BRITISH STANDARD

BS 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

ICS 91.190

National foreword

This British Standard is the UK implementation of EN 179:2008. It supersedes BS EN 179:1998 which is withdrawn.

The UK participation in its preparation was entrusted by Technical Committee B/538, Doors, windows, shutters, hardware and curtain walling, to Subcommittee B/538/4, Building hardware.

A list of organizations represented on this committee can be obtained on request to its secretary.

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This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 March 2008

ISBN 978 0 580 62451 3

Amendments/corrigenda issued since publication

Date	Comments

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 179

January 2008

ICS 91.190

Supersedes EN 179:1997

English Version

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

Quincaillerie pour le bâtiment - Fermetures d'urgence pour issues de secours manœuvrées par une béquille ou une plaque de poussée, destinées à être utilisées sur des voies d'évacuation - Exigences et méthodes d'essai

Schlösser und Baubeschläge - Notausgangsverschlüsse mit Drücker oder Stoßplatte für Türen in Rettungswegen - Anforderungen und Prüfverfahren

This European Standard was approved by CEN on 30 November 2007.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN Management Centre has the same status as the official versions.

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Ref. No. EN 179:2008: E

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Foreword

This document (EN 179:2008) has been prepared by Technical Committee CEN/TC 33 “Doors, windows, shutters, building hardware and curtain walling”, the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by July 2008, and conflicting national standards shall be withdrawn at the latest by July 2008.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 179:1997.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive 89/106/EEC, see informative Annex ZA which is an integral part of this document.

It has been revised to incorporate clarification of the definitions, safety requirements and test procedures, in particular for emergency exit devices intended for use on double leaf doorsets, in order to allow for more reproducible test methods.

It incorporates extension of the classification to avoid misuse of the products, extension of the limits of door mass and dimensions as well as extension of the field of application to cover products already available on the market, which were not covered by the 1997 edition of this European Standard.

It incorporates additional requirements for emergency exit devices intended for use on inwardly opening single leaf exit doors, which are required by the market. However, no other modifications have been made to the original concept and main requirements.

A full contribution to the preparation of this European Standard has been made by The European Federation of Associations of Lock and Builders Hardware Manufacturers (ARGE).

This European Standard is part of a group of standards dedicated to building hardware products. It is one of a group of standards for exit devices and exit systems developed by Technical Committee CEN/TC 33.

Wherever reference is made to classes, they are considered to be technical classes and not classes according to Article 3(2) of the Construction Products Directive (89/106/EEC).

Verification or tests performed by mechanical test laboratory and fire test laboratory are listed in Table 1 summarizing performance characteristics and compliance criteria.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

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. See definition **3.18**.

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.

Due to the wide range of emergency exit devices, the reader is advised to refer to the scope and the detailed contents of this European Standard for coverage but, for information and general guide, this revised European Standard now deals with:

- emergency exit devices designed to be used in emergency situations, where people are familiar with the exit and its hardware and therefore a panic situation is most unlikely to develop;
- emergency exit devices for use on hinged or pivoted door leaves only;
- range of emergency exit devices including those for use on double doorsets (see **7.10**);
- two specific types of operation: emergency exit devices with “lever handle” operation, type A (see **3.9**, see Figures 1 and 3) and emergency exit devices with “push pad” operation, type B (see **3.15**, see Figures 2 and 4);
- two categories of emergency exit device projection in order to maximize the width of the escape route, and minimize the projection from the door face where either or both of these criteria are of importance (see **4.1.12**);
- exceptional case of emergency exit devices intended for use on single leaf inwardly opening exit doors. It is assumed throughout this European Standard that emergency exit doors generally open towards the outside in order to assure safe escape. However, there are cases such as hospital or hotel bedroom doors, classroom doors, etc. where local building regulations allow, by way of exception, the exit door to open against the direction of exit;
- double doorset emergency exit devices of which the first opening leaf is equipped with a panic exit device conforming to EN 1125 and the second opening leaf is equipped with an emergency exit device conforming to EN 179. It is essential that this combination undergoes an additional test for approval (see **4.2.4**).

This European Standard does not cover the following:

- any particular design of emergency exit devices and only such dimensions as are required for safety reasons are specified;

- specific emergency exit devices intended for use on inwardly opening double doorsets;

- specific emergency exit devices intended for use by the severely disabled (due to the wide range of disabilities, such emergency exit devices and their performances should be agreed between specifier and producer);

- panic exit devices operated by a horizontal bar (see EN 1125) or electrically controlled panic exit systems or electrically controlled exit systems (see prEN 13633 and prEN 13637).

1 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.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 1125, *Building hardware - Panic exit devices operated by a horizontal bar, for use on escape routes - Requirements and test methods*

EN 1634-1, *Fire resistance and smoke control tests for door and shutter assemblies, openable windows and elements of building hardware - Part 1: Fire resistance test for doors and shutter assemblies and openable windows*

EN 1634-3, *Fire resistance and smoke control tests for door and shutter assemblies, openable 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)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
active leaf
first opening and last closing leaf of a rebated single swing double doorset

3.2
automatic relatching device
part of an emergency exit device to enable the automatic securing of a door in the closed position, after it has been operated

NOTE For example, a spring loaded latch bolt or an automatically thrown bolt head.

3.3
bolt head
portion of an emergency exit device that engages with the keeper to secure the door in the closed position

3.4
dogging mechanism
part of an emergency exit device for holding the bolt head(s) in the withdrawn position until manually reset

3.5
doorset
assembly consisting of a single leaf exit door being hinged or pivoted vertically in a frame

3.6
inactive leaf
last opening and first closing leaf of a rebated single swing double doorset

3.7
inside
face of the door on which the lever handle or push pad is situated for operating an emergency exit device in order to exit

3.8
keeper
part of an emergency exit device such as a strike, socket or other fitting with which the bolt head(s) engages

3.9
lever handle
rotatable operating element as part of an emergency exit device whose axis of rotation is perpendicular to the face of the door and which operates the emergency exit device mechanism in order to release the bolt head(s)

3.10
producer
manufacturer, entity or organization that has legal responsibility for placing the product on the market

3.11
outside
face of the door opposite to the face on which the lever handle or push pad for operating the emergency exit device is situated

3.12
outside access device
optional part of an emergency exit device for opening an exit device from the outside

NOTE An outside access device can be supplied with optional re-entry function.

3.13
operating element
abbreviation for lever handle or push pad

3.14
double doorset
assembly consisting of two hinged or pivoted exit doors within a single frame

NOTE 1 The meeting stiles can be either plain or rebated.

NOTE 2 A double doorset where only one leaf is equipped with an emergency exit device is considered to be a single emergency exit doorset.

NOTE 3 A double doorset where the first opening leaf is equipped with a panic exit device conforming to EN 1125 and the second opening leaf is equipped with an emergency exit device conforming to EN 179 is considered to be a double emergency exit doorset, or a single panic exit door.

3.15
push pad
operating element of an emergency exit device that operates the emergency exit device mechanism in order to release the bolt head(s)

NOTE The term “pull pad” is sometimes used instead of “push pad” for use on inwardly opening exit doors.

3.16
release force
force applied to the operating element, which is necessary to withdraw or release all the bolt head(s) from the keeper(s), such that a door can be opened

3.17
vertical rod
extension of the bolt head of an emergency exit device that links it to the operating element via the operating mechanism

3.18
panic exit device
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

NOTE 1 A panic exit device contains bolt head(s) that engage(s) with a keeper(s) in the surrounding door frame and/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 2 Panic exit devices are intended for use where panic situations can arise. In a panic situation, a group of people will react differently from an individual. When two or more people are rushing to an escape door, 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.

NOTE 3 When a door opens in the direction of exit, a panic exit device can be used instead of an emergency exit device subject to local regulations.

3.19
emergency exit device
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 (see Figure 1 and Figure 2)

NOTE 1 An emergency exit device contains bolt head(s) that engage(s) with a keeper(s) in the surrounding door frame and/or floor for securing a door when closed. The bolt head(s) can be released by the lever handle or the push pad positioned on the inside face of the door.

NOTE 2 Exit devices conforming to EN 179 are intended for emergency purposes where panic situations are not likely to arise. Where a pressure against the door caused by people in a panic is foreseen, then a panic exit device conforming to EN 1125 should be used.

NOTE 3 Emergency exit devices are suitable also for inwardly opening single leaf exit doors, where local building regulations allow.

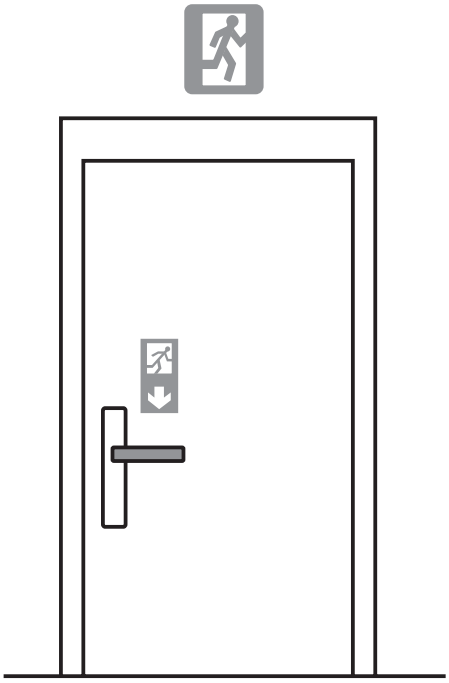


Figure 1 — Example of type A emergency exit device

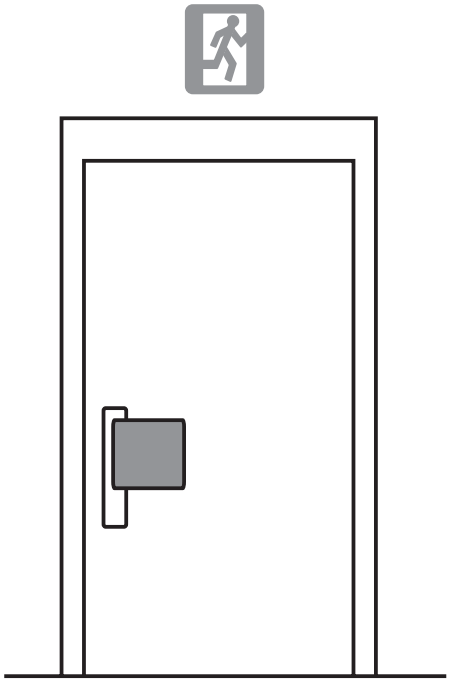


Figure 2 — Example of type B emergency exit device

3.20
double doorset emergency exit device
emergency exit device designed for use on the leaves of double doorsets, such that the operation of either operating element will release at least the door leaf to which it is fitted

3.21
deadbolt
part of an emergency exit device that can be deadlocked manually by key or automatically and which is released when the exit device is operated

NOTE An emergency exit device can be designed to incorporate additional deadbolt(s) thrown by a key or thumbturn, used only at certain periods of time for additional security.

3.22
exit door
door on an escape route equipped with an exit device conforming to EN 179 and/or EN 1125

3.23
free end
furthest point away from the axis or the bearing point of the lever handle or push pad

3.24
re-entry function
optional function that allows, for safety reasons, an individual to re-enter a room from outside without a key once the inside operating element has been actuated. After having released the device from the inside, any handle (or other means) to operate the exit device from outside remains unlocked until manually reset by key

3.25
field of door application
door configurations for which the emergency exit devices are designed and claimed by the producer

3.26
limits of door mass and dimensions
dimensional and mass limits of the doors for which the emergency exit devices are designed

3.27
sub-assemblies
pre-assembled set of components that form one part of the emergency exit device, for example: pullman catches, operating boxes and lock cases

3.28
visual inspection
assessment made with the naked eye, adjusted for normal vision and use of the appropriate measurement equipment

3.29
functional test
assessment made by operating the test door (opening or closing) and/or operating any element of the exit device

3.30
measurement
assessment made by using a measuring tool

4 Requirements

4.1 Design requirements

4.1.1 General

Compliance with the design requirements shall be as Table 1.

4.1.2 Release function

An emergency exit device shall be designed to release a door at all times from the inside in less than 1 s, by one single hand operation only, not requiring the use of a key or other similar object. It shall be designed to release the door without any delay from the time the operating element is operated to the released position of the mechanism.

The operation of the operating element shall enable immediate exit from the inside at all times regardless of any auxiliary locking and/or unlocking means being incorporated, such as a deadbolt or outside access device.

Compliance shall be verified by visual inspection, functional tests and/or measurements.

4.1.3 Release operation

The release direction of an emergency exit device shall not be opposite to the direction of the door opening.

Compliance shall be verified by visual inspection and functional tests.

4.1.4 Lever handle design

Lever handle operated emergency exit devices shall be designed to release the door following a movement of the lever handle in a downward rotational direction.

Compliance shall be verified by visual inspection and functional tests

4.1.5 Push pad design

Push pad operated emergency exit devices shall be designed to release the door following a movement in the direction of the door opening in an arc downwards or to the side. This requirement shall also apply to emergency exit devices intended for use on inwardly opening single leaf exit doors.

NOTE The term “pull pad” is sometimes used instead of “push pad” for use on inwardly opening single leaf exit doors.

Compliance shall be verified by visual inspection and functional tests

4.1.6 Double doorset

The design of an emergency exit device intended for use on double doorset leaves shall allow both leaves to be opened simultaneously and to swing freely in the direction of exit once the door has been released.

NOTE 1 The construction and installation of a specific doorset assembly, including choice of hinges, leaf thickness and leaf width, can have a significant effect on the ability of both leaves to open simultaneously. These issues are beyond the scope of this European Standard. Additional guidance is given in **A.5**.

