



# SLOVENSKI STANDARD SIST EN 13617-1:2004

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

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

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

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**Petrol filling stations - Part 1: Safety requirements for  
construction and performance of metering pumps, dispensers  
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Stations-service - Partie 1: Exigences relatives à la  
construction et aux performances de sécurité des  
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Tankstellen - Teil 1: Sicherheitstechnische Anforderungen  
an Bau- und Arbeitsweise von Zapfsäulen, druckversorgten  
Zapfsäulen und Fernpumpen

This European Standard was approved by CEN on 9 February 2004.

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 Central Secretariat or to any CEN member.

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## Foreword

This document (EN 13617-1:2004) 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of an identical text or by endorsement, at the latest by November 2004, and conflicting national standards shall be withdrawn at the latest by November 2004.

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 annexes ZA and ZB, which are integral parts of this document.

This European Standard "Petrol filling stations" consists of 4 parts:

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

Part 2<sup>1)</sup>: Safety requirements for construction and performance of safe breaks for use on metering pumps and dispensers

Part 3<sup>1)</sup>: Safety requirements for construction and performance of shear valves

Part 4<sup>1)</sup>: Safety requirements for construction and performance of swivels for use on metering pumps and dispensers

Annex A is normative. Annex B is informative.

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.

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<sup>1)</sup> In course of preparation.

## Introduction

This document is a type C standard as stated in EN 1070.

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  $200 \text{ l}\cdot\text{min}^{-1}$ , and intended for use and storage at ambient temperatures between  $-20 \text{ }^{\circ}\text{C}$  and  $+40 \text{ }^{\circ}\text{C}$ . Additional measures can be required for use and storage at temperatures outside this range and is to negotiate between the manufacturer and its 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 foreseen by the manufacturer (see clause 4).

This European Standard specifies selection of equipment and construction and performance requirements for safety aspects.

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.

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.

NOTE Liquefied petroleum gas (LPG) is not a liquid fuel in the sense of this European Standard.

## 2 Normative references

<https://standards.iteh.ai/catalog/standards/sist/32b980ac-904e-4c5e-9957-067659b1fb95/sist-en-13617-1-2004>

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 228, *Automotive fuels — Unleaded petrol — Requirements and test methods*.

EN 954-1, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design*.

EN 1050:1996, *Safety of machinery — Principles for risk assessment*.

EN 1070:1998, *Safety of machinery — Terminology*.

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

EN 12874, *Flame arresters — Performance requirements, test methods and limits for use*.

EN 13012, *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 50014, *Electrical apparatus for potentially explosive atmospheres — General requirements*.



EN 50018:2000, *Electrical apparatus for potentially explosive atmospheres — Flameproof enclosures „d“.*

EN 50019:2000, *Electrical apparatus for potentially explosive atmospheres — Increased safety „e“.*

EN 50021, *Electrical apparatus for potentially explosive atmospheres — Type of protection „n“.*

EN 60079-10, *Electrical apparatus for explosive gas atmospheres — Part 10: Classification of hazardous areas (IEC 60079-10:1995).*

EN 60079-14, *Electrical apparatus for explosive gas atmospheres — Part 14: Electrical installations in hazardous areas (other than mines) (IEC 60079-14:1996).*

EN 60204-1:1997, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements (IEC 60204-1:1997).*

EN 60529, *Degrees for protection provided by enclosures (IP code) (IEC 60529:1989).*

EN 60730-2-10, *Automatic electrical controls for household and similar use — Part 2: Particular requirements for motor starting relays (IEC 60730-2-10:1991, modified).*

EN 60947-3, *Low-voltage switchgear and controlgear — Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units (IEC 60947-3:1999).*

EN 60950-1, *Information technology equipment — Safety — Part 1: General requirements (IEC 60950-1:2001, modified).*

EN ISO 1182, *Reaction to fire tests for building products — Non-combustibility test (ISO 1182:2002).*

EN ISO 12100-1:2003, *Safety of machinery - Basic concepts, general principles for design - Part 1: Basic terminology, methodology (ISO 12100-1:2003).*

EN ISO 12100-2:2003, *Safety of machinery - Basic concepts, general principles for design - Part 2: Technical principles (ISO 12100-2:2003).*

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

HD21.13 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.*

HD22.4 S3, *Rubber insulated cables of rated voltages up to and including 450/750 V — Part 4: Cords and flexible cables.*

### 3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in EN 1070:1998 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, this 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

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3.11

**metering unit**

device for continuously measuring the amount of liquid fuels delivered

3.12

**safe-break**

according to prEN 13617-2

3.13

**type of protection**

the specific measures applied to electrical apparatus to avoid ignition of a surrounding explosive atmosphere

