PD CEN/TS 16819:2015

BSI Standards Publication

Postal services — Parcel boxes for end use — Technical features

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National foreword

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

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Postalische Dienstleistungen - Paketboxen für den Endverbrauch - Technische Merkmale

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European foreword

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1 Scope

This Technical Specification describes the technical features of parcel boxes for end use. This covers technical features such as size of parcels, ergonomics and safety, corrosion and water penetration resistance and security of delivery.

2 Normative references

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

EN 1670, *Building hardware - Corrosion resistance - Requirements and test methods*

EN 13724:2013, *Postal services - Apertures of private letter boxes and letter plates - Requirements and test methods*

EN 60529, *Degrees of protection provided by enclosures (IP Code) (IEC 60529)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 13724:2013 and the following apply.

3.1
parcel box
receptacle intended to receive parcel delivered by postal and/or parcel operators

3.2
parcel box components
all parts supplied by the manufacturer of the parcel boxes

3.3
access door
opening through which a parcel is delivered

3.4
casing
enclosure receiving the parcels delivered excluding the box door

3.5
door
generally flat, whose purpose is to cover and/or seal an opening

Note 1 to entry: Doors can open inwards or outwards.

3.6
parcel
packed item with name and address of the recipient to be delivered by a postal and/or parcel operator

3.7
parcel reception area
complete area inside a parcel box where a parcel of the size XS can be placed

3.8
gauge parcel
parcel used to test the clear delivery of parcels

3.9
lock mechanism
locking device which is operated mechanically, electronically or by other means

3.10
delivery floor level
floor level on the delivery side of the parcel box

3.11
receiving floor level
floor level on the receiving side of the parcel box

3.12
theft prevention
protection against the theft of parcels

4 Classification, designation and coding

4.1 Parcel box types

a) Parcel box, dedicated to one receiver – limited to one delivery at the same time.

b) Parcel box, dedicated to one receiver –not limited to one delivery at the same time.

c) Parcel box, shared by several receivers – limited to one delivery at the same time.

d) Parcel box, shared by several receivers – not limited to one delivery at the same time.

4.2 Parcel sizes

Eight parcel sizes are identified. The dimensions correspond to the maximum parcel sizes. Dimensions are given in Annex A.

The manufacturer shall supply information with the box which parcel sizes fit inside the box.

4.3 Corrosion resistance

Three grades of corrosion are identified according to EN 1670:

a) Corrosion grade 0;

b) Corrosion grade 3;

c) Corrosion grade 4.

4.4 Security

Six grades of security are identified (see 5.6.2):

a) Security grade 1;

b) Security grade 2;

c) Security grade 3;

d) Security grade 4;

e) Security grade 5;

f) Security grade 6.

5 Requirements

5.1 General requirements

The test methods that shall be used to meet these requirements are described in Clause 6.

All items shall be installed in accordance with the manufacturer's fixing instructions as supplied with the product.

5.2 Components

Fixing instructions shall be supplied with each individual product enabling the correct installation in accordance with this Technical Specification.

5.3 Dimensions

5.3.1 Parcel box dimensions

The parcel box shall allow parcels of the maximum sizes described in Annex A to fit inside the box.

Eight parcel sizes are identified. Maximum dimensions of each parcel are given in Annex A.

5.3.2 Gauge parcel

It shall be possible to push gauge parcels through the opening door without damaging it. It shall be possible to empty gauge parcels from a parcel box without damaging it.

The gauge parcels shall have the dimensions described in Annex A and shall be made of inflexible material, with a tolerance of $^{0}_{-3}$ mm.

5.4 Ergonomics and safety

5.4.1 Installation height of the box and lock

5.4.1.1 General

The installation height of the box and lock shall form part of the installation instruction. Failure to comply with the installation requirements shall result in non-conformity with this Technical Specification.

5.4.1.2 Parcel box (informative)

See Annex B for details.

5.4.1.3 Opening device

If more than 4 parcel boxes are fitted together, 30 % of them shall have their opening device (e.g. lock, door handle) at a height between 900 mm and 1 300 mm.

