

# Data Bulletin

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## Fire Pump Connections Class 2700

### INTRODUCTION

This data bulletin addresses the question of how to accommodate fire pump connections in power equipment such as switchboards or switchgear. The information contained in this bulletin is representative of the applicable codes and standards. However, there are instances in which customers have received a waiver or special permission from local authorities for different arrangements. The key is to be informed of the customer needs in each fire pump situation.

### CODES AND STANDARDS

National Fire Protection Association (NFPA) 20 is the governing standard for centrifugal fire pumps. The relevant electrical portions of NFPA 20 are extracted to National Electrical Code (NEC) Article 695. In Article 695, the primary areas that use extracted text are 695.3 and 695.4.

In general, the objective of NFPA 20 is to get power from the electric utility to the fire pump controller without any equipment, disconnects, or overcurrent protection. The standards prefer a reliable (as determined by the Authority Having Jurisdiction) utility connection. If that cannot be obtained, apply an alternate source — usually a standby generator. The standards also recognize that it is not always feasible to connect directly from the utility company transformer to the fire pump controller. Building design, fire pump location, and ability to access the power source are all factors that impact how the connection is made.

We frequently receive requests to supply equipment with a “fire pump breaker.” This request is *generally* at odds with the applicable codes and standards outlined in this bulletin.

### NEC ARTICLE 695.3(A)

#### **When the switchboard or switchgear is the service equipment for the installation:**

NEC Article 695.3(A)(1) states that the connection to the utility must either be a separate service tap or a tap ahead of the main service to the building.

1. *If the equipment is part of the separate service dedicated to the fire pump installation* — which generally means that only one disconnect/overcurrent device is in the equipment — then the rules in Article 695.4(B) will govern the size of the overcurrent device (see “NEC Article 695.4(B)” on page 2).
2. In the case of the “tap” ahead of the main service, Article 695.3(A)(1) only permits the tap inside the equipment. It does *not* allow the overcurrent device to be part of the equipment. The tap must be made “...ahead of and not within the same cabinet, enclosure, or vertical switchboard section as the service disconnecting means.”

Generally, a separate section must be supplied to accommodate only the tap to the fire pump equipment. This is often misunderstood as allowing the fire pump breaker to be part of the equipment, which is not the intent.

3. Article 695.3(A)(1) requires compliance with Article 230.82(4), which allows a tap ahead of the main only if the tap is "...provided with service equipment and installed in accordance with requirements for service-entrance conductors." The tap conductors that leave the switchboard or switchgear must terminate in another piece of service equipment.
4. Article 695.3(A)(1) also requires that the separate piece of service equipment discussed in number 3 above must comply with the labeling requirements of Article 230.2 and the location requirements of Article 230.72(B).

Specifically, Article 230.72(B) requires that the additional service disconnecting means for the fire pump are "...installed remote from the one to six service disconnecting means for normal service to minimize the possibility of simultaneous interruption of supply." It is practically impossible to mount the "fire pump breaker" in the same switchboard or switchgear line-up as the normal service and also comply with the requirement that it is installed remote from the other disconnects (see Figure 1 on page 3).

*NOTE: The definition of "remote" is determined locally and may vary from one jurisdiction to the next.*

Where a single service is not considered reliable, a second source is required. This is typically a standby generator. In this case, the automatic transfer must occur in transfer equipment approved for fire pump use. Generally, this transfer switch will be a part of the fire pump controller.

*NOTE: The addition of the generator does not negate the requirements for properly connecting the primary supply.*

## NEC ARTICLE 695.3(B)

### **When the switchboard or switchgear is *not* the service equipment for the building:**

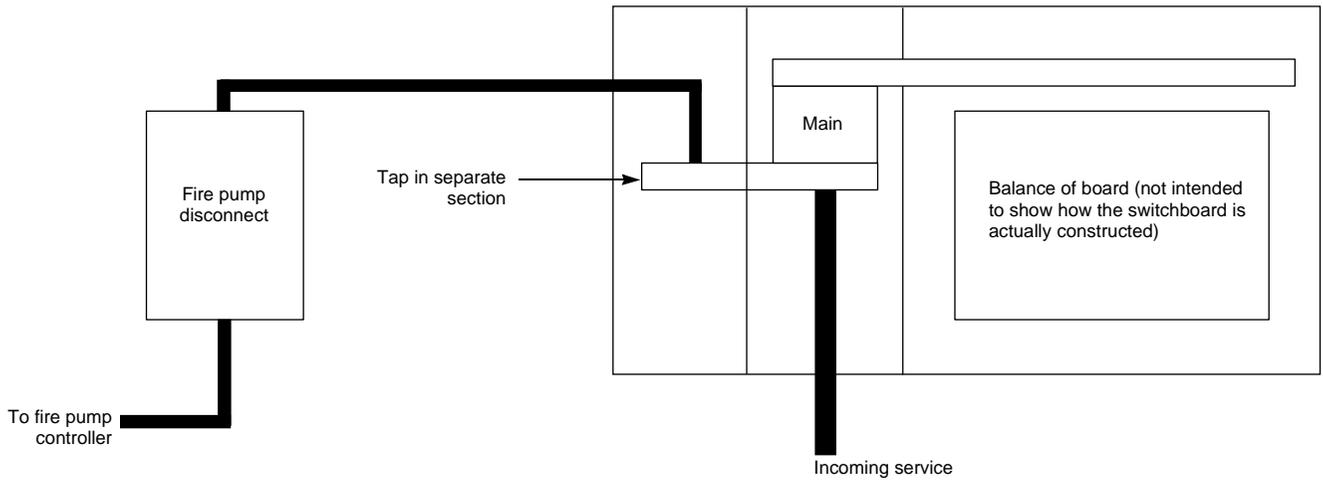
The situation becomes more complicated. *Generally*, NFPA 20 (and consequently the NEC) does not allow a feeder to supply a fire pump. Articles 695.3(B) and 695.3(B)(2) recognize feeder sources for "multibuilding campus-style complexes." This is applicable in instances in which a feeder supplies the building instead of the service — for example, when the utility stops at the property line and the customer owns the distribution throughout the complex of the buildings.

*NOTE: This is only permitted with approval of the Authority Having Jurisdiction.*

## NEC ARTICLE 695.4(B)

Even if it is permitted to be supplied by a feeder, the NEC does not allow the "fire pump breaker" to be part of the equipment. Article 695.4(B)(2)3 requires that the disconnecting means is "...located sufficiently remote from other building or other fire pump source disconnecting means such that inadvertent contemporaneous operation would be unlikely." Mounting the "fire pump breaker" in the same equipment as the other disconnects would probably not accomplish this objective.

Figure 1: Fire Pump Installation



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