NOTE 2 For example, on rebated double doors, operating the emergency exit device on the inactive leaf will release both the inactive and the active leaf.

Compliance shall be verified by visual inspection and functional tests carried before and also after durability test.

4.1.7 Corrosion resistance

The corrosion resistance shall comply with **4.2.9** or be at least grade 3 in accordance with EN 1670:2007, **5.6**.

4.1.8 Exposed edges and corners

An emergency exit device shall have all edges and exposed corners, that are likely to cause injury to persons using the exit, rounded to a radius of not less than 0,5 mm.

Compliance shall be verified by visual inspection and measurements.

4.1.9 Temperature range

Materials selected in the design of an emergency exit device shall be suitable for the operation of the emergency exit device between temperatures of −10 °C and +60 °C. This requirement shall be verified by the test specified in **6.2.2**. The maximum operating force at −10 °C and at +60 °C shall not exceed 50 % in excess of the operating forces measured at 20 °C.

4.1.10 Suitability of emergency exit devices for use on smoke/fire-resisting doorsets

Emergency exit devices that are suitable for use on smoke/fire-resisting doorsets shall conform to the requirements of **4.2.3**, **4.2.4**, Annex B and be classified according to **7.4**.

4.1.11 Push pad installation

Push pads shall be designed such that the operating element can be installed at 250 mm or less (dimension Z) from the leading edge of the door when the door is in the closed position. See Figure 4.

Compliance shall be verified by visual inspection and measurements

4.1.12 Lever handle installation

Lever handles shall be designed to have a minimum length (dimension X) of 120 mm, measured from the axis of rotation to the free end, and the axis of rotation no more than 150 mm (dimension Z) from the leading edge of the door. See Figure 3.

Compliance shall be verified by visual inspection and measurements

4.1.13 Operating element projection

No part of an emergency exit device, when the door is in any position, shall project (dimension W) from the face of the door more than:

— category 1: projection up to 150 mm (large projection);

— category 2: projection up to 100 mm (standard projection).

NOTE 1 See Figures 3 and 4 for illustration of dimension W (projection).

NOTE 2 Category 1 does not apply to type A operation.

Compliance shall be verified by visual inspection and measurements.

4.1.14 Operating element face

With the emergency exit device secured, the width of the operating element (dimension V) shall be not less than 18 mm. The shape of the operating element shall facilitate the application of the operating force to the lever handle or the push pad. Verification shall be made in accordance with a) and b). See Figure 5.

a) If the operating element is a lever handle, it shall have on its operating face – to which the release force is applied – a minimum thickness of 5 mm, either with a flat surface or with a rounded surface featuring a radius of not less than 5 mm.

b) If the operating element is a push pad, it shall have an operating face of not less than 1 400 mm^2.

For the convenience of more architectural design freedom and less sophisticated production it is acceptable to allow the lever handle to have a reduced cross-section of not less than 15 mm width (dimension V) and not less than 4 mm thickness on the operating face, provided this reduction is within 20 mm from the free end of the lever handle.

Compliance shall be verified by visual inspection and measurements.

4.1.15 Lever handle free end

To minimize the risk of injury or of trapping clothes, the free end of a lever handle shall point towards the door such that the dimension “U” is not less than 40 mm, the dimension “W” is not more than 100 mm (standard projection) and the angle α between the free end of the lever handle perpendicular to the surface of the door is not more than 30°. See Figure 3.

Compliance shall be verified by visual inspection.

4.1.16 Lever handle operating gap

To allow sufficient room for hand operation, lever handles shall be designed such that a rounded (17,5 mm radius) test block of 35 mm width and 95 mm length held at an angle of not more than 15° to the surface of the door can be passed freely between the lever handle and the surface of the door. This requirement shall be fulfilled at any position of the lever handle. See Figure 3.

Compliance shall be verified by visual inspection and measurements.

4.1.17 Push pad operating gap

The gap between a push pad and the door face shall not be less than 25 mm (dimension R) at any position of the travel to reduce the risk of trapped fingers and preventing the release of the door.

To allow for particular designs such as bracket supports, bushings, etc. the first 25 mm of the supporting end of the push pad can have any such gaps reduced to 20 mm. See Figure 4.

Compliance shall be verified by visual inspection and measurements.

4.1.18 Test rod

To reduce the risk of trapping fingers and/or the blocking of the emergency exit device, any gap shall not trap a test rod (of 10 mm diameter by 100 mm in length) by its 10 mm diameter in any position during the operation of the emergency exit device.

Compliance shall be verified by visual inspection and measurements.

4.1.19 Push pad release operation

The design of a push pad shall be such that the release operation of the emergency exit device cannot be blocked by the application of a force in the direction of the door opening, anywhere on the exposed operating surface that moves in the direction of opening during normal release operation.

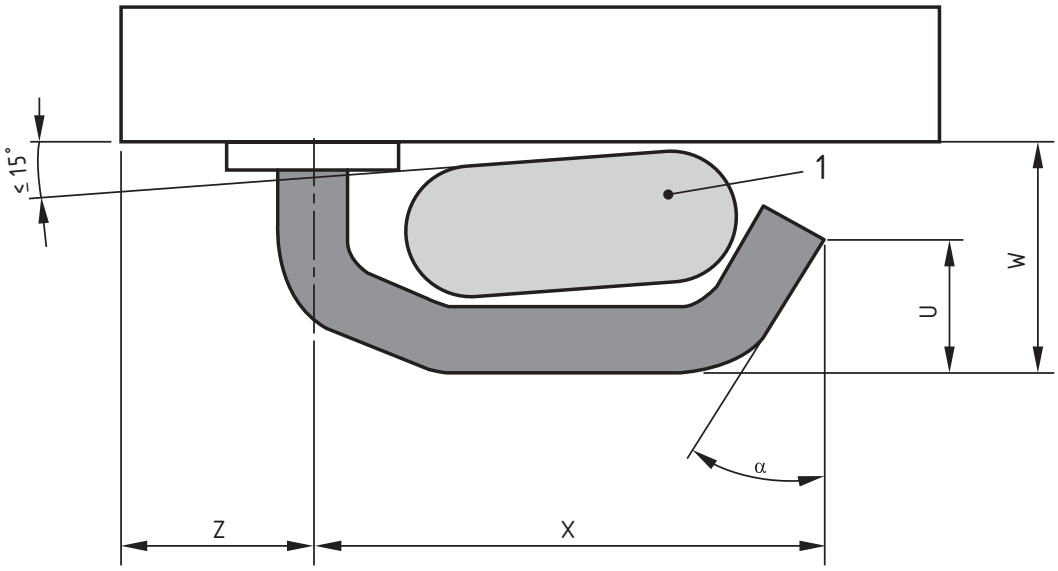
Compliance shall be verified by visual inspection and functional tests.

4.1.20 Accessible gap

An emergency exit device shall be designed such that the top surface of any operating element, chassis or other mounting assembly does not contain any accessible gap that could inadvertently be blocked by a foreign object, resulting in failure of the emergency exit device to operate.

A steel piece of 10 mm $\times$ 15 mm $\times$ 20 mm placed in any accessible gap and in any orientation shall not prevent correct operation of the emergency exit device.

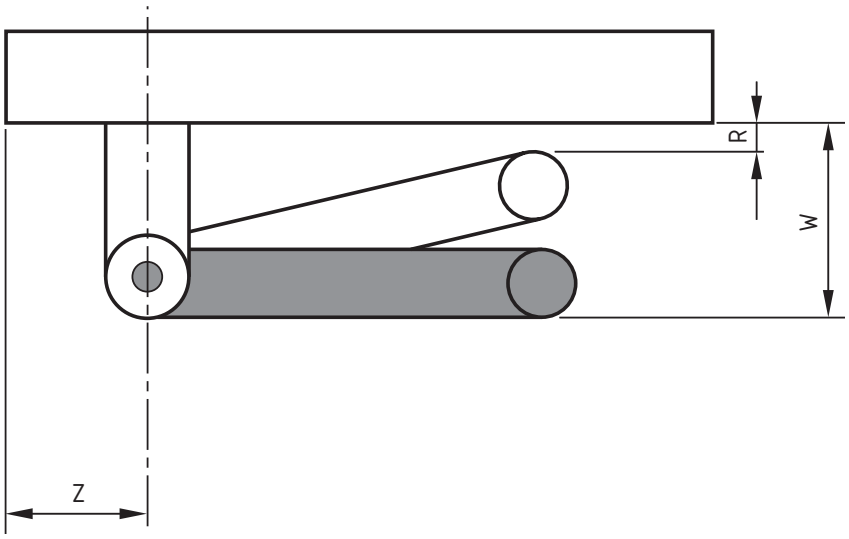
Compliance shall be verified by visual inspection and measurements.



Key

U minimum dimension of lever end return
W maximum projection
X minimum length
Z distance from the leading edge of the door
α angle between the free end and the perpendicular to the door face
1 test block

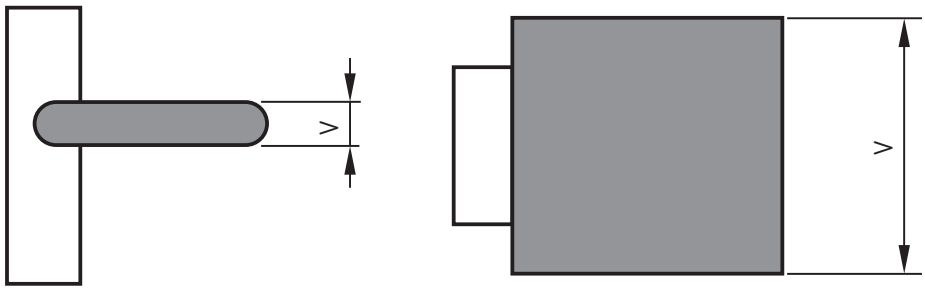
Figure 3 — Critical dimensions of type A emergency exit devices



Key

R is the minimum gap between the push pad and the surface of the door leaf
W is the maximum projection
Z is the distance from the leading edge of the door

Figure 4 — Critical dimensions of type B emergency exit devices



Key

V is the width of the operating element

Figure 5 — Width of operating element

4.1.21 Door free movement

The design of an emergency exit device shall be such that the bolt head(s), once the door has been released to open, does not restrict or impede the free movement of the door.

The design of an emergency exit device can include a dogging mechanism or an automatic relatching device. If the exit device is equipped with a dogging mechanism or a device retaining the bolt(s) retracted, this shall not impede the free movement of the door once released.

An exit device shall be designed to avoid accidental release of the bottom bolt, preventing the free opening of the door.

Exit devices intended for use on smoke/fire-resisting doors, shall comply with Annex B for additional requirements.

Compliance shall be verified by visual inspection and functional tests carried before and also after durability test.

4.1.22 Top vertical bolt

An emergency exit device with top and bottom vertical rods shall include a mechanism to ensure that the releasing and/or the manipulation of the bottom vertical rod bolt head does not release the top vertical rod bolt head. This is verified by pushing the bottom bolt head up to its flush position with the bolt case.

Compliance shall be verified by visual inspection and functional tests carried before and also after durability test.

4.1.23 Covers for vertical rods

If covers are provided to surface fixed vertical rods to achieve abuse resistance, they shall have secure fixings and only be removable by means of a specific tool.

Compliance shall be verified by visual inspection and functional tests, or (if not removable by a specific tool) the emergency exit device shall meet the performance requirements of **4.2.6** with the covers removed.

The design of an emergency exit device may provide for a guide(s) to retain the vertical rods.

4.1.24 Keepers

The design of an emergency exit device shall include a keeper(s) for protecting the door frame and engaging the bolt head(s) when the emergency exit device is in the secured position.

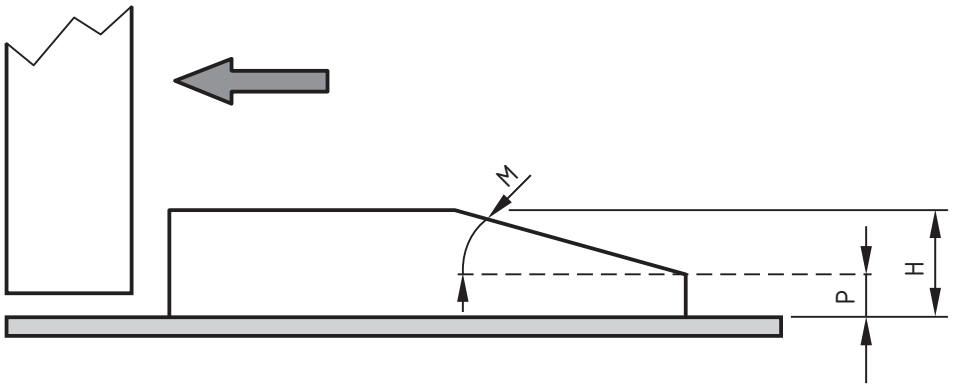
Keepers shall provide protection for any part of the door or frame that could be damaged by the emergency exit device during the opening and closing cycle of the door.

Compliance shall be verified by visual inspection and functional tests carried before and also after durability test.

4.1.25 Keepers dimensions

The design of a floor keeper shall be such that dust and dirt can easily be removed with a conventional vacuum cleaner. If the keeper is not fitted flush it shall not exceed 15 mm in height (dimension H) from the finished floor level and shall be chamfered in the direction of escape at an angle (M) not exceeding 45° from the horizontal, and any up stand (dimension P) shall not exceed 3 mm. See Figure 6.

Compliance shall be verified by visual inspection and measurements.



