

Summary Report for Individual Task
551-88L-2055
Maintain a Battery Charging System
Status: Approved

Distribution Restriction: Approved for public release; distribution is unlimited.

Destruction Notice: None

Foreign Disclosure: FD5 - This product/publication has been reviewed by the product developers in coordination with the [installation/activity name] foreign disclosure authority. This product is releasable to students from all requesting foreign countries without restrictions.

Condition: Given an operational battery charging system aboard a vessel, at sea, at anchor or moored alongside a pier, day or night, under all sea and weather conditions, while wearing appropriate PPE, (i.e. hearing protection, Nitrile gloves, eye protection, etc.), lock out tag out kit and a marine rail tool box.

Standard: The Soldier correctly maintains a battery charging system aboard an Army vessel, IAW the appropriate Technical Manual and local SOPs, without injury to self or others and without damage to equipment. The battery charging system was fully mission capable at task completion.

Special Condition: None

Safety Risk: High

MOPP 4:

Task Statements

Cue: None

DANGER
None

WARNING
None

CAUTION
None

Remarks: None

Notes: None

Performance Steps

1. Demonstrate basic knowledge of battery maintenance.

a. Cleanliness of the lead-acid battery is a primary concern because moisture and dirt are conductors.

b. Batteries that are allowed to gas excessively, add additional conductive liquid to the top and sides of the battery.

c. Damp battery surfaces retain conductive dirt and debris.

d. A simple test, known as the leak test, provides a visual and authoritative point of view for battery cleanliness.

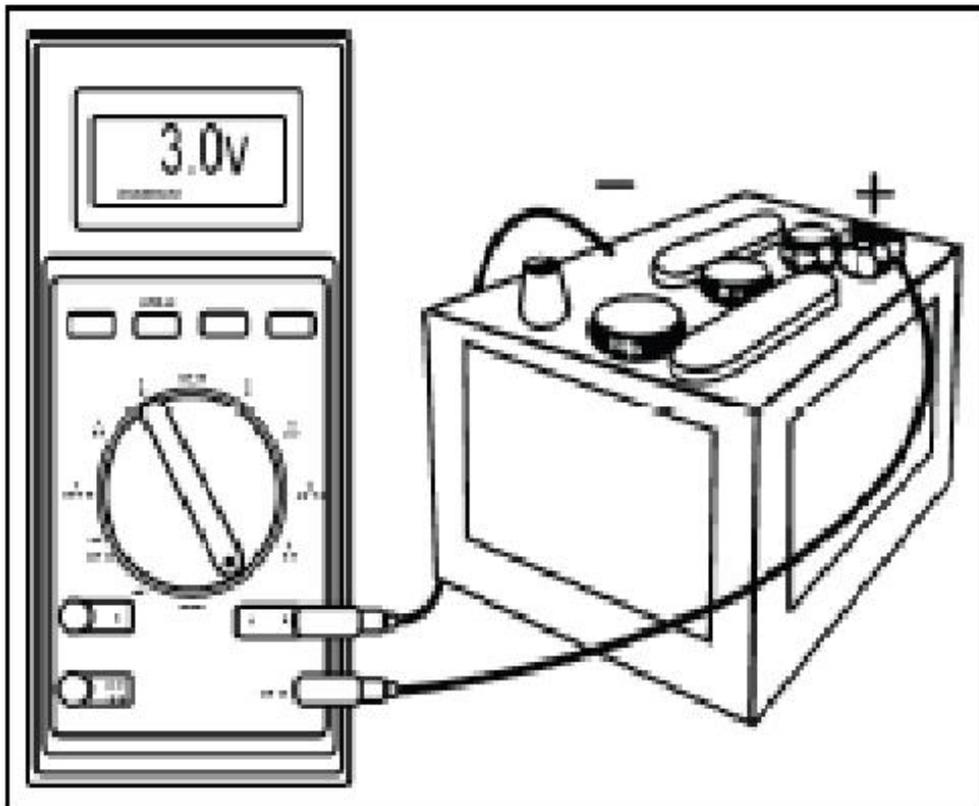
(1) Select a DC voltage scale at or above battery voltage.

(2) Connect the negative meter lead to the negative battery post (the smaller battery post)

(3) Use the positive meter lead to probe the housing of the battery.

(4) Measure the voltage leaking across the two battery terminals using the multimeter.

Note: In effect, electrolyte, dirt, and other foreign matter become a parallel circuit that continuously discharges the battery. Normal grease is not an acceptable battery terminal preservative. The heat from the battery compartment often melts the grease, which in turn covers the top and sides of the battery with a thin coating of lubricant. Dirt and dust stick easily to this surface. Only a thin coat of dielectric grease should be used on the outside of the terminal and never between the battery terminal and battery post.



