European
Lift Association

Safety of Existing Lifts

Introduction to the SNEL application (EN 81-80)

SNEL

EN 81-80:2019

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September 2020

European Lift Association

The following description of the gap in safety of existing lifts in Europe, installed before the introduction of the Lifts Directive 2014/33/EU and standards EN 81-20/50, is complimented by the ELA documents, available upon demand:

- the WHITE PAPER on SNEL
- the ISO Signs & Pictograms brochure (2008)
- the present brochure.

For more information, please contact ELA, at www.ela-aisbl.org

Contents

Introduction

Lifts are a Safe Means of transportation, but...

YES, lifts are very safe...
Still, accidents happen!

Existing lifts, which were installed before the introduction of European Lift Directives (2014/33/EU), can be dangerous in certain situations. The experts of the lift industry have compiled a list of 85 risks that can exist on old lifts. Some of these risks are very serious. They can lead to fatal accidents and should urgently be removed.

The difficulty is that the European Lift Directives in general, are not retrospective and only impose to future demands. More than six million lifts are in use today in Europe. Only approximately 0.75 million lifts has been installed in Europe since the application of the new directive and 5.25 million lifts which were installed before 2014, for those the national legislation of each Member State is to be applied. Each national legislation should be up-dated and improved, to impose a retrofit of the existing lifts that need a safety upgrade. This safety upgrade is very different from lift to lift, depending of its age. It varies depending on the legislation and standards applicable on the day of installation. The cost varies accordingly.

In many countries, more than 50% of existing lifts are older than 25 years, and only few of them have been modernized to meet current requirements and the state of the art in safety and performance. Unfortunately, accidents, even fatal accidents still happen every year. The lift industry is aiming at making the lift ride absolutely safe and for everyone the "No Compromise on Safety" philosophy, is the base. The lift may not fail «sometimes». It should never fail. The user gives his/her own life to the lift and does not expect to encounter any problems. And so, it should be.

Ageing lifts can be made safer, more energy-effective, more reliable and comfortable through regular maintenance and through improvements, e.g. modernizations and technical updates.

This document is a revision of information materials produced in the spring of 2013. It is a milestone in the long process that, through best practices exemplified further in this document, will strengthen the focus on the safety level on existing lifts. Primarily focusing on lifts that do not carry the CE marking, in other words lifts that were not installed in the era of the European Lift Directives, but dated from before the turn of the century, earlier than 1999.

In 2003, the European Committee of Standardization (CEN) has added to its well-known European Standard for new lifts, EN 81-1/2, the key standard for the safety of existing lifts, EN 81-80:2003 – the so-called "SNEL". This standard was the result of several years' work by committed safety experts from the lift industry, government authorities, third party inspection bodies, consumers' organizations and insurance companies. Since then, the main lift norm EN 81-1/2 is being replaced by the new norm EN 81-20/50, but the on-going process keeps its references for existing lifts to EN 81-80. This creates the need to upgrade the EN 81-80:2003 standard as well. The new EN 81-80:2019 version reduces the safety gaps of existing lifts and brings closer their safety level, which EN 81-20/50 defines for new lifts put on market.

EN 81-80:2019, 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, categorizes various hazards and hazardous situations, each of which has been analyzed by a risk assessment. It then provides a list of corrective actions to improve safety progressively.

According to EN 81-80:2003 standard the lift should be audited against a checklist of 74 risks, the revised standard – EN 81-80:2019, has 85 risks, some even covering lifts which were put on the market according to EN 81-1/2 or the Lifts Directive 95/16/EC thus having CE-marking.

The identification of a risk or hazardous situation can be carried out in the course of any periodical survey or special examination on a given installation, by technically competent and sufficiently trained persons. This can be subject to national legislations or regulations.

Once the risks of the installation have been identified through this pro-active assessment or safety audit, improvements can be made (if necessary) by a step by step upgrading which can naturally be combined with any modernization being carried out. In addition, preventive maintenance and repairs are still a necessary ongoing process.

The best way forward was for experts or parties to assess all existing risks on lifts, whatever their type or age. The experts listed 74 of them with varying degrees of urgency and defined the best way to suppress the risks. The European norm is called EN 81-80, the Safety Norm for Existing Lifts (SNEL).

It is original in its concept, since it asks each national authority in charge to check their national legislation and identify the missing elements of legislation to cover the risks to users and to lift technicians. This “filtering process” has been successfully applied in countries such as France, Spain, Austria, Belgium, Germany, Norway and governments have taken the necessary decisions: laws and application decrees, royal decrees, regulations or plain recommendations: the chosen path varies from country to country but if all apply EN 81-80, Europe will obtain a de facto harmonization of its legislation for existing lifts and dramatically improve the safety of the 5 million lifts in use in Europe. The result is very clear in France for example, fatal accidents have been mostly eradicated and the number of accidents divided by 3.