Key

H is the height of the floor keeper
M is the angle from the horizontal
P is the up stand of the floor keeper

Figure 6 — Floor keeper dimensions

4.1.26 Lubrication

Where periodic lubrication is required, it shall be possible to lubricate without dismantling the emergency exit device. No additional lubrication shall be required before 20 000 cycles have been attained, and at no less interval than 20 000 cycles thereafter. This requirement shall be verified in accordance with **6.3.4**.

4.1.27 Door mass and dimensions

The door mass and door dimensions shall be limited to the following for the purposes of an emergency exit device tested on a test door according to **5.2.2**:

— maximum door mass: 100 kg or 200 kg according to the classification;

— maximum door height, excluding any rebates: up to 20 % increase of the height of the test door (i.e. maximum increased height = 2 520 mm);

— maximum door width, excluding any rebates: up to 20 % increase of the width of the test door (i.e. maximum increased width = 1 320 mm).

Beyond these limits an emergency exit device shall be additionally tested according to the following:

1) **door mass over 200 kg:** repeat the durability test in accordance with **6.3.4** and the final examination in accordance with **6.3.8**, with the intended door mass;

2) **door width over 1 320 mm:** no further tests required;

3) **door height over 2 520 mm:** repeat the release test in accordance with **6.3.2**, the abuse resistance test of vertical rods in accordance with **6.3.6** and the final examination in accordance with **6.3.8**. Either perform the test with the intended door height or perform the test on test doors 2 100 mm high but with weights added to the vertical rods to ensure that the vertical rods have the same mass that they would have on the door for which the device is specified. In this case, the longest unsupported length of surface fixed vertical rod, at the midpoint of which the abuse force is applied, shall be not less than the one of the door for which the device is intended.

The forces shall be applied in accordance with **5.2.1**.

An emergency exit device may be used on a door with shorter dimensions and lower mass than the dimensions and the mass of the door to which it has been tested.

4.1.28 Outside access device

The provision for a connection of an outside access device (key, cylinder, lever handle, knob, etc.) shall not, in any, way render the emergency exit device inoperable from the inside, whether the outside access device is tested in the fully locked or unlocked position with the key removed. The installation instructions shall clearly indicate the approved configurations for outside access. See Annex A.

An outside access device that is not specified by the producer as designed to be compatible with a specific emergency exit device shall not be considered to be in conformity with this document.

When an outside access device is intended for use with a thumbturn cylinder, the size and any positioning of the thumbturn shall not interfere with the operation of the emergency exit device from the inside.

Where National Building Regulations accept direct connection of the exit device mechanism with the outside lever handle, which when being blocked at any position may render the exit device inoperable from the inside, this shall be clearly stated in the installation instructions, as in 4.3.

Where an outside access device is intended for use with a cylinder and a key left inside a cylinder at any position can render the emergency exit device inoperable from the inside then this shall be clearly stated in the installation instructions, as in **4.3** and Annex A.

Compliance is verified by a visual and mechanical examination, which shall include all the functions of the outside access device which have been declared by the producer of the emergency exit device.

Compliance shall be verified by visual inspection and functional tests.

The examination shall confirm that the release forces of the emergency exit device are still within the limits of **6.3.2** with the outside access device installed.

4.1.29 Dangerous substances

Materials in products shall not contain or release any dangerous substances in excess of the maximum levels specified in existing European material standards or any national regulations.

Compliance shall be verified by visual inspection of documents supplied by the producer.

4.2 Performance requirements

4.2.1 General

Emergency exit devices shall be manufactured such that, when tested according to the specified test methods as Clause 6, the performance of the emergency exit device (or components) shall demonstrate conformity to the specific design requirements as specified in **4.1**, and conformity to the requirements for product information as specified in **4.3**, Annex A and Annex C.

Emergency exit devices shall demonstrate conformity to the characteristics according to Table 1.

An emergency exit device whose performance is declared as compliant with this document shall conform to all the requirements of Table 1.

Table 1 – Performance characteristics and compliance criteria

Performance characteristic	Function		Clause number		Compliance criteria
	Mechanical [a]	Fire [b]	Requirement	Test	
Ability to release (for locked doors on escape routes)					
Release function	X	X	4.1.2	4.1.2	Threshold ($\leq$ 1 s)
Release operation	X	X	4.1.3	4.1.3	Pass/Fail
Lever handle design	X	X	4.1.4	4.1.4	Pass/Fail
Push pad design	X	X	4.1.5	4.1.5	Pass/Fail
Double doorset	X	X	4.1.6	4.1.6	Pass/Fail
Exposed edges and corners	X		4.1.8	4.1.8	Threshold ($\geq$ 0,5 mm)
Push pad installation	X		4.1.11	4.1.11	Threshold (Z $\leq$ 250 mm)
Lever handle installation	X		4.1.12	4.1.12	Threshold (X $\geq$ 120 mm; Z $\leq$ 150 mm)
Operating element projection	X		4.1.13	4.1.13	Threshold (W $\leq$ 100 or 150 mm)
Operating element face	X		4.1.14	4.1.14	Threshold (V $\geq$ [c]18 mm)
Lever handle free end	X		4.1.15	4.1.15	Threshold (U $\geq$ 40 mm; W $\leq$ 100 mm; $\alpha \leq 30°$)
Lever handle operating gap	X		4.1.16	4.1.16	Threshold (test block)
Push pad operating gap	X		4.1.17	4.1.17	Threshold (R $\geq$ [d]25 mm)
Test rod	X		4.1.18	4.1.18	Pass/Fail
Push pad release operation	X		4.1.19	4.1.19	Pass/Fail
Accessible gap	X		4.1.20	4.1.20	Threshold (20 mm)
Door free movement	X	X	4.1.21	4.1.21	Pass/Fail
Top vertical bolt	X		4.1.22	4.1.22	Pass/Fail
Keepers	X		4.1.24	4.1.24	Pass/Fail
Keepers dimensions	X		4.1.25	4.1.25	Threshold (H $\leq$ 15 mm; M $\leq 45°$; P $\leq$ 3 mm)
Door mass and dimensions	X		4.1.27	6.3.2; 6.3.4; 6.3.5, 6.3.6; 6.3.8	Threshold (Grade)
Outside access device	X		4.1.28	4.1.28; 6.3.2	Pass/Fail

Performance characteristic	Function		Clause number		Compliance criteria
	Mechanical [a]	Fire [b]	Requirement	Test	
Release forces	X		4.2.2	6.3.2	Threshold (A ≤ 70 N; B ≤ 150 N)
Security requirement	X		4.2.7	6.3.7	Threshold (Grade)
Durability of ability to release (for locked doors on escape routes)					
Corrosion resistance	X		4.1.7; 4.2.9	6.2.3	Threshold (Grade)
Temperature range	X		4.1.9	6.2.2	Threshold (50 % in excess)
Covers for vertical rods	X		4.1.23; 4.2.6	4.1.23; 6.3.6	Threshold (500 N)
Lubrication	X		4.1.26	6.3.4	Threshold (20 000 cycles)
Re-engagement force	X		4.2.3	6.3.3	Threshold (≤ 50 N)
Durability	X		4.2.4; 4.1.21; 4.2.2; 4.2.3	6.3.4	Threshold (Grade - 100 000 or 200 000 cycles)
Abuse resistance – Operating element	X		4.2.5	6.3.5	Threshold (500 N and 1000 N)
Abuse resistance – Vertical rod	X		4.2.6	6.3.6	Threshold (500 N)
Final examination	X		4.2.8; 4.2.2; 4.1.21	6.3.2; 6.3.1.a)	Threshold (operating forces as applicable)
Self closing ability C (for fire/smoke doors on escape routes)					
Re-engagement force	X		4.2.3	6.3.3	Threshold (≤ 50 N)
Durability of Self closing ability C against aging and degradation (for fire/smoke doors on escape routes)					
Durability	X		4.2.4	6.3.4	Threshold (Grade - 100 000 or 200 000 cycles)
Re-engagement force	X		4.2.3	6.3.3	Threshold (≤ 50 N)
Resistance to fire E (integrity) and I (insulation) (for use on fire doors)					
Suitability of emergency exit devices for use on fire resisting doorsets assemblies - Additional requirements		X	4.1.10; Annex B	Annex B	Threshold (Grade)
Control of Dangerous substances	X		4.1.29	4.1.29	Pass/Fail

[a]Verification or tests performed by mechanical test laboratory

[b]Verification or tests performed by fire test laboratory

[c]See **4.1.14** §2

[d]See **4.1.17** §2

4.2.2 Release forces

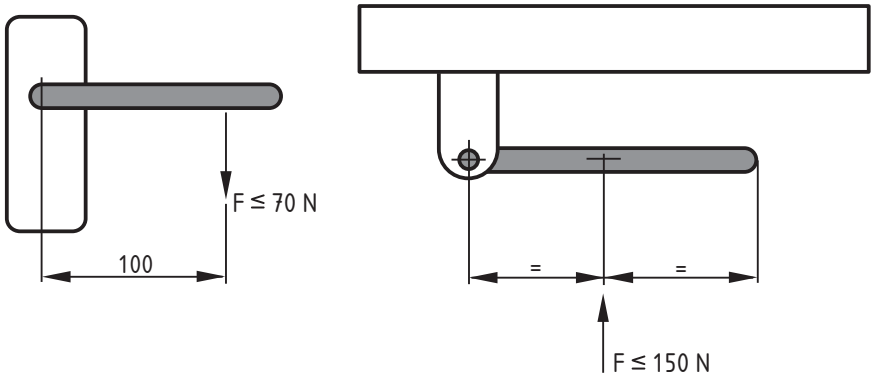
4.2.2.1 Emergency exit devices operated by a lever handle (type A device)

When an emergency exit device is tested in accordance with **6.3.2.1**, the force required to release the emergency exit device shall not exceed 70 N. See Figure 7.

4.2.2.2 Emergency exit devices operated by a push pad (type B device)

When an emergency exit device is tested in accordance with **6.3.2.2**, the force required to release the emergency exit device shall not exceed 150 N. See Figure 7. For “pull pad” type B emergency exit device, reverse the arrow.

Dimensions in millimetres



Type A emergency exit device **Type B emergency exit device**

Figure 7 — Release forces

4.2.3 Re-engagement force

When an emergency exit device is tested in accordance with **6.3.3**, the force required to release an automatic relatching device in order to re-engage the emergency exit device in the secured position shall not exceed 50 N.

The test in **6.3.3** may be omitted if the emergency exit device does not include an automatic re-latching device.

4.2.4 Durability

When an emergency exit device is tested in accordance with **6.3.4**, the cycling test shall consist of:

— 100 000 cycles to achieve grade 6;

— 200 000 cycles to achieve grade 7.

When an emergency exit device equipped with a deadbolt only thrown by a key for additional security is tested in accordance with **6.3.4.2**, the cycling test of the deadbolt shall consist of:

— 25 000 cycles to achieve grade 6;

— 50 000 cycles to achieve grade 7.

An emergency exit device may be designed to incorporate an additional deadbolt thrown by a key, used only at certain period of time for additional security. The release function shall be tested with any deadbolt thrown. The durability of the deadbolt does not need to be tested to same number of cycles as either the regular latch bolt or an automatic relatching device, or an automatic deadbolt.

Emergency exit devices intended for use *only on the inactive leaf* of a double doorset shall be tested in accordance with **6.3.4.1** (Test 2); the cycling test shall consist of:

— 10 000 cycles to achieve grade 6;

— 20 000 cycles to achieve grade 7.

For rebated double doorsets, it shall not be necessary for emergency exit devices used only on inactive leaves to complete the same number of durability cycles as that required for the active leaf. However, when an emergency exit device is designed for use on either leaf of a double doorset, or for use on a single door, it shall be tested to the complete number of cycles.

After the test, the emergency exit device shall continue to be operable and meet the requirements of **4.1.21**, **4.2.2** and **4.2.3**.

Where double doorset emergency exits, when the first opening leaf is equipped with a panic exit device conforming to EN 1125 and the second opening leaf is equipped with an emergency exit device conforming to this European Standard, the combination shall be tested according to **6.3.4**.

NOTE This combination is not permitted in all national regulations.

4.2.5 Abuse resistance – Operating element

a) Emergency exit device operated by a lever handle

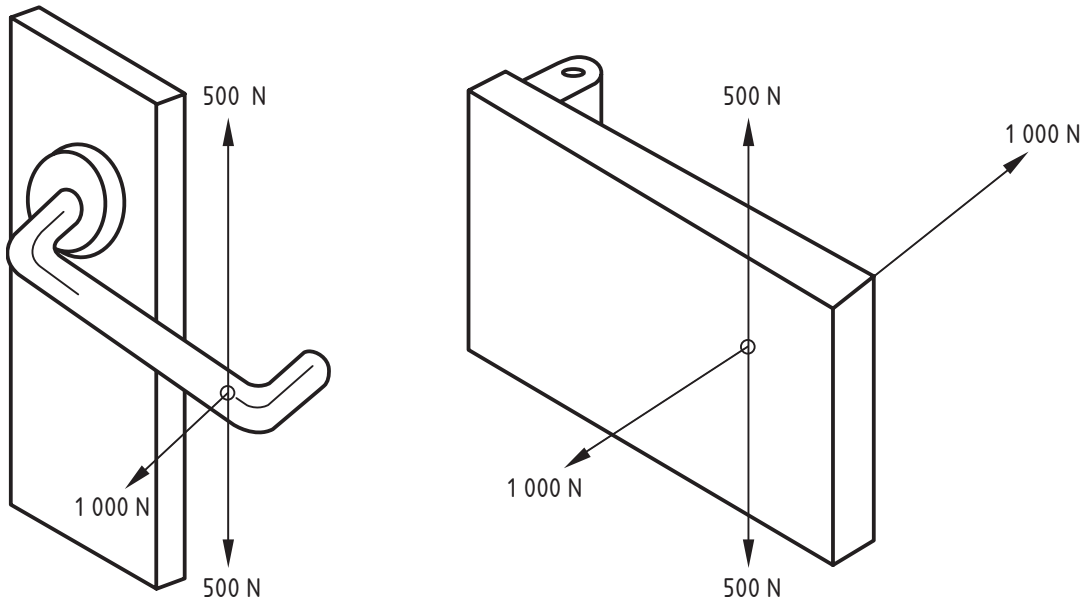
When an emergency exit device is tested in accordance with **6.3.5.1**, it shall withstand a perpendicular pull force of 1 000 N and a parallel force of 500 N. See Figure 8.

b) Emergency exit devices operated by a push pad

When an emergency exit device is tested in accordance with **6.3.5.2**, the push pad shall withstand a force of 1 000 N and a force of 500 N in a vertical direction. See Figure 8.

