BRITISH STANDARD

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1919:2000

Transportable gas cylinders — Cylinders for liquefied gases (excluding acetylene and LPG) — Inspection at time of filling

The European Standard EN 1919:2000 has the status of a British Standard

ICS 23.020.30

National foreword

This British Standard is the official English language version of EN 1919:2000.

The UK participation in its preparation was entrusted by Technical Committee PVE/3, Gas containers, to Subcommittee PVE/3/7, Gas cylinder (receptacle) operations, which has the responsibility to:

— aid enquirers to understand the text;

— present to the responsible European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;

— monitor related international and European developments and promulgate them in the UK.

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

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Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 13 and a back cover.

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Transportable gas cylinders – Cylinders for liquefied gases (excluding acetylene and LPG) – Inspection at time of filling

Bouteilles à gaz transportables – Bouteilles à gaz liquéfiés (à l'exception de l'acétylène et du G.P.L.) – Contrôle au moment du remplissage

Ortsbewegliche Gasflaschen – Gasflaschen für verflüssigte Gase (ausgenommen Acetylen und Flüssiggas LPG) – Prüfung zum Zeitpunkt des Füllens

This European Standard was approved by CEN on 2 July 2000.

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COMITÉ EUROPÉEN DE NORMALISATION
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Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 23, Transportable gas cylinders, the Secretariat of which is held by BSI.

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of an identical text or by endorsement, at the latest by January 2001 and conflicting national standards shall be withdrawn at the latest by January 2001.

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

Introduction

This standard covers requirements which reflect current practice and experience.

Each transportable gas cylinder is inspected at time of filling in order to establish that:

- it has no defects such that the cylinder is unsafe for filling or continued use;

- it can be identified and complies with the relevant requirements with regard to marking, labelling, colour coding and completeness of its accessories;

- its valve functions satisfactorily.

The cylinder filling inspection shall be carried out only by persons who are trained and competent in the subject, for the purpose of ensuring that a cylinder is safe for continued use.

Annexes A and B are for information only and are not a mandatory part of this standard.

1 Scope

This standard:

- specifies the inspection requirements at the time of filling and applies to seamless or welded transportable gas cylinders made of steel or aluminium alloy for liquefied gases (excluding acetylene and LPG) of water capacity from 0,5 litre up to 150 litres. It also applies, as far as practicable, to cylinders of less than 0,5 litre water capacity;

- does not apply to manifolded bundles or manifolded trailer cylinders.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

prEN 1802:1998	Transportable gas cylinders – Periodic inspection and testing of seamless aluminium alloy gas cylinders.
prEN 1803:1998	Transportable gas cylinders – Periodic inspection and testing of welded carbon steel gas cylinders (excluding LPG).
prEN 1968:1998	Transportable gas cylinders – Periodic inspection and testing of seamless steel gas cylinders.
EN ISO 11114-1	Transportable gas cylinders – Compatibility of cylinder and valve materials with gas contents – Part 1: Metallic materials (ISO 11114-1:1997).
prEN ISO 11114-2:1999	Transportable gas cylinders – Compatibility of cylinder and valve materials with gas contents – Part 2: Non-metallic materials (ISO/FDIS 11114-2:1999).

3 Terms and definitions

For the purpose of this standard the following terms and definitions apply.

3.1
filling ratio
ratio of the mass of gas introduced in a cylinder to the mass of water at 15 °C that would fill the same cylinder fitted ready for use

3.2
maximum permissible filling weight
product of the water capacity of the cylinder and the filling ratio of the gas

3.3
pressure relief device
device which is fitted to the cylinder or its valve and designed to open to prevent a rise of pressure in excess of a specified value because of excess temperature and/or pressure

3.4
empty weight
mass of the cylinder including all integral parts (e.g. neck ring, foot ring) but excluding the mass of valve, valve cap or valve guard and any coating

