

# Swedish Neutral

*Premium Power Protection*

## Neutral Earthing Resistor



## Introduction

A neutral earthing resistor (NER) is normally connected to the transformer neutral. The function of the neutral earthing resistor is to generate the active current traditional earth fault protection needs to be able to detect one phase to ground faults (earth faults)

Swedish Neutrals NERs are delivered with overload protection, local control panel and remote control interface. The NERs are available both for indoor and outdoor use.

Swedish Neutral has delivered NERs since 1991 to Swedish and European customers.



[www.swedishneutral.se](http://www.swedishneutral.se)



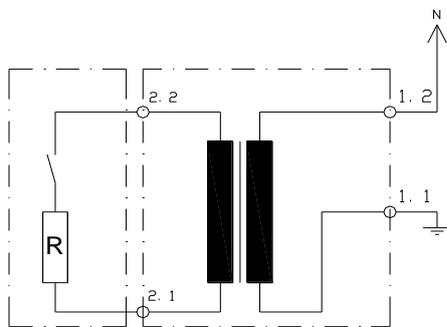
## Neutral Earthing Resistor

Swedish Neutral offers NERs of four different types:

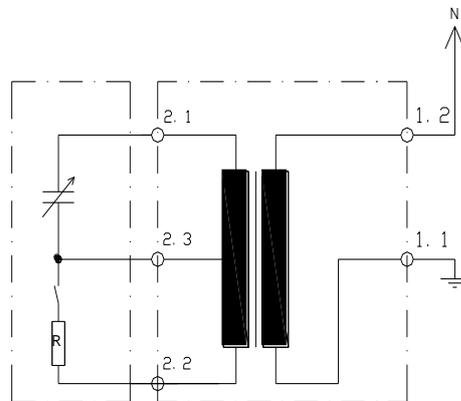
- NER connected to One-Phase Transformer
- NER connected to Grounding Transformer
- NER connected to Arc Suppression Coil
- Primary NER

## Main Circuit Neutral Earthing Resistors

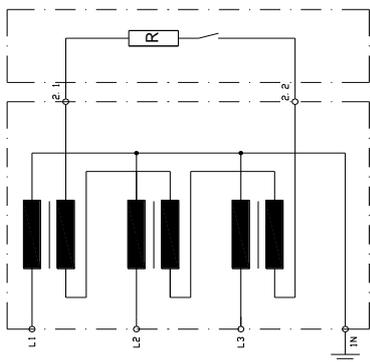
NER connected to One-Phase Transformer



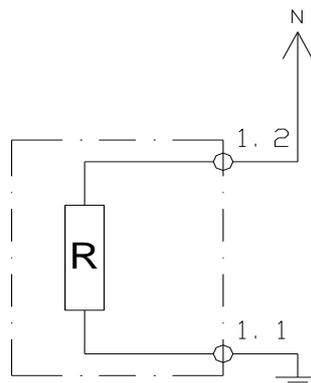
NER connected to Arc Suppression Coil



NER connected to Grounding Transformer



Primary NER



## Neutral Earthing Resistor

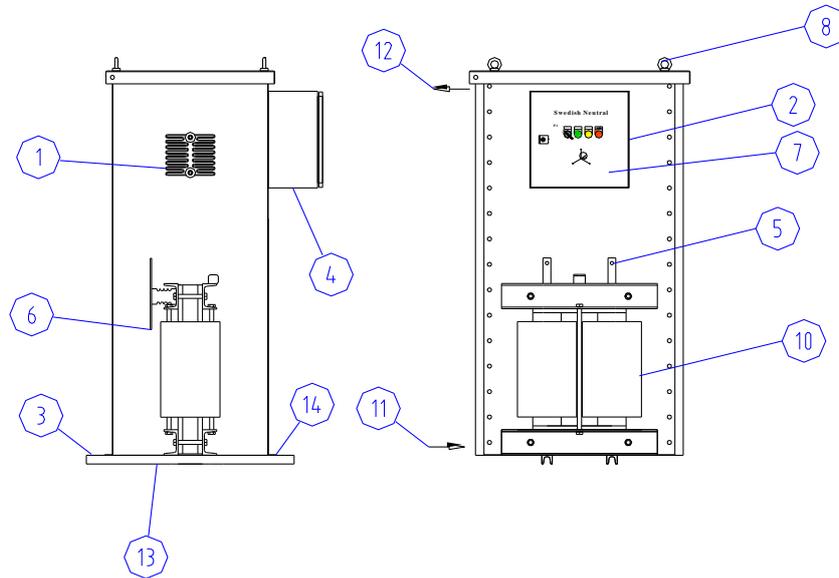
- Air cooled stainless steel resistor elements
- Integrated overload protection
- Local control panel with remote control interface
- Hermetically sealed design of One-Phase Transformers and Grounding Transformers
- Built in voltage transformer as option
- Built in current transformer as option
- Manufactured in co-operation with SGB, one of Europes largest transformer manufacturers



