



SLOVENSKI STANDARD
oSIST prEN 16631:2023
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Oprema in pribor za utekočinjeni naftni plin (UNP) - Varnostni ventili za tlačne posode za UNP - Zahteve za obnovo

LPG equipment and accessories - Pressure relief valves for LPG pressure vessels - Reconditioning requirements

Flüssiggas-Geräte und Ausrüstungsteile - Sicherheitsventile für Druckbehälter für Flüssiggas (LPG) - Anforderungen an die Instandsetzung

Équipements pour GPL et leurs accessoires - Soupapes de sécurité pour réservoirs de GPL sous pression - Exigences de reconditionnement

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ICS:

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23.060.40	Tlačni regulatorji	Pressure regulators

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ICS

Will supersede EN 16631:2015

English Version

LPG equipment and accessories - Pressure relief valves for LPG pressure vessels - Reconditioning requirements

Équipements pour GPL et leurs accessoires - Soupapes
de sécurité pour réservoirs de GPL sous pression -
Exigences de reconditionnement

Flüssiggas-Geräte und Ausrüstungsteile -
Sicherheitsventile für Druckbehälter für Flüssiggas
(LPG) - Anforderungen an die Instandsetzung

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 286.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (prEN 16631:2023) has been prepared by Technical Committee CEN/TC 286 “Liquefied petroleum gas equipment and accessories”, the secretariat of which is held by NSAI.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 16631:2015.

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Introduction

Protection of the environment is a key political issue in Europe and elsewhere. Protection of the environment is taken in a very broad sense. What is meant is the total life cycle aspects of, e.g. a product on the environment, including expenditure of energy and during all phases from mining of raw materials, fabrication, packaging, distribution, use, scrapping, recycling of materials, etc.

Provisions have to be restricted to a general guidance. Limit values are specified in national laws. It is recommended that companies using this document develop an environmental management policy. For guidance see ISO 14000 series.

It has been assumed in the drafting of this document that the execution of its provisions is entrusted to appropriately qualified and experienced people. Where judgements are called for, it has been assumed that they are made by competent persons who have been trained specifically for the tasks.

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1 Scope

This document specifies the requirements for the reconditioning, retesting and certification of Pressure Relief Valves (PRVs) for LPG pressure vessels covered under the scope of EN 14129.

This document applies to retesting and reconditioning of PRVs that are carried out in a workshop and does not apply to site adjustment of installed PRVs.

Annex A is an informative annex detailing a sampling approach for PRV requalification which is only used in case of on-site requalification of series produced pressure vessels fitted with series produced PRVs.

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.

EN 751-1, *Sealing materials for metallic threaded joints in contact with 1st, 2nd and 3rd family gases and hot water - Part 1: Anaerobic jointing compounds*

EN 751-2, *Sealing materials for metallic threaded joints in contact with 1st, 2nd and 3rd family gases and hot water - Part 2: Non-hardening jointing compounds*

EN 751-3, *Sealing materials for metallic threaded joints in contact with 1st, 2nd and 3rd family gases and hot water - Part 3: Unsintered PTFE tapes and PTFE strings*

EN 837-1, *Pressure gauges - Part 1: Bourdon tube pressure gauges - Dimensions, metrology, requirements and testing*

EN 14129:2014, *LPG Equipment and accessories - Pressure relief valves for LPG pressure vessels*

ISO 2230, *Rubber products — Guidelines for storage*

3 Terms and definitions

For the purposes of this document, the following terms and definitions 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>

3.1

liquefied petroleum gas

LPG

low pressure liquefied gas composed of one or more light hydrocarbons which are assigned to UN 1011, UN 1075, UN 1965, UN 1969 or UN 1978 only and which consists mainly of propane, propene, butane, butane isomers, butene with traces of other hydrocarbon gases

prEN 16631:2023 (E)**3.2****pressure relief valve****PRV**

self-closing valve which automatically, without the assistance of any energy other than that of the vapour concerned, discharges vapour at a predetermined pressure, and operates with a pop action

Note 1 to entry: This is known as a “safety valve” in ADR.

3.3**competent person**

person which by combination of appropriate qualification, training, experience, and resources, is able to make objective judgments on the subject

3.4**setting**

operation of adjusting and testing the start to discharge pressure to the nominal set pressure

3.5**reconditioning**

operation that includes complete dismantling of the valve, evaluation and replacement of components and reassembly

3.6**pop action**

rapid opening of the pressure relief valve sealing element so that the pressure relief valve is fully open, resulting from an increase of inlet pressure creating a sudden increase in force and compression of the spring

3.7**sealing element**

non-metallic moveable resilient component which affects a seal by contact with the pressure relief valve seat

4 General

PRVs shall have a storage life of two years after being assembled and set.

All PRVs shall be subjected to inspection in accordance with Clause 6 prior to reconditioning, setting or changing the set pressure.

