



SLOVENSKI STANDARD

SIST-TS CEN/TS 81-83:2010

01-oktober-2010

Varnostna pravila za konstruiranje in vgradnjo dvigal (liftov) - Obstoječa dvigala - 83. del: Pravila za izboljšanje odpornosti proti vandalizmu

Safety rules for the construction and installation of lifts - Existing lifts - Part 83: Rules for the improvement of the resistance against vandalism

Sicherheitsregeln für die Konstruktion und den Einbau von Aufzügen - Bestehende Aufzüge - Teil 83: Regeln für die Verbesserung der Schutzmaßnahmen gegen mutwillige Zerstörung

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Règles de sécurité pour la construction et l'installation des ascenseurs - Ascenseurs existants - Partie 83: Règles pour l'amélioration de la résistance aux actes de vandalisme

Ta slovenski standard je istoveten z: **CEN/TS 81-83:2009**

ICS:

91.140.90 Dvigala. Tekoče stopnice Lifts. Escalators

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TECHNICAL SPECIFICATION
SPÉCIFICATION TECHNIQUE
TECHNISCHE SPEZIFIKATION

CEN/TS 81-83

October 2009

ICS 91.140.90

English Version

Safety rules for the construction and installation of lifts - Existing lifts - Part 83: Rules for the improvement of the resistance against vandalism

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This Technical Specification (CEN/TS) was approved by CEN on 10 August 2009 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

CEN members are required to announce the existence of this CEN/TS in the same way as for an EN and to make the CEN/TS available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the CEN/TS) until the final decision about the possible conversion of the CEN/TS into an EN is reached.

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Foreword

This document (CEN/TS 81-83:2009) has been prepared by Technical Committee CEN/TC 10 “Lifts, escalators and moving walks”, the secretariat of which is held by AFNOR.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This standard is part of the EN 81 series of standards: “*Safety rules for the construction and installation of lifts*”.

CEN/CENELEC have embarked on a programme of work to produce a series of related machinery and lift safety standards as part of the process of European harmonisation. This document makes use of and refers to EN 81-71:2005.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this Technical Specification: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

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CEN/TS 81-83:2009 (E)**Introduction****Background**

More than 4 million lifts are in use today in EU and EFTA and almost 50 % were installed more than 25 years ago. Existing lifts were installed to the safety level appropriate at that time. This level is less than today's state of the art lifts built to EN 81-1 or EN 81-2, offering already a reasonable degree of protection against vandalism.

Furthermore the life cycle of a lift is longer than most other transportation systems and building equipment, which therefore means that lift design, performance, safety and resistance against vandalism can fall behind modern technologies. If existing lifts are not upgraded to today's state of the art of safety and/or protection against vandalism the number of incidents will increase.

This document provides guidance to building owners addressing in particular existing lifts installed in buildings where it is considered additional security or other measures may be required to protect against the risk of vandalism. The building owner will need to consider the extent of additional protection required, as covered by the enclosed proposals, which may be adopted according to the environment in which the lift installation is situated and the type of vandalism that is likely to be experienced.

This document is based upon and referring to EN 81-71:2005 and addresses additional protective measures against deliberate acts that may result in equipment damage or injury to persons.

Approach

This Technical Specification

- defines the categories of vandalism according to EN 81-71:2005, Annex A, taking into account the existing environment and the likelihood of persons acting as a vandal;
- categorises various hazards and hazardous situations, each of which has been analysed by a risk assessment;
- is intended to provide corrective actions to progressively and selectively improve, step by step, the level of vandal resistance of existing passenger and goods passenger lifts towards today's state of the art;
- enables each lift to be audited and measures against vandalism to be identified and implemented in a step by step and selective fashion;
- lists the high, medium and low priorities and corrective actions which can be applied in separate steps in order to eliminate the risks.

Other designs to previous national regulations or standards, providing they have an equivalent safety level, may be acceptable.

Use

This Technical Specification can be used as a guideline for:

- a) national authorities to determine its own programme of implementation in a step by step process via a filtering process (see Annex A) in a reasonable and practicable¹⁾ way based on the priorities level (high, medium, low) and social and economic considerations;

1) "Reasonable and practicable" is defined as follows: "In deciding what is reasonably practicable the seriousness of a risk to injury should be weighted against the difficulty and cost of removing or reducing that risk. Where the difficulty and costs are high, and a careful assessment of the risk shows it to be comparatively unimportant, action may not need to be taken. On the other hand where the risk is high, action should be taken at whatever cost."

- b) owners to follow their responsibilities according to existing regulations;
- c) maintenance companies and/or inspection bodies to inform the owners on the vandal resistance level of their installations;
- d) owners to upgrade the existing lifts on a voluntary basis in accordance with c) if no regulations exist.

In making an audit of an existing lift installation Annex B can be used to identify the deviations to the state of the art and corrective actions in this Technical Specification.

However, where a situation is identified not covered in this Technical Specification a separate risk assessment should be made. This risk assessment should be based on ISO 14798 [1].

