Swedish Neutral

Premium Power Protection

Grounding Transformer
Introduction

A Grounding Transformer is used to provide a physical neutral for a power transformer with a delta connected downside. The Grounding Transformers neutral point has low impedance and is suitable for different grounding systems such as solid earthing, NER earthing (resistor) and resonance earthing (Arc Suppression Coil).

The Grounding Transformer can also be equipped with a low voltage auxiliary winding to be used as local power supply to the substation.

Swedish Neutral has together with SGB Germany delivered Grounding Transformers since 1991.

www.swedishneutral.se
Grounding Transformer

A Grounding Transformer provides a physical neutral where one is needed. A Grounding Transformer with built in local power supply can be used as a local transformer.

Swedish Neutral also offers five limb YNd (open) connected Grounding Transformers, suitable for neutral grounding of smaller industry grids.

Different Grounding Transformers

Vector group ZN
High Voltage Neutral

Vector group YNd (open) – five limb
Low voltage zero sequence connections

Vector group ZNyn 11/5
With local power winding

Vector group ZNyn 11/5
With LV load disconnector
Swedish Neutral Grounding Transformer

- Manufactured by SGB Germany – one of Europe’s biggest transformer manufacturers
- Hermetically sealed design (oil cooled)
- Available for both indoor and outdoor duty (oil cooled / cast resin)
- Can be delivered with integrated Neutral Earthing Resistor
- Fused load switch for local power supply as option

Delivery of Grounding Transformer (left) and Arc Suppression Coil (right)
**Layout**

Grounding Transformer - outdoor

Legend

1. Mounting holes (16mm) for fitting of the Grounding Transformer to the foundation (optional wheels)
2. High voltage bushing – Elastimold: Load break/Dead break, DIN, Pfisterer
3. Neutral bushing – Elastimold: Load break/Dead break, DIN, Pfisterer
4. Rating plate (movable)
5. Lifting lugs
6. Protective earth

Grounding Transformer with local power supply - outdoor

Legend

1. Mounting holes (16mm) for fixation of the Grounding Transformer to the foundation (optional wheels)
2. High voltage bushing – Elastimold: Load break/Dead break, DIN, Pfisterer
3. Neutral bushing – Elastimold: Load break/Dead break, DIN, Pfisterer
4. Low voltage bushing – DIN
5. Rating plate (movable)
6. Lifting lugs
7. Protective earth
8. Cabinet low voltage bushings
9. Fused load switch (optional)
Grounding Transformer YNd (open) - outdoor

Legend

1. Mounting holes (16mm) for fitting of the Grounding Transformer to the foundation (optional wheels)
2. High voltage bushing – Elastimold: Load break/Dead break, DIN, Pfisterer
3. Neutral bushing – Elastimold: Load break/Dead break, DIN, Pfisterer
4. Low voltage bushing – DIN
5. Rating plate (movable)
6. Lifting lugs
7. Protective earth

Grounding Transformer with auxiliary power supply YNd (open) - indoor

Legend

1. Mounting holes (16mm) for fitting of the Grounding Transformer to the foundation (optional wheels)
2. High voltage bushing - M12
3. Neutral bushing - M12
4. Low voltage bushing – terminals
5. Rating plate (movable)
6. Lifting lugs
7. Enclosure
8. Service hatch
9. Air in
10. Air out
11. Cable bushing for HV cable from bottom
12. Protective earth
Technical specification

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage</td>
<td>Up to 130 kV</td>
</tr>
<tr>
<td>Current</td>
<td>Up to 1000A</td>
</tr>
<tr>
<td>Duty</td>
<td>Continuous or short time (2 hours)</td>
</tr>
<tr>
<td>Cooling methods for</td>
<td></td>
</tr>
<tr>
<td>Hermetically sealed</td>
<td>ONAN (ANSI/IEEE C57.12.00)</td>
</tr>
<tr>
<td>Indoor:</td>
<td>Class AA or Class AFA (ANSI/IEEE C57.12.01)</td>
</tr>
<tr>
<td>Frequency</td>
<td>50 or 60 Hz</td>
</tr>
<tr>
<td>Installation</td>
<td>Indoor or Outdoor</td>
</tr>
<tr>
<td>Secondary winding voltage</td>
<td>400/420 V</td>
</tr>
<tr>
<td>Insulation level</td>
<td>According to the rated voltage (IEC70076-3)</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-40 to +40 °C, other temperatures on request</td>
</tr>
<tr>
<td>Insulation oil in hermetically sealed</td>
<td>Nynas: Nytro Taurus</td>
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<tr>
<td></td>
<td>Starke &amp; Sohn: Transformer Oil U</td>
</tr>
<tr>
<td></td>
<td>M&amp;I Materials Ltd: Midel 7131</td>
</tr>
<tr>
<td></td>
<td>Other oils on request</td>
</tr>
</tbody>
</table>

Routine Tests

- Visual inspection (SS-EN 60439)
- Protective earth continuity test (SS-EN 60439)
- Verification of correct wiring (SS-EN 60439)
- Verification of correct function (SN routine test)
- Rated voltage / current test (IEC 60076-6)
- HV insulation test (IEC 60076-6)
- LV winding insulation test (3kV ~ 60s) (IEC 60076-6)
- Measurement of losses (IEC 60076-1)

Type tests

According to IEC 60076-1

- Measurement of current at rated voltage
- Temperature rise test
- Dielectric test

Special tests

- On request, as per agreement
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