

National Electrical Safety Board's regulations and general advice in English – 2008:2

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Section of legislation: Execution of electrical installations

Number: ELSÄK-FS 2008:2

Amendments per 2017-07-01: Amended by ELSÄK-FS 2010:2

Title: The National Electrical Safety Board's regulations and general advice on warning markings at electrical installations

Legal titel: Elsäkerhetsverkets föreskrifter och allmänna råd (2008:2) om varselmärkning vid elektriska starkströmsanläggningar

Link to regulations: <http://www.elsakerhetsverket.se/om-oss/lag-och-ratt/gallande-regler/Elsakerhetsverkets-foreskrifter-listade-i-nummerordning/elsak-fs-20082/>

1 § These regulations concern warning markings at electrical installations.

Warning markings are defined as markings with signs or marine safety signs which warn about or provide information as to how to behave where there is a risk of injury or damage caused by electricity.

The regulations do not apply to warning marking at installations

- in aircraft,
- in contact line installations for electric railway, light rail, underground railway and trolley bus operation,
- in vehicles used in electric railway, light rail, underground railway and trolley bus operation,
- in other vehicles including trailers,
- in vessels including leisure craft,
- in other equipment.

General advice

Other vehicles including trailers are taken to mean vehicles such as motorhomes and caravans. Other equipment is taken to mean items such as machinery, hoists and cranes.

2 § In these regulations terms are defined as follows:

restricted access location a room or other location for the operation of electrical installations and other electrical equipment presenting a risk of injury due to electricity,

uninsulated overhead line overhead line with conductors suspended separately from each other with accessories such as insulators and fastenings,

prohibition sign sign or ribbon prohibiting behaviour potentially presenting an electrical hazard,

high voltage nominal voltage over 1000 V AC or 1500 V DC,

low voltage nominal voltage up to 1000 V AC or up to 1500 V DC,

navigable area collective term for a body of water forming part of Swedish territorial waters in accordance with

	the Swedish Act (1966:374) on the territorial waters of Sweden, excluding bodies of water that are so small or so shallow that they are only navigable by small rowing boats, or watercourses with a current so strong that no navigation is possible,
<i>marine safety signs</i>	signs in accordance with the Swedish Maritime Administration's regulations on marine safety signs,
<i>symbol</i>	an image describing a situation or indicating particular behaviour and used on a sign or illuminated surface,
<i>supplementary sign</i>	a sign which is used in addition to a warning sign and which provides supplementary information,
<i>warning sign</i>	a sign or ribbon which warns about a general electrical hazard.

3 § The owner of an electrical installation which has been put into service is responsible for ensuring that the installation has warning markings in accordance with these regulations. The warning markings shall form an integral part of the installation. An installation is considered to be put into service when it is energised with a voltage, current or frequency that may be hazardous for people or property. This also applies if the installation is energised temporarily, e.g. for trial operation.

The person with responsibility as described in the first paragraph shall assess the risks at the installation and shall ensure that warning markings are affixed where necessary in order to warn or inform of risks associated with electricity at the installation.

Regulations concerning signs at places of work are contained in the Swedish Work Environment Authority's regulations on signs and signals regarding health and safety in locations where work is performed and general implementation advice (AFS 2008:13).

4 § Warning markings in accordance with these regulations may not be used for purposes other than those set out in the regulations.

Warning markings shall be removed if they are no longer necessary.

5 § Warning markings shall be clearly visible. They shall be positioned at the entrance to an area in which there is a risk of injury or damage caused by electricity and also, if necessary, next to individual objects.

6 § The position and design of the warning marking and the number of signs shall be determined on the basis of the local conditions and the assessed risk. More signs than are necessary to make the marking clearly visible shall not be used.

7 § Signs for permanent warning markings shall be permanently installed. Signs for temporary marking shall be adequately affixed.

8 § Warning signs, prohibition signs and marine safety signs shall have the appearance set out on the Annex, in the Swedish Maritime Administration's regulations and general advice on marine safety signs (SJÖFS 2007:19), and in the Swedish Work Environment Authority's regulations on signs and signals regarding health and safety in locations where work is performed and general implementation advice (AFS 2008:13).

Signs shall be made of impact-resistant material able to withstand influences from the immediate environment.

9 § Overhead line masts for high voltage shall have warning signs.

An insulated overhead line mast forming part of a high voltage line which is not unbreakable shall have a supplementary sign with the text "*Livsfarlig ledning. Gå ej nära nedfallen ledare*" ("Danger of death. Do not approach fallen cables") if the line crosses a road with traffic or is in a well-frequented area.

