

# Specification for Zigzag Grounding Transformers

## Scope

This specification covers design, manufacture and testing of low- or medium-voltage Zigzag grounding transformers for use with Neutral Grounding Resistors (NGR) for installation indoors or outdoors onto a concrete pad or power transformer.

## Applicable Standards

The transformer shall be designed, manufactured and tested as per the latest revisions of IEEE-32.

## Transformer

The transformer shall be a three-phase, dry-type, air-cooled auto-transformer with each phase having two windings connected in a Zigzag configuration. It shall have class "B" insulation up to 2400 volts or class "H" insulation above 2400 volts.

The transformer shall be continuously rated for the charging current of the system on which it is being applied; it shall also have the same current and "on" time rating as that of the NGR with which it is being applied.

Insulation class maximum temperature rise shall not be exceeded at these currents and "on" times.

It shall be rated at the system voltage.

## Enclosures

### Low Voltage (600 volts or less)

The Zigzag transformer may be combined with the NGR and mounted in one enclosure where the continuous rating does not exceed 5 amps.

The enclosure shall be of heavy gauge Galvanneal cold rolled steel with baked enamel finish. All mounting hardware shall be stainless-steel.

Indoor enclosure shall have a screened cover with maximum openings of 1/2".

Outdoor enclosure shall have a solid heavy gauge top cover, slightly overhung.

### CSA Approved Low Voltage

Separate external terminal junction boxes shall be provided for termination of all three line conductors and the ground conductor.

### Medium Voltage (above 600 volts to 5,000 volts)

The frame of the enclosure shall be made from structural steel angles made from heavy gauge steel, welded together, or bolted together with stainless-steel hardware. The top of the enclosure shall be solid, slightly overhung and sloped. It shall be embossed with stiffening ribs. The enclosure shall have forged eyebolts in each corner for lifting purposes.

The bottom of the enclosure shall be screened with expanded or perforated metal with openings of 1/2" or less. This screening shall be welded or bolted in and is not removable. It shall be elevated 4 to 6 inches above the base of the unit.

Bolt-on side covers on all four sides shall be used. Screened covers may be furnished for certain applications. Stainless-steel hardware shall be used. Louvered or screened openings shall not exceed 1/2".

A durable nameplate, permanently attached to one side cover shall show the manufacturer and the complete rating.

Painted enclosures shall be suitably sanded, cleaned, primed and painted. Stainless-steel and aluminum enclosures (in particular) shall be protected from scratching during manufacture, assembly and shipment.

