ARTICLE

AIR-CONDITIONING EQUIPMENT

Introduction to Article 440—Air-Conditioning Equipment

Article 440 applies to hermetic refrigerant motor-compressors, such as those used for pool heat pumps and HVAC equipment. In most cases the manufacturer has worked out all the details and identifies the minimum conductor ampacity, maximum overcurrent protective device rating, and other information (such as running-load amperes) on the nameplate, so the rules covered in this material deal with what the installer needs to know. Some of these rules are outside of the scope of this material, however we do cover the following topics in this article:

- Scope
- Marking on Hermetic Motor-Compressors and Equipment

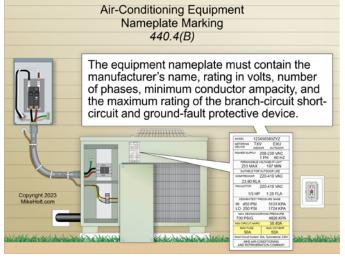
Part I. General

440.4 Marking on Hermetic Motor-**Compressors and Equipment**

(B) Air-Conditioning Equipment Nameplate. Multimotor airconditioning equipment must have a visible nameplate marked with the manufacturer's name, rating in volts, number of phases, minimum conductor ampacity, and the maximum rating of the branch-circuit short-circuit and ground-fault protective device. ▶Figure 440-3

Author's Comment:

▶ Hermetic refrigerant motor compressors typically have an integral thermal device that provides overload protection [440.51]. The branch-circuit short-circuit and ground-fault protection is provided with a circuit breaker or fuse which must be installed by the electrician in accordance with the manufacturer's nameplate marking.

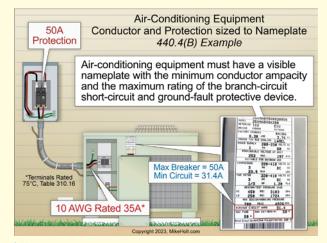


▶ Figure 440-3

Multimotor Equipment Example

Question: What size conductor and short-circuit and ground-fault protective device is required for a multimotor air-conditioning compressor? The nameplate minimum circuit ampacity is 31.40A, the maximum circuit breaker rating is 50A, where the equipment is rated for 75°C conductor. ▶Figure 440-4

- (a) 10 AWG, 50A breaker
- (b) 10 AWG, 30A breaker
- (c) 8 AWG, 50A breaker
- (d) 8 AWG, 20A breaker



▶Figure 440-4

Solution:

Conductor: Since the terminals are rated 75°C, we can use 10 AWG rated 35A at 75°C [110.14(C)(1)(a)(3) and Table 310.16].

The circuit breaker protection for air-conditioning compressor equipment must have an ampere rating of not more than the 50A marked on the nameplate [440.4(B)]. Use a maximum 50A breaker in accordance with 240.6(A).

Answer: (a) 10 AWG, 50A breaker