

## **INFORMATION NOTE**

# **Improvement of the accessibility of existing lifts for persons including persons with disability**

## **Impact of the prEN 81-82:2012 to the components**

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Components Committee – D.Pons/B.Wells

# Impact of prEN 81-82:2012 to the components

## 1. Introduction

This information note has been done from the prEN 81-82.

The norm was published on Februar 2012 and applies from then on.

## 2. Objective

The main objective of prEN 81-82 is to provide rules for the installer on how to implement EN 81-80 (SNEL) section 5.2.1 (which demands improvement of existing lifts to the standard of EN 81-70) where it is not physically or technically possible to meet EN 81-70.

- **EN 81-70:** Safety rules for the construction and installations of lifts - Particular applications for passenger and good passengers lifts - Part 70: **Accessibility to lifts for persons including persons with disability**
- **EN 81-80:** Safety rules for the construction and installation of lifts. Existing lifts. Part 80: **Rules for the improvement of safety of existing passenger and goods passenger lifts.**
- **Point 5.2.1 of EN 81-80:** Where existing lifts are intended to be used also by persons with disabilities the requirements of EN 81-70 shall be considered. The items considered are subject to a risk assessment on a case by case basis.

In order to understand the importance of the previous comments, some extracts from the norm prEN 81-82 are summarized next.

### **Many old lifts installed in all Europe:**

*“More than 5 million lifts are in use today in the EU, and almost 50 % were installed more than 25 years ago. Existing lifts were installed to the safety and accessibility level appropriate at that time. This level is less than today’s state of the art.”*

### **Many people with physical problems have to use these lifts:**

*“There is a growing trend for people to live longer and for disabled people to expect access and design for all. Therefore it is especially important to provide a safe means of vertical transport for all lift users including disabled and elderly persons without assistance.”* Component suppliers will have to research flexible product solutions for the practical problems faced.

### **Scope of prEN 81-82:**

*“prEN 81-82 has been prepared to address these issues. This rule is to help owners, authorities and lift designers/manufacturers to find practical solutions and ways of applying EN 81-70 to existing lifts to improve accessibility and use by persons including persons with disability. Where due to practical reasons EN 81-70 cannot be fully applied, this Technical Specification provides alternative proposals.”* – It provides the building owner with an alternative to modernise the lift to a standard below EN 81-70 because of practical problems.

### 3. Requirements for safe access and use and/or protective measures

The technical specification divides the text in 4 parts as follows:

- Entrances and Door openings
- Car dimensions, equipment in the car
- Control devices and signals
- Stopping/levelling accuracy

#### 3.1 Entrances and Door openings

Relevant points:

- Minimum entrance **clear opening** shall be **800 mm** (If the size of the car is in accordance with Table 1 of EN81-70:2003)  
NOTE: National regulations can require more than 800 mm. Type 2 lifts should be provided with an entrance clear opening of 900 mm, according to ISO 4190-1 (series B) [8], and Type 3 lifts with a clear opening of 1100 mm.
- Car and landing doors shall be installed as **automatic power operated horizontally sliding doors**. It is preferred to reduce the clear opening width from 800 mm to 700 mm if necessary to install automatic power operated horizontally sliding doors.
- prEN 81-82 recommends that if it is not possible to install power operated horizontally sliding doors, then power operated hinged doors are an acceptable solution. For power operated hinged doors the effort needed to prevent the door opening and closing shall not exceed 150 N. The kinetic energy shall not exceed 4 J in each direction.
- Existing **folding car doors** may remain if the accessibility for wheel chair users is not restricted.
- Obstacle-free accessibility on the landing floors is required on all eligible floors.
- When the lift is equipped with automatic power operated doors the **door dwell time** shall be sufficiently **long** (2 – 20 sec.) to facilitate access or the control system shall be equipped with an **adjustable dwell time**. Means to reduce this time shall be installed e.g. by using a door close button in the car. The means of adjustment shall not be accessible to users.
- When the lift is equipped with automatic power operated horizontally sliding doors it shall at least also be equipped with a **protection device** preventing physical contact. The protective device may cover the opening over a distance between at least **25 mm** and **1800 mm** above the car door sill.
- Where it is not possible to install a device due to interference between the device and door coupler and/or locks a protective device which offers cover over a distance between at least **25 mm** and **1600 mm** above the car door sill may be used as an alternative prEN 81-82.

#### 3.2 Car dimensions, equipment in the car

## Car dimensions:

Normally inside dimension of cars with a single entrance or with two opposite entrances shall be chosen in accordance with Table 1, these are the ideal dimensions for new buildings.

Where there are existing lifts of a smaller dimension, a change to the car size is not necessary providing this is acceptable to the expected users of the building, risk assessment is recommended.

The dimensions of the well dictate dimensions of the car (ISO 4190).