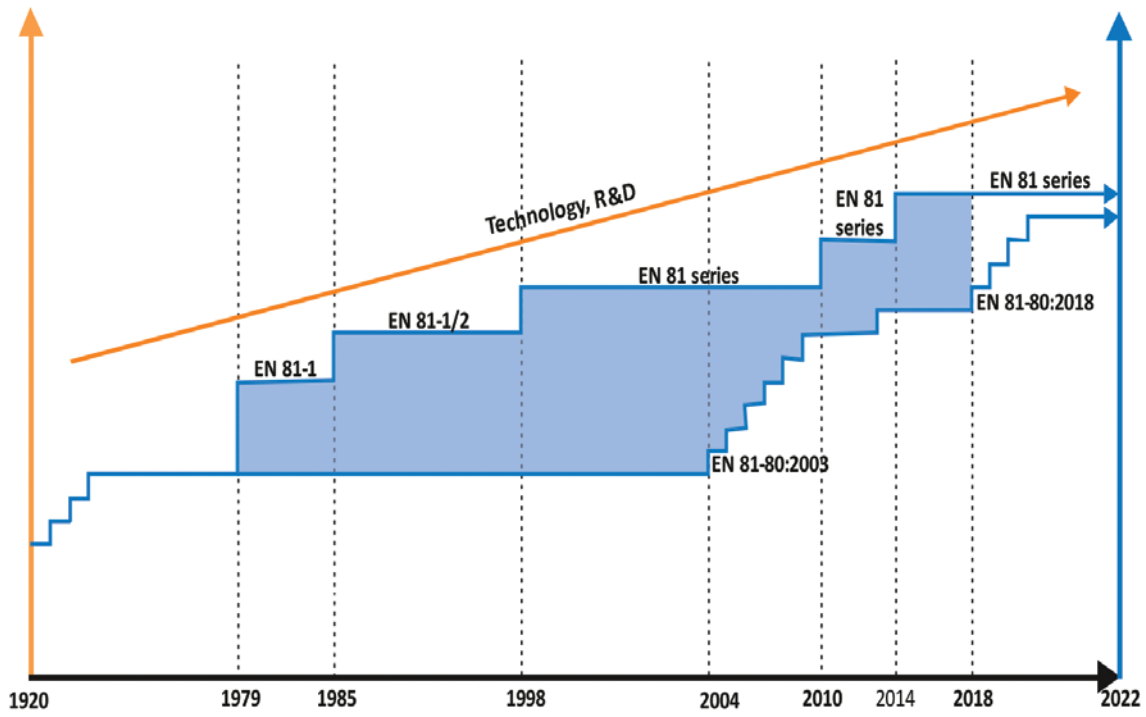
Asian and North American countries are very much interested in the European standard EN 81-80, they have asked the international standardisation system, ISO, to start work on a similar standard for the world.

Unfortunately, many European countries have not legislated and not even started the filtering required by EN 81-80. There is no obligation to proceed of course, and that is why the lift industry is producing this brochure, to show the importance of adopting SNEL at national level, to eradicate most risks on existing lifts. What we can do is encourage owners, builders, political and technical deciders, to move in the right direction and to apply SNEL over a reasonable period of time if they haven’t yet. Most of the fatal accidents which took place on lifts in the last decade in Europe could have been avoided if SNEL had been implemented everywhere in time!

In the XXIst century, it is essential that Europe closes the safety gap, and makes its built environment equally SAFE for vertical transportation...

The ELA editorial team

Step by step approach of safety for lifts in Europe



The introduction of SNEL in many European countries, makes it that the safety of existing lifts (bottom line) "catches up" progressively with the safety of new lifts, which is very well covered by the Lift Directives and the introduction of EN81-20/50 norms.

Here follow some situations which can kill people every year in Europe, on lifts installed before 2014, and which have not been upgraded following SNEL (EN 81-80). ELA strongly recommends to Member States to act responsibly and making existing lifts safe according to the state of the art.

Each drawing represents the accident or the dangerous situation for the lift user or the mechanic working on it, and the situation, after the lift is upgraded and the safety situation solved. The risk (or risks) number(s) in the EN 81-80 standard are indicated accordingly, with a short definition.
The sequence of hazardous situation refers to the frequency and severity of the accidents.

List of SNEL risks

EN81-80:2019	EN81-80:2003	Description of risks	Who is threatened
1.1	2.	No or limited accessibility for disabled persons	Users
1.2	4.	Vandal resistance	Users
1.3	Not covered	Firefighters lift	Users
1.4	5.	Behavior of the lift in the event of fire	Users
1.5	Not covered	Earthquake resistance if at least the building is earthquake resistant	Users
1.6	1.	Installation without harmful material e. g. asbestos in brake linings, contactor shields, cladding of the well, landing doors, cladding of machine room, car floor etc.	Users/Workers
2.1	8.	Locking devices on access, emergency and inspection doors to well and pit	Users/Workers
2.2	8.	Car stops when access, emergency and inspection doors to well or pit are open	Users/Workers
2.3	6.	Well partially enclosed walls	Users
2.4	33.	Non accessibility of landing door locking device in case of well enclosures with perforate walls by unauthorized persons to prevent deliberate misuse (e.g. reaching through a mesh well)	Users/Workers
2.5	7.	Partial well enclosure	Users/Workers
2.6	9.	Height of vertical surface below landing door sills	Users/Workers
2.7	10.	Protection of any accessible spaces below the well, where no solid pier extending down to solid ground is existing	All
2.8	11.	Counterweight or balancing weight screen to prevent access to area below counterweight or balancig weight	Workers
2.9	12.	Partition in the pit for lifts in a common well to avoid access to adjacent lift	Workers
2.10	13.	Partition between moving parts of lifts located in a common well	Workers
2.11	14.	Refuge spaces and clearances in the headroom	Workers
2.12	14.	Refuge spaces and clearances in the pit	Workers
2.13	15.	Means to enter the pit	Workers
2.14	17.	Lighting of the well	Workers
2.15	16.	Stopping device in pit	Workers

