

## Regulations and general advice of the National Electrical Safety Board regarding the signage of electrical installations

decided on 21 April 2022.

The National Electrical Safety Board issues the following regulations<sup>1</sup> pursuant to Section 33 of the Electrical Safety Ordinance (2017:218)<sup>2</sup>.

### Scope

**1 §** These regulations contain provisions on signage at electrical installations in order to warn or inform about conduct vis-a-vis the risk of personal injury or damage to property caused by electricity.

These regulations apply to electrical installations as referred to in Section 3 of the Electrical Safety Act.

### Definitions and abbreviations

**2 §** The definitions and abbreviations used in the Electrical Safety Act and the Electrical Safety Ordinance shall have the same meaning in these regulations.

For the purposes of these regulations, the following definitions shall apply.

<i>closed electrical operating area</i>	a room or other place for the operation of electrical installations or other electrical equipment which may involve a risk of injury due to electricity.
<i>the Electrical Safety Ordinance</i>	the Electrical Safety Ordinance (2017:218), or a statute that has replaced it.
<i>the Electrical Safety Act</i>	the Electrical Safety Act (2016:732), or a statute that has replaced it.
<i>ELSÄK-FS 2022:1</i>	the regulations and general advice (2022:1) of the National Electrical Safety Board regarding the installation of electrical installations, or the statute that has replaced it.
<i>uninsulated overhead line</i>	overhead line with separately-suspended wires or covered conductors with accessories such as insulators and fasteners.

<sup>1</sup> See Directive 2015/1535 of the European Parliament and of the Council of 9 September 2015 laying down a procedure for the provision of information in the field of technical regulations and of rules on Information Society services (codification)

<sup>2</sup> Last amended by 2021:700.

<i>prohibition sign</i>	a sign prohibiting conduct that may constitute an electrical hazard.
<i>high voltage</i>	nominal voltage exceeding 1000 volts AC / 1500 volts DC.
<i>power source</i>	general term for equipment or installations capable of supplying the electrical installation with electrical energy, such as a micro-generation plant, electrical energy storage, back-up power or uninterruptible power.
<i>overhead line</i>	general term for above-ground lines or cables placed on poles or other supports to achieve a certain height; divided into uninsulated lines, aerial insulated cable and bundle assembled aerial cable.
<i>nominal voltage</i>	value of the voltage by which the electrical installation or part of the electrical installation is designated and identified.
<i>maritime traffic area</i>	the general term for water areas that form part of the Swedish maritime territory according to the Swedish Sea Territory and Maritime Zones Act (2017:1272), with the exception of water areas where traffic is prohibited by their shallowness, smallness or strong current.
<i>seaway marking</i>	signage pursuant to the Swedish Transport Agency's regulations and general advice on seaway markings (TSFS 2019:12), or a statute that has replaced it.
<i>symbol</i>	image describing a situation or prescribing conduct and used on a sign or illuminated surface.
<i>additional sign</i>	sign used in conjunction with a prohibition or warning sign and providing additional information.
<i>equipment with residual electric charge</i>	equipment which may have a residual electric charge despite having been disconnected from an installation, such as capacitor banks or electrical energy storage.
<i>warning sign</i>	a sign warning of general electrical hazard.

### **General provisions**

**3 §** General provisions on signs, markings and signals at workplaces can be found in the Swedish Work Environment Authority's Regulations on workplace design (AFS 2020:1), or a statute that has replaced it.

**4 §** The holder of an electrical installation is responsible for ensuring that signs are displayed in accordance with these regulations.

**5 §** An electrical installation which has been commissioned shall be provided with the necessary signs to warn or inform those present at the installation of the risk of personal injury or damage to property due to electricity. This also applies to the modification or expansion of an installation.

Provisions on when an electrical installation is considered to be commissioned are contained in Chapter 2, Section 2 ELSÄK-FS 2022:1.

**6 §** Electrical installation signage shall be based on a risk assessment and used only when the identified electrical hazard cannot be avoided or sufficiently limited by other measures. The number and location of signs and markings shall be adapted to the conditions of the site and the assessed risk.

*General advice*

The risk assessment shall include:

- risk of contact with energised parts of the installation,
- risk of voltage remaining after disconnection,
- the presence of partially energised installations or parts of installations,
- the presence of electrical supply from several directions, and
- risk of arc flash.

