SLOVENSKI STANDARD
SIST EN 13617-4:2021

01-december-2021

Nadomešča:
SIST EN 13617-4:2012

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

Ta slovenski standard je istoveten z: **EN 13617-4:2021**

ICS:

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

SIST EN 13617-4:2021 **en,fr,de**

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 13617-4

September 2021

ICS 75.200

Supersedes EN 13617-4:2012

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 European Standard was approved by CEN on 14 June 2021.

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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

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

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Ref. No. EN 13617-4:2021 E

Contents

Page

European foreword

This document (EN 13617-4:2021) has been prepared by Technical Committee CEN/TC 393 “Equipment for storage tanks and for filling 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 March 2022, and conflicting national standards shall be withdrawn at the latest by March 2024.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights..

This document supersedes EN 13617-4:2012.

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

— swivels for aqueous urea solution added;

— Table 1 corrected to ensure compatibility between components according to EN 13012:2021, EN 13617-2:2021, EN 13617-4:2021 and EN 1360:2013;

— the liquid compatibility preconditioning fluid for fuel swivels is defined in EN 13617-1.

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 2014/34/EU.

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

EN 13617 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.*

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

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

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 subdivision Group IIA according to EN ISO/IEC 80079-20-1 and also aqueous urea solution in accordance with ISO 22241-1.

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 1127-1:2019, *Explosive atmospheres - Explosion prevention and protection - Part 1: Basic concepts and methodology*

EN 1360:2013, *Rubber and plastic hoses and hose assemblies for measured fuel dispensing systems - Specification*

EN 13012:2021, *Petrol filling stations - Construction and performance of automatic nozzles for use on fuel dispensers*

EN 13483:2013, *Rubber and plastic hoses and hose assemblies with internal vapour recovery for measured fuel dispensing systems - Specification*

EN 13617-1:2021, *Petrol filling stations - Part 1: Safety requirements for construction and performance of metering pumps, dispensers and remote pumping units*

EN 13617-2:2021, *Petrol filling stations - Part 2: Safety requirements for construction and performance of safe breaks for use on metering pumps and dispensers*

EN IEC 60079-0:2018, *Explosive atmospheres - Part 0: Equipment - General requirements (IEC 60079-0:2017)*

EN ISO 228-1:2003, *Pipe threads where pressure-tight joints are not made on the threads - Part 1: Dimensions, tolerances and designation (ISO 228-1:2000)*

EN ISO 1825:2017, *Rubber hoses and hose assemblies for aircraft ground fuelling and defuelling - Specification (ISO 1825:2017)*

EN ISO 8031:2020, *Rubber and plastics hoses and hose assemblies - Determination of electrical resistance and conductivity (ISO 8031:2020)*

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

ISO 261:1998, *ISO general purpose metric screw threads — General plan*

ISO 965-2:1998, *ISO general purpose metric screw threads — Tolerances — Part 2: Limits of sizes for general purpose external and internal screw threads — Medium quality*

ISO 11925-3:1997, *Reaction to fire tests — Ignitability of building products subjected to direct impingement of flame — Part 3: Multi-source test*

ISO 22241-1:2019, *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 EN 13012:2021, EN 13617-1:2021 and EN 13617-2:2021 and the following apply.

ISO and IEC maintain terminological 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
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 1127-1:2019 and EN 13617-1:2021, Annex B.

4.2 The swivel shall be explosion protected and shall be Category 2G, Group II, EPL Gb in accordance with EN ISO 80079-36:2016. The vapour path of a vapour recovery swivel shall be Category 1G, Group II, EPL Ga in accordance with EN ISO 80079-36:2016. The swivel shall fulfil the requirements for temperature Class T3 and Group IIA to EN IEC 60079-0:2018 or EN ISO 80079-36:2016.

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 EN ISO 80079-36:2016, 5.2.

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 IEC 60079-0:2018, 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 228-1:2003.

