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

<table>
<thead>
<tr>
<th>Total current on circuit, amperes</th>
<th>3.1 (10)</th>
<th>4.5 (15)</th>
<th>6.1 (20)</th>
<th>7.6 (25)</th>
<th>9.2 (30)</th>
<th>10.7 (35)</th>
<th>12.2 (40)</th>
<th>13.7 (45)</th>
<th>15.2 (50)</th>
<th>16.8 (55)</th>
<th>18.3 (60)</th>
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<tr>
<td>12 volts, 2-wire—10 percent drop wire sizes (A.W.G.)</td>
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</table>

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.
- \( K = 3.28 \text{ ohms/mil-meter (metric)} \)
- \( K = 10.75 \text{ ohms/mil-foot (english)} \)
- \( I \) = 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.

(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.