

**BATTERY TYPES**

Three basic types of batteries can be given a charge with this charger:

**Conventional and Low Maintenance Batteries**

These are lead acid batteries. Conventional/ Low Maintenance batteries require periodic addition of distilled water to the acid solution (electrolyte). Additional water may be added by removing the filler caps located on the top of the battery.

**Note:** When lead is known to be one of the materials used in the battery's construction, that battery is a Low Maintenance/ Conventional type.

**Maintenance Free Batteries/ AGM batteries**

These are calcium/ lead batteries and normally do not require water additions. Therefore, filler caps have been removed from the battery surface. These batteries will have a smooth or sealed appearance.

**Deep Cycle Batteries**

These heavy duty batteries are used in boats, construction equipment, sump pumps, etc. They are normally marked DEEP CYCLE on the outside of the case.

**DC CONNECTION PRECAUTIONS****FOLLOW THESE STEPS WHEN BATTERY IS INSTALLED IN VEHICLE. A SPARK NEAR BATTERY MAY CAUSE BATTERY EXPLOSION. TO REDUCE RISK OF A SPARK NEAR BATTERY.**

1. Stay clear of moving engine parts.
2. Position the AC/DC cables to reduce the risk of damage by the moving engine parts. Never allow the clips to touch each other.
3. If it is necessary to close the engine hood, please ensure the hood will not damage the cable insulation or touch the battery clips to the hood.
4. Check the polarity of the battery posts.  
**Note:** The positive (+) post is usually larger in diameter than the negative (-) post.
5. Determine which battery post is grounded.  
**Note:** In most vehicles, the negative battery post is grounded to the chassis.  
• For negative grounded vehicles, connect the red positive (+) clip from the battery charger/maintainer to the positive (+) battery post. Connect the black negative (-) clip to the vehicle chassis or engine block.  
NEVER connect the clip to areas such as the carburetor, fuel lines or other metal body parts.  
• For positive grounded vehicles, connect the black negative (-) clip from the battery charger/maintainer to the negative (-) battery post. Connect the red positive (+) clip to the vehicle chassis or engine block.  
NEVER connect the clip to areas such as the carburetor, fuel lines or other metal body parts.
6. Plug the AC power cord/plug into a properly grounded outlet.
7. When disconnecting the charger/maintainer, first unplug the AC power cord from the outlet, remove the clip from the vehicle chassis or engine block and then remove the clip from the battery terminal.
8. Refer to the Charging Time Calculation Table in Fig 1.

**FOLLOW THESE STEPS WHEN BATTERY IS OUTSIDE VEHICLE. A SPARK NEAR THE BATTERY EXPLOSION. TO REDUCE RISK OF A SPARK NEAR BATTERY.**

**Note:** If using this battery charger/maintainer for a marine battery, the battery must be removed and charged on shore unless you have purchased special equipment designed for marine use to allow for onboard charging.

1. Check the polarity of the battery posts.  
**Note:** The positive (+) post is usually larger in diameter than the negative (-) post.
2. Attach at least a 24 inch 6-gauge insulated battery cable to the negative (-) battery post.
3. Connect the red positive (+) charger clip to the positive (+) battery post.
4. Place the free end of the battery cable as far away from the battery to be charged as the cable will allow and then connect the black negative (-) charger clip to the free end of the cable. NEVER face the battery when making the connection.
5. Plug the AC power cord/plug into a properly grounded outlet.
6. When disconnecting the charger/maintainer, always use the reverse order from the connection process, staying as far away as possible from the battery.

**AC POWER CORD/PLUG CONNECTIONS AND PROPER GROUNDING**

- This battery maintainer is designed for use on a 120V circuit. Always plug the AC power cord/plug into a properly grounded outlet that follows all local ordinances. The plug pins must properly fit the grounded outlet. An improper connection can result in electric shock.
- NEVER change or alter the AC power cord or plug pins.
- If an extension be used, it should follow the listed recommendations:
  - 100 ft (30.5m) or less – 18 gauge
  - 100 ft (30.5m) or more – 16 gauge

**OPERATING INSTRUCTIONS****Automatic charging mode**

The unit will switch automatically from Charging to Maintain mode when the battery is fully charged.

**Aborted charge**

If charging cannot be completed normally, the unit will abort the procedure. Error message will appear, check the Fault Codes on page 6 for trouble shooting. To reset an aborted charge, first unplug the charger/maintainer from the outlet, check connections and fuse, wait a few minutes and plug back in.

**Desulfation**

If the battery is left discharged for an extended period, the battery could become sulfated. A sulfated battery will not accept a normal charge.