EN81-80:2019	EN81-80:2003	Description of risks	Who is threatened
2.16	18.	Alarm initiation device in pit and on car roof	Workers
2.17	58.	Horizontal distance between the inner surface of the well and the sill, door frame of the car or closing edge of car sliding doors	Users
2.18	59.	Horizontal distance between closed car and landing door	Users
2.19	Not covered	Distance between leading edges of car and landing door	Users
3.1	19.	Acces to machinery spaces and pulley rooms	Workers
3.2	23.	Lighting in the machinery spaces and in pulley rooms	Workers
3.3	16.	Stopping devices in pulley rooms	Workers
3.4	24.	Suspension points for handling of equipment where necessary in the machinery spaces and at the top of the well	Workers
3.5	20.	Non-slip floor of machinery spaces and pulley rooms	Workers
3.6	21.	Horizontal and vertical clearances in machinery spaces for safe working on the equipment	Workers
3.7	22.	Levels and recesses in the machine room	Workers
3.8	72.	Intercom system between car and the location of the emergency operation	Users
4.1	25.	Imperforate landing doors	Users
4.2	25.	Imperforate car doors	Users
4.3	26.	Strength of landing doors	Users
4.4	Not covered	Strength of car doors	Users
4.5	27.	Glass in landing doors other than vision panels	Users
4.6	27.	Glass in car doors other than vision panels	Users
4.7	27.	Glass vision panel in landing doors	Users
4.8	27.	Glass vision panel in car doors	Users
4.9	30b.	Protective device (e.g. light curtain)to initiate re-opening of power operated car and landing doors if a person is crossing the entrance during the closing movement.	Users
4.10	30a.	Protective device (150 N to limit the effort needed to prevent the door from closing of automatic power operated sliding doors	Users
4.11	Not covered	Protective device (150 N to limit the effort needed to prevent the door from closing of automatic power operated doors, other than sliding doors	Users
4.12	28.	Means against dragging of children hands in horizontally sliding landing or car doors with glass	Users
4.13	29.	Lighting of the landing in the vicinity of the landing doors	Users

EN81-80:2019	EN81-80:2003	Description of risks	Who is threatened
4.14	31.	Landing door locking devices	Users
4.15	32.	Emergency unlocking of landing doors with special device only (e.g. triangular key)	
4.16	34.	Self closing and locking of landing door after opening for whatever reason when the car is outside the unlocking zone	Users
4.17	35.	Sliding landing doors with multiple panels (direct mechanical linkage or electrical checking of closed position by electric device)	Users
4.18	36.	Fire resistance of landing doors	All
4.19	37.	Power operated horizontal sliding door operates after hinged landing door is closed	Users
4.20	40.	Presence of car door(s)	Users
4.21	Not covered	Car door restrictor where the landing door locking device is accessible when the car door is opened outside the door zone	Users
5.1	38.	Ratio of car floor area to rated load	Users
5.2	39.	Car apron to avoid people falling in the well	Users/Workers
5.3	41.	Locking of emergency trap door on the car	Users
5.4	42.	Strength of car roof and emergency trap door	Workers
5.5	43.	Protection against falling from car roof	Workers
5.6	44.	Ventillation of the car	Users
5.7	45.	Normal lighting in the car	Users
5.8	46.	Emergency lighting in the car	Users
5.9	Not covered	Emergency lighting on car roof	Workers
5.10	73.	Load control to avoid the car starting if overloaded	Users
5.11	71.	Remote alarm system allowing two-way voice communication	Users
6.1	47.	Protection against injury from traction sheaves, pulleys or sprockets	Workers
6.2	48.	Protection against ropes / chains leaving the sheaves, pulleys or sprockets	Workers
6.3	49.	Protection against the introduction of objects between ropes / chain and sheaves, pulleys or sprockets	Workers
6.4	50. és 54.	Protection against free fall, and descent with exessive speed	Users
6.5	52.	Protection means against ascending car overspeed on traction drive lifts with counterweight	Users
6.6	53.	Protection means against unintended car movement with not closed doors	Users
6.7	54.	Protection against creeping on hydraulic lifts (or presence of clamping device)	Users
6.8	51.	Slack rope switch for overspeed governor rope	Users

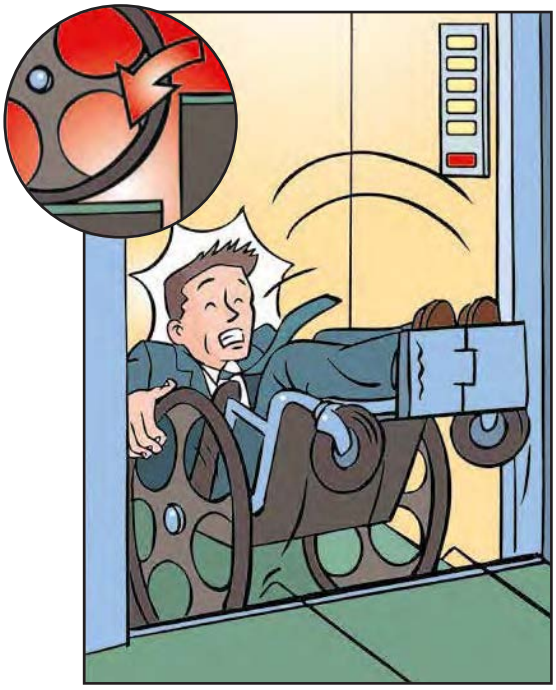
EN81-80:2019	EN81-80:2003	Description of risks	Who is threatened
6.9	63.	Slack ropes / chain detection device	Users
7.1	55.	Guiding of counterweight or balancing weight	Users
7.2	56.	Car and counterweight buffers	Users
7.3	57.	Final limit switches	Users
8.1	Not covered	At least two independent brake sets	Users
8.2	60.	Emergency operation system	Users
8.3	62.	Means for stopping the machine and checking its stopped position	Users
8.4	64.	Motor run time limiter	Users
8.5	61.	Shut off valve (hydraulic lifts)	Users
8.6	65.	Low cylinder pressure on indirect acting hydraulic lifts and direct acting hydraulic liftswhere the jack is not rigidly fastened to the car	Users
9.1	66.	Protection against electric shock (direct contact)	Workers
9.2	66.	Marking of connection terminals which remain live after switching off the main switch	Workers
9.3	67.	Protection against overheating of the lift machine motor	Users
9.4	68	Lockable main switch	Workers
9.4	Not covered	Stopping device at the machine in the machinery spaces	Workers
10.1	Not covered	Earth fault protection in circuits with electric safety devices and in circuits controlling the brake or down valve	Users/Workers
10.2	69.	Power phase reversal	Users/Workers
10.3	3.	Levelling and stopping accuracy of the car	Users
10.4	70.	Inspection control and stopping device on the car roof	Workers
10.5	Not covered	Inspection control station in the pit	Workers
11.1	74.	Information on safe use and maintenance of lift	Users/Workers