After the test, the emergency exit device shall meet the requirements of **4.1.16** or **4.1.17**, and 4**.1.18** and continue to be operable. The requirements of **4.1.18** shall be checked during the final examination by the tests given in **6.3.8**.

An emergency exit device with a dogging mechanism shall have the test of **4.2.5** repeated with the emergency exit device in the dogged position.



Type A emergency exit devices **Type B emergency exit devices**

Figure 8 — Abuse resistance test forces

4.2.6 Abuse resistance – Vertical rod

Vertical rods shall be resistant to abuse by either conformity to **4.1.23** or with the following test.

When an emergency exit device is tested in accordance with **6.3.6**, the surface fixed rods shall withstand a pulling force of 500 N. See Figure 9.

After the test, the emergency exit device shall continue to be operable. This requirement shall be checked during the final examination by the tests given in **6.3.8**.

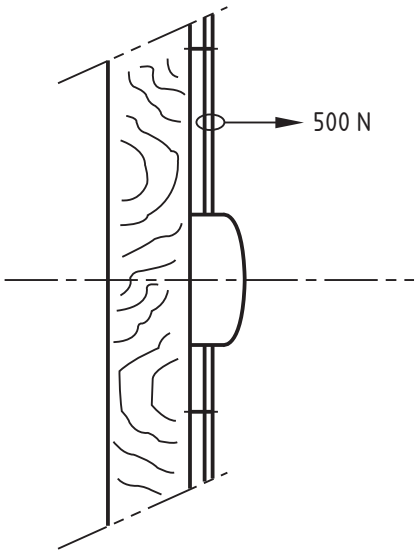


Figure 9 — Abuse resistance test force

4.2.7 Security requirement

When an emergency exit device is tested in accordance with **6.3.7**, the device shall remain in the locked position and shall keep the door closed when subjected to a force of:

— 1 000 N for attaining grade 2;

— 2 000 N for attaining grade 3;

— 3 000 N for attaining grade 4;

— 5 000 N for attaining grade 5.

Emergency exit devices conforming to this European Standard have a safety rather than a security function. It is therefore considered essential that the emergency exit device shall continue to be operable after the application of any abuse test forces. The test values in **4.2.7** reflect this requirement and indicate a level of strength that shall be achieved without impairing the escape function of the emergency exit device.

4.2.8 Final examination

At the end of the test programme, the emergency exit device shall continue to be operable and meet the requirements of **4.2.2** and **4.1.21**.

4.2.9 Corrosion resistance

When an emergency exit device is tested in accordance with **6.2.3**, the force required to release the emergency exit device shall not exceed:

a) emergency exit devices operated by a lever handle:

   1) 70 N prior to the test;

   2) 100 N after the test.

b) emergency exit devices operated by a push pad:

   1) 150 N prior to the test;

   2) 220 N after the test.

4.3 Requirements for product information

An emergency exit device manufactured to this European Standard shall be supplied with clear and detailed instructions for its installation and maintenance. See Annex A and Annex C.

These instructions shall contain the following:

a) The limitations on:

- intended use,
- door mass and door dimensions,
- maximum door distortion to enable safe exit at all times (see 5.2.2),
- minimum resistance of the door leaf against a pulling force of the recommended fixing screws,
- field of door application,
- fire/smoke door suitability.

Where an exit device is suitable for use on fire and smoke door assemblies based on a test in accordance with EN 1634-1 (see 7.4 Grade B), the product information shall include:

- fire resistance time (i.e. 30 minutes, 90 minutes, etc.) for each door configuration approved (i.e. single leaf door only, double exit door, etc.),
- type of door (timber, steel, others),
- reinforcements supplied with the exit device if any,
- any additional information such as fire test report or web site where to find updated information.

b) following warning in a prominent position: “The safety features of this product are essential to its compliance with EN 179. No modification of any kind, other than those described in these instructions, is permitted”;

c) installation and fixing instructions to ensure that the emergency exit device can achieve the performance requirements in this document, including any restriction in use, for example conditions under which the exit device could be rendered inoperable. See **4.1.28** and Annex A;

d) maintenance instructions to ensure that the emergency exit device continues to achieve the performance requirement in this document for a reasonably economic working life. See Annex C;

e) list of all elements that are tested and approved for use with this emergency exit device and which may be packaged separately, e.g. mortise lock, lever handle, cylinder, keeper, etc.

Where an assembly is using different accessories, the producer shall clearly identify configurations that are acceptable within the product family and those which are not (i.e. using a table).

It is of paramount importance that an emergency exit device shall be installed as defined by the producer and equipped with properly compatible components and/or accessories. Therefore, this information shall be available in the producer’s instructions.

If the producer allows a double doorset to be equipped with a combination of a panic exit device in accordance with EN 1125 on the active (or first opening) leaf and an emergency exit device on the inactive (or second opening) leaf, the installation instructions shall clearly indicate which specific EN 1125 panic exit device on the active leaf is compatible in combination with the specific EN 179 emergency exit device chosen on the inactive leaf. See Annex A.

Compliance shall be verified in accordance with **6.3.1.b)**.

5 Tests – General and test apparatus

5.1 General

Any emergency exit device within any one product range having significantly different working components, or working components of significantly different materials, shall be separately tested.

Emergency exit devices intended for use with a mortise lock shall be tested together with the operating element specified by the producer.

Three test samples shall be used for testing in accordance with this European Standard:

— test sample A for environmental tests;

— test sample B for design and performance tests;

— test sample C for reference or further tests.

Alternatively, test sample C can be used also for environmental tests if it is necessary to split temperature and corrosion tests.

Failure of any one test within a sequence constitutes failure of that particular test sample.

In the case of any one test sample failure, the relevant test sequence may be repeated using sample C.

The emergency exit device shall be fitted to the test door in accordance with the producer's instructions, as in **4.3**.

If an emergency exit device is to be used on single leaf doors only, this emergency exit device shall be tested on the test door described in **5.2.2.1**, or on the test door described in **5.2.2.2** by using only one of the two leaves, with the unused leaf being clamped secured.

If an emergency exit device is to be used on double doorsets, this emergency exit device shall be tested only on the test door described in **5.2.2.2**.

NOTE It is recognized that such emergency exit devices can also, in some circumstances, be used on single leaf doors.

Throughout these tests, the following tolerances on values shall apply, unless otherwise stated:

— angular position in degrees ±2°

— force, in Newtons ±2 %

— length, in millimetres ±2 %

— mass, in kilograms ±5 %

— temperature, in degrees Celsius ±2 °C

— time, in seconds ±10 %

The ambient temperature of the test environment shall be controlled throughout the tests to between +15 °C and +30 °C. The environment shall be free from draughts.

5.2 Test apparatus

5.2.1 General

Instruments with an accuracy of 1,5 % of reading or better shall be used for measurements in accordance with these test methods.

The forces required shall be applied as follows:

— release forces required in **6.2.3** and **6.3.2**, shall be applied gradually at an average rate of 20 N/s ± 10 % from 30 N to the required value;

— abuse forces required in **6.3.5** and **6.3.6** shall be applied gradually at an average rate of 100 N/s ± 10 % from 100 N to the required value;

— security forces required in **6.3.7** shall be applied gradually at an average rate of 100 N/s ± 10 % from 500 N to the required value;

— operating forces required in **6.3.4** shall be applied gradually, in no less than 1 s;

— re-engagement force required in **6.3.3** shall be applied from 30 N to 50 N or to the required value within 1 s.

For example, these rates are calibrated on a blocked door prior to carrying out the tests. Unless otherwise stated in the relevant clause, all forces shall be applied by means of a polyamide or POM actuator of the following dimensions:

a) release tests and cycling tests (push pad operation): diameter 60 mm;

Where such a dimension cannot be applied due to design of the product, a minimum 15 mm diameter actuator shall be used and its use shall be recorded in the test report.

b) release tests and cycling tests (lever operation): diameter 15 mm;

c) tests with load applied to the door (e.g. security): diameter 60 mm;

Pulling may be used as an alternative way to conduct the test.

d) abuse tests (all elements): diameter 15 mm.

All edges shall be radiused by 3 mm.

All cycle testing equipment shall include means of recording the number of cycles attained.

5.2.2 Test door

5.2.2.1 For a single leaf test door, the test door leaf shall be 2 100 mm high and 1 100 mm wide. It shall have means of attaching weights so that the door mass is according to the intended classification in kilograms ± 2 %. The test door and its frame shall be made of material of sufficient rigidity (i.e. welded steel or aluminium profiles) such that any distortion taking place during the test sequence shall be no more than 5 mm at any position. Actuating means shall be provided to enable the door to be opened solely by operating the operating element of the emergency exit device under test.

5.2.2.2 For a double leaf test door, the test door leaves shall each be 2 100 mm high and 1 100 mm wide. They shall have means of attaching weights so that the door mass is in accordance with the intended classification in kilograms ± 2 %. The test door leaves and their frame shall be made of material of sufficient rigidity (i.e. welded steel or aluminium profiles) such that any distortion taking place during the test sequence shall be no more than 5 mm at any position. Actuating means shall be provided to enable either door leaf to be opened solely by operating the respective operating element of the emergency exit device under test. Provision shall be made for an astragal (or rebated edge) to be fitted to the external face of the first opening leaf. The effective gap between the two leaves shall be 6 mm.

5.2.2.3 The position of the centre of gravity shall be nominally at the mid-height position of the test door leaf and 500 mm from the vertical axis of the hinges.

5.2.2.4 The test door shall be mounted vertically on hinges or other bearings attached to the rigid frame. The moment of friction shall not exceed 2 Nm in both directions. The axis of rotation shall be positioned 65 mm from the inside face of the test door leaf measured perpendicular to the leaf. See Figure 10.

Dimensions in millimetres

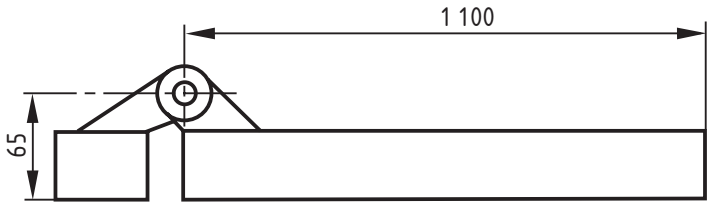


Figure 10 — Mounting of test door and frame

5.2.2.5. The producer may specify any reinforcement or special preparation to the door, according to the installation instructions.

6 Test methods – Procedures

6.1 General

Test samples as in **5.1** shall be used for performance verification:

— test sample A for environmental tests;

— test sample B for design, product information and mechanical performance tests.

Alternatively, test sample C can be used also for environmental tests if it is necessary to split temperature and corrosion test.

The flow chart described in Annex D shall be used for the test sequence.

During installation, the positional details (i.e. keepers, bolts, gaps, etc.) shall be recorded in the test report.

Prior to each individual test, it shall be permitted to carry out the following adjustments: retightening of fixing screws to the test door, and cleaning of bolts and keepers (only once after the durability test). Such adjustments shall be recorded in the test report.

After installation and until the end of the test sequence, in the order detailed in **6.3.2** to **6.3.8**, it shall not be permitted to carry out the following adjustments: modification of the adjustment or positioning of keepers, rods, bolts, latches, springs, and operating element.

For mortise emergency exit devices, mortised locks shall be installed in a way that the vertical axis of the fore end is positioned 20 mm from the internal face of the test door leaf. If this requirement is in conflict with the producer's installation instructions, the producer's installation instructions shall be followed. See Annex A.

6.2 Test procedure – Test sample A – Environmental tests

6.2.1 General

The environmental tests shall be carried out in the order detailed below.

6.2.2 Temperature test

6.2.2.1 Principle

The emergency exit device shall be exposed in as assembled a state as possible to high and low temperatures for sufficient time to allow temperature stability to be reached, and for functional tests to be conducted. For the functional test, the forces required to withdraw the bolt head(s) shall be measured and compared without using the keeper.

Tests may be carried out either as sub-assemblies or complete devices.

NOTE The humidity level is not critical during this test.

6.2.2.2 Test procedure

— Stabilize the emergency exit device for a minimum of 4 h at a temperature of +20 °C.

— While still in the test chamber, measure relevant operating forces.

— Stabilize the emergency exit device for a minimum of 4 h at a temperature of +60 °C.

— While still in the test chamber, measure relevant operating forces.

— Verify that the operating forces are no more than 50 % in excess of the operating forces measured at +20 °C.

— Stabilize the emergency exit device for a minimum of 4 h at a temperature of −10 °C.

— While still in the test chamber, measure relevant operating forces.

— Verify that the operating forces are no more than 50 % in excess of the operating forces measured at +20 °C.

