



European Guideline No 1:2009

3



PANIC & EMERGENCY EXIT DEVICES or SYSTEMS

*Guidelines for the choice, the installation and the
maintenance of exit devices or systems for use on escape
routes*

Foreword

The European Federation of Associations of Lock and Builders Hardware Manufacturers (ARGE) have decided to produce common guidelines in order to achieve similar interpretation in the European countries and to give examples of acceptable solutions regarding the choice, the installation and the maintenance of building hardware products.

The following recommendations contained in these guidelines do not bind ARGE. The decision of the choice belongs to the specifier, according to the situation and of the type of risk to be prevented.

July 2009

Read more: [Why this Guide?](#)

Read more: [What is ARGE?](#)

Contents list

<i>Introduction</i>	4
<i>1. The background</i>	5
<i>2. The products available on the market</i>	9
<i>3. Guidance for choosing the appropriate exit hardware</i>	12
<i>4. Guidance for installation of Exit Hardware</i>	20
<i>5. Guidance for Maintenance of Exit Hardware</i>	21
<i>6. Disclaimer</i>	21
<i>7. Conclusion</i>	22
<i>Acknowledgements</i>	23
<i>Frequently asked questions (FAQ)</i>	23
<i>Bibliography and web links</i>	23
<i>Terminology and definitions</i>	23
<i>Links to Building Hardware National Associations</i>	23
<i>ANNEXES</i>	24
<i>About the present document</i>	24
<i>Why this guide?</i>	24
<i>ARGE Presentation</i>	26
<i>Free Zone markings</i>	27
<i>The Construction Products Directive (CPD)</i>	29
<i>and the Construction Products Regulation (CPR)</i>	29
<i>Factory Production Control (FPC)</i>	33
<i>Main testing requirements</i>	35
<i>The responsibility of the various stakeholders</i>	36
<i>Typical examples of products and configurations</i>	38
<i>Examples of potentially dangerous solutions</i>	39
<i>Frequently asked questions</i>	40
<i>Bibliography</i>	42
<i>Terminology and definitions</i>	43
<i>TR 15894 Extracts</i>	46
<i>EN 1125:2008 Extracts</i>	47
<i>EN 179:2008 Extracts</i>	49
<i>prEN 13633 Extracts</i>	50
<i>prEN 13637 Extracts</i>	53
<i>Installation instructions</i>	56
<i>Maintenance instructions</i>	59

Introduction

- **Type of products covered by this guidelines**

This guideline cover building hardware intended to be installed on escape routes, which have to be CE marked and therefore comply with harmonized standards:

- Panic exit devices: EN 1125
- Emergency exit devices: EN 179
- Electrically controlled panic exit systems: prEN 13633
- Electrically controlled exit systems: prEN 13637

- **The needs for saving lives and protecting property: Fire, smoke and panic**

Statistics.

In fires in buildings, it is often not the fire itself that causes casualties, but rather the smoke and panic that result from the fire. Smoke control is important, but it is even more important to have an adequate number of exit doors that swing outwards and that can be easily operated without prior knowledge of how they work.

Recent European disasters.

Despite the fact that technology is continually advancing, fire disasters with fatal outcome still happen. Even during the last decade, fires have caused thousands of deaths and many more severe injuries in Europe alone. With appropriate exit devices, some of these lives could have been saved.

Finding the Best Solution

Security and safety need not be mutually exclusive. You do not have to sacrifice security (resistance to forced entry) to achieve safety for people who need to escape from an emergency or life-threatening situation. New solutions using mechanical or electromechanical exit systems can provide ease of escape from a secure building.

Conclusion.

A building lost by fire can always be replaced. Human life lost by fires cannot. But you can help make a difference by the systems you choose.

Where human life is involved, the price of the locking device should not be the only factor to be considered.

1. The background

- **Basic rules about safety, security, panic and emergency**

Life before property.

When designing a building, safety and security are normally considered in terms of ease of escape and prevention of unauthorised use of the doors. However, the new European regulations only stipulate Standards for safety. These requirements are mandatory and must be followed. In this document, we focus on the issue of safety, but take security into consideration.



Safety



Security

Safety and security.

Safety.

Ability to provide for escape from a dangerous or life-threatening situation, i.e. saving human lives.

- Ease of escape

Security.

Ability to resist unauthorised entry (access) and exit (egress), i.e. protecting people and property.

- Resistance to unauthorised use of door

Panic or Emergency?

When designing equipment for exit doors on escape routes, you should always ask the question: is there any chance that a panic situation may arise? Often, of course, building regulations and fire safety requirements will give you formal guidance or will even require the use of special hardware.

However, the designer should take all possible measures to reduce the consequences of potential risks that may occur in the lifespan of a building. Technical solutions to deal with panic situations and with 'ordinary' emergencies are different. It is therefore important to define what type of situation is likely to arise.



Panic situations.

The reactions of a large number of people are always difficult to predict, especially in the event of a fire in a cinema, or a



Emergency situations.

Typically, panic will not arise in hazardous situations involving a smaller number of people. Especially not if these people are

discotheque for example. The chances are that many of them will behave irrationally. The individuals exposed to such a panic situation must be able easily to find the hardware located on the exit door and how to operate it, and must not need any special tool or key. The exit hardware must be designed to perform correctly in even the most extreme situations, in order to allow panicking people to exit.

familiar with the premises and with the emergency exits and their hardware. This could be the case in offices or other working environments. A clear understanding of the means of escape will allow positive and reasonable reactions, thus making a clear choice possible: where to go, what door to use, and how to operate the door. Of course, it is necessary here that the door will operate without using any special tool or key.

• The role of Exit Hardware

In a building, escape routes are designed to be used in both emergency and panic situations. Escape routes include corridors, staircases and all other routes leading to a safe area outside the building.



The exit doors located on escape routes and at the final exits from a building should normally always open in the direction of escape. There may be exceptions, due to the likelihood of special weather conditions (heaps of snow outside, for example) or because of the use of the building, like hospital or hotel rooms (where opening outwards would reduce the effective width of an escape route).

Exit hardware is the name given to any equipment in a building which is intended to open the exit doors located on escape routes.

Ease of escape (safety) is always the first priority, but resistance to unauthorised entry or egress (security) should not be compromised, partly because it could have a negative effect on safety

• What happens when a fire starts?

The usual sequence of events during a fire is:

- Fire and smoke detection
- Fire alarm sounded
- Extraction of smoke
- Evacuation of people from the building
- Compartmentalization of the building through fire-resisting doors that close automatically
- Fire fighting from inside (sprinklers, fire extinguishers, water walls) and from outside (firemen).

When designing a building, it is necessary to specify locations for the escape doors on the escape routes. Also, to identify other requirements such as fire detection, alarms, evacuation, fire resistance including compartmentalization.

• Always consider the local regulations.

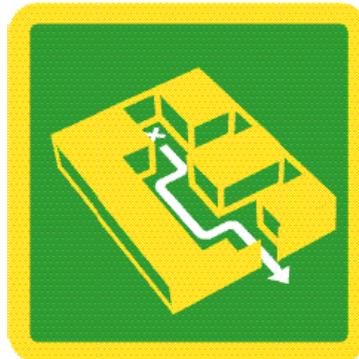
Reference should always be made to building codes and regulations from national and fire authorities regarding exit hardware where such codes exist. However the new European Standards for panic and emergency exit hardware should always be given priority. Each country has its own Fire and Life safety requirements. Although considerations by Fire Authorities are similar in all European countries and each national code has basically similar requirements, many differ in detail.

- **Escape routes and escape doors**

Seen from a safety perspective, all doors along escape routes should be viewed as escape doors. Accordingly, they need to be identified as such and properly equipped with exit hardware in accordance with the national regulations and new European Standards.



Panic.



Emergency.

- **Important considerations**

Free zone

It is recommended to ensure the functionality of a safe escape route presupposes the fact that the “Escape door FREE ZONE” (contiguous, adjacent space/zone, before and after the escape door in the escape route) is free and protected whether or not the doors are ‘in’ or ‘out’ swing-type, single or pair of doors.

[Read more: Free zone markings](#)

Any attempt to restrict or prohibit the correct operation of panic or emergency exit devices or systems is an attack against the safety requirements, which involves those responsible. However, there are still too often potentially dangerous installations, locked or encumbered doors, which can have very serious consequences for the safety and the life of the people in the event of fire or of panic. As example:

- Chains and padlocks around the bars, Plastic chains, Locked additional door bolts, Blocking chairs, Obstructions of the door, Locking bars

Unfortunately imagination does not have limit...

[Read more: Exit devices - Examples of potential dangerous installations](#)

Doors.

The number of exit doors and the location and width of each door are all important considerations.

A fire-resistant door that is designed to contain a fire must use a locking device designed to keep the door closed during the fire. The latch bolt must be engaged and close but not lock the door each time it is used.

Door closers and Door coordinators must be CE marked, **only** if the doorsets are fire resisting. Single axis hinges must be CE marked if they are intended to be used on escape route doors. However, local regulations (eg France), may force the use of CE marked products, even if the doorsets are **not** fire resisting.

Public areas.

The safeguarding of human life is a responsibility shared by architects, public officials and others in deciding on the equipment for a building. In schools, theatres, and other public areas it is necessary to make provisions for PANIC arising in case of fire or other emergencies. Among other things, this demands that all exit doors must not only be made to swing outwards from the building, but must also be equipped with exit devices that enable the doors to be opened AT ALL TIMES from the INSIDE by ANYBODY. Some local regulations permit exceptions when buildings are known to be unoccupied. For security purposes, exit doors may be locked against exit at such time, providing they are unlocked during hours of occupancy.

- **CE Mark, Construction Products Directive (CPD), Regulation and Quality Mark**

The Construction Products Directive (Directive 89/106/EC) establishes a single market in construction products, enabling products that satisfy harmonised technical specifications to bear the CE mark.

In addition to this mandatory CE Mark, in some countries, some voluntary quality labels may ensure a higher level of quality or product controls

[Read more: The Construction Products Directive \(CPD\) and Regulation](#)

- **Other European Directives**

The CE marking implies the conformity to all Directives applicable to the product. Therefore, other Directives can apply to electrically controlled exit hardware, which include:-

- EU Directive 89/336/EC and 2004/118/EC (EMC)
- EU Directive 73/23/EEC (Low Voltage)
- EU Directive 2002/96/EEC (WEEE) and 2002/95/EEC (ROHS)

- **Avoiding discrimination against the disabled.**

Most European countries have published additional regulations or technical requirements covering discrimination against the disabled or people with impaired mobility.

Typically, exit hardware offers good solutions for allowing the young, the elderly and the handicapped to use public buildings. The informative Technical Recommendation EN TR 15894 covering accessibility has been published in 2009.

- **Liability and responsibility**

All individuals and corporate organisations have a 'duty of care' in all matters affecting people and property. This 'duty of care' may be defined as responsibility and failure to exercise it can lead to civil or criminal liability.

- A criminal act in the subject of exit devices will be some act or omission to act, which has endangered life and property, and results in action in the criminal courts.
- A civil liability is again a failure to act or to act incorrectly which causes damage to structures or people of a lesser degree than criminal acts and is subject to the civil law of the country.
- The areas of criminal and civil law vary between the individual members of the European Community.

- **The responsibility for the various stakeholders**

If the regulations and the standards define obligations or recommendations to be followed, it is important to point out the responsibility for the various parties in the manufacture, the marketing, the choice, the installation and maintenance but also the correct use of emergency

exits. Everyone is indeed concerned, at various levels, during the lifespan of an exit device or system:

Read more: [The responsibility of the various stakeholders](#)

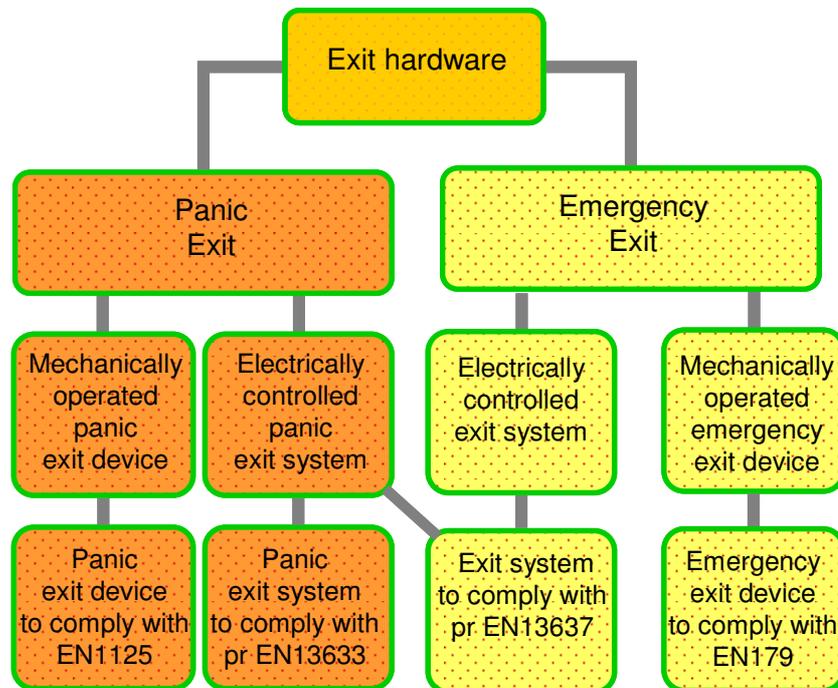
2. The products available on the market

- **Different types of exit hardware available on the market**

Exit Hardware is the term for the different types of hardware intended for use on exit doors located on escape routes. **Panic Exit Hardware** or **Emergency Exit Hardware** should be selected in accordance to the level of risk of panic.

