


Technical Specification

GENERAL CUTTING BOXES

ET 1203


Revision No. 4 | 10 February 2023



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Register of revisions

| Revision number | Date | Motif |
|-----------------|------------|---|
| 0 | 2004-07-30 | Initial wording [as ET 436] |
| 1 | 2009-11-30 | General revision [as ET 436] |
| 2 | 2016-12-27 | General revision [as ET 436] |
| 3 | 2020-04-08 | Revision and replacement of the reference "EDP Gás Distribuição" by "Portgás". |
| 4 | 2023-02-10 | General revision carried out by IDOM Consulting, Engineering, Architecture, SAU |

Information classification

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|---------------------|--------------------------|-------------------|--------------------------|---------------------|--------------------------|---------------|-------------------------------------|
| Confidential | <input type="checkbox"/> | Restricted | <input type="checkbox"/> | Internal use | <input type="checkbox"/> | Public | <input checked="" type="checkbox"/> |
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Distribution of the document

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| External | Contractors <input checked="" type="checkbox"/> Qualified for Allotments <input checked="" type="checkbox"/> Internet <input type="checkbox"/> Other <input type="checkbox"/> |
| Internal | CA <input type="checkbox"/> AT <input checked="" type="checkbox"/> ACR <input checked="" type="checkbox"/> |
| | AT-ED <input type="checkbox"/> AT-EX <input type="checkbox"/> AT-GE <input type="checkbox"/> AT-MS <input type="checkbox"/> |
| | ACR-DC <input type="checkbox"/> ACR-GC <input type="checkbox"/> ACR-RD <input type="checkbox"/> |
| Nominal | < name, function, position > |

Caption:

CA: Board of Directors

AT: Technical Area

AT-ED: Technical Area - Engineering and Development

AT-EX: Technical Area - Exploration

AT-GE: Technical Area - Energy Management

AT-MS: Technical Area - Maintenance and Systems


ACR: Clients and Networks Area

ACR-DC: Clients and Networks Area - Commercial Development

ACR-GC: Clients and Networks Area - Large Consumption

ACR-RD: Clients and Networks Area - Networks

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| Elaborated: | Check: | Approved: |
| Glória Gonçalves/Jorge Almeida | Ricardo Moreira | Rui Bessa |
| The approval of this document formalised in this page, prevails over the totality of its contents. | | |

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Preamble

As part of the "H2 REN Programme" aimed at adapting technical specifications to prepare assets to receive hydrogen up to 100%, Portgás identified this regulation to be subject to assessment and consequent revision.

This revision of ET 1203 cancels and replaces the previous revision dated 08 April 2020, and it is advisable to read this technical specification in full for a correct application of its provisions.

This technical specification should be given the status of a Portgás standard which establishes the rules to be followed to achieve the discriminated objective.

1. Objective

The purpose of this technical specification is to define the main technical characteristics of the individual and building general cut-off boxes, as well as the requirements and conditions to be met with a view to model approval.

2. Scope

Applies to all general cut-off boxes for building gearboxes and counter gear sets from G4 to G10.

3. References

All undated documents should be considered in their latest version.

3.1. External

Despacho n.º 806-B/2022, de 19 de janeiro


"Regulamento da Rede Nacional de Distribuição de Gás."

Portaria n.º 361/98, de 26 de junho, com as alterações introduzidas pela Portaria n.º 690/2001, de 10 de julho

"Aprova o regulamento técnico relativo ao projeto, construção, exploração e manutenção das instalações de gás combustível canalizado em edifícios.

Portaria n.º 362/2000, de 20 de junho, (alterada pelo Decreto-Lei n.º 7/2000, de 3 de fevereiro, Portaria n.º 690/2001, de 10 de julho, Portaria n.º 1358/2003, de 13 de dezembro, Lei n.º 15/2015, de 16 de fevereiro e Decreto-Lei n.º 97/2017, de 10 de agosto)

"Aprova os procedimentos relativos às inspeções e à manutenção das redes e ramais de distribuição e instalações de gás e o estatuto das entidades inspetoras das redes e ramais de distribuição e instalações de gás".

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NP EN 60529

"Degrees of protection ensured by enclosures (IP Code) (IEC 60529:1989/A1:1999)."

NP EN 13501-1

"Classification of the fire performance of construction products and elements - Classification using reaction to fire test results".

