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**Safety rules for the construction and installation of lifts -  
Particular applications for passengers and goods  
passenger lifts - Part 76: Evacuation of persons with  
disabilities using lifts**

Règles de sécurité pour la construction et l'installation  
des élévateurs - Applications particulières pour les  
ascenseurs et les ascenseurs de charge - Partie 76 :  
Évacuation des personnes en situation de handicap au  
moyen d'ascenseurs

Sicherheitsregeln für Konstruktion und Einbau von  
Aufzügen - Besondere Anwendungen für Personen-  
und Lastenaufzüge - Teil 76: Personenaufzüge für die  
Evakuierung von Personen mit Behinderungen

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 10.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
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## **European foreword**

This document (prEN 81-76:2019) has been prepared by Technical Committee CEN/TC 10 “Lifts, escalators and moving walks”, the secretariat of which is held by AFNOR.

This document is currently submitted to the CEN Enquiry.

This document will supersede CEN TS 81-76:2011.

## Introduction

This document is a type C standard as stated in EN ISO 12100.

The machinery concerned and the extent to which hazards, hazardous situations and events are covered is indicated in the scope of this document.

When provisions of this document are different from those which are stated in type A or B standards, the provisions of this document take precedence over the provisions of the other standards for lifts that have been designed and built according to the provisions of this document.

This document specifies a lift to be used for the evacuation of persons with disabilities and persons with disabled mobility automatically or under the direction and control of the building management. Annex A provides a concept for the use of an evacuation lift.

The following assumptions were made in writing this document:

- a) the building is provided with means to protect the following from the effects of fire and smoke for at least the maximum planned duration of the evacuation:
  - the lift well;
  - machine rooms and machinery spaces;
  - refuges;
  - safe areas including direct access to safe exit;
  - landing doors which are not in safe areas;
  - hose or piping and cables between the lift well and machinery spaces;
  - power supplies and supply cables.
- b) fire and smoke detection is provided at least in the evacuation lift well, safe areas and machinery spaces;
- c) smoke management to prevent the ingress of smoke into the lift well, safe area and stairs. e.g. air pressurization;
- d) power supplies are secure and reliable; to ensure this the provision of a secondary supply or an alternative supply cable from the main building intake is considered to be essential;
- e) the number, size and speed of lifts, and the floors to be served, have been determined as part of the building design and are appropriate for the intended purpose including the use by persons in wheelchairs etc.;
- f) the building is designed to minimize the risk of flooding into the lift or lift well. To this end, sprinkler discharge, burst pipes, fire hose etc. are not located to discharge within or towards the lift and any water close to the lift is directed away from it by sloping floors etc.;
- g) the lift is maintained and the evacuation operation is tested at suitable regular intervals to ensure its availability in the event of an evacuation;
- h) negotiations have been made between the owner, customer, building designers, fire authorities or other relevant bodies and installer concerning the evacuation plan including the following:

## prEN 81-76:2019 (E)

- 1) the intended use of the lift (whether to use the lift for evacuation and when to remove it from evacuation service is assumed to be a building management decision);
- 2) the building evacuation strategy;
- 3) the floors to be served during evacuation;
- 4) the design of the lift to fulfil the requirements of the evacuation strategy e.g. attendant control with visual signals and audible announcements;
- 5) the maximum planned time of the evacuation;
- 6) building requirements (e.g. structural and technical fire safety measures);
- 7) suitable maintenance and verification plan;
- 8) interfaces between the lift and the building management system (BMS) or fire detection system and responsibilities for signalling systems to return the lift to the appropriate evacuation floor(s) e.g. the use of an automatic recall device such as the building's fire detection system in addition to the evacuation lift switch;
- 9) location, type and protection of evacuation lift switch;
- 10) water management (if applicable);
- 11) emergency lighting in safe areas and staircases.

NOTE Developers and architects are expected to take account of national building regulations.

## 1 Scope

This document specifies the additional or deviating requirements to prEN 81-20 for new passenger and goods passenger lifts, which may be used to support faster evacuation of persons with difficulty in using stairs including in case of fire alarm.

This document does not apply to:

- lifts which are not included in a fire resisting building structure;
- the evacuation due to other circumstances, like explosion, chemical or biological attack, flooding, storm damage, earthquake etc.

NOTE General evacuation guidance can be found in ISO/TS 18870.

The following significant hazards are not covered in this document and are assumed to be addressed by the building designer:

- fire or smoke in the evacuation lift well, safe areas or machinery spaces;
- ingress of water to the lift well during evacuation process;
- insufficient or incorrectly located evacuation lifts;
- entrapment in waiting area (safe area) due to absence of lift service or adjacent stairs;
- structural collapse or failure of building services (e.g. power supply, lighting, ventilation) before the evacuation using lifts has been completed;
- presence of harmful gases, potentially explosive atmosphere, extreme climate conditions, transport of dangerous goods, etc.

## 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.

prEN 81-20:2019, *Safety rules for the construction and installation of lifts - Lifts for the transport of persons and goods - Part 20: Passenger and goods passenger lifts.*

EN 81-28:2018+AC:2019, *Safety rules for the construction and installation of lifts - Lifts for the transport of persons and goods - Part 28: Remote alarm on passenger and goods passenger lifts*

EN 81-70:2018, *Safety rules for the construction and installation of lifts - Particular applications for passenger and goods passenger lift - Part 70: Accessibility to lifts for persons including persons with disability*

EN 81-71:2018+AC:2019, *Safety rules for the construction and installation of lifts - Particular applications to passenger lifts and goods passenger lifts - Part 71: Vandal resistant lifts*

prEN 81-72:2019, *Safety rules for the construction and installation of lifts - Particular applications for passenger and goods passenger lifts - Part 72: Firefighters lifts*

prEN 81-73:2019, *Safety rules for the construction and installation of lifts - Particular applications for passenger and goods passenger lifts - Part 73: Behaviour of lifts in the event of fire*

EN 81-77:2018, *Safety rules for the construction and installations of lifts - Particular applications for passenger and goods passenger lifts - Part 77: Lifts subject to seismic conditions*

EN ISO 12100:2010, *Safety of machinery. General principles for design. Risk assessment and risk reduction.*

### **3 Terms and definitions**

For the purposes of this document, the terms and definitions given in EN ISO 12100:2010 and prEN 81-20:2019 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

#### **3.1**

##### **Building Management System**

##### **BMS**

system in the building capable of making decisions based on information sent to it

#### **3.2**

##### **evacuation assistant**

person appointed by building management to assist in the evacuation process and drive the lift when required

#### **3.3**

##### **evacuation lift**

lift designed to be used for the evacuation of persons with difficulty in using stairs, in automatic mode or under the direction of building management, trained evacuation assistant or rescue services

#### **3.4**

##### **evacuation lift switch**

a manual device intended to be used to switch the lift to evacuation service

#### **3.5**

##### **Main Evacuation Exit Floor**

##### **MEEF**

floor determined by the building designer where the evacuation for persons with disabilities is guided to

Note 1 to entry: This may or may not be the main floor of the building.

#### **3.6**

##### **safe area**

##### **refuge**

##### **refuge area**

##### **lobby**

##### **fire protected lobby)**

area, provided with a safe route to the lift and safe exit e.g. stairs, that will remain safe for persons for the duration of evacuation operations and is both separated from a fire by suitable fire resisting construction and kept free from dangerous temperatures and the effects of smoke

[SOURCE: EN 81-72:2015, 3.9, modified]



**3.7****suspend service signal**

signal to suspend the evacuation service

**3.8****person with disabilities**

person who, due to any disability or impaired mobility, is unable to use stairs safely in the event of evacuation

**3.9****evacuation recall signal**

signal to recall the lift to MEEF and maintained during evacuation operation

**4 List of significant hazards****4.1 General**

This clause contains the significant hazards, hazardous situations and events, as far as they are dealt with in this document, identified by risk assessment as significant for this type of lift and which require action to reduce or eliminate risk.

**4.2 Significant hazards**

Significant hazards dealt with in this document are shown in Tables 1 and 2 below.