If there is a need the parcel boxes with their opening device (e.g. lock, door handle) at a height between 900 mm and 1 300 mm shall be used by handicapped people. A handicapped people symbol, see Figure 1, can be put on these boxes.

Depending on the features of the locking mechanism the parcel box shall fulfil one of the three equivalent requirements.

Figure 1 —Handicapped people symbol

This information shall be included in the installation instructions.

5.4.2 Safety

5.4.2.1 Protection against injury

All components that will be reached when normally inserting or removing a parcel shall not have sharp edges.

5.4.2.2 Child protection

Parcel boxes for parcels of size XL or larger shall not be airtight and shall also fulfil the following child protection requirements. All holes and openings that allow the air to pass through shall not create other problems like finger entrapment.

Depending on the features of the locking mechanism, the manufacturer shall fulfil one of the following requirements:

1) Locking of the door without additional manual operation from the outside

   Parcel boxes shall be equipped with an emergency opening to ensure that the door can be opened from the inside in any locking condition. It shall be possible to open the door from the inside using a force of no more than 8 N. This can be realized by a handle, push button or other solutions which ensures opening from the inside. Such controlled processes could be executed by children from a certain age. Therefore, children up to an age of 3 years are exempted from this requirement. A warning for parents shall be added on a label inside the parcel box and in the documentation: *WARNING FOR PARENTS! Risk of entrapment and suffocation, do not let your children play with the parcel box.*

   There should be means to ensure that the opening mechanism is not in complete darkness, e.g. by a light source or a light-transmissive aperture which lets pass as much light as an opening of min. 7 cm^2.

   Air supply to survive inside the box shall be ensured. A total cross section area, e.g. gaps or round holes to the outside of 10 cm^2 shall be provided. It shall be ensured that the air supply is sufficient in any possible assembly the manufacturer shows in his assembly instructions.

The smallest dimension of the cross section area shall not be smaller than 1 mm in order not to avoid the automatic air exchange by convection.

A warning for parents shall be added on a label inside the parcel box and in the documentation: *WARNING FOR PARENTS! Risk of entrapment and suffocation, do not let your children play with the parcel box.*

The following warning shall be added on a label outside the parcel box and in the documentation if the parcel box opens to the front: *WARNING! Do not leave anything in front of the door!*

The following warning shall be added on a label outside the parcel box and in the documentation if the parcel box opens from above: *WARNING! Do not leave anything on top of the parcel box!*

2) Locking of the door only with an additional operation

When closing the door, blocking of it shall only be possible with an additional manual operation from the outside of the parcel box.

3) Others

A system which prevents by design a child from being locked in a parcel box. This shall be fulfilled even if the door is left open after operation.

5.4.3 Fire protection regulations

The component materials and the location and/or installation of parcel boxes within any building shall be in accordance with the requirements for fire protection in staircases and access routes provided for rescue operations as laid down in the relevant planning laws and building regulations.

NOTE It is advisable to refer to national legal and administrative regulations.

5.5 Corrosion and water penetration

5.5.1 General

Corrosion resistance shall be in accordance with EN 1670.

5.5.2 Water penetration

Requirement regarding resistance to water penetration shall be in accordance with 5.6.2 of EN 13724:2013 or IPX3 as described in EN 60529. The manufacturer can choose the test he prefers.

5.6 Security

5.6.1 Security requirements

The requirements in this clause are intended to make the theft of parcels more difficult.

5.6.2 Security door and locks

Components shall have adequate strength to resist mechanical forces in accordance with security grade:

a) Grade 1 shall resist a force of 150 N;

b) Grade 2 shall resist a force of 220 N;

c) Grade 3 shall resist a force of 300 N;

d) Grade 4 shall resist a force of 500 N;

e) Grade 5 shall resist a force of 1 000 N;

f) Grade 6 shall resist a force of 2 000 N.

During and after the test, the deformation shall not allow a gauge made of inflexible material with a cross section of 50 mm × 20 mm to be pushed inside at least 50 mm without pressure.

The number of key differs shall be in accordance with security grade 2 of EN 13724.