Neutral Earthing Resistor connected to Grounding Transformer 11kV/V3 15A 30s

## Layout Drawings

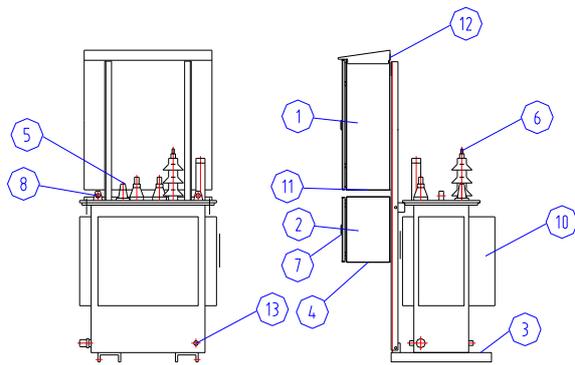
### NER connected to One-Phase Transformer - indoor use



## Legend

1. Resistor
2. Local control panel
3. Mounting holes  $\varnothing 10\text{mm}$
4. Low voltage bushing for auxiliary and control voltage
5. Neutral connection M12
6. Earth connection M12
7. Rating plate
8. Lifting lugs
9. Service hatch
10. One-phase transformer
11. Air intake
12. Air out
13. High voltage bushing for high voltage cable
14. Protective Earth

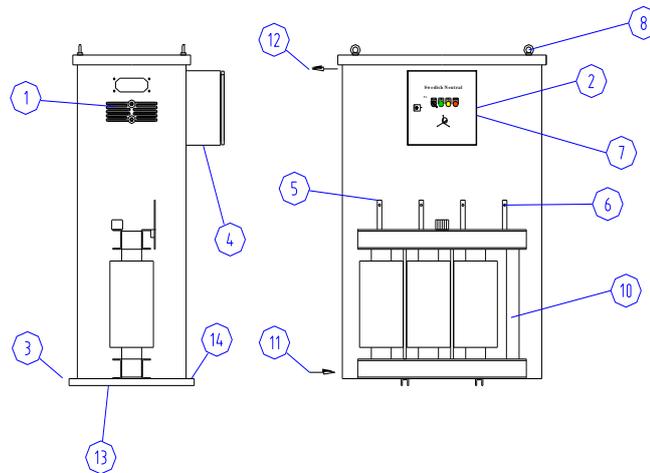
## NER connected to One-Phase Transformer - outdoor use



### Legend

1. Resistor
2. Local control panel
3. Mounting holes  $\varnothing 16\text{mm}$  (option wheels)
4. Low voltage bushing for auxiliary and control voltage.
5. Neutral bushing – Elastimold: Loadbreak/Deadbreak, DIN, Pfisterer
6. Earth connection M12
7. Rating plate
8. Lifting lugs
10. One-phase transformer
11. Air intake
12. Air out
13. Protective Earth

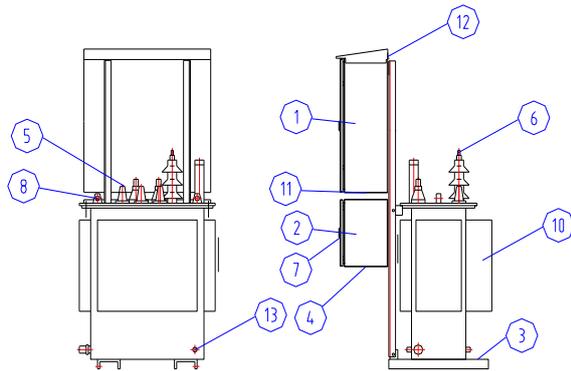
## NER connected to Grounding Transformer - indoor use



### Legend

1. Resistor
2. Local control panel
3. Mounting holes  $\varnothing 10\text{mm}$
4. Low voltage bushing for auxiliary and control voltage
5. Neutral bushing M12
6. Earth connection M12
7. Rating plate
8. Lifting lugs
9. Service hatch
10. Grounding Transformer
11. Air intake
12. Air out
13. High voltage bushing for high voltage cable
14. Protective Earth

