



SLOVENSKI STANDARD

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SIST EN 13617-1:2004+A1:2009

Bencinski servisi - 1. del: Varnostne zahteve za izdelavo in lastnosti tlačnih in sesalnih naprav za točenje goriva in naprav za točenje goriva z daljinskim vodenjem

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

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Tankstellen - Teil 1: Sicherheitstechnische Anforderungen an Bau- und Arbeitsweise von Zapfsäulen, druckversorgten Zapfsäulen und Fernpumpen

SIST EN 13617-1:2012

Stations-service - Partie 1: Exigences relatives à la construction et aux performances de sécurité des distributeurs à pompe immergée, distributeurs de carburants et unités de pompage à distance

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75.200

Oprema za skladiščenje nafte, naftnih proizvodov in zemeljskega plina

Petroleum products and natural gas handling equipment

SIST EN 13617-1:2012

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EUROPEAN STANDARD
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EUROPÄISCHE NORM

EN 13617-1

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English Version

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

Stations-service - Partie 1: Exigences relatives à la
construction et aux performances de sécurité des
distributeurs à pompe immergée, distributeurs de
carburants et unités de pompage à distance

Tankstellen - Teil 1: Sicherheitstechnische Anforderungen
an Bau- und Arbeitsweise von Zapfsäulen, druckversorgten
Zapfsäulen und Fernpumpen

This European Standard was approved by CEN on 13 April 2012.

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.

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EN 13617-1:2012 (E)

Foreword

This document (EN 13617-1:2012) 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 November 2012, and conflicting national standards shall be withdrawn at the latest by November 2012.

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

This document supersedes EN 13617-1:2004+A1:2009.

In comparison with EN 13617-1:2004+A1:2009, the following fundamental changes have been made:

- the normative references have been updated;
- in 6.1.4.2, the test method for cables includes those required for use with biodiesel has been revised;
- in 6.1.8.2, the test method for seals and gaskets includes those required for use with biofuels;
- a new paragraph has been added in the scope: 'Fuels other than the ones of Explosion Group IIA are excluded from this European Standard';
- 7.2.1 has been added;
- the existing 7.2 has been made into 7.2.2;
- the informative Annex C concerning environmental aspects has been added.

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 Directives, see informative Annexes ZA and ZB, which are integral parts 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.*

The key purpose for the review of the standards was to consider biofuels. In practice, only EN 13617-1 was changed.

According to the CEN/CENELEC Internal Regulations, the national standards organizations 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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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EN 13617-1:2012 (E)**Introduction**

This document is a type C standard as stated in EN ISO 12100.

The machinery concerned and the extent to which hazards, hazardous situations and events are covered are indicated in the scope of this document.

When provisions of this type C standard are different from those which are stated in type A or B standards, the provisions of this type C standard take precedence over the provisions of the other standards, for machines that have been designed and built according to the provisions of the type C standard.

It has been assumed that the use of the equipment for dispensing of fuels will be by untrained persons (user/dispenser), while other aspects of the operation, maintenance, etc., will be by designated and trained personnel (station personnel or operator).

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1 Scope

This European Standard applies to metering pumps, dispensers and remote pumping units to be installed at petrol filling stations, designed 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, and intended for use and storage at ambient temperatures between -20 °C and +40 °C. Measures in addition to those required by this European Standard may be required for use and storage at temperature outside this range. The need for and nature of additional requirements should be determined by the manufacturer, if necessary after consulting the client.

This European Standard deals with all significant hazards, hazardous situations and events relevant to metering pumps, dispensers and remote pumping units, when they are used as intended and under the conditions foreseeable by the manufacturer (see Clause 4).

This European Standard gives health and safety related requirements for the selection, construction and performance of the equipment.

This European Standard does not deal with noise and with hazards related to transportation and installation.

This European Standard does not include any requirements for metering performance.

Vapour recovery efficiency rates are not considered within this European Standard.

Fuels other than the ones of Explosion Group IIA are excluded from this European Standard.

This European Standard is not applicable to metering pumps, dispensers and remote pumping units which are manufactured before the date of publication of this document by CEN.

This European Standard does not apply to equipment for use with liquefied petroleum gas (LPG) or liquefied natural gas (LNG) or compressed natural gas (CNG).