3.5
tare weight
sum of the empty weight, the mass of the valve including dip tube where fitted, any fixed valve guard and the mass of all other parts which are permanently attached (e.g. by clamping or bolted fixing) to the cylinder when presented for filling

3.6
total weight
tare weight of the cylinder plus the maximum permissible filling weight

3.7
filler
person or persons responsible for inspection prior to, during and immediately after filling and who has received an appropriate level of training for the work involved, and has access to all necessary data for the cylinder, valve and all other fittings used

4 Filling inspection

Each cylinder shall be submitted to an inspection prior to, during and immediately after filling. The following items shall be covered by a filling inspection:

- verification of serviceable condition (see 5.1);

- identification of cylinder for suitability for filling (see 5.2);

- identification of cylinder owner, if required (see 5.3);

- verification of tare weight and calculation of weight of gas to be charged (see 5.4);

- verification of integrity of neck ring/threaded boss (see 5.5);

- verification of valve integrity and suitability (see 5.6);

- check for correct filling (see 5.7).

5 Description of inspection items

5.1 Verification of serviceable condition

It shall be established that each cylinder is in a serviceable condition. Cylinders which have been found to be non-serviceable shall be clearly identified according to written procedures in the filling company.

Before a cylinder is filled it shall be established that the cylinder is clean and free of foreign material (i.e. such that the cylinder can be assessed for mechanical damage that would prevent it from being filled safely) and does not exhibit any abnormalities such as arc burns, bulging, severe corrosion, heat/fire damage or significant mechanical damage. In case of doubt, rejection criteria described in prEN 1968:1998, prEN 1802:1998 or prEN 1803:1998, as appropriate, shall be applied.

NOTE: It is particularly important that the base of each welded cylinder is inspected for corrosion or rusting. Cylinders exhibiting such evidence should not be filled until properly evacuated, cleaned and painted.

5.2 Identification of cylinder for suitability for filling

Before filling a cylinder, it shall be established that:

- the cylinder has not passed its due date for retest;

- the cylinder is compatible with the intended gas content and filling weight;

- the cylinder is permitted for filling in the country of the filling station;

- the proposed contents correspond with any identification label and shoulder colour on the cylinder. If there is any disagreement between the proposed content and such identification, the cylinder shall not be filled.

5.3 Identification of cylinder owner

If required, before filling, the identity of the cylinder's owner shall be established and his authorization to fill the cylinder obtained.

5.4 Verification of tare weight and calculation of weight of gas to be charged

The validity of the tare weight is not required to be checked if special valves are used which prevent ingress of contamination, e.g. non-return/positive pressure valves, or if it can be guaranteed by appropriate checks at time of filling that no liquid or other detrimental contamination exists in the cylinder.

If the above conditions cannot be met, then the validity of the tare weight shall be verified at the start of the filling process when the cylinder is placed on the filling scale. The tare weight stamped on the cylinder shall be verified by the actual scale weight readings within the tolerances given in Table 1.

If the tare weight is not stamped on the cylinder, or there are doubts about the validity of the tare weight, it shall not be filled until the correct tare weight is determined and stamped onto the cylinder. Examples of such doubts are illegible stampmarkings, suspected change (or absence) of guard, suspected change of valve. See annex A for an example of a tare weight procedure.

However, when a tare weight has to be altered, a diagonal line shall be stamped through the obsolete tare weight, if present, so that it is still legible for future reference. If more than one obsolete tare weight exists only the original tare weight (with diagonal line) shall be retained together with the new tare weight. The other obsolete tare weight(s) shall be removed, taking care not to affect the integrity of the cylinder.

Only a clean, empty cylinder with one paint coat and valve shall be weighed, with accuracy as shown in Table 1. The cylinder shall be empty of all product prior to weighing.

The amount of liquefied gas charged into a cylinder shall be determined by weight, or, if charged at a pressure lower than the vapour pressure, by pressure shown on a vapour pressure/temperature chart for the specific gas. The weight of gas to be charged into a cylinder shall be determined from the water capacity and the filling ratio for the specific gas or by the maximum permissible filling weight, if indicated.

