SLOVENSKI STANDARD
SIST EN 13616-2:2016

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Nadomešča:
SIST EN 13616:2004
SIST EN 13616:2004/AC:2006

Naprave za preprečitev prepolnitve za nepremične rezervoarje za tekoča goriva - Zahteve in metode za preskušanje in ocenjevanje - 2. del: Naprave za preprečitev prepolnitve brez zaporne naprave

Overfill prevention devices for static tanks for liquid fuels - Requirements and test/assessment methods - Part 2: Overfill prevention devices without closure device

Überfüllsicherungen für ortsfeste Tanks für flüssige Brenn- und Kraftstoffe - Anforderungen und Prüf-/Bewertungsverfahren - Teil 2: Überfüllsicherungen ohne Schließeinrichtung

Dispositifs limiteurs de remplissage pour réservoirs statiques pour carburants pétroliers liquides - Exigences et méthodes d'essai/d'évaluation - Partie 2: Dispositifs limiteurs de remplissage sans dispositfs de fermeture

Ta slovenski standard je istoveten z: **EN 13616-2:2016**

ICS:

23.020.10	Nepremične posode in rezervoarji	Stationary containers and tanks
75.200	Oprema za skladiščenje nafte, naftnih proizvodov in zemeljskega plina	Petroleum products and natural gas handling equipment

SIST EN 13616-2:2016 **en,fr,de**

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 13616-2

June 2016

ICS 23.020.10

Supersedes EN 13616:2004

English Version

Overfill prevention devices for static tanks for liquid fuels - Part 2: Overfill prevention devices without a closure device

Dispositifs limiteurs de remplissage pour réservoirs statiques pour carburants liquides - Partie 2: Dispositifs limiteurs de remplissage sans dispositif de fermeture

Überfüllsicherung für ortsfeste Tanks für flüssige Brenn- und Kraftstoffe - Teil 2: Überfüllsicherungen ohne Schließeinrichtung

This European Standard was approved by CEN on 8 April 2016.

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

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

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European foreword

This document (EN 13616-2:2016) 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 December 2016, and conflicting national standards shall be withdrawn at the latest by 2017-07-11.

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, together with EN 13616-1 and EN 16657, supersedes EN 13616:2004.

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.

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

According to EN 13616:2004, the following fundamental changes are given:

— splitting of EN 13616:2004; the new EN 13616, under the general title *Overfill prevention devices for static tanks for liquid fuels*, will consist of the following parts:

  - *Part 1: Overfill prevention devices with a closure device;*
  - *Part 2: Overfill prevention devices without a closure device.*

— reference to EN 14116;

— technical parameters regarding explosion updated;

— the requirements for the equipment of the overfill prevention devices with a closure device on the static tank are fixed in EN 13616-1;

— the requirements for the equipment of the overfill prevention devices without a closure device on the tank vehicle were shifted to EN 16657, *Tanks for the transport of dangerous goods — Transport tank equipment for overfill prevention devices for static tanks*.

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, Former Yugoslav Republic of Macedonia, 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.

1 Scope

This European Standard contains requirements, test and assessment methods, marking, labelling and packaging applicable to overfill prevention devices without a closure device.

The overfill prevention device without a closure device is usually composed of

— overfill prevention sensor consists of

  — sensor,

  — electrical interface,

  — mechanical interface,

— overfill prevention controller according to EN 16657.

These overfill prevention devices are intended to be used in/with underground or above ground, non-pressurized, static tanks designed for liquid fuels.

NOTE 1 Liquid fuel means liquids for internal combustion engines, heating/cooling boilers and generators.

NOTE 2 In further text, for liquid fuels the term liquid is used.

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 590, *Automotive fuels — Diesel — Requirements and test methods*

EN 14879-4:2007, *Organic coating systems and linings for protection of industrial apparatus and plants against corrosion caused by aggressive media — Part 4: Linings on metallic components*

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

EN 60079-11, *Explosive atmospheres — Part 11: Equipment protection by intrinsic safety "i (IEC 60079-11)*

EN 61000-6-2:2005, *Electromagnetic compatibility (EMC) — Part 6-2: Generic standards — Immunity for industrial environments (IEC 61000-6-2:2005)*

EN 61000-6-3:2007, *Electromagnetic compatibility (EMC) — Part 6-3: Generic standards — Emission standard for residential, commercial and light-industrial environments (IEC 61000-6-3:2006)*

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

EN 16657:2016, *Tanks for the transport of dangerous goods — Transport tank equipment for overfill prevention devices for static tanks*

3 Terms, definitions and abbreviated terms

For the purposes of this document, the following terms, definitions and abbreviated terms apply.

