Battery Cable Amperage Capacity Chart

	Recommended Length and Amperage for Battery Cable while maintaining a 2% or less voltage drop at 12 volts				
Battery Cable Size	**50 Amps**	**100 Amps**	**150 Amps**	**200 Amps**	**300 Amps**
6 Gauge (AWG)	11.8 ft	5.9 ft	4.4 ft	2.9 ft	2.2 ft
4 Gauge (AWG)	18.8 ft	9.4 ft	6.3 ft	4.7 ft	3.1 ft
2 Gauge (AWG)	29.8 ft	14.9 ft	9.9 ft	7.4 ft	4.9 ft
1 Gauge (AWG)	37.7 ft	18.9 ft	12.6 ft	9.4 ft	6.3 ft
1/0 Gauge (AWG)	47.5 ft	23.8 ft	15.9 ft	11.9 ft	7.9 ft
2/0 Gauge (AWG)	60 ft	30 ft	20 ft	15 ft	10 ft
3/0 Gauge (AWG)	75.6 ft	37.8 ft	25.2 ft	18.9 ft	12.6 ft
4/0 Gauge (AWG)	95.2 ft	47.6 ft	31.7 ft	23.8 ft	15.8 ft.

When choosing the size of a battery cable to power your electrical system or project, it is important that it is sized appropriately. As electricity flows through a cable, there is an inherent resistance to the flow of that electricity which will generate heat in your battery cable and manifest itself in the form of what is called a voltage drop. Voltage drop is simply the voltage seen at one end of the cable minus the voltage seen at the other end of the cable. This voltage drop is influenced by the diameter of the copper conductors inside the cable, and the total length of the cable - The longer the battery cable is, the higher the voltage drop will be, and the larger the diameter, or gauge (AWG) of the battery cable, the less the voltage drop will be.

Why is voltage drop important? for example, let's say that your length of battery cable is connected to a 12 volt source and has a voltage drop of 2%, which is considered adequate for almost all electrical systems. At the source, or battery, you will read 12 volts using a voltage meter, but at the other end of the cable your voltmeter will only read 11.76 volts (12 volts -2%). If your circuit needs 100 amps of current, the battery cable will absorb 24 watts of power because of it's resistance. Now lets say that your voltage drop is 10%. Now your voltmeter at the other end of your battery cable will read 10.8 volts (12 volts - 10%) and that same 100 amp current draw will cause your battery cable to absorb 120 watts of power! Your cable will definitely get warm to the touch! This amount of voltage drop will cause other devices to not work properly - light bulbs will be dimmer, fans and motors will be weaker, and if the voltage drop is high enough computer systems can fail, and even the cable itself can be destroyed leading to a catastrophic failure and even an electrical fire!

When determining the length of cable you need for your circuit, both the positive cable, and the negative cable need to be considered, especially if you are wiring a vehicle that does not have a chassis ground such as a boat or other vehicle with a fberglass body. So if you have a 10 foot run from your battery, you actually have a total of a 20 foot run because the negative cable will also be 10 feet back to the battery.