

European guideline



*panic &
emergency exit
devices*

FOREWORD

The European fire protection associations have decided to produce common guidelines in order to achieve similar interpretation in the European countries and to give examples of acceptable solutions, concepts and models. The Confederation of Fire Protection Associations Europe (CFPA E) has the aim to facilitate and support the fire protection work in the European countries.

This Guideline refers only to exit devices, which comply with the European standards for, panic and emergency exit devices, EN 1125 and EN 179.

The guideline applies where the activity imposes demands on doors, not sliding doors, which shall be normally kept locked from the outside and/or prevent the passage of unauthorised persons, and shall also be capable of use as means of escape.

The guideline is primarily intended for those responsible for safety in companies and organisations. It is also addressed to the installation firms, rescue service, consultants, safety companies, architects etc so that , in the course of their work, they may find it useful to have access to different functional solutions with exit devices complying with European standards.

This guideline has been compiled by Guidelines Commission and adopted by all fire protection associations in the Confederation of Fire Protection Associations Europe.

Zurich, 30 November 2002
CFPA Europe

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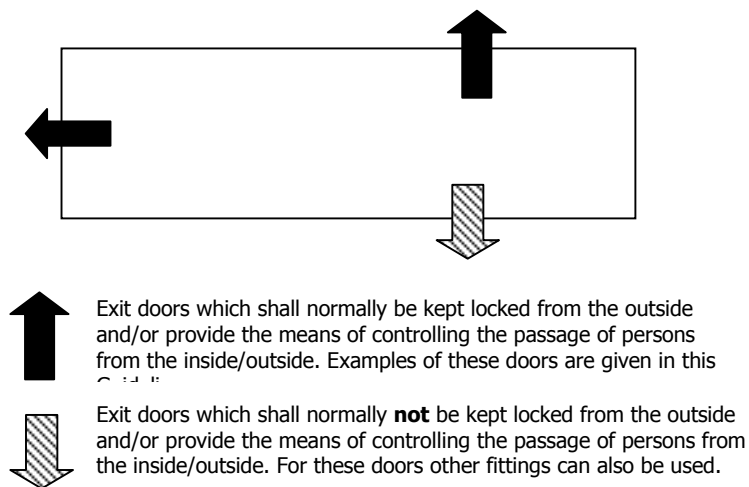
1 Introduction

This proposal for functional solutions is mainly based on European standards for panic and emergency exit devices, EN 1125 and EN 179.

The Guideline applies for doors in escape routes, with or without fire separating function, which normally shall be kept locked from the outside and/or provide the means of controlling the passage of persons from the inside/outside.

For other doors in escape routes, which are **not** covered by this Guideline, a different opening function can be used or after other national regulations.

Example



Appendix No 1 gives examples of exit devices which can be used on doors to escape routes, where the activity demands that it should normally be possible for these doors to be kept locked from the outside to prevent the passage of unauthorised persons.

The publication does not deal with the fundamental problems of how to identify the doors, which are exit doors. For the applicable requirements, reference is to be made to the laws, regulations and other publications in the country concerned.

2 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.

2.1 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. For example, 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.

2.2 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.

3 Fields of application

The fields of application listed below are to be seen as a guide to specifying exit devices. In each individual project, consideration should be given to the layout of the escape routes and premises and their fields of application. Even temporary use of the premises for purposes other than their normal activity may affect the choice of exit devices, e.g. when a sports hall is used for a school dance. Consideration should also be given to the possible future use of the premises, so that provision may be made at an early stage for flexible use. This implies that in certain circumstances the devices should be designed for a greater number of people, with variable knowledge of the premises, than those in the activity that is normally carried on in the premises.

The terms large number, smaller number and few are not defined in numbers of people, but shall be seen as a guide and a basis for assessment of the building as a whole or of the individual premises.

3.1 Panic exit devices

Appropriate devices in premises and buildings where a large number of people, without good knowledge of the premises, may be present at the same time. Examples are schools, shopping centres, hospitals, theatres, discotheques, sports facilities, and restaurants.

Consideration should be given to the layout of the building and the premises, as well as the number of escape routes and their characteristics.

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The publication refers to panic bolts, which comply with the requirements in European Standard EN 1125.

3.2 Emergency exit devices

Appropriate devices in premises and buildings where a smaller number of people are present and where they cannot all be presumed to have good knowledge of the premises. Examples are offices and medium sized places of assembly.

These are recommended as the lowest level for exit doors where panic exit devices are not required.