3.1
overfill prevention device
device installed in a supply system, which automatically stops the delivery, preventing the liquid level in the tank exceeding a maximum filling level

3.2
maximum filling level
L_{max}
permitted filling level subject to relevant standards and/or any national/regional safety requirements and/or recommendations

3.3
supply system
connection hoses, fittings, devices and any fixed pipework through which the liquid is delivered to the static tank from any tank vehicle

Note 1 to entry: The supply system includes both tank vehicle and stationary tank equipment.

3.4
tank vehicle
vehicle built to carry liquids in integral tanks comprising one or more compartments intended for discharge to static tanks

3.5
level
L_1
filling level at which the sensor of the overfill prevention device provides an activation signal

3.6
sensor
liquid level detection device mounted in a tank for detecting liquid at a predetermined level

3.7
permissive
signal causing the permission of a liquid delivery

3.8
non-permissive
signal causing the prevention of a liquid delivery

3.9
residual volume
amount of liquid which is in the supply system at the moment of shutdown/closure

3.10
interface
point of transfer of specified information

3.11
PID
Product Identification Device

3.12
T_{amb}
ambient temperature

3.13
T_{liq}
liquid temperature

4 Requirements

4.1 Effectiveness

4.1.1 Signal equal or greater than level L_1

To ensure the effectiveness of the overfill prevention device the overfill prevention sensor shall provide a signal showing tank contents are equal or greater than level L_1 to show a non-permissive state.

Functional requirements according to 4.1.3.

4.1.2 Signal below level L_1

To ensure the effectiveness of the overfill prevention device the overfill prevention sensor shall provide a signal showing tank contents are below level L_1 to show a permissive state.

Functional requirements according to 4.1.3.

4.1.3 Functional requirements

4.1.3.1 Electrical interface

4.1.3.1.1 Power supply

The manufacturer shall declare which liquid fuels their overfill prevention sensors are compatible with and according to their flashpoint, define the technical parameters for the electrical supply of the overfill prevention sensor with regard to explosion safety.

For overfill prevention sensors intended to be used in explosive atmospheres the technical parameters shall be at least Ex ia IIB T3 according to EN 60079-0 and EN 60079-11 and shall be suitable for the maximum output values according to 5.4.3.3 of EN 16657:2016.

4.1.3.1.2 Working characteristics of the overfill prevention sensor

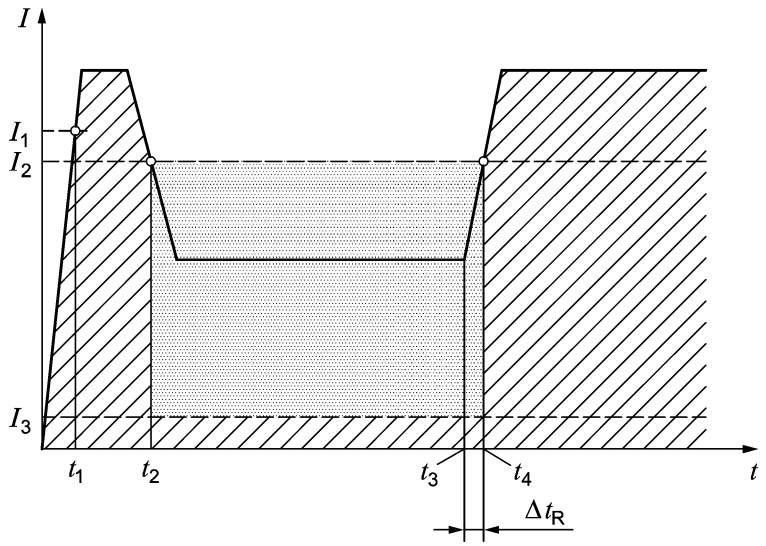
The sensor may be a resistor with a positive temperature coefficient (PTC-resistor) or a device with the same behaviour.

The sensor shall work in a fuel temperature T_{liq} range of −25 °C to +50 °C. If the fuel temperature T_{liq} range deviates from the standard, it shall be declared by the manufacturer.

The operational characteristics for the overfill prevention sensor shall be according to Figure 1 and Table 1.

Any additional use of the electrical interface shall not influence the operating characteristics and the functioning of the overfill prevention sensor.

To obtain the characteristics in Figure 1 the voltage of the supply circuit has to be stabilized over the whole temperature range to a value of (19 ± 0,3) V. The voltage value of (19 ± 0,3) V shall also be up to a current of 80 mA. The internal resistance of the supply circuit shall be (160 ± 3,2) Ω.