The manufacturer of the parcel boxes shall ensure that the specified key differs are available and used by the manufacturer. It is not sufficient that the lock has the theoretical possibility of the specified key differs.

5.6.3 Fixings

If the parcel boxes are installed according to the manufacturer's instruction the following should be fulfilled: The parcel box shall be supplied with fixings which, once installed, cannot be removed from the outside. Fixing points shall resist the same forces as the door (see 5.6.2). During the test, fixing elements used for mounting shall not be pulled through the wall of the parcel box.

Disassembling should be only possible from the inside and not easy from the outside.

5.6.4 Casing strength

If a wall of a parcel box is accessible from the outside, this shall resist the same forces as the door (see 5.6.2).

During and after the test, the deformation shall not allow a gauge made of inflexible material with a cross section of 50 mm × 20 mm to be pushed inside at least 50 mm without pressure.

5.6.5 Other door systems

If the design is different from the design in Figure 2, the following should be fulfilled.

Every security relevant item of the door system shall be able to resist forces according to 5.6.2, applied in any direction to it.

It shall not be possible that humans (including children) are able to take out gauge parcels (see 5.3.2) by hand (or with simple tools like fishing rods) before, during or after the test.

6 Test methods

6.1 General test requirements

All items shall be installed in accordance with the manufacturer's fixing instructions as supplied with the product.

6.2 Components

The requirements of 5.2 shall be satisfied.

6.3 Dimensions

The requirements of 5.3 shall be satisfied.

The accuracy of the measuring instrument shall have a tolerance of less than ± 0,5 mm.

6.4 Ergonomics and safety

6.4.1 Installation height of the parcel box and lock

The requirements of 5.4.1 shall be satisfied.

The accuracy of the measuring instrument shall have a tolerance of less than ± 2 mm.

6.4.2 Safety

The requirements of 5.4.2.1 and 5.4.2.2 shall be satisfied.

For 5.4.2.2 case 1, the manufacturer shall check whether the ventilation is sufficient and decide whether an additional test method as described in Annex D is necessary.

6.5 Corrosion and water penetration

6.5.1 Corrosion

The testing of the parcel box components shall be carried out in accordance with EN 1670, and shall refer to functionality and appearance.

NOTE The appearance of copper and copper alloys can change.

6.5.2 Water penetration

When testing the parcel box in accordance to 6.6.2 of EN 13724 or in accordance with IPX3 of EN 60529 the weight of the penetrated water shall not exceed 40 mN of water.

During the test, all holes in the parcel reception area shall be closed.

The amount of the penetrated water shall be measured with water-absorbent material. The weight of which shall be taken before and after absorption of the water.

The accuracy of the measuring instrument shall have a tolerance of less than ± 2 mN.