**Table 1 — List of significant hazards and hazardous situations - Environment**

<b>Significant Hazards and Hazardous situations - Environment</b>		<b>Information in this document</b>
1	Fire/heat/smoke in to a lift well/machinery space/safe area	Introduction a), Introduction b), Introduction c), 5.1, 5.2.7, 5.4.4, B.2.2, B.5
2	Lift not useable long enough for evacuation of persons with disabilities	5.2.3, 5.9.2, B.3
3	Flow of water into the lift well	Introduction f), Introduction j) 10), Scope, 5.2.5, B.4
4	Not having enough or correctly located evacuation lifts to evacuate all persons with disabilities requiring evacuation within adequate time	Introduction e), Introduction h), 5.2.2, 5.1.4, B.2
5	Failure of the power supply	Introduction a), Introduction d), 5.1.5, 5.1.6, 5.1.7, 5.9, 5.10, B.3
6	Inadequate lighting	Introduction h) 11), 5.1.2, 5.1.5, 5.9
7	Interruption of a connection between the lift and the building management system (BMS) or fire detection system	5.3.3, 5.4.3.3.3, 5.4.4
8	Difficulty in finding the safe area	B.2.3

**Table 2 — List of significant hazards and hazardous situations – Evacuation lift**

No	Hazards as listed in EN ISO 12100:2010, Annex B	Requirements and clauses in this document
1	General hazards for lifts	Introduction, 5.2.1
2	Trapping hazard, entrapment	5.2.1, 5.2.4, 5.2.6, 5.4.2 i), 5.9, 5.10, B.3
3	Lift is not used correctly for evacuation	Introduction e), 5.3, 5.4, Annex A
4	Lift is not accessible to persons with disabilities	5.2.1, 5.2.2, 5.4.3
5	Lift not available when needed	Introduction e), Introduction h), 5.2.3, 5.3.5, 7
6	Hazards to maintenance personnel	5.1.8, 5.2.1, 5.3.1
7	Inadequate design, location or identification of manual controls	5.2.1, 5.3, 5.5
8	Inadequate communications during evacuation	5.1.2, 5.1.5, 5.4.3.3.1, 5.5.2, 5.6, 5.9, 7
9	Inadequate marking	5.1.2, 5.2.8, 5.4.2, 5.4.3.1, 5.4.3.2.1, 5.4.3.3.2, 5.4.3.4.2, 5.5, B.2.3

### 4.3 Hazards not addressed

The following significant hazards are not dealt with in this document:

- a) entrapment in waiting area (safe area) due to absence of lift service or adjacent stairs;
- b) structural collapse before the evacuation has been completed using lifts.

## 5 Safety requirements and/or protective measures

### 5.1 Environment/Building requirements

**5.1.1** The evacuation lift shall be located in a well with a safe area in front of every landing door which according to the evacuation plan requires evacuation service. Where no evacuation service is provided, a fire shutter or a fire door can be provided as alternative to the safe area.

**5.1.2** It is the responsibility of national regulations to determine the required levels of fire resistance and other building requirements that shall be addressed for a safe evacuation lift:

- fire resistance of the safe areas in front of the landing doors;
- fire resistance of staircases;
- separation of the well;
- fire resistance of the landing doors;
- fire resistance of the lift well and machinery space walls;

- fire resistance of fire shutters and fire doors;
- connection between lift safe areas and staircase;
- water management (see B.4);
- power supply;
- fire protection of primary and secondary or alternative power supply cables;
- audio and/or visual communication connection;
- smoke detection system in safe areas, staircases, lift well and machinery space;
- smoke control e.g. air pressurization system;
- emergency lighting in safe areas and staircases;
- signage to identify the evacuation lift(s) and safe areas.

**5.1.3** The lift equipment including any machinery, hoses, piping, electrical cables or suspension means shall be within fire protected enclosure(s). The level of fire resistance of the lift well shall also apply to any ducts containing hoses, piping, electrical cable or suspension means between machinery spaces and the lift well. If there are other lifts in the same well, then the entire common well shall fulfil the fire resistance requirements of evacuation lift wells.

The lift main switch, emergency and test panel, machine room and access route from MEEF to those locations shall be fire protected (see also 5.2.8).

It shall be ensured that a malfunction of any lift remaining in operation (e.g. firefighters lift) does not have any adverse influence of the function of the evacuation lift.

**5.1.4** The lift(s) or group of lifts shall serve all floors which according to the evacuation plan require service.

**5.1.5** The power supply of the evacuation lift, the lighting of the car and the safe area in front of the lift and the communication system shall consist of primary and secondary (emergency, standby or alternative) power supplies.

The secondary power supply shall be sufficient to run the evacuation lift at the rated speed and rated load for a period agreed in negotiations, see Introduction, h), item 5).

**5.1.6** The evacuation lift electrical power supply cables and secondary or alternative power supply cables shall be fire protected. The fire protection shall be for at least the maximum planned duration of the evacuation.

**5.1.7** The source of the secondary power supply and automatic switch gear shall be located in a fire protected area.

**5.1.8** In the case of an air pressurized well, the following points shall be considered by those designing the pressurization system:

- air speed into the well is minimized to avoid excessive swaying of travelling cable or compensation means;
- when the lift is in evacuation control, noise levels from the pressurization system are less than 80 dB(A) at positions 0,5 m from the microphones in the car, at every landing which according to the evacuation plan require service, and at the MEEF;
- the pressurization shall not affect the opening and closing of the car and landing doors.

It is assumed that air pressurizing of the well does not cause any negative impacts on normal operation or safe maintenance activities of the lifts.

## **5.2 Fundamental evacuation lift requirements**

**5.2.1** The evacuation lift shall be designed in conformity with prEN 81-20 and provided with additional protection, controls and signals.

**5.2.2** The evacuation lift should be designed in conformity with EN 81-70. In order to be used for evacuation of persons with disabilities, the car size shall be at least EN 81-70 type 2.

**5.2.3** The lift shall be designed to operate correctly during evacuation operations for a period equal to that required for the evacuation plan but at least minimum 30 min. (see Introduction). Electrical/electronic devices required for the operation of the evacuation lift, shall be designed to function correctly in an ambient temperature range of 0 °C to +40 °C.

**5.2.4** Any lift, which is not required to stay in operation in the event of fire alarm, sharing the same well as an evacuation lift should be provided with a fire recall system according to prEN 81-73.

**5.2.5** The evacuation lift well, machinery spaces and safe areas shall not contain sprinklers (see also prEN 81-20:2019, 5.2.1.2.1).

**5.2.6** The evacuation lift should have an emergency trap door with size according to prEN 81-72:2019, 5.4.1.1.

**5.2.7** An evacuation lift shall be provided with a means to suspend evacuation control.

**NOTE** The suspend service signal allows a building management system (BMS) to suspend evacuation control e.g. if smoke or fire is detected in the lift spaces, safe areas etc.

**5.2.8** The locations of the lift main switch, emergency and test panel or machine room and also secondary power supply capacity in minutes should be included in a label at the MEEF.

**5.2.9** When on evacuation control the function of the lift shall not be affected by an electrical malfunction of the landing call control or other parts of the lift control system located outside of the lift well and machinery spaces.

No electrical fault on any other lift located in the same group as the evacuation lift shall affect the operation of the evacuation lift.

**5.2.10** The status of alarm according to EN 81-28:2018+AC:2019, 4.1.5 a) shall be indicated at the MEEF and at any remote evacuation control panel outside of the car.

**5.2.11** The evacuation lift doors shall open only where there is a safe area designated at the selected floor.

**5.2.12** In the case of lifts with more than one car door, no more than one car door shall open at a time during evacuation operation.

### 5.3 Control system requirements

#### 5.3.1 General

Any evacuation operation shall not override any of the following:

- the electric safety devices;
- the suspend service signal;
- the inspection operation (prEN 81-20);
- the emergency electrical operation (prEN 81-20);
- the firefighters lift switch (EN 81-72);
- the signal from the recall means of EN 81-73;
- the behaviour of the lift in seismic mode (EN 81-77);
- the remote alarm system (EN 81-28);
- any maintenance control.

**NOTE** Maintenance control includes, but is not limited to, the opening by the use of a key of any door providing access to the pit, return to normal operation of the lift from pit inspection station, protection for maintenance operations or landing and car door bypass device.

#### 5.3.2 Evacuation control signals, functions and priorities

Evacuation operation control signals, functions and priorities between functions are summarized in the Table 3. At least one of the optional evacuation operations (5.4.3.2, 5.4.3.3, 5.4.3.4) shall be provided.

