Cold Cranking Ampere	100~2000
IEC	International Electrotechnical Commission	100~1000
EN	European Norm	100~2000
DIN	Deutsches Institut für Normung	100~1000
JIS#	Japanese Industrial Standard	From 26A17 to 245H52
SAE	Society of Automotive Engineer	100~2000

① JIS# needs to check the table to compare with CCA, SAE please refer to CCA.

5. Operating Instructions

5.1 Start Ability

5.1.1 Preparation before the test

- (1) If the car is starting, please turn off the engine and turn the car key to the "OFF" position.
- (2) After the car has been running for a while or when the battery is just fully charged, the voltage will be slightly higher than the normal value. In this case, please turn on the headlights for 2~3 minutes and wait until the voltage drops back to the normal value before measuring.
- (3) Write down the voltage, model and Cold Cranking Ampere standard parameters of the battery to be tested.

5.1.2 Testing procedure

- (1) Clamp the test clamps to the positive and negative poles of the battery to be tested (red to positive and

black to negative), after the correct connection, the instrument will turn on and enter the "Battery Voltage" interface.

① When there is a ferrule on the battery pole to be tested, make sure that the ferrule is in good contact with the battery pole.

(2) According to the voltage of the battery to be tested press "▲/▼" button to select the 12V or 24V (12V is taken as an example below), and press the "OK" button after selection.

① This procedure is not applicable to model B.

(3) In the "Test Items" interface, press "▲/▼" button to select "Start Ability"; after selection, press "OK" to enter the "Battery Type" interface.

(4) Press the "▲/▼" button to select the battery type according to the battery model. After confirming the selection, press the "OK" key to enter the "Battery Parameter" interface.

① When the battery is in the "JIS" standard, you can directly enter the CCA value (when the CCA is known) or call up the corresponding Cold Cranking Ampere standard parameter value according to the battery model (for specific operations, see 5.1.4).

(5) Press the "▲/▼" button (long press to achieve continuous adjustment of the value) to adjust the value until the value is consistent with the standard parameter of the battery's Cold Cranking Ampere.

(6) Press the "TEST" or "OK" button to test, and the test result will be displayed on the screen.

Good	
12.83V	17.76m Ω
BAT PERF	157CCA
BAT Life	100%

(7) Press the "ESC" key at this time, the instrument can return to the "Battery Parameter" interface.

5.1.3 Test result description

➤ Normal test result

Good	
12.83V	17.76m Ω
BAT PERF	157CCA
BAT Life	100%

Test Result	
Voltage	12.83V
BAT PERF	157CCA
BAT RES	17.76m Ω

Voltage **12.83V**

Under normal circumstances, the best battery voltage is 12.3~13V when the car is no-load (not started). If the voltage is lower than 12.3V, it may be due to power loss or aging.

Battery Resistance **17.76m Ω**

The larger the CCA value of the battery, the smaller the internal resistance will generally be.

① The standard of internal resistance varies with different battery materials, so there is no certain standard. However, the internal resistance of the battery of the same model from the same manufacturer will not differ too much when leaving the factory.

When using 24V test, the internal resistance is the sum of two sets of 12V batteries in series.

CCA **157**

Generally, automobiles (gasoline or diesel fuel) have a minimum Cold Cranking Ampere standard when starting, and it is best if the Cold Cranking Ampere output by the battery is greater than the minimum cold start standard of the car.

When using 24V test, the CCA value is 1/2 of the sum of two sets of 12V batteries in series.

Battery Life 100%

The service life measured and evaluated by the instrument is the service state of the tested battery under comprehensive working conditions. Therefore, it is recommended to replace the battery when its service life is less than 45%.

Battery life	Test results	Remark
>80%	Good	Battery is in very good condition
>60%	Normal	Battery is in good condition
>45%	Warning	Battery life is approaching, need to pay attention
<45%	Replace	Battery life is exhausted, please refer to replacement

➤ Replace

CCA is 42, battery life is only 30%, performance is poor, it is recommended to replace.

Replace	
12.37V	6.75m Ω
BAT PERF	42CCA
BAT Life	30%

➤ Battery life test is normal, battery voltage is low

The battery life is 100%, the performance is excellent, but the battery voltage is only 12.01V, it is recommended to charge.

