# Conventional Transformers

**Application:**

Conventional distribution transformers are used outdoors or indoors on medium-voltage distribution systems. They are designed to convert medium voltage to low voltage or vice versa.

They are typically used for residential service loads and occasionally for light commercial or industrial loads. These transformers are usually designed for pole mounting, although in some cases they are built for installation on certain types of substations.

These transformers do not include any protection accessories; therefore, any surge arresters or other overvoltage or overload protection must be provided by the buyer.



**Scope of the offer:**

Manufactured in compliance with applicable NTC, IEC and ANSI standards and/or individual customer specifications.

Single-phase transformers may be manufactured with one or two high-voltage bushings to be connected in E1GrdY/E or E/E1GrdY configurations, where E is the phase-to-neutral voltage and E1 is the phase-to-phase voltage. Low voltage configurations are typically 2E/E or E/2E; the latter are usually used to form threephase banks. Switchable single-phase transformers are specially designed to operate at two different input voltages.

Three-phase transformer configuration is made in accordance with the connection required by the standard or by the customer; the most common types are Dy, Yd, Dd, Yy, Dz, Yz.

**Ratings (kVA):**
Single Phase: 5 kVA to 167 kVA.
Three-phase: 15 kVA to 500 kVA.

**Basic Insulation Level:**
Single phase: Up to BIL 150 kV
Three-phase: Up to BIL 200 kV*

* At transformer voltages below 75 kVA BIL 200 kV, failure in the surge arrester, the cable or in the transformer itself may occur as a result of ferroresonance. Ferroresonance is a phenomenon usually characterized by overvoltages and irregular wave shapes and associated with the excitation of one or more saturable inductors through a capacitance in series with the inductor [ANSI/IEEE Std. 100-1984].

**Typical construction mode:**

Transformers typically consist of an active part made up of the core (magnetic circuit), the coil (electric circuit) and the yoke clamp, which is determined in accordance with the type of transformer, placed in a tank that provides the equipment with specific features, depending on its intended application.

**Coils:**

- Rectangular cross section and concentric copper or aluminum windings.
- Insulation: High-quality epoxy resin coated paper.

**Cores:**

- Shell Type or Core Type, wound with a back-to-back interleaving arrangement, step-lapped for easy assembly and disassembly without losing dimensional characteristics, thus ensuring very low levels of losses and excitation currents.
- Materials: Cold-rolled grain-oriented silicon electrical steel sheet with insulating coating on bothsides, low core loss and high permeability.

**Yoke clamps:**

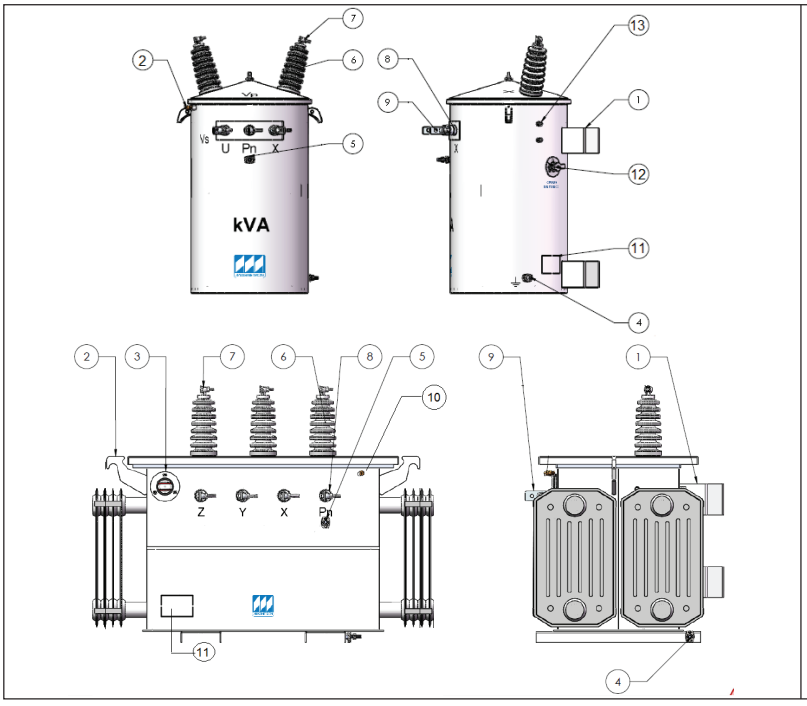
- Made of cold-rolled and hot-rolled steel, they clamp the core, with individual bolted caps that can beeasily removed and disassembled for maintenance purposes.
- They ensure high resistance to short circuit mechanical stresses, with low noise levels and lowexcitation currents.

**Tanks:**

- Single-phase transformers: Cylindrical, made from Cold Rolled and Hot Rolled Steel.
- Three-phase transformers: Rectangular in shape, made of Cold Rolled or Hot Rolled steel, with reinforcements capable of withstanding internal pressures resulting from temperature rise and mechanical stresses due to equipment installation and handling.
- Cold Rolled steel radiators are attached to the tank.

**Accessories and protection devices:**

MAGNETRON S.A.S. offers a variety of high voltage and low voltage protection accessories, as well as control and alarm devices to control the basic functions of the transformers, such as pressure relief valves, temperature, oil level indicators, internal gas generation and moisture control devices, in accordance with the customer's requirements.




| | DESCRIPCION |
|---|---|
| 1 | Support for hanging on the utility pole |
| 2 | Lifting lug |
| 3 | Refrigerant liquid level indicator |
| 4 | Tank grounding |
| 5 | Low voltage neutral grounding |
| 6 | High-voltage bushings |
| 7 | High-voltage terminals |
| 8 | Low-voltage bushings |
| 9 | Low-voltage terminals |
| 10 | Pressure relief device |
| 11 | Nameplate |
| 12 | Vacuum tap changer |

**Optional accessories**

- External SPD
- Control and measurement accessories
  - Vacuum Pressure Gauge
  - Thermometer
  - Oil level indicator with and without contacts
- Bi-directional wheels (Applies to transformers with power rating >=300kVA