

Cable Size and Capacity Guide									
AWG (B&S) Gauge	Conductor Diameter Inches	Conductor diameter (mm)	Cross sectional area (mm ²)	Tinned Copper Conductors (ohms/km)	Metric Equivalent				
					Cross Sectional Area	Copper Conductors (ohms/km)	Tinned Copper Conductors (ohms/km)	Continuous current carrying capacity	Volt Drop (μV/A.m)
0000	0.460	11.68	107.22	0.16	120	0.16	0.16	302	0.32
000	0.410	10.40	85.01	0.20	95	0.2	0.21	262	0.41
00	0.365	9.27	67.43	0.26	70	0.27	0.28	211	0.51
0	0.325	8.25	53.49	0.32	50	0.38	0.39	211	0.64
1	0.289	7.35	42.41	0.41	50	0.38	0.39	165	0.81
2	0.258	6.54	33.62	0.51	35	0.55	0.56	137	1.03
3	0.229	5.83	26.67	0.65	25	0.78	0.79	111	1.29
4	0.204	5.19	21.15	0.82	25	0.78	0.79	111	1.63
5	0.182	4.62	16.77	1.03	16	1.21	1.24	82	2.06
6	0.162	4.11	13.30	1.30	16	1.21	1.24	82	2.59
7	0.144	3.67	10.55	1.63	10	1.91	1.95	62	3.27
8	0.129	3.26	8.37	2.06	10	1.91	1.95	62	4.12
9	0.114	2.91	6.63	2.60	6	3.3	3.39	46	5.20
10	0.102	2.59	5.26	3.28	6	3.3	3.39	46	6.55
11	0.091	2.30	4.17	4.13	4	4.95	5.09	35	8.27
12	0.081	2.05	3.31	5.21	4	4.95	5.09	35	10.42
13	0.072	1.83	2.63	6.57	2.5	7.98	8.21	26	13.14
14	0.064	1.63	2.08	8.28	2.5	7.98	8.21	26	16.56
15	0.057	1.45	1.65	10.44	1.5	13.3	13.7	18	20.89
16	0.051	1.29	1.31	13.17	1.5	13.3	13.7	18	26.34
17	0.045	1.15	1.04	16.61	1	19.5	20	15	33.22
18	0.040	1.02	0.82	20.94	1	19.5	20	15	41.89
19	0.036	0.91	0.65	26.41	0.75	26	26.7	10	52.81
20	0.032	0.81	0.52	33.29	0.5	39	40.1	5	66.58

How to calculate the right cable

First of all you need to know two things – the length of the cable run and how much current will be required to be drawn through it. If the current rating is not known, it can be obtained from the power rating by using –

$$current(I) = \frac{Power (W)}{Voltage (V)}$$

Once the current is known, the voltage drop can be calculated by using the rightmost column on the table and the following formula –

$$Volt Drop (Vd) = Length \times Current \times \frac{\mu V}{A.m}$$

Note – some tables will show mV/A.m, so you will need to divide by 1000 if using their numbers.

For automotive systems volt drop should be maintained to less than 2%, so for 12V this gives a maximum drop of 0.24V.

Once you have confirmed your cable size will avoid excessive volt drop, check the intended amount of continuous current that you need the cable to carry. You may need to go up one size to ensure that insulation temperature limits are not exceeded.