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Bencinski servisi - 4. del: Varnostne zahteve za izdelavo in lastnosti vrtljivih delov na tlačnih in sesalnih napravah za točenje goriva

Petrol filling stations - Part 4: Safety requirements for construction and performance of swivels for use on metering pumps and dispensers

Tankstellen - Teil 4: Sicherheitstechnische Anforderungen an Bau- und Arbeitsweise von Drehgelenken für Zapfsäulen und druckversorgte Zapfsäulen

Stations service - Partie 4 : Exigences de sécurité relatives à la construction et aux performances des raccords tournants utilisés sur les distributeurs de carburants

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ICS:

75.200	Oprema za skladiščenje nafte, naftnih proizvodov in zemeljskega plina	Petroleum products and natural gas handling equipment

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English Version

Petrol filling stations - Part 4: Safety requirements for construction and performance of swivels for use on metering pumps and dispensers

Stations-service - Partie 4 : Exigences de sécurité relatives à la construction et aux performances des raccords tournants utilisés sur les distributeurs de carburants

Tankstellen - Teil 4: Sicherheitstechnische Anforderungen an Bau- und Arbeitsweise von Drehgelenken für Zapfsäulen und druckversorgte Zapfsäulen

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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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 13617-4:2018) 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 13617-4:2012.

In comparison with the 2012 edition, the following fundamental changes were made:

— Swivels for aqueous urea solution added.

— Table 1 corrected to ensure compatibility between components according to EN 13012, EN 13617-2, EN 13617-4 and EN 1360

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.

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 Directives.

For relationship with EU Directives, see informative Annex ZA, which is an integral part of this standard.

This document *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.

1 Scope

This document specifies safety requirements for the construction and performance of swivels to be fitted to delivery hose assemblies on metering pumps and dispensers installed at 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 $l \cdot min^{-1}$. It pays particular attention to electrical, mechanical and hydraulic characteristics of swivels.

This document applies to fuels of Explosion Group IIA and also aqueous urea solution in accordance with ISO 22241-1.

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

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

This document applies mainly to hazards related to the ignition of liquid fuels being dispensed or their vapour. This document also addresses electrical and mechanical hazards of swivels.

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*

EN 1360, *Rubber and plastic hoses and hose assemblies for measured fuel dispensing systems - Specification*

prEN 13012:2018, *Petrol filling stations — Construction and performance of automatic nozzles for use on fuel dispensers*

EN 13483, *Rubber and plastic hoses and hose assemblies with internal vapour recovery for measured fuel dispensing systems - Specification*

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

prEN 13617-2, *Petrol filling stations - Part 2: Safety requirements for construction and performance of safe breaks for use on metering pumps and dispensers*

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

EN ISO 228-1, *Pipe threads where pressure-tight joints are not made on the threads - Part 1: Dimensions, tolerances and designation (ISO 228-1)*

EN ISO 1825, *Rubber hoses and hose assemblies for aircraft ground fuelling and defuelling - Specification (ISO 1825)*

EN ISO 8031:2009, *Rubber and plastics hoses and hose assemblies - Determination of electrical resistance and conductivity (ISO 8031:2009)*

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

ISO 261, *ISO general purpose metric screw threads — General plan*

ISO 965-2, *ISO general purpose metric screw threads — Tolerances — Part 2: Limits of sizes for general purpose external and internal screw threads — Medium quality*

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 13012:2018, prEN 13617-1:2018 and prEN 13617-2:2018 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
swivel
device fitted between nozzle and metering pump or dispenser to allow rotational movement

3.2
single plane swivel
swivel with one plane of rotation

3.3
dual plane swivel
swivel with two planes of rotation

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

5 Construction

5.1 General

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/EPL of the equipment it shall be subjected to an ignition hazard assessment in accordance with 5.2 of EN ISO 80079-36:2016.

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 manufacturer's declaration and by the tests detailed in Annex A.

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.

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

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

If protective covers are fitted they shall be constructed so that they allow ventilation and evaporation of fuel even if some shrinkage occurs. They shall not affect the performance of the swivels.

The sealing surfaces of the connection threads shall be designed such that they are suitable for use with an enclosed O-ring or flat gasket.

5.2 Connection threads

Swivels without a vapour recovery path shall use parallel threads in accordance with EN ISO 228-1.