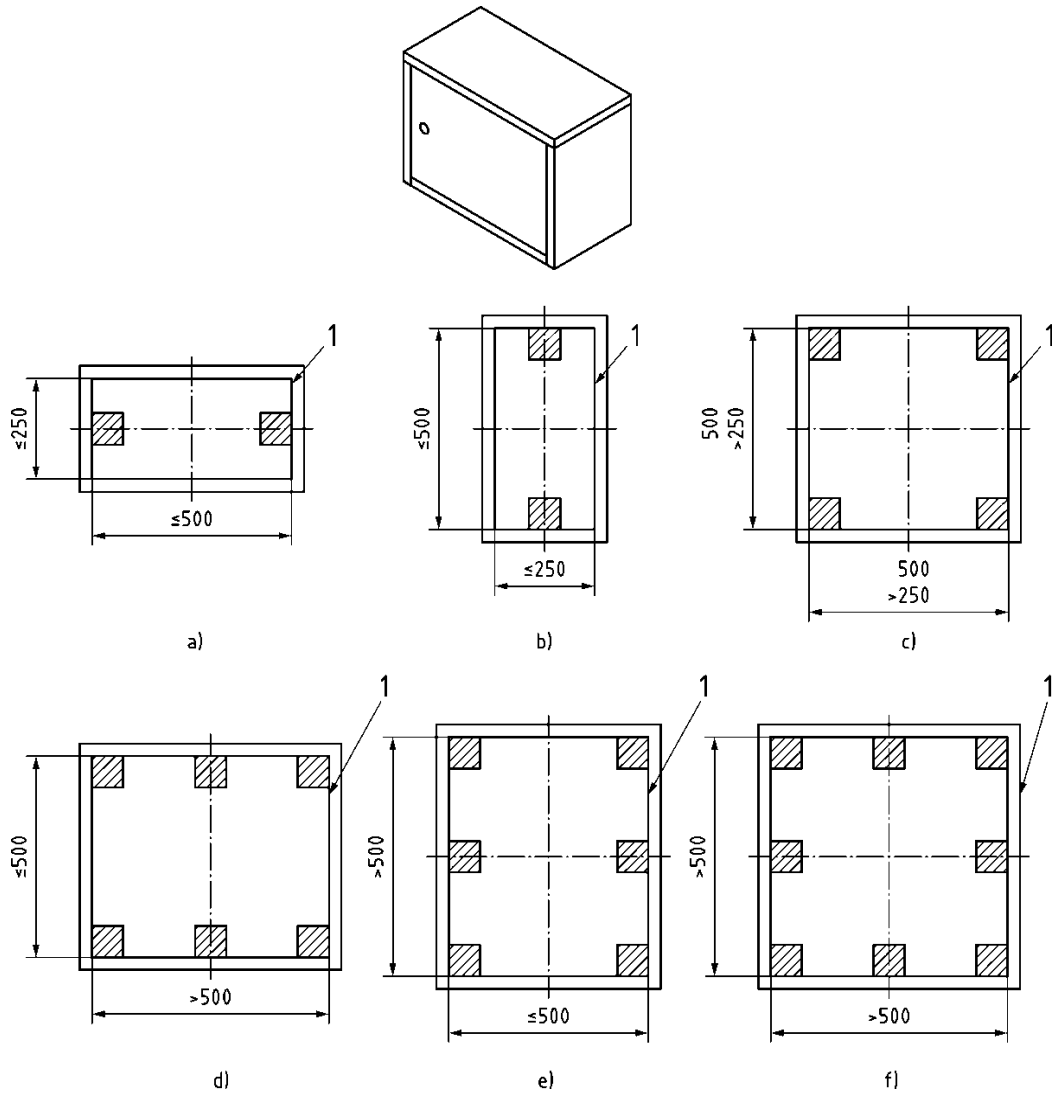
6.6 Security

6.6.1 Security of door and locks

The construction of the box door and lock shall be tested for resistance to mechanical forces on a test device in compliance with the following description:

The force application areas for various door dimensions are shown in Figure 2.

Dimensions in millimetres, tolerance ± 1 mm



Key

1 hinge side

force application area (80 × 80)

Figure 2 — Protection against the opening of closed doors

For door edge lengths ≤ 250 mm there is one force application point in the middle of the door edge.

For door edge lengths > 250 mm but ≤ 500 mm there are two force application points; one at each corner of the door edge.

For door edge lengths > 500 mm there are three force application points; in the middle and at both corners of the door edge.

Each force application area shall resist the force applied in accordance to each security grade.

The force can be applied by pushing or pulling over an area of diameter 20 mm ± 1 mm. See Annex C.

All force application areas are 80 mm × 80 mm.

The load shall be continuously increased and applied without shock. The load shall be reached within not more than 10 s ± 1 s and held for 10 s ± 1 s.

The measurement uncertainty of the load shall be ± 5 % of the applied load, and ± 1 s for the time.

The measurement uncertainty of the dimensions shall be ± 1 mm.

6.6.2 Fixings

The same forces as described under 5.6.2 shall be applied to the fixing points.

The force can be applied by pushing or pulling over an area of a diameter of 20 mm ± 1 mm. See Annex C.

The load shall be continuously increased and applied without shock. The load shall be reached within not more than 10 s ± 1 s and held for 10 s ± 1 s.

The measurement uncertainty of the load shall be ± 5 % of the applied load, and ± 1 s for the time.

6.6.3 Casing Strength

The same forces as described under 5.6.2 shall be applied to the middle of the side walls and the back wall of the parcel box.