**Table 3 — Summary of evacuation controls, functions and priorities**

Control name	Function name	Priority	Clause	
The suspend service signal	Suspend service	1 (Highest)	5.4.4	Mandatory
The driver assisted evacuation signal	Driver assisted evacuation operation	2	5.4.3.4	Optional
The remote assisted evacuation operation panel communication	Remote assisted evacuation operation	3	5.4.3.3	Optional
The automatic evacuation signal	Automatic evacuation operation	4	5.4.3.2	Optional
The evacuation recall signal	Evacuation recall (Phase 1)	5 (Lowest)	5.4.2	Mandatory

### 5.3.3 Availability and diagnostics

Interruption of a connection to lift control system shall be treated as in Table 4.

**Table 4 — Signal connection interruption reaction**

<b>Interruption of:</b>	<b>Shall considered as:</b>
The suspend service signal	Signal active
The driver assisted evacuation (evacuation lift switch) signal	Signal active
The remote assisted evacuation operation panel communication for more than 30 s	Panel inactive
The automatic evacuation signal	Signal inactive
The evacuation recall signal	Signal active

## 5.4 Evacuation operation

### 5.4.1 General

The evacuation recall signal may be activated e.g. by BMS or the evacuation lift switch.

The evacuation recall signal shall remain active during evacuation operation to prevent lift return to normal operation in case of any evacuation operation signal malfunction.

### 5.4.2 Evacuation recall (Phase 1)

Upon activation of evacuation recall signal or while terminating any evacuation operation (see also Table 3 and Table 4), the lift shall act as described below:

- a) all registered car and landing calls are cancelled and registration of new calls shall be rendered inoperative;
- b) visual indication such as “Evacuation” shall be illuminated in the car;
- c) door re-open button (prEN 81-20:2019, 5.3.6.3), door close button (where provided), door protective device (prEN 81-20:2019, 5.3.6.2.2.1 b)), door reopening device (prEN 81-20:2019, 5.3.6.2.2.1 d)) and remote alarm system shall remain operative;
- d) a lift parked at a landing, shall close the doors and travel nonstop to the MEEF. An audible signal shall sound in the car until the doors are closed. At the latest when the actual door dwell time exceeds 20 s, all heat and smoke sensitive door protection devices shall be made inactive and the doors shall attempt to close as defined in prEN 81-20:2019, 5.3.6.2.2.1 b) 4);
- e) a lift travelling away from the MEEF level shall make a normal stop latest at the nearest possible landing without opening the doors, make audible speech message such as “evacuation” and reverse its direction and return to the MEEF;
- f) a lift travelling towards the MEEF shall continue its travel non-stop to the MEEF. If the lift has already started stopping at a level, it is acceptable to make a normal stop and without opening doors to continue to the MEEF;
- g) on arriving at the MEEF, the evacuation lift shall open its door and shall make audible and visual indication such as “Exit now”. The audible signal shall be adjustable between 35 and 65 dB(A), initially set at 55 dB(A);

- h) at the latest when the actual door dwell time at the MEEF exceeds 20 s, the car and landing doors shall be closed;
- i) To enable the fire service to check whether the car is present and persons are not trapped (see prEN 81-20:2019, 0.4.2), any landing call at the designated landing shall initiate opening of the doors for maximum 20 s.
- j) After deactivation of evacuation recall signal, when any evacuation operation is not active and when the lift is at the MEEF, the lift shall return to normal operation and visual indication (see 5.4.2 b)) shall be deactivated.

### 5.4.3 Evacuation operation (Phase 2)

#### 5.4.3.1 General

After evacuation recall (5.4.2) is completed and any evacuation operation is activated (see Table 3), the lift shall operate as follows:

- a) registration of landing calls shall be reactivated on those landings intended to be served according evacuation strategy (see Introduction h) 3) and 5.1.1);
- b) when evacuation operation is activated and the lift is capable to serve landing calls, information (e.g. potential free contact) about service capability of the lift shall be available e.g. for BMS;

NOTE This information can be used e.g. for controlling evacuation route indicators.

- c) on given landing, activation of any landing call shall register call to MEEF;
- d) on given landing, the call registration feedback shall be according to EN 81-70;
- e) if lift service is not available, any call registration feedback shall not be given.

Evacuation operation service capability (see 5.4.3.1 b)) shall be visually indicated at the MEEF.

#### 5.4.3.2 Automatic evacuation operation

##### 5.4.3.2.1 General

After procedure described in 5.4.3.1 and when automatic evacuation signal is active, the lift shall operate as described as follows:

- a) In automatic evacuation operation, the lift shall serve registered landing calls;
- b) The priority of the landing calls shall be based on the evacuation strategy. Where no other strategy is defined, priority shall be based on the distance from the MEEF with the furthest landing call getting highest priority;
- c) If the lift has started deceleration to a landing call, any new landing call further away from the MEEF shall be served after serving the ongoing landing call service;
- d) On arrival at a landing, the lift shall open the doors and give a voice announcement to inform persons to enter the car (e.g. message such as "Evacuation. Enter the car");
- e) Once passengers have entered the lift, the doors shall be closed and the lift shall proceed directly to the MEEF;

- f) The lift may serve other landing calls on the way to MEEF (see Introduction, h)). If the lift makes stops on the way to MEEF, there shall be:
  - 1) an audible and visual indication to inform persons not to leave the car (e.g. message such as “No exit”);
  - 2) means (e.g. load or space sensors) to prevent stops without sufficient capacity of the lift;
- g) At the latest when the actual door dwell time exceeds 30 s, all door protective devices shall be made inactive and the doors shall attempt to close as defined in prEN 81-20:2019, 5.3.6.2.2.1 b) 4);
- h) Actuation of the landing call device shall not prevent a loaded car from closing its doors and leaving the floor;
- i) On arriving at the MEEF, the evacuation lift shall open its door and shall make audible and visual indication such as “Exit now”. The audible signal shall be adjustable between 35 and 65 dB(A), initially set at 55 dB(A).

#### **5.4.3.2.2 Deactivation of automatic evacuation operation**

Automatic evacuation operation shall be ceased when lift opens its doors at MEEF and automatic evacuation signal is not active.

#### **5.4.3.3 Remote assisted evacuation**

##### **5.4.3.3.1 General**

Remote assisted evacuation is evacuation under the control of an “evacuation assistant” who controls the lift from remote evacuation operation panel.

Evacuation operation control from outside the lift car or from a remote location is permitted provided there are communication means between the remote location control and the lift car (see 5.6.3). The use of remote assisted evacuation and the communication means shall be selected based on building evacuation strategy and risk analysis.

Activation of remote assisted evacuation operation shall override the automatic evacuation signal (5.4.3.2).

##### **5.4.3.3.2 Remote assisted evacuation operation**

After procedure described in 5.4.3.1 and when remote assisted evacuation operation panel is activated, the lift shall operate as described as follows.

Control of lift is solely from remote evacuation operation panel except alarm and door open buttons of in-car operating panel shall continue operation.

- a) Registered landing calls, car position and car door status shall be indicated at evacuation operating panel;
- b) Destination call from evacuation control panel shall cause the door to close and the car to travel to the destination landing;
- c) If door closing is prevented by door protective device, a separate door close command from remote evacuation operation panel shall bypass the protective device and the doors shall attempt to close as defined in prEN 81-20:2019, 5.3.6.2.2.1 b) 4);



- d) At any time it shall be possible to register a new destination call from the evacuation control panel. The previous call shall be cancelled. The car shall travel in the shortest time to the newly registered landing;
- e) On arrival at any destination, the lift shall automatically open its doors and remain at landing until a new destination call is registered;
- f) On arrival at a landing, the lift shall open the doors and give a voice announcement to inform persons to enter the car (e.g. message such as “Evacuation. Enter the car”);
- g) When arriving at the MEEF, the evacuation lift shall make audible and visual indication such as “Exit now”.

#### **5.4.3.3 Deactivation of remote assisted evacuation**

Remote assisted evacuation operation shall be ceased when remote assisted evacuation operation panel is inactive or the connection between the remote evacuation operation panel and the lift is interrupted (see also Table 3 and Table 4). The lift shall return to the MEEF according to 5.4.2.

#### **5.4.3.4 Driver assisted evacuation**

##### **5.4.3.4.1 General**

Driver Assisted evacuation signal shall override the automatic evacuation signal (5.4.3.2) and remote assisted evacuation operation (5.4.3.3).

Driver assisted evacuation is evacuation under the control of an “evacuation assistant” who controls the lift from car operating panel.

