ARTICLE

695 FIRE PUMPS

Introduction to Article 695—Fire Pumps

The general philosophy behind most *Code* requirements is to provide circuit overcurrent protection that will shut equipment down before allowing the supply conductors to overheat and become damaged from overload. Article 695 departs from this philosophy. The idea is that the fire pump motor must keep running no matter what! Since it supplies water to a facility's fire protection piping, which in turn supplies water to the sprinkler system and fire hoses, it is better to sacrifice the fire pump rather than the entire structure. This article contains many requirements to make certain an uninterrupted supply of water is maintained.

Some of these requirements are obvious. For example, locate the pump where its exposure to fire is minimized, which is usually in a separate space with fire-rated construction. It is important that the source of power is maintained for both the fire pump and its jockey (pressure maintenance) pump. Also, fire pump wiring must remain independent of all other wiring. Some of the requirements of Article 695 seem wrong at first glance, until you remember why that fire pump is there in the first place. For example, the disconnect must be designed to be lockable in the closed position. You would normally expect it to be lockable in the open position because other articles require that for the safety of maintenance personnel. But the fire pump runs to ensure the safety of an entire facility and everyone within. For the same reason, fire pump power circuits cannot have automatic overcurrent protection against overloads.

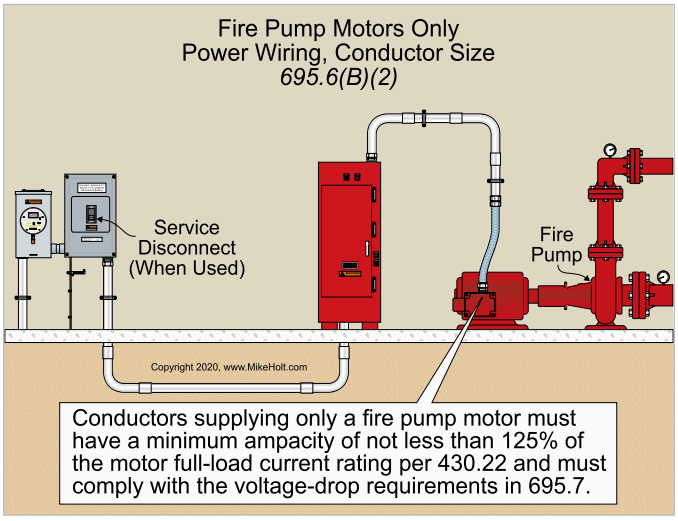
Remember, the fire pump must be kept in service, even if doing so damages or destroys the pump. It is better to sacrifice the fire pump than to save it and lose the facility. The intent of this article is to allow enough time for building occupants to escape and (if possible) to save the facility.

695.6 Power Wiring

(B) Conductor Size.

(1) Fire Pump Motors and Other Equipment. Conductors supplying a fire pump motor(s) pressure maintenance pumps, and associated fire pump accessory equipment, must have a minimum ampacity of not less than 125 percent of the sum of the fire pump motor(s) and pressure maintenance motor(s) full-load current(s), and 100 percent of the associated fire pump accessory equipment.

(2) Fire Pump Motors Only. Conductors supplying only a fire pump motor must have a minimum ampacity of not less than 125 percent of the motor full-load current rating in accordance with 430.22 and must comply with the voltage-drop requirements in 695.7. ▸Figure 695–5

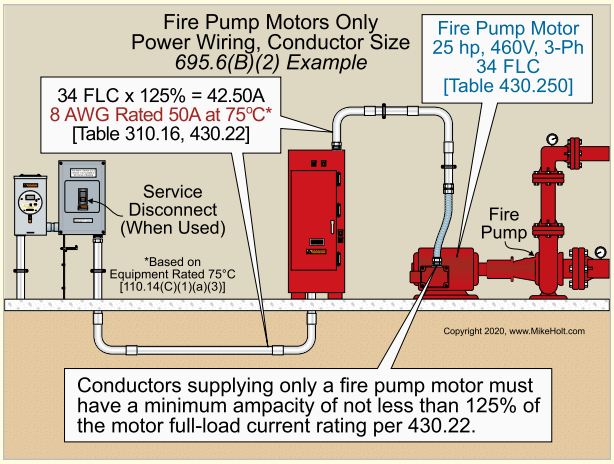


▸Figure 695–5

▶ Fire Pump Conductor Size Example

Question: *What size conductor is required for a 25 hp, 460V, three-phase fire pump motor with terminals rated 75°C?* ▶Figure 695–6

(a) 8 AWG (b) 6 AWG (c) 4 AWG (d) 3 AWG



▶Figure 695–6

Solution:

25 hp, 460V, Three-Phase Motor FLC = 34A [Table 430.250]

Determine the branch-circuit conductor at 125 percent of the motor's FLC [Table 310.16, 430.22, and Table 430.250].

Branch-Circuit Conductor = 34A × 125%
Branch-Circuit Conductor = 42.50A

Use an 8 AWG conductor rated 50A at 75°C [110.14)(C)(1)(a)(3) and Table 310.16].

Answer: *(a) 8 AWG*