

ASSA ABLOY



Saving life and property

Practical advice and formal regulations
regarding Exit Devices for escape routes

The ASSA ABLOY Group is the world's leading manufacturer and supplier of locks and associated products. All designed to meet end-user's needs for security, safety and convenience.

The Group is active in the development, the production and the marketing of mechanical locks, industrial locks, electromechanical and electronic locks as well as hotel locks, fittings and other accessories. Exit devices form an important element in this broad product mix.

European edition

The contents of this booklet relate to the new European regulations, but can be used elsewhere providing it is borne in mind that all references are European and that local regulations must be taken into consideration. Not to be used in the US.

Contents

Part 1: Practical guidance

| | |
|--|----|
| Fire, smoke and panic | 2 |
| How to use this handbook | 4 |
| The basic consideration: Safety vs. Security | 8 |
| Panic or Emergency? | 10 |
| The role of Exit Hardware | 12 |
| What type of premises? | 14 |
| Important considerations | 18 |
| Different types of Exit Hardware | 20 |
| Mechanically operated Panic Exit Devices | 22 |
| Electrically controlled Panic Exit Systems | 24 |
| Mechanically operated Emergency Exit Devices | 26 |
| Electrically controlled Emergency Exit Systems | 28 |
| A summary | 31 |
| Installation and maintenance | 32 |
| How to find a good solution | 35 |
| A checklist | 36 |
| Terminology and definitions | 38 |
| Frequently asked questions | 42 |
| Where to find what in this document | 44 |

Part 2: Formal regulations

| | |
|---|----|
| New and important information | 48 |
| European Construction Product Directive | 50 |
| National Building Regulations | 52 |
| Fire and Life safety | 52 |
| Where to find what | 53 |
| Extracts from EN standards | 54 |
| Product standards/CEN | 57 |
| Main testing requirements | 58 |
| ASSA ABLOY in brief | 60 |
| About this document | 61 |

Fire, smoke and panic

Assess the problem.

Security and safety are among Man's main concerns in life.

Security was probably the earlier consideration for humanity. Ancient cave dwellers used heavy stones to protect their homes from intruders or wild animals. That may have worked well from a security point of view. But in case of fire, it was very far from being safe. Escaping from a life-threatening situation is not easy with a heavy stone to shift!

Unfortunately, many people still have to learn that lesson today.

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.

80,000

It has been estimated that each year in the European Union, 80,000 people will be injured in fires and of these, 4,000 will die.

In pursuit of the optimal 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 electro-mechanical exit systems can provide ease of escape from a secure building.

Conclusions.

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.



How to use this handbook

New Standards create higher demands.

New European Standards for building hardware have been published recently. Others are still in preparation by the CEN committees. Some of them, so-called Harmonised Standards, have been mandated by the European Commission to meet the essential requirements of the new Construction Product Directive. Accordingly, products complying with these Standards will be entitled to carry the CE marking.

These new regulations are 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 will be published as national Standards. All existing national Standards that conflict with them will have to be withdrawn or amended.

Guidance, not a rulebook.

This handbook gives guidance. Within the ASSA ABLOY Group we have 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. It will give some practical guidance as well as information regarding 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

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.



Part 1:

Practical guidance



The basic consideration

Life before property.

When designing a new building, both ease of escape and resistance to unauthorised use of doors, i.e. safety and security, are normally considered:

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 too.



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, fire safety requirements, etc. 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, a restaurant etc.

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, which may not be available.

The exit hardware must be designed to perform correctly in even the most extreme situations, in order to allow panicking people to exit.



Emergency situations.

Typically, panic will not arise in hazardous situations involving a smaller number of people. Especially not if these people are familiar with the premises and with the emergency exits and their hardware. This could be the case in offices or other working environments.

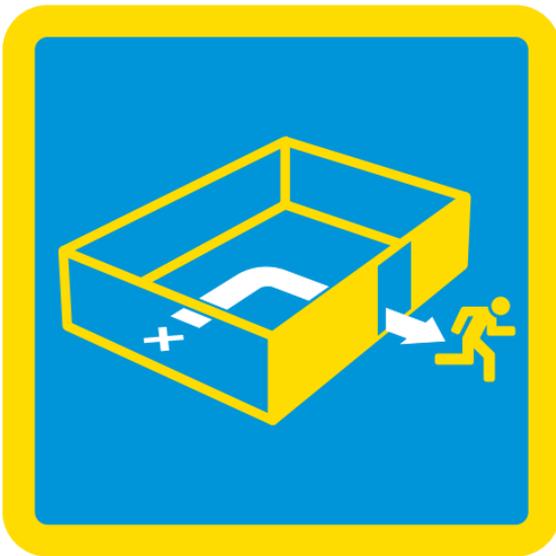
Information, training, etc. will allow people to act rationally and to overcome their fears when exposed to a threatening situation. A clear understanding of the means of escape will allow positive

and reasonable reactions, thus making a clear choice possible: where to go, what door to use, how to operate the door, etc.

Of course, it is necessary here too that the door will operate without using any special tool or key, since this may not be available immediately.

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 (e.g. hospital or hotel rooms).

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 (security) should not be compromised, partly because it could have a negative effect on safety

Protecting lives with Exit Hardware.