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CEN/TS 81-83:2009 (E)**1 Scope**

1.1 This Technical Specification provides ways on how to apply EN 81-71 referred to in EN 81-80:2003 [2], 5.3 to existing lifts in order to improve their vandal resistance.

1.2 This document applies to permanently installed lifts serving defined landing levels, having a car designed for the transportation of persons or persons and goods and moving between guide rails inclined not more than 15° to the vertical.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 81-1:1998, *Safety rules for the construction and installation of lifts – Part 1: Electric lifts*

EN 81-2:1998, *Safety rules for the construction and installation of lifts – Part 2: Hydraulic lifts*

EN 81-71:2005, *Safety rules for the construction and installation of lifts – Particular applications for passenger lifts and goods passenger lifts – Part 71: Vandal resistant lifts*

EN 60529, *Degrees of protection provided by enclosures (IP code) (IEC 60529:1989)*

EN ISO 13857:2008, *Safety of machinery – Safety distances to prevent hazard zones being reached by the upper and lower limbs (ISO 13857:2008)*

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3 Terms and definitions

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For the purposes of this document, the terms and definitions given in the EN 81 series of standards apply.

4 List of significant hazards

EN 81-71:2005, Clause 4 applies.

5 Safety requirements and/or measures**5.1 Lift well****5.1.1 Well enclosure**

5.1.1.1 Well enclosures shall be imperforate. For Category 1 lifts where it is difficult to replace perforate enclosures, existing enclosures may remain if they comply with EN ISO 13857:2008, 4.2.4.2.

The strength and the fire resistance of materials used for the well shall comply with the requirements of EN 81-71:2005, 5.1.1.1.

5.1.1.2 For Category 1 lifts with a partially enclosed well the height of the enclosure according to 5.2.1.2 a) of EN 81-1:1998 or EN 81-2:1998 shall be a minimum of 5,0 m.

5.1.1.3 Category 2 lifts shall be provided with a totally enclosed well.

5.1.2 Inspection and emergency doors and inspection traps

5.1.2.1 Inspection and emergency doors and inspection traps shall be of such a construction that it is not possible to open them with any of the items as listed in EN 81-71:2005, Table E.1.

5.1.2.2 The strength of doors and trap doors shall be according to EN 81-71:2005, 5.1.2.2.

5.1.3 Ventilation

Ventilation openings shall be in accordance with EN 81-71:2005, 5.2.3 and 5.2.4.

5.2 Machinery spaces, pulley space(s) and machinery cabinets

5.2.1 The strength and the fire resistance of the materials used in the construction of any machinery space, pulley spaces or cabinet outside of the well shall comply with EN 81-71:2005, 5.1.1.1.

5.2.2 Windows, if provided and accessible to persons, shall be in accordance with EN 81-71:2005, 5.2.2.

5.2.3 If ventilation openings are accessible to persons from the outside, dimensions and protections of the openings shall be according to EN 81-71:2005, 5.2.3.

5.2.4 The means of protection in 5.2.3 shall be of a strength as specified in EN 81-71:2005, 5.1.1.1.

5.2.5 Doors and trap doors with their locks shall meet the requirements of EN 81-71:2005, 5.1.2.2.

5.2.6 For Category 2 lifts, an intruder alarm system shall be provided in compliance with EN 81-71:2005, 5.2.6.

5.2.7 In the case of a Category 2 machine-room-less lift, equipment located in a machinery space in the pit, e.g. machine, tank, controller, shall be covered according to EN 81-71:2005, 5.2.7.

5.3 Landing and car doors

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5.3.1 Landing and car door construction

5.3.1.1 Landing and car doors shall be of the automatically horizontally sliding power operated type. Hinged doors may remain respecting the specifications mentioned in 5.3.2.2.

A car door shall always be installed (see EN 81-80:2003, 5.8.3) and respect the specifications mentioned below.

5.3.1.2 Materials used for door panels and frames/architraves and decorative finishes for car and landing doors shall comply with EN 81-71:2005, 5.3.1.1.

5.3.1.3 The strength of car and landing door assemblies, together with their frames and fixings shall comply with the requirements of EN 81-71:2005, 5.3.1.2.

5.3.1.4 Doors shall be provided with a means for retaining the door panels in position should the roller or guide shoe assemblies fail. The strength of these devices shall comply with EN 81-71:2005, 5.3.1.3.

5.3.1.5 For Category 2 lifts vision panels shall not be used according to EN 81-71:2005, 5.3.1.4.

5.3.1.6 For Category 2 lifts, the design of the door panels and the distance between each landing door, or its attachments at the leading edge, and the car door(s), or its attachments at the leading edge, shall comply with EN 81-71:2005, 5.3.1.5.

5.3.1.7 For Category 2 lifts, in addition to the requirements of 7.2.3.2 of EN 81-1:1998 and EN 81-2:1998, it shall not be possible to pass a rod of 10 mm diameter from the landing side of the entrance into the well according to EN 81-71:2005, 5.3.1.6.

