

Ventilated Dry-Type Transformers

GE ventilated dry-type transformers are designed for indoor or outdoor applications in schools, hospitals, industrial plants, commercial buildings and anywhere that safe and dependable power are important considerations. Ventilated dry-type transformers are among the lowest first-cost indoor units available and are extremely reliable when properly installed. Indoor installations do not require a liquid confinement area, automatic fire extinguishing system or fire vault which may be associated with liquid-filled transformers. This permits these relatively lightweight units to be conveniently installed on upper floors, balconies, roof trusses or roofs. Insurance companies offer lower premiums for installations of dry-types than for liquid filled transformers. Dry-type transformers do not require oil level checking, cleaning or replacing as is the case with liquid-filled units.

Coils

Ventilated dry-type winding designs vary depending on the voltage, basic impulse level (BIL) and current of the individual winding and/or application of the transformer. Generally, LV windings less than 2400 volts are either multi-conductor barrel or sheet conductor windings. Multi-conductor windings may be more economical and preferred in smaller kVA low voltage windings where the current and axial short circuit forces are relatively small. HV windings 2400 volts or greater may be single-section barrel, multi-section barrel or disk windings. Ventilated dry-type coils may be either round or rectangular up through about 2000 kVA. Transformers larger than 2000 kVA generally are designed with round windings unless there are special considerations such as limiting dimensions. The important criteria for winding design is a reliable transformer life under normal operating conditions. Design and routine tests developed through industry standards are a key measure of the dependability of a particular design. For each transformer design family, design and routine tests have been performed to assure that the transformer will operate within its nameplate rating for many years.

Cores

The transformer cores are constructed of non-aging, high grade, grain oriented silicon steel laminations with high magnetic permeability. Magnetic flux densities are kept well below the saturation point. Core laminations are free of burrs and stacked without gaps. Mitered and step-lap construction cores may be provided when specified. The core clamping brackets are designed to provide an even distribution of clamping forces to the core yokes and legs. A copper core ground strap is provided.

Enclosure

The standard indoor enclosure is NEMA 1, Category C construction. Enclosures are suitable for lifting, jacking, rolling or skidding with provisions for lifting from the transformer base. A stainless steel or copper ground pad is provided on the LV side panel. The enclosure has been sized and machined for the forced air cooled rating. The enclosure paint finish is neat, clean and highly resistant to corrosion. Metal surfaces are thoroughly cleaned of scale, oil, grease, rust and other foreign matter prior to painting. Unless specified otherwise, paint color shall be ANSI 61 (light gray).

Forced Air Cooling

Provisions for future forced air (FFA) cooling is inherent in all units rated 750 KVA and above. To allow for the addition of fans, all current-carrying components are designed to handle the increased capacity (33 1/3%). Provisions are also made for the future addition of a fan control device.

Audio Sound Levels

The importance of sound level considerations is relative to the proximity of the equipment to personnel. The location of transformers with respect to walls, ceilings and other transformers will have an effect on the sound level measured.

Means are provided to isolate the core and coil assembly from the casing and it is important that the instructions in this regard are followed during installation.

The NEMA sound levels of the ventilated dry-type transformer are shown in Table 2. If lower levels are desired they can be obtained by various means, including the design of the equipment room itself.

Dry-Type Standard Features

- 60 Hertz Operation
- 220° C Insulation System
- 80, 115, 150° C Average Winding Rise Ratings
- Aluminum or Copper Windings
- (2) 2 ½ % Full Capacity taps above and below Nominal
- NEMA 1 Indoor Ventilated Enclosure
- Removable front and rear panels
- Provisions for lifting
- Provisions for Future Fans
- Core ground strap
- ANSI ground pad on LV side
- Vibration isolating pads
- ANSI 61 paint finish

Dry-Type Accessories Options

- NEMA 3R Outdoor Enclosure
- Space Heaters
- Thermostat for Space Heaters
- 120/240 V Fans for 133% FA kVA
- Temperature Monitor/Fan Controller
- Filters over Ventilation Openings
- Copper Flange to Flange Ground Bus
- Future Fan Wiring and Control