Good, Charging	
12.01V	4.75m Ω
BAT PERF	588CCA
BAT Life	100%

➤ Battery life test is normal, battery voltage is too low

The battery voltage is only 10.85V, and the battery voltage is too low, which may affect the test results, it is recommended to test before charging.

Charge, Retest	
10.85V	5.99m Ω
BAT PERF	466CCA
BAT Life	50%

5.1.4 Batteries named according to JIS# standard

(1) When the standard parameters of Cold Cranking Ampere are marked on the surface of the battery to be tested, perform the following operations.

A. Select "JIS" on the "Battery Type" interface, and then press "OK" to enter the next step.

B. Press the "▲/▼" button to select "Input" in the "Inquiry Mode" interface, and then press the "OK" key to enter the "Battery Parameter". In this interface, you can use the "▲/▼" button to adjust the value. After the adjustment is completed, press the "TEST" or "OK" key to test.

Battery Type	
CCA	DIN
IEC	JIS
EN	***

Inquiry Mode	
Look up	Input

Battery Parameter	
185	CCA

(2) When the battery to be tested is not marked with Cold Cranking Ampere standard parameters, perform the following operations.

A. You can check the table according to JIS model number (such as JIS code conversion table), find the corresponding CCA value, and then select "Input" for testing.

B. The corresponding Cold Cranking Ampere standard parameters can be called out on the instrument according to the JIS model, the specific operation steps are:

a. Select "Look up" on the "Inquiry Mode" interface; after selecting, press "OK" to enter the next step.

b. Press "▲/▼" to turn pages ("*" in the list means any character, and "[]" means that the character is optional); after finding the corresponding page, press "OK" to enter the page, press the "▲/▼" button again to select the target specification, and press the "OK" button after confirming the selection.

c. In the "Affirm Parameter" interface, press the "TEST" button to test, the instrument displays the test results.

Inquiry Mode	
Look up	Input

Select Model	
26A17*	
26B17*	
26A19*	1/30

Affirm Parameter
26A17*
200 CCA
Affirmed by <test>

5.1.5 Description of abnormal problems during testing

The instrument has a certain abnormal situation self-checking prompt function, and corresponding prompts can be made when an abnormal situation occurs.

➤ Low voltage

During the battery startup capability test, if the battery voltage is too low (12V system threshold is 11.94V, 24V system threshold is 23.88V), the instrument will prompt as follows:

Low Voltage !!! The results may be unreliable Skipped by <test>
--

Users can choose to press the "TEST" button to skip and continue the test, or they can choose to test again after charging.

➤ High voltage

During the battery start-up capability test, if the battery voltage is too high (12V system threshold is 13.5V; 24V system threshold is 27V), the instrument will prompt as follows:

High voltage !!!
Electrify devices
after engine off
Skipped by <test>

When the battery has just been charged, the floating voltage will remain high due to the floating charge. At this time, the user can perform the following operations:

- A. When the battery is installed in the car, the user can turn on some of the car's electrical equipment to eliminate the battery float voltage.
- B. When the battery is not installed, the user can continue to connect the instrument to the battery and use the instrument as a load to eliminate the floating voltage of the battery (relatively slow).
- C. Ignore the prompt, press the "TEST" button to skip and continue the test (not recommended, it will have a certain impact on the test result).

➤ **Bad contact of test clip**

When the test clip is in bad contact, the instrument will make the following prompt:

Red test clip
loose contact

Black test clip
loose contact

At this time, check and eliminate the reason for the poor contact of the test clip immediately, and perform the test after the instrument prompts "Test clips be normal".

5.2 Start Load

5.2.1 Preparation before the test

If the car is starting, please turn off the engine and turn the car key to the "OFF" position.

5.2.2 Operation steps

- (1) Clamp the test clamps to the positive and negative poles of the battery to be tested.
- (2) According to the voltage of the battery to be tested, press the "▲/▼" key to select the 12V or 24V (12V is taken as an example below), and then press the "OK" key after selection.
- (3) In the "Test Items" interface, press the "▲/▼" key to select "Start Load"; after selection, press the "OK" key, the instrument enters the "Tips" interface, as shown on the left.

Tips	
>Close	engine
>Press	<test>
>Start	engine

Start Load Test	
Current	12.46V
Minimum	10.30V
Minimum	> 9.6V

- ← Current test voltage: 12.46V
- ← The lowest starting voltage during starting: 10.30V
- ← Test result: starting voltage > standard voltage 9.6V

- (4) After following the prompts, press the "TEST" button to enter the "Start Load Test" interface, as shown on the right.
- (5) Start the engine, the instrument automatically records the lowest starting voltage output by the battery during the engine start.
- (6) Press the "ESC" key at this time, and the instrument can return to the "Test Items" interface.