An **Exit Device** is the common term for a mechanically operated device intended for panic exit function or emergency exit function: a **Panic Exit Device** or an **Emergency Exit Device**.

An **Exit System** is the common term for an electrically controlled system intended for panic exit function or emergency exit function: a **Panic Exit System** or an **Exit System**.



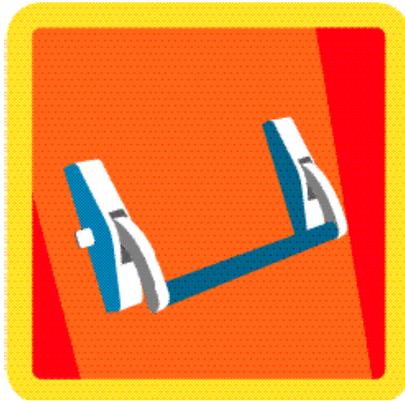
- **Mechanically operated Panic Exit Devices – EN 1125**

Definition of a panic exit device - EN 1125:2008 clause 3.18

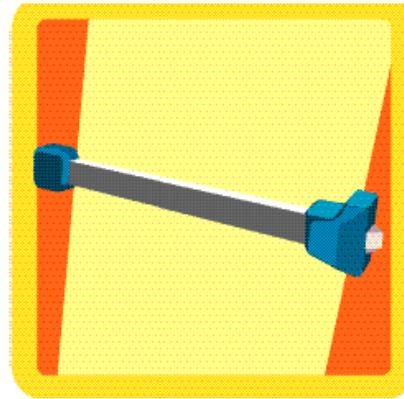
exit device conforming to EN 1125 intended to give safe and effective escape through a doorway with minimum effort and without prior knowledge of the panic exit device allowing safe escape even in the event of the door being under pressure such as by people being pushed against the door in the direction of escape

There are basically two different categories of operation identified in the Standard:

- type A: panic exit device with 'push-bar' operation (see illustration)
- type B: panic exit device with 'touch-bar' operation (see illustration)



Type A



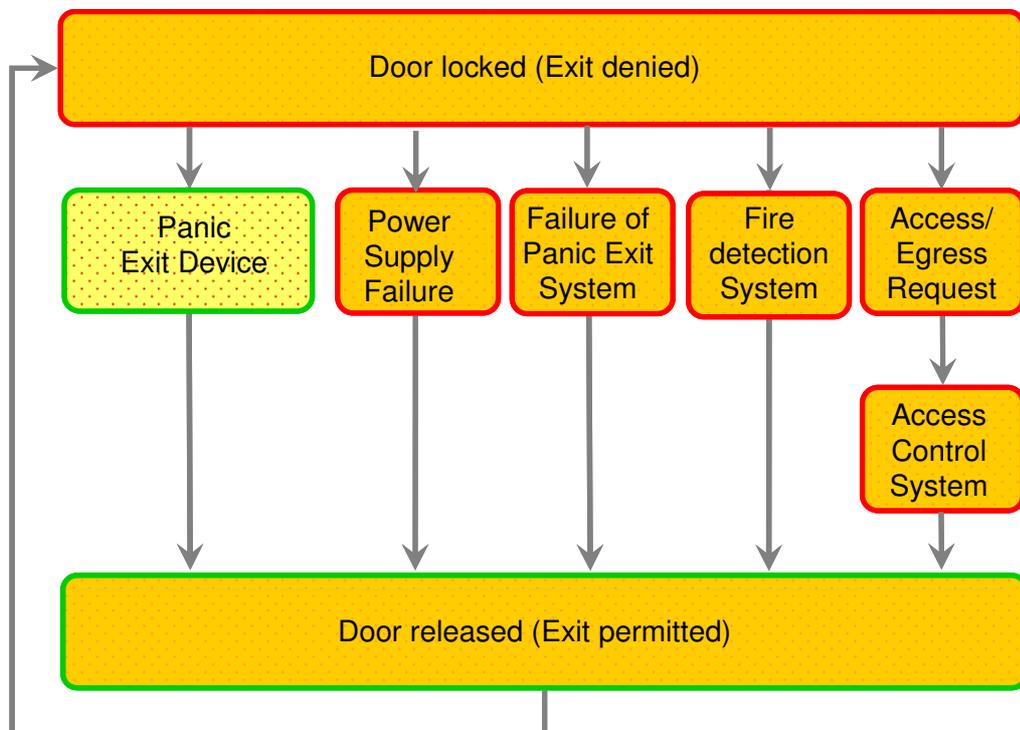
Type B

Read more: [EN 1125:2008 - Building hardware — Panic exit devices operated by a horizontal bar, for use on escape routes — Requirements and test methods](#)

- **Electrically controlled Panic Exit Systems – prEN 13633**

Electrically controlled Panic exit system according to prEN 13633 operated by a horizontal bar by one single hand or body operation for use where panic situations are foreseen, and intended to give safe and effective escape through a doorway with one single operation to release the panic exit system, with minimum effort and without prior knowledge of the panic exit system allowing safe escape even in the event of the door being under pressure such as by people being pushed against the door in the direction of escape

Functionality of electrically controlled Panic Exit Systems.



Read more: [prEN 13633 - Building hardware — Electrically controlled panic exit systems for use on escape routes — Requirements and test methods](#)

- **Mechanically operated Emergency Exit Devices – EN 179**

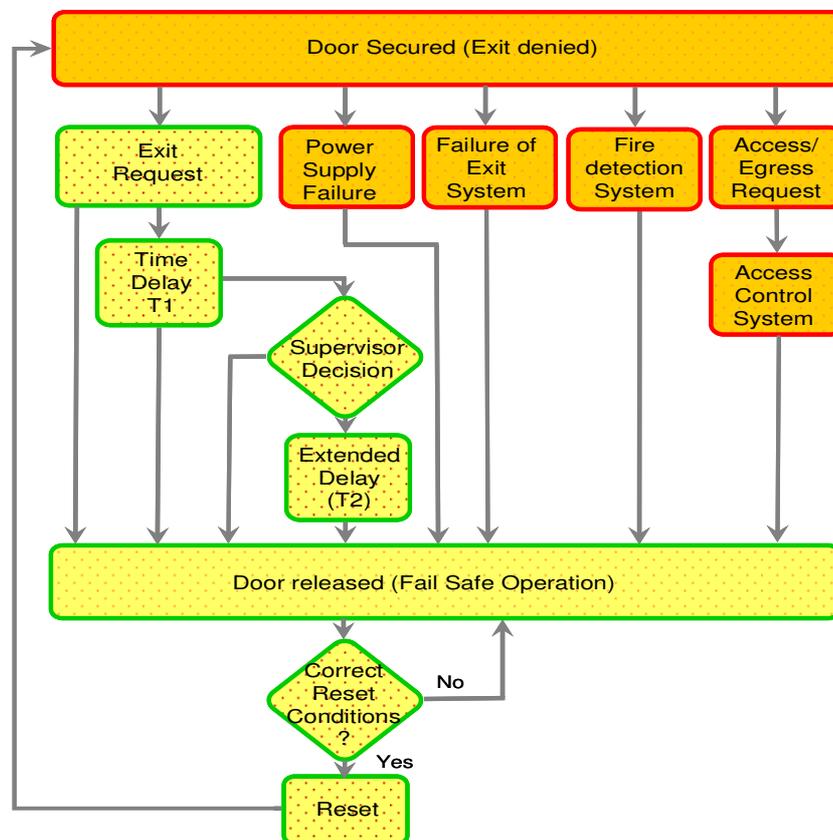
Exit device conforming to EN 179 intended for emergency purposes where panic situations are not likely to arise, to give safe and effective escape through a doorway with one single operation to release the emergency exit device, although this can require prior knowledge of its operation

Read more: [EN 179:2008 - Building hardware — Emergency exit devices operated by a lever handle or push pad, for use on escape routes — Requirements and test methods](#)

- **Electrically controlled Escape Exit Systems - prEN 13637**

Electrically controlled escape exit system according to prEN13637 standard for use where panic situations are not foreseen, which enables the electrical control of exit doors by means of electrical locking elements, a requesting element and electrical controlling elements. These separate elements may be inter-connected or may be combined in various assemblies, to provide the required system functions.

Functionality of electrically controlled Exit Systems.



Read more: [prEN 13637 - Building hardware — Electrically controlled exit systems for use on escape routes — Requirements and test methods](#)

Read more: [Exit devices – Typical examples of products and configurations](#)
 Read more: [Exit devices - Examples of potentially dangerous solutions](#)

3. Guidance for choosing the appropriate exit hardware

3.1 The sources of information

- **Product information**

Manufacturers' solutions.

Manufacturers will provide you with a number of technical solutions to suit different needs. It is important to select the product designed for the right application and which meets the local regulations or other technical (including fire, life and insurance company) requirements.

Claims of compliance.

When choosing the correct product from a manufacturer's catalogue, it is always necessary to question claims of compliance with the Standards, of quality and of marking of the product. Since the Standards are complex and far-reaching, there may still be misunderstandings and misinterpretations.

Do not take anything for granted. Check for yourself, so that you are convinced about any product's compliance with the Standards.

- **Insurance requirements**

Insurance companies have their own requirements for risk analysis of safety and security which are usually in addition to local Life Safety codes. Always check your particular Insurance requirements.

3.2 Criteria for the choice of exit hardware for use on escape routes

The type of Panic or Emergency exit device or system should be defined according to a risk analysis. Various factors and conditions can influence the risk level, such as:

- Factors related to the building and the position of the rooms in the building.
- Factors related to the activity in the building and/or the room.
- Factors related to the type and number of people inside the building and the room.
- Factors related to the door and its functions/performance.

In some countries the building regulations give clear rules and then it will be easy to decide the choice.

In other countries the regulations are not so specific and the options to equip the door are more open.

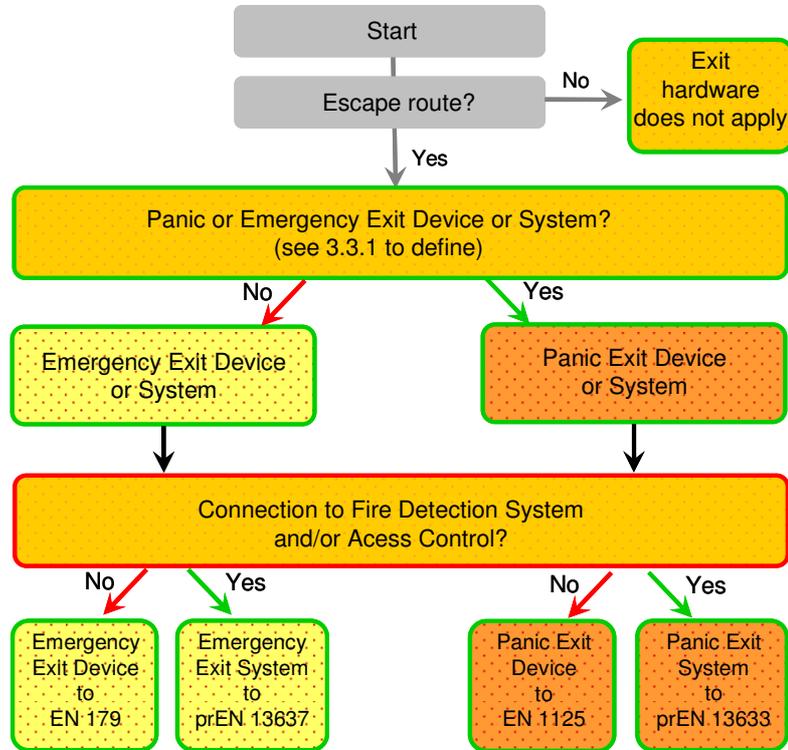
National regulations influence on the criteria must always be checked.

In 3.3.1 there is a decision route to help the specifiers evaluate factors in the choice of emergency exit device.

