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Petrol filling stations - Part 3: Safety requirements for construction and performance of shear valves

Tankstellen - Teil 3: Sicherheitstechnische Anforderungen an Bau- und Arbeitsweise von Abscherventilen

Stations-service - Partie 3 : Exigences de sécurité relatives a la construction et aux performances des raccords de sécurité

Ta slovenski standard je istoveten z: EN 13617-3:2004

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SIST EN 13617-3:2004

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English version

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This European Standard was approved by CEN on 24 June 2004.

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. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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

Management Centre: rue de Stassart, 36 B-1050 Brussels

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Foreword

This document (EN 13617-3:2004) has been prepared by Technical Committee CEN/TC 221 “Shop fabricated metallic tanks and equipment for storage tanks and for service stations”, the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by February 2005, and conflicting national standards shall be withdrawn at the latest by February 2005.

This document has been prepared under a mandate given to CEN by the European Commission and the European Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

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

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Introduction

The function of the shear valve is to prevent continuous liquid or vapour release in the event of impact or fire.

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1 Scope

This document specifies safety and environmental requirements for the construction and performance of shear valves to be fitted to metering pumps, dispensers, and/or satellite delivery systems installed at petrol filling stations and used to dispense liquid fuels into the tanks of motor vehicles, boats and light aircraft and into portable containers at flow rates up to $200 \text{ l}\cdot\text{min}^{-1}$.

It pays particular attention to mechanical and hydraulic characteristics.

NOTE Liquefied petroleum gas (LPG) is not a liquid in the sense of this document.

2 Normative references

The following referenced documents are indispensable for the application 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 976–1, *Underground tanks of glass-reinforced plastics (GRP) — Horizontal cylindrical tanks for the non-pressure storage of liquid petroleum based fuels — Part 1: Requirements and test methods for single wall tanks*

EN 1127-1, *Explosive atmospheres — Explosion prevention and protection — Part 1: Basic concepts and methodology*

EN 13463–1:2001, *Non-electrical equipment for potentially explosive atmospheres — Part 1: Basic method and requirements*

EN 13617-1:2004, *Petrol filling stations - Part 1: Safety requirements for construction and performance of metering pumps, dispensers and remote pumping units*

EN 60079-0, *Electrical apparatus for potentially explosive atmospheres — General requirements*

EN ISO 1182, *Reaction to fire tests for building products - Non-combustibility test (ISO 1182:2002)*

ISO 7–1, *Pipe threads where pressure-tight joints are made on the threads — Part 1: Dimensions, tolerances and designations*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 13617–1:2004 and the following apply.

3.1

main valve (liquid)

normally open valve on the inlet side, closing when the shear valve operates

3.2

main valve (vapour)

normally open valve on the outlet side, closing when the shear valve operates

3.3

pressure relief valve

valve to allow liquid to return to the pipework below the dispenser if pressure in the dispenser increases beyond a defined level

3.4

separation zone

designed to be the first section of the shear valve to fracture when stressed

3.5

mechanical link

device to activate the closing mechanism automatically to stop the flow of liquid when the shear valve breaks

3.6

thermal detector

device to activate the closing mechanism automatically to stop the flow of liquid when the temperature in the vicinity of the shear valve exceeds the operating temperature

3.7

test plug

device to allow pressure testing of associated pipework

3.8

mounting point

rigid attachment facility on the inlet and outlet sections of the shear valve

4 Explosion protection measures

4.1 Explosion protection measures shall be taken in accordance with EN 1127-1 and Annex B of EN 13617-1:2004.

4.2 Equipment and components used within hazardous areas shall be suitable as a minimum requirement for Explosion Group IIA and temperature class T3 as defined in EN 60079-0 and EN 13463-1.

Inside the vapour path the requirements for equipment group II, Category 1 as defined in EN 13463-1:2001 shall apply.

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5 Construction

5.1 General requirements

5.1.1 All electrical and non-electrical equipment and components, intended for use in potentially explosive atmospheres, shall be designed and constructed according to good engineering practice and in conformity with the required categories for group II equipment to ensure avoidance of any ignition source. To classify the Category of the equipment it shall be subjected to an ignition hazard assessment in accordance with 5.2 of EN 13463-1:2001.

5.1.2 All materials used in the construction shall be chemically and dimensionally stable under known service conditions. Materials likely to come into contact with fuels in both liquid and vapour phases shall be resistant to attack by these fuels. Conformity shall be demonstrated by testing in accordance with Clause 8.

5.1.3 Light alloys when used shall conform to the requirements of Clause 8 of EN 13463-1:2001. If other specifications for explosion protected equipment impose more stringent requirements then the more stringent requirement shall apply.

5.1.4 All components shall be of corrosion resistant material or shall be provided with a corrosion resistant protective coating.

5.1.5 Outside surfaces likely to be handled shall be free of sharp edges.

5.2 Specific requirements

5.2.1 Means shall be provided to connect the shear valve to input and output pipework. The means selected shall not fail at forces less than the design shear force of the shear valve.

5.2.2 The shear valve shall be so designed that after fracture of the weak section, the input and output sections shall be completely decoupled.

5.2.3 The shear valve shall not have a means to prevent the main valve from closing completely when it is operated by the weak section or by the thermal detector.

5.2.4 The thermal detector shall be so constructed that when it operates the main valve closes.

5.2.5 Shear valves for liquids may include a manual means of closing the main valve (liquid) for maintain purposes.

5.2.6 Test plugs, where fitted to shear valves in liquid containment systems, shall be on the inlet side of the main valve.

5.3 Classes of construction

Shear valves are classified in accordance with Table 1.

Table 1 — Classes of construction

Valve type	Class		
	I	II	III
Main valve	Yes	Yes	Yes
Thermal detector	Yes	Yes	No
Check valve	Yes	No	No
Pressure relief valve	Yes	No	No

Class I and II for liquid pressure systems,

Class III for vapour systems only.

5.4 Threads

Input and output threads shall be in accordance with ISO 7–1.

6 Physical properties

The physical properties of the shear valve shall conform to Table 2 when tested by the methods indicated.

Table 2 — Physical properties of shear valve

Physical property	Requirement	Test method
Fuel compatibility (preconditioning)	Clause 5	B.5
Electrostatic properties	7.4 of EN 13463-1:2001	Manufacturer's declaration
Fire resistance	EN ISO 1182	EN ISO 1182

7 Operational requirements

The shear valve shall conform to the operational requirements according to Table 3 and Table 4 when tested by the methods indicated.