##### **5.4.3.4.2 Driver assisted evacuation operation**

After procedure described in 5.4.3.1 and when driver assisted evacuation signal is active, the lift shall operate as described below.

NOTE Driver assisted evacuation signal could be activated by the evacuation lift switch or by e.g. BMS.

- a) Registered landing calls shall be indicated in the car by blinking car call acceptance light of the given landings or by blinking floor identification on a display;
- b) In case multiple lifts in a group are in evacuation operation, all registered landing calls shall be indicated in each car in the driver assisted evacuation operation. If one of the cars serves the landing call, the landing call shall be disabled from the other car;
- c) All heat and smoke sensitive door protection devices shall be made inactive;
- d) Constant pressure on a car call button or on the door close button shall cause the door to close. Closing shall start only after 1 to 2 s delay. If the button is released before the door is fully closed, the doors shall automatically reopen. When the door is fully closed, the car call can be registered and the car shall start to travel to the destination landing;
- e) If doors are closed by the door close button and car call is not registered within 15 s, the lift shall travel to MEEF and open its doors;
- f) At any time, it shall be possible to register a new call from within the car. The previous car call shall be cancelled. The car shall travel in the shortest time to the newly registered landing;

- g) On arrival at any destination, the lift shall automatically open its doors and remain at landing until a new car call is registered as described in d);
- h) When arriving at the MEEF, the evacuation lift shall make audible and visual indication such as “Exit now”.

#### **5.4.3.4.3 Deactivation of driver assisted evacuation operation**

Driver assisted evacuation operation shall be ceased when driver assisted evacuation signal is not active. The lift shall return to the MEEF according to 5.4.2.

#### **5.4.4 Suspension of evacuation operation**

When any safe area, lift well or machinery space of evacuation lift becomes unsafe e.g. due to smoke or fire, evacuation service shall be suspended by e.g. BMS or fire detection system giving the suspend service signal. Upon receiving the suspend service signal, the lift shall operate as defined in prEN 81-73:2019 subclause 5.3 where the designated landing is to be understood as MEEF.

### **5.5 Car and landing control equipment**

#### **5.5.1 Car controls**

Whilst on driver assisted evacuation operation, control of the evacuation lift shall be by means of buttons or similar devices in the car. These may be buttons used for the normal use of the lift.

#### **5.5.2 Remote evacuation control panel**

The remote evacuation control panels shall have at least the following controls and indications as required in various clauses of this document:

- alarm status (5.2.10);
- registered landing calls (5.4.3.3.2 a));
- car position (5.4.3.3.2 a));
- door status (5.4.3.3.2 a));
- destination call (5.4.3.3.2 b));
- evacuation lift operation mode and service availability;
- the remote connection communication status;
- lift identification.

#### **5.5.3 Landing signals**

The MEEF shall have a car position indicator.

The MEEF shall visually indicate the alarm status (see 5.2.10).

The MEEF shall have a visual indication of the active evacuation operation (see 5.4.3.1 f)).

#### **5.5.4 Evacuation route indicator**

Evacuation lift sign according to Figure 1 may be used as a part of a building exit route indications. Number, location and the size of the exit signs shall meet the national building rules. See 5.4.3.1 b).

The evacuation lift sign can be amended with route indications as shown in B.1.

## 5.5.5 Evacuation lift switch for driver assisted evacuation operation

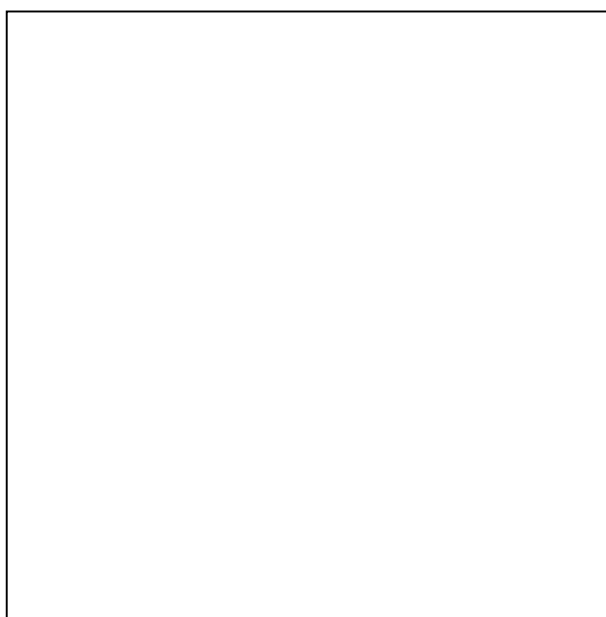
### 5.5.5.1 General

Evacuation lift switch shall be provided with driver assisted evacuation operation.

When provided and if not otherwise agreed (see Introduction h) 9), an evacuation lift switch location and signage shall meet the following requirements.

Evacuation lift switch shall be located in the safe area at the MEEF. The switch shall be located within 2 m horizontally from the evacuation lift, at a height between 1,4 m and 2,0 m above floor level. The switch shall be marked with the safety sign shown in Figure 1 and it shall be clearly indicated to which lift it is associated. The size of the safety sign shall be 100 mm x 100 mm.

When accessible to all, the switch should be protected from misuse or damage e.g. by placing it behind a locked cover. See Introduction and EN 81-71.



**Figure 1 — Safety sign “Evacuation lift for persons with disabilities”**

### 5.5.5.2 Operation of the evacuation lift switch

Operation of the evacuation lift switch shall be by means of the unlocking key, which fits the unlocking triangle as defined in prEN 81-20:2019, 5.3.9.3. The switch shall have at least two positions clearly marked ‘0’ and ‘1’. There shall be clear visual indication on which position the switch is. In position ‘1’, driver assisted evacuation operation is initiated. Other positions are permitted and can be used for other evacuation operations, e.g. recall ‘R’ and/or automatic operation ‘A’.

This key shall be available on the site of the lift installation and accessible only to authorized persons (see also prEN 81-20:2019 0.4.2 a)).

## 5.6 Evacuation service communication system

### 5.6.1 General

The wiring for any evacuation service communication system may be installed within the lift well and/or machine room if provided.

## **5.6.2 Automatic evacuation operation**

Communication system is not required for automatic evacuation operation.

## **5.6.3 Remote assisted evacuation operation communication system**

### **5.6.3.1 Audio communication system**

A remote assisted evacuation lift shall have a communication system for interactive two-way speech communication. This shall allow communication between the remote panel and the evacuation lift car, each lift landing to be evacuated and the MEEF.

The communication equipment in the car and at the landings shall be a built-in microphone and speaker, and not a telephone handset. The communications from the car and the landings to the remote panel shall individually be switched active from the remote panel.

NOTE Landing call indicates evacuation request and the possible need for communication between remote panel and an individual landing.

### **5.6.3.2 Video monitoring system**

A remote assisted evacuation operation shall be supported by a video system. It shall allow monitoring from the remote panel to the car, to any landing to be evacuated and to the MEEF.

## **5.6.4 Driver assisted evacuation operation communication system**

**5.6.4.1** An evacuation lift shall have an intercom system or similar device for interactive two-way speech communication between the evacuation lift car and:

- a) the MEEF. The communication from the car to the MEEF shall be permanently active during any evacuation operation (see 5.4) without pressing a control button;
- b) the evacuation lift machine room or in the case of machine roomless lifts at the emergency and test panel(s). The microphone shall only be made active by pressing a control button on the intercom unit;
- c) optionally, other locations for communication, e.g. central command point. Microphones for other locations shall only be made active by pressing a control button on the intercom unit.

The communication equipment within the lift car and at the MEEF shall be a built-in microphone and speaker, and not a telephone handset.

**5.6.4.2** The communication system may be the same as the communication system required in prEN 81-72.

## **5.7 Vandal prone areas**

Where an evacuation lift is installed in a vandal prone area/building, then the requirements of EN 81-71 shall also apply until evacuation operation (see 5.4) is activated.

## **5.8 Seismic conditions**

If the lift is designed according to EN 81-77, after activation of the seismic detection system the lift shall operate according to EN 81-77 and shall be removed from service.

In EN 81-77 seismic mode a lift in motion shall reduce its speed or stop and proceed to the next possible landing. This is not necessarily the MEEF.

## 5.9 Power supplies for evacuation lifts

The power supply system of the lift, lighting and evacuation communication system shall consist of primary and secondary (emergency, standby or alternative) power supplies. The level of fire protection shall be in line with national regulations or requirements and at least equal to that given to the lift well. See 1.2 and Annex C.