Drive system with bad stopping / levelling accuracy

Relevant clauses in EN 81-20- **5.12.1.1.4**

Risk(s)

10.3



Description of the risk

Bad levelling accuracy (a step between car and landing door) can make people trip and fall or worse, bang their head on the wall of the lobby or inside the lift. In case of a wheelchair user, getting into the lift, back first, this risk can kill by breaking the neck or the skull of the disabled person.

Risk reduction measures

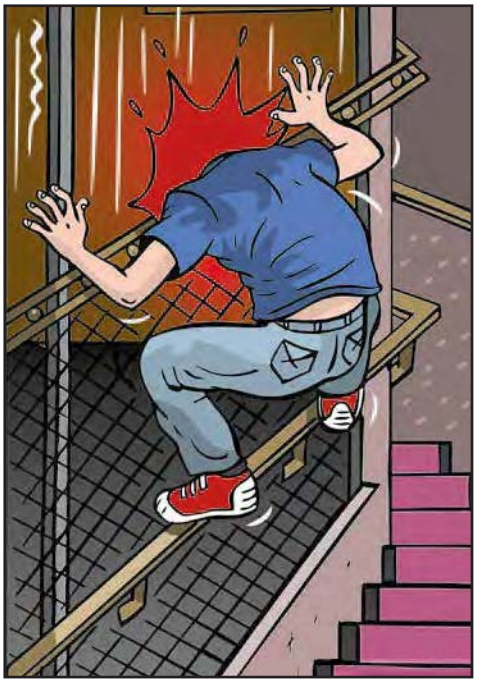
New controllers, regulated drive-systems and re- levelling devices, make sure that the lift self-corrects and is always at the right level. The stopping accuracy of the car shall be +/- 10 mm, a levelling accuracy of +/- 20 mm shall be maintained. If, during e.g. loading and unloading phases, the value of 20 mm is exceeded, it shall be corrected.

Risk(s)

2.3

Well partially enclosed walls

Relevant clauses in EN 81-20, **5.2.5.2.2.1** or
EN 81-21:2018, **5.2**



Description of the risk

Objects, limbs or body parts are passed into the well, causing shearing and crushing of limbs, or even death. Lifts installed in a large staircase, where the stairs climb round the lift need to have full enclosures and no possibility for humans to put part of their body inside the shaft. Very silent lifts coming down at that moment can decapitate a person who would be looking down or calling down.

Risk reduction measures

The solution is a full enclosure, that can be done in the same wrought iron or wood material for exam- ple, but also plexy-glass or glass, making sure no animal (cat) or human can put its life at risk.

Unsafe locking device of landing door

Relevant clauses in EN 81-20, **5.3.9.1**

Risk(s)

4.14

Description of the risk

The landing door (swing door) is closed but not properly locked, the person is opening the door. no car is standing behind the door, the person falls down the well and is seriously hurt or killed.

Risk reduction measures

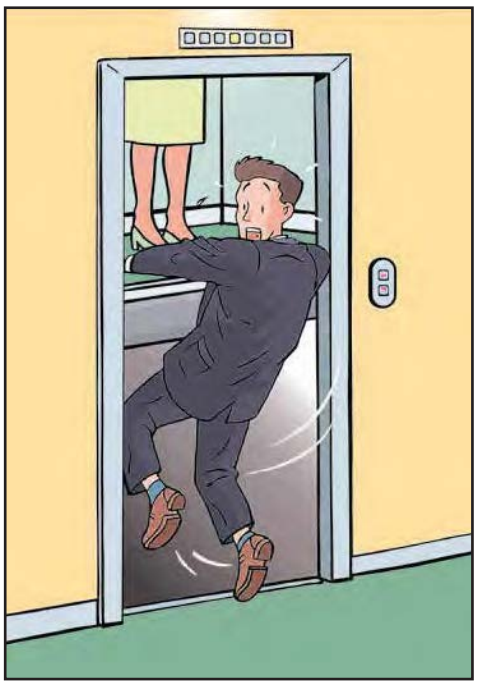
The best way to prevent this type of accident is to install an adequate locking device on each landing door at every floor.

Risk(s)

5.2

Inadequate length of car apron

Relevant clauses in EN 81-20, **5.4.5**, or
EN 81-21:2018, **5.8**



Description of the risk

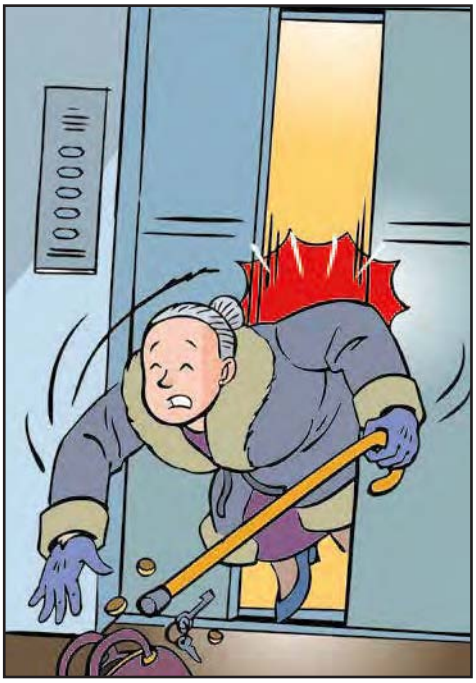
Rescuing trapped persons when a car is stopped above the landing. The person can fall down the well.