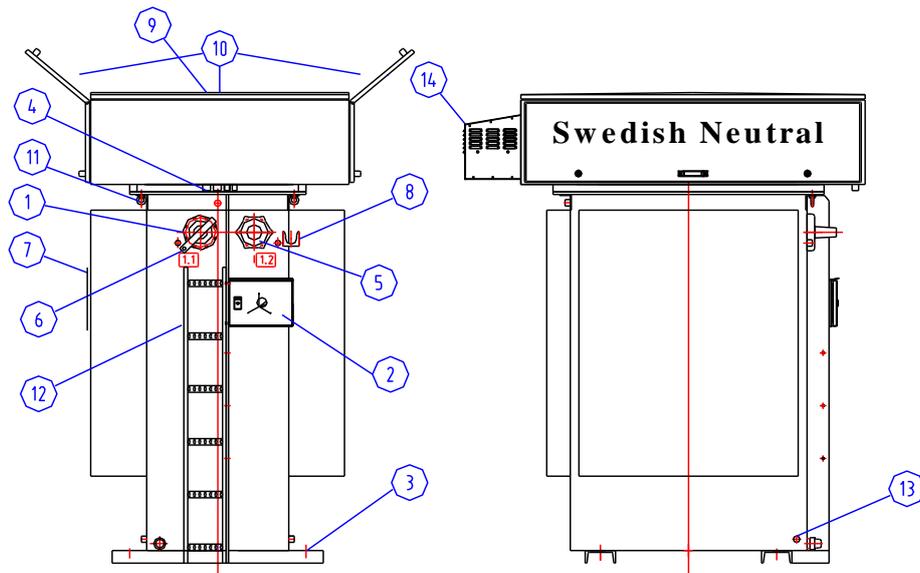
## NER connected to Grounding Transformer - outdoor use



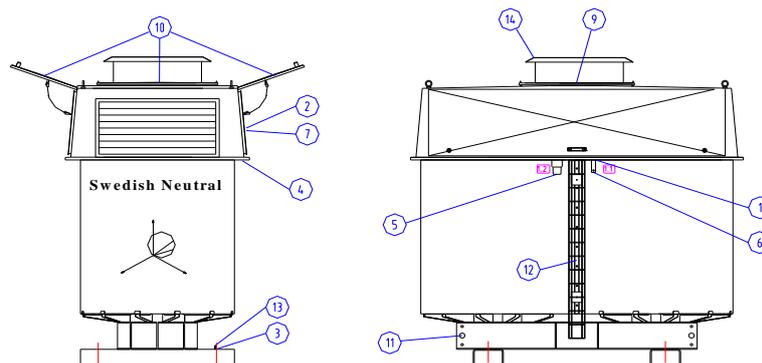
### Legend

1. Resistor
2. Local control panel
3. Mounting  $\varnothing 16\text{mm}$  (option wheels)
4. Low voltage bushing for auxiliary and control voltage
5. High voltage bushing – Elastimold: Loadbreak/Deadbreak, DIN, Pfisterer
6. Neutral bushing M12
7. Rating plate
8. Lifting lugs
9. -
10. Grounding Transformer
11. Air intake
12. Air out
13. Protective Earth

## NER connected to Arc Suppression Coil



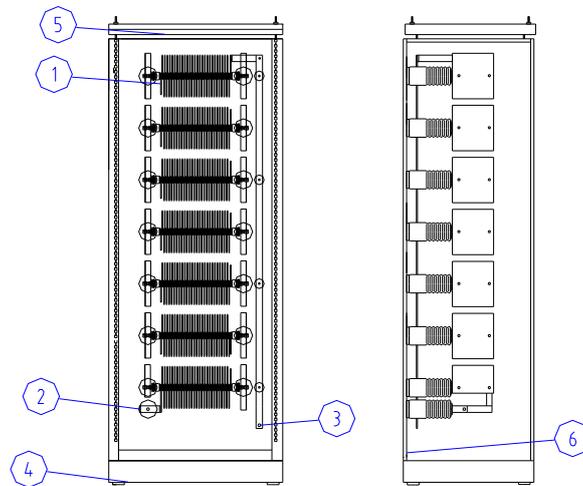
## NER connected to Arc Suppression Coil (oil free)



## Legend

1. Current transformer (option)
2. Local control panel
3. Mounting holes (16mm) (option hjul).
4. Low voltage bushing for auxiliary and control voltage
5. High voltage bushing – Elastimold: Loadbreak/Deadbreak, DIN, Pfisterer
6. Earth connection M12
7. Rating plate
8. Parking stand
9. Lifting lugs
10. Service hatch
11. Transport lugs
12. Cable tray (option)
13. Protective earth
14. Resistor

## Primary Neutral Earthing Resistor



### Legend

1. Resistor
2. Neutral connection M12
3. Earth connection M12
4. Air intake
5. Air out
6. Protective earth



Primary Neutral Earthing Resistor 22kV/ $\sqrt{3}$  600A 10s



## Technical Specification

Voltage	Up to $70/\sqrt{3}$ kV
Current	Up to 100A – larger sizes on request
Operation	Continuous or short time (10 s)
Cooling	ONAN (ANSI/IEEE C57.12.00) Class AA or Class AFA (ANSI/IEEE C57.12.01)
Frequency	50 or 60 Hz
Installation	Indoor or outdoor
Auxiliary winding voltage	690 V and 345 V
Insulation	Depending on voltage (IEC70076-3)
Temperature range	-40 to +40 °C, other temperatures on request
Oil	Nynas: Nytro Taurus Starke & Sohn: Transformer Oil U Midel 7131 Other oils on request

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