Table 1 - Maximum allowable deviation in tare weight and gas weight

Cylinder water capacity (V) litre	Maximum allowable deviation in tare weight (grammes)
$0,5 < V \leq 5,0$	±50
$5,0 < V \leq 20$	±200
$V > 20$	±400

5.5 Verification of integrity of neck ring/threaded boss

Before filling a cylinder, it shall be established that the neck ring/threaded boss and guard (if fitted) are fit for the intended purpose and that the neck ring, if one exists, is not loose. If there is a permanent valve guard or a welded-on shroud, it shall be checked to ensure that it is properly attached.

5.6 Verification of valve integrity and suitability

5.6.1 Prior to each fill, it shall be established that the installed valve is suitable for the intended gas (see EN ISO 11114-1 and prEN ISO 11114-2:1999) and is in a satisfactory condition. As a minimum it shall be established that:

- the valve is easy to operate;

- the valve is free from contaminants;

- the handwheel, or key operated spindle, is operable;

- the safety device, if present, is undamaged;

- the outlet threads and body are undamaged;

- the valve attaches correctly to the filling connector.

5.6.2 During the filling cycle of a cylinder, the filler shall determine:

- that the valve is not blocked (see annex B) and that the operation is progressing satisfactorily (e.g. by checking the weight increase);

- that the valve does not leak in the open position (e.g. by the use of a gas compatible leak test fluid). If leakage is suspected check for example at the bonnet or at the gland nut.

5.6.3 After filling a cylinder, the filler shall ensure that the valve or pressure relief device does not leak when the valve is closed and disconnected from the fill connection. If leakage is suspected check for seat leakage at the valve outlet. Also it shall be checked that the interface between the valve and the cylinder is leaktight. For welded cylinders attention shall be paid to the welds to ensure that the cylinder is free from leaks.

5.7 Check for correct filling

Immediately after disconnecting from the filling line, the weight shall be checked by use of a scale capable of determining the gas content of that cylinder within the tolerances shown in Table 1, according to the cylinder water capacity. The weight of the full cylinder shall not exceed the total weight allowed for that cylinder and gas combination.

Finally it shall be checked that the cylinder is correctly identified and labelled.

If a valve guard is fitted prior to dispatch a check shall be made of the guard fitting connection.

Annex A (informative)

Example of a procedure to establish a correct tare weight

A correct tare weight may be determined by proceeding as follows.

a) If the cylinder is valved, perform all necessary purges and evacuations in order to devalve safely.

b) Remove the valve (see annex B).

c) Visually inspect the cylinder internally and externally for corrosion, excess paint on exterior, contamination or build-up on interior. Clean if necessary, e.g. shotblast. Requalify, if necessary, e.g. evidence of excess corrosion requires retesting.

d) Weigh cylinder on a calibrated scale:

- Place the empty cylinder, together with a valve of type to be used, on the scale and weigh;

- From this reading establish the correct tare weight for the cylinder with the valve.

e) Stamp the tare weight onto the cylinder in kilograms to three significant figures.

Annex B (informative)

Procedure to be adopted when a cylinder valve is suspected to be obstructed

B.1 If there is any doubt when the valve of a gas cylinder is opened, that gas is not being released and that the cylinder may still contain gas under pressure, a check shall be made to establish that the free passage through the valve is not obstructed.

The method adopted shall be a recognized procedure such as one of the following or one that provides equivalent safeguards.

a) For cylinders of liquefied gases, first check to establish that the weight of the cylinder is the same as the tare weight stamped on the cylinder. If there is a positive difference, the cylinder may contain either liquefied gas under pressure or contaminants.

b) Introduce inert gas at a pressure of up to 5 bar and check its discharge.

c) Use the device shown in Figure B.1 to pump air into the cylinder, by hand.