A mast with an uninsulated overhead line for nominal voltages above 100 kV shall have a supplementary sign with the text "*Vistas ej nära stolpe eller stag vid åskväder*" ("Stay away from this mast or attachments during thunderstorms").

Masts carrying overhead lines for both heavy current and light current shall have signs warning of the presence of both heavy current lines (both high voltage and low voltage if applicable) and light current lines, and signs warning about possible confusion.

10 § Chapter 3 4 § of the National Electrical Safety Board's regulations and general advice on the execution of electrical installations (ELSÄK-FS 2008:1) states that a restricted access location shall be adequately enclosed or fenced off and access shall be restricted. All entrances to a restricted access location shall have prohibition signs on the outside prohibiting unauthorised access.

All entrances and sides of the enclosure surrounding a restricted access location shall have warning signs on the outside.

11 § Equipment or housings with live parts connected to more than one power supply shall have warning signs making it clear that there is more than one possible power supply. If it is not otherwise made clear that a heavy current installation is connected to or contains stationary backup power or an uninterruptible power supply, the installation shall have warning signs and supplementary signs to that effect.

12 § If a capacitor installation in a restricted access location contains capacitors with live containers or an unenclosed terminal board, etc., warning signs and prohibition signs shall be affixed to the doors to the site. The prohibition signs shall indicate that unauthorised access is prohibited. Each capacitor bank shall have warning signs making it clear that there is a risk of residual electric charge.

13 § Prohibition signs indicating that touching is prohibited shall be affixed at machines, transformers and capacitors installed outside restricted access locations where there is a risk of accidental contact.

14 § Overhead heavy current lines in navigable areas shall have marine safety signs warning of danger of death from overhead lines/submarine cables and with details of the minimum air clearance (SJÖFS 2007:19, Annex 2, signs S 101 and S 102).

15 § In navigable areas, submarine heavy current lines (cables) shall be indicated with marine safety signs at the landing points drawing attention to the cable (SJÖFS 2007:19, Annex 2, sign S 110). If a submarine line is a high voltage line, there shall also be marine safety signs warning of danger of death from overhead lines/submarine cables (SJÖFS 2007:19, Annex 2, signs S 101).

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

Entry into force and transitional arrangements

ELSÄK-FS 2008:2

These regulations enter into force on 1 October 2008.

Markings executed at the time of entry into force may be used provided they are clearly visible.

ELSÄK-FS 2010:2

These regulations and general advice enter into force on the date of the statute as indicated by the date of printing in the Code of Statutes of the National Electrical Safety Board.

Annex to the National Electrical Safety Board's regulations and general advice (ELSÄK-FS 2008:2) on warning markings at electrical installations

1. Prohibition signs

Prohibition signs shall be round in shape, with a black symbol on a white background, a red border and a red diagonal cross bar. The red parts shall occupy at least 35 per cent of the surface area of the sign.



F1 Unauthorised access prohibited F2 Do not touch

2. Warning signs

Warning signs shall be triangular in shape with a black symbol on a yellow background and a black border. The yellow parts shall occupy at least 50 per cent of the surface area of the sign.



V1 General warning
of electrical hazard



V2 Warning ribbon to be placed around masts for high voltage lines. Symbols and borders shall be printed on a yellow background. The ribbon shall be approximately 100 cm in width.

3. Supplementary signs

Supplementary signs with additional text shall be black on a yellow background. The yellow parts shall occupy at least 50 per cent of the surface area of the sign.

Bakspänning	Livsfarlig ledning Gå ej nära nedfallen ledare
V3 Sign indicating a possible additional power supply as described in 11 §	V4 Sign indicating a mast carrying non-unbreakable high voltage uninsulated overhead line as described in 9 §



V5 Sign indicating a mast carrying uninsulated overhead line with voltage > 100 kV as described in 9 §

V6 Sign for capacitor as described in 12 §

4. Combinations

Markings with additional text or symbols may be affixed to a combination sign or constructed with multiple signs next to each other. If a combination sign contains a prohibition sign and a warning sign, the supplementary marking shall have black text or a black symbol on a white or yellow background.



Example of a combination of warning sign and supplementary sign.



Example of a combination of prohibition sign and warning sign.

5. Marine safety signs

Marine safety signs shall be designed in accordance with the Swedish Maritime Administration's regulations and general advice on marine safety signs (SJÖFS 2007:19).

6. Prohibition and warning signs

Prohibition and warning signs which are not marine safety signs shall be designed in accordance with the Swedish Work Environment Authority's regulations on signs and signals regarding health and safety in locations where work is performed and general implementation advice (AFS 2008:13).