Special Design or Application

- Low Loss Designs
- Rectifier Transformer Designs
- Special Ambient Designs
- High Overload Capacity Designs
- Special/Low Sound Level Designs
- 50 Hertz Designs
- Seismic Zone IV Designs
- Five-Legged Core Designs
- Series/Parallel Windings
- HV Wye Connection to LV Delta
- Electrostatic Shield
- Retrofit to Specific Dimensions
- K-Factor Ratings
- UL Listed Transformers
- Special Paint

Vent-Dry Basic Impulse Ratings

Nominal System Voltage kV	Standard HV BIL kV	Option HV BIL kV	LV BIL kV
1.2	10	30	10
2.5	20	30, 45	20
5.0	30	45, 60,75	30
8.7	45	60,75,95	N/A
15.0	60	75,95,110	N/A

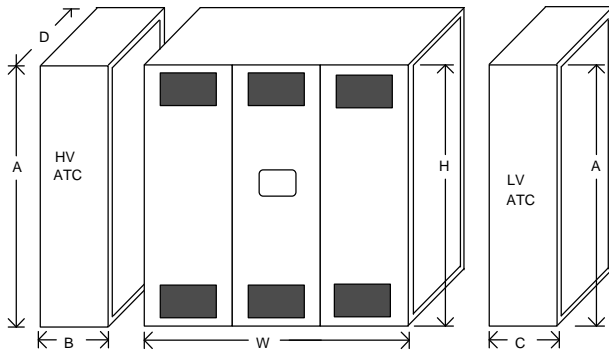
Table 1

Vent-Dry Sound Levels: (dB)

Equivalent Two Winding Base kVA	Self-Cooled dB	Fan-Cooled dB
500	60	N/A
750	64	67
1000	64	68
1500	65	69
2000	66	71
2500	68	71
3000	68	73

Table 2

Ventilated Dry-Type Case Outline



Enclosure Dimensions

kVA	Height Inches	Width Inches	Depth Inches	Weight lbs
500	90	78	54	4700
750	90	82	56	6000
1000	90	86	58	6800
1500	90	90	60	9600
2000	100	94	62	11200
2500	100	98	64	14000
3000	110	104	68	18000

HV Air Filled Terminal Compartment (ATC)

BIL	Dimension		Weight
	A	B	
60	A=H	15	250
95	A=H	22	400
110	A=H	25	450

LV Air Filled Terminal Compartment (ATC)

Cables/Phase	Dimension		Weight
	A	C	
1-4	A=H	15	250
5-8	A=H	22	400

Enclosure Dimensions

1. Dimensions are approximate for kVA, 115°C Rise, 15 kV Class, 95 kv BIL and usual service conditions.
2. Width dimensions may decrease slightly for 5 kV Class units and/or 150 °C rise units.
3. Width dimensions may increase 4 to 8 inches for 80° C rise units.
4. Height and depth dimensions may increase 4 to 8 inches each for outdoor NEMA 3R enclosures.
5. Dimensions may vary with special requirements.
6. Dimensions and weights are subject to change without notice and should not be used for construction purposes.

Air Terminal Compartments

1. Terminal boxes can be supplied on the primary or secondary side of the transformer.
2. HV terminal boxes are suitable for single or loop feed.
3. Bolted-on end panel gives easy access to the cable fittings.
4. Incoming line cables can enter the top or bottom of the terminal box and can be connected for up to 8 cables per phase.
5. The standard method for cable connections is with clamp type terminals (#2-4/0 AWG, 250-500 MCM or 600-1000 MCM).
6. NEMA two hole lugs are available upon request.
7. GE Tranquell Intermediate, Distribution, and Station type arresters are available when specified.
8. Dimensions and weights are subject to change without notice and should not be used for construction purposes.

ALL DIMENSIONS ARE APPROXIMATE