

FIELD EXAMINATION FOR BATTERY,
No. L-360A

ALL MESA SCHEDULE 24 MACHINES

V70121

INSTRUCTIONS FOR STORAGE BATTERY TESTING

A. VISUAL INSPECTION

The first step in determining the condition of a battery should be a visual inspection. Conditions such as broken, cracked or distorted container or cover, loose terminals or evidence of electrolyte seepage may indicate improper care, installation or application of the battery.

Look for excessive corrosion on the battery terminals, hold down, battery tray and battery cables. Check the battery cables for worn or frayed insulation. Replace cables if necessary.

Check the electrolyte level in each cell. If electrolyte level is below the plates, it is possible the battery is permanently damaged. Also look for dirt, oil or other contaminants floating in the electrolyte.

The sources of deficiencies noted in the visual inspection should be located and corrected before installation of a new battery.

B. HYDROMETER

This test can only be used when there is sufficient electrolyte above the battery plates to fill the hydrometer tube. Do not, however, take readings immediately after refilling the cells with water.

Specific gravity will vary 4 points (.004) with every 10° F temperature change. For each 10° F below 80° F, subtract 4 points from hydrometer reading. For each 10° F above 80° F, add 4 points to hydrometer reading.

After correcting to 80° F, interpret readings as follows:

- (1) All cell readings uniform and above 1.225 specific gravity. Battery is serviceable. May require charging.
- (2) All cell readings uniform and below 1.225 specific gravity. Recharge to full charge and retest.
- (3) Variation of more than 30 points (.030) specific gravity between any two cells. Battery condition is questionable. Recharge and retest before making replacement.

C. CAPACITY TEST

Satisfactory capacity tests can be made only when the battery electrolyte equals or exceeds 1.225 specific gravity at 80° F.

Terminal Voltage Test -- Off the vehicle.

Discharge rate should be 200 amperes when using adjustable discharge rate equipment. Other equipment will have built-in load for discharge test.

With the battery under discharge for the period recommended by equipment manufacturer, read terminal voltage. If the terminal voltage is 4.5 volts or more for 6 volt batteries or 9.0 volts or more for 12 volt batteries, the battery has good output capacity.

FIELD EXAMINATION FOR BATTERY WARRANTY

ONLY BATTERIES WITH DEAD CELLS SHOULD BE CONSIDERED FOR WARRANTY CLAIMS

The most frequent complaint of battery failure is simply a **DISCHARGED BATTERY**. If these batteries were to be fully charged and reinstalled with the balance of the electrical system checked for proper operation, they would perform satisfactorily.

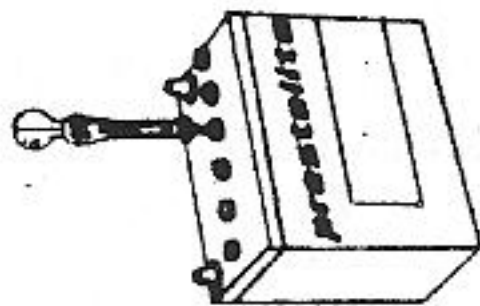
When a battery fails due to defective material or workmanship; usually there is only one defective cell within the battery. However, one dead cell does not necessarily indicate a manufacturing defect as will be explained later.

To determine whether a battery is eligible for warranty, the following steps should be taken:

