The Disconnecting Means: Convenient De-energizing of Fluorescent Luminaires Will Save Lives



120 VOI

A Risky Practice Becomes Commonplace

Changing the ballast of a fluorescent lighting fixture while the circuit powering the luminaire remains energized has become standard practice in the electrical trade, even though the electrician faces the risk of serious personal injury. Reasons for the prevalence of this unsafe practice include incorrectly identified or unidentified circuits and avoiding darkness and disruption of operations caused by the disabling of power sources.

Trade data indicate that 277-volt lighting circuits are one of the leading causes of workrelated deaths among electricians. The hazards of servicing luminaires while electricians are exposed to un-insulated energized wires are exacerbated by the fact that many luminaires are installed in ceilings and are accessible only by ladders.

Minimizing Risk Through Code Changes

In May 2004, the National Fire Protection Association (NFPA) adopted an amendment to National Electrical Code (NEC[®]) 410.73 that requires all fluorescent luminaires with ballasts, except in dwellings and associated accessory structures, include a disconnecting means that will open all grounded and ungrounded ballast supply conductors with the line side terminals of the disconnecting means being guarded. Additionally, the location of the disconnecting means must be accessible before servicing or maintaining the ballast. A disconnecting means enables the technician to de-energize a luminaire easily without having to disable power at its source.

The NFPA added the proposed requirement to *NEC*[®] 2005. NEC Article 410.73(G) Disconnecting Means will go into effect on January 1, 2008, and is applicable to fluorescent luminaires used in all but residential locations. The requirement reads as follows:

"In indoor locations, other than dwellings and associated accessory structures, fluorescent luminaires (fixtures) that utilize double-ended lamps and contain ballast(s) that can be serviced in place or ballasted luminaires that are supplied from multiwire branch circuits and contain ballasts that can be serviced in place shall have

a disconnecting means either internal or external to each luminaire (fixture), to disconnect simultaneously from the source of supply all conductors of the ballast, including the grounded conductor if any. The line side terminals of the disconnecting means shall be guarded. The disconnecting means shall be located so as to be accessible to qualified persons before servicing or maintaining the ballast."

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The code includes five exceptions:

- Luminaires installed in hazardous (classified) locations;
- Emergency illumination required in NEC Article 700.16;
- Accessible separable connector or plug and receptacle are permitted to serve as disconnecting means for cord-and-plug-connected luminaires;
- Industrial environments with "restricted public access where conditions of maintenance and supervision ensure that only qualified persons service the installation by written procedures."; and
- "Where more than one luminaire is installed and supplied by other than a multiwire branch circuit, a disconnecting means shall not be required for every luminaire when the design of the installation includes locally accessible disconnects, such that the illuminated space cannot be left in total darkness."

Enforcing the Code Requirements

Beginning in 2008, all new and replacement luminaires in the United States must be installed with a disconnecting means. When a servicing electrician replaces a luminaire in a commercial building, for example, the codes will require the installation of a disconnecting means between the power line and the ballast. Once the disconnecting means is installed, the servicing electrician will be able to disconnect power to the ballast without handling un-insulated energized wires.

In Canada, the Canadian Standards Association (CSA) already requires a disconnect device for luminaires, as does the Canadian Electrical Code (CEC), per part I, rule 30-308(4), 2006 Edition. Electrical inspectors in Canada have not enforced these standards, however, because a disconnecting means device specified by these requirements has not been available.

The CEC requirements not only affect electricians, but also the original equipment manufacturers of fluorescent luminaries who must incorporate disconnecting means into the assembly of these products to be compliant.

Best Practices Protect the Electrician from Serious Injury

The new code does not yet require that the electrician install a disconnecting means when repairing or replacing the luminaire's ballast. In the interest of best practices for safety, however, making an existing luminaire compliant with the new code when performing a repair will ensure that that future servicing of the luminaire will offer the same level of safety that new luminaires with the required disconnecting means will provide.

A disconnecting means, even when it is not required to be compliant with new codes, protects the electrician by ensuring that the power is disconnected safely. It also eliminates the risk of errors made by disabling the wrong circuit and eliminates the concern for line of sight to the circuit.

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Providing the Solution That the Code Requires

In response to the need to meet these requirements for a disconnecting means, Thomas & Betts introduced its Luminaire Disconnect under the Sta-Kon[®] brand in November 2006.

Installed between a fluorescent luminaire or ballast and incoming power, the Sta-Kon[®] Luminaire Disconnect enables the electrician to service the luminaire without exposure to un-insulated energized conductors. It consists of a male and female disconnect body with pre-stripped wire connected to the male and female tin-plated brass contacts. The housing is made of polycarbonate, which is resistant to cracks, abrasion and impact.

The female line side wire connectors are finger-safe, shielding the installer from energized contacts and eliminating the need to disconnect power while servicing the luminaire. The male side is connected to the ballast leads.

The Luminaire Disconnect includes No. 18 AWG solid copper-insulated integral wire leads, which ease installation through compatibility with multiple sizes of copper or aluminum wire and enable a safe disconnect for single luminaires with multiple ballasts.

Other Features

Integral latch in the polycarbonate housing

- Provides a visible and audible verification that the contacts are secured
- Prevents nuisance outages by not disengaging under small amounts of tension on the wires

Poka-Yoke design enables mating halves to be installed only one way, ensuring the correct electrical polarization

Oversized electrical contacts improve conductivity and limit temperature increases

Bright orange color

- Clearly visible
- Signifies a safety device

Clear identification of the line and load on each polycarbonate housing

Rounded, compact design is easy to handle and small enough to be used in tight applications, including those that require passing the conductor through a 1/2-inch knockout.

Availability

Two-pole version (catalog no. LD2; in Canada, LD2C) Three-pole version (catalog no. LD3; in Canada, LD3C).

Product Data

Maximum temperature rating: 105°C (221°F) Flammability: UL94-V2; -V0 is available upon request Electrical rating: 4A, 600V.



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