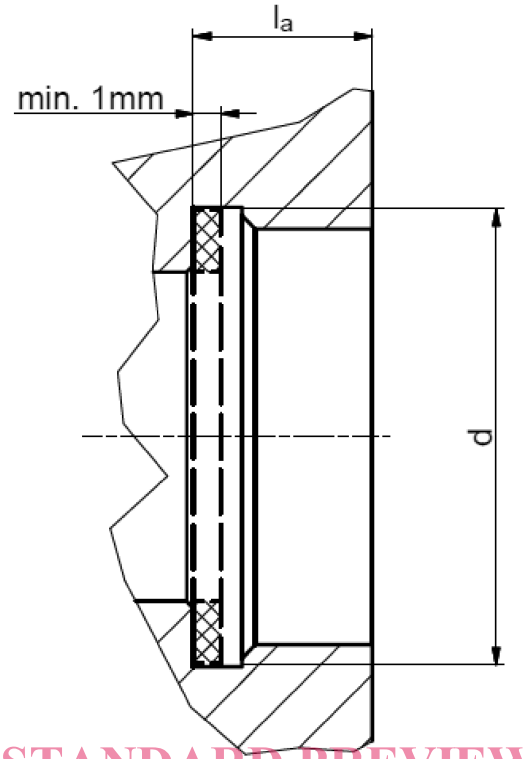
The connection thread dimensions shall be in accordance with Table 1

Table 1 — Thread specifications

Nominal inlet size d	Female threads	Male threads
	Thread depth [a] l_a mm See Figure 1	Minimum engagement [b] l_b mm See Figure 2
3/4”	$12{,}0\ ^{-0.5}$	12,0
1”	$13{,}0\ ^{-0.5}$	13,0
1 1/4”	$15{,}0\ ^{-0.5}$,	15,0
1 1/2”	$18{,}0\ ^{-0.5}$	18,0

[a] The thread depth, measured from the outer fore-part to the metallic inner sealing face.

[b] The stated minimum length only applies if the female thread of the hose fitting includes an inner flat gasket. In case of using an outer flat gasket, the male threads might be shorter than the dimensions in this table.

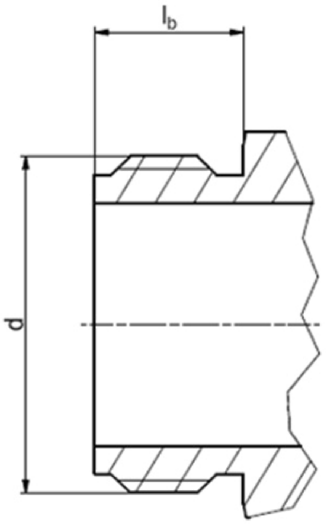


Key

l_a female thread depth

d nominal inlet size

Figure 1 — Female inlet thread



Key

l_b male thread minimum engagement

d nominal inlet size

Figure 2 — Male inlet thread

Swivels with a vapour recovery path shall use M 34 × 1,5 male outlet threads according to ISO 261 and ISO 965-2, and shall be in accordance with EN 13483.

The total thread length shall be not greater than 15,0 mm.

The inlet end shall be machined to a diameter of (35,0 ± 0,05) mm for a length (6,0 ± 0,1) mm.

5.3 Safe breaks

If a swivel has an integral safe break it shall fulfil the requirements of prEN 13617-2:2018.

6 Physical properties

The physical properties of the swivel shall conform to the requirements given in Table 2 when tested by the methods indicated.

Table 2 — Physical properties of swivel

Property	Requirement	Test method
Electrical resistance between inlet and outlet when assembled.	< 10^5 Ω	A.4
Electrostatic properties	6.7 EN ISO 80079-36:2016	EN ISO 80079-36
Liquid compatibility, drop, tightness and burst tests	5.1	A.2 followed by A.6, A.7 and A.5
Endurance	Clause 6 and electrical resistance test < 10^5 Ω after endurance test	A.3
Ignitability of composites on the swivel. Ignition source C; Effect time 20 s; Surface flame impingement	The material tested shall not afterflame	ISO 11925-3
Characteristics of swivel component's and/or covers to prevent dangerous, mechanically generated, sparks (resistance to sparking).	Metallic enclosure requirements of EN 60079-0	—

7 Functional requirements

The swivel shall comply with the operational requirements of Table 3 when tested by the indicated methods; and with a frequency of testing as specified in Clause 8 and Table 4.

Table 3 — Operational requirements

Test	Test method	Requirement
Burst test	A.5	No catastrophic damage.
Drop test	A.6	No permanent deformation of the swivel leading to malfunction.
Leak test	A.7	No quantifiable sign of leakage visible to an eye with normal visual acuity.