



SLOVENSKI STANDARD SIST EN 13617-4:2005

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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 a la construction et aux performances des raccords tournants utilisés sur les distributeurs de carburants

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ICS:

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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

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This European Standard was approved by CEN on 16 August 2004.

CEN members are bound to comply with the CEN/GENELEC 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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Foreword

This document (EN 13617-4:2004) 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 April 2005, and conflicting national standards shall be withdrawn at the latest by April 2005.

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.

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

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EN 13617-4:2004 (E)

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 into the tanks of motor vehicles, boats and light aircraft and into portable containers at flow rates up to 200 l·min⁻¹. It pays particular attention to electrical, mechanical and hydraulic characteristics of swivels.

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 is not applicable to swivels for the dispensing of any compressed gas.

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 228, *Automotive fuels – Unleaded petrol – Requirements and test methods*

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

EN 1360, *Rubber hoses and hose assemblies for measured fuels dispensing — Specification*

EN 13012:2001, *Petrol filling stations — Construction and performance of automatic nozzles for use on fuel dispensers*

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

prEN 13483, *Hoses and hose assemblies with internal vapour recovery for measured fuel dispensing systems — Specification*

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

EN 13617-2:2004, *Petrol filling stations — Part 2: Safety requirements for construction and performance of safe breaks for use on metering pumps and dispensers*

EN 50014:1997, *Electrical apparatus for potentially explosive atmospheres — General requirements*

EN 60079-0, *Electrical apparatus for explosive gas atmospheres – Part 0: General requirements*

EN ISO 8031:1997, *Rubber and plastics hoses and hose assemblies — Determination of electrical resistance (ISO 8031:1993)*

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

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*

3 Terms and definitions

For the purposes of this document, the terms and definitions according to EN 13012:2001, EN 13617-1:2004 and EN 13617-2:2004 and the following apply:

3.1

swivel

a device fitted between nozzle and metering pump or dispenser to allow rotational movement

3.2

single plane swivel

a swivel with one plane of rotation

3.3

dual plane swivel

a 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 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 shall apply.

5 Construction

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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 of the equipment it shall be subjected to an ignition hazard assessment in accordance with 5.2 of EN 13463-1:2001.

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 manufacturers' declaration and by the tests detailed in Annex A.

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.

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 such 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

Connection threads shall be one of the following styles:

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Style 1:

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 connection size inch	Female threads	Male threads
	Maximum thread depth ^a mm	Minimum thread length ^b mm
¾"	12,5	11,0
1"	15,5	14,0
1 ¼"	15,5	17,5
1 ½"	15,5	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 connection fitting includes an inner flat gasket. When no inner flat gasket is used the minimum thread length depends on the tightness requirements of the threaded connection.

Style 2:

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Swivels with a vapour recovery path shall use M 34 x 1,5 male outlet threads according to ISO 261 and ISO 965-2.

The total thread length shall be maximum 15,0 mm.

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

5.3 Safe breaks

If a swivel has an integral safe break it shall fulfil the requirements of EN 13617–2.

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.	$< 10^5 \Omega$	A.4
Electrostatic properties	7.4 of EN 13463-1:2001 7.3.2 of EN 50014:1997	EN 13463-1 EN 50014
Fuel compatibility	5.1	A.2 followed by A.6, A.7 and A.5
Endurance	Clause 6 and electrical resistance test $< 10^5 \Omega$ 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 flame	ISO 11925-3
Characteristics of swivel component's and/or covers to prevent dangerous, mechanically generated, sparks (resistance to sparking).	8.2 of EN 13463-1:2001 8.1 of EN 50014:1997 or equivalent measures (Manufacturer's declaration).	EN 13463-1 EN 50014

7 Functional requirements

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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.

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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.