The secondary power supply shall be sufficient to run the evacuation lift at the rated load and rated speed for a period equal to the maximum planned time of the evacuation (see 5.2.3). The car lighting shall be also supplied by secondary power supply. See Introduction and B.2.

Secondary power supply capacity shall be informed in a label in the MEEF (see 5.2.8).

Power supply with fire protected alternative supply cable from the main building intake may be considered as a secondary power supply. See also B.3.

Evacuation lift using such an alternative supply through the building should have an automatic rescue device which, in the event of a power failure, allows the lift car to move automatically to an adjacent landing and open its doors to allow the passengers to escape.

## 5.10 Changeover and interruption of electrical supplies

When the power supply is re-established, the lift shall become available for service within 1 min. If the lift needs to move to establish its position, it shall not move more than one floor and towards the fire service access level and indicate its position.

## 6 Verification of safety measures and/or protective devices

Safety requirements and/or protective measures of Clauses 5 and 7 shall be verified according to Table 5.

**Table 5 — Verification Table**

Sub clause	Visual inspection <sup>a</sup>	Compliance with the lift design <sup>b</sup>	Measurements <sup>c</sup>	Design document check <sup>d</sup>	Functional Test <sup>e</sup>
5.2.1	see prEN 81-20				
5.2.2	see prEN 81-20 and EN 81-70				
5.2.3				X	
5.2.4					X
5.2.5	X				
5.2.6	X	X	X	X	
5.2.7		X		X	
5.2.8				X	
5.2.9		X		X	
5.2.10		X		X	
5.2.11	X	X			X
5.2.12	X	X			X
5.3.1		X			X
5.3.2		X			X

Sub clause	Visual inspection <sup>a</sup>	Compliance with the lift design <sup>b</sup>	Measurements <sup>c</sup>	Design document check <sup>d</sup>	Functional Test <sup>e</sup>
5.3.3		X		X	X
5.4.1		X		X	X
5.4.2.		X	X		X
5.4.3		X	X		X
5.4.4				X	X
5.5.2	X	X		X	X
5.5.3	X				
5.5.5.1	X	X	X	X	-
5.5.5.2	X		X	X	
5.6		X			X
5.7	See EN 81-71				X
5.8	See EN 81-77				X
5.9	X	X	X	X	X
5.10		X	X	X	X
7	X	X		X	

<sup>a</sup> The results of the “visual inspection” are only to show that something is present (a marking, a control panel, an instruction handbook), that the marking required satisfies the requirement and that the content of the documents delivered to the owner is in accordance with the requirements.

<sup>b</sup> The results of the “compliance with the lift design” are to prove that the lift is built according to the design and that the components/devices comply with the design documents.

<sup>c</sup> The result of the measurement is to show that the stated measurable parameters have been met.

<sup>d</sup> The results of the “design document check” are to prove that the design requirements of the document have been matched “on paper” in the design documentation (layout, specification).

<sup>e</sup> The results of the “functional test” are to show that the lift works as intended, including the safety devices.

## 7 Information for use

Instructions shall be passed to the building owner in the instruction handbook (owner documentation) describing the operation of the lift in priority recall and under evacuation control and the need to maintain and to periodically test that the lift and any alarm system or other system used to initiate evacuation service are in working order. It should also be pointed out the importance of proper maintenance being conducted on a suitable regular basis and the need for the maintenance company to test the operation of the evacuation system and its communication system at least every 12 months or in line with national fire requirements if they demand tests that are more frequent.

Table 6 describes the information for use.

**Table 6 — Information for use**

Clause	Information
5.1	Environment/Building requirements (e.g. significant hazards not addressed, secondary power supply, signage)
5.2.8	Need for signage at the MEEF with the location of machinery, emergency and test panel, and the lift main switch.
5.4.2	Operation of the lift in evacuation recall (Phase 1)
5.4.3	Use of the lift under evacuation operation (Phase 2)
5.4.4	Suspension of evacuation service
5.4.2	Reactivation of evacuation service
5.6	Evacuation service communication system (e.g. periodic testing required by owner)
5.9	Power supply for evacuation lifts (e.g. owner's task to organize maintenance and periodic testing)
5.10	Changeover of electrical supplies (e.g. owner's task to organize maintenance and periodic testing)
Annex D	Maintenance requirements including the need to maintain and to periodically test the operation of the evacuation system, secondary power supply and the communication system at least every 12 months or in line with national fire requirements if they demand tests that are more frequent.

## **Annex A** (informative)

### **Concept of the evacuation lift**

#### **A.1 General**

##### **A.1.1 Introduction**

This document describes a lift to be used for the evacuation of persons with disabilities according to one or more of the following operations:

- Automatic evacuation;
- Remote assisted evacuation;
- Driver assisted evacuation;

under the responsibility of the building management. For each of these operations, this annex describes one possible concept for the use of an evacuation lift.

To ensure that the lift is available in the event of an evacuation, the standard is based on the following principles:

- The evacuation strategy and process has been defined consistent with the operation of an evacuation lift as described in this document;
- Building requirements are according to Annex B;
- The use of a firefighters lift for evacuation is not usually appropriate without agreement with the fire and rescue service unless additional firefighters' lifts have been provided for this purpose. Where firefighters' lifts are used for evacuation, they should meet the further requirements in this document;
- Until the evacuation of persons with disabilities is complete, the evacuation strategy and process ensures that the evacuation lift is dedicated to their evacuation;
- The lift and the systems on which it depends are maintained and inspected to ensure its reliability, see Annex D.

##### **A.1.2 General building design**

The effective use of the evacuation lift is based on the evacuation strategy. This is determined by the building designers and building management. See also Annex B. The following responsibilities have been assumed in the building planning phase:

- Depending on the building evacuation strategy envisaged by the building designer, the lift described in this document may or may not be suitable. It needs to be determined by the building designer if this type of lift is suitable for the actual strategy to be employed. It is the responsibility of the building designer to develop the evacuation strategy and define under which limits of use the lift according to this document will achieve the required aims.



- In the event of a fire alarm, lifts other than those intended to stay in operation (firefighters' lifts and evacuation lifts) should operate according to prEN 81-73 to ensure that they are returned to a designated landing and removed from normal service.

NOTE The building management is expected to consider the case of an evacuation other than for fire when it would not be appropriate to use the operation described in prEN 81-73 as the lifts might need to be retained in use.

## **A.2 Automatic evacuation operation**

### **A.2.1 Building design (automatic evacuation operation)**

Building design responsibilities need to ensure that the evacuation strategy is consistent with the automatic operation described in 5.4.3.2 and that such operation is appropriate for the evacuation strategy. Considerations in addition to those in A.1.2 include the following:

- The risks of using the lift in automatic operation i.e. without the intervention of trained evacuation assistants are assessed and addressed;
- The risks of the lifts being used by persons without impaired mobility are assessed and the building design and evacuation strategy ensure that lifts are available for use by persons with impaired mobility;
- The building design and evacuation strategy is consistent with the prioritization of the landing calls (see 5.4.3.2.1);
- At floors closer to the MEEF, longer waiting time would be anticipated.

### **A.2.2 Building management (automatic evacuation operation)**

The safe and effective use of an evacuation lift in automatic evacuation mode depends on a number of building management responsibilities. The following have been assumed:

- Adequate training and induction being carried out for those needing use of the lift for evacuation so that, in the event of an evacuation, those needing to use the lift move to the safe areas;
- To make the best use of the lift in automatic evacuation operation, the evacuation of persons with disabilities should begin at the first alert or fire alarm;
- Measures have been put in place to ensure that use of the evacuation lifts is only by those people with disability/ impaired mobility;
- If an evacuation lift fails to arrive at a landing or access to it at any level is obstructed by the fire, it will be necessary to use a stairway. It may only be necessary to descend to the storey below any fire to await rescue in a safe area. It is, therefore, necessary to determine the best method of negotiating stairs and some practise may be necessary;
- Removal of the lift from evacuation service if the lift environment, safe areas etc. become unsafe;
- Providing information to fire and rescue services on the use of the lifts for evacuation.