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5.3.1.8 For Category 2 lifts, where panels are mechanically linked, the linkage shall be so designed or located that it cannot be disengaged by a user, with an item as described in EN 81-71:2005, Annex E within a period of 60 s.

5.3.1.9 For Category 2 lifts, the leading edge profile of car and landing doors shall be formed as an integral part of the door according to EN 81-71:2005, 5.3.1.8.

5.3.2 Landing door security system – Category 2 lifts**5.3.2.1 Automatic sliding doors**

For Category 2 lifts with automatic sliding doors, a landing door security system according to EN 81-71:2005, 5.3.2 shall be provided.

5.3.2.2 Hinged doors**5.3.2.2.1 General**

If hinged doors remain, an alarm system (see 5.3.2.2.2) and or blocking system (see 5.3.2.2.3) shall be installed for Category 2 lifts.

5.3.2.2.2 Alarm system

The warning flashing light installed on the landing door side and the acoustic signal shall remain active as long as the landing door is unlocked and/or opened outside the unlocking zone. Once the system is activated, the electric displacement of the car shall be impossible, even during maintenance actions.

This device installed on each served landing, shall be composed by a warning flashing light, including a sign “access prohibited” installed on the landing door frame. In addition to this warning signal, an acoustic signal shall also exist, providing a minimum noise level of 65 dB (A) measured in a distance of 1 m in front of the closed landing door concerned.

The setting and re-setting of this device shall only be possible by an authorised person from:

- a) a landing, or
- b) the machine room, or
- c) the lift control panel, or
- d) the control panel located at the landing (MRL), or
- e) the control room of the building, if there exists in the vicinity (in the same building).

The warning flashing light installed on the landing door side remains active as long as the landing door is unlocked and/or opened outside the unlocking zone.

The identification of the device (as specified in EN 81-71:2005, Annex C) to set and reset the alarm device shall be clearly and permanently located on or adjacent to the lift entrance at the main entry/exit floor of the building.

To avoid the alarm device to be left inoperative, a timer shall automatically reactivate it after a maximum period of 30 min. However, when the lift is in inspection mode or a stopping device (on the roof of the car, or in the pit, or in the machine room or in the pulley room) is actuated, the timer shall be interrupted. Once the lift turned into normal service, the timer shall be automatically re-activated.

In the event of loss of electrical supply the alarm device shall remain operative for at least 2 h.

In the event of a damaged alarm device at the landing, a complementary warning flashing light, located in the well and being visible from the landing door side, shall be active. In addition, an acoustic signal shall also exist in the

well providing a minimum noise level of 65 dB (A) measured in a distance of 1 m in front of the closed landing door concerned.

The manual displacement of the car with open landing door from the machine room shall activate the flashing lights and the acoustic signal in the well.

It shall be impossible to dismount the locking mechanism of the landing doors and the elements of the alarm device from inside of the well.

5.3.2.2.3 Blocking device

The blocking device shall prevent the manual opening of the landing door in the absence of the car at the landing from the landing and from the car itself with a special item as mentioned in EN 81-71:2005, Annex E.

If the blocking device, once activated, is not in the position to prevent the manual opening of the landing doors, in the absence of the car at the landing level, all new departure of the lift shall be prevented.

The setting and re-setting of this device shall only be possible by an authorised person from:

- a) a landing, or
- b) the machine room, or
- c) the lift control panel, or
- d) the control panel located at the landing (MRL), or
- e) the control room of the building, if there exists in the vicinity (in the same building).

The warning flashing light installed on the landing door side remains active as long as the landing door is unlocked and/or opened outside the unlocking zone.

The identification of the device (as specified in EN 81-71:2005, Annex C) to set and reset the blocking device shall be clearly and permanently located on or adjacent to the lift entrance at the main entry/exit floor of the building.

To avoid the blocking device to be left inoperative, a timer shall automatically reactivate it after a maximum period of 30 min. However, when the lift is in inspection mode or a stopping device (on the roof of the car, or in the pit, or in the machine room or in the pulley room) is actuated, the timer shall be interrupted. Once the lift turned into normal service, the timer shall be automatically re-activated.

In the event of loss of electrical supply the blocking device shall remain operative for at least 2 h.

In the event of a damaged blocking device at the landing, a complementary warning flashing light, located in the well and being visible from the landing door side, shall be active. In addition, an acoustic signal shall also exist in the well providing a minimum noise level of 65 dB (A) measured in a distance of 1 m in front of the closed landing door concerned.

The manual displacement of the car with open landing door from the machine room shall activate the flashing lights and the acoustic signal in the well.

It shall be impossible to dismount the locking mechanism of the landing doors and the elements of the blocking device from inside of the well.

5.3.3 Door coupling mechanism for automatically operating sliding doors

For Category 2 lifts, whilst the car is stationary in the unlocking zone it shall not be possible to de-couple the car and landing doors by hand or the use of a item as described in EN 81-71:2005, Annex E within a period of 60 s.