5.2.3 Test result description

When the starting voltage is more than 9.6V (24V system, the voltage is more than 16.0V), it means that the starting system is good.

When the startup voltage is less than 9.6V (24V system, the voltage is less than 16.0V), it means there is a problem with the startup system. Please check related parts such as connection points, wires or starter for corrosion.

① 12V the standard voltage of the system is 9.6V, and the standard voltage of the 24V system is 16.0V.

Data parameter table (12V system)		
Starting battery voltage	Battery discharge performance	Disposal of batteries
>10.7	Good	No need to replace
10.2~10.7	Ordinary	Need to observe
9.6~10.2	Poor	Need to be replaced in the near future
<9.6	Very bad	Need to be replaced immediately

5.3 Maximum Load

5.3.1 Preparation before the test

If the car is stalled, please start the engine first.

5.3.2 Operation steps

(1) Clamp the test clamps to the positive and negative poles of the battery to be tested.

(2) According to the voltage of the battery to be tested, press the "▲/▼" key to select the 12V or 24V (12V is

taken as an example below), and then press the "OK" key after selection.

(3) In the "Test Items" interface, press the "▲/▼" key to select "Maximum Load"; after selecting, press the "OK" key, the instrument enters the "Tips" interface, as shown in the figure below.

Tips	
>Full	open load
>Keep	2000-2500rpm
>Press	<test>

(4) After following the prompts, press the "TEST" button to enter the "Maximum Load Test" interface, as shown in the figure below.

Maximum Load Test	
Current	13.06V
Minimum	12.30V
Minimum	< 12.8V

← Current test voltage:13.06V

← Minimum voltage:12.30V

← Test result: minimum voltage < standard voltage 12.8V

(5) Press the "ESC" button at this time, the instrument can return to the "Test Items" interface.

5.3.3 Test result description

When the minimum voltage is more than 12.8V (24V system, the voltage is more than 25.6V), it means the system is normal.

When the minimum voltage is less than 12.8V (24V system, the voltage is less than 25.6V), it means there is a problem with the system. Please check whether the engine belt is worn or whether the wire is short-circuited.

① The standard voltage of 12V system is 12.8V, and the standard voltage of 24V system is 25.6V.

5.4 Charge System

5.4.1 Preparation before the test

If the car is stalled, please start the engine first.

5.4.2 Operation steps

(1) Clamp the test clip to the positive and negative poles of the battery to be tested.

(2) According to the voltage of the battery to be tested, press the "▲/▼" button to select the 12V or 24V (12V is taken as an example below), and then press the "OK" button.

(3) In the "Test Items" interface, press the "▲/▼" key to select "Charge System"; after selecting, press the "OK" key, the instrument enters the "Tips" interface, as shown on the left.

Tips
>Start engine
>Keep 2500-3500rpm
>Press <test>

Charge System Test
Max 14.11V < 15.0V
Cur 14.05V
Min 14.00V > 13.3V

← Maximum test voltage 14.11V < standard voltage 15.0V

← Current test voltage: 14.05V

← Minimum test voltage 14.00V > standard voltage 13.3V

(4) After following the prompts, press the "TEST" button to enter the "Charge System Test" interface, as shown on the right.

(5) Press the "ESC" button at this time, the instrument can return to the "Test Items" interface.

5.4.3 Test result description

When the maximum test voltage is more than 15.0V (24V system, the voltage is more than 30.0V), please check the voltage regulator.

When the minimum test voltage is less than 13.3V (24V system, the voltage is less than 26.6V), please check the connection point, wire or generator.

① The standard maximum voltage of the 12V system is 15.0V, and the standard minimum voltage is 13.3V; the standard maximum voltage of the 24V system is 30.0V, and the standard minimum voltage is 26.6V.

Data parameter table(12V System)		
Situation	Battery voltage	Engine performance
No headlights and air conditioner (need to step on the accelerator to detect)	> 13.5	Normal
	13.2~13.5	Ordinary
	13.0~13.2	Need to pay attention
	< 13.0	Need to enter the factory for inspection immediately
Turn on the headlights and air conditioner (need to step on the accelerator to detect)	13.4~14.6	Normal
	13.2~13.4	Normally need attention
	< 13.2	Need to enter the factory for inspection immediately

6. Frequently Asked Question

➤ Will the reverse current installed on the car affect the test result?