**7 §** Signage that is no longer needed shall be removed.

**8 §** Signs shall be checked, maintained and cleaned so that they retain functionality and quality.

**General provisions on the location and design of signs**

**9 §** Signs shall be clearly visible and placed so as to warn and inform of the risks identified in the risk assessment pursuant to Section 6. No more signage than necessary should be used to warn or inform about electrical hazards.

**10 §** Signs shall have the appearance shown in the Appendix. The symbols may differ slightly from those set out in the Appendix, provided that they reproduce the same content and do not distort the message.

*General advice*

If symbols are used on an additional sign, these symbols should be designed in accordance with the ISO 7000 / IEC 60417 standard, Graphical symbols for use on equipment.

**11 §** Signage shall have good durability with respect to the surrounding environment and location and shall be attached in a secure manner. Permanent signage shall be permanently mounted.

## Special provisions for signage at certain types of electrical installations

### *Signage at overhead lines*

**12 §** Warning signs shall be displayed on high-voltage overhead line poles. Warning signs shall be designed according to the Appendix, Figure 3 - Electrical hazard.

**13 §** A pole with an uninsulated overhead line, which is part of a high-voltage line that is not fail-safe, shall have additional signage if the line crosses a busy road or is located in a place where people frequently spend time. Additional signs shall be designed as shown in the Appendix, Figure 4, and shall read: "Livsfarlig ledning. Gå ej nära nedfallen ledare" ("Deadly wires. Keep away from fallen wires").

**14 §** Additional signage shall be provided on poles with uninsulated overhead lines which are part of a high-voltage installation with line-to-earth short-circuit currents exceeding 500 A. Additional signs shall be designed as shown in the Appendix, Figure 5, and shall read: "Livsfarlig ledning. Vistas ej nära stolpe och stag vid åskväder." ("Deadly wires. Keep away from poles and stays during storms.")

**15 §** Warning signs shall be provided on poles for overhead electrical and light-current or fiber-optic lines. Warning signs shall be designed according to the Appendix, Figure 3 - Electrical hazard. The poles shall also be provided with additional signs informing about the risk of confusion.

### *Signage at closed electrical operating areas*

**16 §** All entrances to a closed electrical operating area shall be provided with prohibition signs. Prohibition signs shall be designed as shown in the Appendix, Figure 1 - No unauthorised access.

All entrances and sides of the enclosure around a closed electrical operating area shall be provided with warning signs on the outside. Warning signs shall be designed according to the Appendix, Figure 3 - Electrical hazard.

### *Signage at electrical installations with multiple power sources or supply points*

**17 §** If an electrical installation can be energized by several power sources, the installation shall be provided with warning signs. Warning signs shall be designed as shown in the Appendix, Figure 3 - Electrical hazard. The installation shall also be provided with additional signage informing about and identifying the several power sources.

If the electrical installation is managed only by skilled or instructed persons, information about the electrical hazard may be provided by means other than

signage. How the electrical hazard is managed shall be shown in a risk assessment. The risk assessment shall be documented.

**18 §** If an electrical installation contains equipment or enclosures with energised parts connected to several supply points, the installation shall be provided with warning signs. Warning signs shall be designed according to the Appendix, Figure 3 - Electrical hazard. Equipment and enclosures shall also be provided with additional signage informing that there is more than one supply point.

If equipment and enclosures are managed only by skilled or instructed persons, information about the electrical hazard may be provided by means other than signage. How the electrical hazard is managed shall be shown in a risk assessment. The risk assessment shall be documented.

#### *Signage of electrical installations with certain electrical equipment*

**19 §** If the electrical installation includes electrical equipment with residual electric charge, the installation shall be provided with warning signs. Warning signs shall be designed according to the Appendix, Figure 3 - Electrical hazard. The installation shall also be equipped with additional signage informing about the risk of residual charge and the type of equipment.

A risk assessment pursuant to Section 6 shall clarify whether signage is also needed on individual electrical equipment with residual charge.

**20 §** If the electrical installation contains high-voltage electrical equipment which is installed in a place other than the closed electrical operating area and which could be accidentally touched, then it shall be marked with a prohibition sign. Prohibition signs shall be designed as shown in the Appendix, Figure 2 - Do not touch.

#### *Signage in maritime traffic areas*

**21 §** In the case of overhead electrical lines in maritime traffic areas, there shall be signs warning of a deadly power line and indicating the minimum air draught. Seaway markings shall be designed in accordance with the Swedish Transport Agency's regulations and general advice TSFS 2019:12 on seaway markings, Appendix 2, markings S101 and S102 respectively.