The operating force in this test shall be the force required to operate the emergency exit device or any of its critical components. Alternatively, where it is not possible to measure relevant operating forces inside the test chamber, it is possible to assemble the device outside the test chamber in a maximum time of 5 min in order to measure the operating forces.

6.2.3 Corrosion test

6.2.3.1 Pre-test release force

6.2.3.1.1 Single leaf test door

Install test sample A on the test door in accordance with the producer's instructions.

With no thrust on any part of the test door and with the test door secured, the operating element shall be actuated to release the emergency exit device as follows:

— lever handle (type A): force applied at a distance of 100 mm from the pivot of the lever handle;

— push pad (type B): force applied in the direction of door opening at the midpoint of its operating surface.

NOTE The midpoint is considered to be the centre of gravity of the visible surface of the push pad.

This test shall be conducted three times. Verify each time that the emergency exit device meets the requirements of **4.2.9.a)1)** for type A emergency exit devices, and **4.2.9.b)1)** for type B emergency exit devices.

6.2.3.1.2 Double leaf test door

The test of **6.2.3.1.1** shall be carried out on each leaf, depending on the field of door application claimed.

6.2.3.2 Neutral salt spray test

Remove the emergency exit device from the test door and, in as assembled a state as possible, subject to a neutral salt spray test in accordance with **4.1.7**.

Surfaces which are not exposed to the atmosphere in normal installation may be covered or protected during this test. For example, mortise elements may be inserted into a suitable piece of material such as “PMMA” or a non-metal material.

6.2.3.3 Post-test release force

6.2.3.3.1 Single leaf test door

After completion of the test remove the emergency exit device from the cabinet and rinse it gently in clean running water at a temperature not exceeding 40 °C. Allow the device to dry for 3 h at a temperature of between 15 °C and 30 °C and at a humidity of between 40 % RH and 70 % RH. At the end of the drying period, and in a time of up to 2 h, re-install the emergency exit device on the test door.

With no thrust on any part of the test door and with the test door secured, the operating element shall be actuated to release the emergency exit device as follows:

— lever handle (type A): force applied at a distance of 100 mm from the pivot of the lever handle;

— push pad (type B): force applied in the direction of door opening at the midpoint of its operating surface.

This test shall be conducted 10 times. Verify that during each of the last three times, the emergency exit device meets the requirements of **4.2.9.a)2)** for type A emergency exit devices, and **4.2.9.b)2)** for type B emergency exit devices.

6.2.3.3.2 Double leaf test door

The test in **6.2.3.3.1** shall be carried out on each leaf, depending on the field of door application claimed.

6.3 Test procedure – Test sample B – Design and performance tests

6.3.1 General

a) Compliance with the design requirements given in **4.1** shall be verified by visual inspections, functional tests or measurements. See **3.28**, **3.29**, **3.30**.

b) Compliance with the requirements for product information in accordance to **4.3** shall be verified by visual inspections and recorded in the test report. This report shall include at least the following:

1. installation instructions and permitted adjustments;

2. limitation of the door size and mass and door configuration;
3. safety warning;
4. maintenance instructions;
5. list of approved components and accessories;
6. fire/smoke suitability information including type of door and fire resistance time..

Items 2, 5 and 6 may be obtained from the producer's website, if available.

NOTE This is desirable to ensure that the latest product information is available.

c) The performance requirements shall be tested in the order detailed in **6.3.2** to **6.3.8**.

Prior to the start of the test sequence of sample B (design and mechanical performance), it is permissible to make any necessary installation adjustments to the emergency exit device or its fixings in accordance with the producer's instructions.

6.3.2 Release tests

6.3.2.1 Emergency exit devices operated by a lever handle (type A)

6.3.2.1.1 Single leaf test door

Prior to testing, the emergency exit device shall be set to its most unfavourable configuration to verify that reliable release is achieved in all expected situations. For example, when a deadbolt is available, it shall be engaged prior to the release test. See Figure 7.

With no thrust on any part of the test door and with the test door secured, the lever handle shall be actuated by a force of 70 N applied at a distance of 100 mm from the pivot of the lever handle to release the emergency exit device.

This test shall be conducted three times.

Verify each time that the emergency exit device meets the requirements of **4.2.2.1**.

6.3.2.1.2 Double leaf test door

The test of **6.3.2.1.1** shall be carried out on each leaf, depending on the field of door application claimed.

Double doorset emergency exit devices, of which the first opening leaf is equipped with a panic exit device conforming to EN 1125 and the second opening leaf is equipped with an emergency exit device conforming to this European Standard, shall be tested without the door under pressure.

6.3.2.2 Emergency exit devices operated by a push pad (type B)

6.3.2.2.1 Single leaf test door

With no thrust on any part of the test door and with the test door secured, the push pad shall be actuated by a force of 150 N applied in the direction of door opening at the midpoint of its operating surface to release the emergency exit device. For type B emergency exit devices intended for use on inwardly opening exit doors, apply the force to the operating element in the direction enabling exit.

NOTE The midpoint is considered to be the centre of gravity of the visible surface of the push pad.

This test shall be conducted three times.

Verify each time that the emergency exit device meets the requirements of **4.2.2.2**.

6.3.2.2.2 Double leaf test door

The test of **6.3.2.2.1** shall be carried out on each leaf, depending on the field of door application claimed.

Double doorset emergency exit devices, of which the first opening leaf is equipped with a panic exit device conforming to EN 1125 and the second opening leaf is equipped with an emergency exit device conforming to this European Standard, shall be tested without the door under pressure.

NOTE Operating forces of exit devices are tested in laboratory condition with a defined test rig in order to achieve reproducible conditions. However, operating forces (by body, hand or fingers) of a given exit device installed on a given escape door are the result of the operating forces of the exit device plus any additional frictions due to hinges, seals, door alignment, door reinforcement, etc. It is therefore important to choose the appropriate components in order to achieve a reasonable operating force.

6.3.3 Re-engaging test

With the test door open at 10°, apply a closing force of up to 50 N at right angles to the face of the test door, at a position of 1 000 mm from the centre line of the hinges of the test door leaf and at between 800 mm and 1 200 mm from the bottom of the test door to re-engage the emergency exit device in the secured position.

In the case of a double doorset, conduct this test on each leaf consecutively, in accordance with the closing sequence of the emergency exit device under test.

This test shall be conducted three times.

Verify each time that the emergency exit device meets the requirements of **4.2.3**.

6.3.4 Durability test

6.3.4.1 General

Emergency exit devices shall be subjected to durability test cycles according to their field of application as in Tables 2 and 3.

Some exit devices, especially those of modular way, may not be suitable for certain type of doors (i.e. two vertical rod devices on a rebated double doorset). It shall be clear in the installation instructions which combination is suitable for use on which type of door. See Annex A.

The emergency exit device under test shall be actuated by its operating element as follows:

a) Emergency exit devices operated by a lever handle (type A):

— measure and record the gap between the bolt head(s) and keeper(s);

— measure and record the engagement of the bolt head(s) into the keeper(s);

— prior to the cycling test, measure and record the force needed to release the exit device with 25 N load on the test door;

— apply the force needed to release the exit device, and open the door. The test door shall be opened by solely actuating the lever handle 100 mm from its pivot point;

— if the operating force is not enough during the durability test, then gradually increase the operating force until it operates, and continue the cycling. The maximum force allowed to release the emergency exit device installed on the active leaf shall not exceed 25 % of the required release force in **4.2.2.1**. This force shall be recorded in the test report;

— at the end of the cycling test, measure and record the force needed with 25 N load on the test door to release the device;

— measure and record the gap between the bolt head(s) and keeper(s) at the end of the cycling test;

— measure and record the engagement of the bolt head(s) into the keeper(s);

— verify that the exit device meets the requirements of **4.1.21**.

b) Emergency exit devices operated by a push-pad (type B):

— measure and record the gap between the bolt head(s) and keeper(s);

— measure and record the engagement of the bolt head(s) into the keeper(s);

— prior to the cycling test, measure and record the force needed to release the exit device with 25 N load on the test door;

— apply the force needed to release the exit device, and open the door. The test door shall be opened by solely actuating the push pad at its midpoint;

— if operating force is not enough during the durability test, then gradually increase the operating force until it operates, and continue the cycling. The maximum force allowed to release the device installed on the active leaf shall not exceed 25 % of the required release force in **4.2.2.2**. This force shall be recorded in the test report;

— at the end of the cycling test, measure and record the force needed with 25 N load on the test door to release the device;

— measure and record the gap between the bolt head(s) and keeper(s) at the end of the cycling test;

— measure and record the engagement of the bolt head(s) into the keeper(s);

— verify that the exit device meets the requirements of **4.1.21**.

c) Combination of emergency exit devices and panic exit device in double doorset emergency exits

When a device conforming to EN 1125 is used on the first opening leaf of a double doorset emergency exit, it shall be tested in accordance with the requirements of EN 1125 related to the release test for double leaf, with the door not under pressure, prior to durability testing as a combination.

The full test sequence for sample B (initial release test, re-engaging test, durability test, release test, abuse resistance test and security test) shall be performed with the same installation of the exit device according to producers' instructions, to verify the durability of the performance of the exit device. No adjustment shall be allowed because of wear of the product.

Table 2 — Test method according to category

Category	Field of door applications covered	Test method
A	— Outwardly opening single door — Outwardly opening double door: active or inactive leaf	Test 1 + Test 2
B	— Outwardly opening single door only	Test 1
C	— Outwardly opening double door: inactive leaf only	Test 2
D	— Inwardly opening single door	Test 1

Table 3 — Number of cycles

Test method	Test door	Number of cycles
Test 1	— Outwardly or inwardly opening single leaf door — Outwardly opening double door	100 000 or 200 000 cycles
Test 2	— Outwardly opening double door (operate inactive leaf in order to open both leaves)	10 000 or 20 000 cycles

According to the producer's installation instructions, the most unfavourable conditions (e.g. different keepers or functions) shall be chosen in order to minimize the amount of testing required. This may be done by preliminary testing or evaluation. See Annex A.

Test 1

The test door shall be opened to an angle of between 10° and 12° by solely actuating the operating element. Following a dwell period of not less than 0,5 s a closing force shall be applied to return the test door to the secured position in a time of between 1,0 s and 2,0 s. The closing force shall be removed when the test door reaches an open position of 5° ± 1°, allowing the test door to latch by kinetic energy alone, and with no residual closing moment. Following a dwell period in the latched position of not less than 0,5 s, cycling shall continue for a total of 100 000 cycles for grade 6 or 200 000 cycles for grade 7.

In the case of testing an emergency exit device on the inactive leaf, the active leaf shall be held open throughout Test 1.

A force of 25 N shall be applied to the single leaf test door or to both leaves of a double leaf test door at a position of 550 mm from the centre line of the hinges, and between 800 mm and 1 200 mm from the bottom of the test door in the direction of door opening, to simulate a force caused by seals.

Test 2

Both leaves of the test door shall be opened by solely actuating the operating element of the inactive leaf to an angle of at least 10°, for a total of 10 000 cycles for grade 6, or 20 000 cycles for grade 7.

Means shall be provided to return each leaf in a time of between 3 s and 6 s to the secured position in the correct sequence, with no residual closing moment, before the commencement of the next cycle.

The test door may be opened further than 10° if required by the construction of the emergency exit device.

A force of 25 N shall be applied to both leaves of the double leaf test door at a position of 550 mm from the centre line of the hinges, and between 800 and 1 200 mm from the bottom of the test door in the direction of door opening, to simulate a force caused by seals.

After completing the total required number of cycles, verify that the emergency exit device meets the requirements of **4.2.4**.

When an outside access device is supplied with optional re-entry function then this function shall be tested 20 cycles every testing day or after not more than 20 000 cycles.

The test report shall record the specific types of door installation for which the emergency exit devices tested are approved.

Where periodic lubrication is recommended by the producer, it shall not take place before 20 000 cycles have been attained and at no less an interval than 20 000 cycles thereafter.

6.3.4.2 Emergency exit devices with additional deadbolt

When an emergency exit device is equipped with a deadbolt for additional security, the first 25 000 cycles for grade 6, or 50 000 cycles for grade 7 shall be conducted with the deadbolt engaged each time before the emergency exit device is released.

6.3.5 Abuse resistance test – Operating element

6.3.5.1 Emergency exit devices operated by a lever handle (type A)

With the test door clamped in the closed position, apply to the lever handle a force of 1 000 N, perpendicular to the door face (parallel to the axis) at 25 mm from the free end. The required value shall be maintained for 10 s. Remove this force and apply consecutively to the lever handle a force of 500 N in both directions, in a plane parallel with the face of the door and at 25 mm from the free end. The required value shall be maintained for 10 s. See Figure 8.

Verify that the emergency exit device meets the requirements of **4.2.5**.

NOTE It is possible to use a specifically designed fixture in order to apply abuse forces where required.

6.3.5.2 Emergency exit devices operated by a push pad (type B)

With the test door clamped in the closed position, apply to the push pad a force consecutively in each of four directions (500 N in vertical directions, and 1 000 N in horizontal and perpendicular directions to the face of the door) within 25 mm from the free end of the push pad. The required value shall be maintained for 10 s. See Figure 8.

Verify that the emergency exit device meets the requirements of **4.2.5**.

NOTE It is possible to use a specifically designed fixture in order to apply abuse forces where required.

6.3.6 Abuse resistance test – Vertical rods

With the test door secured in the closed position, apply a pulling force of 500 N at the midpoint on the longest unsupported length of surface fixed vertical rod in a direction perpendicular to the door face. The required value shall be maintained for 10 s. See Figure 9.

Verify that the emergency exit device meets the requirements of **4.2.6**.