PRVs where the set pressure (reset) is to be changed, shall meet the requirements of Clause 9.

PRVs that have been stored for more than two years, but are less than five years old, shall have the sealing element changed and shall meet the requirements of Clauses 6 and 8.

PRVs that have been stored for more than five years shall be reconditioned in accordance with Clauses 6, 7 and 8.

PRVs that are to be reconditioned shall be subjected to reconditioning in accordance with Clauses 6, 7 and 8.

5 Materials

5.1 General

Components for reconditioning shall meet the Original Equipment Manufacturer (OEM) specification.

5.2 Lubricants, sealants and adhesives

Lubricants, sealants and adhesives shall be compatible with LPG and not interfere with the operation of the PRV, when used on operating threads and seals. Sealants shall comply with the requirements of EN 751-1, EN 751-2 or EN 751-3.

5.3 Shelf life

5.3.1 Shelf life of unassembled components

Unassembled metallic components, when stored appropriately have an unlimited shelf life.

Unassembled rubber components shall have a storage life of 7 years with the ability to extend this to 10 years when the requirements of ISO 2230 are met.

Lubricants, sealants and adhesives shall have a shelf life in accordance with the manufacturer's instructions.

5.3.2 Storage life of assembled PRVs

After manufacture or reconditioning, PRVs may be stored for up to two years when stored in line with the manufacturer's recommendations. Manufacturers shall ensure that the operating conditions of the PRV shall remain in line with the design standard during this period.

PRVs that exceed this storage period of two years shall have the sealing element replaced and shall be assembled, set and tested in accordance with Clause 8 to ensure correct operation.

PRVs that have been in storage for more than five years shall be reconditioned.

Springs and seals on PRVs that have been in storage for more than five years shall not be reused.

6 Inspection

PRVs shall be subjected to inspection for the following criteria to establish the suitability of the PRV or its components for reuse.

Components which do not meet the following criteria and cannot be safely rectified shall be scrapped:

- stems that have drill holes in the potentially stressed area between the nut and the seat;
- bent or damaged stems;
- bent, deformed, corroded, badly marked, scored or cracked bodies;
- contaminants, foreign matter and corrosion;
- cross-threaded, damaged or stripped PRV threads;
- indications of having been subjected to excessive heat or having been in a fire;
- foreign matter in visible internal passageways; or
- evidence of abuse or tampering.

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PRVs that are to be reconditioned shall also be checked for:

- damaged sealing surfaces and/or any non-metallic sealing elements; and
- non-standard parts, which shall be replaced with approved OEM parts.

7 Reconditioning

Each PRV shall be dismantled into its component parts. Each component shall be inspected to ensure its suitability for reuse including meeting the manufacturer's original specification.

Threads shall be cleaned and checked for stripped threads, damage, distortion, cuts, cracks or corrosion. Threads shall be assessed by a competent person to determine if they can be rectified and reused.

Taper threads where the full form thread gauge screws on by more than 1 turn over maximum shall be scrapped. Threads shall be checked using thread gauges.

During reconditioning springs shall not be reused once removed from a PRV.

During reconditioning non-metallic materials shall not be reused in a PRV.

Spare parts used in the reconditioning of PRVs shall be to the original manufacturer's specification.

For mobile applications, PRVs shall be constructed with the stem guide permanently attached to the PRV body. This design shall be able to withstand a deceleration of 100 times gravity and shall remain leak tight and operate correctly afterwards.

The reconditioned PRV shall be tested in accordance with Clause 8.

8 Pressure setting

8.1 General

Setting and testing shall be carried out in accordance with the requirements of this document by the PRV reconditioner, prior to any painting which may be required.

The tests required below for all PRVs shall be conducted using air or nitrogen. The responsibility for the design and safety of the pneumatic test rig rests with the reconditioner.

All Bourdon tube pressure gauges shall be calibrated in accordance with EN 837-1. The accuracy class for pressure measuring equipment used during the tests shall not be more than 0,6, see EN 837-1, with the test pressure within the middle third of the instrument range.

Alternative methods of pressure measurement (e.g. by digital gauge/transducer) may be used if they achieve equivalent accuracy. PRVs undergoing pneumatic pressure testing shall not be subjected to any form of shock load.

The hazards involved in pneumatic pressure testing shall be considered and appropriate precautions taken.

All pipes, connections and blanking devices of the test installation shall be capable of withstanding at least twice the nominal set pressure of the PRV on test.

8.2 Setting and testing of PRVs

8.2.1 Only springs to the original PRV manufacturer's specification shall be used.

8.2.2 Each PRV shall be individually set such that when air or nitrogen supply is connected to the PRV inlet at a pressure equal to the nominal set pressure marked on the PRV, the first of a stream of bubbles appears through a water seal not more than 50 mm in depth applied on the outlet of the PRV.