3.3 ARGE guidance for the choice of exit devices or systems

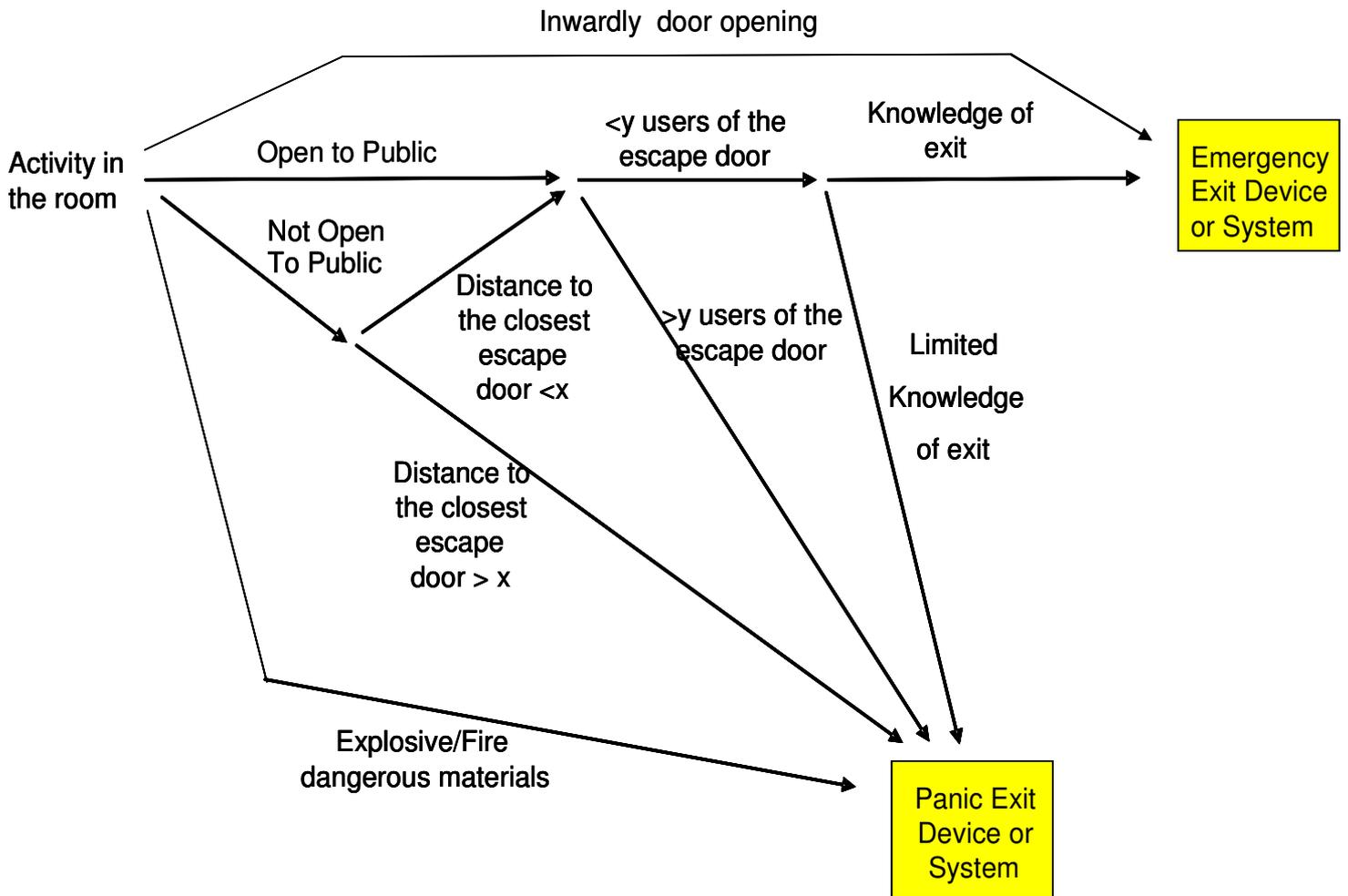
For doors opening in the direction of exit, it is always possible to replace an EN 179 product (emergency exit device) by an EN 1125 product (panic exit device), but not the reverse. It is also possible to replace an EN 179 or EN 1125 product by an electrically controlled exit system, according to local regulations.

3.3.1 Recommendations by ARGE professionals for the decision tree: How to choose panic or emergency exit device on an escape door



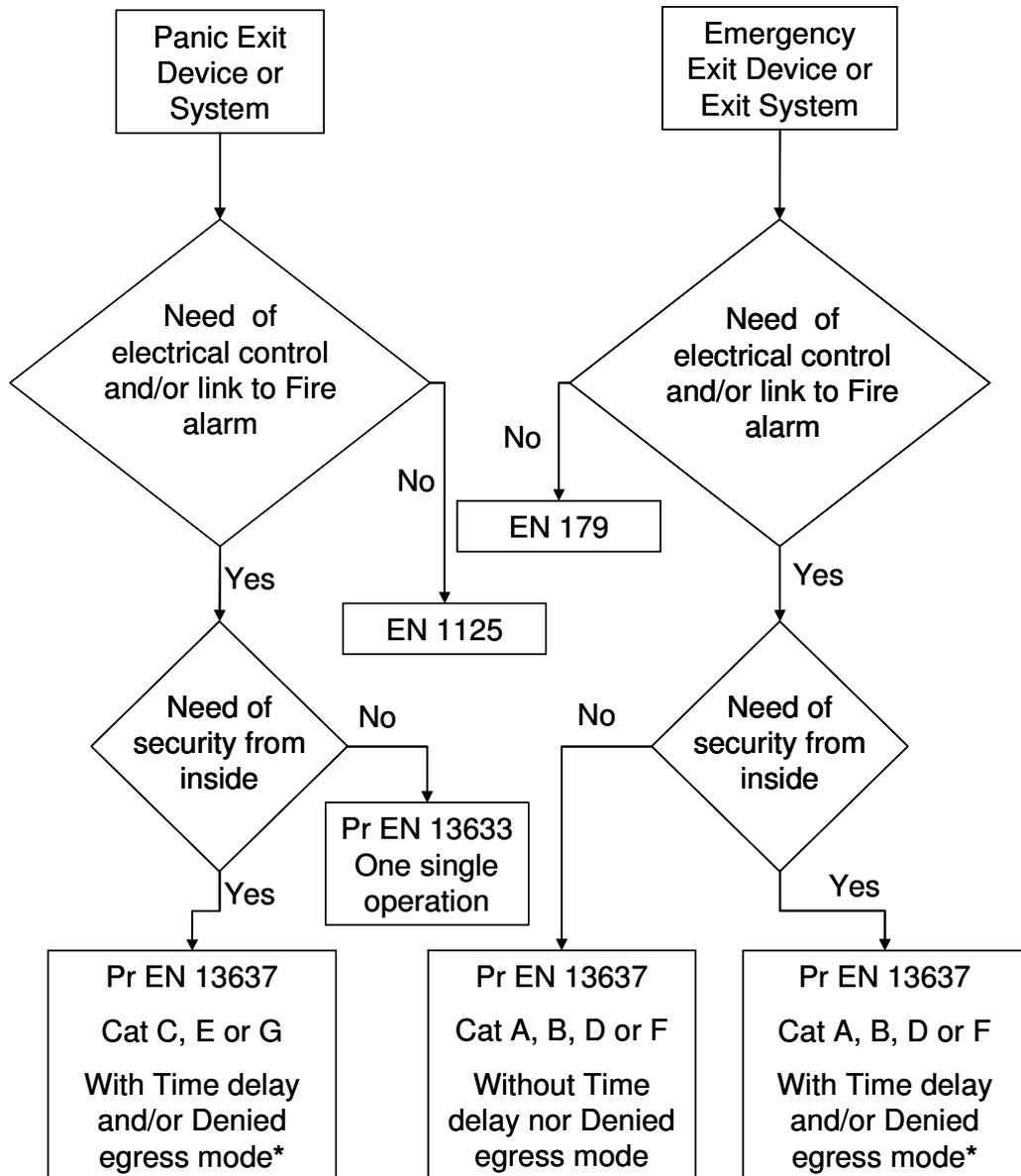
The following diagrams and tables give the steps on how to choose adequate panic or emergency exit devices on the exit doors. They give the opportunity for a more in-depth risk analyse before making a choice.

STEP 1: Choice between Emergency Exit or Panic Exit



* Values for x or y need to be found in local regulations

STEP 2: Choice between Mechanical Device or Electrically controlled Device



*: subject to local building regulations

STEP 3: Choice of performances to be reached by the device or the system

The following tables are a guide for aiming at the grades needed which are set out within EN179, prEN13637, EN1125 or prEN13633.

		Table 2: Factors related to the door		Go to			
No	Factor			3.1 EN 179	3.2 prEN 13637	4.1 EN 1125	4.2 prEN 13633
2.1	Width of the door opening	2.1.1	< z* mm	2.2	2.2	2.2	2.2
		2.1.2	> z* mm	2.2.2	2.2.2	2.2.2	2.2.2
2.2	Type of door	2.2.1	Single door	2.3.1	2.3.1	2.3.1	2.3.1
		2.2.2	Double door	2.3	2.3	2.3	2.3
2.3	Operation of door leaves	2.3.1	Active door leaf	7.10 Grade A, B, D	7.2.6 Grade 1, 2 7.2.7 Grade A, B, D, F	7.10 Grade A, B	7.2.6 Grade 1, 2 7.2.7 Grade A, B, D, F
		2.3.2	Inactive door leaf	7.10 Grade A, C	n/a	7.10 Grade A, C	n/a
2.4	Door mass	2.4.1	< 100 kg	7.3 Grade 5	n/a	7.3 Grade 5	n/a
		2.4.2	100 kg < mass < 200 kg	7.3 Grade 6	n/a	7.3 Grade 6	n/a
		2.4.3	> 200 kg	7.3 Grade 7	n/a	7.3 Grade 7	n/a
2.5	Door width	2.5.1	< 1320 mm	2.1	2.1	2.1	2.1
		2.5.2	> 1320 mm	2.1	2.1	2.1	2.1
2.6	Door height	2.6.1	< 2520 mm	2.1	2.1	2.1	2.1
		2.6.2	> 2520 mm	2.1	2.1	2.1	2.1
2.7	Door frequency of use	2.7.1	Seldom < 100 000 cycles	7.2 Grade 6	7.2.1 Grade 6	7.2 Grade 6	7.2.1 Grade 6
		2.7.2	Frequent < 200 000 cycles	7.2 Grade 7	7.2.1 Grade 7, 8, 9	7.2 Grade 7	7.2.1 Grade 7, 8, 9
2.8	Fire/smoke resistant door	2.8.1	YES	7.4 Grade A, B	7.2.2 Grade A, B	7.4 Grade A, B	7.2.2 Grade A, B
		2.8.2	NO	7.4 Grade 0	7.2.2 Grade 0	7.4 Grade 0	7.2.2 Grade 0
2.9	Burglary resistant from outside	2.9.1	YES	7.7 Grade 2 - 5	7.2.3 Grade 2 - 5	7.7 Grade 2	7.2.3 Grade 2 - 5
		2.9.2	NO	7.7 Grade 2	7.2.3 Grade 2	7.7 Grade 2	7.2.3 Grade 2

* Values for "z" need to be found in local regulations

Table 3: Choice of emergency exit device

No	Product type	Clause In EN179	Mechanically operated	EN 179 certified	
3.1	Emergency exit device operated by a lever handle or push pad for use on escape routes	7.1	Category of use	Grade 3 for all devices	
		7.2	Security Durability	Grade 6	Seldom use
				Grade 7	Frequent use
		7.3	Door mass	Grade 5	Light doors
				Grade 6	Medium doors
				Grade 7	Heavy doors
		7.4	Suitability for use on fire/smoke door	Grade 0	Not suitable
				Grade A	Smoke tested
				Grade B	Fire tested
		7.5	Safety	Grade 1 for all devices	
		7.6	Corrosion resistance	Grade 3	Moderate resistance
				Grade 4	High resistance
		7.7	Security	Grade 2	No security
				Grade 3	Basic security
Grade 4	High security				
Grade 5	Very High security				
7.8	Projection of operating element	Grade 1	Large projection		
		Grade 2	Standard projection		
7.9	Type of operation	Type A	Lever handle		
		Type B	Push pad		
7.10	Field of door application	Cat A	All application		
		Cat B	Outward single door		
		Cat C	Outward inactive door		
		Cat D	Inward single door		
No	Product type	Clause In EN13637	Electrically controlled	prEN 13637 certified	
3.2	Electrically controlled exit system for use on escape routes	7.2.1	Durability	Grade 6	Seldom use
				Grade 7	Frequent use
				Grade 8	High frequency use
				Grade 9	Extra High frequency use
		7.2.2	Suitability for use on fire/smoke door	Grade 0	Not suitable
				Grade A	Smoke tested
				Grade B	Fire tested
		7.2.3	Security/holding force	Grade 2	No security
				Grade 3	Basic security
				Grade 4	High security
				Grade 5	Very High security
		7.2.4	Time delay	Grade 0	No time delay
				Grade 1	Single time delay
				Grade 2	Double time delay
7.2.5	Denied egress mode	Grade 0	No denied egress		
		Grade 1	Denied egress available		
7.2.6	Number of operations to release the door	Grade 1	One operation		
		Grade 2	Two operation		
7.2.7	Configuration	Grade A	One operation, fixed on outside door frame		
		Grade B	One operation fixed on door		
		Grade C	One operation Horizontal bar on the door		
		Grade D	One operation		
		Grade E	One operation Horizontal bar EN1125; on the door		
Grade F	Two operations fixed on outside doorframe				
Grade G	Two operations on door				

Table 4: Choice of Panic exit device

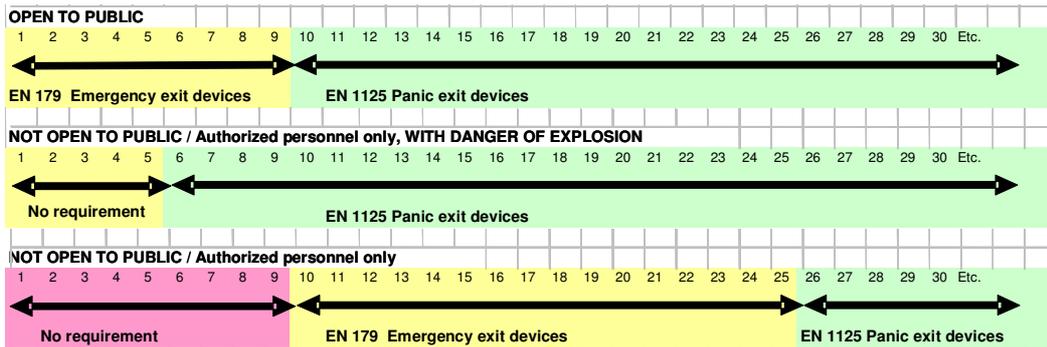
No	Product type	Clause in EN1125	Mechanically operated	EN 1125 certified	
4.1	Panic exit devices operated by a horizontal bar, for use on escape routes	7.1	Category of use	Grade 3 for all devices	
		7.2	Durability	Grade 6	Seldom use
				Grade 7	Frequent use
		7.3	Door mass	Grade 5	Light doors
				Grade 6	Medium doors
				Grade 7	Heavy doors
		7.4	Suitability for use on fire/smoke door	Grade 0	Not suitable
				Grade A	Smoke tested
				Grade B	Fire tested
		7.5	Safety	Grade 1 for all devices	
		7.6	Corrosion resistance	Grade 3	Moderate resistance
Grade 4	High resistance				
7.7	Security	Grade 2 for all devices			
7.8	Projection of operating element	Grade 1	Large projection		
		Grade 2	Standard projection		
7.9	Type of operation	Type A	Push bar		
		Type B	Touch bar		
7.10	Field of door application	Cat A	All application		
		Cat B	Outward single door		
		Cat C	Outward inactive door		
No	Product type	Clause in EN13633	Electrically controlled	prEN 13633 certified	
4.2	Electrically controlled panic exit systems for use on escape routes	7.2.1	Durability	Grade 6	Seldom use
				Grade 7	Frequent use
				Grade 8	High frequency use
				Grade 9	Extra High frequency use
		7.2.2	Suitability for use on fire/smoke door	Grade 0	Not suitable
				Grade A	Smoke tested
				Grade B	Fire tested
		7.2.3	Security/holding force	Grade 2	No security
				Grade 3	Basic security
				Grade 4	High security
				Grade 5	Very High security
7.2.4	Time delay	Grade 0 for all system			
7.2.5	Denied egress mode	Grade 0 for all system			
7.2.6	Number of operations to release the door	Grade 1 for all system			
7.2.7	Configuration	Grade C	One operation, Horizontal bar		
		Grade E	One operation, Horizontal bar		

3.3.2 Examples of existing National Regulation

The criteria for installing an EN 179 or EN 1125 device differ in different countries or regions. Two examples from two countries are set out below. National regulations influence the criteria and must always be checked.