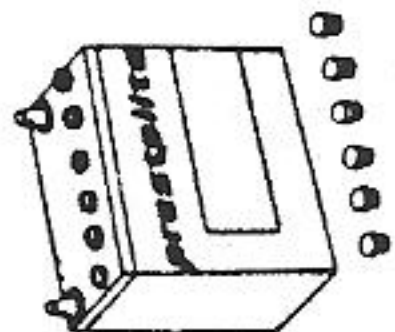
PREPARATION FOR TEST

CELL	HYDROMETER READING
1	1220
2	1215
3	1218
4	1225
5	1230
6	1225

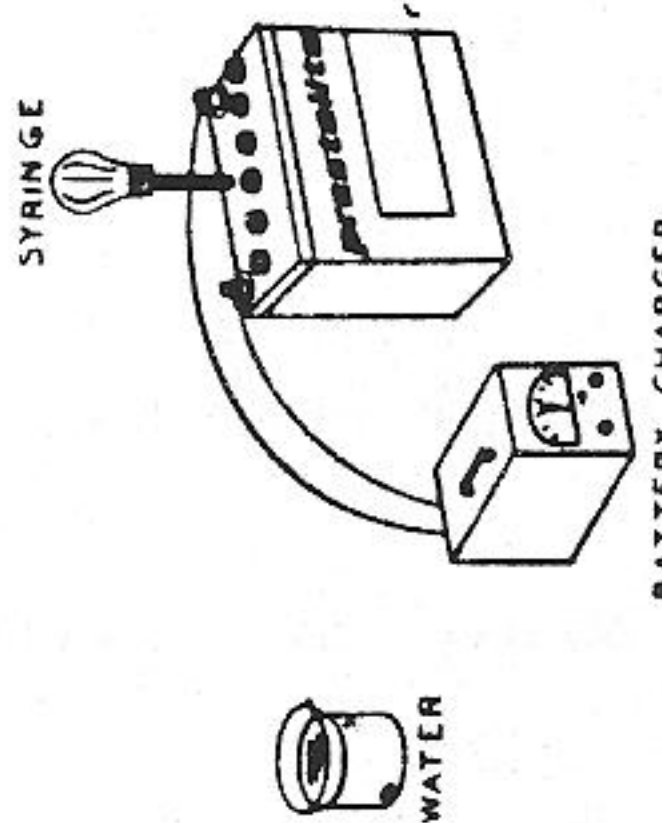
Sample of corrected Hydrometer Readings.



STEP 2 - Take the temperature corrected hydrometer reading of each cell and record readings. If electrolyte level is too low to obtain readings, proceed with **STEP 3**.



STEP 1 - Clean outside of battery with a solution of baking soda and water. Make a visual inspection of container, covers, terminal posts. Remove vent plugs.

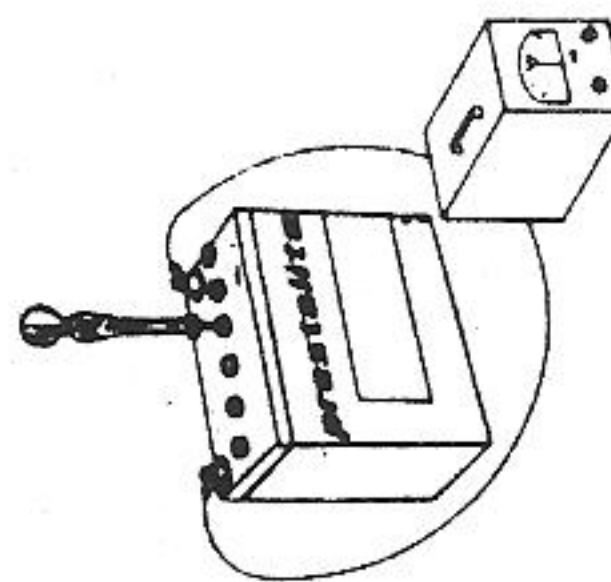


STEP 3 - Add water to bring electrolyte level to appropriate height and apply a fast boosting charge for 15 minutes. Then take and record temperature corrected hydrometer readings.