All reverse currents will affect the test results of the instrument. Therefore, please remove the reverse current before measuring.

➤ Can this product accurately predict when the battery will fail?

No. The internal resistance of the battery is affected by many factors, and the internal resistance values measured by different methods at different times are not the same. But it can be determined that when the internal resistance of the battery suddenly increases or the conductance decreases suddenly, it indicates that the battery life is about to end.

➤ **Is the CCA value measured by this product correct?**

CCA is a control standard during battery production. According to the accumulated results, the CCA value of the new battery will be 10~15% higher than the label value, but as the use time goes on, the CCA will first approach the label value and then fall below the label value.

➤ **What is the difference between the product test method and the load test method?**

Load test method

According to the physical formula $R=V/I$, the test equipment forces the battery to pass a constant DC current in a short period of time (2~3s) (generally a large current of 40~80A is used), and then measures the voltage across the battery, and finally calculates according to the formula the current internal resistance of the battery. The disadvantages of this method are:

A. It can only measure large-capacity batteries or accumulators. Small-capacity batteries cannot load 40-80A current within 2~3s.

B. When a large current is passed, the electrodes inside the battery will be polarized to produce a polarized internal resistance, so the measurement time must be short, otherwise the measured internal resistance will have a large error.

C. When a large current flows through the battery, it will cause some damage to the electrode.

Product test method

Because the battery is actually equivalent to an active resistance, we apply a fixed frequency and a fixed small current to the battery, and then perform a series of processing such as sampling, rectifying and filtering the voltage, and finally the calculation circuit calculates the internal resistance of the battery value. The advantages of this method are:

A. There will not be much damage to the battery itself.

B. Almost all batteries can be measured, including small-capacity batteries and laptop batteries, etc.

7. Automobile Battery Common Sense Explanation

➤ **Different types of batteries have different internal resistance**

The same type of battery has different internal resistance due to the inconsistency of internal chemical characteristics. The internal resistance of the battery is very small, and it is generally defined in milliohm units. Internal resistance is an important technical indicator to measure battery performance. Under normal circumstances, batteries with low internal resistance have strong discharge capacity, and batteries with high internal resistance have weak discharge capacity.

➤ **The battery capacity cannot be measured by sensory**

You can use a hydrometer to measure the working status of the battery. The water in the battery is mixed with distilled water and pure sulfuric acid at a specific gravity of 1.260/20 °C. When the water volume of the new battery is in the normal range, its acidity is fixed. Therefore, adding distilled water when the battery water is low can not only maintain a certain amount of water, but also maintain the pH value.

Small car battery		
Voltage	Electricity(%)	Proportion
> 12.7	100	1.26~1.28
12.6	90	1.24
12.4	70~80	1.22
12.1	50	1.16
< 12	25	< 1.13

When the battery is working normally, its pH value and specific gravity value will be fixed within a certain range. If the specific gravity of water cannot reach 1.26~1.28 after the battery is fully charged, and the voltage cannot reach above 12.7V, it means that the battery's storage capacity has dropped. At this time, if the specific

gravity of water is deliberately adjusted to 1.26 (increasing the ratio of sulfuric acid to water), not only will it not increase the storage capacity, but it will accelerate the loss of the battery. Because although the acidity of the water has increased, the voltage has not increased.

➤ **Common battery standard abbreviations meaning**

- **RC—Reserve Capacity**

The battery has an average load of 25 amperes of electricity per minute at 80°F (27°C), and can maintain a minimum voltage of about 10.5V.

- **CCA—Cold Cranking Ampere**

Under the solid current intensity, cooling the battery immersed in the state of -20~0°F (-29~-18°C) can last for 30 seconds and maintain the minimum voltage of 7.2V. The unit of cold start current is ampere. General vehicles, especially those that are too old, often fail to start the engine smoothly when the motor is turned on, and must be maintained for more than a few seconds or be started for the second time. When the engine is started, when the battery power is consumed the most, the voltage of the battery can drop from the normal 12.5V to 10.5V or below 10.5V at the moment of high current output in a short time. The larger the cold start current, the greater the help for this kind of start-up problem.