3.3.2.1 Regulation in Italy

The following example takes into account three criteria, considered as most important and allowing a fast evaluation of the risks involved and a simplified choice of the appropriate minimum equipment:



3.3.2.2 Regulation in Austria

This is the official statement by the OIB (Oesterreichisches Institut für Bautechnik, Vienna) to the Austrian Standards Institute:

"It shall be possible to open doors in the course of escape routes easily by everyone and every time without additional devices in the escape direction by emergency exit devices according to EN 179.

This does neither apply for dwelling doors nor for doors in one or two family houses.

Exit doors and other doors of public areas as e.g. of public buildings shall be equipped with a panic exit device according to EN 1125 - if panic situations are expected and in any case if there are at least 120 people depending on the device."

4. Guidance for installation of Exit Hardware

4.1 General



Each exit device is placed on the market with detailed instructions for the installation and the maintenance which should be passed on to the user or to his authorized representative.

Installers should bear in mind that the performance characteristics of exit devices are paramount for the users' safety. No modifications are allowed other than the ones described in the manufacturers' instructions.

The producer should specify the appropriate fixing arrangements for the door types for which the exit device is designed.

The incorrect installation of an exit device may cause a product failure and a risk for the user.

4.2 Recommendations to consider before fitting an exit device

1. Read and follow the installation instructions supplied with the device or by the system manufacturer(s)
2. Check that the hinges are aligned, have a vertical axis and are in good working order.

The door, free from any thrusts, including the one which may be applied by a door closer or spring hinges, remains still and doesn't close or open because of its mass when it is open to an angle of about 45°. If this is not the case, the installer is to correct the hinge alignment and the vertical hinge axis.

If the friction of the hinges is so high that the door closer can't close the door, then the installer has to check the working conditions of the hinges and their lubrication.

4.3 Recommendations to consider after fitting an exit device

3. After fitting an exit device, with the door free from any thrust, including the one which may be applied by a door closer or spring hinges, measure and record the relatching force and the release force of the device. These values will be a reliable reference for maintenance engineers to use for an objective evaluation of the exit device performance over time.
4. After fitting an exit device, if the door has fire resistance and smoke leakage characteristics, the installer should check whether the door is self-closing, proceeding as specified in the standard EN 14600 – Doorsets and Openable Windows with Fire Resisting and/or Smoke Control Characteristics – Requirements and Classification.

[Read more: Installation instructions](#)

5. Guidance for Maintenance of Exit Hardware

Each exit device is placed on the market with detailed maintenance instructions which should be passed on to the user or to his authorized representative,

The user should maintain the device or should have the device maintained as specified in the maintenance instructions with at least the frequency specified by the manufacturer.

Product maintenance should be carried out by qualified maintenance engineers, possibly approved by local competent authorities. Several criteria can influence the frequency of the maintenance needed to maintain a product in good working conditions: frequency and type of use, the location and the exposure to critical environmental and climatic conditions. A periodical checking can detect the need for more frequent maintenance of the device.

Unless otherwise stated in the maintenance instructions, or in the local building regulations, the user should carry out the following maintenance tasks at least every year, if the frequency of use is low and more often if the frequency of use is higher:

1. carry out the maintenance recommended in the instructions supplied by the manufacturer of the device
2. measure and record the relatching force and the release force of the exit device, as defined in point 3 of the clause “Recommendations to consider after fitting an exit device” (set out within the standard), and compare the values obtained with the values recorded in the previous maintenances.
3. if the door has fire resistance and smoke leakage characteristics, after the maintenance check whether the door is self-closing; proceed as specified in the standard EN 14600 - Doorsets and Openable Windows with Fire Resisting and/or Smoke Control Characteristics – Requirements and Classification

[Read more: Maintenance instructions](#)

6. Disclaimer

The purpose of this document is to draw attention to the existence of the European Standards Number EN 1125, EN 179, prEN13633 and prEN13637 on the supply and installation of panic fittings on doors and the fact that many countries also have their own regulations. It attempts to provide general guidance on the use of such components but it is not definitive and not specific to any country. It is the responsibility of the reader to ascertain the precise regulations applicable to the country in which the component is to be used.

Neither ARGE nor the authors of this document accept any liability for any loss, injury or death arising from the incorrect selection or installation of components in reliance upon the general guidance contained in this document. Users must rely upon their own experience or obtain independent expert advice or guidance from the relevant authorities in the particular country.

7. Conclusion

A. The escape of the occupants is a priority

At the time of a fire, or an emergency or panic, the fast and sure escape of the occupants towards protected places is the priority before being able to proceed to the safeguard of property. The installation of suitable methods of evacuation is important in the general safety of the buildings, in particular those accessible to the public.

B. Standardized devices or systems of evacuation for emergency exits

Thanks to the innovations carried out by the manufacturers, the products on the market today offer more safety, more security and more ergonomics than previously. The choice of a suitable device or system according to the regulations in force helps personal safety. Furthermore this step makes it possible not only to improve safety but also accessibility for the benefit of all. The technical solutions include panic exit devices, emergency devices, electromagnetic unlocking devices and centralized management of electrically controlled exit systems for use on escape routes.

C. The safety diagnosis and the analysis of risk must lead to the choice of suitable devices or systems

The type of population, the knowledge of the building, and concentration of people, are some of the features to evaluate the risks. The diagnosis of safety and the analysis of risk is an important and effective means to specify the most suitable technical solutions.

D. The responsibility for those involved in the choice of a technical solution

The various parties in the choice of installation and the maintenance of the emergency exits, are liable to civil and penal liability in the event of disaster should the solution be inappropriate or the operation faulty.

E. Towards a possible evolution of the European and National regulations

If the objectives of most National building regulations are very clear, they are still often interpreted at the lowest possible level.

ARGE recommends that National Building regulations define precisely the conditions of use of emergency and panic doors. This is, for example, what the Italian regulation did, by taking into account some details of the building and the number of people who use it.

F. A surer world

We hope that this guide will bring a new understanding on the question of the evacuation of people and of solutions suggested to specifiers and to others in fire protection. Our main objective throughout this guide is to contribute to a safer world.

Read more: [About the present document](#)

Acknowledgements

This document has been prepared by ARGE Working Group C “Standardisation”

Frequently asked questions (FAQ)

Read more: [Exit devices - Frequently asked question](#)

Bibliography and web links

Read more: [Exit devices and systems - Bibliography](#)

Read more: [Exit devices - web sites](#)

Terminology and definitions

Read more: [Exit devices - Terminology and definitions](#)

Links to Building Hardware National Associations

FRANCE:

UNIQ web site: <http://www.uniq.org>

UK:

DHF web site: <http://www.dhfonline.org.uk/> and : <http://www.firecode.org.uk/>

SWEDEN:

FLB web site: <http://www.f-l-b.se>

ITALY:

ANIMA web site: <http://www.anima-it.com>

ASSOFERMA web site: <http://www.assoferma.it/>

GERMANY:

F+S V web site: <http://www.schlossindustrie.de> and <http://www.beschlagindustrie.de>

SPAIN:

AENOR web site: <http://www.aenor.es>

THE NETHERLANDS:

VHS

Boerhaavelaand 40

PO-Box 190

NL-2700 AD Zoetermeer

Tel.: +31 79 353 12 70

Fax: +31 79 353 13 65

e-mail: vhs@fme.nl

ANNEXES

About the present document

The purpose of this document is to draw attention to the existence of the European Standards Number EN 1125, EN 179, prEN13633 and prEN13637 on the supply and installation of panic fittings on doors and the fact that many countries also have their own regulations. It attempts to provide general guidance on the use of such components, but it is not definitive and not specific to any country. It is the responsibility of the reader to ascertain the precise regulations applicable to the country in which the component is to be used.

Neither ARGE nor the authors of this document accept any liability for any loss, injury or death arising from the incorrect selection or installation of components in reliance on the guidance in this document. Users must rely upon their own experience or obtain independent expert advice or guidance from the relevant authorities in the particular country in which components are to be installed.

Why this guide?

New Standards create higher demands

European Standards for building hardware have been published over the years. Others are still in preparation by the CEN committees. Harmonised Standards have been mandated by the European Commission to meet the essential requirements of the Construction Product Directive. Accordingly, products complying with these Standards are entitled to carry the CE marking. The new regulations are still new to most of us and may seem difficult to understand. Demands for information and clarification are growing.

European and national Standards

These European Standards are (or will be) implemented in all member countries of the European Union. This means they are (will be) published as national Standards. All existing national Standards that conflict with them have been (or will be) withdrawn or amended.

Panic and emergency exit hardware

There has been a lot of product development to meet the European Standards. Thanks to constant innovations, panic and emergency exit devices and systems offer more safety, more security, more comfort and ergonomics. With the wide range of products available today, choosing an exit device could paradoxically become difficult. This should not be a reason for undervaluing life safety when choosing the right solution in the design of a building.

Guidelines, not a rulebook

This handbook gives guidance to stakeholders in the choice, the installation and the maintenance of equipments for doors situated on escape routes. Within the membership of ARGE there is a vast amount of expertise in the area of panic and emergency exit hardware and its application in many countries throughout the world. With this document, our aim is to share this expertise with you to help you to find a path through the complex rules and regulations surrounding this critically important subject.

This handbook is not intended as a rulebook, rather as a practical help in finding a good solution. The final choice remains the responsibility of the decision-maker.

A tool for better Design Specification

This handbook is intended to be used when writing design specifications, installing or maintaining exit devices and systems. It will give some practical guidance as well as information about formal regulations. If you have any of the following roles, this document has been prepared especially with you in mind:

- Architect and specifier
- Security manager
- Fire officer
- Safety officer
- Government official
- Insurance assessor
- Police officer
- Security consultant
- Distributor
- General contractors
- Installer
- Maintenance company
- End user

However, our expectation and hope is that anyone with an influence on the selection of hardware for escape routes will find this document an invaluable source of information.

ARGE members are at your disposal to bring you, if necessary, any additional information.

ARGE Presentation

THE EUROPEAN FEDERATION OF ASSOCIATIONS OF LOCKS AND BUILDERS HARDWARE MANUFACTURERS



ARGE is the European Federation of Associations of Lock and Builders Hardware Manufacturer and therefore ARGE is the roof organisation of the European Builders Hardware Industry. Members of ARGE are the National Associations in 16 European countries and ARGE is today covering about 70 – 75 % of the whole European Builders hardware production.

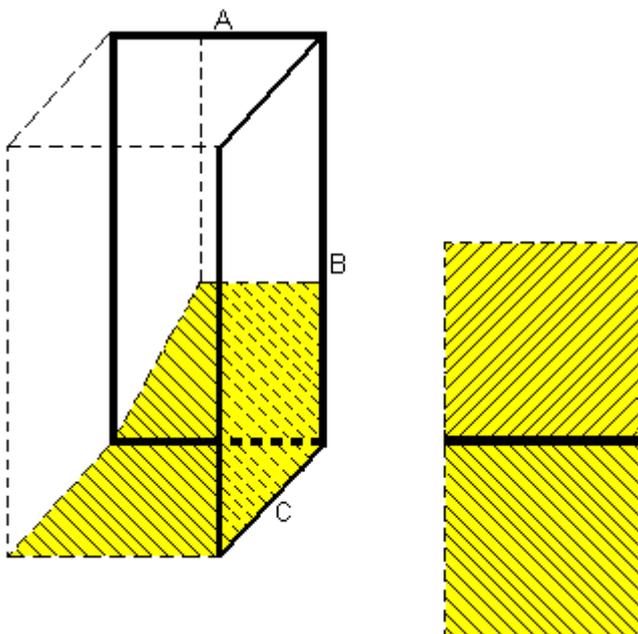
For many decades Manufacturers knew only their National Technical Standards. With increasing globalisation, international Standards, based on performance standards became necessary. International Standards eliminate trade barriers and contribute to easier exchange of products from country to country. International Standards like CEN are harmonised and tested according to common rules. Mutual recognition is also required.

Requirements from the market for high security products are continuously increasing. Manufacturers have taken advantage of this development and have created a range of appropriate new security products.