The connection thread dimensions shall be in accordance with Table 1

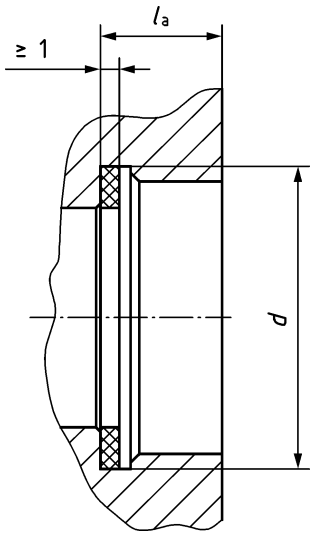
Table 1 — Thread specifications

Nominal inlet size	Female threads	Male threads
	Thread depth[a]	Minimum engagement[b]
	l_a	l_b
	mm	mm
d	See Figure 1.	See Figure 2.
3/4”	$12,0\,^{0}_{-0,5}$	12,0
1”	$13,0\,^{0}_{-0,5}$	13,0
1 1/4”	$15,0\,^{0}_{-0,5}$	15,0
1 1/2”	$18,0\,^{0}_{-0,5}$	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.

Dimensions in millimetres

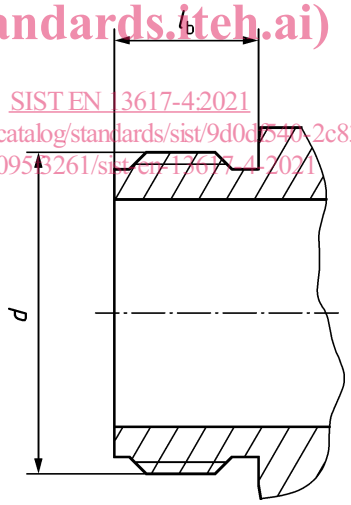


Key

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 261:1998 and ISO 965-2:1998, and shall be in accordance with EN 13483:2013.

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 EN 13617-2:2021.

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	EN ISO 80079-36:2016, 6.7	EN ISO 80079-36:2016
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 11925-3:1997
Characteristics of swivel component's and/or covers to prevent dangerous, mechanically generated, sparks (resistance to sparking).	Metallic enclosure requirements of EN IEC 60079-0:2018	—

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.

8 Frequency of testing

Testing shall be performed in accordance with the schedule given in Table 4.

A total of five swivels shall be subjected to the type tests.

One swivel for type test shall be tested according to A.3 followed by functional requirements under Clause 7.

Four swivels for type test shall be pre-conditioned according to A.2. The drop test according to A.6 shall be done immediately after removal from saturated atmosphere and shall be commenced within 30 min of removal from saturated atmosphere, followed by the leak test according to A.7. Then the burst test shall be performed according to A.5.

Production acceptance tests shall be carried out on the first unit produced on a production run, the last unit manufactured on a production run and at least every one hundredth unit during the production run.

Routine tests shall be carried out on each finished swivel.

Table 4 — Tests

Property/requirements	Type test	Production acceptance test	Routine test
Electrical resistance	A.4	A.4	A.4[a]
Ignitability	Manufacturers declaration according to Table 2	—	—
Electrostatic properties		—	—
Resistance to sparking		—	—
Tightness	A.7	A.7	A.7
Burst test	A.5	—	—
Drop test	A.6	—	—
Endurance	A.3	—	—

[a] Where there is low electrical resistance material from inlet thread, across the swivel to the output then this routine test shall not be required.

9 Information for use

9.1 General

Information for use shall be in accordance with EN 13617-1:2021.

9.2 Marking and instruction

If the size of the swivels is not large enough for the marking, then marking shall be in accordance with EN IEC 60079-0:2018.

Swivels shall be marked legibly and indelibly during the manufacturing process; where necessary this marking may be made visible for inspection by the easy removal of plastic covers. Marking shall include at least the following information:

— manufacturer's name or identification;

— manufacturer's type indication;

— the ambient temperature range if it is outside the temperature range of −20 °C to +40 °C;

— serial number, batch code or date code with a precision of at least year and quarter;

— direction of flow, if necessary;

— EN number.