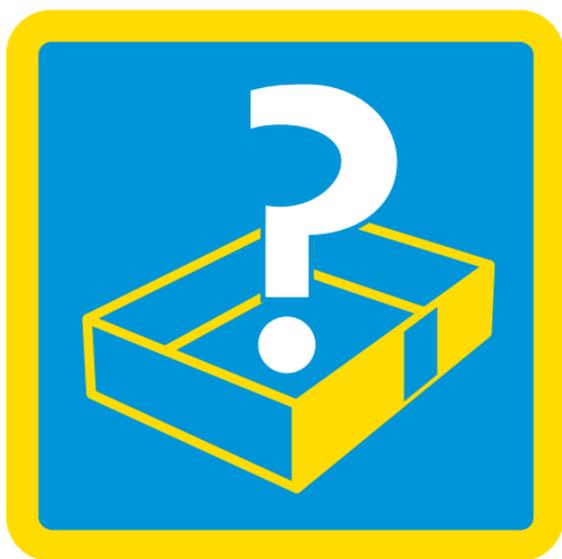
History shows that, after every disaster, the public authorities respond with new legislation and regulations.

In most countries where major disasters have occurred, better solutions are now enforced. Why should we wait for the next disaster before we act?

Traditional thinking often fails to recommend the most suitable solutions for a panic situation. New solutions that take account of recent technical developments and experience drawn from real disasters around the world are now readily available.

What type of premises?

As a specifier or decision maker, you should always consider the most suitable and effective solutions that modern exit hardware can offer in the interests of saving lives.



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 etc that close automatically
- Fire fighting from inside (sprinklers, fire extinguishers, water walls, etc.) 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 (compartmentalization), etc.

The first questions to answer are:

- Type and use of building?
- Type and use of each room?
- Size of each room?
- Number of people allowed in the room?
- Escape routes?
- People's likely knowledge of environment?
- Need for control of exit or entry?
- Fire resisting door or not?

Consider the regulations.

After answering these questions, always consider the 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.

Further advice.

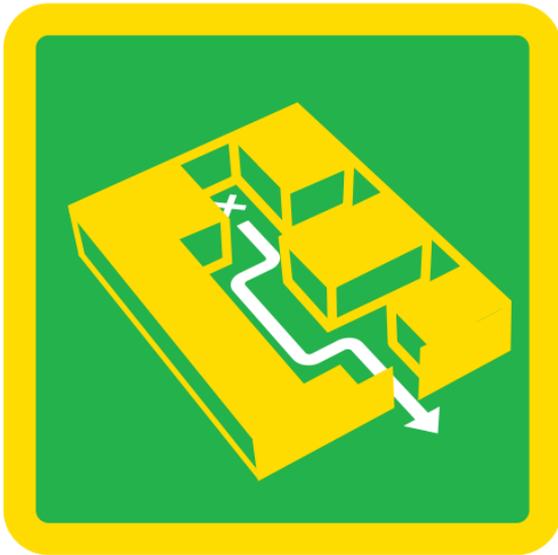
On the following pages you will find a schematic presentation of how escape routes and escape doors may interact in premises with different functionalities. There is also a list ranking the risk of panic in different types of building. Please note that these presentations are examples only, and far from exhaustive.

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 new European Standards.



Panic.



Emergency.

Important considerations



Doors.

The number of exit doors and the location and width of each door are all important considerations. The choice depends on the size of the area in which people will gather and the maximum number of people that might gather in that area at one time.

Exit hardware.

Where large numbers of people will occupy a room, panic exit devices must be provided. Where small numbers of people are gathered, emergency exit devices may be used (see definitions on p 38). However, where human life is involved, the price of the locking device should not be the only factor to be considered.

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 (with limited exceptions, see p 13), 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. A sign over the door might state "This door must be unlocked during hours of occupancy".

Fire-resisting doors.

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.

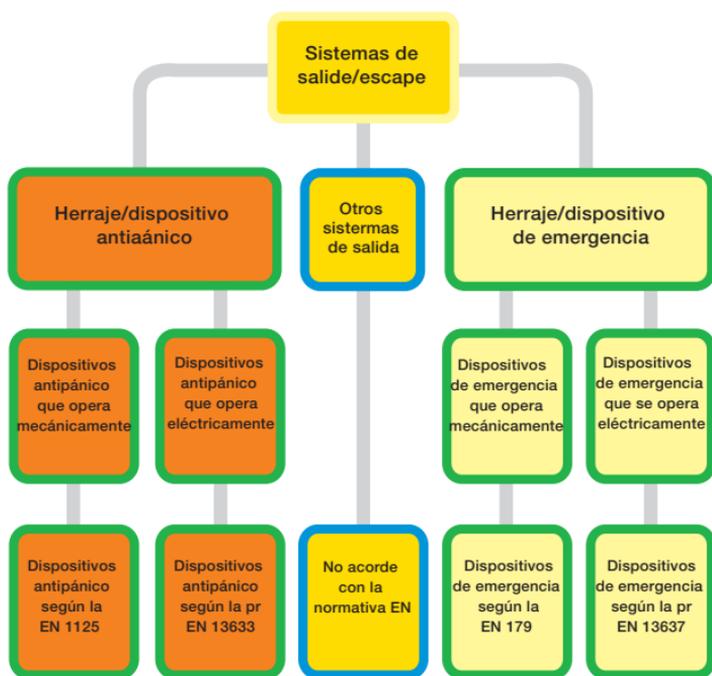
Different types of Exit Hardware

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 **Emergency Exit System**.



