The West Advisor®

Even the experts have to check occasionally on the correct gauge of wire for a given marine DC load. The simplest method we've found uses the charts below.

- Select either the 10% or 3% voltage drop chart, based on the type of load you are running.
- Next, find the current consumption of the load on the vertical axis of the chart.
- Find the length of the circuit on the horizontal axis of the chart, noting that the length is the "round trip" distance from the panel or battery to the load and back.
- The color of the graph at the intersection denotes the gauge of wire to use.

We've included copper wire specifications which comply with the AWG standards at the bottom. Of particular interest is the equation:

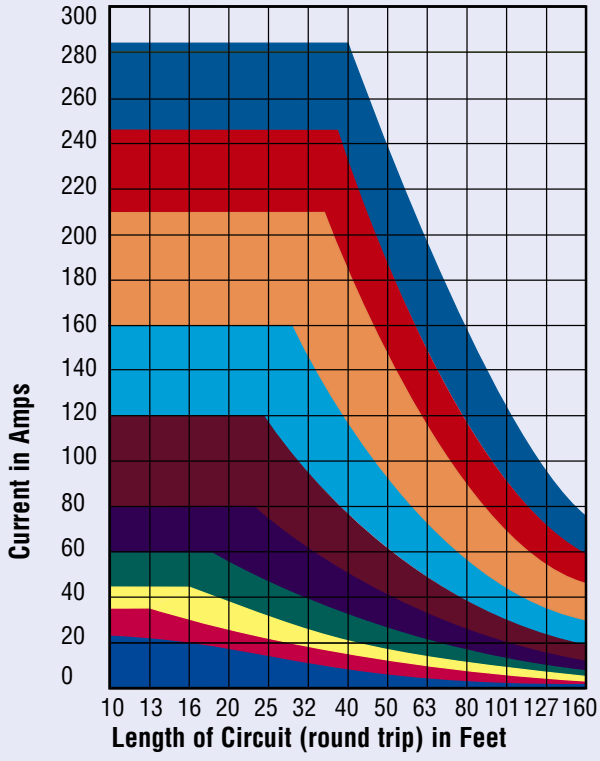
Voltage Drop = Current x Length x Ohms per foot

This simple equation allows you to calculate the voltage drop for a circuit of any length and any current flow, if you know the resistance of the wire.

Finally, note that the amp capacity of the wire curtails using very short lengths of wire for large current flows, as show by the "flat tops" of the 10% chart areas.

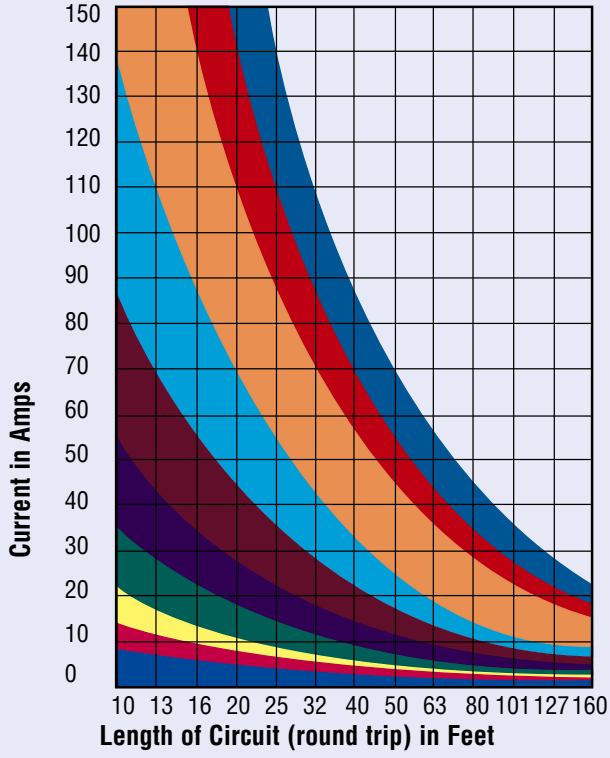
10% Voltage Drop, 12V DC Wiring

For circuits other than running lights, electronics and panel board feeds



3% Voltage Drop, 12V DC Wiring

For running lights, blowers, electronics and panel board feeds



These simple, proprietary graphs assume:

1. 105ºC insulation rating

   All Ancor wire uses 105ºC insulation rating. Lower temperature insulation cannot handle as much current (the flat tops on the 10% graph would be lower than shown)

2. AWG wire sizes, not SAE

   All Ancor wire uses AWG wire sizes. SAE wire sizes are 6%-12% smaller, carry proportionally less current, and have greater resistance

3. Wires are not run in engine spaces

   Maximum current is 15% less in engine spaces, which are assumed to be 20ºC hotter than nonengine spaces (50ºC vs 30ºC).

4. Conductors are not bundled

   If three conductors are bundled, reduce maximum amperage by 30%. If 4–6 conductors are bundled, reduce maximum amperage by 40%. If 7–24 conductors are bundled, reduce amperage by 50%.

To complete your project, don't forget:

- Heat Shrink tubing
- wire-strippers, cutters, and crimpers
- terminals: ring, spade or butt connectors

AWG Wire Specs

Wire Size (AWG)	Nominal OD	Weight per 1000'	Cir. Mil Area	Square mm	Ohms per 1000'	Max. Amps
18	7/64"	12#	1,600	0.823	6.48	20
16	1/8"	16#	2,600	1.31	4.00	25
14	9/64"	23#	4,100	2.08	2.5	35
12	5/32"	31#	6,500	3.31	1.75	45
10	7/32"	44#	10,500	5.26	0.98	60
8	5/16"	86#	16,800	8.37	0.62	80
6	11/32"	18#	26,600	13.30	0.40	120
4	13/32"	178#	42,000	21.15	0.24	160
2	15/32"	277#	66,500	33.62	0.157	210
1	17/32"	350#	83,690	44.21	0.127	245
1/0	9/16"	437#	105,600	53.49	0.099	285
2/0	5/8"	549#	133,000	67.43	0.077	330
3/0	11/16"	675#	167,800	85.01	0.062	385
4/0	13/16"	837#	211,600	107.20	0.049	445

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