BS 8499

"Specification for domestic gas meter boxes and meter bracket".

3.2. Internal

ET 206

"2nd and 3rd class regulation and measurement posts".

ET 207

"3rd class reducers".

ET 430

"Diaphragm gas meters".

ET 1202


"General shut-off valve to buildings".

4. Classification

All boxes which meet the requirements of this technical specification and contain a shut-off valve and reducer are classified as general shut-off boxes for individual and collective buildings. These boxes may also have a meter. Shelter boxes are boxes for sheltering meters only.

5. Construction features


- The shelter enclosures shall provide an adequate level of mechanical protection, so that any equipment contained therein can operate with a high level of quality and safety. The materials and construction method of all the constituent elements of the enclosures, covered by this specification, shall comply with the applicable legislation and standards.
- Shelter boxes with a general cut-off function, meter boxes and technical alveolus boxes must be closed and can be made of different materials, depending on the location and respective form of installation.
- The shelter boxes to be installed in collective or individual buildings must always be installed flush. If it is not possible to install the box flush, it must comply cumulatively with the conditions referred to in ET 1201.

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- d) The body of the box must be airtight in order to avoid that, in the presence of gas inside at atmospheric pressure, gas may accumulate in the walls in which the box is fitted. Gas may escape only through the ventilation slots in the door or through the joint formed by the door and the box body. In accordance with ET 1201, the necessary measures must be taken to seal the gas entry and exit openings in the box.
- e) To avoid water accumulation in the box, in case of direct rainfall, the doors must have a system to evacuate any water that may accumulate inside.

5.1. Materials


- a) The quality and thickness of the materials used in the construction of the boxes must be such that, when they are installed in accordance with the rules of the trade and under normal conditions of use and maintenance, the materials are resistant to mechanical, thermal and chemical action which may result from the action of atmospheric agents.
- b) All the components of the enclosure must be constructed and assembled in such a way that the characteristics of the material are not significantly affected under normal conditions of installation and use.
- c) Under no circumstances shall materials be used which contact each other and whose differences in electrochemical potential could cause corrosion.
- d) Shelter boxes can be:
- **Metallic.** Stainless steel plate (304 or 316), zinc-coated plate (electro-zinc coated) or aluminium are permitted;
 - In composite **material**. The boxes made of composite material should be made of polyester reinforced with about 30% glass fibre (SMC – Sheet Molding Compound).
 - In **masonry or concrete with metal frame and door** (these doors must be in stainless steel 304 or 316, zincor plate or aluminium);
 - In **masonry or concrete with metal frame and door in composite material**.
- e) Elements such as the tab or other fastening elements (e.g., pins), when manufactured from polymeric material, shall be polyacetal in homo- or copolymer form.
- f) Metal fasteners (e.g., pins, tab shaft, tab or washers) should be manufactured from stainless steel in accordance with ANSI 304 or 316 standards (or equivalent).
- g) The above-mentioned boxes, when installed in a non-built-in manner must be metallic, constructed exclusively of stainless-steel sheet (304 or 316), zincor plate or aluminium.

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- h) All stainless-steel plates (304 or 316) or zincor plate must have a minimum thickness of 1.2 mm.
- i) Aluminium plates should have a minimum thickness of 2.5 mm.
- j) Composite panels should be at least 2.5 mm thick.
- k) The box must comply with standard NP EN 60529 (IP55), based on the mechanical characteristics required to be placed directly into a concrete massif or embedded or fixed into a wall.
- l) The material constituting the housing body must be self-extinguishing heat and fire resistant and must comply with European class "C", according to standard NP EN 13501-1.
- m) The box must have the hinges (at least two) to receive the door placed on the right, allowing the door to open at 90°.

5.2. Box door

- a) For maintenance purposes, the door and lock should be replaceable.
- b) The door must have a tongue and groove type lock with triangular key.
- c) The manufacturer shall ensure that the door does not warp and bend when handled, applying internal reinforcements if necessary.
- d) Ventilation of the enclosure is ensured by grooves in the doors. The ventilation area must be at least 2% of the floor area of the enclosure. The ventilation must be divided (equally) between the top and bottom of the door.
- e) The door of the box must bear the following indelible characters:
 - the word "GAS";
 - the symbol prohibiting bonfires.
- f) The word "GAS" must be in high-relief 2 mm, surrounded by a frame also in high-relief, 2 mm high and 1 mm thick. Tahoma should be used as the main font with a minimum height of 30 mm.
- g) In a square measuring 40x40 mm or larger, in high-relief 2 mm high, the symbol prohibiting bonfires should be outlined in low-relief.
- h) The door may be given a decorative coating (plate type) to fit the surface of the wall and to better integrate it in the surrounding environment. However, the solution to be adopted should ensure the visibility of the inscriptions mentioned in the previous paragraph.

