WIRING GUIDE – PRIMARY WIRE & BATTERY CABLE

Using an automotive wiring guide is critical to help determine the correct wire or cable gauge for 12-volt systems. The selection of the correct gauge for automotive or other low voltage applications is extremely important to maximize safety and performance. Voltage drop or a loss of candlepower can occur if an insufficient gauge is used.

Always consider the total amperage and length of wire in each circuit when selecting an adequate gauge. Allow for the return circuit, including the grounded return, when estimating the length.

TOTAL APPROX. CIRCUIT AMPERES	WIRE GAUGE (FOR LENGTH IN FEET)											
12V	3	5	7	10	15	20	25	30	40	50	75	100
1	18	18	18	18	18	18	18	18	18	18	18	18
1.5	18	18	18	18	18	18	18	18	18	18	18	18
2	18	18	18	18	18	18	18	18	18	18	16	16
3	18	18	18	18	18	18	18	18	18	18	14	14
4	18	18	18	18	18	18	18	18	16	16	12	12
5	18	18	18	18	18	18	18	18	16	14	12	12
6	18	18	18	18	18	18	16	16	16	14	12	10
7	18	18	18	18	18	18	16	16	14	14	10	10
8	18	18	18	18	18	16	16	16	14	12	10	10
10	18	18	18	18	16	16	16	14	12	12	10	10
11	18	18	18	18	16	16	14	14	12	12	10	8
12	18	18	18	18	16	16	14	14	12	12	10	8
15	18	18	18	18	14	14	12	12	12	10	8	8
18	16	16	16	16	14	14	12	12	10	10	8	8
20	16	16	16	16	14	12	10	10	10	10	8	6
22	14	14	14	14	12	12	10	10	10	8	6	6
24	14	14	14	14	12	12	10	10	10	8	6	6
30	12	12	12	12	10	10	10	10	10	6	4	4
40	10	8	8	8	8	8	8	8	6	6	4	2
50	8	8	8	8	8	8	8	8	6	6	2	2
100	4	4	4	4	4	4	4	4	4	2	1	1/0
150	2	2	2	2	2	2	2	2	2	1	2/0	2/0
200	1/0	1/0	1/0	1/0	1/0	1/0	1/0	1/0	1/0	1/0	4/0	4/0

USING THE CHART

1. Measure the length of wire in the circuit including the ground return. A two-wire circuit will be the total lengths of both the wires. Account for both vehicles on auto and trailer applications.
2. Find the total amperes, watts, or candlepower and choose the nearest number in Circuit Amperes column.
3. Look across for proper footage to find nearest wire gauge.

Note:

18-gauge applications outside of the shaded area could be 20-gauge for electrical purposes. However, it is recommended to use 18-gauge for the tensile strength of the wire. Chart is based on maximum 10% voltage drop @ 100°F (in free air).

TYPICAL AMPERAGE GUIDE

EQUIPMENT	AVG. AMPS*
Air Conditioner	13 to 20
Alarm System	18 to 20
Anti-lock Brake Module	2 to 6
Cigarette Lighter/Power Outlet	10 to 12
Dash lights	1.5 to 3
Dome Light	1
Electric Clock and Light	0.3
Electric Wiper	3 to 6
Fog Lights	8 to 9
Gauges	0.7 to 1
Headlight Dimmer	2.2
Headlights - Low Beams	8 to 9
Headlights - High Beams	13 to 15
Heater/Defroster	6 to 10
Horns (2)	18 to 20
Ignition	1.5 to 3.5
License Lights	0.5
Parking Lights (2)	1.3
Power Antenna	6 to 10
Power Door Locks	3 to 5
Power Seats	25 to 50
Power Sunroof	20 to 25
Power Windows	2 to 20
Power to Trailer Hitch if Equipped	20 to 30
Radio/CD Player	2 to 5
Rear Window Defogger	20 to 25
Reverse Lights (2)	3.5 to 4
Starter Motor	75 to 300
Starter Solenoid	12 to 20
Stop Lights (2)	3.5 to 4
Side Marker Lights (2)	1.3
Tail Lights (2)	0.5
Trunk Lights	0.5

*Based on a typical 12-volt system.