

TABLE 120.340(p)—CONDUCTOR SIZES FOR AMPERES—LENGTHS

Total current on circuit, amperes	Length of conductor in meters (feet) from source of current to most distant fixture										
	3.1 (10)	4.5 (15)	6.1 (20)	7.6 (25)	9.2 (30)	10.7 (35)	12.2 (40)	13.7 (45)	15.2 (50)	16.8 (55)	18.3 (60)
12 volts, 2-wire—10 percent drop wire sizes (A.W.G.)											
5 .....	14	14	14	14	14	14	14	14	12	12	12
14 .....	14	14	14	12	12	12	10	10	10	10	8
15 .....	14	14	12	10	10	10	8	8	8	8	8
20 .....	12	12	10	10	8	8	8	8	6	6	6
25 .....	10	10	10	8	8	8	6	6	6	6	4

Other values can be computed by means of the following formula:

$$cm = \frac{K \times I \times L (\times 2 \text{ for two-wire circuit})}{E}$$

Where:

cm = Circular-mil area of conductor.

K = 3.28 ohms/mil-meter (metric)

K = 10.75 ohms/mil-foot (english)

(a constant representing the resistance of cooper).

I = Load current, in amperes.

L = length of conductor from center of distribution, in meters (feet).

E = Voltage drop at load, in volts.

(q) If used, each armored cable metallic covering must:

- (1) Be electrically continuous; and
- (2) Be grounded at each end of the run to:

- (i) The metallic hull; or
- (ii) The common ground plate on nonmetallic vessels; and

(3) Have final sub-circuits grounded at the supply end only.

(r) A portable or temporary electric cord or cable must be constructed and used in compliance with the requirements of §111.60-13 in subchapter J of this chapter for a flexible electric cord or cable.

[CGD 85-080, 61 FR 928, Jan. 10, 1996; 61 FR 20556, May 7, 1996, as amended at 62 FR 51352, Sept. 30, 1997]

**§ 120.350 Batteries—general.**

(a) Where provisions are made for charging batteries, there must be natural or induced ventilation sufficient to dissipate the gases generated.

(b) Each battery must be located as high above the bilge as practicable, secured to protect against shifting with the roll and pitch of the vessel, and

free from exposure to water splash or spray.

(c) Batteries must be accessible for maintenance and removal.

(d) Connections must be made to battery terminals with permanent type connectors. Spring clips or other temporary type clamps are prohibited.

(e) Batteries must be mounted in trays lined with, or constructed of, a material that is resistant to damage by the electrolyte.

(f) Battery chargers must have an ammeter connected in the charging circuit.

(g) If the batteries are not adjacent to a distribution panel or switchboard that distributes power to the lighting, motor, and appliance circuits, the battery lead must have a fuse in series, located as close as practicable to the battery.

(h) Batteries used for engine starting are to be located as close as possible to the engine or engines served.

**§ 120.352 Battery categories.**

This section applies to batteries installed to meet the requirements of §120.310 of this part for secondary sources of power to vital loads, or sources of power to final emergency loads.

(a) *Large.* A large battery installation is one connected to a battery charger having an output of more than 2 kilowatts (kw), computed from the highest possible charging current and the rated voltage of the battery installation.

(b) *Small.* A small battery installation is one connected to a battery charger having an output of 2 kw or less, computed as above.