**Table 1 — Minimum car dimensions for cars with a single entrance or two opposite entrances**

Type of lift	Minimum car dimensions <sup>a</sup>	Accessibility level	Remarks
1	450 kg Car width : 1 000 mm Car depth : 1 250 mm	This car accommodates one wheelchair user.	Type 1 ensures accessibility to persons using a manual wheelchair described in EN 12183 or electrically powered wheelchair of class A described in EN 12184.
2	630 kg Car width : 1 100 mm Car depth : 1 400 mm	This car accommodates one wheelchair user and an accompanying person.	Type 2 ensures accessibility to persons using a manual wheelchair described in EN 12183 or an electrically powered wheelchair of class A or B described in EN 12184. Class B wheelchairs are intended for some indoor environments and capable of navigating some outdoor obstacles.
3	1 275 kg Car width : 2 000 mm Car depth : 1 400 mm	This car accommodates one wheelchair user and several other users. It also allows a wheelchair to be rotated in the car.	Type 3 ensures accessibility to persons using a manual wheelchair described in EN 12183 or an electrically powered wheelchair of class A, B or C described in EN 12184. Class C wheelchairs are not necessarily intended for indoor use but are capable of travelling over longer distances and navigating outdoor obstacles. Type 3 provides sufficient turning space for persons using wheelchairs of class A or B and walking aids (walking frames, rollators etc.).
<sup>a</sup> Car width is the horizontal distance between the inner surface of the structural walls, measured parallel to the front entrance. Car depth is the horizontal distance between the inner surface of the structural walls, measured perpendicular to the width.			

## Equipment in the car:

- Handrails shall be in compliance with EN 81-70.
- If placing the handrail on the side reduces the entrance width and prevents wheel chair user's access, it shall be placed on the rear wall.
- Tip-up seats where provided shall be in compliance with EN 81-70.

## 3.3 Control devices and signals

Relevant points:

- Push button system shall accomplish several requirements according to EN 81-70:2003 in terms of surface, colours, position of the symbols, minimum height, distance between buttons, sounds...
- Where a push button system is used it shall comply as follows:
  - Landing push buttons identified by the symbols: -2, -1, 0, 1, 2...
  - Alarm push button: yellow with the symbol of a bell
  - Re-open door push button identified by the symbol  $\triangleleft|\triangleright$
  - Closing door push button identified by the symbol  $\triangleright|\triangleleft$
- If the push button is modernised, it should fulfil all the requirements
- The car control panel shall be located on the wall as described in EN81-70:2003, 5.4.2.3.

### 3.4 Normal stopping of the car at landings and levelling accuracy

The stopping and levelling accuracy shall comply with EN 81-70:2003, 5.3.3 which means:

- The stopping accuracy of the car shall be  $\pm 10$  mm
- A levelling accuracy of  $\pm 20$  mm shall be maintained. If, during e.g. loading and unloading phases, the value of 20 mm is exceeded, it shall be corrected.

#### Comment:

- *For traction drive lifts electrical drive systems (e.g. gearless drive with frequency inverter) for better stopping/levelling accuracy have proved. For hydraulic lifts pump units with inverter would be a solution.*

## 4. Guideline to improve accessibility

Annexed to the technical specification there is a guideline to make the implementation of the commented improvements easier. As it is logical, *In deciding the best course of action to remove the physical barriers facing disabled persons when accessing and using lifts many factors need to be considered.*"

*"Combining the type of disability with the effectiveness of improvements enables to introduce a quantification of added value to all persons, including persons with disability, using the lift. The effectiveness levels used are:*

- 1 *some benefit to all;*
- 2 *benefit;*
- 3 *important;*
- 4 *vital.*

*This quantification is used in Table A.1 (reduced accessibility matrix), to demonstrate the effectiveness of the different improvements in relation to the type of disabilities (see EN 81-70:2003, Table B.1)."*

Nr.	Type of	Impaired mobility, wheelchair, walking frame and rollator	Impaired mobility, walking stick and crutches	Impaired endurance, equilibrium	Impaired dexterity	Impaired vision	Impaired hearing	Impaired speech	Learning difficulty
	Items to be checked								
1	Minimum door opening of 800 mm (nominal)	4	3	3	2	3	1	1	1
2	Car and landing doors are horizontal sliding and power operated.	4	3	3	3	3	1	1	2
4	Adjustable/sufficient door dwell time	4	4	4	3	4	1	1	2
5	Re-opening device without physical contact	4	4	4	2	4	1	1	1
6	Car size appropriate for the use of wheelchairs (type 1,2 or 3)	4	1	1	1	1	1	1	1
7.1	Handrail on one side wall	1	4	4	2	2	1	1	1
7.2	Handrail of correct dimensions	1	2	2	2	2	1	1	1
7.4	Handrail ends closed and turn in towards the car walls	2	2	1	1	2	1	1	1
10	Maximum out of level of the lift $\pm 20$ mm	4	3	2	2	4	1	1	1
15.1	Floor buttons identified by symbols -2, -1, 0, 1, 2, 3, 4 etc.	1	1	1	1	1	1	1	3
15.2	Alarm button identified by a yellow bell shaped symbol	1	1	1	1	1	1	1	2
15.3	Door re-open button fitted and identified by <>	2	2	2	2	2	2	2	3
15.4	Door close button fitted and identified by ><	2	2	2	2	2	2	2	2

Table A.1 reduced

## 5. Conclusions and Impact to lifts and their components

- The prEN 81-82 extends the requirements of EN81-80 in terms of point 5.2 (Accessibility) taking into account the requirements of EN81-70.
- It is especially important to provide a safe means of vertical transport for all lift users including disabled and elderly persons without assistance. There is an important amount of people in all Europe owning to these groups.
- Before putting a lift back into service after modifications it shall be subject to examinations and tests in accordance with EN 81-70:2003, Clause 6. These examinations can be visual inspections, measuring, function check, or design check.
- Relevant documentation shall be provided for those components which are changed and completed according to Clause 5 of this Technical Specification. (According to the Requirements for safe access and use and/or protective measures).