

## INTERESTING BATTERY FACTS

1. Battery problems are the No. 1 cause of road service calls.
2. Battery efficiency *decreases* with falling temperatures. Engine cranking power demands *increase* with falling temperatures.
3. A fast charge cannot fully re-charge a battery; follow up with a slow charge for 3 or 4 hours.
4. A common, frequently unrecognized, cause of battery failure is overcharging.
5. A hot battery charges (and also overcharges) faster than a cold one. A problem in hot weather during long trips.
6. All batteries have a normal self-discharge rate that increases with temperature. Maintenance-free types have a substantially lower self-discharge rate.
7. Store batteries in as cool a location as possible to minimize self-discharge.
8. An old battery myth: A battery on a concrete floor discharges very rapidly. Not true; it will run down just as fast on any other surface.
9. A heavy discharge will not damage the plates; overcharging, though, will.
10. A fully charged battery freezes at -85°F. (50% charge at -15°F and 25% at +5°F).
11. A battery left in a discharged state will “sulfate” and lose capacity.
12. THE ONLY GOOD BATTERY IS A FULLY CHARGED BATTERY.

# DIGITAL BATTERY TESTER

Model 1270

*Including tests for:*

- CHARGING SYSTEM
- STARTER SYSTEM

## WARNING

Serious injury may result if face and other exposed areas are not properly shielded while using this device in connection with a lead-acid battery. Read and follow instruction manual and use this device only in a well-ventilated area. Avoid touching eyes while working with or near such a battery. Such batteries can generate explosive gases during normal operation which can be ignited by a spark. In case eyes accidentally come in contact with contents of battery, rinse eyes in clear water for at least 5 minutes and seek immediate medical attention.

For all 12-volt 300–1000 CCA batteries

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## BATTERY LOAD TEST

**NOTE: Below 7 volts the display turns off. If this happens during the Load Test, the battery is severely discharged.**

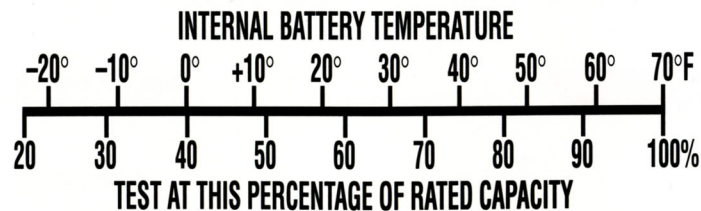
1. Engine and all electrical accessories must be OFF.
2. Connect red clamp to the positive (+) battery post and black clamp to the negative (-) battery post, rocking the clamps to ensure firm connections. On side terminal batteries, be sure both clamp jaws contact the post.
3. Note the Cold Cranking Ampere (CCA) rating of the battery (usually listed on top of the battery) or use the vehicle's specified rating.
4. While observing the digital display, momentarily press the red SET CCA button. The display now shows (for 1 second) the instrument's CCA setting. If this differs from the battery's CCA rating by more than 50, press the button again. Repeat until the display agrees with the battery rating within 50 or less. The instrument is now calibrated to properly load test the battery.
5. To load test, depress the rocker switch for ten seconds. After ten seconds, **and while still pressing the rocker switch**, note which of the LED indicators above the display is lit—then release the rocker switch:

GREEN	Battery capacity is good.
YELLOW	Battery capacity is below specified amount.
RED	Battery is unserviceable (recharge and retest).
TIME LIMIT	Rocker switch has been pressed for more than 10 seconds. Release switch immediately.

## TESTING COLD BATTERIES

All batteries test lower when cold than when warm. For accurate test results when the battery's internal temperature is below 50°F, reduce the battery's CCA rating by the percentage shown in the chart below.

Example: If rated capacity is 800 CCA and internal battery temperature is 35°F, use 560 CCA for test purposes (800 X .70=560).



## STARTER SYSTEM TEST

A QUICK SCREENING TEST

1. Use the same connections as for the BATTERY LOAD TEST. Engine must be at normal operating temperature.
2. Depress the rocker switch (as for battery testing) for 5 to 10 seconds.
3. **While still pressing the rocker switch**, note the load voltage reading on the digital display. Release rocker switch immediately after noting voltage.
4. Using the load voltage (LOAD V.) reading obtained in Step 3, look up the MIN. CRANK VOLTS in the Starter Test tables on the instrument panel.  
Example: If LOAD V. is 10.8, MIN. CRANK VOLTS is 10.3.  
If engine is over 5.0 L, use next lower MIN. CRANK VOLTS.
5. Crank the engine without starting (disable the ignition system if necessary) and note the cranking voltage. If this voltage falls below the MIN. CRANK VOLTS from Step 4, the starter may be drawing excessive current and should be further tested with a suitable starter current draw tester.

### BAD CELL INDICATORS

If battery has removable cell caps, use a hydrometer to further evaluate battery condition. Impending battery failure is indicated if:

1. Gravity varies more than 25 points (0.025 s.g.) between cells.
2. Electrolyte appears grey or cloudy with suspended particles.
3. One or more cells are dry with remaining cells at normal level.

## CHARGING SYSTEM TEST

A QUICK SCREENING TEST

1. Use the same connections as for the BATTERY LOAD TEST.
2. Operate the engine at a fast idle (typically, 12-1500 RPM).
3. With all electrical accessories turned OFF, note charging voltage on the digital display. Compare with specified charging voltage (typically, 13.6 to 14.8 volts). Voltage readings outside of the specified range indicate possible alternator or regulator trouble. Retest with a suitable charging system tester.
4. With engine still at a fast idle, turn ON high-beam headlights and high blower motor, and again note charging voltage. If this voltage falls more than 0.3 volts below that obtained in Step 3, it indicates possible alternator trouble. Retest with a suitable charging system tester.