## **A.3 Remote assisted evacuation operation**

### **A.3.1 Building design (Remote assisted evacuation operation)**

Building design responsibilities need to ensure that the evacuation strategy is consistent with the remote assisted evacuation operation described in 5.4.3.3 and that such operation is appropriate for the evacuation strategy. Considerations in addition to those in A.1.2 include the following:

- A remote location could be at the MEEF or could be more remote from the lift. The risks arising from the remoteness of the location from the lift are assessed and addressed as part of the building design and evacuation strategy;
- The control and monitoring signals are protected against the effects of fire and are have sufficient integrity;
- Other risks are addressed e.g. cybersecurity;
- The control and monitoring equipment is either fed from a secondary power supply used for the lift or the equipment contain backup supplies.

### **A.3.2 Building management (Remote assisted evacuation operation)**

The effective use of the evacuation lift is based on the building evacuation planning. This is determined by the building management. The following have been assumed:

- Adequate training and induction being carried out for those needing use of the lift for evacuation so that, in the event of an evacuation, those needing to use the lift move to the safe areas;
- The person in charge of the evacuation decides if the lift is to be used for evacuation and passes the information to the person in control of the lift and determines priorities;
- The person in control of the lift should put the lift into evacuation control. This will allow the lift to be operated to evacuate those needing assistance using the communications system and monitoring systems described in 5.6.3;
- Any evacuation assistants should be designated and they should be trained and capable of carrying out the necessary duties quickly and efficiently at all times during which the building is occupied;
- The functions which need to be ensured include the following:
  - a) ensure that any person with difficulty in using stairs moves to the nearest safe area to await the lift;
  - b) help in the evacuation of persons with disabilities to reach the safe area and the lift;
  - c) inform the senior evacuation assistant of the lift of the urgency of the situation on a floor;
  - d) notify the senior evacuation assistant when everyone on a floor has been evacuated;
  - e) one of the evacuation assistants, possibly located close to the location of the emergency and test panel or machinery space, is trained and designated to undertake the rescue procedure if required (see 5.2.8).
- The preparation for evacuation of persons with disabilities should begin at the first alert or fire alarm. This could save time if a general evacuation is not to be given or if the situation becomes serious. In premises where there is a two-stage warning system, this may be on the sounding of the “alert” or “first-stage” alarm;

- If an evacuation lift fails to arrive at a landing or access to it at any level is obstructed by the fire, it will be necessary to use a stairway. It may only be necessary to descend to the storey below any fire to await rescue in a safe area. It is therefore necessary to determine the best method of negotiating stairs and some practise may be necessary;
- The senior evacuation assistant usually ensures that the lift car is driven only to those levels where there are such persons in need of assistance;
- Removal of the lift from evacuation service if the lift environment, safe areas etc. become unsafe.

As soon as the fire and rescue service arrives, they may take management of the evacuation but this should not be assumed as the evacuation of the building is the responsibility of the building management. The person responsible for the evacuation will need to pass information to the fire and rescue services.

Those responsible for evacuation planning need a flexible plan depending on the need for evacuation (e.g. fire or other), different scenarios and the actual conditions as the evacuation progresses. These may necessitate changes to manage different situations such as the planned sequence of evacuation.

## **A.4 Driver assisted evacuation operation**

### **A.4.1 Building design responsibilities**

Building design responsibilities need to ensure that the evacuation strategy is consistent with the driver assisted evacuation operation described in 5.4.3.4 and that such operation is appropriate for the evacuation strategy. The considerations in A.1.2 apply.

Figure A.1 shows an example of driver assisted evacuation operation.

### **A.4.2 Building management responsibilities**

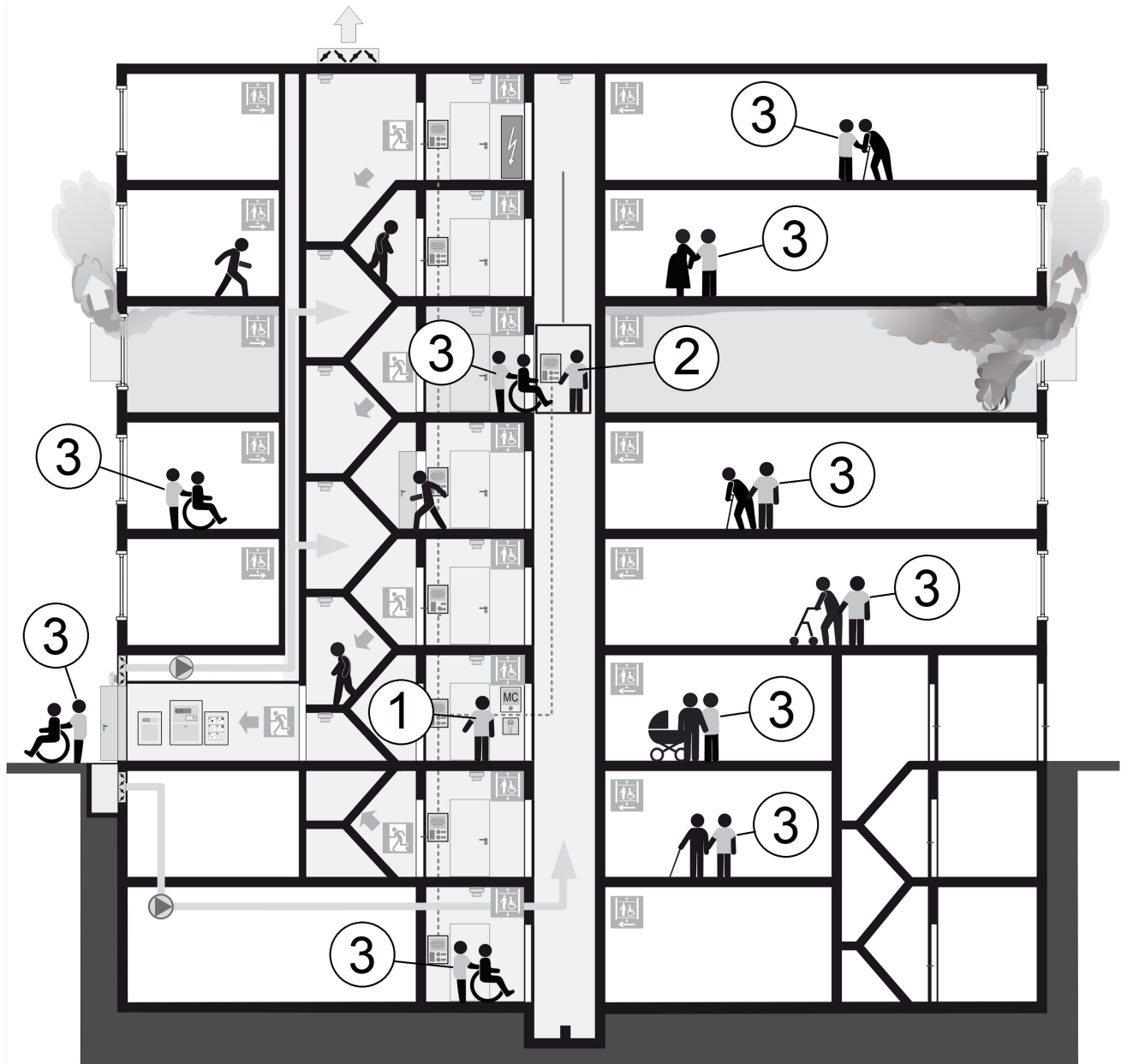
The effective use of the evacuation lift is based on the building evacuation planning. This is determined by the building management. The following have been assumed:

- The person in charge of the evacuation decides if the lift is to be used for evacuation and passes the information to those in control of the lift (senior evacuating assistant), who should determine priorities and instruct any lift driver and evacuation assistant accordingly;
- The person responsible for the evacuation lift (senior evacuation assistant) should tell the evacuation assistants to start work and to put the lift into evacuation control. This will allow the lift to be operated to evacuate those needing assistance. The senior evacuation assistant would typically be located at the MEEF with access to the evacuation lift switch and communication system, and in communication with the evacuation assistant(s);
- Evacuation assistants should be designated and they should be trained and capable of carrying out the necessary duties quickly and efficiently at all times during which the building is occupied. The duties to be undertaken by the evacuation assistant at each floor could include the following:
  - a) ensure that any person with difficulty in using stairs move to the nearest safe area to await the lift;
  - b) help in the evacuation of persons with disabilities to reach the safe area and the lift;
  - c) inform the senior evacuation assistant of the lift of the urgency of the situation on a floor;
  - d) notify the senior evacuation assistant when everyone on a floor has been evacuated;