Leak Test Procedure
Figure 551-88L-2055_01

2. Conduct maintenance procedures for a battery charging system in the winter months.

a. Cold weather increases the already difficult task of starting diesel engines.

b. The following to ensure the batteries are maintained at a high state of readiness:

(1) Always service and charge batteries thoroughly whenever the batteries are to enter an idle period.

(a) A discharged battery will freeze at about 18 degrees Fahrenheit (F).

(b) A frozen battery greatly increases the chance of a battery detonation.

Note: Detonation occurs during excessive charging or prolonged efforts to jump start equipment under these severe conditions.

(2) After the batteries are serviced and charged, disconnect the cables.

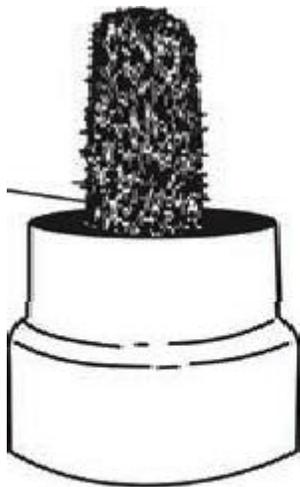
(a) Always disconnect the negative battery post first.

(b) Many small electrical problems in the starting or charging system can conduct current and discharge the batteries.

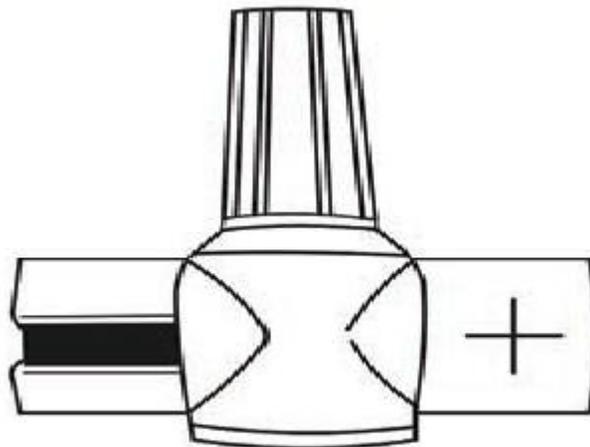
3. Demonstrate maintenance procedures for cleaning battery terminals.

a. Most acceptable manner to clean battery terminals and clamps is to use the wire-type cleaner or cutter or straight-edge cleaner.

b. Wire-type cleaners can damage the battery posts and clamps.



(A) Wire Type



**(B) Cutter or
Straight-Edge Type**

Battery Terminal and Clamp Cleaners

Figure 551-88L-2055_02

c. The main concern for cleaning is to provide a large, clean contact surface area for the unimpeded flow of current.

d. The wire-type cleaner cannot restore the surface of the post or clamp.

e. Use a battery terminal clamp puller to remove battery clamps from the terminals.

WARNING

Prying the clamp from the terminal with a screwdriver will damage the terminal.

4. Demonstrate basic knowledge of battery logbook.

a. Keep weekly specific gravity in a battery logbook.

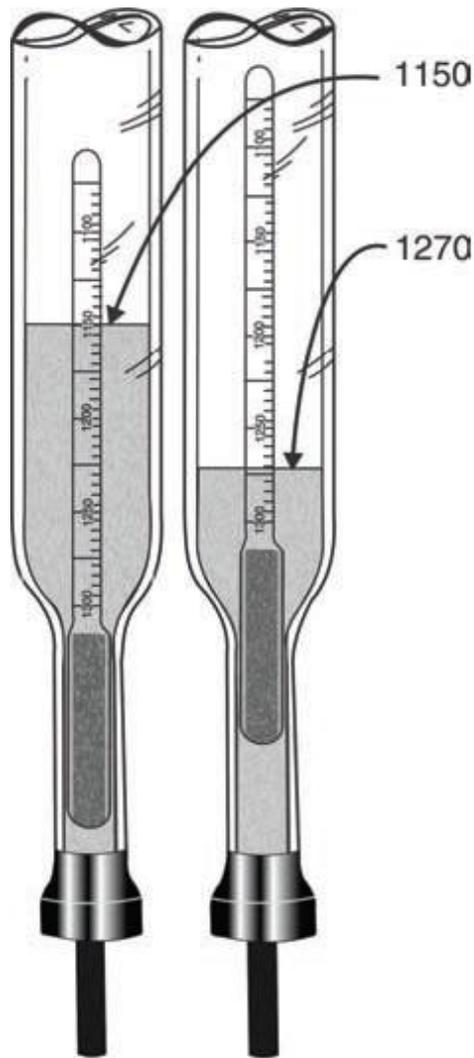
b. This will provide an accurate and complete operational status of each battery to forecast any cells that are becoming deficient.

