

charged until specific gravity reaches 1.265 (See "Slow Charging"). A slow charge is preferable to bring the battery up to a full charge.

If specific gravity remains constant after testing battery at one hour intervals for three hours, battery is at its highest state of charge.

(6) Make another capacity test. If capacity test does not meet specifications, replace battery.

CHARGING THE BATTERY (Fig. 14)

WARNING: WHEN BATTERIES ARE BEING CHARGED AN EXPLOSIVE GAS MIXTURE FORMS BENEATH THE COVER OF EACH CELL. DO NOT SMOKE NEAR BATTERIES ON CHARGE OR WHICH HAVE RECENTLY BEEN CHARGED. DO NOT BREAK LIVE CIRCUITS AT THE TERMINALS OF THE BATTERIES ON CHARGE. A SPARK WILL OCCUR WHERE THE LIVE CIRCUIT IS BROKEN. KEEP ALL OPEN FLAMES AWAY FROM THE BATTERY.

Slow Charging Batteries

If adequate time is available, the slow charging method should be used in recharging a discharged battery.

There are many types of battery charging equipment available. Be sure to follow the instruction of the equipment manufacturer for the necessary preparations and precautions. However, the following items should be observed when slow charging the battery with any type of equipment:

(1) If the battery is to remain in the vehicle, disconnect the cables at the battery, to prevent damage to the electrical system, during charging.

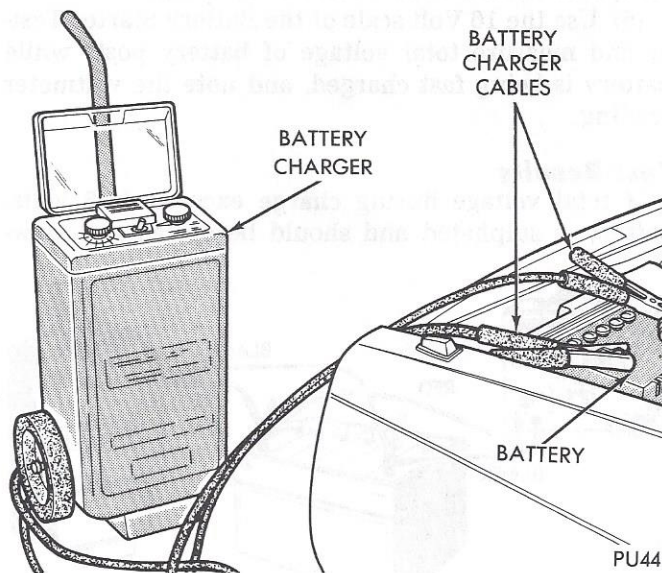


Fig. 14—Battery Charger Connected

(2) Thoroughly clean the battery. Refer to "Battery Visual Inspection".

(3) Make sure the electrolyte level is at the normal level. Refer to "Testing Specific Gravity".

(4) The battery is to be charged at a rate (amps) of 1/20 of its ampere hour capacity.

(5) The average length of time necessary to charge a battery by the slow charge method at normal rates is from 12 to 16 hours, however, when a battery continues to show an increase in specific gravity, battery charge should be continued even if it takes 24 hours or more. Watch the temperature of the electrolyte and if the temperature of the cells reaches 110°F (44°C) lower the charging rate.

Battery will be fully charged when it is gassing freely and when there is no further rise in specific gravity after three successive readings taken at hourly intervals. Make sure hydrometer readings are corrected for temperature.

Sulphated Batteries

Many sulphated batteries can be brought back to good condition by slow charging.

The rate of charge for a sulphated battery should be no more than 1/2 the normal slow charge rate and the charging time should be from 60 to 100 hours. This long charging cycle is necessary to reconvert crystalline lead sulphate into active materials.

Fast Charging Battery

If adequate time for a slow charge is not available a high rate (FAST) charge is permissible and will give a sufficient charge in one hour enabling the battery and alternator to continue to carry the electrical load. If the battery is to remain in the vehicle, disconnect the cables at the battery to prevent damage to the electrical system during charging. The manufacturers of high rate charging equipment generally outline the necessary precautions and some models have thermostatic temperature limiting and time limiting controls. Make sure their instructions are followed.

CAUTION: The battery can be damaged beyond repair unless the following precautions are taken:

(1) Make sure electrolyte level is at normal level. Refer to "Testing Specific Gravity".

(2) Battery electrolyte temperature must **Never** exceed 125 degrees Fahrenheit.

If this temperature is reached, battery should be cooled by reducing charging rate or remove battery from the circuit.

(3) As battery approaches full charge electrolyte in each cell will begin to gas or bubble. Excessive gassing must not be allowed.