

Exhibits 315.1 and 315.2 illustrate shielded cable installations: a three-conductor cable of the shielded type, a stress-relief cone for an indoor cable terminator, and a stress cone on a single-conductor shielded cable terminating inside a pothead. In Exhibit 315.2 (right), a clamping ring provides a grounding connection between the copper shielding tape and the shield to the metallic base of the pothead.

Informational Note: The primary purposes of shielding are to confine the voltage stresses to the insulation, dissipate insulation leakage current, and drain off the capacitive charging current.

Exception No. 1: Nonshielded insulated conductors listed by a qualified testing laboratory shall be permitted for use up to 2400 volts under the following conditions:

- (1) Conductors shall have insulation resistant to electric discharge and surface tracking, or the insulated conductor(s) shall be covered with a material resistant to ozone, electric discharge, and surface tracking.



EXHIBIT 315.1 A three-conductor cable of the shielded type.

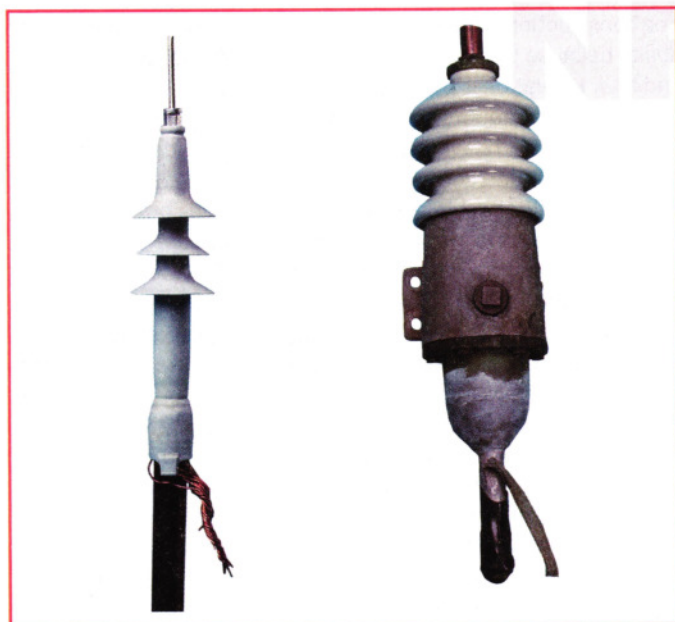


EXHIBIT 315.2 (Left) A one-piece, premolded stress-relief cone for indoor cable terminations of up to 35 kilovolts phase-to-phase. (Right) A stress cone on a single-conductor shielded cable terminating inside a pothead.

- (2) Where used in wet locations, the insulated conductor(s) shall have an overall nonmetallic jacket or a continuous metallic sheath.
- (3) Insulation and jacket thicknesses shall be in accordance with Table 315.10(B).

Exception No. 2: Nonshielded insulated conductors listed by a qualified testing laboratory shall be permitted for use up to 5000 volts to replace existing nonshielded conductors, on existing equipment in industrial establishments only, under the following conditions:

- (1) Where the condition of maintenance and supervision ensures that only qualified personnel install and service the installation.
- (2) Conductors shall have insulation resistant to electric discharge and surface tracking, or the insulated conductor(s) shall be covered with a material resistant to ozone, electric discharge, and surface tracking.
- (3) Where used in wet locations, the insulated conductor(s) shall have an overall nonmetallic jacket or a continuous metallic sheath.
- (4) Insulation and jacket thicknesses shall be in accordance with Table 315.10(B).

Informational Note: Relocation or replacement of equipment may not comply with the term *existing* as related to this exception.

Where cable in an existing installation requires replacement, it might be preferable to replace a nonshielded cable with another nonshielded cable where existing raceways and termination enclosures do not provide adequate space for shielded conductors and their associated terminations.

Federal Aviation Administration (FAA) Advisory Circulars for airfield lighting cable permit certain circuits up to 5 kilovolts to be unshielded. Permitted uses of nonshielded cable in airfield lighting are provided in 315.36, Exception No. 2.

Specialized training and close adherence to manufacturers' instructions are essential for high-voltage cable installations.

Exception No. 3: Where permitted in 315.36, Exception No. 2.

N 315.45 Shielding at Type MV Cable Joints and Terminations.

Type MV cable joints and terminations shall be provided with means to connect the metallic insulation shield to ground if required.

Part IV. Ampacities

315.60 Ampacities of Conductors.

(A) General.

- (1) **Tables or Engineering Supervision.** Ampacities for solid dielectric-insulated conductors shall be permitted to be determined by tables or under engineering supervision, as provided in 315.60(B) and (C).

The ampacity of Type MV cable installed in cable tray shall be determined in accordance with 392.80(B).