Mechanically operated Panic Exit Devices

*”A panic exit device to EN 1125 is 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.**

It contains bolt head(s) which engage(s) with a keeper(s) in the surrounding door frame or floor for securing a door when closed. The bolt head(s) can be released by the bar positioned horizontally across the inside face of the door when it is moved anywhere along its effective length in the direction of travel and/or in an arc downwards.

*NOTE : panic exit devices are suitable also for emergency exits.”***

* by being pushed, thus creating pressure on the bolt-heads in the keepers

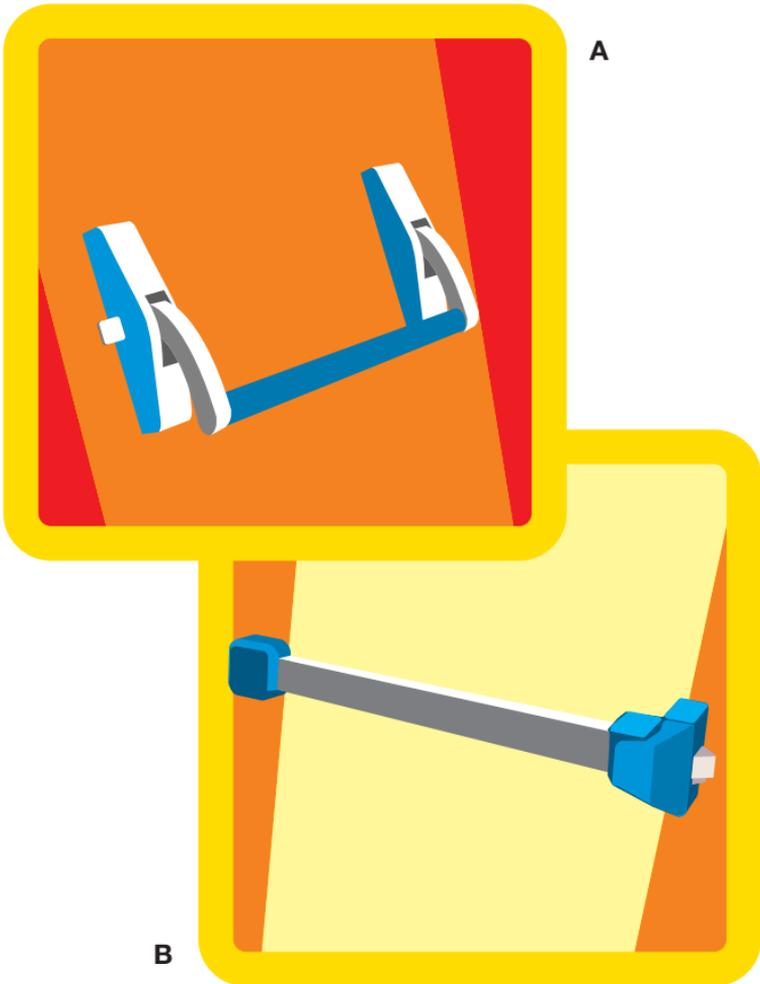
** EN 1125

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)

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

The touch-bar (or ‘integrated bar’) is the activating horizontal bar of a panic device (type B). It is designed to be part of a chassis or other mounting assembly that operates in the direction of exit.



Electrically controlled Panic Exit Systems



New solutions meeting additional needs have been developed to incorporate additional features.

An electrically controlled panic exit system to prEN 13633, intended for use where panic situations are foreseen, enables the electrical control of emergency exit doors by means of an electrical locking element, an initiating element and electrical controlling elements. These separate elements may be interconnected or may be combined in various assemblies to provide the required system functions.

Why use electrically controlled panic exit systems?

To add more intelligence to the exit solutions, thereby achieving other optional functions:

- Signalling (open, closed, locked)
- Video monitoring

- Time operation (locked when building unoccupied)
- Delayed release (controlled / supervised)
- Remote operation (electric locking)

Higher security can also be achieved.

- Higher holding power
- Optional access control link

The safety of the installation can be maintained.

- Can be linked to fire detection and alarm system
- Fail safe operation
- Mechanical exit is always retained! (a requirement of prEN 13633)

Functionality of electrically controlled Panic Exit Systems.