Risk reduction measures

An apron is positioned under the car. In case of stoppage of the car between 2 floors, if the passen- gers try to escape, climbing down on the landing, it often happens that they actually lose balance at the last second and fall in the shaft if the car apron is not long enough. The height of the verti- cal portion of the apron shall be at least 0,75 m.

No or inadequate protective devices on power operated doors

Relevant clauses in EN 81-20, **5.3.6.2.2.1 b)**



Description of the risk

The person is passing through the doors when the doors start closing. The automatic doors close fast and hard, hitting the full body length of the person entering or leaving the car. Fragile, old and disabled persons can have limbs or the hip broken by the shock or by the subsequent fall.

Risk reduction measures

Power operated doors must have an adequate pro- tective closing device, detecting the presence of a body in the way and reopening after at most a light touch. For this purpose, sensitive light screens are to be installed.

Risk(s)

5.1

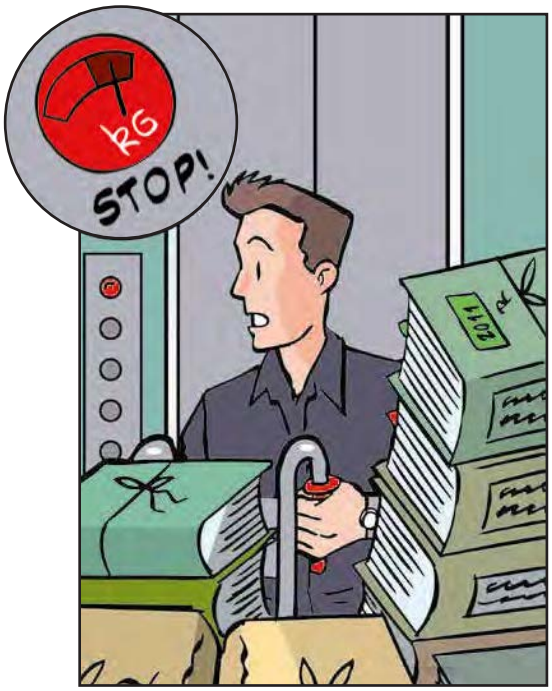
Large car area in relation to rated car load

Relevant clauses in EN 81-20, **5.4.2**

Description of the risk

The lift is not used as intended, the car is overloaded with persons and/or load. The car slips away from the landing. Persons are sheared and crushed. Serious injuries.

It occurs often that a user tries to put too much and too high a weight in a lift (pallet of paper, photocopying machine, furniture...) and falls to his death if the lift is not equipped with a load limiter and a brake strongly keeping the lift from travel- ling. Hospital very large (old) lifts, made to trans- port beds and stretchers, should never be overloaded. They could very well be overloaded by a large group of persons entering the lift carelessly.



Risk reduction measures

To prevent an overloading of the car by persons, the available area of the car shall be limited. Furthermore a lift shall be fitted with a device to prevent normal starting, including re-levelling, in the event of overload in the car.

Car without doors

Relevant clauses in EN 81-20, **5.3.6.2.2.1** or
EN 81-20, **5.3.6.2.2.2**

Risk(s)

4.20

Description of the risk

Goods in the car hit the sill or recesses on the wall and tip suddenly. A child enters the gap between the car sill and the wall. Users are crushed, suffer serious injury or death.

The absence of car doors makes it that the wall landing doors fly past at high speed. One should never touch the moving surface. It often happens that in the absence of a car door, a person transporting a large object, such as a big bin, is brusquely crushed against the back wall of the lift car. If the lift stops in that position, the person will not be able to reach the buttons if he/she is still conscious. He/ she dies rapidly. Such accidents happen every year in countries where car doors are not compulsory.

Risk reduction measures

Lifts must be equipped with car doors, protecting the users from contact with a moving surface.

Risk(s)

5.8

5.9

No or inadequate emergency light in car and on car roof

Relevant clauses in EN 81-20: **5.8.8.2**
EN 81-20: **5.8.8.3**

Description of the risk

In case of loss of power supply, a user does not always have a light source at hand in the lift. It is then difficult to find the right button to go up or down, or to call for assistance by pushing on the intercom button. Panic and claustrophobia can be the result.

The situation is the same dangerous for the service man on the roof. He might press wrong button when moving on inspection.

Risk reduction measures

All lifts should be equipped with emergency lighting in case of power failure, in the car and on the car roof as well.

No or inadequate safety gear and/or overspeed governor on electric lifts

Relevant clauses in EN 81-20, Table 11 or Table 12

Risk(s)

6.4

Description of the risk

Overspeed down or free fall of the car, due to the suspension failure, breaking of traction sheave shaft, brake failure, etc. If the safety gear fails to function, the lift is in free fall and can cause serious or even fatal accidents.

Risk reduction measures

There must be a state of the art safety gear and overspeed governor on all existing lifts, that brings the lift to a stop in case of free fall.

