Warning
Working with Batteries

Poster 026






Follow Instructions	Use Protective Goggle and Clothes	Avoid Sparks, Flames, or Arcing	Explosive Gases (Avoid Short Circuit)	Caustic Acid	Danger

Atmospheric Hazard
Like all other flooded, lead-acid batteries, batteries may leak, release hydrogen gas or cause acid misting.
1) Ventilate before entry into the compartment
2) Keep sparks, flames and smoking materials away from the battery.

Electric Shock Hazard
Multi-cell battery systems can attain high voltage and/or currents, therefore, do not touch un-insulated battery connectors or terminals. To prevent serious ill help prevent injury should an accident occur.

Always:
1) Remove all jewelry (i.e., rings, watches, chains, etc.).
2) Never lay tools or other metallic objects on the battery cell. Using the correct tools and wearing proper safety equipment will help prevent injury should an accident occur.

Before working on the system:
1) Disconnect all loads and power sources to the battery.
2) If working on an assembled battery system, sectionalize (interrupt the battery sections) into safe working voltage levels.
3) Check the battery system grounding. Grounding of the battery system is not recommended. However, grounding of the rack is recommended.

Sulfuric Acid Burns
Stationary batteries are safe when operated and handled properly. However, they do contain sulfuric acid, and other serious injuries. Always wear protective clothing.

Safety Equipment and Clothing
When working with any battery system, be sure you have the necessary tools and safety equipment, including but not limited to: insulated tools, face shield and protective goggles, rubber apron or acid resistant cloth, rubber gloves, emergency eye wash and shower, fire extinguisher and acid spill cleanup kit.

In case of contact with skin or cloth, immediately:
1) Remove contaminated clothing.
2) Flush the area thoroughly with water.
3) Get medical attention, if required.

In case of eye contact with sulfuric acid, immediately:
1) Flush thoroughly every few minutes with large amounts of water.
2) Get medical attention.
   If acid is spilled it should be neutralized with a solution of 1 pound of baking soda to 1 gallon of water (1 kg $NaHCO_3$ / 10 litres water) and then washed off with water.

Explosive Gases and Fire
Batteries generate explosive gases in all stages of operation. Under extreme conditions these gases can explode, causing blindness and other serious
personal injury. Consider the following:
1) Always wear protective clothing and use the correct safety tools.
2) Eliminate any potential of sparks, flames or arcing.
3) Before working on the battery, be sure to discharge static electricity that can build up on tools or the technician by touching a grounded surface in the vicinity of the battery but far enough from the cells and flame arresters to avoid ignition of any hydrogen gas present.
4) Provide adequate ventilation of the battery room.

In case of fire:
1) If batteries are connected to a charger, shut off power.
2) Extinguish a fire in a battery room containing lead acid batteries, using CO2 or Dry Chemical extinguishing media. Do NOT discharge the extinguisher directly onto the battery. The resulting thermal shock may cause cracking of the battery case/cover.
3) Leave the area as soon as possible if toxic fumes are present.
4) Sound the Alarm for help.
5) Wear breathing apparatus if it is required to fight fire in the vicinity.