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5.3. Lock

The following is a possible layout of the tongue and groove lock with triangular key.

The lock shall have a ¼ turn lock washer. The dimensions of the triangle shall correspond to those shown in Figure 1.

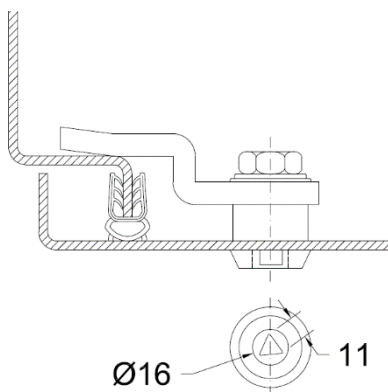



Figure 1 Detail of the lock

5.4. Surface treatment

- a) Metallic surfaces, including the metal frame and door solution, should be subjected to an anticorrosive surface treatment in factory. Except for stainless-steel surfaces, which can retain their original finish.
- b) **Any surface treatment should always be carried out after all the holes in the box have been drilled, so that the coatings are not damaged.**
- c) Surface treatment on zincor steel shall include the following steps:
 1. Clean and degrease the surface;
 2. Surface preparation type SA 2 ½;
 3. Self-extinguishing paint primer;
 4. Polyester paint finish.
- d) Aluminium surfaces should be subjected to a polyester-based lacquering process.
- e) The non-metallic boxes (SMC) can, like the metallic ones, undergo a polyester-based surface treatment (like the one applied to zincor sheets). This treatment will increase the useful life of the boxes, due to the protection against UV rays.

Note: In marine areas, it is advisable to use enclosures made of 316 stainless steels.

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5.5. Tests


- a) Although not mandatory, it is recommended that the boxes are subjected to tests that attest to the construction quality of the boxes. The presentation of test results will be valued in the purchasing process.
- b) The supplier should indicate which standards he has based his design and construction of the boxes on.
- c) It is recommended to consult the British Standard BS 8499 for carrying out the tests:
 - Resistance to bending
 - Charpy
 - Density
 - Hinge strength
 - Door levelling
 - Water absorption

6. Box dimensions

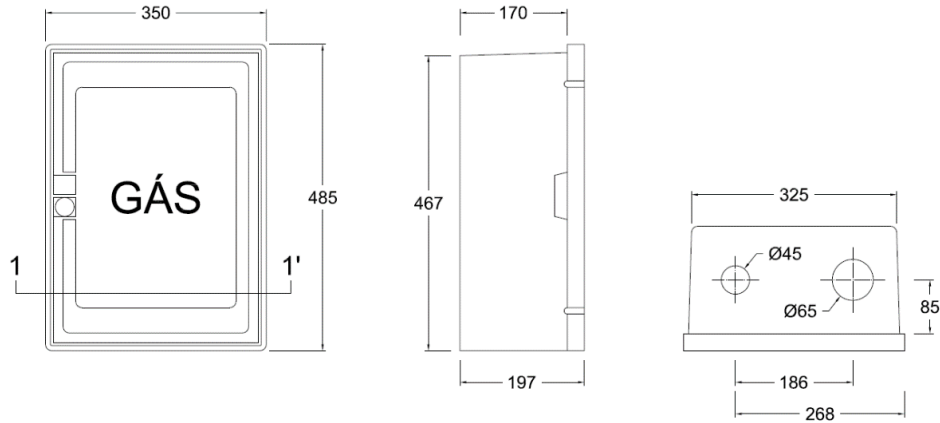
- a) Historically, the most common sizes of boxes in Portgás' concession area are shown in the following table:

| Historical name given to the box | Minimum external dimensions Height x Width x Depth (mm) |
|----------------------------------|--|
| S 2300 | 485 x 350 x 197 |
| S 300 | 517 x 535 x 232 |

- b) The dimensions of the S 2300 and S 300 boxes according to the equipment housed (see Sections 7 - 9) represent the minimum dimensions of the boxes.
- c) Larger boxes are accepted, if they meet all the requirements of this technical specification.