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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 590, *Automotive fuels — Diesel — Requirements and test methods*

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

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

EN 13463-1:2009, *Non-electrical equipment for use in potentially explosive atmospheres — Part 1: Basic method and requirements*

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

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

EN 14125, *Thermoplastic and flexible metal pipework for underground installation at petrol filling stations*

EN 14214, *Automotive fuels — Fatty acid methyl esters (FAME) for diesel engines — Requirements and test methods*

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CEN/TS 15293, *Automotive fuels — Ethanol (E85) automotive fuel — Requirements and test methods*

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

EN 60079-1:2007, *Explosive atmospheres — Part 1: Equipment protection by flameproof enclosures "d" (IEC 60079-1:2007)*

EN 60079-7:2007, *Explosive atmospheres — Part 7: Equipment protection by increased safety "e" (IEC 60079-7:2006)*

EN 60079-10-1, *Explosive atmospheres — Part 10-1: Classification of areas — Explosive gas atmospheres (IEC 60079-10-1)*

EN 60079-14, *Explosive atmospheres — Part 14: Electrical installations design, selection and erection (IEC 60079-14)*

EN 60204-1:2006, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements (IEC 60204-1:2005, modified)*

EN 60529, *Degrees of protection provided by enclosures (IP Code) (IEC 60529)*

EN 60730-2-10, *Automatic electrical controls for household and similar use — Part 2-10: Particular requirements for motor-starting relays (IEC 60730-2-10)*

EN 60947-3, *Low-voltage switchgear and controlgear — Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units (IEC 60947-3)*

EN 60950-1, *Information technology equipment — Safety — Part 1: General requirements (IEC 60950-1)*

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

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

EN ISO 12100:2010, *Safety of machinery — General principles for design — Risk assessment and risk reduction (ISO 12100:2010)*

EN ISO 13849-1, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design (ISO 13849-1)*

EN ISO 16852, *Flame arresters — Performance requirements, test methods and limits for use (ISO 16852)*

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

HD 21.13 S1, *Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V — Part 13: Oil resistant PVC sheathed cables with two or more conductors*

HD 22.4 S3, *Cables of rated voltages up to and including 450/750 V and having cross-linked insulation — Part 4: Cords and flexible cables*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 12100:2010 and the following apply.

3.1

air and/or vapour separator

device used for continuously separating and removing air or gases contained in the liquid

3.2**delivery hose assembly**

flexible delivery system to which the nozzle is connected

3.3**column extension**

fabrication extending upwards from a metering pump/dispenser hydraulic housing

3.4**metering pump**

measuring system containing its own pumping system to draw and deliver liquid fuel from a supply tank or tanks into the tanks of motor vehicles, boats and light aircraft and into portable containers

3.5**dispenser**

measuring and delivery system similar to that of a metering pump but without an integral pumping system

3.6**multi product metering pump/dispenser**

unit designed to deliver liquid fuels where the customer can choose from more than one product, which may include systems where the fuel delivered is a mix of more than one base fuel

3.7**remote pumping unit**

suction pump assembly mounted remotely from a dispenser

3.8**filling station**

establishment providing for the delivery of liquid fuels into the tanks of motor vehicles, boats and light aircraft and into portable containers

3.9**hazardous area**

area in which an explosive gas atmosphere is present, or may be expected to be present, in quantities such as to require special precautions for the construction, installation and use of apparatus

3.10**non-hazardous area**

according to EN 60079-10-1

3.11**metering unit**

device for continuously measuring the amount of liquid fuels delivered

3.12**safe-break**

according to EN 13617-2

3.13**type of protection**

measures according to EN 60079-0 and EN 13463-1 to avoid ignition of a surrounding explosive atmosphere

3.14**metering pump/dispensers hydraulic housing**

structure, which may include cladding, to provide physical and ingress protection of the liquid and/or vapour equipment

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- 3.15**
automatic delivery nozzle
nozzle
according to EN 13012
- 3.16**
vapour recovery nozzle
according to EN 13012
- 3.17**
nozzle boot
location, normally a partially enclosed housing, where the nozzle or vapour recovery nozzle is stored when not in use
- 3.18**
nozzle sensor
device detecting the nozzle position in the nozzle boot
- 3.19**
vapour barrier
sealing system to limit hazardous areas
- 3.20**
shear valve
impact check valve
normally open valve, activated by impact and heat, which closes to prevent flow from a pressure source and remains closed after activation
- 3.21**
sight glass
device to allow checking that all, or part, of the measuring system is completely filled with liquid
- 3.22**
vapour recovery system
system in and attached to the metering pump/dispenser to feed back the vapours displaced from the fuel tank and led back into the vapour return lines to the storage tank
- 3.23**
vapour pump
pump positioned in the vapour recovery system to supply vacuum for vapour suctioning
- 3.24**
screen
perforated cladding fabrication which may be provided to enhance the visual appearance of a pump or dispenser or to provide another related function
- 3.25**
vapour pipe
tubing of the vapour recovery system, excluding the vapour recovery delivery hose assembly and vapour recovery nozzle
- 3.26**
retraction system
system to assist the stowage of delivery hose assembly or vapour recovery delivery hose assembly
- 3.27**
hose cassette
separate assembly primarily for the storage of delivery hose assembly(s) or vapour recovery delivery hose assembly(s)

3.28**normal operation**

situation when the equipment, protective systems, and components perform their intended function within their design parameters

Note 1 to entry: See EN ISO 12100:2010, 5.3.

Note 2 to entry: Minor release of flammable material may be part of normal operation. For example, releases of substances from seals which rely on wetting by the fluid which is being pumped are considered to be minor releases.

