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**Oprema in pribor za utekočinjeni naftni plin (UNP) - Varnostni ventili za tlačne posode za utekočinjeni naftni plin (UNP)**

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

**Ta slovenski standard je istoveten z: prEN 16631**

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## 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

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

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## Foreword

This document (prEN 16631:2013) 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.

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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.

NOTE Annex B indicates which clauses in this standard address environmental issues.

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

It has been assumed in the drafting of this European Standard 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 retesting, reconditioning and certification of Pressure Relief Valves for LPG pressure vessels covered under the scope of EN 14129.

This standard applies to retesting and reconditioning of pressure relief valves that are carried out in a workshop and does not apply to site adjustment of installed pressure relief valves.

Annex a is an informative annex detailing a sampling approach for pressure relief valve requalification which shall only be used in case of on-site requalification of series produced pressure vessels fitted with series produced pressure relief valves.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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*

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

### 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

### 3.2

#### **pressure relief valve**

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

### 3.3

#### **competent person**

person who by a combination of training, experience and supervision, is able to make objective judgements on the subject

### 3.4

#### **resetting**

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

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**3.5  
reconditioning**  
operation that includes complete dismantling of the valve, evaluation and replacement of components and reassembly

**4 General**

All relief valves shall be subjected to inspection prior to reconditioning, resetting or changing the set pressure

Valves that are to be reset shall meet the requirements of clause 7.

Valves that are to be reconditioned shall be subjected to reconditioning in accordance with 6 and pressure setting in accordance with clause 7

Pressure relief valves that have been stored for more than two years shall have the seal changed and shall meet the requirements of clause 6

Pressure relief valves that have been stored for more than five years shall meet the requirements of clause 6 and clause 7.

Valves that are to have the set pressure changed shall meet the requirements of clause 8.

**5 Materials**

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**5.1 General**

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

**5.2 Lubricants, sealants and adhesives**

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

**5.3 Storage life****5.3.1 Storage life of components**

Metallic components do not require a limited shelf life.

Rubber components have a storage life of 7 years with the ability to extend this to 10 years.

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

**5.3.2 Storage life of assembled relief valves**

Pressure relief valves may be in storage for up to two years after manufacture. Manufacturers shall ensure that the operating conditions of the valve shall remain in line with the design standard during this period when stored in line with the manufacturer's recommendations.

Valves that exceed this storage period of two years shall have the seal replaced and shall be retested to ensure correct operation.



Valves that have been in storage for five years shall be reconditioned.

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

## 6 Inspection

Pressure relief valves/devices shall be subjected to inspection for the following criteria to establish suitability for the valve or components for reuse:

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

When valves are to be reconditioned the following criteria shall also be checked:

- damaged sealing surfaces and/or any non metallic sealing elements;
- non-standard parts:

Components which do not meet the above criteria shall be scrapped.

## 7 Reconditioning

Each valve shall then be dismantled into its component parts. Each component shall then 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 that may affect reuse and if present shall not be reused.

Minor thread faults on parallel threads can be rectified.

Taper threads shall be checked using thread gauges.

No spring shall be reused once removed from a pressure relief valve or hydrostatic valve during reconditioning.

No non-metallic materials shall be reused in a pressure relief valve or hydrostatic valve during reconditioning.

Spare parts used in the reconditioning of pressure relief valves or hydrostatic valves shall be to the original manufacturer's specification.

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For mobile applications, relief valves shall be constructed with the stem guide permanently attached to the relief valve 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 pressure relief valve or hydrostatic valve shall be tested to confirm the seat tightness, design set pressure and reseal pressure. (See clause 8).

## **8 Pressure setting**

### **8.1 General**

Setting and testing should be carried out in accordance with the requirements of this standard and be carried out by the valve reconditioner prior to any painting which may be required.

The tests required below for all pressure relief valves, hydrostatic relief valves, check devices or manifolds should be conducted using air or nitrogen. The responsibility for the design and safety of the pneumatic test rig rests with the reconditioner.

All pressure measuring devices fitted to the test equipment should be tested and calibrated to ensure the required accuracy during testing.

All Bourdon tube pressure gauges should be calibrated in accordance with EN 837-1.

No pressure relief valve, hydrostatic relief valve, check device or manifold undergoing pneumatic test should be subjected to any form of shock load.

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

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

### **8.2 Setting and testing of pressure relief valves**

**8.2.1** If the set pressure of a pressure relief valve is to be changed and requires a spring change, only springs to the original valve manufacturer's specification shall be used.

**8.2.2** At the appropriate stage in the assembly procedure each pressure relief valve, or hydrostatic relief valve should be individually set such that when air or nitrogen supply is connected to the valve inlet at a pressure equal to the nominal set pressure marked on the valve, 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 valve.

**8.2.3** After verification of the set pressure, the inlet pressure should be increased until a steady stream of bubbles is obtained without causing the valve to pop fully open. The inlet pressure should then be gradually decreased until the flow of bubbles ceases. The pressure at which this occurs is the reseal pressure which should not be less than 90 % of the nominal set pressure.

**8.2.4** All pressure relief valves and hydrostatic relief valves should be set to start to discharge at the nominal set pressure.

**8.2.5** If at any time after manufacture and prior to use it is required to check the set pressure, then the first application of pressure should allow the tolerance defined in 8.2.6 between the first start to discharge pressure and the set pressure marked on the valve to overcome 'adhesion' of the sealing disc to valve seat which can occur during storage prior to use.