

DETERMINING PROPER WIRE SIZE

The two (2) most important factors to be considered are how much current the wire has to carry and how long the wire run is. The most important factor of these is current. The more current drawn the larger the wire you will need. Wire size (diameter) is specified in terms of “AWG” which is more commonly known as “Gauge”. The confusing thing about this is that as the wire gets larger, its’ gauge number gets smaller. For our models, we generally use wire in the 12 to 26 Gauge range.

Before you can select the proper size wire, you will need to know how much current the wire will carry. Ideally, you know or can measure the current use of each item in your model, then it is a simple matter to add these numbers up to get the total amount. In reality, it is not that complicated, most items, (lights, sound effects, smoke units and motors), tell you the current draw on their packaging. For those that give a range like drive motors, select a value that is 50% to 75% of the max depending on the size of the prop. Once all of these individual amounts are known, you can add them up to determine the total. From the chart provided at the end of this article, you can now select the size wire required or needed. To be on the safe side, select a size that will carry your total load plus an additional 25%, this will be the size wire needed to run from your battery to your power distribution point. From the power distribution point to each individual device, use the proper size wire to carry the current draw of that specific device.

I also mentioned that the length of the wire is important. This is because of the resistance of the wire. This resistance causes voltage drops. The longer the wire, the more voltage lost. To counter this, a larger wire (smaller gauge), is used as the larger the wire the less the resistance. For any wire run over five (5) feet, I would consider using the next size larger wire than what the current draw requires. If in doubt, it is better to use too large a wire as opposed to too small a wire. The only disadvantage to the larger wire is that it is stiffer and therefore harder to work with.

This Chart will help you determine what Wire Gauge you will need:

<u>WIRE GAUGE</u>	<u>CURRENT CAPACITY</u>
12 Gauge	41 Amps
14 Gauge	32 Amps
16 Gauge	22 Amps
18 Gauge	16 Amps
20 Gauge	11 Amps
22 Gauge	7 Amps
24 Gauge	3.5 Amps
26 Gauge	2.2 Amps
28 Gauge	1.4 Amps

Excerpt from Loyalhanna Dockyard Newsletter March 2005