If the design of an emergency exit device is such that it does not allow the covers to be removed without using a specific tool (see **4.1.23**), this test may be omitted. Any such omission shall be noted in the test report.

6.3.7 Security test

With the test door secured in the closed position, apply to the test door the forces of **4.2.7** at a position of 1 000 mm from the centre line of the hinges of the test door leaf and at between 800 mm and 1 200 mm from the bottom of the test door, in the direction of door opening. The required value shall be maintained for 10 s.

For type B emergency exit devices intended for use on inwardly opening exit doors, apply the force in the direction of door opening.

Verify that the emergency exit device meets the requirements of **4.2.7** according to the grade required.

In the case of double door emergency exit devices, the forces of **4.2.7** shall be applied consecutively to each leaf.

6.3.8 Final examination

After the completion of tests **6.3.2** to **6.3.7**, verify that the emergency exit device meets the requirements of **4.2.8**.

7 Classification

7.1 Category of use (1st character)

Only one grade of use shall be used:

— grade 3: high frequency of use where there is little incentive to exercise care, i.e. where there is a chance of an accident occurring and of misuse.

7.2 Durability (2nd character)

Two grades of durability shall be used:

— grade 6: 100 000 test cycles;

— grade 7: 200 000 test cycles.

7.3 Door mass (3rd character)

Three grades of door mass shall be used:

— grade 5: up to 100 kg;

— grade 6: up to 200 kg;

— grade 7: over 200 kg.

7.4 Suitability for use on fire/smoke doors (4th character)

Three grades shall be used:

— grade 0: Not approved for use on fire / smoke door assemblies;

— grade A: Suitable for use on smoke door assemblies - based on the requirements of B.1;

— grade B: Suitable for use on fire and smoke door assemblies based on a test in accordance with EN 1634-1.

Annex B contains additional requirements for emergency exit devices to this grade.

7.5 Safety (5th character)

Only one grade of safety shall be used:

— grade 1: all emergency exit devices have a critical safety function, therefore only the top grade is identified for the purposes of this European Standard.

7.6 Corrosion resistance (6th character)

Two grades of corrosion resistance given in EN 1670:2007, **5.6**, shall be used:

— grade 3: 96 h (high resistance);

— grade 4: 240 h (very high resistance).

7.7 Security (7th character)

Four grades of security shall be used:

— grade 2: 1 000 N;

— grade 3: 2 000 N;

— grade 4: 3 000 N;

— grade 5: 5 000 N.

NOTE Additional specific tests may be carried out to prove a higher level of security. The emergency exit devices will be deemed to conform with this European Standard provided that all the requirements of this European Standard are met.

7.8 Projection of operating element (8th character)

Two grades of projection shall be used:

— grade 1: projection up to 150 mm (large projection);

— grade 2: projection up to 100 mm (standard projection).

NOTE Grade 1 does not apply to type A operation.

7.9 Type of operation (9th character)

Two types of operation shall be used:

— type A: emergency exit device with “lever handle” operation;

— type B: emergency exit device with “push pad” operation.

7.10 Field of door application (10th character)

Four categories of field of door application shall be used according to the end use of the emergency exit device (see **6.3.4**):

— category A: outwardly opening single exit door, double exit door: active or inactive leaf;

— category B: outwardly opening single exit door only;

— category C: outwardly opening double exit door: inactive leaf only;

— category D: inwardly opening single exit door only.

NOTE Certain emergency exit devices are restricted to particular doors within this broad categorization. The installer should check the specific application according to the producer’s installation instructions. See Annex A.

7.11 Example of classification

1	2	3	4	5	6	7	8	9	10
3	7	5	B	1	3	3	2	A	B

This classification denotes an emergency exit device with the following characteristics:

1) (3) is suitable for use in high frequency applications;

2) (7) tested to 200 000 cycles;

3) (5) for a door mass of up to 100 kg;

4) (B) suitable for use on fire/smoke resisting door assemblies according to product information;

5) (1) is safe for use on escape route doors;

6) (3) with high corrosion resistance;

7) (3) with a grade 3 security level 2 000 N;

8) (2) with a projection of up to 100 mm;

9) (A) operated with lever handle type A;

10) (B) suitable for use on a single door only.

8 Marking

8.1 On the product

A producer may only claim compliance with this European Standard if compliance can be demonstrated with all the relevant clauses of this document for type A or type B emergency exit devices.

Where the requirements of this clause are also required for regulatory marking, compliance with the requirements for regulatory marking shall be deemed to satisfy the requirements of this clause. Voluntary marking shall not be applied in such a manner that it could be confused with the regulatory marking. The following information shall be marked on the product:

a) CE marking symbol; see Annex Z for further requirements;

b) identification number of the certification body;

c) producer's name or trademark or other means of positive identification;

d) number and year of this European Standard, i.e. EN 179:2008.

e) full classification of the product;

f) month and year of manufacture.

Only item a) CE marking symbol and items b) and c) shall need to be visible after installation. Item f) may be in coded form.

NOTE 1 For CE marking and labelling, see **ZA.3**.

NOTE 2 See Table 4.

8.2 On the packaging

The following information shall be marked on the packaging:

a) producer's name or trademark or other means of positive identification;

b) number and year of this European Standard, i.e. EN 179:2008;

c) producer's product reference number.

NOTE See Table 4.

8.3 On the installation instructions

The information given in Table 4 shall be marked on the installation instructions.

Table 4 — The marking requirements

Marking requirements	On the product (device mechanism and/or operating element)		On the packaging	On the installation instructions
	Visible before installation	Visible after installation		
CE marking	-	X	-	X

Marking requirements	On the product (device mechanism and/or operating element)		On the packaging	On the installation instructions
	Visible before installation	Visible after installation		
Identification number of the certification body	-	X	-	X
The name or identifying mark of the producer	-	X	X	X
Registered address of the producer	-	-	-	X
The last two digits of the year in which the marking was applied	-	-	-	X
The number of the EC certificate of conformity	-	-	-	X
Reference to this European Standard (number and year)	X[a]	-	X[a]	X
Classification	X[a]	-	-	X
Month and year of assembly by producer	X	-	-	-
Category of projection	-	-	-	X
Field of door application	-	-	-	X
Door dimension suitability	-	-	-	X
Producer's product reference number	-	-	X	X
Information on the only approved components for use on escape/exit doors (operating elements, keepers, etc.)	-	-	-	X

[a] If a product conforms to different standards with different classifications, then this marking may be omitted and included in the installation instructions. See Annex A.

8.4 Mortise lock combined with a separate operating element

If an emergency exit device consists of a mortise lock combined with a separate lever handle unit, and the mortise lock cannot be replaced without removing the lever handle unit first, then it shall be sufficient to apply the marking requirements to the lever handle unit only.

9 Evaluation of conformity

9.1 Initial type test

9.1.1 General

The conformity of the emergency exit device to the requirements of this European Standard and with the stated values (including classes) shall be demonstrated by:

— initial type testing;

— factory production control by the producer, including product assessment.

For the purposes of testing, emergency exit devices may be grouped into families, where it is considered that the results for one or more characteristics from any one product within the family are representative for those same characteristics for all emergency exit devices within that same family (a product may be in different families for different characteristics).

An initial type test is the complete set of tests or other procedures, in respect of the characteristics to be assessed, determining the performance of samples of products representative of the product type.

Initial type testing shall be performed to show conformity with this European Standard for emergency exit devices being put onto the market.

Initial type testing shall be repeated if a change in production process, in material, in supply of components or in product design, could detrimentally affect the performance of the declared characteristics.

NOTE The producer should discuss such changes with the laboratory that conducted the original type testing in order to evaluate the need for new initial type testing.

In the case of type testing of emergency exit devices for which initial type testing in accordance with this European Standard was already performed, type testing may be reduced if it has been established that the performance characteristics compared with the already tested emergency exit devices have not been affected.

Where kit components (e.g. sub assemblies) are used whose characteristics have already been determined, by the component producer, on the basis of conformity with this or other appropriate European technical specifications, these characteristics need not be reassessed provided that the components' performance or method of assessment remain the same, that the characteristics of the component are suitable for the intended end use of the finished product, and insofar as the manufacturing process does not have a detrimental affect on the determined characteristics.

Products CE marked in accordance with appropriate harmonized European specifications may be assumed to have the performances stated with the CE marking, although this does not replace the responsibility of the kit producer to ensure that the kit as a whole is correctly designed (where the producer himself undertakes the design) and its components have the necessary performance values to meet the design.

9.1.2 Characteristics

All characteristics in **4.2** shall be subject to initial type testing.

Release of dangerous substances may be assessed indirectly by controlling the content of the substance concerned.

9.1.3 Use of historical data

Tests previously performed on the same exit devices in accordance with the provisions of this European Standard (same characteristic(s), test method, sampling procedure, system of attestation of conformity, etc.) may be taken into account.

9.2 Sampling, testing and conformity criteria

Samples, selected in accordance with **6.1**, representing the series, shall be subjected to the full test sequence in accordance with **6.2** and **6.3** and, where relevant, Annex B.

The following rules shall be applied for the selection of test samples:

a) separate type tests shall be conducted where devices have different numbers of locking points;

b) separate type tests shall be conducted where significant components (which can affect its performance to the standard) are of different design or material;

c) variations of model within a family that have not been selected for initial type test shall be covered through the periodic and annual testing;

d) tests performed on samples that are not made from full production methods, processes and tooling shall be repeated within the first six months of full production.

NOTE Item d) is a possibility offered to the producer to reduce time and cost to market. It is essential to be able to verify that the product made from production tools has the same design characteristics and performance as the samples that have been accepted.

Where devices in families have a different number of locking points, or where significant components that could affect the performance to this European Standard are of a different design or material, the most severe and/or unfavourable configuration of such devices shall be subjected to an initial type test or such devices shall be subjected to separate initial type tests.

It may be possible to carry out pre-tests, to identify the worst case product/combination for type testing, that is representative of the series. This shall include pre-release tests on different versions within the series, including for example different keeper settings or outside access devices, to evaluate the most unfavourable version to be tested.

9.3 Factory production control

9.3.1 General

The producer shall establish, document and maintain a factory production control (FPC) system to ensure that the products placed on the market conform to the declared performance characteristics. The FPC system shall consist of written procedures (works' manual), regular inspections and tests and/or assessments and the use of the results to control raw and other incoming materials or components, equipment, the production process and the product. Records shall remain legible, readily identifiable and retrievable.

An FPC system conforming with the requirements of EN ISO 9001:2000, and made specific to the requirements of this European Standard shall be considered to satisfy the above requirements.

The results of inspections, tests or assessments requiring action shall be recorded, as shall any action taken. The action to be taken when control values or criteria are not met shall be recorded and retained for the period specified in the producer's FPC procedures.

9.3.2 Documents

The producer shall draw up and keep up-to-date documents defining the FPC that is applied. The producer's documentation and procedures shall be appropriate to the product and manufacturing process. The FPC system shall achieve an appropriate level of confidence in the conformity of the product. This involves:

a) preparation of documented procedures and instructions relating to FPC operations;

b) effective implementation of these procedures and instructions;

c) recording of these procedures and their results;

d) use of these results to correct any deviations, repair the effects of such deviations, treat any resulting instances of nonconformity and, if necessary, revise the factory production control to rectify the cause of nonconformities.

The producer shall establish procedures to ensure that the production tolerances allow for the emergency exit device's performances to be in conformity with the declared values, derived from initial type testing.

The producer shall record the results of the tests specified above. These records shall at least include the following information:

— identification of the emergency exit device tested;

— date of sampling and testing;

— test methods performed;

— test results;

— frequency of product testing. See **9.4** and **9.5**.

9.3.3 Traceability and marking

Individual products, product batches or packages shall be identifiable and traceable with regard to their production origin. The producer shall have procedures ensuring that processes related to affixing traceability codes and/or markings (see Clause **8**) are inspected regularly. Compliance with EN ISO 9001:2000, **7.5.3** shall be deemed to satisfy the requirements of this sub-clause.

9.3.4 Non conforming products

The producer shall have written procedures which specify how non-conforming products shall be dealt with. Any such events shall be recorded as they occur and these records shall be kept for the period defined in the producer's written procedures. Compliance with EN ISO 9001:2000, **8.3** shall be deemed to satisfy the requirements of this sub-clause.

9.3.5 Corrective action

The producer shall have documented procedures that instigate action to eliminate the cause of nonconformities in order to prevent recurrence. Compliance with EN ISO 9001:2000, **8.5.2** shall be deemed to satisfy the requirements of this sub-clause.

As a minimum, the producer shall have procedures to treat non-conforming products as follows:

a) isolate and identify nonconforming products;

b) undertake the necessary corrective actions;

c) repeat tests as appropriate to prove that the product meets the specifications.

9.3.6 Handling, storage and packaging

The producer shall have procedures providing methods of product handling and shall provide suitable storage areas preventing damage or deterioration.

9.3.7 Personnel

The responsibility, authority and the relationship between personnel that manages, performs or verifies work affecting product conformity, shall comply with the appropriate clause of EN ISO 9001:2000.

9.3.8 Equipment

All weighing, measuring and testing equipment necessary to achieve, or produce evidence of, conformity shall be calibrated or verified and regularly inspected according to documented procedures,

frequencies and criteria. Control of monitoring and measuring devices shall comply with the appropriate clause of EN ISO 9001:2000.

All equipment used in the manufacturing process shall be regularly inspected and maintained to ensure use, wear or failure does not cause inconsistency in the manufacturing process.

Inspections and maintenance shall be carried out and recorded in accordance with the producer's written procedures and the records retained for the period defined in the producer's FPC procedures.

9.3.9 Design process

The FPC system shall document the various stages in the design of the emergency exit device identify the checking procedure and those individuals responsible for all stages of design.