The publication refers to emergency exit devices with single action operation, which comply with the requirements in European Standard EN 179.

3.3 Other opening devices

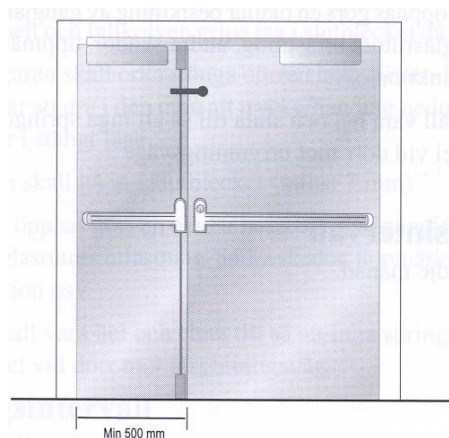
These devices are not intended for exit doors and should be used only in premises for a few people who have good knowledge of the premises. Examples are dwellings and small offices. The term other opening devices refers only to simple types of devices such as door handles and turn knobs.

Plastic domes over turn knobs are also covered here. These devices are intended to prevent unauthorised use of the turn knob function, e.g. in conjunction with installations for entry and exit control systems. Single action operation of the opening device should always be endeavoured.

4 Pairs of doors

Pairs of doors with an inactive leaf smaller than 500 mm, fitted with a door closer, are not recommended for use in escape routes where panic exit devices are required, because the resistance to opening is too great.

Automatic flush bolts shall not be used in inactive leaves where these form part of an escape route, because the automatic flush bolt does not have a sequentially activated opening function.



5 Emergency exit knob

Emergency exit knobs can be accepted where emergency exit devices in accordance with EN 179 are normally recommended according to Table 7.1. The knob shall be placed in a prominent position.

For activities where panic exit devices are recommended according to Table 7.1, emergency exit knobs shall not normally be accepted. In this type of activity, the use of an emergency exit knob shall be considered only after consultation with, and agreement by, the parties concerned.

Key switches are not accepted.

Properties of an emergency exit knob:

- Green encapsulation.
- The emergency exit box is to be marked with a special sign. This sign should be green with white text "Emergency exit". The sign should be large enough to be easily detected.
- The knob shall be easy to operate by a single action.
- The knob should be visible even in the event of power failure. This can be achieved by providing standby power to illuminate the sign, by making the knob luminous or the sign photoluminescence.
- Illuminated emergency exit knob. By means of an integral illumination function or some other lighting fitting.
- When the knob is depressed, the current shall be interrupted and the lock function released.
- If possible, red light for locked door and green light for unlocked door.
- The emergency exit knob can with advantage be equipped with an acoustic exit alarm.

Position of emergency exit knob:

- It shall be easy to see and placed on or in the immediate vicinity of the door.
- 0.9 – 1.2 m above floor level.
- Max 0.5 m from the door laterally, but not on the side of the hinge.
- For pairs of doors the emergency exit knob shall be placed on the side of the opening half. If the pair of doors consists of two opening halves, push buttons should be provided on both sides.

6 Intruder protection locking device

If doors are fitted with intruder protection locking devices (night locks), further measures in the form of connecting these via microswitches or similar are required.

They shall be connected to the function essential for the activity in such a way that activity cannot be carried on in the premises until all escape routes have been unlocked. One usual way is to connect the lighting in such a way that it cannot be switched on until all escape routes have been unlocked.

Local regulations may allow for "night locking" when not open to the public or for general occupancy, under certain conditions. For example, it may be requested for each person having access to the building (such as cleaning, security or maintenance people) to have their own key allowing them to escape from the building in case of an emergency.

Special conditions, for instance when people are locked in for various reasons, are not dealt with here. In such cases the solutions must at all times be decided on in consultation with the parties concerned.

7 Operation and maintenance

The doors and devices, which form part of escape routes, must be maintained so that their function in an emergency situation is secured.

Inspections shall be made at regular intervals by a person appointed by the person responsible for the building or firm. Inspection intervals are to be determined by the responsible person.

The way inspection is to be performed varies depending on the function, which the door has. See Appendix No 1.

8 Choice of exit device for locked door as a function of the activity

Table 8.1 sets out the standard levels of exit devices in buildings and premises for different types of activities, where doors in escape routes are normally locked from the outside to prevent the entry of unauthorised persons.