Note 3 to entry: Failures (such as a breakdown of pump seals, flange gaskets or releases of substances caused by accidents) which involve repair or shut-down are not considered to be part of normal operation.

3.29**cladding**

external panels that serve no structural, load bearing, purpose but which contribute to the physical protection of the contents of the housing

3.30**vapour trap**

unventilated part of a structure where vapours can accumulate creating an area of greater hazard than its immediate surroundings

3.31**preset delivery**

delivery where the maximum volume (cost) for that delivery is fixed, either directly at the metering pump/dispenser or remote from the metering pump/dispenser, before the delivery commences

3.32**preset delivery slowdown**

last part of a preset delivery where the flow rate is limited by the metering pump/dispenser to allow accurate completion of the delivery

3.33**flow rate**

volume flow delivered under normal working conditions

Note 1 to entry: In l·min⁻¹ or m³·h⁻¹.

3.34**potential ignition source**

according to EN 13463-1

3.35**high hose inlet joint**

delivery hose assembly connection at a location on equipment that will be at a height greater than 2 m above ground level when the equipment is installed

3.36**de-mountable joint**

joint which is designed to be assembled and disassembled

3.37**satellite delivery system**

remote delivery system connected to a metering pump/dispenser

3.38**check valve**

normally closed, opened by flow of liquid in normal working conditions

EN 13617-1:2012 (E)**3.39****catastrophic failure**

irreversible damage resulting in an unsafe condition

3.40**routine test**

test performed on each unit on completion of manufacture

3.41**powering up sequence**

internal sequence of events that follows the application of electrical power to the equipment

3.42**cross ventilation**

ventilation which facilitates airflow from one side of a housing or enclosure to the opposite side, usually horizontally

4 List of significant hazards

Table 1 contains the significant hazards and hazardous situations, as far as they are dealt with in this European Standard, identified by a risk assessment significant for metering pumps, dispensers and remote pumping units used for the dispensing of liquid fuels, and which require action to eliminate or reduce risks.

NOTE A risk assessment should be carried out to determine whether the hazards identified at Table 1 exist and whether there are additional hazards not covered by this standard. It is the responsibility of the manufacturer, outside the scope of this standard, to identify such hazards and provide suitable protective measures.

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Table 1 — List of significant hazards

Significant hazards according to EN ISO 12100:2010		Significant hazards, danger zones, hazardous situations or events, associated with the covered machinery	Safety requirements
No.	Type of hazard	—	Clauses of this standard
1	Mechanical hazards due to <ul style="list-style-type: none"> - Falling objects - High pressure - Rotating elements - Inadequate mechanical strength - Stability 	<p>Moving parts and ejected fuel Fluid in the hose, pipes etc.</p> <p>Drive belts and/or shafts</p> <p>Stability of the dispenser in normal use Vehicle movement</p>	<p>5.3.6 5.3.1.4, 5.3.1.5, 5.3.1.6, 5.3.3.2, 5.3.4, 5.3.5, 6.1.2, 6.1.3, 6.1.6 5.3.6.1, 5.3.6.2, 7.3 5.3.6.4, 6.1.7, 6.1.8 5.3.1.6, 6.1.5 5.3.4.7, 7.3</p>
2	Electrical hazards <ul style="list-style-type: none"> - Electrostatic phenomena - Live parts - Parts which have become live under fault conditions 	Charging of belts, hoses and cladding	<p>5.3.3, 5.3.4.1, 5.3.4.3 5.3.2, 6.1.4, 6.1.9 5.3.2, 6.1.4</p>
3	Thermal hazards <ul style="list-style-type: none"> - Explosion 	Ignition of possible explosive atmosphere by electrical or non-electrical parts or electrical change	5.1, 5.2, 5.3
7	Material/substance hazards <ul style="list-style-type: none"> - Explosive - Fluid - Gas 	<p>Sparks or high temperature from electrical and non-electrical parts in combination with explosive atmospheres</p> <p>Tightness of components, pipes, hoses</p> <p>Tightness of components, pipes, hoses</p>	<p>5.1, 5.2, 5.3 5.3.3, 5.3.4 5.3.3, 5.3.4</p>
8	Ergonomic hazards <ul style="list-style-type: none"> - Design, location or identification of control devices - Human errors 	<p>Explosive atmosphere due to unexpected liquid flow</p> <p>Errors of fitting</p>	5.3.1.1, 5.3.1.2, 5.3.1.3, 5.3.2, 5.3.4.2, 7.3 7.3

5 Safety requirements and/or protective measures

5.1 Explosion protection measures

5.1.1 Explosion protection measures should be taken in accordance with Annex B.

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

5.2 Selection of equipment

5.2.1 General

5.2.1.1 Hazardous areas considered in this European Standard are only those created by an individual metering pump/dispenser in open air.

NOTE 1 The following requirements for classification of zones are not intended to release the user of the equipment from his obligation to verify the correct classification as far as workplaces are concerned, and to implement additional health and safety arrangements if necessary. Required documents are identified in 7.3.