



Transformers – Article 450



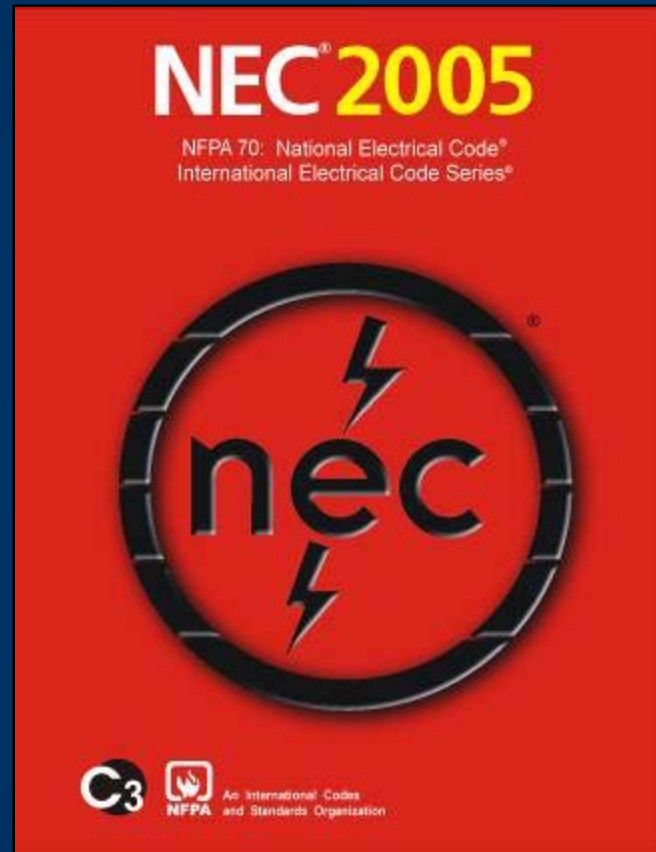
General Electrical Code Requirements

Presentation by:

International Association of Electrical Inspectors

NFPA 70 *National Electrical Code* ®

- This presentation is based on the requirements of the 2005 edition of the *National Electrical Code*.





40 V
LBA
SEC. 24V

201606
CLASS 2

MADE IN U.S.A.

UL LISTED 802M
CLASS 2 WET
CLASS 2 DRY WET



Applicable Definitions

- **450.2 Transformer.** An individual transformer, single- or polyphase, identified by a single nameplate, unless otherwise indicated in this article.
- **Separately Derived System.** A premises wiring system whose power is derived from a source of energy or equipment other than a service. Such systems have no direct electrical connection, including a solidly grounded circuit conductor, to supply conductors originating in another system.



Applicable Product Safety Standards

- UL 1310: Class 2 Power Units
- UL 1561: Dry-Type General Purpose and Power Transformers
- UL 1562: Transformers, Distribution, Dry-type, Over 600 volts
- UL 1585: Class 2 and Class 3 Transformers



450.3 Overcurrent Protection

- Protect the transformer against overcurrent in accordance with the requirements of 450.3 and Tables 450.3(A) and 450.3(B)
- FPN No. 1 refers to Section 240.4, 240.21, 240.100 and 240.101 for the overcurrent protection requirements for conductors
- FPN No. 2 indicates that nonlinear loads can create excessive heat in transformers without operating the overcurrent protective device

