

DIVISION 26 – ELECTRICAL

26 22 00 LOW-VOLTAGE TRANSFORMERS

PART 1 - GENERAL

1.01 SUMMARY

- A. This section includes the following types of dry-type transformers rated 600 V and less, with capacities up to 1000 kVA:
 - 1. Distribution transformers
 - 2. Buck-boost transformers

1.02 OVERVIEW

- A. Low voltage transformers are typically not used inside WSU facilities. Service transformers are provided at both 208Y/120V and 480Y/277V and thus eliminate the need for additional low voltage transformers. In the few cases where they are needed, the following applies:
 - B. Selection of indoor transformers rated greater than 75 kVA shall require review and approval by WSU Engineering Services.
 - C. Indoor transformers are to be air cooled, totally enclosed with ventilated openings.
 - D. Use copper windings only.
 - E. Consider HVAC requirements and provide an exhaust fan and/or adequate cooling for the space in which the transformer is installed.
 - F. Consider transformer size and the ability to get it in/out of the building for replacement.
 - G. Use pad mounted transformers in dedicated electrical rooms only.
 - H. Do not mount transformers to walls or to anything other than the floor.
 - I. Consider the potential need for electrostatic shielding.
 - J. Strictly adhere to clearance requirements.
 - K. Provide grounding electrode conductor at the transformer secondary and bond to nearest grounding electrode.
 - L. Provide primary overcurrent protection rated or set at transformer primary full load current, use next higher rating or setting where not available at primary full load current. Do not protect primary at more than 125% of primary full load current.
 - 1. Observe these same overcurrent protection rules for transformer secondaries.

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- M. Do not use delta secondary transformers.
- N. All transformer secondaries are to be grounded.
- O. Use K factor rated transformers where non sinusoidal loads are served.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Eaton Electrical Inc.; Cutler-Hammer Products
- B. General Electric Company
- C. Siemens Energy & Automation, Inc.
- D. Square D; Schneider Electric

2.02 DISTRIBUTION TRANSFORMERS

- A. Shall comply with NEMA ST 20.
- B. Transformer enclosure finish: Comply with NEMA 250.
 - 1. Finish color: Gray.
- C. Taps for transformers smaller than 3 kVA: One 5 percent tap above normal full capacity.
- D. Taps for transformers 7.5 to 24 kVA: One 5 percent tap above and one 5 percent tap below normal full capacity.
- E. Taps for transformers 25 kVA and Larger: Two 2.5% taps above and two 2.5% taps below normal full capacity.
- F. Insulation class: 220 deg C, UL-component-recognized insulation system with a maximum of 150 deg C rise above 40 deg C ambient temperature.
- G. Energy efficiency for transformers rated 15 kVA and larger:
 - 1. Complying with NEMA TP 1, Class 1 efficiency levels.
 - 2. Tested according to NEMA TP 2.
- H. K-factor rating: Design Engineer shall specify K-factor transformers at locations where the majority of loads are non-sinusoidal.
- I. Electrostatic shielding: Specify electrostatically shielded transformers where solid-state devices or computers constitute a significant portion of the load. Selection of electrostatically shielded transformers shall require review and approval by WSU Engineering Services.

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2.03 BUCK-BOOST TRANSFORMERS

- A. Description: Self cooled, two winding dry type, rated for continuous duty and with wiring terminals suitable for connection as autotransformer.
Transformers shall comply with NEMA ST 1.

END OF SECTION