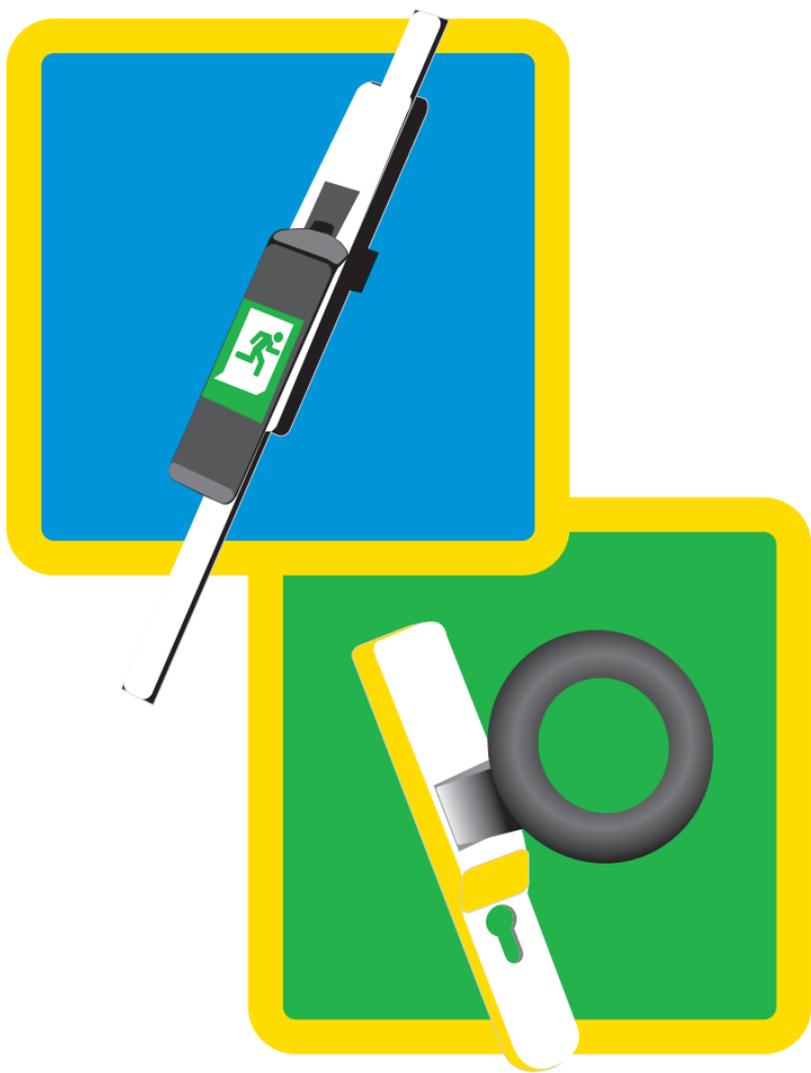


Mechanically operated Emergency Exit Devices

An emergency exit device to EN 179 is a mechanism intended for emergency purposes where panic situations are not likely to arise. It is designed 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.

The device contains one or more bolt heads which engage with keepers in the surrounding door frame or floor for securing the door when closed. The bolt heads can be released by the lever handle or the push pad positioned on the inside face of the door.

NOTE: emergency exit devices are not suitable for panic exits.



Electrically controlled Emergency Exit Systems

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

Why use electrically controlled emergency exit systems?

To add more intelligence to the exit solutions, thereby achieving other optional functions:

- Signalling (open, closed, locked)
- Video monitoring
- Time operation (locked when building unoccupied)
- Delayed release (controlled / supervised)
- Remote operation (electric locking)

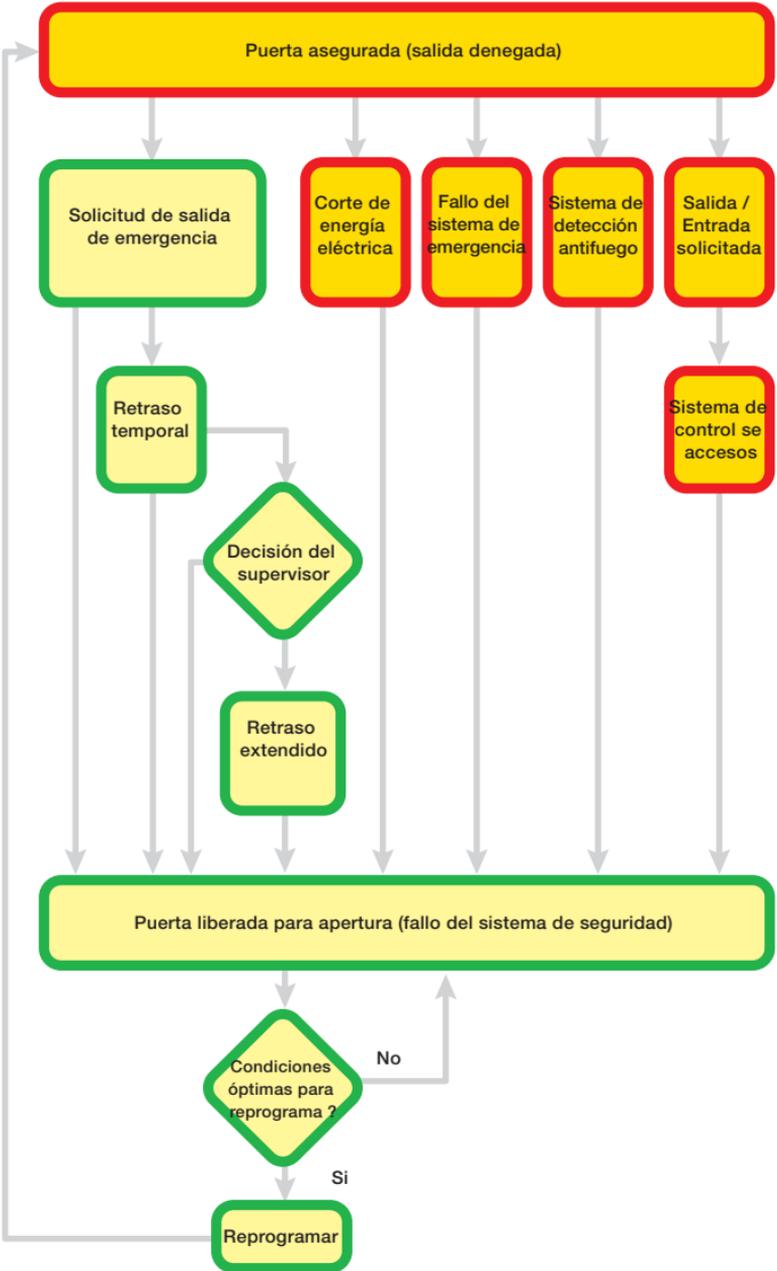
Higher security can be achieved.