In the table, premises which, regarding their size and the number of people present, may be compared to a place of assembly, e.g. a staff dining room or a school dining room, are equated with places of assembly. This means that the devices are designed for a larger number of people, with variable knowledge of the premises, than those engaged in the activity that is daily carried on in the premises.

The reason for the more stringent requirement in large office buildings, hotels and healthcare premises is that in an escape situation persons congregate in stairways from several floors. This means that so many persons congregate at the exits that a more secure exit function is necessary.

In case of doubt the higher requirement shall at all times be selected, i.e. a panic exit device can always be used.

8.1 Table for choosing exit devices

The fittings refer only to panic exit devices in accordance with EN 1125 or emergency exit devices in accordance with EN 179.

The numbers in the table heading refer to the corresponding examples of solutions in Appendix No 1.

Activity	Position of door	Panic exit device (EN 1125) Examples of solutions: P1-P6 PP1 – PP6*	Emergency exit device (EN 179) Examples of solutions: N1– N3 NP1–NP3*
School < 200 persons	To stairway		x
	From stairway to external air		x
School > 200 persons	To stairway		x
	From stairway to external air	X	
Office building <2000 m²	To stairway		x
	From stairway to external air		x
Office building > 2000 m²	To stairway		x
	From stairway to external air	X	
Place of assembly			
Large number of people	To foyer or stairway	X	
	Out to external air	X	
Small number of people	Out or to stairway		x
	From stairway to external air	X	
Department store and retail trade < 300 m² net floor space	To external air or gallery		x
Department store or retail trade >300 m² net floor space	To external air or gallery	X	
	From common gallery to external air	X	

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Activity	Position of door	Panic exit device (EN 1125) Examples of solutions: P1-P6 PP1 – PP6*	Emergency exit device (EN 179) Examples of solutions: N1– N3 NP1–NP3*
Hotel, except restaurant etc < 200 beds	To stairway		x
	From stairway to external air		x
Hotel, except restaurant etc > 200 beds	To stairway		x
	From stairway to external air	X	
Health care premises, < 200 beds	To stairway		x
	From stairway to external air		x
Health care premises, > 200 beds	To stairway		x
	From stairway to external air	X	
Service flats	To stairway and to external air		x
Alternative housing	To stairway and to external air		x
Day care centre	To external air		x
Industry			x
Warehouse			x
Laboratories etc with activity that presents a fire hazard		X	

* NP and PP denote pairs of doors

9 Definitions

- **Intruder protection locking**
Locking device that complies with the insurer's intruder protection requirement for the premises concerned
- **Electromechanical door bolt**
Electromechanical locking device which connects the top of the door leaf to the door frame through a mechanical coupling. It locks when connected to the power supply and is always automatically deactivated when disconnected from the power supply.
- **Standby power**
Function that secures the supply of power in the event of mains failure. It is often provided in the form of a battery backup for e.g. electric striking plate, electromechanical door bolt, door holder magnet and entry and exit control system.
- **Electromechanical hold-open device**
A hold-open device in the door closer function which is automatically deactivated when disconnected from the power supply. May also be provided in the form of a wall mounted door holder magnet.
- **Pulse generator**
May be in the form of e.g. push button, key switch, microswitch in exit device, digital code lock, card reader, time switch, pulse from the alarm system or some other electrical function.
- **Door holder magnet**
Electromechanical locking device which holds the top of the door leaf to the door frame through magnetic force. It locks when connected to the power supply and is always automatically deactivated when disconnected from the supply.
- **Automatic flush bolt**
Locking device mounted on the meeting stile of the inactive leaf where its bolt is operated by a mechanism that is activated when the active leaf is closed.

An automatic flush bolt must not be used in the inactive leaf when this is part of an escape route because the automatic flush bolt does not have a sequentially activated opening function.
- **Striking plate**
Device mounted in the frame to reinforce this where the hole for a bolt is made.
- **Bolt**
Mobile locking component placed in a lock or other locking device which shoots out through the forend, stile plate, etc.
- **Latch bolt**
Bolt with a bevelled end.
- **Lever handle**
Handle to operate the bolt of a lock.
- **Fire door**
Door that has a certain period of resistance to fire. The period of fire resistance may vary depending on the position of the door or the fire resistance class of the surrounding elements of construction.

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- **Tailpiece**

For pairs of doors in combination with a door coordinator.

If a pair of doors is opened via the inactive leaf, the tailpiece opens the active leaf also, so long as the door coordinator has been activated, which means that the leaves will be closed in the right order.