- **CA—Cranking Ampere**

Its main meaning is similar to CCA, and the unit is also ampere. The only difference from CCA is the temperature at the time of measurement. CCA is the result obtained under the environment of -17.8°C, and the CA is the result obtained under the environment of 0°C. If both CCA and CA are marked on the same battery, the value of CCA will be lower than the value of CA, because the lower the temperature, the worse the performance of the battery.

- Ah——Ampere-hour

It is a standard specified by the Japanese Industrial Standards. Simply put, the battery can be discharged at a fixed amperage for 20 hours and the voltage is maintained above 10.5V. This fixed amperage is multiplied by the number of hours, which is the ampere hour. For example, if the battery is discharged at 5 amperes for 20 hours, the ampere hours of the battery is 100Ah.

- DIN——Deutsches Institut für Normung

At a cold temperature of 0°F (-18°C), the battery's reachable amperage is at 9.0V for 30 seconds and maintains the minimum voltage, while at 8.0V for 150 seconds.

- IEC -- International Electrotechnical Commission

Under the average current intensity, each battery that is cooled and immersed at 0°F (-18°C) can carry the lowest voltage of 8.4V for 60 seconds.

- BCI——Battery Council International

Under the average current intensity, each battery that is cooled and immersed in -20~0°F (-29~-18°C) can carry a minimum voltage of 7.2V for 30 seconds.

8. Battery Specification Schedule

The following is the reference data, the actual value is subject to the manufacturer's factory data.

8.1 JIS Code Conversion Table

Specification		Cold Cranking Ampere		
JIS(new)	JIS(old)		MF	CMF
26A17R		200		
26A17L		200		
26A19R	12N24-4	200	220	264
26A19L	12N24-3	200	220	264
28A19R	NT50-N24	250		
28A19L	NT50-N24L	250		
32A19R	NX60-N24	270	295	
32A19L	NX60-N24L	270	295	
26B17R		200	220	265
26B17L		200	220	265
28B17R		245		
28B17L		245		
28B19R	NS40S	245		
28B19L	NS40LS	245		
32B20R	NS40	270		
32B20L	NS40L	270		
32C24R	N40	240	325	400
32C24L	N40L	240	325	400

Specification		Cold Cranking Ampere		
JIS(new)	JIS(old)		MF	CMF
34B17R		280		
34B17L		280		
34B19R	NS40ZA	270	325	400
34B19L	NS40ZAL	270	325	400
34B19RS	NS40ZAS	270	325	400
34B19LS	NS40ZALS	270	325	400
36B20R	NS40Z	275	300	360
36B20L	NS40ZL	275	300	360
36B20RS	NS40ZS	275	300	360
36B20LS	NS40ZLS	275	300	360
38B20R	NX60-N24	330	340	410
38B20RS	NT60-N24S	330	340	410
38B20L	NX60-24L	330	340	410
38B20LS	NX60-24LS	330	340	410
40B20L		330		
40B20R		330		
42B20R		330		
42B20L		330		

Specification		Cold Cranking Ampere		
JIS(new)	JIS(old)		MF	CMF
42B20RS		330		
42B20LS		330		
46B24R	NS60	325	360	420
46B24L	NS60L	352	360	420
46B24RS	NS60S	325	360	420
46B24LS	NS60LS	325	360	420
46B26R		360		
46B26L		360		
46B26RS		360		
46B26LS		360		
48D26R	N50	280	360	420
48D26L	N51L	280	360	420
50D20R		310	380	480
50D20L		310	380	480
50D23R	85BR60K	500		
50D23L	85B60K	500		
50B24R	NT80-S6	390		
50B24L	NT80-S6L	390		
50D26R	50D20R		370	
50D26L	50D20L		370	
55D23R		355	480	500
55D23L		355	480	500

Specification		Cold Cranking Ampere		
JIS(new)	JIS(old)		MF	CMF
55B24R	NX100-S6	435	420	500
55B24L	NX100-S6L	435	420	500
55B24RS	NT80-S6S	430	420	500
55B24LS	NT80-S6LS	430	420	500
55D26R	N50Z	350	440	525
55D26L	N50ZL	350	440	525
60D23R		520		
60D23L		520		
65D23R		420	540	580
65D23L		420	540	580
65D26R	NS70	415	520	625
65D26L	NS70L	415	520	625
65D31R	N70	390	520	625
65D31L	N70L	390	520	625
70D23R	35-60	490	540	580
70D23L	25-60	490	540	580
75D23R		500	520	580
75D23L		500	520	580
75D26R	F100-5	490		
75D26L	F100-5L	490		
75D31R	N70Z	450	540	735
75D31L	N70ZL	450	540	735