- Higher holding power
- Optional access control link
- Immediate or optional delayed exit

Still maintaining the safety of the installation.

- Can be linked to fire detection and alarm system
- Fail safe operation
- Mechanical exit is always retained! (a requirement of prEN 13637)
(But can be delayed by a short, pre-set time period)

Functionality of electrically controlled emergency exit systems.



Other exit hardware

Some other types of exit hardware are used by tradition in a number of countries. These devices do not comply with the new European Standards, but may be accepted as an emergency product in some countries for a limited time to come. However it is of great importance to be sure of the acceptance of the product.

Possible reasons for acceptance can be traditional use of the product and/or that the escape route and the escape fittings are well known to the occupants.

However, such products should, wherever possible, be replaced by products that comply with the latest Standards.

A summary

Suitable products for different requirements.

| Equipment | Panic | Emergency (Safety) | Security | Ease of use |
|--|---|---|---|---|
| Mechanically operated Panic exit devices |  |  |  |  |
| Electrically controlled Panic exit systems |  |  |  |  |
| Mechanically operated Emergency exit devices | NO |  |  |  |
| Electrically controlled Emergency exit systems | NO |  |  |  |

KEY TO SUITABILITY

 = high

 = medium

 = low

NO = must not be used

Installation and maintenance

Exit devices and systems are designed and tested on various applications and doors. Make sure to check these points:

Door type.

- Single door
- Double door set
- First opening leaf of a double door set
- Second opening leaf of a double door set

Door construction.

- Solid or framed door
- Material
- Thickness
- Weight

Door fixings.

- Rim type (or surface-applied): the device is fixed to the surface of the door leaf.
- Mortise type (or concealed): the device is installed inside the door leaf.

Door functionality.

- Standard exit door
- Fire-resisting exit door
- High security door

Accessories.

- Special strikes
- Door coordinator
- Open-back strike
- Removable mullions
- Throw bolts

Each of these must be tested and approved with the exit device or system to be used. Exit hardware should always be fitted by a qualified installer.

External functions.

Here are some of the most used options:

- Lever handle or knob only
- Lever handle or knob, locked by a key
- Key operation only
- Electrically controlled outside trim
- No operation outside (exit only)

NOTE: These external functions must not interfere with the exit device or system and **must allow exit at all times** from inside. Check that the outside trims are tested and approved together with the exit device chosen.



Additional considerations.

- The quality level of the products
- The importance of installation quality
- The products should work for many years (despite high use, very low use or exposure to harsh atmosphere)
- The quality of the total solution including complementary products such as door-closing devices, hinges, door operators, door coordinators, etc.

Relevant EN recommendations

Installation and fixing, see EN 1125, EN 179, prEN 13633 and prEN 13637.

Installation on fire-resisting doors, see EN 1125, EN 179, prEN 13633 and prEN 13637.

Preventive maintenance: note that products should be checked on a regular basis and more sophisticated products should be covered by a maintenance contract.

Use with door-closing devices see EN 1154; with door operators see EN 1155; with door coordinators see EN 1158, etc.

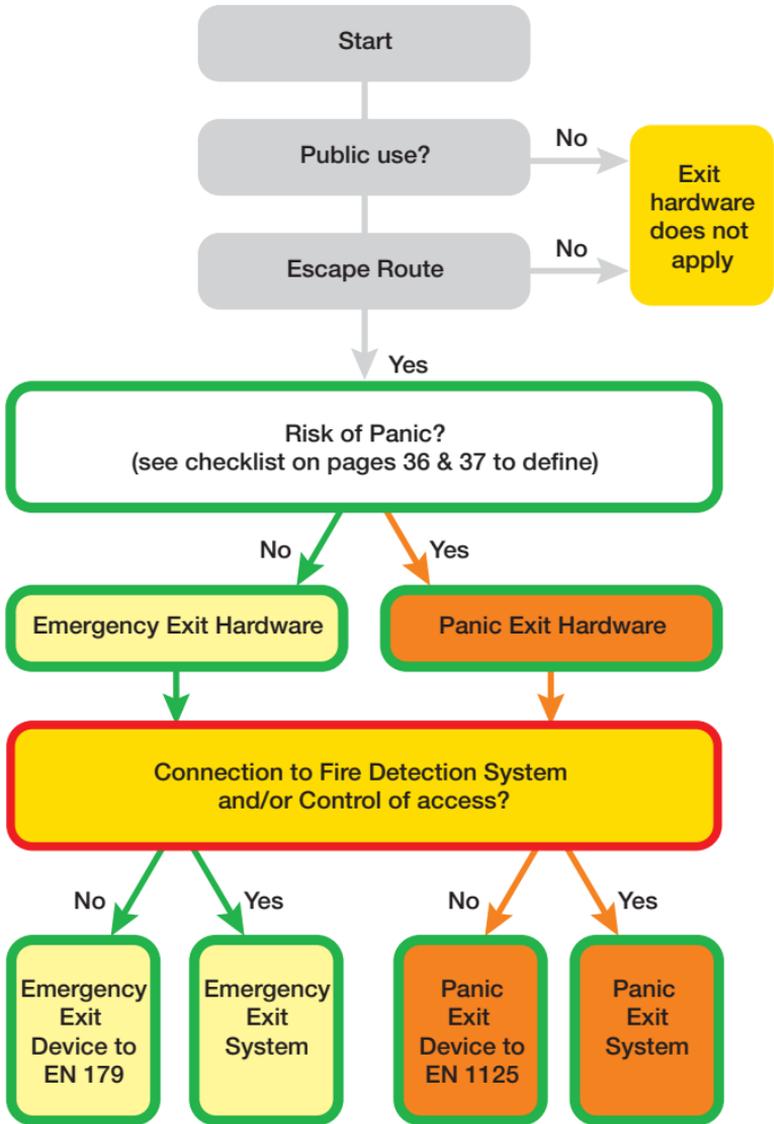
The risk of panic.