The force can be applied by pushing or pulling over an area of a diameter of 20 mm ± 1 mm. See Annex C.

The load shall be continuously increased and applied without shock. The load shall be reached within not more than 10 s ± 1 s and held for 10 s ± 1 s.

The measurement uncertainty of the load shall be ± 5 % of the applied load and ± 1 s for the time.

6.6.4 Other door systems

The same forces as described under 5.6.2 shall be applied to every security relevant item of the parcel box.

The force can be applied by pushing or pulling over an area of a diameter of 20 mm ± 1 mm. See Annex C.

The load shall be continuously increased and applied without shock. The load shall be reached within not more than 10 s ± 1 s and held for 10 s ± 1 s.

The measurement uncertainty of the load shall be ± 5 % of the applied load and ± 1 s for the time.

6.6.5 Marking, labelling and packaging

If a manufacturer or trade mark owner claims that a product conforms to this Technical Specification, the manufacturer's name or the trade mark shall be included on the marking of the product.

The method of affixing the marks, e.g. by embossing, riveting or gluing, shall be left to the discretion of the manufacturer or trademark owner.

Table 1 — Product Marking

Technical specification	**CEN/TS 16819:2015**
Type	1. Parcel box, dedicated to one receiver – limited to one delivery at the same time. 2. Parcel box, dedicated to one receiver –not limited to one delivery at the same time 3. Parcel box, shared by several receivers – limited to one delivery at the same time. 4. Parcel box, shared by several receivers – not limited to one delivery at the same time
Size	XXS XS S M L XL XXL XXXL
Corrosion resistance	0: no defined corrosion resistance 3: high corrosion resistance 4: very high corrosion resistance
Security	Security increases with rising number: 1. Security grade 1 2. Security grade 2 3. Security grade 3 4. Security grade 4 5. Security grade 5 6. Security grade 6

Hints shall be given in the documentation and on warning labels that a misuse by small children might be possible (see 5.4.2.2).

Table 2 — Example of product marking

CEN/TS 16819:2015	
Type	**3**
Size	**XL**
Corrosion resistance	**3**
Security	**5**

Annex A
(normative)

Dimensions

Size	Parcel dimensions mm			Volume l
XXS	200	140	80	2,2
XS	200	300	80	4,8
S	210	330	120	8,3
M	230	330	260	19,7
L	230	330	500	38
XL	340	400	530	72
XXL	400	500	700	140
XXXL	400	600	1 000	240

Annex B
(informative)

Installation height of access door

The bottom of the parcel box should not be lower than 400 mm measured from the delivery floor level. This is not valid for boxes for parcels starting from size XXL.

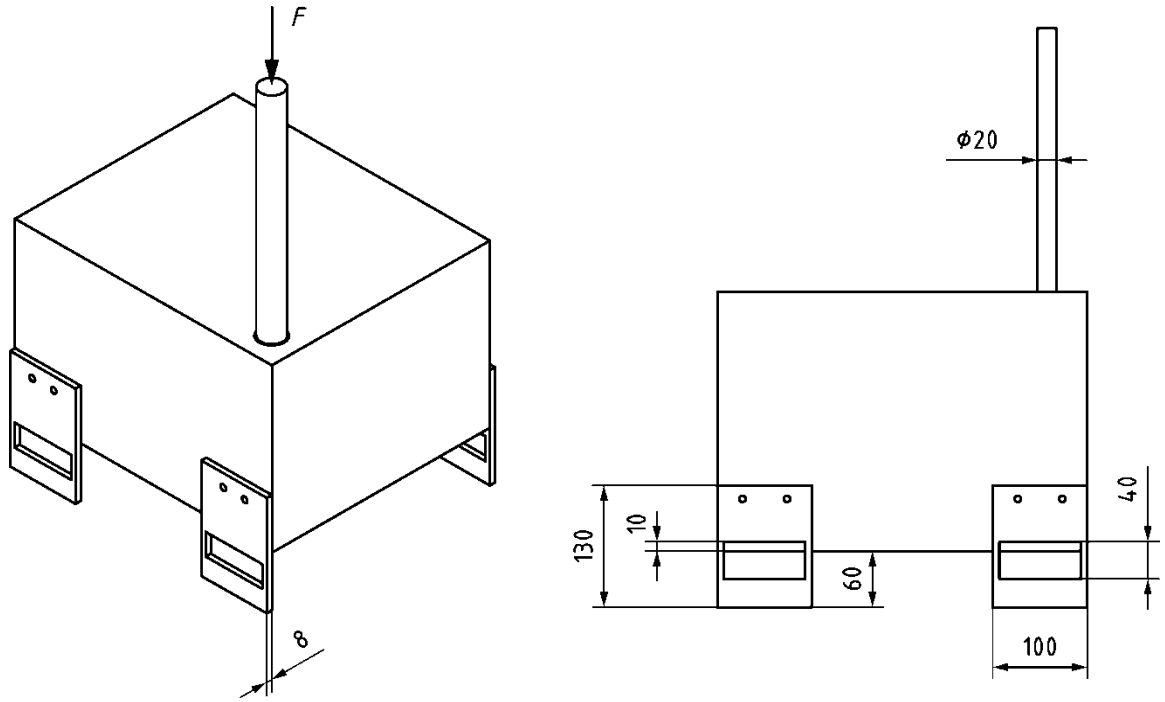
For ergonomic reasons the lower edge of the lowest access door and the upper edge of the highest access door should be at the height between 700 mm and 1 700 mm measured from the delivery floor level.