Specification		Cold Cranking Ampere		
JIS(new)	JIS(old)		MF	CMF
80D23R		580		
80D23L		580		
80D26R	NX110-5	580	580	630
80D26L	NX110-5L	580	580	630
85B60K				500
85BR60K				500
95D31R	NX120-7	620	660	850
95D31L	NX120-7L	620	660	850
95E41R	N100	515	640	770
95E41L	N100L	515	640	770
105E41R	N100Z	580	720	880
105E41L	N100ZL	580	720	880
105F51R	N100Z	580		
105F51L	N100ZL	580		
115E41R	NS120	650	800	960
115E41L	NS120L	650	800	960
115F51R	N120	650	800	960
115F51L	N120L	650	800	960
130E41R	NX200-10	800		
130E41L	NX200-10L	800		

Specification		Cold Cranking Ampere		
JIS(new)	JIS(old)		MF	CMF
130F51R		800		
130F51L		800		
145F51R	NS150	780	920	
145F51L	NS150L	780	920	
145G51R	N150	780	900	1100
145G51L	N150L	780	900	1100
150F51R	NT200-12	640		
150F51L	NT200-12L	640		
165G51R	NS200	935	980	
165G51L	NS200L	935	980	
170F51R	NX250-12	1045		
170F51L	NC250-12L	1045		
180G51R	NT250-15	1090		
180G51L	NT250-15L	1090		
195G51R	NX300-51	1145		
195G51L	NX300-51L	1145		
190H52R	N200	925	1100	1300
190H52L	N200L	925	1100	1300
245H52R	NX400-20	1530	1250	
245H52L	NX400-20L	1530	1250	

8.2 DIN and EN Model Comparison Table

Model	Same 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	300
54313	54324 54464	220	330
54317	54312 88146	210	360
54437	54466 54459L	210	360
54459	54434 88046	210	360
54469	54449 54465	210	360
54519	54533 54612	210	360
54523	54524	220	300
54537	54545 54801	190	300
54551	54580	220	300
54533	54577 54579	220	300
54584	54578	220	300
54590		210	330
54827		240	360
55040	88056	265	450
55041	55042	220	360

Model	Same model	DIN	EN
55044	55457	265	450
55046		300	510
55056		320	540
55057	54827 88156	320	540
55068	55069 55548	220	390
55218		255	420
55414	55415 55421	265	450
55422	55566	265	450
55428	55423 55427	300	510
55529		220	360
55531	55545 55559L	255	420
55559	55530 88056	255	420
55564	55552 55563	255	420
55565	55548	255	420
55570	55567 55565L	255	420
56012		230	390
56048	56068	250	390
56049	56069 56073	250	390
56077	56030	300	510
56091	55811	360	540
56111	55048	300	540
56218	56092	300	510
56219	56216	300	510

Model	Same model	DIN	EN
56220		280	510
56225	56323	300	510
56318	56312 56311	500	500
56420	56322 88066	300	510
56530	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
57230		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

Model	Same model	DIN	EN
59218	59219	290	480
59226	59215	450	760
59514		320	540
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		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
58032	68034	600	1000
70029	70038 70027	630	1050

Model	Same model	DIN	EN
70036	68040 68021	570	950
71014	71015	700	1150
72512		680	1150
73011		740	1200

8.3 YUASA Battery Specification Table

YUASA battery model	Cold Cranking Ampere
24-500	500
34-60	525
34-610MF	610
34-6MF	500
34-710	710
35-580	580
41-580	580
55D23R	522
58-530	530
58-60	525
58-6MF	530
65-70	700
65-730	730
65-900	850
74-60	525
75-660	660
75-6MF	615

YUASA battery model	Cold Cranking Ampere
75-72	500
75A-72	630
78-710	710
78A-72	670
GR40R-CMF	820
GR40R-MF	700
GR96R-CMF	580
GR96R-MF	500
GT50L	356
GTH40	277
GTH40L	276
GTH40S	275
GTH55DL	356
GTH60DL	325
GTH60L	325
GTH75DL	520
GTH75DR	521