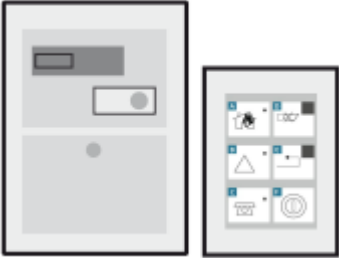





- e) one of the evacuation assistants, possibly located close to the location of the emergency and test panel or machinery space, is trained and designated to undertake the rescue procedure if required (see 5.2.8);
- The preparation for evacuation of persons with disabilities should begin at the first alert or fire alarm. This could save time if a general evacuation is not to be given or if the situation becomes serious. In premises where there is a two-stage warning system, this may be on the sounding of the “alert” or “first-stage” alarm;
- The communications system allows the continuous communication between the senior evacuation assistant and the lift driver, the rapid and unambiguous identification of those floors with persons with disabilities requiring evacuation, and the relaying of this information to the person in charge of the evacuation;
- If an evacuation lift fails to arrive at a landing or access to it at any level is obstructed by the fire, it will be necessary to use a stairway. It may only be necessary to descend to the storey below any fire to await rescue in a safe area. It is therefore necessary to determine the best method of negotiating stairs and some practise may be necessary;
- The senior evacuation assistant usually ensures that the lift car is driven only to those levels where there are such persons in need of assistance.

As soon as the fire and rescue service arrives, they may take management of the evacuation but this should not be assumed as the evacuation of the building is the responsibility of the building management.

Those responsible for evacuation planning need a flexible plan depending on the need for evacuation (e.g. fire or other), different scenarios and the actual conditions as the evacuation progresses. These may necessitate changes to manage different situations such as the planned sequence of evacuation.



Symbols

 <p>Damper</p>	 <p>Smoke detector</p>	 <p>Key switch (lift)</p>
 <p>Control panel</p>	 <p>Control panel</p>	 <p>Controller box</p>
 <p>Ventilator</p>		 <p>Manual control</p>
 <p>Air release</p>		 <p>Intercom</p>

Key

- 1 Senior evacuation assistant
- 2 Drive evacuation assistant
- 3 Floor evacuation assistant

Figure A.1 — Example of an evacuation lift with driver assistant

## **Annex B** (informative)

### **Essential building requirements**

#### **B.1 General**

In order to allow the lift to be used in safety for evacuation, several building design issues have to be satisfied by the building designer (see Introduction, h)).

Although building requirements are outside of the scope of the lift specifications, these different topics are listed here as guidance and some possible solutions are offered. Because the national regulations for design of buildings for fire safety are not yet harmonized, it will be necessary for some topics to be proposed as solutions at the national authorities' level. These authorities should determine the most appropriate solutions depending on the national regulation in force.

#### **B.2 The size and number of lifts dedicated to evacuation and evacuation time**

##### **B.2.1 General**

The size and number of lifts dedicated for evacuation should be determined in accordance with the number of persons with disabilities needing to be evacuated using lifts and taking into account the building use, building evacuation strategy and any national guidance on estimated population.

The number of lifts required will depend on the number of persons with disabilities to be evacuated and the time permitted to complete the evacuation. In the absence of more detailed information, it can be assumed that approximately 10 percent of the population have some form of disability and may be unable to use stairs due to the form and extent of their disability.

The time required to complete the evacuation is strongly related to the number of lifts used for the evacuation. In the case of evacuation due to fire, the evacuation of persons with disabilities should be completed before the fire services have started to fight the fire (e.g. within 15 min). The level of fire protection to the evacuation lift and safe areas needs to be adequate for at least the time required for the evacuation. Where this is lengthy, the evacuation strategy should recognize the increased risks and address these either by increasing the number of lifts available for the evacuation or by increasing the level of fire protection of the evacuation lifts.

For the purpose of evacuation the speed of the lift or lifts intended for the evacuation is less critical than may be thought. The maximum speed is determined by ensuring that if all lifts set aside for evacuation are used, the combination of speed and load will move all persons with disabilities requiring evacuation in the required evacuation time.

##### **B.2.2 Safe area**

A safe area is a designated temporary or permanent place where persons with disabilities can wait in safety for a defined period of time whilst the evacuation process is under way.

It is not a place to leave persons for the duration of the alarm but is to be designed for its additional protection from fire, meaning that it will remain tenable and safe for humans to wait.

The provision of a safe area will permit a staged evacuation to be implemented if required.

In this situation, a safe area is an area that is both separated from the fire by fire-resisting construction, kept clear of smoke and has access via a safe route to the lift and a floor exit.

Examples of satisfactory safe areas include:

- an enclosure such as a compartment, protected lobby, protected corridor or protected stairway;
- any other arrangements which satisfy the general principles outlined above and which provide at least an equal measure of safety;
- The period the safe area is to remain tenable should be in accordance with national regulations. In the absence of such regulations, it should be tenable for a period of at least 30 min.

The size of the safe area should be determined in accordance with the number of persons with disabilities being expected in the building and accommodate any persons who may need to pass through the area during their evacuation.

### B.2.3 Signs and signals

In all horizontal circulation areas, building signs should clearly indicate the location of the safe area for the evacuation lift.

Direction to the evacuation lift should be easily identified by a suitable pictogram, see example Figure B.1.

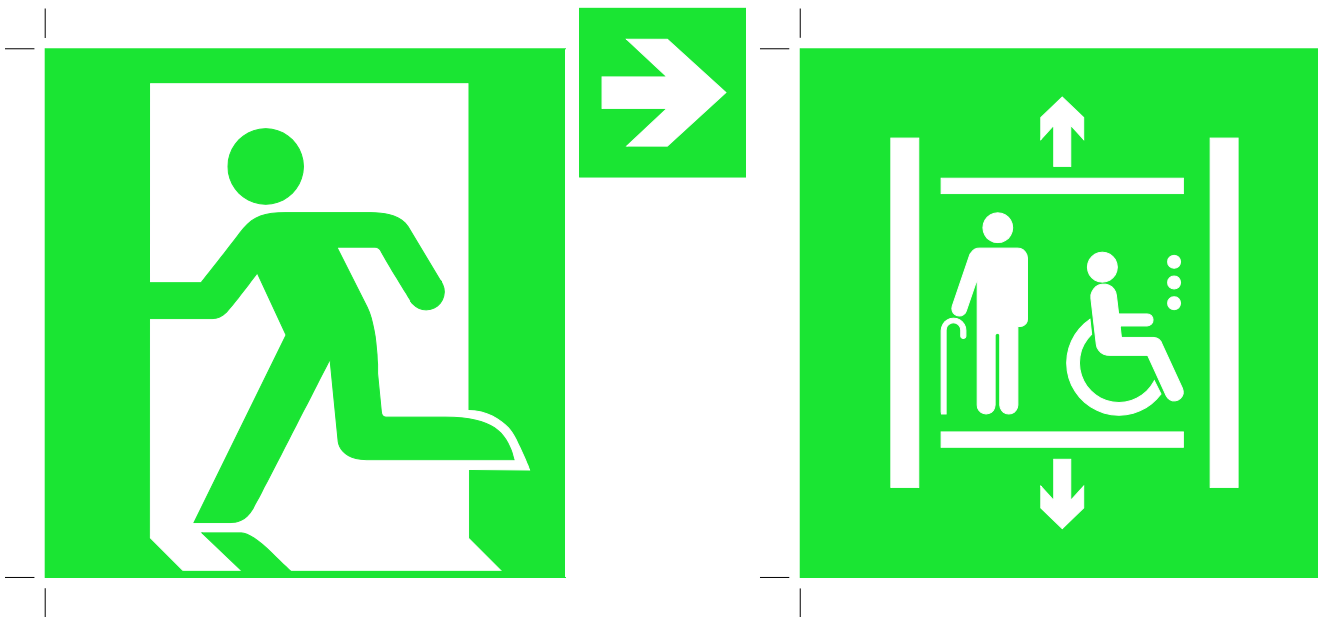


Figure B.1 — Examples of route indications

The size of the pictogram should be in accordance with national regulations or if national regulations require illumination of the sign, the size should be in accordance with EN 1838.

### B.3 Power supplies

The provision of power to the lift is essential to keep the lift operating for the anticipated time required to evacuate all persons with disabilities and to ensure persons do not become trapped in the lift.

The normal supply should be connected in a manner to ensure that it is a maintained supply that will remain available even if sections of the building power are turned off. See 5.9.

