INTERNATIONAL STANDARD

ISO 13341

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Transportable gas cylinders — Fitting of valves to gas cylinders

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

Reference number
ISO 13341:1997(E)

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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 13341 was prepared by the European Committee for Standardization (CEN) in collaboration with ISO Technical Committee TC 58, *Gas cylinders*, Subcommittee SC 2, *Cylinder fittings*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

Annex A forms an integral part of this International Standard. Annex ZZ is for information only.

Annex ZZ provides a list of corresponding International and European Standards for which equivalents are not given in the text.

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Foreword

The text of EN ISO 13341:1997 has been prepared by Technical Committee CEN/TC 23 "Transportable gas cylinders", the secretariat of which is held by BSI, in collaboration with Technical Committee ISO/TC 58 "Gas cylinders".

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of an identical text or by endorsement, at the latest by April 1998, and conflicting national standards shall be withdrawn at the latest by April 1998**.**

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.

1 Scope

This standard specifies the essential procedures to be followed when connecting cylinder valves to gas cylinders. It applies to all valve and cylinder combinations connected with screw threads detailed in annex A but excludes breathing apparatus, diving gas cylinders and fire extinguishers. It defines routines 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 gas 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.

EN 629-1	Transportable Gas Cylinders - 25E taper thread for connection of valves to gas cylinders - Part 1: Specification
prEN ISO 11116	Transportable Gas Cylinders - 17E taper thread for connection of valves to gas cylinders - Specifications
prEN ISO 11114-2	Transportable Gas Cylinders - Compatibility of cylinder and valve materials with gas contents - Part 2: Non-metallic materials

3 General requirements and recommendations

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

Tools used to screw the valve into the gas cylinder shall fit the valve properly and shall restrain the gas cylinder from turning during the torquing process. Tools shall not cause damage to either the valve or the cylinder. Minor marks to the valve are acceptable.

Sealing materials used between the valve stem and cylinder neck threads shall be compatible with the gas to be contained in the cylinder, in accordance with prEN ISO 11114-2.

For both taper and parallel threads, the torque ranges given in annex A shall not be exceeded, even to achieve alignment of the valve and any guard. The maximum level of torque shall not be exceeded for taper threads because this will give rise to a high stress in the valve stem and in the cylinder neck.

Great care shall be taken with aluminium alloy cylinders, for which valving torques are lower than for steel cylinders. Such 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.

All tools used for valving cylinders shall be periodically checked for torque against a calibrated standard.

NOTE: Many 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 may result in valving torques being in practice far higher than the machine set point.

4 Preparation

4.1 Each valve and cylinder thread shall be examined to ensure that they are to the same dimensional standard, either EN 629-1, prEN ISO 11116 or an appropriate standard for the parallel thread sizes given in annex A.

NOTE: The EN standards require that valve and cylinder threads are identified by marking.

4.2 The valve and cylinder threads shall be visually inspected for integrity and, where applicable, for damaged ‘O’ ring sealing surfaces. In particular, when valving aluminium alloy cylinders, the bottom threads on the stem of valves and the lower threads within the cylinder neck, shall be fully formed and free from ragged edges or burrs. Similar care is required when fitting stainless steel valves to all cylinders.

4.3 Threads on both valve and cylinder shall be checked for cleanliness. Any remnants of old PTFE sealing tape or other sealants shall be completely removed. Care shall be taken to prevent any debris falling into the cylinder.

5 Valving procedure for taper threaded valves

5.1 General

Thread sealing may be achieved using lubricant tape in accordance with 5.2 or lead caps in accordance with 5.3. Alternative sealing methods may be used e.g. paste, in which case refer to the manufacturer's instructions.

5.2 Wrapping with lubricant tape

5.2.1 Wrapping of the valve stem with tape shall commence at the small end of the taper, the tape shall be wound clockwise when looking from the base of the valve.

5.2.2 Wrapping shall commence beyond the small end of the valve taper, so that it protrudes by a maximum of 3 mm and a minimum of 1 mm. Tape shall be overlapped during wrapping to give an even double thickness all the way up the valve stem. At the small end however, there shall be a minimum of 3 layers of tape. (see 5.2.5).

5.2.3 The tape shall not be excessively stretched during wrapping and shall be carefully torn or cut.

5.2.4 Tape shall be carefully worked into the valve thread profile.

NOTE: Adherence between the tape and the valve stem should be established.

5.2.5 Prior to torquing the valve shall be fitted to the cylinder by hand having previously rolled back the tape which protrudes beyond the valve bottom thread to leave the bottom of the valve clear of tape.

5.3 Application of lead caps

5.3.1 Lead caps shall not be used with aluminium cylinders.

5.3.2 The lead cap used shall be of the correct size.

5.3.3 After the cap is pulled over the valve stem it shall be carefully worked into the valve thread profile with a suitable tool or a leather glove, to prevent the bottom end of the lead cap being cut off when the valve is fitted.

5.3.4 Prior to torquing, the valves shall be fitted to the cylinder by hand.

5.4 Valve torquing

5.4.1 Once the valve has been screwed in by hand as far as possible and after making sure that enough threads are engaged, a properly fitting tool shall be used to tighten the valve onto the cylinder. (see clause 3).

5.4.2 Torques shall be in accordance with those given in annex A.

5.4.3 If required to check the torque that was applied for fitting, the value shall be measured by further tightening the valve. The minimum value obtained to move the valve shall be within the limits of annex A. A properly calibrated torque wrench shall be used.

If setting type of sealants are used, torque checking shall be done before sealant sets.

6 Valving procedure for parallel threaded valves

6.1 An 'O' ring seal which is compatible with the gas service shall be placed onto the valve stem. It shall be correctly positioned in the sealing area and shall not be damaged during placement.

6.2 If required an appropriate lubricant, compatible with the gas, shall be applied, to the three to four threads furthest away from the 'O' ring. Only the minimum shall be used, excess shall be removed. The lower surface of the valve stem shall be completely clean.

6.3 The area of cylinder neck thread adjacent to the sealing area shall be clear of any debris, ragged edges, burrs, etc.

6.4 With the cylinder secured against rotation, the valve shall be fitted by hand paying particular attention to prevention of damage to the 'O'ring as it is engaged into the cylinder sealing area.

6.5 Once the valve has been screwed in by hand as far as possible, a properly fitting tool shall be used to apply the torque.

6.6 Torques shall be in accordance with those in annex A.

6.7 If required to check the torque that was applied for fitting, the value shall be measured by unscrewing the valve. The minimum value obtained to move the valve shall be within the limits of annex A.

A properly calibrated torque wrench shall be used.

If setting type of sealants are used, torque checking shall be done before sealant sets.

Annex A (normative) Valving torques

This annex applies to valves made from conventional materials, e.g. brass, stainless and carbon steels.

A.1 Valving torques for seamless steel cylinders

Table A.1 : Taper threads

Taper valve stem size	Torque N.m	
	Minimum	Maximum
17E	120*	150*
25E	200*	300*
NOTE: Users should be aware that use of high torque levels gives the possibility of stem thread deformation *All values shall be reduced to 2/3 of the tabled values for stainless steel valves		

Table A.2 : Parallel threads

Parallel valve stem size	Torque N.m	
	Minimum	Maximum
M18	100	130
M25	100	130
M30	100	130