THE EUROPEAN FEDERATION OF ASSOCIATIONS OF LOCK AND BUILDERS HARDWARE MANUFACTURERS
ARBEITSGEMEINSCHAFT DER VERBANDE DER EUROPÄISCHEN SCHLOSS - UND BESCHLAGINDUSTRIE
FEDERATION EUROPEENE DES ASSOCIATIONS DE FABRICANTS DE SERRURES ET FERRURES

Free Zone markings (example from Sweden)

1. It is recommended to ensure the functionality of a safe escape route presupposes that the “Escape door FREE ZONE” (contiguous, adjacent space/zone, before and after the escape door in the escape route) is free and protected, whether or not the doors are ‘in’ or ‘out’ swing-type, single or pair of doors (including sliding doors).
2. The “Escape door FREE ZONE” has to be established at the design stage according to local situations throughout Europe. It is recommended that the marking and protection of the “Escape door FREE ZONE” should be in place at the same time as the installation of the door.
3. The end-user takes the responsibility of maintaining the marked and protected “Escape door FREE ZONE” as functional on the escape route at all times
4. The dimension of the “Escape door free volume space zone” (in m³) is defined by the dimension a b c with the door-blade at 90 degree position both for the ‘in’ and ‘out’ swing-doors.



Sketch showing “**Escape door FREE ZONE**” for a single swing-door

5. It is up to the designer and the manufacturer to define the most appropriate solution on how to mark and protect the “Escape door FREE ZONE”.
6. The following photos show an example of real door situation “Escape door with FREE ZONE” protection, but without marking.

FREE ZONE TO BE MARKED

OUTSIDE



INSIDE

This example is only representative for the "Escape door FREE ZONE"
It has nothing to do with the door itself or lock-devices.

The Construction Products Directive (CPD) and the Construction Products Regulation (CPR)

The Construction Products Directive (Directive 89/106/EC) was adopted in 1989 and became law following national implementation in 1991. It established a single market in construction products, enabling products that satisfied harmonised technical specifications to bear the CE mark. The CE mark creates the legal presumption that a product bearing it complies with the health and safety requirements of the relevant directive. Such products are automatically granted access to the market in all member states. In the case of construction products, although a CE marked product can lawfully be offered for sale anywhere in the EU, local building regulations will determine whether it can be used in a particular application.

In the majority of member states it is unlawful to place a construction product on the market without the CE mark once the harmonised technical specification has been published and the date for withdrawal of conflicting national standards has passed.

Technical specifications

Performance requirements

The harmonised technical specifications lay down the performance requirements to be achieved by the products in order for the construction works in which they are to be installed to achieve the six “Essential Requirements”. These performance requirements are outlined in mandates for product families issued by the European Commission to CEN and other European standards organisations. Performance requirements may be expressed in levels or classes to enable the user to select the appropriate performance level for a specific application. In some cases, technical specifications contain extra requirements, in addition to those in the mandate, but compliance with these is **not** required for CE marking. (A list of harmonised standards can be found at: <http://ec.europa.eu/enterprise/newapproach/nando/>)

The six essential requirements are:

1. Mechanical resistance and stability
2. Safety in case of fire
3. Hygiene, health and the environment
4. Safety in use
5. Protection against noise
6. Energy economy and heat retention

Evaluation of conformity

As well as performance requirements, the standards detail how the conformity of the product is to be evaluated. This involves:

1. An initial type test (ITT) carried out on one or more samples of the product
2. Factory production control (FPC) to ensure that the products actually sold achieve the declared performance, which is based on the ITT. A quality system certified to ISO 9000 by an approved certification body will meet this requirement.

Attestation of conformity

The CPD also establishes four levels of “attestation of conformity”, describing the attestation process required to support the CE mark and its associated declaration of conformity. The highest level, intended for safety-critical products, requires an approved certification body to be involved in surveillance and assessment of the factory production control and of the product itself. The lowest level allocates these responsibilities to the manufacturer:

	Factory Production Control	Initial Type Test
System 1 (highest)	Notified Body	Notified Body
System 2	Notified Body	Manufacturer
System 3	Manufacturer	Notified Body
System 4 (lowest)	Manufacturer	Manufacturer

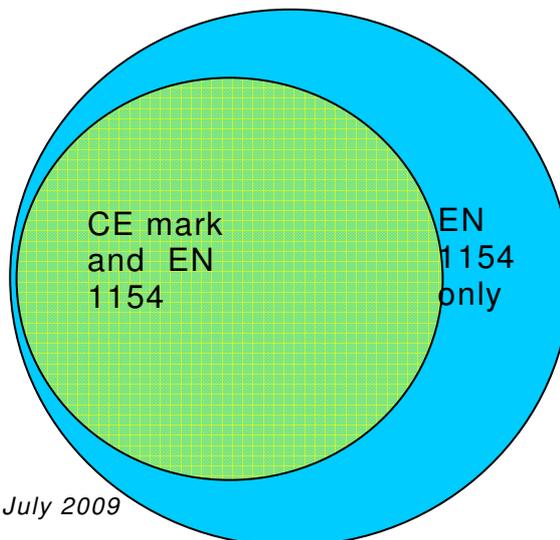
System 1 includes, optionally, audit testing of production samples by the notified body. System 2 includes an option for testing of production samples by the manufacturer. Which system and option applies to a particular product or application is decided by the European Commission and laid down in the mandate. This information is then included in an informative annex (annex Z) to the harmonised technical specification. In addition, this annex details the clauses within the standard with which compliance is essential to permit CE marking.

Notified bodies are test houses and certification bodies which have been designated by member states to carry out conformity assessment for particular product areas; a list can be found at <http://ec.europa.eu/enterprise/newapproach/nando/>.

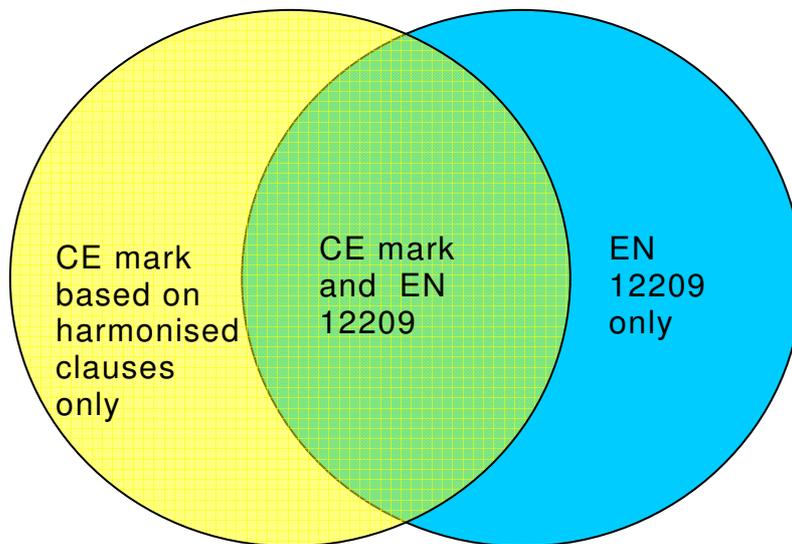
The harmonised technical specifications may include levels or classes of performance for particular product attributes. This is to accommodate, inter alia, differences in national regulatory requirements.

It is important to note that compliance with a European standard, and compliance with the harmonised clauses of that standard, are not necessarily the same thing:

In EN 1154 (controlled door closing devices), all the performance requirements in the standard are relevant to the product’s ability to close and retain a fire-resisting door in position. Consequently, a CE marked product must both comply in full with the standard and with the requirements of Annex Z. However, a product complying with the standard but not Annex Z could not carry the CE marking:



In EN 12209 (single point lock-cases), CE marking is applied to products that can latch and retain a fire-resisting door in the closed position, enabling it to perform its function. Only the performance of the latch-bolt is relevant. The performance of the dead bolt (if any), although essential to the lock's ability to resist attack, has no bearing on the lock's fire performance. Thus a lock that complied with Annex Z, but not the burglary resistance clauses, *could* carry the CE mark although it did not fully meet the requirements of the standard. Equally, a lock which complied with all the standard's requirements, including burglary resistance, could not carry a CE mark unless it also complied with the requirements of Annex Z.



In this case it is important to check that the product meets all the performance criteria for the application; the CE mark on its own is not sufficient.

Responsibility

The person responsible for compliance with the CPD is whoever first places the product on the EU market. Typically this will be the manufacturer, but, for a manufacturer based outside the EU, it may be an importer or agent, depending on circumstances. A retailer or distributor may be responsible if the product is marketed under their name.

Applying the CE mark

The responsible person must provide a declaration of conformity (or, where an approved certification body is involved, obtain a certificate of conformity) for the product. That person may then apply the CE marking to the product, to an attached label or to accompanying documentation as detailed in the relevant harmonised standard.

The CE mark is a statement that the product complies with **all** relevant directives; electrically-powered products may also need to comply with the Low Voltage Directive, the Electro-Magnetic Compatibility Directive and the Machinery Directive.

Future developments – the Construction Products Regulation

The Construction Products Directive is likely to be replaced in 2012 by the Construction Products Regulation. EU regulations are directly enforceable in member states; there will be no requirement for national implementation as there was in the case of the existing directive. This means that interpretation and enforcement should be more uniform across the EU.

Other changes in the draft document include:

- There will be a seventh essential requirement: “Sustainable use of natural resources” which requires recyclability of construction works, materials and parts, durability of works and use of “environmentally compatible raw and secondary materials”.
- It will be an offence in all member states to offer for sale a construction product without the CE marking where:
 - (a) A harmonised product standard is in force, and
 - (b) A national regulation exists, embodying requirements similar to those of the harmonised standard.

Where (a) is true but (b) is not, CE marking is voluntary.

- Obligations of manufacturers, representatives, importers and distributors are explicitly stated.
- Simplified procedures are described for micro-enterprises and individually manufactured products.
- Attestation of conformity is altered slightly:

New system	Equivalent under existing system
1	1 with audit testing by notified body
2	1 without audit testing by notified body
3	2 with testing of production samples by manufacturer
4	3
5	4

The existing system 2 option “without testing of production samples by the manufacturer” has disappeared.

Factory Production Control (FPC)

1 General

The product standard requires the manufacturer to maintain a FPC system to ensure that the hardware components actually sold achieve the declared performance, which is based on the results of the Initial Type Test (ITT).

The system consists of:

- Written procedures;
- Regular inspections;
- Tests and/or assessments;
- Use of the results to control raw materials, components, equipment, production process and product;
- Records of the inspections, tests, assessments and any action taken.

Note that:

- ❖ Records must be stored in a secure and retrievable way for a minimum of 10 years after production of the hardware component in question has ended.
- ❖ The procedures must ensure that production tolerances allow for the hardware component to achieve the declared performance.
- ❖ The procedures must specify the action to be taken when control values or criteria are not met.
- ❖ The manufacturer must record the process of verification, including at least the following information:
 - identification of the hardware component tested,
 - the date of sampling and testing,
 - the test methods performed,
 - the test results,
 - person responsible for the verification.

2 Personnel

The responsibilities of staff managing or performing work affecting product conformity must be defined in the written procedures. This is particularly important for those responsible for preventing non-conformities or responsible for action to be taken in the event of non-conformities.

Staff must be competent to perform the work involved and records must include relevant details of individuals' skills, training and experience.

3 Equipment

Weighing, measuring and testing equipment must be calibrated and all equipment used in testing and production must be regularly inspected and maintained to ensure consistency in the manufacturing process. This process must be carried out in accordance with the written procedures and the results recorded.

4 Design process

The written procedures must include descriptions of the various stages in the design process, who is responsible at each stage and what checks are to be carried out. All such checks must

be recorded, including results and action taken; records must be sufficient to demonstrate that the design process and all the checks have been satisfactorily completed.

5 Raw materials and components

The procedures must include specifications for incoming materials and also details of the inspection scheme for ensuring their conformity.

6 Production process control

The procedures must identify the key stages during the production process, the checks to be carried out and who is responsible. Results of tests must be recorded, as must any corrective action taken. The aim is to ensure that only products which have passed the intermediate controls are dispatched.

7 Traceability and marking

The procedures must include regular checking of traceability codes and markings.

8 Non-conforming products

The procedures must document how non-conforming hardware components are dealt with. Any such events must be recorded and the records retained for the specified period.

9 Corrective action

The procedures must instigate action to eliminate the cause of nonconformities in order to prevent recurrence.

10 Handling, storage, packaging

The procedures must provide methods of product handling and storage to prevent damage or deterioration.

Main testing requirements

The requirements of the European Standards have been developed and based on extensive practical tests. Some of these tests are:



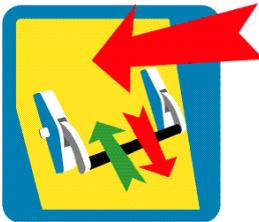
Opening test with minimum effort.

Focus on the ease of opening by the young, elderly and disabled.



Opening test with loaded door for panic exit devices.

Opening force required in a panic situation.



Abuse resistance test.

Durability of the device's functionality when mistreated.



High-usage-cycle test.

Focus on the sustained 'escape' capability of the device throughout its expected life.



Factory production control, third-party attestation of conformity.

To make sure that the performance of the manufactured products is consistent and complies with the original test requirements..



Marking requirements.

To give evidence of conformity of the product and to differentiate applications (panic or emergency).

The responsibility of the various stakeholders

If regulations and the use of a product define obligations and recommendations which have to be respected, it is important to point out the responsibility of the various stakeholders in the manufacture, marketing, choice, installation and maintenance, but also the use of doors for emergency exits. Everyone is concerned, at various levels, during the lifespan of a door for emergency exit.