During the design process itself, a record shall be kept of all checks, their results, and any corrective actions taken. This record shall be sufficiently detailed and accurate to demonstrate that all stages of the design phase, and all checks, have been carried out satisfactorily. Compliance with EN ISO 9001:2000, **7.3** shall be deemed to satisfy the requirements of this sub-clause.

9.3.10 Raw materials and components

The specifications of all incoming raw materials and components shall be documented, as shall the inspection scheme for ensuring their conformity. The verification of conformity of the raw material with the specification shall be in accordance with EN ISO 9001:2000, **7.4.3**.

In case supplied kit components are used, the attestation of conformity level of the component shall be at least that given in the appropriate harmonized technical specification for that component. If this is not the case, the inspection scheme shall be adequate to demonstrate their suitability.

9.3.11 In-process control

The producer shall plan and carry out production under controlled conditions. Compliance with EN ISO 9001:2000, **7.5.1** and **7.5.2** shall be deemed to satisfy the requirements of this subclause.

9.3.12 Unit checks during manufacture

The producer shall conduct as a minimum, the unit checks given in Table 5.

Table 5 — Minimum frequency of unit checks

Performance characteristics	Clause, indicating the relevant test method (if any)	Threshold value (if any) and tolerances	Minimum number of samples/ tests	Minimum frequency of tests or inspection
Ability to release (for locked doors on escape routes)				
Release function	4.1.2	Threshold (≤ 1 s)	1	Every sub-assembly
Release operation	4.1.3	Pass/Fail	1	6 months
Lever handle design	4.1.4	Pass/Fail	1	6 months
Push pad design	4.1.5	Pass/Fail	1	6 months
Double doorset	4.1.6	Pass/Fail	1	6 months
Exposed edges and corners	4.1.8	Threshold (≥ 0,5 mm)	1	Beginning of production
Push pad installation	4.1.11	Threshold (Z ≤ 250 mm)	1	Beginning of production

Performance characteristics	Clause, indicating the relevant test method (if any)	Threshold value (if any) and tolerances	Minimum number of samples/ tests	Minimum frequency of tests or inspection
Lever handle installation	4.1.12	Threshold (X ≥ 120 mm; Z ≤ 150 mm)	1	Beginning of production
Operating element projection	4.1.13	Threshold (W ≤ 100 or 150 mm)	1	Beginning of production
Operating element face	4.1.14	Threshold (V ≥ 18 mm)	1	Beginning of production
Lever handle free end	4.1.15	Threshold (U ≥ 40 mm; W ≤ 100 mm; $\alpha \leq 30°$)	1	Beginning of production
Lever handle operating gap	4.1.16	Threshold (Test block)	1	Beginning of production
Push pad operating gap	4.1.17	Threshold (R ≥ 25 mm)	1	Beginning of production
Test rod	4.1.18	Pass/Fail	1	Beginning of production
Push pad release operation	4.1.19	Pass/Fail	1	6 months
Accessible gap	4.1.20	Threshold (20 mm)	1	Beginning of production
Door free movement	4.1.21	Pass/Fail	1	6 months
Top vertical bolt	4.1.22	Pass/Fail	1	6 months
Keepers	4.1.24	Pass/Fail	1	Beginning of production
Keepers dimensions	4.1.25	Threshold (H ≤ 15 mm; M ≤ 45°; P ≤ 3 mm)	1	Beginning of production
Door mass and door dimensions	4.1.27	Threshold (Grade)	1	Beginning of production
Outside access device	4.1.28	Pass/Fail	1	Beginning of production
Release forces	4.2.2	Threshold (A ≤ 70 N; B ≤ 150 N)	1	Every sub-assembly batch produced or received
Security requirement	4.2.7	Threshold (Grade)	1	Beginning of production
Durability of ability to release (for locked doors on escape routes)				
Corrosion resistance	4.1.7; 4.2.9	Threshold (Grade)	1	Beginning of production
Temperature range	4.1.9	Threshold (50 % in excess)	1	Beginning of production
Covers for vertical rods	4.1.23	Threshold (500 N)	1	Beginning of production
Lubrication	4.1.26	Threshold (20 000 cycles)	1	Beginning of production
Re-engagement force	4.2.3	Threshold (≤ 50 N)	1	6 months
Durability	4.2.4	Threshold (Grade - 100 000 or 200 000 cycles)	1	6 months

Performance characteristics	Clause, indicating the relevant test method (if any)	Threshold value (if any) and tolerances	Minimum number of samples/ tests	Minimum frequency of tests or inspection
Abuse resistance – Operating element	4.2.5	Threshold (500 N and 1000 N)	1	Beginning of production
Abuse resistance – Vertical rod	4.2.6	Threshold (500 N)	1	Beginning of production
Final examination	4.2.8	Threshold (Operating forces as applicable)	1	Beginning of production
Self closing ability C (for fire/smoke doors on escape routes)				
Re-engagement force	4.2.3	Threshold (≤ 50 N)	1	6 months
Durability of Self closing ability C against aging and degradation (for fire/smoke doors on escape routes)				
Durability	4.2.4	Threshold (Grade - 100 000 or 200 000 cycles)	1	6 months
Re-engagement force	4.2.3	Threshold (≤ 50 N)	1	6 months
Resistance to fire E (integrity) and I (insulation) (for use on fire doors)				
Suitability of emergency exit devices for use on fire resisting doorsets assemblies - Additional requirements	4.1.10; Annex B	Threshold (Grade)	1	ITT satisfactory unless a change in materials or components
Control of Dangerous substances	4.1.29	Pass/Fail	1	(continuous monitoring of raw material/components)
– Beginning of production means at the commencement of a production line following a successful ITT. A new ITT means a new production line. – Sub-assembly: see Clause 3				

9.4 Periodic testing (for all products)

At intervals of no more than six months, samples taken from finished stock, selected in accordance with **6.1** and representative of the series shall be subjected to the following test sequence:

a) release tests in accordance with **6.3.2**;

b) durability testin accordance with **6.3.4**;

c) abuse resistance test on operating element in accordance with **6.3.5**.

Where particular products within a series (or family) of products have not been subjected to a specific initial type test in accordance with **9.1**, such products shall be chosen in sequence for the test of **9.3.1**, so that over time, all variations of the product family, shall have been tested.

9.5 Annual testing (for all products)

At intervals of no more than one year, three samples representative of the series shall be taken from finished stock and subjected to the full sequence of testing specified in Clause **6**.

Annex A
(normative)

Installation and fixing instructions

The following shall be the minimum information and installation guidance to accompany the emergency exit device:

A.1 The producer shall specify the appropriate fixing arrangements for the door types for which the exit device is designed.

A.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 verify that the door construction allows the use of the device, i.e. to verify that offset hinges and engaging leaves allow both leaves to be opened simultaneously (see **A.4**), or to verify that the gap between door leaves does not differ from that defined by the exit device producer, or to verify that the operating elements do not interfere, etc.

NOTE Emergency exit devices manufactured in accordance with this European Standard 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.

A.3 Before fitting an emergency 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 an exit device is not used on a fire door assembly of a greater fire resistance time than approved for. See Annex B.

A.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 emergency exit device.

A.5 On double doorsets with rebated meeting stiles and where both leaves are fitted with emergency exit devices, it is essential to check that either leaf will open when its emergency exit device is activated and also that both leaves will open freely when both emergency exit devices are operated simultaneously.

The use of a carry bar to move the active leaf may be required for this application.

A.6 Where emergency exit devices are manufactured in more than one size, it is important that the correct size is selected.

A.7 Category 2 (standard projection) emergency exit devices should be used in situations where there is restricted width for escape, or where the doors to be fitted with the emergency exit devices are not able to open beyond 90°.

A.8 Where an emergency exit device is designed to be fitted to a glazed door, it is essential that the glazing is tempered or laminated glass.

A.9 Different fixing can be necessary for fitting emergency exit devices to wood, metal or frameless glass doors. For more secure fixing, male and female through-door bolts, reinforcement and rivets can be used.

A.10 Emergency exit devices are not intended for use on double action (double swing) doors unless specifically designed by the exit device producer.

A.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. See Annex C.

A.12 The operating element 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 users of the premises will be young children, consideration should be given to reducing the height of the operating element.

A.13 When installing lever operated emergency exit devices, particularly on doors with raised or recessed surfaces, consideration should be given to minimizing any potential safety risks, such as the trapping of fingers or clothing.

A.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 swinging freely.

A.15 Where emergency 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 (see Bibliography) should be fitted to ensure the correct closing sequence of the doors. This recommendation is particularly important with regard to smoke/fire-resisting door assemblies.

A.16 No devices for securing the door in the closed position should be fitted other than that specified in this European Standard. This does not preclude the installation of self-closing devices.

A.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.

A.18 Any keepers or protection plates provided should be fitted in order to ensure compliance with this European Standard.

A.19 A sign which reads “Rotate handle to open” or “Push 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 mm^2 and its colours should be white on a green background. It should be designed such that the arrow points to the operating element, when installed. The pictogram given in Figure A.1 can be used.

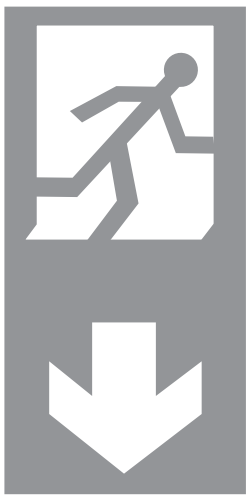


Figure A.1 — Pictogram

Annex B
(normative)

Additional requirements for emergency exit devices intended for use on smoke/fire resisting door assemblies

B.1 An emergency exit device intended for use on smoke/fire-resisting door assemblies shall meet the following requirements in accordance with its intended classification in **7.4**.

Grade A: Grade A exit devices representative of their type shall have been subjected to a successful evaluation proving their suitability for use on smoke doors. For this, all parts of the exit device that are responsible for keeping the door in its closed position shall be made out of material with a melting point of not less than 300 °C. If the exit device is equipped with a latch bolt and the latch bolt could be the only part of the exit device that keeps a smoke door in its closed position, then the projection of the latch bolt shall be at least 10 mm. Alternatively, the suitability for use on smoke-resisting doors shall be determined by a successful test conducted in accordance with EN 1634-3.

Installation instructions shall ensure that the engagement of the latch bolt inside the locking plate is not less than 6 mm.

Grade B: Grade B exit devices representative of their type and including any outside access devices intended for fire door use shall have been subjected to a successful fire test conducted on both sides of the door in accordance with EN 1634-1 to prove the contribution of the exit device to the fire resistance of the complete door assembly. It is not necessary for the exit device to be operable after such a fire test.

NOTE Although the emergency exit devices referred to in this annex are suitable for use with smoke/fire-resisting door assemblies, the safety aspect and ease of escape as described in the introduction to this European Standard remains of the utmost importance.

B.2 An emergency exit device intended for use on self-relatching fire resisting doors shall include an automatic relatching device.

This requirement shall not apply where the emergency exit devices are intended for use on self closing fire resisting doorsets and where the fire test evidence required by **B.1** has been obtained from unlatched fire-resisting doorset assemblies.

Details of the inclusion or otherwise of an automatic relatching device in the fire test samples shall form a part of the final fire test report.

B.3 An emergency exit device intended for use on self-relatching smoke/fire-resisting doors shall not include a dogging mechanism or other means of holding the bolt heads in the withdrawn position unless such means are capable of reliable release of the bolt head(s) in conjunction with a smoke/fire alarm system.

This requirement shall not apply where the emergency exit devices are intended for use on self-closing smoke/fire-resisting doorsets and where the fire test evidence required by **B.1** has been obtained from unlatched smoke/fire-resisting doorset assemblies. Regardless of whether a dogging mechanism is operated or not, the device shall not prevent the door from self closing.

Details of the inclusion or otherwise of a dogging mechanism in the fire test samples shall form a part of the final fire test report.

If a device intended for use on self-relatching smoke/fire-resisting doors allows for automatic rebolting, it shall be designed to avoid accidental rebolting while the door is opened, preventing the self closing of the door.

Annex C
(normative)

Maintenance instructions

The following shall be the minimum information to accompany the product:

To ensure performance in accordance with this document, the following routine maintenance checks should be undertaken at intervals of not more than one month (or the period recommended by the producer).

a) Inspect and operate the emergency exit device to ensure that all components are in a satisfactory working condition. Using a force gauge, measure and record the operating forces to release the exit device.

b) Ensure that the keeper(s) is (are) free from obstruction.

c) Check that the emergency exit device is lubricated in accordance with the producer's instructions.