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S 2300

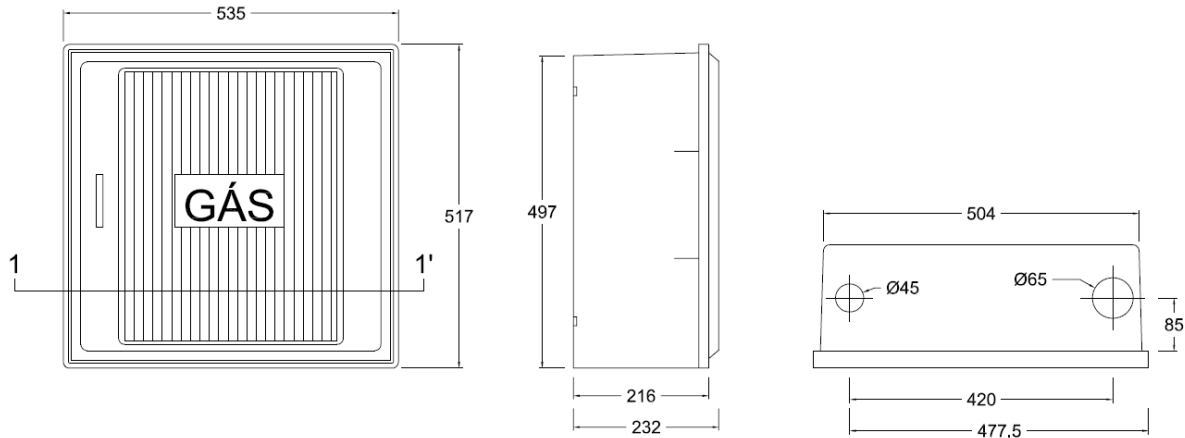


corte 1-1'

Inlet hole diameter: 45 mm

Diameter of exit hole: 65 mm

S 300




corte 1-1'

Inlet hole diameter: 45 mm

Diameter of exit hole: 65 mm

Note: The inlet and outlet holes should be positioned so that there is at least 92 mm clearance between the centreline of the holes and the front of the box for equivalent meter sizing. Where possible, locate the inlet and outlet holes behind the centre axis of the box.

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7. Collective building breakout boxes

- Collective building shut-off boxes normally house the general shut-off valve (see ET 1202) and the building reducer (see ET 207).
- In this case S2300 or S300 type boxes can be used.
- If the building gearbox has a "battery" type configuration, an S300 or larger box must be used.

8. Individual building general cut-off boxes

- Depending on the maximum expected flow rate at the point of consumption, the following boxes should be used:
 - S2300 for maximum flow rates up to 6 m³/h (G4 counter according to ET 430);
 - S300 for maximum flow rates up to 16 m³/h (G6 and G10 meters according to ET 430).
- In order to allow better accessibility for operation and maintenance of the equipment, the S300 box should be used whenever possible, even for maximum flows of up to 6 m³/h.
- For flows greater than 16 m³/h, the boxes are usually made of metal or masonry and must meet the requirements set out in ET 206.

9. Multiple general cut boxes


- If more than one G4 meter is to be installed in a box, the requirements referred to in this Section must be complied with.
- Factory-built boxes capable of holding up to 9 meters are accepted. For 10 or more meters, a custom-built masonry box must be built.
- The dimensions of boxes that house several meters must be multiple S 2300 boxes.

9.1. To install 2 meters

- The dimensions must be at least 485 x 700 x 197 (Height x Width x Depth).
- This box must have the hinges (at least two) to receive the door placed on the right, allowing the door to open at 90°.

9.2. To install 4 meters

- The dimensions must be at least 970 x 700 x 400.
- This box must have at least 6 hinges (3 on the left and 3 on the right) to accommodate two doors.
- The doors must have internal reinforcements that prevent them from warping.

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9.3. To install 9 meters

- a) The dimensions should be at least 1455 x 1050 x 400.
- b) **For 9 meters, only steel boxes are permitted.**
- c) This box must have at least 6 hinges (3 on the left and 3 on the right) to accommodate two doors.
- d) The doors must have internal reinforcements that prevent them from warping.