

Unplugging Fluorescents

July 2005

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With the acceptance of the 2005 National Electrical Code (NEC), installing and servicing fluorescent luminaires (fixtures) has become a complex situation. The design and layout of the lighting system is critical in determining certain required added features.

Part XIII of Article 410 provides special provisions for the connection of electric-discharge lighting systems of 1,000V or less. Within Part XIII, Section 410.73(G) has been added to the 2005 NEC, requiring a disconnecting means for luminaires installed in an indoor location for commercial and industrial installations.

Dwellings and accessory buildings for dwellings are exempted from this requirement, but all other occupancies are required to comply with this new rule. This new section does not address incandescent luminaires in any location.

The new rule requires a disconnecting means for any fluorescent luminaire that contains a ballast, has double-ended lamps-such as F34-CW lamps with twin pins on each end-and where the luminaire can be serviced in place without removing it.

Additionally, any ballasted luminaire that is supplied from a multiwire branch circuit where the luminaire can be serviced in place must have a disconnecting means. A multiwire branch circuit is defined in Article 100 as a branch circuit that consists of two or more ungrounded conductors that have a voltage between them, and a grounded conductor that has equal voltage between it and each ungrounded conductor of the circuit, and is connected to the neutral or grounded conductor of the system.

With both the double-ended fluorescent and the fluorescent connected to a multiwire branch circuit, the disconnecting means must be installed at each luminaire, but it can be mounted on the exterior or the interior of the luminaire.

This disconnecting means is required to simultaneously disconnect the entire source of supply of all conductors to the ballast, including any grounded or neutral conductor. The intent is to ensure that each luminaire can be individually disconnected from all conductors so any person servicing the ballast will not be exposed to either an ungrounded conductor or a neutral from a multiwire branch circuit.

With a multiwire branch circuit, the danger would be possible feedback from the other phase conductor through the neutral even if the switch on the wall or the circuit breaker at the panelboard were turned off, thus exposing the service person to a potentially lethal shock.

Any disconnect switch installed either within or on the luminaire must have the line side of the switch guarded or insulated to minimize any inadvertent contact with an energized circuit while a person is servicing the luminaire. This disconnecting means must be located on the luminaire so as to be accessible to a qualified person before that person starts servicing it.

There have been numerous cases where a person has worked on a ballasted luminaire and has been electrocuted either by inadvertent connection to an energized neutral or failure to disconnect power to the lighting circuit. This requirement should reduce the incidents of electrocutions by permitting the service person to easily disconnect all power conductors at the luminaire before attempting to service the unit.

However, there are five exceptions to this new rule. The first does not require a disconnecting means for luminaires installed in hazardous (classified) locations. The second exception eliminates the need for this disconnect on emergency egress lighting based on Section 700.16. Cord- and plug-connected luminaires with an accessible separable connector or an accessible plug and receptacle are exempted by the third exception.

The fourth exception applies to industrial establishments with restricted public access where conditions of maintenance and supervision ensure that only qualified people will service the installation and the facility has written service procedures for these luminaires.

The fifth exception permits the disconnecting means on each individual luminaire to be eliminated if there is more than one luminaire installed, an individual branch circuit (not a multiwire branch circuit) supplies the luminaires, the design of the installation includes locally accessible disconnecting means (such as switches on the wall), and the space cannot be left in total darkness while servicing the luminaire.

This exception does not take into consideration any ambient light that may be available from outside windows. It also does not permit the disconnecting means to be deleted where only one luminaire exists in a small office area, even if adjacent lighting from a corridor or a larger office area could provide enough ambient light to safely illuminate the area.

This requirement does not become effective until Jan. 1, 2008. The electrical industry has considerable time to respond to this substantial change regarding the installation of fluorescent luminaires. Some manufacturers may elect to offer the luminaires with these disconnects, while others may offer a kit that can be field installed by the contractor.

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