Risk(s)

6.7

8.5

8.6

No or inadequate protection against free fall, overspeed and creeping on hydraulic lifts + no shut-off valve + no or inadequate low pressure device on hydraulic lifts

Relevant clauses in EN 81-20, **Table 12**
EN 81-20, **5.9.3.5.1**
EN 81-20, **5.9.3.9.1.5**

Description of the risk

The car leaves the landing with open door and creates a step between landing and cabin or moves away uncontrolled. Persons can fall in or out of the car as a consequence. There can be several causes: failure of suspension means, rupture of hydraulic piping, oil leakage, dirt impairing valve closing. note: if the car moves out of the door zone, the landing door closes automatically, so the big step disappears. Pipe rupture or leakage on hydraulic lifts can cause overspeed or “creeping” lifts, up or down . This surprises a person who is busy cleaning or passengers and creates dangerous situations if adequate safety devices are not installed.

Risk reduction measures

A shut-off valve and a double safety combination of safety valves, safety gear and relevelling device must equip all lifts (uncontrolled movement and risk reduction measures).

A low pressure device avoids danger for passengers and equipment caused by the free fall of the car during emergency lowering (manual or electrical).

Regular maintenance and inspection helps guarantee the functioning of safety systems, while reducing deterioration.

Inadequate glass in door

Relevant clauses in EN 81-20, **5.3.5.3.4, 5.3.5.3.5, 5.3.5.3.6, 5.3.5.3.7**
EN 81-20**, 5.3.7.2.1 a),**
or EN 81-20, **5.3.7.2.1 b)**

Risk(s)
4.5
4.6
4.7
4.8

Description of the risk

If there is a glass panel in a lift landing or car door, it must be safety or armed glass, making it impossible for a person to break the glass by impact and to pass a limb or an object through the opening. It can lead to falling into the well, shearing of limbs, serious injury or even death.

Risk reduction measures

All lifts with a glass panel in landing doors must be equipped with safety glass.

Risk(s)

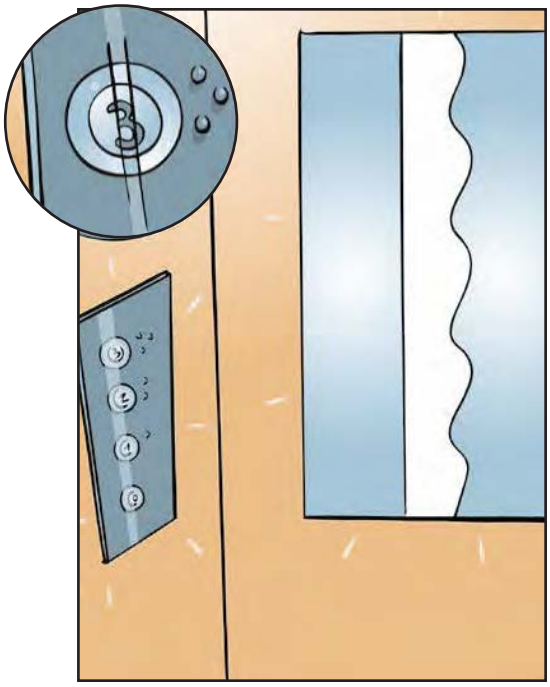
1.2

No or inadequate vandal resistance

Relevant clauses in **CEN/TS 81-83:2009**

Description of the risk

Vandals can for example burn buttons made of varieties of plastic, which are slightly coming out of the surface of the button plate, or smash and scratch the car doors and car wall surfaces.



Risk reduction measures

All Lifts that must be vandal resistant should follow EN 81-83. Plastic buttons sticking out should be avoided and replaced with metal or other material buttons, flush with the surface of the plate. glass doors and car mirrors must be made of toughened safety glass or equivalent.

No or limited accessibility for disabled persons

Relevant clauses in EN 81-82:2013

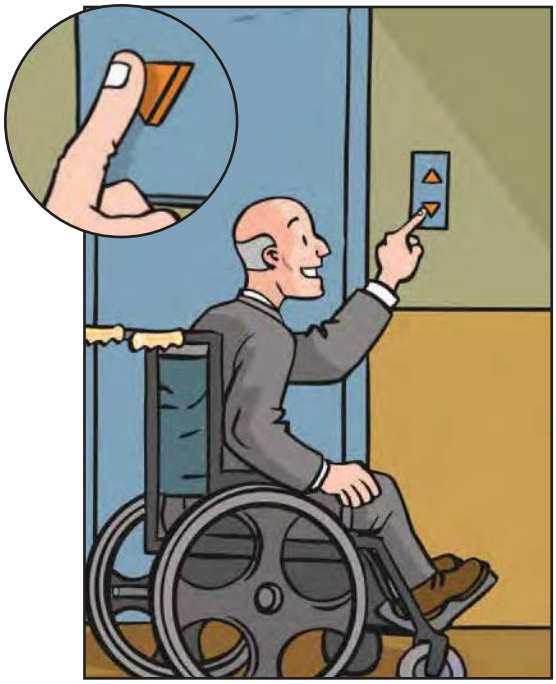
Risk(s)

1.1

Description of the risk

Older lifts are often not disabled-friendly. A small element such as door width or distance/height of buttons on the wall, can make a lift simply inaccessible for a disabled person in a wheelchair.

Other functions are often missing: sound announcements, Tactile or readable button indica tions, good lighting conditions, and of course general access to the lift (steps). This is of course much worse in public buildings or buildings accessible to the public.



Risk reduction measures

All lifts must be constructed or adapted so that they are accessible to ALL. good guidance can be found in CEN TS 81-82 which is inspired by EN 81-70.