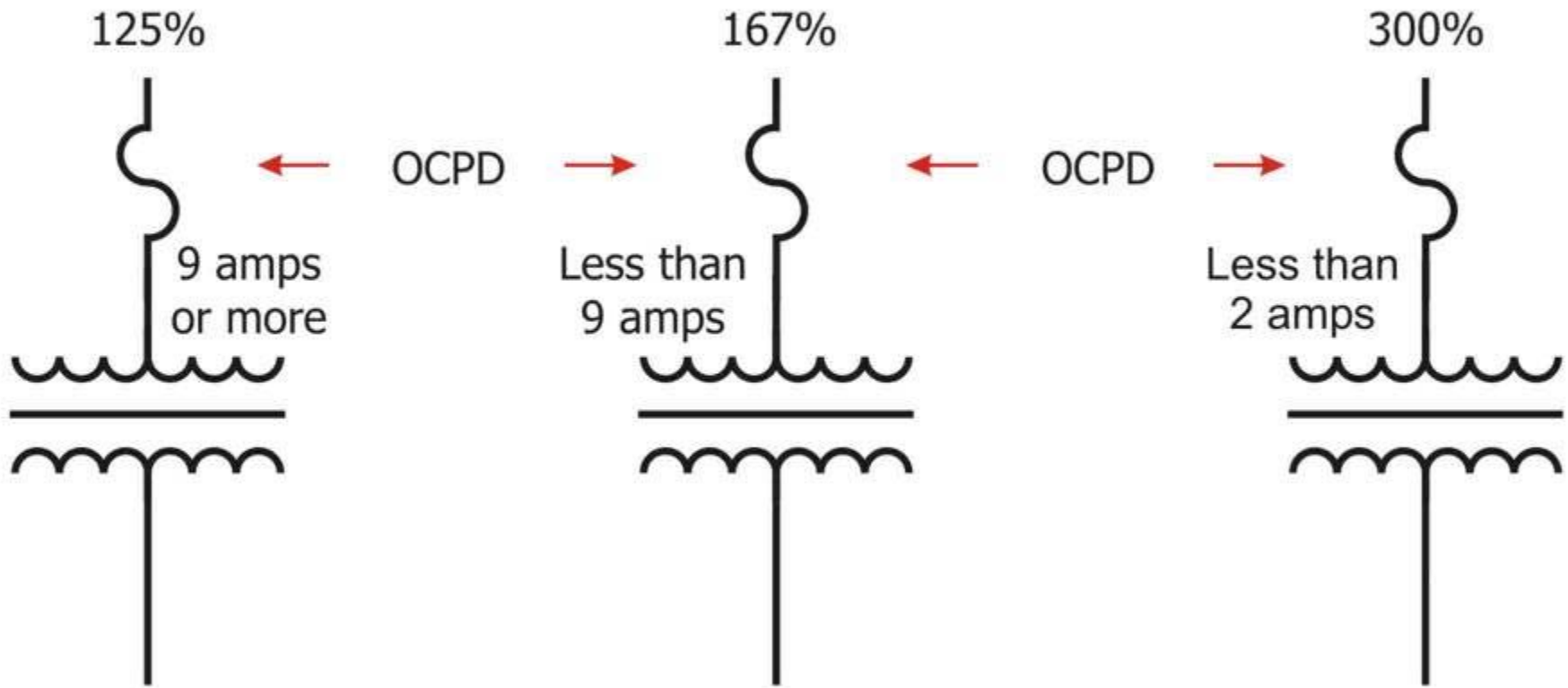
Table 450.3(A) Over 600 Volts

Overcurrent protection for transformers over 600 volts to be provided in accordance with Table 450.3(A) and associated notes

Location Limitations	Transformer Rated Impedance	Primary Protection		Secondary Protection		
		Over 600 Volts		Over 600 Volts	600 Volts or Below	
		Circuit Breaker	Fuse Rating	Circuit Breaker	Fuse Rating	Circuit Breaker or Fuse Rating
Any Location	Not more than 6%	600%	300%	300%	250%	125%
	More than 6% and not more than 10%	400%	300%	250%	225%	125%
Supervised Locations Only	Any	300%	250%	Not required		
	Not more than 6%	600%	300%	300%	250%	250%
	More than 6% and not more than 10%	400%	300%	250%	225%	250%

See table and notes following table for additional information

450.3(B) Overcurrent Protection



Protection of transformers using primary protection only