5. Conduct maintenance procedures using a hydrometer.

a. A hydrometer is the instrument that measures the amount of active ingredients in the electrolyte of the battery.

b. A hydrometer is a glass syringe with a float inside.

(1) The float is a hollow glass tube weighted at one end and sealed at both ends with a scale calibrated in specific gravity marked on the side.



Hydrometer
Figure 551-88L-2055_03

(2) The electrolyte to be tested is drawn into the hydrometer by using the suction bulb.

WARNING

NEVER mix lead-acid and NICAD-servicing tools. NEVER store or transport NICAD and lead-acid batteries together. The combination of potassium hydroxide and sulfuric acid electrolytes generate a toxic gas that that CAN KILL!

(3) Hold the hydrometer in a vertical position and take the reading at the level of the electrolyte.

CAUTION

Care MUST be taken to prevent electrolyte from entering the eyes or from splashing on the skin.

(4) Refer to the manufacturer's TM for battery specifications for the correct specific gravity ranges.

Note: Hydrometers should be flushed with fresh water after each use to prevent inaccurate readings. Storage battery hydrometers must not be used for any other purpose.

(Asterisks indicates a leader performance step.)

Evaluation Guidance: None

Evaluation Preparation: None

PERFORMANCE MEASURES	GO	NO-GO	N/A
1. Demonstrated basic knowledge of battery maintenance.			
a. Checked for cleanliness.			
b. Checked for liquid around the battery.			
c. Performed a leak test.			
2. Conducted maintenance procedures for a battery charging system in the winter months.			
a. Serviced batteries before start during cold or idle period.			
b. Disconnected batteries after service and charge.			
3. Demonstrated maintenance procedures for cleaning battery terminals, using the wire type cleaner or the cutter or straight edge.			
4. Demonstrated basic knowledge of battery logbook.			
a. Kept weekly specific gravity.			
b. Provided an accurate and complete operational status.			
5. Conducted maintenance procedures using a hydrometer.			
a. Tested electrolyte.			
b. Annotated readings.			

Supporting Reference(s):

Step Number	Reference ID	Reference Name	Required	Primary
	TC 55-509-1	Marine Electricity	No	No

Environment: Environmental protection is not just the law but the right thing to do. It is a continual process and starts with deliberate planning. Always be alert to ways to protect our environment during training and missions. In doing so, you will contribute to the sustainment of our training resources while protecting people and the environment from harmful effects. Refer to FM 3-34.5 Environmental Considerations and GTA 05-08-002 ENVIRONMENTAL-RELATED RISK ASSESSMENT.

Safety: In a training environment, leaders must perform a risk assessment in accordance with ATP 5-19, Risk Management. Leaders will complete the current Deliberate Risk Assessment Worksheet in accordance with the TRADOC Safety Officer during the planning and completion of each task and sub-task by assessing mission, enemy, terrain and weather, troops and support available-time available and civil considerations, (METT-TC). Note: During MOPP training, leaders must ensure personnel are monitored for potential heat injury. Local policies and procedures must be followed during times of increased heat category in order to avoid heat related injury. Consider the MOPP work/rest cycles and water replacement guidelines IAW FM 3-11.4, Multiservice Tactics, Techniques, and Procedures for Nuclear, Biological, and Chemical (NBC) Protection, FM 3-11.5, Multiservice Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Decontamination.

Prerequisite Individual Tasks : None

Supporting Individual Tasks :

Task Number	Title	Proponent	Status
551-88L-1036	Demonstrate Basic Knowledge of a Battery Charging System	551 - Transportation (Individual)	Approved

Supported Individual Tasks :

Task Number	Title	Proponent	Status
551-88L-1036	Demonstrate Basic Knowledge of a Battery Charging System	551 - Transportation (Individual)	Analysis
551-88L-1036	Demonstrate Basic Knowledge of a Battery Charging System	551 - Transportation (Individual)	Approved

Supported Collective Tasks : None

ICTL Data :

ICTL Title	Personnel Type	MOS Data
88L20 Watercraft Engineer	Enlisted	MOS: 88L, Skill Level: SL2, Duty Pos: TFS, LIC: EN
88L30 Watercraft Engineer	Enlisted	MOS: 88L, Skill Level: SL3, Duty Pos: TFR, LIC: EN
88L40 Watercraft Engineer	Enlisted	MOS: 88L, Skill Level: SL4, Duty Pos: TGB, LIC: EN, SQI: O