

BATTERY TESTING GUIDE

STEP 1: Carry out a visual test

1A Is the battery leaking?

YES Continue to 1B.

NO Battery with caps: continue to Step 2.
Battery without caps: continue to Step 3A.

1B Are there any signs of impact, shock or excess pressure around the area of the leak?

YES The battery cannot be returned to us. Check for potential problems such as the wrong voltage or excess dust or dirt on the battery surface.

NO There isn't a "No" option in the copy doc.

STEP 2: Check the specific gravity

In a well-functioning battery, the specific gravity should be the same in every cell. Before checking, please take a few minutes to read the charger and battery instructions.

2A Has the specific gravity fallen sharply in one of the cells?

The maximum permissible variation between the highest and lowest values taken across all six cells is 0.03 kg/dm³. For example:

1.26 1.26 **1.15** 1.26 1.26 1.26

YES The battery cannot be returned to us. Check for potential problems such as the wrong voltage or excess dust or dirt on the battery surface.

NO There isn't a "No" option in the copy doc.

2B Is the acid a muddy brown colour and is water consumption consistently high?

YES The battery cannot be returned to us. Check the capacitive load and the vehicle's regulator voltage.

NO Continue to 2C.

2C Is the specific gravity equal in all cells and greater than 1.25 kg/dm³?

YES Continue to either Step 3A or 3B.

NO Charge the battery and continue to 2D.

Specific gravity in kg/dm ³ at a temperature of 27°C	State of charge of the battery	Recommendation
1.25 – 1.28	Charged	Consider checking
1.20 – 1.24	Half charged	Charging recommended
1.19 or less	Insufficiently charged	Charge immediately

2D Is the power consumption equal to at least one twentieth of the nominal capacity? (E.g. for a 100 Ah battery: 100 Ah x 1/20 = 5 A.)

YES Fully charge the battery and continue to either Step 3A or 3B. If the specific gravity reading is still 1.24 kg/dm³ or less once the battery is fully charged, it cannot be returned as the reduced reading is the result of normal wear and tear.

NO The battery has been damaged by insufficient charging and/or deep discharging, so cannot be returned. Check the vehicle's electrical systems, including the regulator voltage, alternator and drive belt.

STEP 3: Do a high rate discharge test

Only conduct this test if the specific gravity is even and at least 1.25 kg/dm³; otherwise charge the battery first. Refer to the battery tester's instruction manual when testing.

For discharge testers with adjustable resistances: test the battery at approximately three times the battery's nominal capacity for around 10 seconds (e.g. a 12 V, 45 Ah battery should be tested with a load current of approx. 135 A). During the test, there should be no significant fluctuations in voltage.

3A Does the high rate discharge test show that the battery is faulty or needs replacing?

YES Replace the battery and return it to us.*

NO The battery is in good working order.

3B Has the specific gravity fallen sharply in one of the cells?

The correct low-temperature testing current – also known as cold start current or cold cranking amps (CCA) – is found on the battery along with the corresponding standard a– which should then be set on the testing device. Remember to refer to the battery tester's instruction manual for details.

If the low-temperature testing currents are not specified, use the following guide:

- For starter batteries, low-temperature testing current = 5 x K20, so K20 = 100 Ah. The current is 5 x 100 = 500 A.

- For ignition and lights batteries (especially VARTA® Gel), 3 x K 5 gives the approximate possible cold start current.

If the device only has one setting based on the old German standard, the EU standard current can be used to determine the current of the German standard: **current = EN current x 0.6.**

If the temperature falls below 0°C, it's necessary to compensate accordingly.

Interpreting results

Reading	Result
GOOD	The battery is fully charged and ready to use.
GOOD + RECHARGE	Once the battery has been charged, it will be ready to use.
CHARGE + RETEST	Charge the battery and then repeat the test. If the same message appears after the second test, replace the battery.*
REPLACE THE BATTERY	Battery replacement recommended.*
No reading given	First, check that the measuring cable is properly connected. If it is, the battery may be deeply discharged. Charge the battery and repeat the test. If conducting the test in the vehicle, turn off all electrical devices.
No reading given after following the above	Replace the battery.*

General points to remember about testing devices:

The device calculates the results as "good" or "replace" based on the state of charge and the available starting power. This means a battery with 45% starting power can be rated as good and a battery with 75% starting power as needing replacement.

The starting power represents the difference between the low-temperature testing current entered into the machine and the current that the machine actually measures. It can exceed 100%.

Electronic testing devices are only suitable for batteries that have been in use for a certain period of time. They cannot provide any indication of the performance of new or unused batteries. For this reason, VARTA recommends confirming the nominal figures by conducting the tests as detailed in the EN 50342 standard.

*About returns: You can get the full returns procedure and warranty conditions from your VARTA representative, but the key points to remember are:

- Battery replacements under warranty can't be made as result of:
 - Normal wear and tear.
 - Failure to follow the instruction manual.
 - Negligent and improper storage, usage or installation.
 - Unauthorised modifications to the battery.
- Of course, the period of use, temperatures and the application of the battery play a crucial role in determining whether it reaches its maximum service life. We'll bear this in mind when authorising a return.