



FINAL DRAFT International Standard

ISO/FDIS 13341

Gas cylinders — Fitting of valves to gas cylinders

Bouteilles à gaz — Montage des robinets sur les bouteilles à gaz

ISO/TC 58

Secretariat: **BSI**

Voting begins on:
2025-04-17

Voting terminates on:
2025-06-12

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Published in Switzerland

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 58, *Gas cylinders*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 23, *Transportable gas cylinders*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This third edition cancels and replaces the second edition (ISO 13341:2010), which has been technically revised. It also incorporates the Amendment ISO 13341:2010/Amd 1:2015.

The main changes are as follows:

- update of [Clause 2](#) and Bibliography;
- addition of a requirement in 4.3 with regards to the cleaning of cylinder threads.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Gas cylinders — Fitting of valves to gas cylinders

1 Scope

This document specifies the procedures to be followed when connecting cylinder valves to gas cylinders. It specifically applies to all valve and cylinder combinations connected with ISO screw threads as specified in ISO 11363-1 and ISO 15245-1. It defines procedures and practices for inspection and preparation prior to valving for both taper and parallel screw threads.

Torque values are given in [Annex A](#) for steel and aluminium alloy gas cylinders including composite cylinders with steel or aluminium alloy neck boss.

NOTE The procedures and practices specified in this document can be beneficially applied to other valve to cylinder screw thread connection systems. ISO/TR 11364 lists the valve to gas cylinder threads in use worldwide. It gives details of the thread identification codes, whether the threads are interchangeable with ISO threads and if the tapping procedure and torque values specified in this document can be used. ISO/TR 11364 gives clear guidance for the method and torque for all listed inlet threads, which are not interchangeable.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

ISO 10286, *Gas cylinders — Vocabulary*

ISO 11119-2, *Gas cylinders — Design, construction and testing of refillable composite gas cylinders and tubes — Part 2: Fully wrapped fibre reinforced composite gas cylinders and tubes up to 450 l with load-sharing metal liners*

ISO 11119-3, *Gas cylinders — Design, construction and testing of refillable composite gas cylinders and tubes — Part 3: Fully wrapped fibre reinforced composite gas cylinders and tubes up to 450 l with non-load-sharing metallic or non-metallic liners or without liners*

ISO 11119-4, *Gas cylinders — Refillable composite gas cylinders — Design, construction and testing — Part 4: Fully wrapped fibre reinforced composite gas cylinders up to 150 l with load-sharing welded metallic liners*

ISO 11363-1, *Gas cylinders — 17E and 25E taper threads for connection of valves to gas cylinders — Part 1: Specifications*

ISO/TR 11364, *Gas cylinders — Compilation of national and international valve stem/gas cylinder neck threads and their identification and marking system*

ISO 15245-1, *Gas cylinders — Parallel threads for connection of valves to gas cylinders — Part 1: Specification*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 10286 apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

4 General requirements and recommendations

Gas cylinders and valves shall be connected so that when in use the combination is gas tight and the valve cannot be removed inadvertently from the cylinder.

Standards exist to allow for the assessment of the condition of both cylinders and valves, e.g. ISO 22434 and ISO 18119. Their requirements should be taken into account before assembly, especially to verify that the threads are in an acceptable condition.

The tools used to screw the valve into the gas cylinder shall fit the valve properly and the gas cylinder shall be secured against rotation during the torquing process.

The tools shall not cause damage to either the valve or the cylinder. Additional instructions given by the cylinder manufacturer shall be followed.

In particular for composite cylinders, which are less able to withstand the stresses typically applied to metallic cylinders, lower stresses may be required at the cylinder surface and/or neck boss.

The cylinder and the valving tool axes shall be aligned.

Additional instructions provided by the cylinder manufacturer and/or valve manufacturer shall be followed.

Except as described in 8.3, the torque applied to the valve shall be within the relevant range given in Annex A. Tables A1 to A5 list the torque ranges for each geometry and material, e.g. 25E with Aluminum cylinder and brass cylinder valve.

Valve manufacturers shall make instructions available if their specific recommendations regarding their product differ from those included in this document (e.g. if their torque recommendations are different from what is allowed in the relevant range included in Annex A or if a specific valving tool is needed). For pin index valves, precautions shall be taken to avoid damaging the surface where the pins are inserted.

For all threads, the maximum level of torque should not be exceeded as this will give rise to a high stress in the valve inlet connection and/or cylinder neck.

Care shall be taken with aluminium alloy cylinders, as valving torques are lower than for steel cylinders. Aluminium alloy cylinders shall not be valved at temperatures above ambient because, on cooling, differential contraction between the cylinder and the valve will give rise to a high stress in the cylinder neck.

High difference of temperature between cylinder neck and valve should be avoided.

Some valve designs (e.g. valves equipped with temperature activated pressure relief device (PRD)) can be unsuitable to be valved if exposed to elevated temperatures (e.g. above 65 °C).

All tools and equipment used for valving cylinders shall be periodically checked for accuracy.

NOTE 1 Recommendations are generally given in the manufacturer user manual.

Accuracy shall be established by measuring the torque applied to the valve of a valved cylinder as indicated in 6.4.3 for taper threads and in 7.5 for parallel threads.

NOTE 2 Some machine tools rely on the friction between the valve and gas cylinder threads to stop the machine turning once the correct torque has been reached. For fast running machines, the inertia to be absorbed before the machine stops can result in valving torques being in practice far higher than the machine set point.

5 Preparation

5.1 The compatibility of the valve threads and the cylinder threads shall be confirmed to ensure they are to the same dimensional standard, for example ISO 11363-1 or ISO 15245-1 or that they are interchangeable according to ISO/TR 11364.

NOTE Some standards require that valve and cylinder threads be identified by marking (see ISO 10297 and ISO 13769).