The responsibility for those who manufacture or design (The Manufacturer)

The industrialist (designer or manufacturer) and also the distributor (importer, or assembler) who puts a product on the market is directly concerned and must respect the regulations and the standards.

The legal risk is significant, with sometimes an obligation to withdraw products from the market.

In particular it is advisable to provide necessary information on the products:

- Markings
- Conformity to the standards produced
- The declaration of conformity and CE marking
- Certifications
- Validated configurations (statement on fire)
- Notes on use, installation and maintenance
- Limits of use of the products offered

The sales contract:

- Details of the products offered for sale
- Additional service complementary to the sale
- General conditions of Sale

The responsibility for those who specify and define the choice (The Specifier)

The specifier, architect, engineering and design department, quantity surveyor generally defines the choice of the suitable product in the schedule of conditions of a project. Other stakeholders, general contractors, sub-contractors, carpenters and metal workers may also be involved either to specify the choice, or to propose alternatives during the specification process. All have a responsibility.

It is particularly advisable to take into account the following:

- To carry out a preliminary analysis of risks
- To define the regulation of the schedule of conditions according to this analysis
- To respect the schedule of conditions
- To avoid changing or degrading a regulation of the schedule of conditions by taking into account only the economic criterion, with the detriment of the safety of the people.

The responsibility for those who distribute and sell (The Distributor)

The distributor plays an important part in the choice of a product, either to specify the functionality or to propose an alternative “similar” or “equivalent” to his customer. It is important that he knows the products offered as well as the regulations and the standards in order not to sell an unsuitable or even dangerous product.

It is advisable to train the personnel who sell the product on the importance of respecting the schedule of conditions and the risks related to a change or the degradation of a specification or schedule of conditions.

The responsibility for those who install (The installer)

Project management (general contractor who employs subcontractors), but also the fitter (carpenter, or metal worker), play an important part related to the objectives of the standards and regulations and schedule of conditions. They must also take careful note of the fixing instructions provided by the manufacturer to achieve good quality installation.

It is particularly appropriate to:-

- use the tools recommended by the manufacturer
- choose compatible accessories validated by the manufacturer
- check the suitability of products for fire-resisting doors
- check the quality of installation, in particular on doors with two leaves.
check the compatibility of other products on the doors
- take care of the qualification of the subcontractor (carpenters or metal workers in particular) and of the type-approval procedure of equipment
- give the building owner the maintenance instructions

The responsibility for the building owner and those who ensure maintenance

The building owner (owner, or premises manager) who is responsible for the building, or the services, ensuring the safety of an establishment also has an important role because he is responsible in the eyes of the law and must take care to maintain the conditions of operation of the building.

The responsibility for the end-user

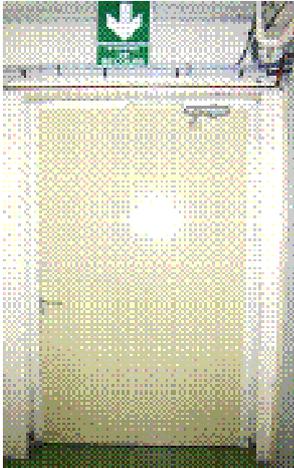
The user, tenant, employer, employee and generally all the people occupying, even on a purely temporary basis, a building should not block the correct operation of exit devices, insofar as it can endanger him and also endanger the life of others.

It is particularly important to:-

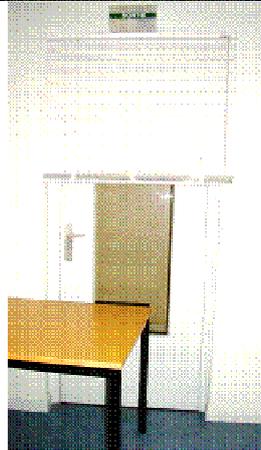
- Educate the personnel and the public about their rights and duties in respect of the operation of exit devices
- respect procedure rules in places of work

Typical examples of products and configurations

Panic exit devices with horizontal bar EN 1125



Examples of potentially dangerous solutions



Frequently asked questions



What is the difference between panic and emergency exit devices and where do I use them?

Panic exit devices to EN 1125 are intended for use on exit doors where a panic situation may arise. They will give safe and effective escape through a doorway with minimum effort and without prior knowledge of the device. Emergency exit devices to EN 179 are intended for use where people are familiar with the exit door. They will give safe and effective escape through a doorway with one single operation to release the device, although this may require prior knowledge of its operation.

Can I use an emergency exit device on a panic exit?

No. Panic exit devices may be used on emergency exits, but emergency exit devices must never be used on panic exits. If in doubt, always specify panic exit devices.

Is it possible to offer an electrically controlled solution?

Yes, panic exit systems (to prEN 13633) and emergency exit systems (to prEN 13637) allow you to offer electrically controlled solutions linked to the fire detection and alarm system as well as to the access control system of a building, without jeopardising the life safety requirements.

May I use exit devices on fire-resisting doors?

Yes, but you should check that the device is intended for use on fire-resisting doors and has been tested accordingly. Evidence is given by the marking on the product and the copy of the certificate of conformity supplied by the manufacturer.

Can I lock an exit door?

No. An exit door must allow safe and immediate exit at any time. However, access from outside may be achieved through an outside access device, unless this is not permitted by local regulations. Nevertheless it is usually permitted (ask your local fire authorities) to lock an exit door electrically under certain conditions. The exit system must be linked to the fire detection and alarm system to allow immediate release of the door in case of an emergency or panic. A time delay action may also be allowed. The door may also be locked when the public are absent. This makes it possible to achieve a higher security level when the building is unoccupied without jeopardising panic/emergency escape.

Can I use a motorised lock for additional security or convenience?

Yes, but only if the motorised lock is interlocked with an essential function in such a way that normal activities cannot be held in the building or room without the ability to release it. Essential functions include:

- The lights (when daylight is not available)
- The intruder alarm

Can I integrate an electrically controlled device into an access control system?

Yes, but it must be linked to the fire detection and alarm system. Access controls are usually not in conflict with panic or emergency functions. You are recommended to use a certified installation company.

Can I use electric strikes? Or solenoid locks?

A solution with electric strikes may not conform to EN 1125 or EN 179. When using an electric strike, escape must be possible even when the strike is in a locked position. A solution with solenoid locks may similarly not conform to EN 1125 or EN 179. When using a solenoid lock you

must ensure that the system is of fail-unlocked type. The function of the solenoid lock must be that the lever handle operates (opens) the latch bolt if power fails. Products must always be tested as a set and must fall into one of the approved categories.

What does 'fail locked' and 'fail unlocked' mean?

'Fail unlocked' (fail safe) means that if the installation is without power (for whatever reason) it must be possible to open that door mechanically. 'Fail locked' means the opposite, that the door will remain locked.

I have a double door set, what is it important to consider?

Importance of door control: Door closers, automatics, coordinators, hinges; do the doors have square edges; are they rebated? Escape via active door leaf? Escape via both doors in the door set?

Is it possible to return through the exit door, and why?

Under some conditions it is a requirement that return through the escape door should be possible: for instance if the escape route is via the staircase or via other rooms. In this case select an approved product and follow the manufacturer's recommendations for outside trims, functions and installation.

Is it possible to connect an exit device to a burglar alarm?

Burglar alarms are usually not in conflict with panic or emergency functions. You are recommended to use a certified installation company.

Bibliography

EN Standards

- EN 1125 :2008 - Building hardware - Panic exit devices operated by a horizontal bar - Requirements and test methods
- EN 179 : 2008 - Building hardware - Emergency exit devices operated by a lever handle or push pad - Requirements and test methods
- prEN 13633, Building hardware - Electrically controlled panic exit systems for use on escape routes - Requirements and test methods
- prEN 13637, Building hardware - Electrically controlled emergency exit systems for use on escape routes – Requirements and test methods
- EN 1158 - Building hardware - Door coordinator devices - Requirements and test methods
- EN 1634-1, Fire resistance and smoke control tests for door and shutter assemblies, opening windows and elements of building hardware - Part 1: Fire resistance test for doors and shutter assemblies and opening windows
- prEN 1634-2 - Fire resistance and smoke control tests for door and shutter assemblies, opening windows and elements of building hardware - Part 2: Fire resistance characterisation test for elements of building hardware
- EN 1634-3, Fire resistance and smoke control tests for door and shutter assemblies, opening windows and elements of building hardware - Part 3: Smoke control test for door and shutter assemblies
- EN 1670:2007, Building hardware - Corrosion resistance - Requirements and test methods
- EN ISO 9001:2000, Quality management systems - Requirements (ISO 9001:2000)
- EN 13501-2 - Fire classification of construction products and building elements - Part 2: Classification using data from fire resistance tests, excluding ventilation services
- EN 14600 – Doorsets and openable windows with fire-resisting and/or smoke control characteristics – requirements and classification.

Terminology and definitions

Technical terminology and definitions

Note: some of the following definitions are extracts from the EN 1125, EN 179, prEN 13633 and prEN 13637 Standards.

exit hardware

Building hardware intended for use on exit doors of escape routes.

exit devices

Mechanical exit hardware intended for use in panic or emergency situation

panic exit device

panic bar-panic lock

An exit device to EN 1125 intended for use where panic situations may arise, to give safe and effective escape through a doorway with minimum effort and without prior knowledge of the panic exit device.

It therefore allows escape even in the event of a door under pressure.

emergency exit device

exit lock;

emergency lock

An exit device to EN 179 intended for emergency purposes where panic situations are not likely to arise, to give safe and effective escape through a doorway with one single operation to release the device, although this may require prior knowledge of its operation.

electrically controlled exit system

Electrically controlled exit hardware intended for use in panic or emergency situation.

electrically controlled panic exit system

A system to prEN 13633 for use where panic situations are foreseen which enables the electrical control of emergency exit doors by means of electrical locking element (EL), initiating element (IE) and electrical controlling elements (EC). These separate elements may be interconnected or may be combined in various assemblies, to provide the required system functions.

electrically controlled emergency exit system

A system to prEN 13637 for use where panic situations are not foreseen which enables the electrical control of emergency exit doors by means of electrical locking elements (EL), requesting element (RE) and electrical controlling elements (EC). These separate elements may be interconnected or may be combined in various assemblies, to provide the required system functions.

bar

The horizontal part of a panic device which, when pushed, will operate the mechanism.

push-bar

The activating horizontal bar of a panic device cross bar (type A), designed to be fixed between pivoted support brackets, that operates in the direction of exit and/or in an arc downwards.

touch-bar

The activating horizontal bar of a panic device push bar (type B), designed to be part of a chassis or other mounting assembly, that operates in the direction of exit.

push pad

An operating element of an emergency exit device, which, when pushed, operates the emergency exit device mechanism in order to release the bolt head(s).

pull pad

An operating element of an emergency exit device installed on an inwardly opening door which, with one single hand operation, operates the emergency exit device mechanism in order to release the bolt head(s).

lever handle

A rotatable operating element whose axis of rotation is perpendicular to the face of the door and which operates the emergency device mechanism in order to release the bolt head(s).

outside access device

A mechanism for opening an emergency exit device from the outside.

automatic re-latching device

A device to enable the automatic securing of a panic device in the closed position, after it has been operated.

bolt head

The portion of a panic device which engages with the keeper to secure the door in the closed position.

dogging mechanism

A mechanism fitted to a panic device for holding the bolt head(s) in the withdrawn position until manually reset.

keeper

strike; striker plate

A socket or other fitting with which the bolt head(s) engages.

outside access device

A mechanism for opening a panic device from the outside.

release force

The force applied to the operating element in a direction perpendicular to the door face, necessary to withdraw the bolt head(s) from the keeper(s).

vertical rod

The extension of the bolt head of a panic device which links it to the bar via the operating mechanism.

deadbolt

A bolt head manually engaged or thrown by a key or thumb turn, and which is released when the exit device is operated.

interconnecting device

A type of device used on double door sets, whereby the operation of the device on one leaf is dependent on the device (or element of the device such as a striker) on the other leaf.

initiating element (IE)

A manually initiated element of a panic exit system that provides an electrical signal to enable an electrical locking element to release the door. An IE may be incorporated into a mechanically operated horizontal bar which complies with EN 1125.

electrical locking element (EL)

An electrically operated element of a panic exit system that maintains the door in secured condition.

These elements may be electromagnetic, electromechanical or motorised in their operation, and may be incorporated in an initiating element.

electrical controlling element (EC)

An element of a panic exit system which supplies, connects and controls the EL and IE. An EC may contain power supplies, selection switches, detection and alarm components and wiring.

active leaf

The first opening and last closing leaf of a rebated single swing double doorset.

inactive leaf

The last opening and first closing leaf of a rebated single swing double doorset.

double doorset

An assembly consisting of two hinged or pivoted leaves within a single frame. The meeting stiles can be either plain or rebated.

NOTE: More can be found in the above-mentioned EN standards.

General terminology and definitions

EU

European Union

CEN

European Standard Organisation (Comité Européen de Normalisation)

EN

European standard (norm)

prEN

Provisional European standard (not yet published)

Standard

A non mandatory technical specification approved by a recognised standard organisation.

Regulation

A mandatory requirement issued by European or National authorities

Escape route

A protected route such as a corridor or staircase leading to a designated safe area, normally outside the building.

Exit door

A door located on an escape route

Access

To gain entry to a building or area within a building

Egress

To exit from a building or area within a building

TR 15894 Extracts

Door fittings for use by children, elderly and disabled people in domestic and public buildings — A guide for specifiers

NOTE The complete document is available from your National Standard Organization.

