

Figure 11-1

The allowable ampacities listed in Table 310.16 are affected by conductor insulation, ambient temperature, and conductor bundling [310.10 and 310.15(B)]. **Figure 11-2**

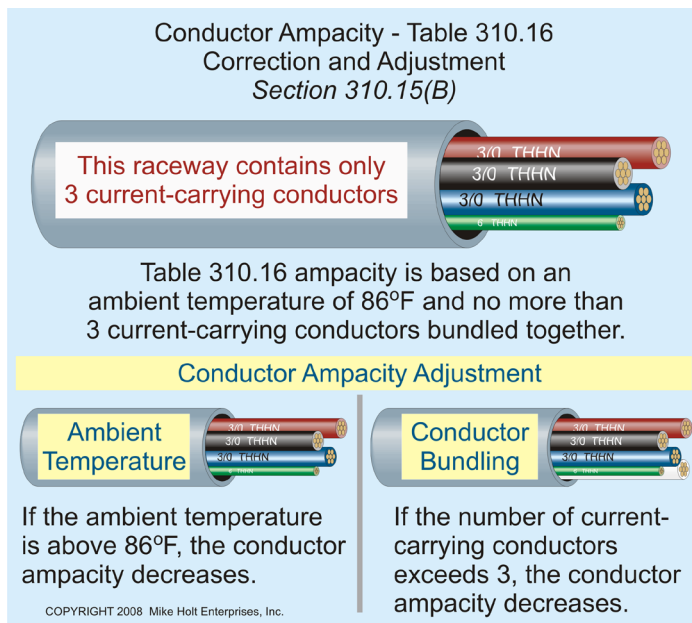


Figure 11-2

**Author's Comment:** Section 110.14(C)(1)(a) states that terminals are rated 60°C for equipment rated 100A or less unless marked 75°C. In real life, most terminals are now rated 75°C, so in this unit, we'll assume all terminals are rated 75°C unless specified 60°C. For exam purposes, and when answering questions at the

end of this unit, read the problem carefully to be certain you know what terminal rating the question specifies. If unspecified, use the rules of 110.14(C).

### Continuous Loads

Ungrounded conductors are sized at 125 percent of the continuous load before any adjustment factor and the overcurrent devices are also sized at 125 percent of the continuous load [210.19(A), 215.2(A)(1), and 230.42]. Neutral conductors that are't connected to an overcurrent device are permitted to be sized at 100 percent of the continuous and noncontinuous load [210.19(A)(1) Ex 2 and 215.2(A)(1) Ex 2].

**Author's Comment:** Article 100 defines a continuous load as a load where the maximum current is expected to continue for 3 hours or more. Some *NEC* sections tell you when certain loads are continuous, such as 422.13 for some types of water heaters, or 424.3(B) for fixed electric space-heating equipment. Most commercial lighting and electric signs are considered continuous loads.

**Example:** If a 60A continuous load with 75°C rated terminals is supplied by a feeder with four current-carrying conductors, it's necessary to adjust the conductor ampacity for four current-carrying conductors.

*Step 1.* Take the continuous load times 125 percent when sizing conductors and overcurrent protection.

$$60A \times 1.25 = 75A$$

*Step 2.* Select the conductors using the column of Table 310.16 that corresponds with the temperature rating of the terminals [110.14(C)(1)].

4 AWG is rated 85A at 75°C [Table 310.16].

*Step 3.* Verify that the conductor is large enough for any necessary deratings, using the column that corresponds to the conductor's temperature rating. If you're using THHN conductors, use the 90°C column of Table 310.16 [110.14(C)].

Adjust the ampacity by 80 percent for four current-carrying conductors [Table 310.15(B)(2)(a)].

$$95A \times 0.80 = 76A$$

This verifies that a 4 THHN conductor is large enough. It can be used on an 80A breaker because 240.4(B) allows rounding up to the next standard size listed in 240.6(A).