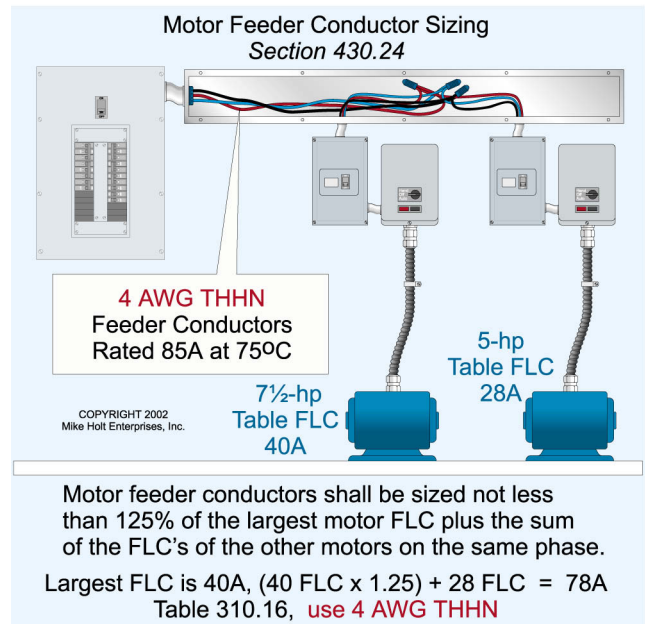


**Figure 7-11**  
Motor Protection and Conductor Sizes



**Figure 7-12**  
Motor Feeder Conductor Sizing

**□ Branch Circuit**

Which of the following statements are true for a 1-hp, 120V motor, nameplate current rating of 14A? Figure 7–11.

- (a) The branch-circuit conductors can be 14 AWG THHN.
- (b) Overload protection is from 16.1A.
- (c) Short-circuit and ground-fault protection is permitted to be a 40A circuit breaker.
- (d) all of these are true

• Answer: (d) all of these are true

Conductor Size [430.22(A)]

$16A \times 1.25 = 20A$ , 14 AWG at 60°C, Table 310.16

Overload Protection Size [430.32(A)(1)]

$14A$  (nameplate)  $\times 1.15 = 16.1A$

Short-Circuit and Ground-Fault Protection [430.52(C)(1), Tables 430.52 and 240.6(A)]

$16A \times 2.50 = 40A$  circuit breaker

This bothers many electrical people, but the 14 AWG THHN conductors and motor are protected against overcurrent by the 16A overload protection device and the 40A short-circuit protection device.

**7-5 FEEDER CONDUCTOR SIZE [430.24]**

Conductors that supply several motors must have an ampacity of not less than:

- (1) 125% of the highest-rated motor FLC [430.17], plus
- (2) The sum of the FLCs of the other motors (on the same phase) [430.6(A)].

**□ Feeder Conductor Size**

What size feeder conductor is required for two motors; a 7½-hp, 230V (40A), 1Ø and a 5-hp, 230V (28A), 1Ø? Terminals rated for 75°C. Figure 7–12.

- (a) 50A
- (b) 60A
- (c) 70A
- (d) 80A

• Answer: (d) 80A,  $(40A \times 1.25) + 28A = 78A$

Note: 4 AWG conductor at 75°C, Table 310.16 is rated for 85A.