Extracts:

Introduction

The essential function of building hardware is to provide easy access to all users regardless of their ability or disability. Doors should be of a minimum clear opening width to accommodate wheelchairs and should be easy to use. For example, this requires low friction hinges and carefully selected door controls, possibly using low energy door operators, powered or automatic operators or electromagnetic devices.

The correct choice of door furniture with easy-to-use locking systems and good signage all add up to an acceptable combination. Generally, this is no more than would be asked of any responsible specification. This guide is intended to enable installers to correctly follow building specifications and to make sure that buildings are correctly equipped for their intended use. One of the main challenges to specifiers, architects, manufacturers and builders is to ensure that the specification, design and construction do not result in the environment for an elderly or disabled person appearing different from the rest of the community.

This European guidance document is people-based and it is essential that specifiers recognize that the individual needs of users can vary. Users should be consulted frequently in the specification and installation processes. The specification should recognize that buildings are often occupied by non-disabled and younger people, as well as elderly and disabled people. Similarly, these members of the community need to move freely and safely in the wider environment.

Where dimensions/measurements are given for guidance purposes, they are subject to the tolerances incorporated in any appropriate product or construction standard. National regulations, where applicable, should take precedence.

It is recognized that local regulations and certain types of door construction (such as aluminium) may prevent specifiers from achieving all the recommendations in this document. In these circumstances, the needs of the building occupants should be considered and the best possible compromise should be achieved.

This European guidance document refers to the following mandates: M/273-ICT, M/283-Elderly and Disabled, M/292-Product information, M/293-Child safety and CEN Guide 6.

This European guidance document does not refer to EN 12217 which contains selected maximum operating forces considered unsuitable for children, elderly and disabled people to use and does not take into consideration doors fitted with emergency and panic exit devices and systems, or door closing devices.

Scope

This European guidance document provides guidance on the selection of existing building hardware for manually and power operated pedestrian doors and associated products whose integration into the design of buildings will make them more safe, secure and convenient for the occupants inclusive of children, elderly and disabled people to use ("design for all"). Although it is intended for people with reduced physical and sensorial capabilities, it may not cover all specific individual needs. For example, it may not cover all needs of blind people or those not able to move unassisted.

EN 1125:2008 Extracts

Panic exit devices operated by a horizontal bar, for use on escape routes — Requirements and test methods

NOTE The complete document is available from your National Standard Organization.

Extracts:

Introduction

Experience relating to escape from buildings, fire and/or smoke hazards and general safety has made it desirable that doors, in public areas, public buildings, places of public entertainment, shops or those that have to be operated in a panic situation, be fitted with panic exit devices operated by a horizontal bar to common European Standard specifications.

The main purpose of the performance requirements contained in this European Standard is to give safe and effective escape through a doorway with one single operation by hand and/or body pressure to release the panic exit device, with minimum effort and without prior knowledge of the panic exit device.

In this standard priority is given to the panic operation rather than pressure and resistance to the door opening from seals, weather-stripping, multiple bolt heads. Precedence is given to the importance of ease of opening by the young, elderly and infirm.

In a panic situation, a group of people will react differently from an individual. When two or more people are rushing to an exit door located on an escape route, probably in darkness and/or smoke, it is possible that the first one to reach the door will not necessarily operate the panic exit device, but can push the surface of the door (door under pressure) while other people will be trying to operate the horizontal bar by hand or body pressure.

Whilst reasonable external security will be provided by the panic exit devices covered in this standard to avoid potential misuse of the device (chains or bolts). The main objective is to enable a door to be opened at all times by hand or body pressure along its inside face on the panic exit device and not requiring the use of a key or any other object. The performance tests incorporated in this European Standard are considered to be reproducible and, as such, will provide a consistent and objective assessment of the performance of these panic exit devices.

Where emergency exit devices are required for situations in which people are familiar with the use of the door hardware in their surroundings, where exit doors are required to be inwardly-opening, and/or where a panic situation is unlikely to develop, reference can be made to EN 179, covering emergency exit devices.

Where additional security is required for exit doors, reference should be made to prEN 13633 covering electrically controlled panic exit systems, or to prEN 13637 covering electrically controlled exit systems, for use on escape routes. See Bibliography.

This European Standard does not cover the following:

- any particular design of panic exit devices, and only such dimensions as are required for safety reasons are specified;
- specific panic exit devices intended for use by the severely disabled (due to the wide range of disabilities, such panic exit devices and their performances should be agreed between specifier and producer);
- emergency exit devices operated by a lever handle or push-pad (see EN 179) or electrically controlled panic exit systems or electrically controlled exit systems (see prEN 13633 and prEN 13637).



Figure 1 — A panic situation

Figure 1 — A panic situation

Scope

This European Standard specifies requirements for the manufacture, performance and testing of panic exit devices mechanically operated by either a horizontal push-bar or a horizontal touch-bar, specifically designed for use in a panic situation on escape routes.

The suitability of a panic exit device for use on fire/smoke resisting door assemblies is determined by fire performance tests conducted in addition to the performance tests required by this European Standard. Annex B indicates additional requirements for these products.

This European Standard covers panic exit devices which are either manufactured and placed on the market in their entirety by one producer or produced by more than one producer and subsequently placed on the market as a kit in a single transaction.

As a matter of principle, this standard assumes that panic exit devices are placed on the market as a complete unit. Therefore the components have to be tested jointly and supplied as a set. For logistic reasons, delivery of complete sets is not always possible. The instructions of the certificate holder shall specify which combinations of individual parts are admissible as panic exit devices. If the conditions are fulfilled, the components may also be supplied separately.

EN 179:2008 Extracts

Building hardware — Emergency exit devices operated by a lever handle or push pad, for use on escape routes — Requirements and test methods

NOTE The complete document is available from your National Standard Organization.

Extracts:

Introduction

Experience relating to escape from buildings, fire and/or smoke hazards and general safety has made it desirable that doors in circulation areas, or those that have to be operated in an emergency situation, be fitted with emergency exit devices to common European Standard specifications.

The main purpose of the performance requirements contained in this European Standard is to give safe and effective escape through a doorway with one single operation to release the emergency exit device, although this might require prior knowledge of the door situation (e.g. inwardly opening).

The performance tests incorporated in this European Standard are considered to be reproducible and, as such, will provide a consistent and objective assessment of the performance of these emergency exit devices.

Where panic situations are foreseen, reference should be made to EN 1125, covering panic exit devices operated by a horizontal bar.

Where additional security is required for exit doors, reference should be made to prEN 13633 covering electrically controlled panic exit systems, or to prEN 13637 covering electrically controlled exit systems for use on escape routes.

Scope

This European Standard specifies requirements for the manufacture, performance and testing of emergency exit devices mechanically operated by either a lever handle or a push pad for the purpose of achieving a safe exit under an emergency situation on escape routes.

The suitability of an emergency exit device for use on smoke/fire-resisting door assemblies is determined by fire performance tests conducted in addition to the performance tests required by this European Standard. Annex B indicates additional requirements for these products.

This European Standard covers emergency exit devices, which are either manufactured and placed on the market in their entirety by one producer, or produced by more than one producer and subsequently placed on the market as a kit in a single transaction.

As a matter of principles, this standard assumes that emergency exit devices are placed on the market as a complete unit. Therefore the components have to be tested jointly and supplied as a set. For logistic reasons, delivery of complete sets is not always possible. The instructions of the certificate holder shall specify which combinations of individual parts are admissible as emergency exit devices. If the conditions are fulfilled, the components may also be supplied separately.

prEN 13633 Extracts

Electrically controlled panic exit systems for use on escape routes — Requirements and test methods

NOTE The complete document is available from your National Standard Organization.

Extracts:

Introduction

Experience relating to fire and/or smoke hazards and general safety has made it desirable that doors in circulation areas, or those that have to be operated in a panic situation, be fitted with panic exit devices.

Increasingly, such panic exit devices may form a part of the security system of a building and involve the use of electrical locking and controlling elements. This standard provides common European Standard specifications for such electrically controlled panic exit systems.

The main purpose of the performance requirements contained in this European Standard is to give safe and effective escape through a doorway with **one single operation** by hand and/or body pressure to release the electrically controlled panic exit system, with minimum effort and without prior knowledge of the panic exit system, and of the door situation.

In this standard priority is given to the panic operation rather than pressure and resistance to the door opening from seals, weather-stripping, multiple bolt heads. Precedence is given to the importance of ease of opening by the young, elderly and infirm.

In a panic situation, a group of people will react differently from an individual. When two or more people are rushing to an exit door located on an escape route, probably in darkness and/or smoke, it is possible that the first one to reach the door will not necessarily operate the panic exit device or system, but can push the surface of the door (door under pressure) while other people will be trying to operate the horizontal bar by hand or body pressure.

This standard introduces the concept of central management control.

NOTE This standard does not refer to the concept of time-delayed egress and denied egress mode, as covered in prEN 13637. It is the responsibility of the regulatory authorities in each member country to decide whether or not such control methods can be allowed, and if so, to what extent within the limits stated in the standard.

It is intended that the requirements of this standard should apply at all times, regardless of whether or not the building is occupied. For safety reasons, any additional features of the system, such as access control, are required to maintain the principle of fail-safe release at all times. In terms of the Construction Products Directive (89/106/EEC) (CPD) the essential requirements of this standard are to give safe and effective escape through a doorway with not more than one single operation from the electrically locked state to the release of the door. Where panic situations are foreseen, but where there is no need for additional electrical control, reference could be made to EN 1125, covering panic exit devices operated by a horizontal bar. See definitions.

NOTE An electrically controlled panic exit system to prEN 13633 can replace an existing mechanical panic exit device to EN 1125.

Where exit devices are required for situations in which people are familiar with the use of the door hardware in their surroundings, where exit doors are required to be inwardly-opening, and/or where a panic situation is unlikely to develop, reference can be made to EN 179, covering emergency exit devices, or to prEN 13637 covering electrically controlled escape exit systems.

The performance tests incorporated in this standard are considered to be reproducible and, as such, will provide a consistent and objective assessment of the performance of these electrically controlled panic exit systems throughout CEN Member States.

This European Standard does not cover the following:

- any particular design of electrically controlled panic exit systems and only such dimensions as are required for safety reasons are specified;
- any other element of a security system, other than those directly involved in the control of an exit door;
- mechanically operated panic exit devices containing electrical functions that are not related to the exit release function, for example, access control or monitoring functions. Such devices are generally within the scope of EN 1125;
- specific electrically controlled exit systems intended for use on inwardly opening doors (see prEN 13637);
- specific electrically controlled panic exit systems intended for use by the severely disabled; due to the wide range of disabilities, such exit devices and their performances should be agreed between specifier and producer;
- mechanical exit devices operated by a horizontal bar (see EN 1125) or electrically controlled exit systems (see prEN 13637), or mechanical emergency exit devices operated by a lever handle or a push pad (see EN 179).

Scope

This European standard specifies requirements for the manufacture, performance and testing of electrically controlled panic exit systems, specifically designed for use in a panic situation on escape routes.

These systems consist of at least the following elements:

- **Requesting element integrated in a horizontal bar** for requesting the release of electrical locking elements in **one single operation** in order to exit;
- **Electrical locking element** for securing an exit door;
- **Electrical controlling element** for supplying, connecting and controlling electrical locking element and requesting element.

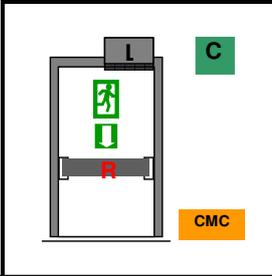
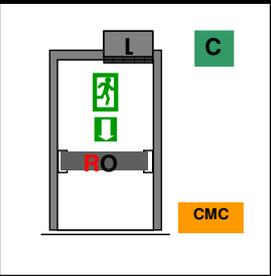
This European Standard covers panic exit systems placed on the market as a complete unit (which includes mortise lock, cylinder, keeper, requesting element integrated in a horizontal bar, electrical locking element, electrical controlling element, for instance). The components are tested as a single product.

NOTE 1 Panic exit systems should give immediate release at all times, therefore a time delay and/or egress mode are not suitable.

NOTE 2 The suitability of an electrically controlled panic exit system for use on fire/smoke resisting door assemblies is determined by fire performance tests conducted in addition to the performance tests required by this European Standard. Annex B indicates additional requirements for these products.

NOTE 3 This European Standard covers electrically controlled panic exit systems which are either manufactured and placed on the market in their entirety by one producer or assembled from sub-assemblies produced by more than one producer and subsequently placed on the market as a kit in a single transaction. This doesn't preclude components being delivered separately. The manufacturer is responsible for making it clear in a 'list of components' as part of the manufacturer's compulsory installations which combination of components is covered by the ITT.

Configurations of Panic Exit Systems

		
TYPE	C	E
Requesting R 1. Break glass 2. Lever handle (or push pad) 3. Horizontal bar	X	X
Operating O 0. None 1. Lever handle (or push pad) 2. Horizontal bar	X	X (with requesting)
Mechanical locking 0. None 1. EN 179 Emergency exit device 2. EN 1125 Panic exit device	X	X
Number of operation(s) (without time delay) 1. One operation 2. Two operations	X	X
Time delay 0. No time delay T0 1. Single time delay T1 2. Double time delay T2 (a)	X	X
Denied egress 0. None 1. Yes (a)	X	X
Fire suitability (with electrical locking element not energized) 0. Not suitable (b) 1. Suitable	X	X
(a) CMC mandatory (b) unless verified by specific fire tests		

Extracted from prEN 13633 :2009 (E) 'Electrically controlled panic exit systems for use on escape routes – Requirements and Test Methods' Annex G (Normative)

prEN 13637 Extracts

Electrically controlled escape exit systems for use on escape routes — Requirements and test methods

NOTE The complete document is available from your National Standard Organization.