[EN 50014:1997 A1/A2:1999]

3.14

**metering pump/dispensers hydraulic housing**

housing which provides physical protection to the liquid and/or vapour equipment

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(s), 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 (see also 5.2.2.a) of EN ISO 12100-1:2003))

NOTE 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 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. [see EN 1127-1:1997]

**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 (preset)**

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 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, in  $\text{l}\cdot\text{min}^{-1}$  or  $\text{m}^3\cdot\text{h}^{-1}$  under normal working conditions

**3.34**

**potential ignition source**

any part of a process that is able to cause an ignition of an explosive atmosphere

**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

**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

#### 4 List of significant hazards

This clause 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.

Before using this standard it is important to carry out a risk assessment of equipment to check that it has the hazards identified in this clause.

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Table 1 — List of significant hazards

Significant hazards according to annex A of EN 1050:1996		Significant hazards, danger zones, hazardous situations or events, associated with the covered machinery	Safety requirement
No.	Type of hazard	—	Clauses of this standard
1	Mechanical hazards due to: — machine parts or work pieces, e.g. a) shape; b) relative location; c) mass and stability (potential energy of elements which may move under the effect of gravity); d) mass and velocity (kinetic energy of elements in controlled or uncontrolled motion); e) inadequacy of mechanical strength. f) moving parts	Drive belts and/or shafts	5.3.6.2, 7.3
1.9	High pressure fluid injection or ejection hazard	Fluid in the hose, pipes etc.	5.3.1.5, 5.3.1.6, 5.3.3.2, 5.3.4
2	Electrical hazards due to	—	—
2.1	Contact of persons with live parts (direct contact)	Electrical components e.g. motors, solenoid valves, control systems, lighting	5.3.2
2.2	Contact of persons with parts which have become live under faulty conditions (indirect contact)	Electrical components e.g. motors, solenoid valves, control systems, lighting	5.3.2
2.4	Electrostatic phenomena	Charging of belts, hoses and cladding	5.3.4.1, 5.3.3.4 5.3.4.3
3	Thermal hazards, resulting in:	—	—
3.1	Burns and other injuries by possible explosions	Ignition of possible explosive atmosphere by electrical or non-electrical parts or electrical charge	5.1, 5.2, 5.3
7	Hazards generated by materials and substances (and their constituent elements) processed or used by the machinery	—	—
7.1	Hazards from contact with or inhalation of harmful fluids, gases, mists, fumes, and dusts	Tightness of components, pipes, hoses	5.3.3, 5.3.4,

Table 1 (concluded)

Hazards according to EN 1050:1996, annex A		Significant hazards, danger zones, hazardous situations or events, associated with the covered machinery	Safety requirement
7.2	Fire or explosion hazard	Sparks or high temperatures from electrical and non-electrical parts in combination with explosive atmospheres	5.1, 5.2, 5.3
10	Unexpected start-up, unexpected overrun/overspeed (or any similar malfunction) from:	—	—
10.1	Failure/disorder of the control system	Explosive atmospheres due to unexpected liquid flow	5.3.1.2, 5.3.4.2,
10.2	Restoration of energy supply after an interruption	Explosive atmospheres due to unexpected liquid flow	5.3.1.2
10.3	External influences on electrical equipment	Explosive atmospheres due to unexpected liquid flow	5.3.1.2, 5.3.2.1
10.5	Errors in the software	Explosive atmospheres due to unexpected liquid flow	5.3.1.2
10.6	Errors made by the operator (due to mismatch of machinery with human characteristics and abilities)	Explosive atmospheres due to unexpected liquid flow	5.3.1.2, 5.3.1.3, 7.2
11	Impossibility of stopping the machine in the best possible conditions	Explosive atmospheres due to unexpected liquid flow	5.3.1.2, 5.3.1.3 5.3.4.2
13	Failure of the power supply	Explosive atmospheres due to unexpected liquid flow	5.3.1.2
14	Failure of the control circuit	Explosive atmospheres due to unexpected liquid flow	5.3.1.1, 5.3.1.2, 5.3.1.3 5.3.2
15	Errors of fitting	Leakage	7.3
16	Break-up during operation	Leakage	5.3.1.1, 5.3.1.4, 5.3.1.6, 5.3.4.7
17	Falling or ejected objects or fluids	Moving parts and ejected fuel	5.3.4 5.3.6
18	Loss of stability / overturning of machinery	Stability of the dispenser in normal use Vehicle movement	5.3.1.6 6.1.5 5.3.4.7 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 50014 and EN 13463–1.