INTERPRETATION OF HYDROMETER READINGS

CELL	HYDROMETER READING
1	1210
2	1215
3	1220
4	1180
5	1215
6	1220

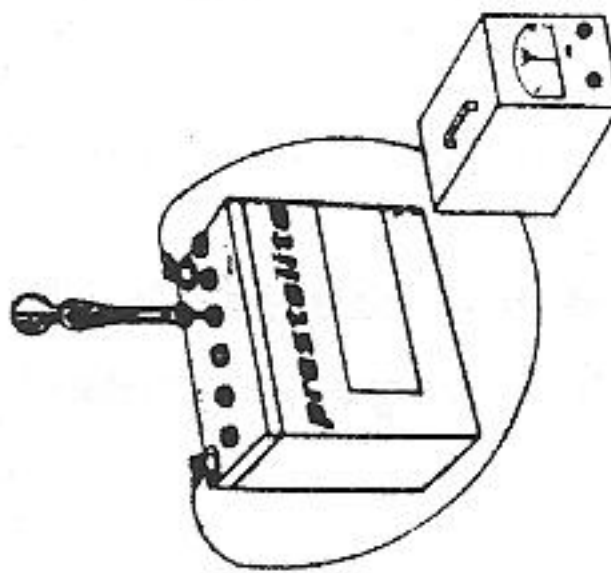
Typical Readings for Battery with Dead Cell



STEP 4 - If the variation in temperature corrected hydrometer readings is more than 30 points for the individual cells within a battery with most boosting charge the electrolyte in all but the suspected cell are clear when drawn into the hydrometer, warranty should be claimed. If all cells are discolored, the battery has been damaged by service - should be replaced and is not subject to warranty.

CELL	HYDROMETER READING
1	1200
2	1190
3	1195
4	1205
5	1200
6	1190

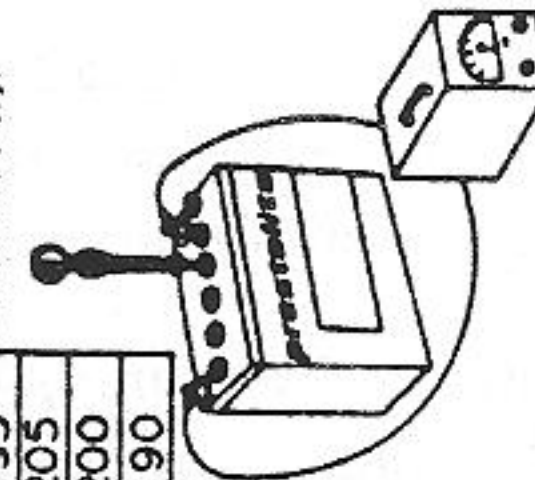
Typical Readings for Discharged Battery



STEP 5 - If more than one temperature corrected cell reading is below 1200, the battery should be charged with a fast boosting charge on a high rate charger for 30 minutes. If all cells show an increase and have clear electrolyte, the battery is probably only discharged. If one cell lags behind and its electrolyte, when drawn into the hydrometer, is discolored with the remaining cells relatively clear, a warranty claim should be made.

CELL	HYDROMETER READING
1	1205
2	1190
3	1195
4	1205
5	1200
6	1190

Typical Readings for a Sulfated Battery



STEP 6 - If all cells show only a slight increase in the hydrometer reading, the battery is sulfated and may be brought back to serviceable condition by a slow charge (3 to 4 amperes) for 48-72 hours. After this charge, all cells should read at least 1250 and have clear electrolyte; if not, the battery is not serviceable. If the variation in hydrometer readings is more than 30 points, the battery is subject to warranty.

CELL	HYDROMETER READING
1	1260
2	1260
3	1260
4	1260
5	1255
6	1260

Typical Readings for a Serviceable Battery

BATTERY CHARGER
3-4 AMP CHARGE RATE

All readings above are examples of corrected readings.

The above procedures are designed to determine responsibility for failure and whether the battery is eligible for warranty. If the above procedures are not followed, many good batteries will be returned for warranty and rejected; causing wasted time, effort and expense.

For more complete battery examination procedure, refer to Form #4167A or the AABM Battery Manual.

When turning batteries, pack carefully to prevent breakage.