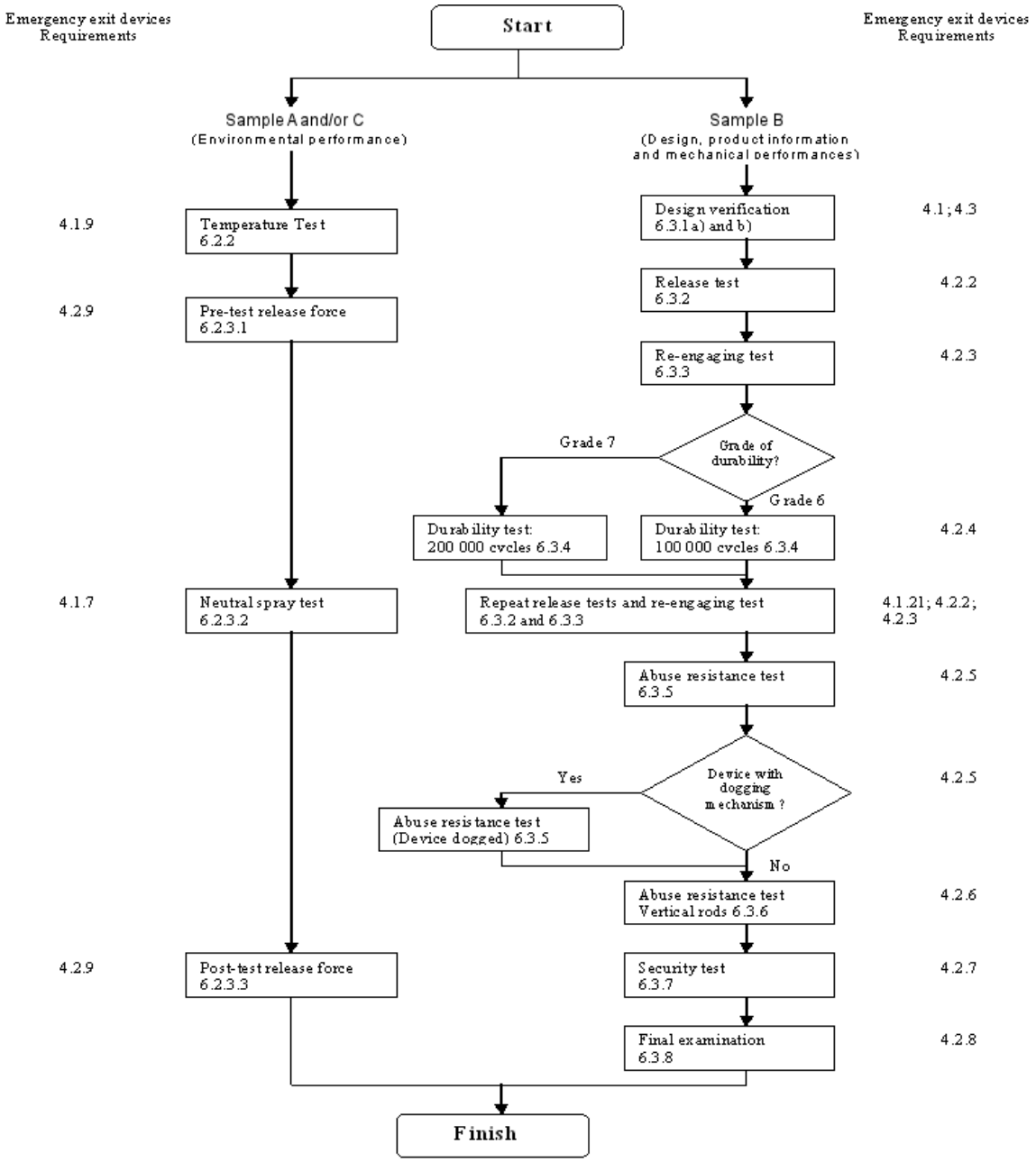
d) Check that no additional locking devices have been added to the door since its original installation.

e) Check periodically that all components of the system are still correct in accordance with the list of approved components originally supplied with the system.

f) Check periodically that the operating element is correctly tightened and, using a force gauge, measure the operating forces to release the exit device. Check that the operating forces have not changed significantly from the operating forces recorded when originally installed.

Annex D
(normative)

Flow chart of test procedure



Annex E
(informative)

Guidance for choosing relevant product standards for particular exit door applications

The final choice of a product for a particular application depends upon a risk analysis of its intended use on exit doors. Table E.1 indicates the main functions of the two exit hardware standards, to enable this risk assessment to be undertaken.

In case of any doubt, a panic situation should be assumed, and therefore preference should be given to panic exit devices as these give precedence to safe exit from buildings through additional requirements for release under loaded door conditions. These requirements simulate the forces which may be applied by people in panic.

NOTE See Introduction to EN 1125:1997.

Table E.1 — Main functions of exit devices

Standards ➔ **Functions** ⬇	**PANIC EXIT DEVICES mechanically operated EN 1125**	**EMERGENCY EXIT DEVICES mechanically operated EN 179**
EXIT from inside under panic or emergency conditions	**PANIC situation:** * Exit at all times * Single operation of horizontal bar in the direction of exit to release the door * No prior knowledge of device operation needed * Loaded door release of device	**EMERGENCY situation:** * Exit at all times * Single operation of lever handle in a downward direction or in a downward direction towards the hinges, or single operation of push pad in the direction of door opening and/or in an arc downwards or to the side, to release the door * Prior knowledge of door situation (e.g. inwardly opening) may be required **IMPORTANT NOTE: No evaluation of loaded door release of device**
NORMAL EXIT from inside with no panic or emergency conditions	* Egress authorized at all times * Precedence is given to the importance of ease of opening by the young, elderly and infirm	* Egress authorized at all times
ACCESS from outside	* Mechanical or electrical operation from outside when available * No influence on exit from inside	* Mechanical or electrical operation from outside when available * No influence on exit from inside
SECURITY from inside	* NONE: immediate release of the device without any delay	* NONE: immediate release of the device without any delay
SECURITY from outside	* Minimum level	* Minimum level or higher grades possible

Annex ZA
(informative)

Relationship between this European Standard and the Essential Requirements of EU Directive 89/106/EEC, EU Construction Products Directive

ZA.1 Clauses addressing the provisions of the EU Construction Products Directive

This European Standard has been prepared under Mandates M/101 and M/126 “External doors and windows, roof openings and roof lights (including fire doors and shutters)” – amended, given to CEN by the European Commission and the European Free Trade Association.

The clauses of this European Standard, shown in this annex meet the requirements of the mandate given under the EU Construction Product Directive (89/106/EEC). Compliance with these clauses confers a presumption of fitness of emergency exit devices covered by this annex for their intended use.

CAUTION — Other requirements and other EU Directives, not affecting the fitness for intended use, can be applicable to emergency exit devices falling within the scope of this European Standard.

NOTE 1 In addition to any specific clauses relating to dangerous substances contained in this European Standard, there may be other requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the EU Construction Products Directive, these requirements need also to be complied with, when and where they apply.

NOTE 2 An informative database of European and national provisions on dangerous substances is available at the Construction web site on EUROPA (http://europa.eu.int/comm/enterprise/construction/index_en.htm).

This annex establishes the conditions for the CE marking of the emergency exit devices intended for the uses indicated in Table(s) ZA.1 and shows the relevant clauses applicable.

This annex has the same scope as Clause 1 of this standard and is defined by Table ZA.1

Table ZA.1 —Clauses of this European Standard applying to the essential characteristics

Product: Emergency exit devices operated by a lever handle or a push pad as covered by the scope of this European Standard. **Intended use:** For doors on escape routes.			
Essential characteristic	**Requirement clauses in this European Standard**	**Mandated levels and/or classes**	**Notes (expression of performance)**
Ability to release (for doors on escape routes)	4.2.1	None	Threshold values as Table 1
Durability of ability to release against aging and degradation (for doors on escape routes)	4.2.1	None	Threshold values as Table 1
Self closing ability C (for fire/smoke doors on escape routes)	4.2.1	None	Threshold values as Table 1
Durability of self closing ability C against aging and degradation (for fire/smoke doors on escape routes)	4.2.1	None	Threshold values as Table 1
Resistance to fire E (integrity) and I (insulation) (for fire doors on escape routes)	4.2.1	None	Threshold (Grade)
Control of Dangerous substances	4.1.29 Note 2 of Clause ZA.1 above	None	Clause ZA.3

The requirement on a certain characteristic is not applicable in those Member States (MSs) where there are no regulatory requirements on that characteristic for the intended use of the product. In this case, manufacturers placing their products on the market of these MSs are not obliged to determine nor declare the performance of their products with regard to this characteristic and the option “No performance determined” (NPD) in the information accompanying the CE marking (see ZA.3) may be used. The NPD option may not be used, however, where the characteristic is subject to a threshold level.

ZA.2 Procedure for the attestation of conformity of emergency exit devices

The system of attestation of conformity of emergency exit devices indicated in Table ZA.1. In accordance with the Decision of the Commission 95/204/EC amended 99/93/EC as given in Annex III of the mandate for “External doors and windows, roof openings and roof lights (including fire doors and shutters)” amended, is shown in Table ZA.2 for the indicated intended use(s) and relevant level(s) or class(es).

Table ZA.2 — System of attestation of conformity

Product	**Intended use**	**Levels or classes**	**System of attestation of conformity**
Building hardware related to doors and gates	For doors on escape routes.	---	**1**
System 1: See CPD, Annex III point 2 (i), without audit-testing of samples.			

The attestation of conformity of the emergency exit device in Table ZA.1 shall be according to the evaluation of conformity procedures indicated in Table ZA.3 resulting from application of the clauses of this or other European Standard indicated therein.

Table ZA.3 — Assignment of evaluation of conformity tasks for emergency exit devices under system 1

Tasks		Content of the task	Evaluation of conformity clauses to apply
Tasks under the responsibility of the producer	Factory production control (FPC)	All characteristics of Table ZA.1	9.3
	Further testing of samples taken at factory		9.4 9.5
Tasks under the responsibility of the product certification body	Initial type testing	All characteristics of Table ZA.1	9.1 9.2
	Initial inspection of factory and of FPC	Parameters related to all characteristics of Table ZA.1	9.3
	Continuous surveillance, assessment and approval of FPC		9.1

When compliance with the conditions of this annex is achieved, the certification body shall draw up a certificate of conformity (EC Certificate of conformity), which entitles the producer to affix the CE marking.

The EC Certificate of conformity shall include the following information:

a) name, address and identification number of the certification body;

b) name and address of the producer, or an authorized representative established in the EEA, and place of production;

c) description of the product (type, identification, use);

d) provisions to which the product conforms (e.g. Annex ZA of EN 179:2008);

e) particular conditions applicable to the use of the product;

f) certificate's number;

g) conditions and period of validity of the certificate, where applicable;

h) name of, and position held by, the person empowered to sign the certificate.

In addition, for each product covered by an EC Certificate of conformity, the producer shall draw up a declaration of conformity (EC Declaration of conformity) including the following information:

1. name and address of the producer, or an authorized representative established in the EEA;

2. name and address of the certification body;

3. description of the product (type, identification, use, …) and a copy of the information accompanying the CE marking;

4. provisions to which the product conforms (i.e. Annex ZA of EN 179:2008);

5. particular conditions applicable to the use of the product (e.g. provisions for use under certain conditions);

6. number of the accompanying EC Certificate of conformity;

7. name of, and position held by, the person empowered to sign the declaration on behalf of the producer or authorized representative.

It is essential that both documents are presented in the official language or languages acceptable to the Member State in which the product is to be used.

ZA.3 CE marking and labelling

The manufacturer or authorized representative established within the EEA is responsible for the affixing of the CE marking. The CE marking symbol to affix shall be in accordance with Directive 93/68/EC and shall be shown on the emergency exit device and/or on the accompanying commercial documents as below.

The CE marking symbol shall be accompanied by the following information:

a) identification number of the certification body;

b) name or identifying mark of the producer;

c) registered address of the producer;

d) last two digits of the year in which CE marking was affixed;

e) number of the EC certificate of conformity;

f) reference to this European Standard (EN 179:2008) and product description;

g) the full classification of the emergency exit device (type).

The CE marking symbol and items a) to g) above shall accompany the product and shall be included with the installation instructions. An example of CE marking is given in Figure ZA.1.

Additionally, at least the CE marking symbol and item a), b), f), g) of this information shall be affixed to the emergency exit device. Only the CE marking symbol and items a) and b) shall need to be visible on the product after installation.

CE **01234** **Easy-exit Ltd**	*CE conformity marking, consisting of the "CE"-symbol given in Directive 93/68/EEC* *Identification number of the certification body* *Name or identifying mark of the producer*
EN 179: 2008 **375B1322AB**	*No. of European Standard* *Classification of the product* *(see example in **7.11**)*

Figure ZA.1 a) — Example of CE marking on an emergency exit device

CE **01234** **EN 179: 2008** **Emergency exit device** **Type 375B1332AB**	*CE conformity marking, consisting of the "CE"-symbol given in Directive 93/68/EEC* *Identification number of the certification body* *No. of European Standard and product description* *Classification of the product (see example in **7.11**)*
Easy-exit Ltd, PO Box 21, B-1050	*Name or identifying mark and registered address of the producer*
08	*Last two digits of the year in which CE marking was affixed*
01234-CPD-00234	*Certificate number (where relevant)*
Ability to release : Pass (≤ 70 N unloaded) **Durability of ability to release : Pass (200 000 cycles)** **Fire resistance C – Self-closing; E – Integrity; I – Insulation : Pass (Grade B)**	*Essential characteristics (where relevant)*

Figure ZA.1b) — Example of CE marking on the installation instructions of an emergency exit device

In addition to any specific information relating to dangerous substances shown above, the product should also be accompanied, when and where required and in the appropriate form, by documentation listing any other legislation on dangerous substances for which compliance is claimed, together with any information required by that legislation.

NOTE European legislation without national derogation need not be mentioned.

Bibliography

EN 1158, *Building hardware — Door coordinator devices — Requirements and test methods*

prEN 1634-2*, Fire resistance and smoke control tests for door and shutter assemblies, openable windows and elements of building hardware — Part 2: Fire resistance characterisation test for elements of building hardware*

EN 13501-2*, Fire classification of construction products and building elements — Part 2: Classification using data from fire resistance tests, excluding ventilation services*

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*

CONSTRUCT 04/645 Rev.1 GUIDANCE PAPER D (concerning the Construction Products Directive — 89/106/EC), *CE marking under the construction products directive European Commission — Enterprise Directorate - General - Single Market : regulatory environment, standardisation and New Approach – Construction - 27 May 2004*

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