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Bencinski servisi - 3. del: Varnostne zahteve za izdelavo in lastnosti varovalnih ventilov

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 à la construction et aux performances des raccords de sécurité

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

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

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

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 393.

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

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Contents

Page

European foreword

This document (prEN 13617-3:2018) has been prepared by Technical Committee CEN/TC 393 “Equipment for tanks and filling stations”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 13617-3:2012.

Compared with the 2012 edition, the following fundamental changes were made:

— Shear valves for aqueous urea solution added.

— Testing for vapour shear valves further differentiated from testing for fuel shear valves. Tests B.15 and B.16 are introduced.

— Fire resistance test B.14 and pass/fail criteria defined in Table 3

This document has been prepared under a mandate given to CEN by the European Commission and the European Free 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.

This European Standard *Petrol filling stations* consists of four parts:

— Part 1: Safety requirements for construction and performance of metering pumps, dispensers and remote pumping units;

— Part 2: Safety requirements for construction and performance of safe breaks for use on metering pumps and dispensers;

— Part 3: Safety requirements for construction and performance of shear valves;

— Part 4: Safety requirements for construction and performance of swivels for use on metering pumps and dispensers.

Introduction

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

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 and aqueous urea solution into the tanks of motor vehicles, boats and light aircraft and into portable containers at flow rates up to 200 $l \cdot min^{-1}$.

This document applies to fuels and their vapours of Explosion Group IIA, and also aqueous urea solution according to ISO 22241-1.

NOTE 1 Fuels other than of Explosion Group IIA are excluded from this document.

The requirements apply to shear valves at ambient temperatures from –20 °C to +40 °C with the possibility for an extended temperature range.

This document pays particular attention to mechanical and hydraulic characteristics.

This document does not apply to equipment dispensing compressed or liquefied gases.

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 976-1:1997, *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*

prEN 13617-1:2018, *Petrol filling stations — Part 1: Safety requirements for the construction and performance of metering pumps, dispensers and remote pumping units*

EN 60079-0:2012, *Explosive atmospheres - Part 0: Equipment - General requirements (IEC 60079 0:2011, modified)*

EN ISO 80079-36:2016, *Explosive atmospheres - Part 36: Non-electrical equipment for explosive atmospheres - Basic method and requirements (ISO 80079-36:2016)*

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

ISO 11925-3, *Reaction to fire tests — Ignitability of building products subjected to direct impingement of flame — Part 3: Multi-source test*

ISO 22241-1, *Diesel engines – NOx reduction agent AUS 32 — Part 1:Quality requirements*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in prEN 13617-1:2018 and the following apply.

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

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

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 prEN 13617-1:2018.

4.2 The shear valve shall be explosion protected and shall be Category 2, Group II, EPL Gb in accordance with EN ISO 80079-36. When a shear valve has a vapour path, the vapour path shall be Category 1, Group II, EPL Ga in accordance with EN ISO 80079-36. The shear valve shall fulfil the requirements for temperature Class T3 and Group IIA in accordance with EN 60079-0 or EN ISO 80079-36.

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/EPLs for Group II equipment to ensure avoidance of any ignition source. To classify the category/EPL of the equipment it shall be subjected to an ignition hazard assessment in accordance with 5.2 of EN ISO 80079-36:2016.

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 EN 60079-0:2012, 8.3. 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, and 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
Liquid compatibility (preconditioning)	Clause 5	B.5
Electrostatic properties	6.7 of EN ISO 80079-36:2016	EN ISO 80079-36
Fire resistance	No catastrophic failure	B.14
Characteristics body and/or internal components to prevent dangerous, mechanically generated, sparks (resistance to sparking), including during separation of inlet and outlet sections	Metallic enclosure requirements of EN 60079-0:2012, 8.3	—

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.