



750 KVA PAD MOUNTED STEP-UP TRANSFORMER

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of the Contract apply to this Section.

1.2 SUMMARY:

- A. This Section includes pad mounted liquid filled step-up transformer.

1.3 DEFINITIONS:

- A. NETA ATS: Acceptance Testing Specification.

1.4 SUBMITTALS:

- A. Submit with Proposal
 - 1. A conformed specification compliance sheet that states conforms, deviation, or exception taken to each specification section. All exceptions and deviations shall be explained.
 - 2. Bill of Material List for transformer: Include timeframe for onsite delivery and include warranty information.
 - 3. Outline drawing to include: Planview, Elevations, Standard and optional features, dimensions and weights.
- B. Submit Within Three Weeks of Approved Order
 - 1. Shop drawings to include complete Bill of Material and dimensional outline drawings.

NOT APPROVED

APPROVED AS NOTED

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7/15/17

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C. Submit When Available:

1. Factory test reports.
2. Copy of Warranty.
3. Nameplate information: Including actual impedance.
4. Installation Manual.
5. Operations Manual.

1.5 WARRANTY:

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace transformer and associated auxiliary components that fail in materials or workmanship within specified warranty period.
1. Warranty Period: Two years from date of shipping.

1.6 QUALITY ASSURANCE:

- A. Testing Agency Qualifications: An independent testing agency, with the experience and capability to conduct the testing indicated, that is a member company of the International Electrical Testing Association or is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7, and that is acceptable to authorities having jurisdiction.
1. Testing Agency's Field Supervisor: Person currently certified by the Inter National Electrical Testing Association or the National Institute for Certification in Engineering Technologies to supervise on-site testing specified in Part 3.
- B. Product Options: Drawings indicate size, profiles, and dimensional requirements of transformers and are based on the specific system indicated.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- D. **Comply with IEEE C2.**
- E. **Comply with ANSI C57.12.28.**
- F. **Comply with NFPA 70.**

1.7 DELIVERY, STORAGE, AND HANDLING:

- A. Store transformers protected from weather and so condensation will not form in units.
- B. Transformer to be delivered to the project site. Coordinate delivery with installing contractor.

1.8 SERVICE CONDITIONS:

- A. Transformers shall be suitable for operation under service conditions specified as usual service conditions in IEEE C57.12.00, except for the following:
 - 1. Exposure to hot and humid climate or to excessive moisture, including steam, salt spray, and dripping water.
 - 2. Exposure to seismic shock or to abnormal vibration, shock, or tilting.

1.9 COORDINATION:

- A. Coordinate size and location of concrete bases and conduit stub-ups.
- B. Coordinate installation so no piping or conduits are installed in space allocated for transformers except those directly associated with transformers.

PART 2 – PRODUCTS

2.1 MANUFACTURES:

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. ABB Power T&D Co., Inc.
 - 2. Cooper Industries; Cooper Power Systems Division
 - 3. Howard Industries

2.2 PAD MOUNTED, LIQUID-FILLED TRANSFORMERS:

- A. Description: Furnish 2-winding type, designed for operation with high-voltage windings connected to a 3-phase, 3-wire, 60-Hz, distribution system.

B. Rating and Features:

- Design for Step-up operation.
- Phase: 3 phase
- Frequency: 60 HZ.
- Cooling Class: ONAN
- KVA rating: 750
- Temperature Rise: 55/65°C
- Material: Copper
- High Voltage Winding: 13.8 GY/7980-95kV-BIL, 13.8 GY/7980 kV, 95 kV BIL
- Surge Arresters: 15kV, Distribution Class, Metal-Oxide, Varistor Type.
- Low Voltage Winding: 480 Delta , 30kV BIL.
- Impedance: 5.75% +/- 7.5% (ANSI C57.12)
- Configuration: Dead Front, Radial Feed.
- Primary Bushings: Three (3) Wells 15kV, 200 amp, Load Break Bushings.
- Inserts: (3) Standard
- Two Position Load Break Primary Switch
- Low Voltage Bushings: Tin Plated, Spade-Type Bushings for Vertical Takeoff. Spacing per ANSI C57.12/34.
- Taps: 2 @ 2 ½% Above, 2 @ 2 ½% Below Normal
- Coolant: Less Flammable Edible Seed Oil: See below

1. Insulating Liquid: Less flammable, edible-seed-oil based, and listed by a NRTL acceptable to authority having jurisdiction as complying with NFPA 70 requirements for fire point of not less than 300 deg C when tested according to ASTM D 92. Liquid shall be biodegradable and nontoxic.

C. Primary Fuses: 15kV fuse assembly consisting of Bay-o-net oil-immersed fuses in series with practical range current limiting fuses.

D. Full-Capacity Voltage Taps: Four 2.5-percent taps; 2 above and 2 below rated high voltage; with externally operated tap changer for de-energized use and with a position indicator and provisions for pad locking.

E. Low-Voltage Terminations and Equipment: Tin-plated spade-type. Include the following:

1. Bushing Supports.

F. Corrosion Protection:

1. Base and Cabinets of Two Compartment Transformers: Fabricate from stainless steel according to ASTM A 167, Type 304 or 304L, not less than No. 13 U.S. gage. Coat transformer with manufacturer's standard green color coating complying with requirements of IEEE C57.12.28 in manufacturer's standard color green.

G. Accessories:

1. Drain Valve: 1 inch with sampling device in LV compartment.
2. 1" upper fill plug and upper fill valve.
3. 1" drain plug in HV compartment
4. Dial-type thermometer gauge.
5. Liquid level gauge.
6. Pressure/vacuum gage with auxiliary contacts.
7. Pressure relief device: Self-sealing with an indicator.
8. (3) Grounding pads (two-hole)
9. Nitrogen Blanket.
10. Welded main tank cover with bolted hand hole.
11. Meet NEMA TR-1 sound levels.
12. Machine engraved nameplate made of stainless steel.

H. Seismic Performance: The transformers shall withstand the effects of earthquake motions determined according to ASCE/SEI 7:

1. The term "withstand" means "the transformer will remain in place without separation of any parts when subjected to the seismic forces specified and the transformer will be fully operational after the seismic event."
2. Component Importance Factor: 1.5.
3. Component Amplification Factor: 2.
4. Component Response Modification Factor: 6.0.

2.3 FINISHES:

- A. Comply with ANSI C57.12.28
- B. Color: As per Owner.

2.4 IDENTIFICATION DEVICES:

- A. Nameplates: Engraved metal nameplate for each transformer, mounted with corrosion-resistant screws. Nameplates and label products are specified in Division 26 Section "Identification for Electrical Systems."

2.5 SOURCE QUALITY CONTROL:

A. Factory Tests: Perform the following factory-certified tests on each transformer.

1. Resistance measurements of all windings on rated-voltage connection and on tap extreme connections.
2. Ratios on rated-voltage connection and on tap extreme connections.
3. Polarity and phase relation on rated-voltage connection.
4. No-load loss at rated voltage on rated-voltage connection.
5. Excitation current at rated voltage on rated-voltage connection.
6. Impedance and load loss at rated current on rated-voltage connection and on tap extreme connections.
7. Applied potential.
8. Induced potential.
9. Temperature Test.
10. Insulation Power Factor Test.
11. Submit test results to Owner for review and approval.

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Date 7/15/12

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