In general, the risk of panic in different sorts of premises can be ranked as follows. However always make a thorough assessment.

NOTE: The information on pages 34-37 are points you should consider as parts of this assessment.

| Risk of panic | |
|-----------------------|-------|
| Airports | ⚡⚡⚡ |
| Clubs | ⚡⚡⚡⚡ |
| Cinemas | ⚡⚡⚡⚡⚡ |
| Department stores | ⚡⚡⚡ |
| Discotheques | ⚡⚡⚡⚡⚡ |
| Factories | ⚡ |
| Homes for the elderly | ⚡ |
| Hospital rooms | ⚡ |
| Hotel (public areas) | ⚡⚡ |
| Office environment | ⚡ |
| Power plants | ⚡⚡ |
| Shopping malls | ⚡⚡⚡ |
| Student dormitories | ⚡ |
| Restaurants | ⚡⚡ |
| Theatres | ⚡⚡⚡⚡⚡ |

How to find a good solution



A checklist

Consider the headings below to help you assess the risk of a panic situation arising. Then complete the

| Door | Estimations Type of building | Type of room | Size of room | Possible number of people | Familiarity with premises |
|------|---------------------------------|--------------|---------------------|---------------------------|---------------------------|
| 1 | Hospital | Exam | 20 m ² | 4 | yes |
| 2 | Theatre | Auditorium | 1000 m ² | 400 | no |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |

There may also be other considerations, such as higher security or accessibility by people with impaired mobility. These must not compromise the primary life-saving features of the exit devices.

appropriate box under each heading. This will guide you to a qualified decision as to whether panic hardware is required.

| Familiarity with hardware | Light levels | Number of escape doors | Escape routes | Risk of panic | Conclusion |
|---------------------------|--------------|------------------------|---------------|--|---|
| yes | good | 1 | 1 | <input type="checkbox"/> likely <input type="checkbox"/> possible <input checked="" type="checkbox"/> none | <input type="checkbox"/> PEH <input checked="" type="checkbox"/> EEH |
| no | poor | 5 | 5 | <input checked="" type="checkbox"/> likely <input type="checkbox"/> possible <input type="checkbox"/> none | <input checked="" type="checkbox"/> PEH <input type="checkbox"/> EEH |
| | | | | <input type="checkbox"/> likely <input type="checkbox"/> possible <input type="checkbox"/> none | <input type="checkbox"/> PEH <input type="checkbox"/> EEH |
| | | | | <input type="checkbox"/> likely <input type="checkbox"/> possible <input type="checkbox"/> none | <input type="checkbox"/> PEH <input type="checkbox"/> EEH |
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| | | | | <input type="checkbox"/> likely <input type="checkbox"/> possible <input type="checkbox"/> none | |

= likely
 = possible
 = none

PEH = Panic Exit Hardware
 EEH = Emergency Exit Hardware

Technical terminology and definitions

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

| Main word | Description |
|--|--|
| 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 <i>panic bar;</i> <i>panic lock</i> | 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 <i>exit lock;</i> <i>emergency lock</i> | 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. <i>Ref.EN 1125, Definitions.</i> |
| push-bar <i>cross bar</i> | The activating horizontal bar of a panic device (type A), designed to be fixed between pivoted support brackets, that operates in the direction of exit and/or in an arc downwards. <i>Ref.EN 1125, Definitions.</i> |
| touch-bar <i>push bar</i> | The activating horizontal bar of a panic device (type B), designed to be part of a chassis or other mounting assembly, that operates in the direction of exit. <i>Ref.EN 1125, Definitions.</i> |
| 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. |

Technical terminology and definitions. (continued)

| | |
|---|--|
| 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 <i>strike;</i> <i>striker plate</i> | 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, etc. |
| 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. |

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 |
| Exit | See egress |

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 verify that the device is intended for use on fire-resisting doors and has been tested accordingly. Evidence may be 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 denied except when re-entry is required 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 releasing 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 do 'fail locked' and 'fail unlocked' mean?

'Fail unlocked' (fail safe) means that if the installation is out of 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 etc.

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 a 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.



Where to find what in this document?

| | | See page |
|--------------------------------|---|-----------------|
| Access control | How to use an exit door as an access controlled door | 43 |
| Additional hardware | What is happening when using an additional hardware part connected with an exit device (strike, mortise lock, electric or mechanic) | 32 |
| Alarms | When can an alarm solution be useful with the exit device | 25&29 |
| Check-list | What is the check-list to go through to help make a decision | 36 |
| Device | How to decide between a panic or an emergency exit device | 21 |
| Delayed egress | When is it possible to have a delayed egress solution | 28 |
| Double doors | What is needed in case of a double door | 43 |
| Electrically controlled | What to consider when selecting an electrically controlled exit system | 24&28 |
| Emergency | What is an emergency situation | 11 |
| EN standards | What are the requirements from the EN standards | 54 |
| EU regulations | What are the EU regulations | 48 |
| Exit door | What is an exit door | 41 |
| Information | What is the information to be requested before making a choice, (CE marking) | 36 |
| Inward doors | What about doors opening inwards (hotels, hospitals) | 13 |
| Local code | How to decide between a local code and an EU regulation | 48 |