B.2 When it is established that there is no obstruction to gas flow in the cylinder valve, the valve may be removed.

B.3 When a cylinder is found to have an obstructed gas passage in the valve, the cylinder shall be set aside for special attention as follows.

a) Saw or drill the valve body until interception is made with the gas passage between the valve body stem and the valve spindle seat; or

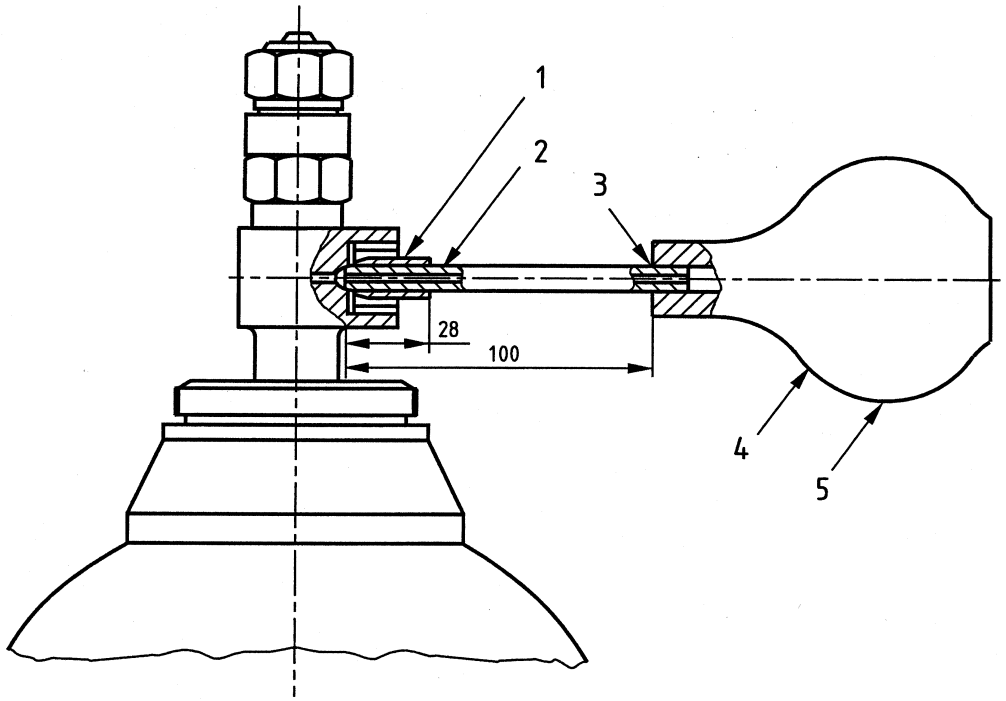
b) Loosen or pierce the safety device in a controlled manner.

These methods are applicable to cylinders of non-toxic, non-flammable, non-oxidizing and non-CFC gases. Appropriate safety precautions shall be taken to ensure that no hazard results from the uncontrolled discharge of any residual gas.

Where the contents are toxic, flammable, oxidizing or CFC, the preferred method is to unscrew partially the valve within a glanded cap, secured and joined to the cylinder and vented to a safe discharge. The principles of a suitable device are illustrated in Figure B.2.

These procedures shall be carried out only by trained personnel. When the gas, if any, has been released and the pressure within the cylinder reduced to atmospheric pressure, and when there is no frost or condensation on the outside of the cylinder the valve may be removed.