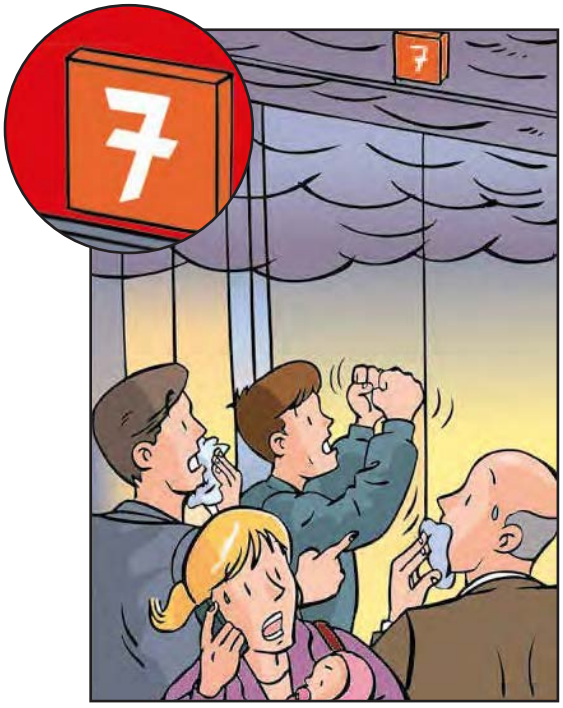
Risk(s)

1.3

1.4

No or inadequate control functions in case of fire

Relevant clauses in EN 81-72
EN 81-73



Description of the risk

In case of fire and smoke detection, the lift must automatically go to the exit floor, open its doors and stay there with open doors. Firemen must have access to the building and a have a key when they arrive on site, that enables them to take control of the lift. With that key, they can travel.

Risk reduction measures

All lifts must be equipped with safety functionaties, such as the automatic travel of the lift to the evacuation floor, and have a fireman key for access and control of the lift by the fire brigade in case of fire.

Inadequate locking devices on access doors to well and pit + unlocking of landing door without a special tool

Risk(s)

2.1

4.15

Relevant clauses in EN 81-20, **5.2.3.3 b) and c)**
EN 81-20, **5.3.9.3.1**

Description of the risk

Non-authorized persons are entering the pit/well, and are crushed by moving parts.

The fact that vandals or thieves open access doors to the well in order to do harm or hide things in the lift shaft can be very dangerous for the users of the lift in the building. The car door can be absent when the doors open.

Risk reduction measures

In order to avoid vandals and thieves to fiddle with the key, the lock should be a triangular key, that is not available in shops and strongly restricts van- dalism and opening of lift landing doors.

Risk(s)

6.5

6.6

No protection means against ascending car overspeed on traction drive lifts with counterweight, no protection means against unintended car movement

Relevant clauses in EN 81-20, **5.6.6**
EN 81-20, **5.6.7**

Description of the risk

Overspeed in up direction due to failure of traction sheave shaft, brake failure, failure of electrical system, etc. The person in the car is injured when the car hits the roof of the well. The maintenance person is crushed on the car roof.
If there is no protective means installed to avoid car overspeed in up direction, the lift may shoot up rapidly and crash against the ceiling of the shaft.

In some cases the car is allowed to move towards the floor with not closed doors inside the unlocking zone. Car must not allowed to move away from the floor with not closed door out of the unlocking zone, otherwise the passengers are exposed to risk of being crushed, or landing door could stay opened and the risk fall is high.

Risk reduction measures

All traction drive lifts should be equipped with the necessary upward overspeed protective means.

Lifts should be equipped with unintended car movement protecting devices.

presence of harmful materials, such as asbestos in brake linings, well, etc...

Relevant clauses in EN 81-20, **0.4.3 e)**

Risk(s)

1.6

Description of the risk

The technicians or inspectors (and possibly users) are exposed to harmful materials, due to wear, ageing, repair or modernization work. Asbestos is particularly harmful today in the building as it was used as insulation on walls and in cavities. The mechanic can inadvertently drill into it and create dangerous dust, which can cause a fatal lung disease much later in time.

Risk reduction measures

The owner of the building has to eradicate asbestos and other materials from the building, and hire specialist teams that remove it completely or like here, put a special film over the asbestos covered surfaces with stickers indicating that there is asbestos behind the film. Existing asbestos brake lining must be replaced with asbestos free brakes.

Risk(s)

9.1

9.2

Insufficient protection against electric shock and/or marking of electrical equipment; missing notices

Relevant clauses in EN 81-20, **5.10.1.2.2**
EN 81-20, **5.10.6.3.5**

Description of the risk

For workers, the electric distribution board can be old and the wiring dangerous to work on or even approach.

Risk reduction measures

All electrical connections and wiring should be state-of-the-art.

No or inadequate lighting of the well or inadequate lighting in machine or pulley room

Risk(s)

2.14

3.2

Relevant clauses in EN 81-20, **5.2.2.4**
EN 81-20, **5.2.1.4.2**

Description of the risk

The lift well is a working area for technicians and inspectors and can be a dangerous space to work in if not correctly lit.

Risk reduction measures

The pulley/machine room and the shaft will be lit with a light that can be switched off when not needed.

Risk(s)

2.11

2.12

10.5

Insufficient safety spaces in headroom and in pit. No inspection device in pit.

Relevant clauses inEN 81-20, **5.2.5.7**, or EN 81-21:2018, **5.5** EN 81-20, **5.2.5.8** or EN 81-21:2018, **5.7,** EN 81-20, **5.2.1.5.1 b)**

Description of the risk

Mechanics and lift inspectors can be crushed between the top of the car and the shaft ceiling or in the pit, if there is not sufficient pit and head room to hold him/them in a standing , crouched or lying position.

Mechanics in pit are exposed to the risk of crushing when someone is working on car roof and makes the car move by inspection control.