In special cases such as groups of access doors or in historical buildings with limitations the range may be extended but should be between 400 mm and 1 800 mm.

Annex C
(informative)

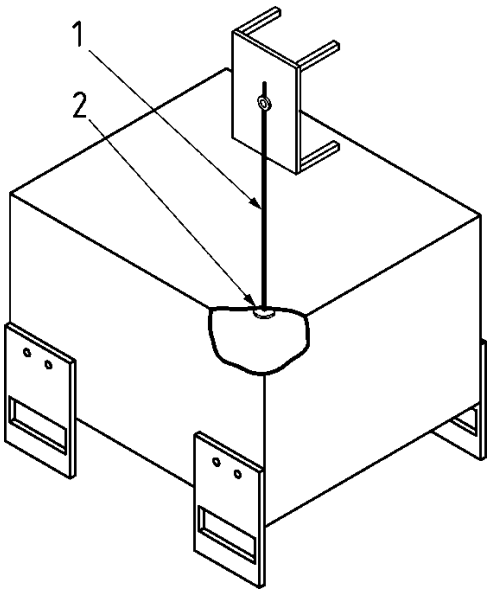
Security

Dimensions in millimetres, tolerance ± 1 mm



Key
F force

Figure C.1 — Example of pushing force application



Key

1 cable with a diameter of 2 mm

2 washer with diameter 20 mm through a hole of 2 mm

Figure C.2 — Example of pulling force application

Annex D
(informative)

Ventilation test

In accordance with EN ISO 12402-8, the testing process should be conducted with a person in perfect health conditions who is in sitting position outside the parcel box and breaths via a tube (min. diameter 20 mm, length max. 250 mm) into the parcel box. The tube should be fixed in a hole of the parcel box which is cut in the upper part of the parcel box and sealed against outside air.

75 % of the inner parcel box shall be blocked by a spacer (e.g. a balloon filled with gas). A CO_2 detection sensor or alternatively an O_2 detection sensor on top of the inner side of the parcel box shall measure the gas values.

The CO_2 concentration within a parcel box is not allowed to be higher than 5 % at any time and not more than 2,5 % in average or the O_2 concentration within a parcel box is not allowed to be lower than 16 % at any time and not lower than 18,5 % in average.

The test duration time is 15 min.

The complete process should be supervised by further persons to avoid health risks.

Bibliography

[1] ISO 21542, *Building construction — Accessibility and usability of the built environment*

[2] CEN/CLC Guide 6, *Guide for addressing accessibility in standards*

[3] EN ISO 12402-8, *Personal flotation devices - Part 8: Accessories - Safety requirements and test methods (ISO 12402-8)*

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