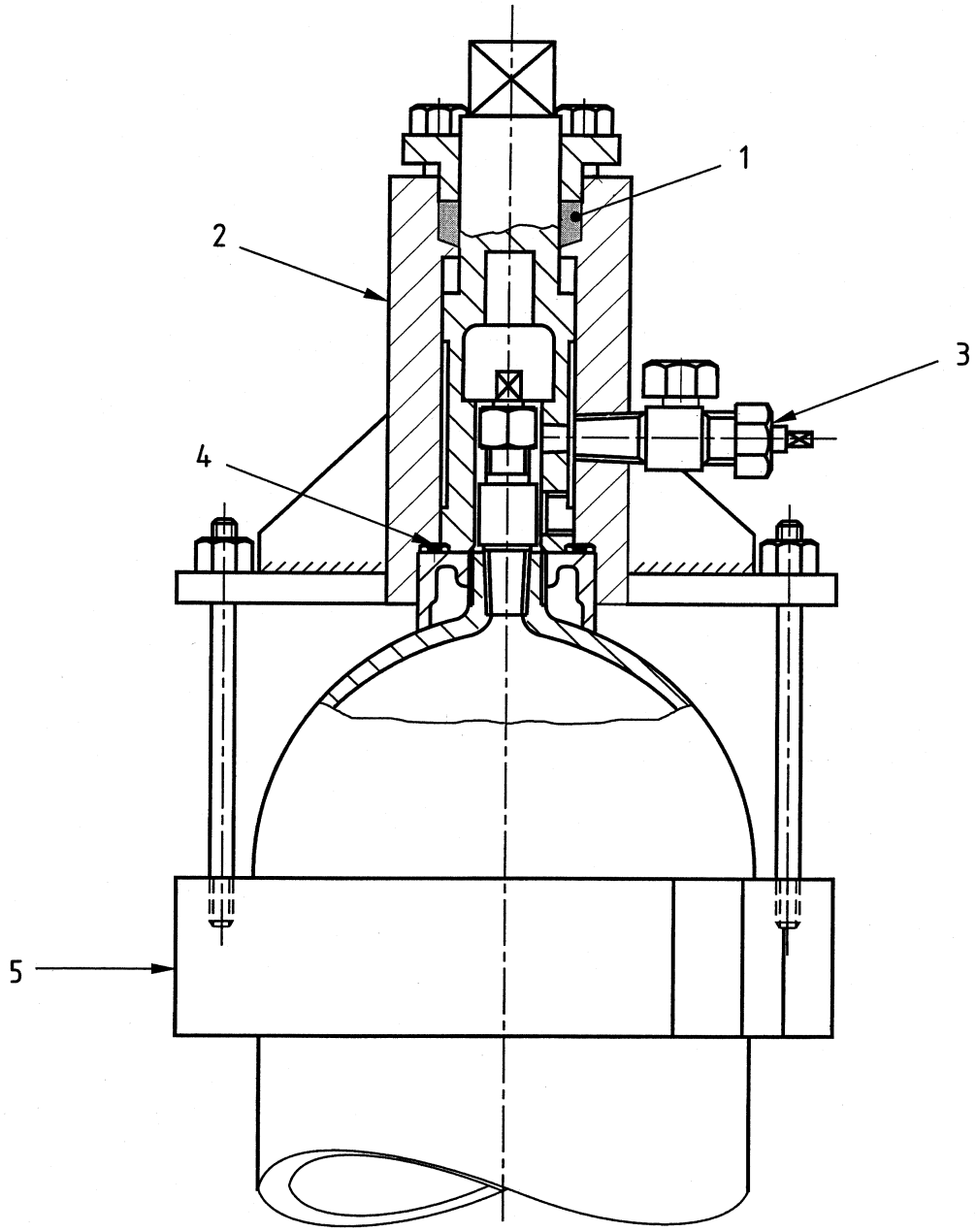
All dimensions in millimetres



Key

1 Rubber tube (8 mm of internal diameter × 13 mm of outer diameter) ground to olive shape and bonded
2 Copper tube (3 mm of internal diameter × 8 mm of outer diameter)
3 Bond
4 Rubber bulb
5 Hand pressure

Figure B.1 - Device for detecting obstructed cylinder valve



Key

1 Rubber gland packing
2 Extractor casing
3 Control valve
4 Joint ring
5 Clamp

Figure B.2 - Typical device for the removal of a damaged gas container valve

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London
W4 4AL