

## Single Phase Core & Coil Assembly

### General Information

ERMCO single phase distribution transformers are designed and manufactured in compliance with all applicable ANSI, and RUS standards. All transformers are oil filled, 65°C rise, and designed for usual service conditions per ANSI C57.12.00.

### Capabilities

- kVA sizes 5 through 250 kVA
- High voltages 2.4 through 19.9 kV (150 kV BIL)
- Low voltages 120 through 600 volts
- Shell form construction (two core loops and one coil)

#### Special design emphasis:

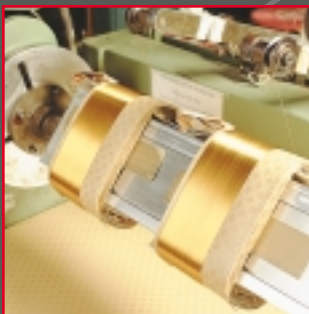
- Overload
- Fault current
- Extreme transient performance
- Electrical efficiency
- Thermal performance
- Material standardization



Core

### Cores

- Designed for low watts loss
- High quality grain oriented silicon steel
- Step lap joint construction
- State-of-the-art core forming
- Quality inspection procedure requires 100% loss testing



Coil

### Coils

- Constructed to pass the next higher BIL ANSI impulse test
- Dual voltage coils are rated at highest BIL in both switch positions
- High voltage taps are wound in two sections for optimum magnetic balance
- Wound in a low-high-low configuration in concentric layers

#### Coil Insulation:

- Each layer is insulated with thermally upgraded 65°C rise paper
- Layer insulation is coated with an epoxy adhesive in a diamond pattern for mechanical bonding
- Cooling ducts are rectangular with a flat surface to prevent pressure damage on layer insulation

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1.877.267.1855[www.ermco-eci.com](http://www.ermco-eci.com)**High Voltage Coils:**

- Conductor is magnet wire with a film coating to insulate for turn-to-turn voltage
- Flat wire and hot pressing improve short circuit strength
- Coil ends have extra insulation for protection against secondary induced lightning surges

**Low Voltage Coils:**

- Interlaced low voltage windings
  - *available upon request*
- Wound with full width sheet conductor
  - *provides maximum short circuit strength*
- All low voltage conductors are deburred
  - *provides added protection to layer insulation*

**Clamping Structure**

- Rigid steel frames
  - *clamps the coil through high density press board shims*
- No pressure is applied to the core
  - *stress free construction*
  - *assures low core losses remain stable for the life of the transformer*
- The core and coil assembly is securely banded to the top and bottom frames
  - *provides excellent short circuit strength*

**Coil Leads****High Voltage Leads:**

- Leads are stranded copper
  - *eliminates the possibility of breakage associated with solid wire*
- Leads are joined to coil conductor with insulation piercing clamp connector
  - *eliminates the need to abrade the film which would weaken the conductor*
- Leads are attached to a rigid terminal block before connection to the HV bushing
  - *provides increased reliability*

**Low Voltage Leads:**

- Leads are hardened aluminum alloy
  - *prevents cold flow at the copper bushing connection*
  - *extends the full length inside the coil body to the low voltage bushing*
  - *improves reliability by eliminating a welded joint for a hard alloy tab*



Assembly Process



Quality Assurance