| | | |
|----------------------------|---|-------|
| Mechanical | What to consider when selecting a mechanically operated exit device | 22&26 |
| Considerations | What should be considered to create the ideal solution | 18 |
| Mis-use | How to avoid the mis-use of an exit door | 42-43 |
| More | Where to find more information | 53 |
| Night locking | Is it possible to lock an emergency and/or a panic exit door over night | 42 |
| Panic | What is a panic situation | 10 |
| Product | How to be certain to have the right product | 35-37 |
| Re-entry | What is the solution when re-entry may be needed | 33&43 |
| Second door leafs | What is needed in case of a second door leaf | 43 |
| Security | How to achieve the highest security on an exit door | 31 |
| Technical questions | Who can answer specific technical questions or applications | 53 |





Formal Regulations



New & important information

**Please note:
Make sure to be updated with
the latest European Standards
and National Regulations!**

Why?

Society is continuously changing. National regulations also change to adapt to these new situations. The European regulations now lead the way on some changes in order to harmonise the various national regulations on subjects of major importance.

Consideration of subjects such as life safety, the environment, safety in use, etc. has been made more stringent.

European regulations usually give general guidelines about what to do in which situations. They define the objectives that have to be met. Standards and technical specifications then define the requirements products have to meet and the way testing and assessment of conformity is performed.

European regulations and Standards will gradually replace existing national regulations and Standards, or, more exactly, they will lead to harmonised regulations and Standards in all EU member countries on those important subjects. It is therefore important that you keep information updated and always check with the source.

The sources of information

Functionality



EU + State

Technical solutions



Manufacturers



Fire authorities

Insurance companies

Advice



Product performance



CEN

Specifications



Architects etc.

European Construction Product Directive

Objectives of the European Commission.

The objectives of the European Commission have been:

- to harmonise national legislation with respect to the health and safety requirements applicable to construction products.
- to coordinate regulatory and legislative activity in the EU, particularly that relating to the internal market for products.
- to promote the ability of the industry to generate rising standards of living for the population, whilst opening markets to international competition.
- to regulate building construction, both at the level of individual products and construction works, because of its impact on health, safety and the environment.
- to consolidate and simplify legislation related to the Single Market and public procurement in order to allow for competitiveness, and to remove existing barriers to trade.

The New Approach Directives.

Before, the ambition was to give technical solutions. Now, the New Approach Directives simply outline functionality. This allows producers to go on developing technical specifications so that their products can keep a cutting edge. It also avoids the directives becoming obsolete.

The new approach to technical harmonisation was agreed in 1985.

It ensured that products used in constructional works met specific essential health and safety requirements. And it introduced a clear separation of responsibilities between the European Community

legislators and the European Standards bodies CEN and CENELEC.

Through the Directives, the EC legislators define the 'essential requirements' of health and safety that products must meet when they are placed on the market. They determine the required levels of product testing and factory production control for each particular product.

It is then the job of CEN and CENELEC to develop corresponding specifications to meet these essential requirements.

Compliance with the CEN Standards means that the product meets the health and safety requirements of the Directives.

When agreed with the Commission, the Standards are called Harmonised Standards, and products shown to comply with them are entitled to carry the CE marking to that effect.

Introduction of European Standards.

These Harmonised Standards will be implemented in all member countries of the EU, and any existing national Standards that conflict with them will then be withdrawn or amended to remove the conflict.

The long-term effect will be:

- to facilitate the free flow of products across national boundaries
- to improve the design and construction of buildings throughout Europe, thereby raising the standard of living of the whole community.

See Directive 89/106/EEC.

Including Directive 93/68/EEC: 01.01.1995 and the supplementary Directive 93/68/EEC.

National Building Regulations

All EU member states must update their building regulations in accordance with the Construction Product Directive (CPD). New regulations appear progressively, so make sure that you always check for recent developments.

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.

Fire & Life safety

Always check with your local Fire and Life safety code.

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.

Insurance requirements

Insurance companies.

Insurance companies have their own safety and security requirements which are usually in addition to local Life Safety codes.

Always check your particular Insurance requirements.

Where to find what?

BSI (British Standards Institution)

BSI Customer services
389 Chiswick High Road
London, W4 4AL
Tel: +44 (0) 208 996 9000
Fax: +44 (0) 208 996 7400
www.bsi.org.uk

FireNet

Electronic pages for the British Fire Service
www.fire.org.uk

The Loss Prevention Council

Melrose Avenue, Borehamwood,
Hertfordshire WD6 2BJ
Tel: +44 (0) 208 207 2345
Fax: +44 (0) 208 207 6305
www.lpc.co.uk

Department of the Environment, Transport and the Regions

Building Regulations Division
DETR, 3rd Floor, Eland House
Bressenden Place
London, SW1E 5DU.
Tel: +44 (0) 220 7944 + extension
Fax: +44 (0) 220 7944-5739 or 5719
www.construction.detr.gov.uk

Contacts:

- + 5744 Building Regulations - access and facilities for the disabled (Part M)
- + 5730 Building Regulations - fire safety (Part B)
- + 5727 Construction Products - CE Marking, European Standards