Extracts:

Introduction

Experience relating to fire and/or smoke hazards and general safety has made it desirable that doors in circulation areas, or those that have to be operated in an emergency situation, be fitted with emergency exit devices.

Increasingly, such emergency exit devices may form a part of the security system of a building and involve the use of electrical locking and controlling elements. This standard provides common European Standard specifications for such electrically controlled escape exit systems.

The main purpose of the performance requirements contained in this European Standard is to give safe and effective escape through a doorway with a **maximum of two operations** to release the electrically controlled escape exit system, although this might require prior knowledge of the number of operations (e.g. break glass and/or operating element), and of the door situation (e.g. inwardly opening).

This standard introduces the concept of time delayed egress and denied egress mode, as a means of increasing the security of the building against unauthorised egress, and the concept of central management control. It is the responsibility of the regulatory authorities in each member country to decide whether or not such control methods can be allowed, and if so, to what extent within the limits stated in the standard.

It is intended that the requirements of this standard should apply at all times, regardless of whether or not the building is occupied. For safety reasons, any additional features of the system, such as access control, are required to maintain the principle of fail-safe release at all times. In terms of the Construction Products Directive (89/106/EEC) (CPD) the essential requirements of this standard are to give safe and effective escape through a doorway with not more than two single operations from the electrically locked state to the release of the door, although this may require prior knowledge.

For exit devices intended for use where panic situations are unlikely to develop and where electrical control is not applicable reference may be made to standard covering emergency devices operated by a lever handle or a push pad (see EN 179).

Where panic situations are foreseen, reference should be made to EN 1125, covering panic exit devices operated by a horizontal bar, or to prEN 13633, covering electrically controlled panic exit systems operated by a horizontal bar. See definitions.

The performance tests incorporated in this standard are considered to be reproducible and, as such, will provide a consistent and objective assessment of the performance of these electrically controlled escape exit systems throughout CEN Member States.

This European Standard does not cover the following:

- any particular design of electrically controlled escape exit systems and only such dimensions as are required for safety reasons are specified;
- any other element of a security system, other than those directly involved in the control of an exit door;

- mechanically operated exit devices containing electrical functions that are not related to the exit release function, for example, access control or monitoring functions. Such devices are generally within the scope of EN 1125 or EN 179;
- specific electrically controlled escape exit systems intended for use on inwardly opening double doorsets;
- specific electrically controlled escape exit systems intended for use by the severely disabled; due to the wide range of disabilities, such exit devices and their performances should be agreed between specifier and producer;
- mechanical exit devices operated by a horizontal bar (see EN 1125) or electrically controlled panic exit systems (see prEN 13633), or mechanical emergency exit devices operated by a lever handle or a push pad (see EN 179).

Scope

This European standard specifies requirements for the manufacture, performance and testing of electrically controlled escape exit systems, specifically designed for use in an emergency situation on escape routes.

These systems consist of at least the following elements:

- **Requesting element** for requesting the release of electrical locking element in order to exit;
- **Electrical locking element** for securing an emergency exit door;
- **Electrical controlling element** for supplying, connecting and controlling electrical locking element and requesting element.
- In addition, these electrically controlled escape exit systems can include **time delay and/or denied egress mode**.

This European Standard covers escape exit systems placed on the market as a complete unit (which includes mortise lock, lever handle, cylinder, keeper, requesting element, electrical locking element, electrical controlling element, for instance). The components are tested as a single product.

NOTE 1 The suitability of a time delay and/or egress mode should be defined according to local regulations.

NOTE 2 The suitability of an electrically controlled escape exit system for use on fire/smoke resisting door assemblies is determined by fire performance tests conducted in addition to the performance tests required by this European Standard. Annex B indicates additional requirements for these products.

NOTE 3 This European Standard covers electrically controlled escape exit systems which are either manufactured and placed on the market in their entirety by one producer or assembled from sub-assemblies produced by more than one producer and subsequently placed on the market as a kit in a single transaction. This doesn't preclude components being delivered separately. The manufacturer is responsible for making it clear in a 'list of components' as part of the manufacturer's compulsory installations which combination of components is covered by the ITT.

CONFIGURATION OF ESCAPE SYSTEMS

TYPE	A	B	C	D	E	F	G
Requesting R 1. Break glass 2. Lever handle (or push pad) 3. Horizontal bar	X			X		X (1st operation)	X (1st operation)
Operating O 0. None 1. Lever handle (or push pad) 2. Horizontal bar	X	X	X	X (with requesting)	X (with requesting)	X (2nd operation)	X (2nd operation)
Mechanical locking 0. None 1. EN 179 Emergency exit device 2. EN 1125 Panic exit device	X	X	X	X	X	X	X
Number of operation(s) (without time delay) 1. One operation 2. Two operations	X	X	X	X	X	X	X
Time delay 0. No time delay T0 1. Single time delay T1 2. Double time delay T2 (a)	X X X	X X X	X X X	X X X	X X X	X X X	X X X
Denied egress 0. None 1. Yes (a)	X X	X X	X X	X X	X X	X X	X X
Fire suitability (with electrical locking element not energized) 0. Not suitable (b) 1. Suitable	X	X	X	X X	X X	X X	X X

(a) CMC mandatory
(b) unless verified by specific fire tests

Extracted from prEN13637 : 2009 (E) 'Electrically controlled exit systems for use on escape routes – requirements and test methods.' Annex G (Normative)

Installation instructions

General

Each exit device is placed in the market with detailed instructions for the installation and the maintenance which should be passed on to the user or to his authorised representative.

Installers should bear in mind that the performance characteristics of exit devices are paramount for the users safety.

No modifications are allowed other than the ones described in the manufacturers' instructions

The producer should specify the appropriate fixing arrangements for the door types for which the exit device is designed.

Incorrect installation of an exit device may cause a product failure and a risk for the user.

Panic and emergency exit devices intended for use on doorsets on escape routes should comply with the relevant product standard, EN 1125 or EN179, and be CE marked in the CEN member countries where the CE marking is mandatory for products falling within the scope of the CPD.

Recommendations to consider before fitting an exit device

1. It is recommended to check whether the producer has specified and supplied the appropriate fixing arrangements for the door in question.
2. Before fitting an exit device to a door, the door should be checked to ensure correct hanging and freedom from binding.

It is not recommended, for example, that exit devices be fitted to hollow core doors unless specially designed by the producer for this type of doors.

It is recommended to check that the door construction allows the use of the device, i.e. to check that offset hinges and pairs of leaves allow both leaves to be opened simultaneously or that the gap between door leaves does not differ from that defined by the exit device producer, or that the operating elements do not interfere, etc.

NOTE Panic and emergency exit devices manufactured in accordance with EN 1125 and EN 179 will provide a high degree of safety and reasonable security provided that they are fitted to doors and door frames that are in good condition.

3. Before fitting a panic exit device to a fire/smoke resisting door, the fire certification of the fire door assembly on which the exit device has been tested to prove suitability for use on a fire door should be examined. It is of utmost importance that the fire test evidence on the exit device covers the fire resistance of the door to which it is being fixed. .
4. Care should be taken to ensure that any seals or weather-stripping fitted to the complete door assembly, do not inhibit the correct operations of the exit device.
5. On double doorsets with rebated meeting stiles and where both leaves are fitted with exit devices, it is essential to check that either leaf will open when its exit device is activated and also that both leaves will open freely when both exit devices are operated simultaneously. The use of a carry bar to move the active leaf may be required for this application.

6. Where panic exit devices are manufactured in more than one size it is important that the correct size is selected.
7. Category 2 (standard projection) exit devices should be used in situations where there is restricted width for escape, or where the doors to be fitted with the exit devices are not able to open beyond 90°.
8. Where an exit device is designed to be fitted to a glazed door, it is essential that the glazing is tempered or laminated glass.
9. Different fixing may be necessary for fitting exit devices to wood, metal or frameless glass doors. For more secure fixing, male and female through-door bolts can be used.
10. Exit devices are not intended for use on double action (double swing) doors unless specifically designed by the producer.
11. The fixing instructions should be carefully followed during installation. These instructions and any maintenance instructions should be passed on by the installer to the user.
12. The operating element (bar, push pad or lever handle) should normally be installed at a height of between 900 mm and 1,100 mm from the finished floor level, when the door is in the secured position. Where it is known that the majority of the occupants of the premises will be young children, consideration should be given to reducing the height of the operating element.
13. The horizontal bar of panic devices should be installed so as to provide the maximum effective length.
14. The bolt heads and keepers should be fitted to provide secure engagement. Care should be taken to ensure that no projection of the bolt heads, when in the withdrawn position, can prevent the door from swinging freely.
15. Where exit devices are to be fitted to double doorsets with rebated meeting stiles and self-closing devices, a door coordinator device in accordance with EN 1158 should be fitted to ensure the correct closing sequence of the doors. This recommendation is particularly important on fire/smoke resisting door assemblies.
16. No devices for securing the door in the closed position, such as locks, chains with padlocks etc., should be fitted other than that specified in EN 1125 and EN 179. This does not preclude the installation of self-closing devices.
17. If a door-closing device is to be used to return the door to the closed position, care should be taken not to impair the use of the doorway by the young, elderly and infirm.
18. Any keepers or protection plates provided should be fitted in order to ensure compliance with EN 1125 or EN 179
19. A sign which reads "Rotate handle to open" or "Push to open" or "Push bar to open", as appropriate, or a pictogram should be provided on the inside face of the door immediately above the operating element or on the operating element if it has a sufficient flat face to take the size of lettering required.

For type "B" emergency exit devices intended for use on inwardly opening exit doors, a sign which reads "Rotate handle and pull to open" or "Pull to open" or a pictogram should be provided on the inside face of the door immediately above or on the pull pad if it has a sufficient flat face to take the size of lettering required.

The surface area of the pictogram should be not less than 8,000 mm² and its colours should be white on a green background. It should be designed so that the arrow points to the operating element.

20. It is recommended to check whether hinges are aligned and in good working order.

If a door, free from any thrusts (including the one which may be applied by a door closer or a spring hinge) when opened does not open and close correctly, the hinge alignment should be checked.

If hinges are in good working condition the door, free from any thrust, (including the one which may be applied by a door closer or a spring hinge) should open and close easily. If this is not the case and the friction of the hinges is high (much higher than 4 Nm) the installer should check the working conditions of the hinges and their lubrication.

Recommendations to consider after fitting an exit device

- 21 After fitting an exit device, with the door free from any thrust, including the one which may be applied by a door closer or spring hinges, measure and record the relatching force and the release force of the device.
22. After fitting an exit device on a door which has fire resistance and smoke leakage characteristics, the installer should check whether the door is self-closing, proceeding as specified in the clauses 5.1.1.3 and 5.1.1.4 of EN 14600.

The procedure defined in EN 14600 for carrying out the self closing test:-

- Set the door closer or the spring hinge in such a way that the leaf or leaves of the considered doorset close with a maximum leading edge speed of 300 mm/s.
- Open the leaf of single leaf doorsets or the active leaf of double leaf doorsets to an angle of $10^{\circ} \pm 2^{\circ}$ ($30^{\circ} \pm 2^{\circ}$ if the closing device is a spring hinge), hold the leaf open for $20\text{ s} \pm 2\text{ s}$ and then release it without shock ensuring that it achieves the closed position.
- For double doorsets fitted with door coordinating devices, test the active leaf as specified above then open both leaves by operating the inactive leaf only to an angle of no more than $10^{\circ} \pm 2^{\circ}$ ($30^{\circ} \pm 2^{\circ}$ if the closing device is a spring hinge) beyond the minimum waiting position of the coordinating device. Hold the inactive leaf for $20\text{ s} \pm 2\text{ s}$ and then release it without shock ensuring that it achieves the closed position.
- Note: The waiting position of a door coordinating device is the angular position at which the active leaf is held to allow the inactive leaf to close first.)

Maintenance instructions

Each exit device is placed in the market with detailed maintenance instructions which should be passed on to the user or to his authorised representative,

The user should maintain the device or should have the device maintained as specified in the maintenance instructions with the minimum frequency specified by the manufacturer.

Product maintenance should be carried out by qualified maintenance engineers, possibly approved by local competent authorities. They should take into consideration the frequency of use, the location, the exposure to critical environmental and climatic conditions which directly affect the frequency of the maintenance needed to maintain a product in good working order.

Unless otherwise stated in the maintenance instructions, the user should carry out or have carried out the following maintenance tasks at least every twelve months, if the frequency of use is low, or more often if the frequency of use is higher,

- a) Inspect and operate the panic exit device to ensure that all components are in a satisfactory working condition
- b) Ensure that the keeper(s) is (are) free from obstruction.
- c) Check that the exit device is lubricated in accordance with the producer's instructions.
- d) Check that no additional locking devices have been added to the door since its original installation.
- e) Check that all components of the device are still correct in accordance with the list of approved components originally supplied with the device.
- f) Check periodically that the operating element is correctly tightened and, using a force gauge, measure the relatching force and the release force of the exit device and verify that they have not changed significantly from the forces measured and recorded when the device was originally installed or previously maintained
- g) Check that the latch wear does not prevent the exit device from performing correctly
- h) Check that the product has not been misused
- i) Check that the hinges are aligned and have a correct friction torque (see point 20 of the installation instructions)
- j) If the door has fire resistance and smoke leakage characteristics, after completing the maintenance tasks check that the door is self-closing proceeding as specified in the clauses 5.1.1.3 and 5.1.1.4 of EN 14600 (see point 22 of the installation instructions).