

## Voltage & Wiring

Wiring is just as important as any other component in the starting and charging system. It must be capable of delivering the amount of current that the load is demanding.

**THINK OF WIRING AS A WATER HOSE.** The electrical current is like water flowing through the hose. The source or supply of this water would be the battery and the alternator.

To give an example, look at the diagrams below. The upper diagram shows a one inch diameter hose which allows one gallon per minute of flow. Since the load requires only one gallon per minute of flow, we can say that this hose (wire size) is of sufficient size to carry the supply of water (current) to the load. This all changes when we reduce the water hose (wire size) to one half inch as shown in the lower diagram. The hose (wire) can only deliver half the current needed by the load. **REMEMBER BIGGER IS BETTER!**

When electrical systems are designed the wire size is calculated for the specific requirements of the electrical components being used. **When electrical components are added or upgraded the wire size has to be upgraded also.**

When calculating proper wire sizing, voltage plays an important role. **Voltage is much like water pressure.** The higher the voltage, the faster the current flows.

A 24 volt system can move the same amount of current through a wire one half the size required for a 12 volt system. (See diagram below.) This is also shown in the charging cable size chart on the following page.

You will see in this chart, the 24 volt cable size requirements are much less than that of the 12 volt.

The smaller the wire, the greater its resistance to the flow of electrons and the greater the heat generated when the wire is conducting electricity. The heat can destroy insulation and even kindle a fire. The larger the amperage of a circuit, the larger the wire that's needed.

**REMEMBER: BIGGER IS BETTER!** The size of a wire (gauge) is expressed in terms of a standardized American Wire Gauge (AWG) measurement. The higher the AWG number, the smaller the wire size. For example, a 14 gauge wire is smaller than a #10 wire.