**22 §** Underwater electrical lines in maritime traffic areas shall be indicated with seaway markings which indicate the cable. These seaway markings shall be placed at the landfall of the lines. Seaway markings shall be designed in accordance with the Swedish Transport Agency's regulations and general advice TSFS 2019:12 on seaway markings, Appendix 2, marking S110.

In the case of an underwater high-voltage line, there shall also be seaway markings warning of a deadly power line. Seaway markings shall be designed in accordance

with the Swedish Transport Agency's regulations and general advice TSFS 2019:12 on seaway markings, Appendix 2, marking S101.

*Signage of certain types of contact lines*

**23 §** Warning signs shall be provided at contact lines for railway operation. Warning signs shall be placed at loading tracks, level crossings and protective devices on road bridges as well as in the railway-station area and at railway stops. Warning signs shall be designed according to the Appendix, Figure 3 - Electrical hazard. Warning signs shall be supplemented by an additional sign. Additional signs shall be designed in accordance with the Appendix.

**24 §** At level crossings between a railway contact line and a road other than a public road, signs shall be placed on both sides of the railway prohibiting vehicles of a height greater than 4 m above the track.

Provisions on the design of road signs for restricted vehicle heights are provided in the Road Signs Regulation (Vägmärkesförordning) (2007:90), or the statute that replaced it. More detailed provisions on the design and positioning of signs can be found in the Swedish Transport Agency's regulations and general advice (2019:74) on road signs and other devices, or the statute that has replaced it.

**25 §** Prohibition signs shall be posted at track areas with power bus bars for underground railways. Prohibition signs shall be designed as shown in the Appendix, Figure 1 - No unauthorised access. There shall also be warning signs at the track area, designed as shown in the Appendix, Figure 3 - Electrical Hazard.

**Exemptions from the regulations**

**26 §** The National Electrical Safety Board may grant exemptions from these regulations.

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**Entry into force and provisional regulations**

These regulations will enter into force on 1 December 2022, when the National Electrical Safety Board's regulations (2008:2) on warning markings for electrical power installations will expire.

Signage erected before the entry into force may be made in accordance with ELSÄK-FS 2008:1 or ELSÄK-FS 2008:2, or its provisional regulations. When replacing existing signage, the new regulations apply.

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## Appendix to Regulations and general advice of the National Electrical Safety Board regarding the signage of electrical installations (ELSÄK-FS 2022:2)

### Prohibition signs

Prohibition signs shall have a round shape and a black symbol on a white background with a red border and a red slash. The red portion shall be at least 35 per cent of the sign's surface.

Prohibition sign - No unauthorised access - shall be designed as shown in Figure 1.



Figure 1. No unauthorised access

Prohibition sign - Do not touch - shall be designed as shown in Figure 2.



Figure 2. Do not touch

### Additional prohibition sign

An additional sign shall have a rectangular shape and black symbol/text on a white background with a red frame. The white portion shall be at least 50 per cent of the sign's surface.

Text on the additional sign shall supplement the prohibition sign with information in Swedish about the prohibition's meaning. If a risk assessment shows that languages other than Swedish is needed, this can be done as a complement.

### **Warning signs**

Warning signs shall have a triangle shape and a black symbol on a yellow background with a black frame. The yellow portion shall be at least 50 per cent of the sign's surface.

Warning sign - Electrical hazard - shall be designed as shown in Figure 3.



**Figure 3. Electrical hazard**

### **Additional warning sign**

An additional sign must have a rectangular shape and black text/symbol on a yellow background with a black frame. The yellow portion must be at least 50 per cent of the sign's surface.

The text and symbol on the additional sign shall supplement the warning sign with information in Swedish on the type of risk to which the warning refers. If a risk assessment shows that languages other than Swedish is needed, this can be done as a complement.

### **Additional warning sign at overhead lines**

Additional signs according to Section 13 shall be designed as shown in Figure 4.



**Figure 4. Deadly wire**

Additional signs according to Section 14 shall be designed as shown in Figure 5.



**Figure 5. Deadly wire**



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**For legal text - please use the link below.**

**Section of legislation:** Electrical installations

**Number:** ELSÄK-FS 2022:2

**Title:** Regulations and general advice of the National Electrical Safety Board regarding the signage of electrical installations

**Legal titel:** Elsäkerhetsverkets föreskrifter och allmänna råd (2022:2) om skyltning av starkströmsanläggningar

**Link to regulations:**

<https://www.elsakerhetsverket.se/globalassets/foreskrifter/elsak-fs-2022-2>