Risk reduction measures

There should be enough room on top of the car and in the pit when the lift is in extreme positions (actual space or at least space created by other means). There should be a stop button on the car roof and in the pit, including also an inspection box on the car roof and in pit. The car is allowed to move by inspection when there are mechanics in the pit by the simultaneous pushing on the same direction buttons of both inspection control units.

Inadequate vertical surface below landing door sills + unsafe pit access

Relevant clauses in EN 81-20, **5.2.5.3.2**
EN 81-20, **5.2.2.4**

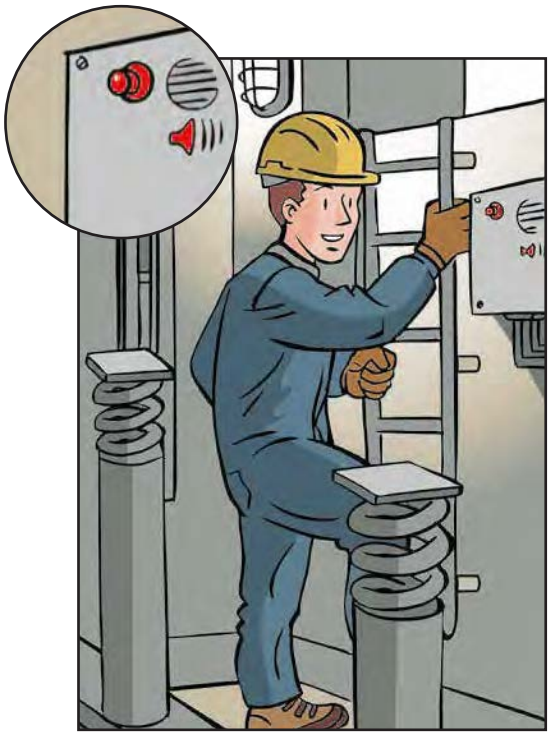
Risk(s)

2.6

2.13

Description of the risk

Pit access, pit walls and bottom can be in a very bad condition, with litter filling the pit, oil or liquid residues, the absence of a ladder, risk of fall from height , no lighting, etc... and no communication.



Risk reduction measures

The pit shall be clean, dry, the walls in good condition, a ladder provided and an intercom button with microphone must be put in the pit, to allow a trapped mechanic to call and request help (portable phones may not work in pits, shafts and confined spaces in general).

Risk(s)

2.16

No alarm system in pit or on car roof

Relevant clauses in EN 81-20, **5.2.1.6**

Description of the risk

A person is trapped or injured in the pit or on the car. If there is no alarm system in the pit or on the car roof, rescue and treatment of injury cannot reach the mechanic in time. It can lead to serious injury.

Risk reduction measures

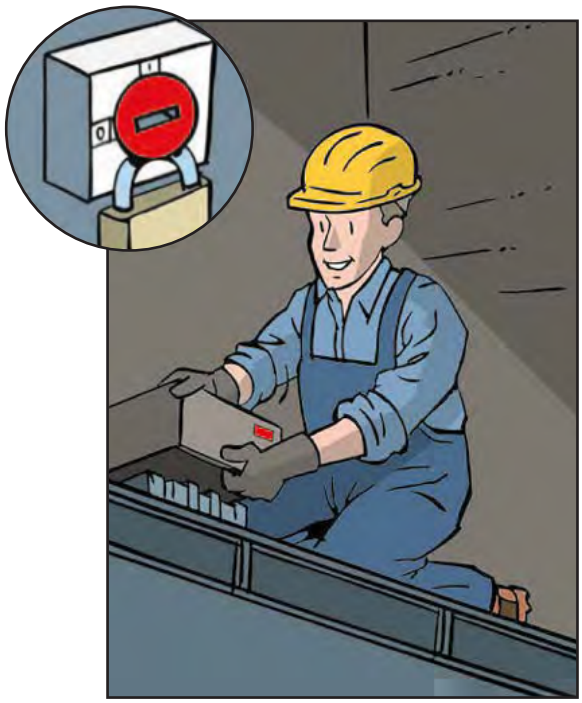
Install adequate alarm system in the pit and on the car roof.

No lockable main switch

Relevant clauses in EN 81-20, **5.10.5**

Description of the risk

A person switches the lift on when another person is working on the lift. Result: the maintenance/ inspection person is sheared or crushed. Injury to users or workers can take place, for example electric shock or unintended car move that can harm the mechanic working in the well.



Risk reduction measures

The main switch must be lockable by the mechanic when he works on the lift.

Risk(s)
2.8
2.9
2.10
5.5

No or inadequate partition of counterweight/balancing weight travel path + no or inadequate pit screen for several lifts in the same well + no or inadequate balustrade on car

Relevant clauses in EN 81-20, **5.2.5.5.1**
EN 81-20, **5.2.5.5.2**
EN 81-20, **5.2.5.5.2**
EN 81-20, **5.4.7.4** or EN 81-21:2018, **5.**

Description of the risk

The mechanic working in a shaft with multiple lifts can be hit by the car or a moving part of another lift than the one he is working on. He can also fall in the shaft if there is no balustrade, har- ness system and/or adequate partition.

Risk reduction measures

If there are two or more lifts in the same well, balustrade and partitions must be installed where necessary. The technician must be protected from falling by a balustrade.

A White Paper on SNEL (2020), PowerPoint presentations, specific documentation and accident statistics are available at ELA, the European Lift Association.

Don’t hesitate to contact ELA at info@ela-aisbl.org or by phone: +32 2 7795082, or by fax at +32 2 7721685

European Lift Association: www.ela-aisbl.org

Notes

Notes

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The brochure is also available on the ELA website at
www.ela-aisbl.org

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