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Extracts from EN standards

| EN standard | EN 1125 | EN 179 |
|----------------------------|--|--|
| Title | Building hardware – Panic exit devices operated by a horizontal bar – Requirements and test methods | Building hardware – Emergency exit devices operated by a lever handle or push pad - Requirements and test methods |
| Opening forces | Loaded door test (220 daN) to simulate panic situation (door under pressure) | No loaded door test. |
| Operating element | Horizontal bar (push-bar or touch-bar) 60% minimum of door width | Lever handle or push-pad |
| Category of use | High frequency of use by public | High frequency of use by public |
| Durability | 100,000 or 200,000 test cycles | 100,000 or 200,000 test cycles |
| Fire resistance | Suitable or not to fire resisting doors | Suitable or not to fire resisting doors |
| Safety | Life safety products grade 1 | Life safety products grade 1 |

| EN standard | EN 1125 | EN 179 |
|---|--|--|
| Corrosion resistance | High resistance. (96 hours neutral salt spray). | High resistance. (96 hours neutral salt spray). |
| Security | 1000 N abuse test load. | 1000 N to 3000 N abuse test load. |
| Operating element | Standard projection (150 mm) or low projection (100 mm max) 60% door width | Standard projection (150 mm) or low projection (100 mm max) |
| Marking | EN Number and classification on the product | |
| Attestation of conformity system | Level 1 third party testing | Level 1 third party testing |
| Factory production control and audit testing | Initial type testing Periodic audit testing Yearly audit testing | Initial type testing Periodic audit testing Yearly audit testing |
| CE marking | Will be applicable when standard is harmonised | Will be applicable when standard is harmonised |

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.

Product standards/CEN

Reference to CEN standards

CEN is the European Standards Organisation (Comité Européen de Normalisation), which is mandated by the EU to write the technical requirements for exit hardware products intended for use on escape routes.

The above information refers to the following Standards which are currently available (EN Standards) or will be available (prEN draft Standards) from each national Standards organisation:

| Ref. | Title |
|-------------|---|
| EN 1125 | Building hardware - Panic exit devices operated by a horizontal bar - Requirements and test methods |
| EN 179 | 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 - Requirements and test methods |
| prEN 13637 | Building hardware - Electrically controlled emergency exit systems - Requirements and test methods |

Note: European standards are published in each country under a national reference but the contents remain the same.

Main testing requirements

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

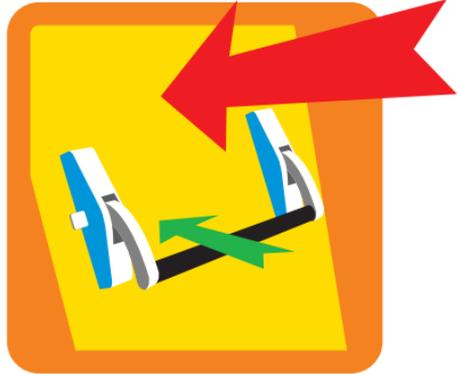
Opening test with minimum effort.

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.



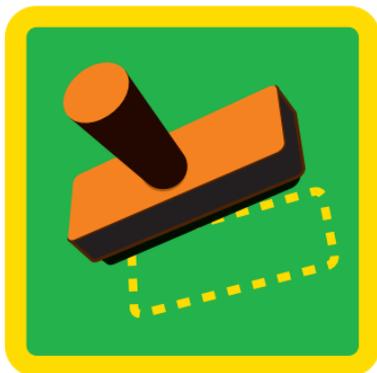
Factory production control, third-party attestation of conformity.

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).



ASSA ABLOY in brief

The ASSA ABLOY Group is the world's leading manufacturer and supplier of locks and associated products. All these are designed to meet end-user's needs for security, safety and convenience.

The Group is active in the development, the production and the marketing of mechanical locks, industrial locks, electromechanical and electronic locks as well as hotel locks, fittings and other accessories. Exit devices form an important element in this broad product mix.

The Group has its origins in the Nordic countries and holds market-leading positions there. The Group also has strong positions in continental Europe, North America, Australia and South East Asia. Within the electromechanical area, ASSA ABLOY holds a world leading position in hotel security.

Although ASSA ABLOY is the world leader in the lock business, close liaison with local customers in each country and experience of local requirements, business arrangements and distribution patterns are recognised as prerequisites for success.

About this document

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No modifications or reproductions of any kind are permitted without the written authorisation of the ASSA ABLOY Exit Devices Group (who will provide extra copies free of charge, upon request).

We have drawn information from many sources, including established national and international regulations, the new European Standards and our own practical experience in many countries where the use of panic and emergency exit hardware is well established. Our knowledge has been gained over many years of creating specifications for a great variety of critical applications in numerous different environments.

ASSA ABLOY will accept no liability of any kind regarding the use of this handbook, which is intended to provide general guidance only as a practical help in finding a good solution. The final choice remains the responsibility of the decision-maker. **Specific advice is available from your local ASSA ABLOY company.**

European edition.

The contents of this handbook relate to the new European regulations, but can be used elsewhere providing it is borne in mind that all references are European and that local regulations must be taken into consideration. Not to be used in the US.

References

Lås & utrymningsvägar (Svenska Brandförsvarsförningen) 1997

EN 1125: Building hardware - Panic exit devices operated by a horizontal bar - Requirements and test methods (CEN)

EN 179: Building hardware - Emergency exit devices operated by a lever handle or push pad - Requirements and test methods (CEN)

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The ASSA ABLOY Group is the world's leading manufacturer and supplier of locks and associated products, dedicated to satisfying end-user needs for security, safety and convenience.

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