



GRIOT'S GARAGE BATTERY TESTER

Thank you for choosing this fine product from GRIOT'S GARAGE.

SAFETY INFORMATION

Working in the vicinity of a lead-acid battery is **dangerous** due to **explosive gases** generated by the battery which can be ignited by a spark, cigarette, or flame and blow the battery apart, forcefully showering the area with battery pieces and acid. To reduce the chance of exploding batteries, follow these instructions, as well as those of your battery's manufacturer. In case of an accident, rinse eyes with clean water for at least 5 minutes and see a doctor immediately. Never use eye drops or other medication unless directed by a doctor. When working around lead-acid batteries, wear eye protection and avoid touching or rubbing the battery. Also avoid rubbing or touching your clothing, skin and eyes while working around the battery. Never smoke, have an open flame or sparks near a battery. Have plenty of ventilation and keep your face as far from the battery as possible. Undercharged lead-acid batteries will freeze during cold weather. Never test or charge a frozen battery. Do not allow tools to drop onto a battery. Do not lay the BATTERY TESTER on the battery.

IMPORTANT SAFETY INFORMATION REGARDING YOUR BATTERY TESTER

READ BEFORE USING OR BODILY HARM MAY OCCUR:

The BATTERY TESTER should never be used in an enclosed area (i.e. engine compartments, boat interiors, airplane cockpits, etc.) without proper ventilation. Any fumes (gasoline, thinner, etc.) contained in these areas may ignite and/or explode from the heat generated from the BATTERY TESTER's load cell, causing serious injury or death.

BATTERY LOAD TEST

This test evaluates the battery's ability to crank an engine. The BATTERY TESTER draws a current from the battery while measuring its voltage level. The voltage level of a good battery will remain relatively steady under load, but a defective battery will show a rapid loss in voltage. Battery size (CCA rating) and temperature will affect test results. Follow these instructions carefully.

1. Turn off engine, accessories and battery test equipment.
2. Connect the NEGATIVE (BLACK) clamp to the NEGATIVE (NEG, N, -) battery post. Connect the POSITIVE (RED) clamp to the POSITIVE (POS, P, +) battery post. "Rock" clamps back and forth to insure a good electrical connection. For batteries with side terminals, use the adapters in the clamps.
3. With clamps connected, the BATTERY TESTER's meter will indicate battery's "state of charge." If the "state of charge" is less than 12.4 volts (for a 12 volt battery) or 6.2 volts (for a 6 volt battery) – white ▼ symbol on meter – the battery should be recharged before load testing. If recharging does not bring voltage to 12.4 volts (for a 12 volt battery) or 6.2 volts (for a 6 volt battery), the battery is defective. If the meter needle is off scale to the left, check for loose or reversed clamps. Otherwise, the battery is defective.



4. Note the battery's rating in Cold Cranking Amps (CCA). If the rating is not printed on the battery, use the following guidelines to estimate it: Small engine (4 cyl) -300 CCA; Medium engine (6 cyl) -400 CCA; Large engine (8 cyl) -500 CCA.
5. Depress the load switch for 10 seconds.
6. Read the meter at the end of 10 seconds with the switch depressed. Refer to the **LOAD TEST ANALYSIS** chart below.

NOTE: On a 12-volt battery, if the needle falls into the red area to the right of the "8" – the battery is defective. On a 6-volt battery, if the needle falls into the red area to the left of the "4" – the battery is defective.

LOAD TEST ANALYSIS:	
METER ACTION AT END OF 10 SECONDS	BATTERY CONDITION INDICATED
If the needle is in the temperature Corrected Green Scale...	The battery is good.
If there is noticeable meter movement and/or needle is in the temperature corrected red scale...	Battery is defective. Replace.

COMPENSATING FOR LOW TEMPERATURES:

Low temperatures have a degrading effect on batteries and will affect test results. This can be compensated for by reading a different scale.

- If the battery is 50 degrees, read the scale 100 CCA less than the battery rating.
- If the battery is 30 degrees, read the scale 200 CCA less than the battery rating.
- If the battery is 10 degrees, read the scale 300 CCA less than the battery rating.

NOTE: Top and rear of tester will heat up due to load current. Allow tester to cool one minute between load tests - Maximum of 3 load tests in a 5 minute period.

CHARGING SYSTEM TEST: (12 VOLT VEHICLES)

This test measures the output voltage of the alternator/regulator. Check for under or over charging - which leads to poor battery performance and short life.

ENGINE SHOULD BE AT ITS NORMAL OPERATING TEMPERATURE.

1. Connect the BATTERY TESTER clamps to the battery as described in Steps 1-2 under "BATTERY LOAD TEST."
2. Turn off all lights and accessories. Operate the engine at fast idle (approximately 1500 RPM).
3. Do not operate the BATTERY TESTER's load switch.
4. Read the meter voltage. Meter needle should be in the green (OK) area of the Charging System Scale.
5. Turn on high beam lights and turn blower on high. Meter needle should remain in the green (OK) area.
6. If the meter needle goes to the red (Low or High) areas, the charging system is not operating correctly.



TROUBLE-SHOOTING HINTS:

LOW VOLTAGE – may be caused by a loose belt, a defective voltage regulator or a defective alternator.

HIGH VOLTAGE – may be caused by loose or corroded connections or a defective voltage regulator.

STARTER MOTOR TEST (12 VOLT VEHICLES)

This test identifies excessive starter current draw, which makes starting difficult and shortens battery life. Perform the **BATTERY LOAD TEST** - proceed if the battery is "Good".

ENGINE MUST BE AT ITS NORMAL OPERATING TEMPERATURE

1. Connect BATTERY TESTER clamps to battery as described in Steps 1-2 under **BATTERY LOAD TEST**.
2. Disable the ignition so the car will not start.
3. Crank the engine and note the voltage reading during cranking.
4. A meter reading of 9 volts or less indicates excessive draw. This may be due to bad connections or a failing starter motor; or the battery is too small for the vehicle's requirements.

BATTERY FACTS

1. A fully charged battery at 0° F. has only 40% of the cranking power it has at 80° F.
2. Battery failure is frequently caused by overcharging.
3. A warm battery charges faster than a cold battery.
4. All batteries self-discharge. Maintenance-free batteries self-discharge more slowly.
5. A heavy discharge will not damage the internal plates, but an overcharge will.
6. A fully-charged battery freezes at -85° F., a ½-charged battery freezes at -15° F., and a ¼-charged battery freezes at +15° F.
7. A battery left in a state of discharge will sulfate and lose capacity.
8. Batteries should be stored in the coolest area possible to reduce self-discharge.

ANSWERS TO YOUR QUESTIONS

Should you want to order another BATTERY TESTER, or for a complete selection of quality GRIOT'S GARAGE products, please write, use the internet or call us toll-free at **800-345-5789**. Reorder item number 10211.

Have fun in your garage!

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