Secondary power supply should comply with HD 60364-5-56.



## **B.4 Water management**

In case of risk of water ingress to the lift well during the evacuation process, preventive methods should be taken. See Introduction h) 10). It should be noted that the evacuation lift is not protected against water.

Arrangements should be appropriate to the building. Suitable methods may include:

- the provision of drainage channels in front of every lift landing entrance and drainpipes; and/or
- raising or ramping of the floor in front of every lift landing entrance so that any water entering the safe area will not enter the lift well but will drain away down the stairs and/or into a smoke shaft; and/or in to drains.

These provisions apply to every lift landing door of the evacuation lift well (whether to a safe area or otherwise) and to all landings of lifts which share a common well with an evacuation lift.

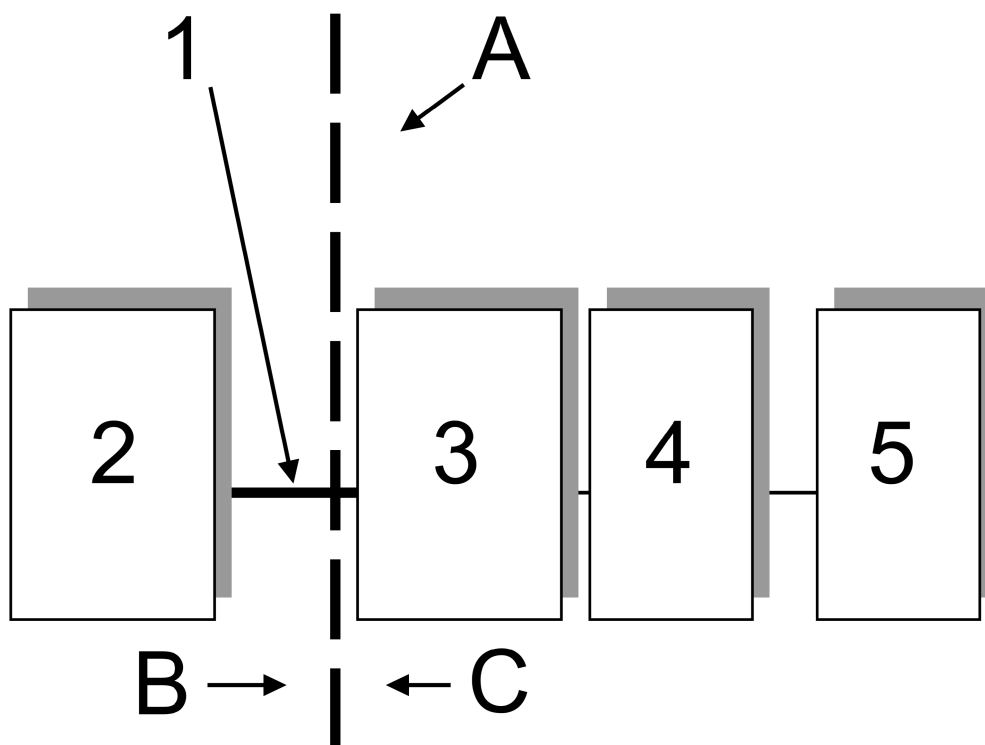
## **B.5 Smoke management**

Measures to address the ingress of smoke into the lift well and safe areas, see Introduction b).

**Annex C**  
(informative)

**Lift interfaces**

Figure C.1 illustrates the interface between any automatic fire detection systems and lift control(s).



**Key**

- A Boundary
- B Building
- C Lift
- 1 Interface wiring
- 2 Output signal(s) from the manual or automatic means
- 3 Lift Control Interface (via terminals)
- 4 Lift Control Systems
- 5 Lifts

**Figure C.1 — Interfaces**

## Annex D (informative)

### Maintenance requirements

In order to ensure the safe and reliable operation of the lift in case of evacuation, it is essential that proper planned maintenance is carried out on a regular basis according to owner documentation (see Clause 7).

Maintenance of an evacuation lift requires a joint effort by the building responsible person for the day to day operation of the building and the lift maintenance contractor.

The responsible person should organize regular checks of the lift to ensure it operates in accordance with the instructions provided by the installer. These checks would normally include:

- operation of the evacuation lift switch or any recall signal to check the lift returns to the MEEF, opens its doors and parks with doors open, does not respond to landing calls, and if the lift is connected to a BMS or fire detection system to ensure that the lift responds to the signals from the BMS (typically weekly);
- simulation of a failure of the primary power supply (typically quarterly) to check changeover to the secondary supply and operation from the secondary supply;
- check that the smoke detection system suspends the evacuation service. See 5.4.4;
- a full test of the evacuation lift operation (typically annually and arranged by the responsible person with the lift maintenance contractor) from the evacuation lift switch and BMS/ detection system, operation from the secondary power supply to check the full evacuation facilities including communication systems. This should check to ensure the lift can be driven to any required floor;
- checks of building related issues including smoke detection devices in lift well and safe areas.

The lift maintenance contractor should make the annual test as requested by the building responsible person and record the correct operation of all aspects of the evacuation lift(s) including communication systems.

The lift maintenance contractor should advise the building responsible person about the following:

- any need to change components or parts of the lift to ensure the availability and reliability of the lift in the event of an evacuation;
- any change in standards relating to lifts in service; particularly to evacuation lifts.

The building responsible person should advise the lift maintenance contractor of any changes between BMS and lift interface or devices to ensure proper function of lift.

## Annex ZA (informative)

### Relationship between this European Standard and the essential requirements of EU Directive 2014/33/EU aimed to be covered

This European Standard has been prepared under a Commission's standardization request "M/549 C(2016) 5884 final" to provide one voluntary means of conforming to essential requirements of Directive 2014/33/EU of the European Parliament and of the Council of 26 February 2014 on the harmonization of the laws of the Member States relating to lifts and safety components for lifts (recast).

Once this standard is cited in the Official Journal of the European Union under that Directive compliance with the normative clauses of this standard given in Table ZA.1 and Table ZA.2 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding essential requirements of that Directive and associated EFTA regulations.

**Table ZA.1 — Correspondence between this European Standard and Annex I of Directive 2014/33/EU**

Essential health and safety requirements of Annex I to Directive 2014/33/EU	Clause(s)/subclause(s) of this EN	Remarks/Notes
1.1	See below Table ZA.2	
1.6.1	5.2.2 Fundamental evacuation lift requirements 5.5 Car and landing control equipment	Control devices
1.6.2	5.5 Car and landing control equipment	Control devices
4.1	5.4.2 d) Evacuation recall (Phase 1)	Door protection against crushing
4.4	5.2.2 Fundamental evacuation lift requirements 5.9.3 Fire protected alternative power supply	Rescue Secondary power supply
4.5	5.6.3 Remote assisted evacuation operation communication system 5.6.4 Driver assisted evacuation operation communication system	Communication system
4.8	5.9 Power supplies for evacuation lifts	Emergency lighting
4.9	5.9 Power supplies for evacuation lifts	Secondary power supply
4.10	5.4 Evacuation operation	Lift used under fire alarm (event of fire)
6.2 a)	Clause 7 Information for use	Instructions for evacuation operation, maintenance

**Table ZA.2 — Correspondence between this European Standard and Annex I of Directive 2006/42/EC**

<b>Essential health and safety requirements of Annex I to Directive 2006/42/EC</b>	<b>Clause(s)/subclause(s) of this EN</b>	<b>Remarks/Notes</b>
1.1.2 a)	5.1 Environment/Building requirements 5.2 Fundamental evacuation lift requirements 5.4.2 d) Evacuation recall (Phase 1)	Addressing risks that may prevent safe operation of a evacuation lifts.
1.1.2 c)	5.7 Vandal prone areas	
1.2.1	5.2.2 Fundamental evacuation lift requirements 5.2.3 Fundamental evacuation lift requirements 5.5 Car and landing control equipment	Safety and reliability of control systems
1.2.2	5.5 Car and landing control equipment	Control devices
1.2.5	5.3.2 Evacuation control signals, functions and priorities 5.4 Evacuation operation 5.6 Evacuation service communication system	Selection of control or operating modes

**WARNING 1** — Presumption of conformity stays valid only as long as a reference to this European Standard is maintained in the list published in the Official Journal of the European Union. Users of this standard should consult frequently the latest list published in the Official Journal of the European Union.

**WARNING 2** — Other Union legislation may be applicable to the product(s) falling within the scope of this standard

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