Key

range for signal “filling permitted”

range for signal “filling not permitted”

t_1 time of recognition of start of sensor warm up ($I > I_1$)

t_2 time of recognition of reaching sensor operating condition

$0{,}5\ s < (t_2 - t_1) < 180\ s$

NOTE If $(t_2 - t_1) > 180$ s no product flow is possible.

t_3 time of wetting sensor

t_4 time of recognition of a wet sensor i.e. stop of product flow shall be initiated

Δt_R $\Delta t_R = t_4 - t_3$

Reaction time of the overfill prevention sensor (Δt_R) from status permissive to status non-permissive shall be ≤ 1,5 s.

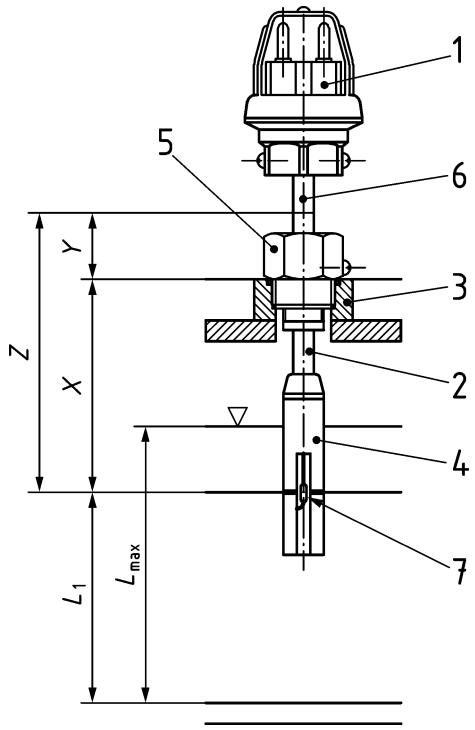
Figure 1 — Cycle of electrical interface

Table 1 — Current values at electrical interface

Current	Max. value mA	Min. value mA	Remark
I_1	49,5	41	$I_1 > I_2$
I_2	44	38	
I_3	10	2	—

4.1.3.2 Installation of the overfill prevention sensor in the tank

The principle installation of the sensor and its main parts shall be according to Figure 2. See also Annex A.



Key

X	adjusted dimension	1	plug according to Figure 3
Y	control dimension	2	sensor pipe
Z	probe length between markings	3	connection thread of the tank for the overfill prevention sensor
L_1	level at which the sensor for overfill prevention sensor is wetted	4	protection against spraying liquid
L_{max}	maximum filling level	5	installation body of the overfill prevention sensor, optional with adjustability for the overfill prevention sensor
		6	place for value Z in mm
		7	sensor

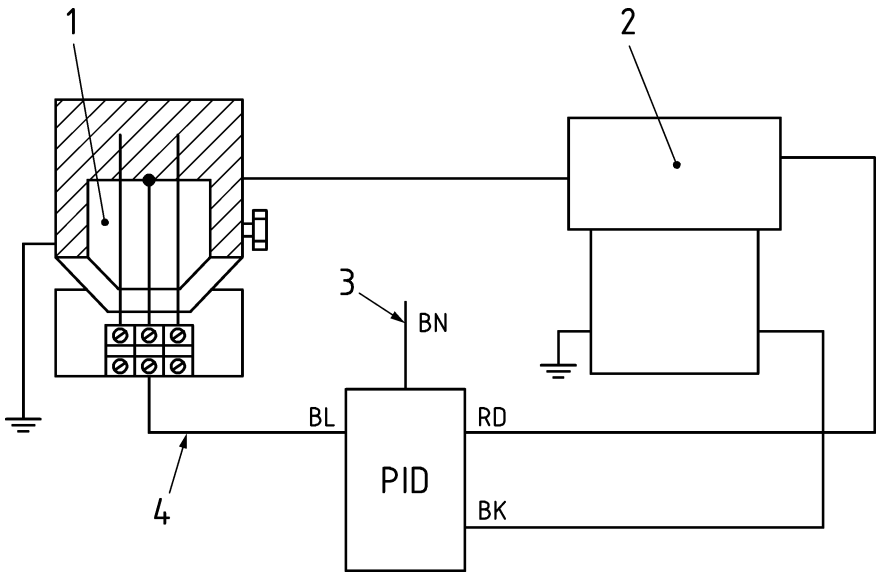
Figure 2 — Structure of the overfill prevention sensor with installation in the static tank

4.1.3.3 Mechanical interface

The plug part of the connection between the overfill prevention sensor and the mating part of the transport tank equipment is shown in Figure 4 and Figure 5.

The mating part (socket) is described in EN 16657.

The wiring at the storage tank between the PID and the listener contact shall be according to Figure 3.



Key

1	overfill prevention system socket	BK	black colour of the wire
2	fill coupling	BL	blue colour of the wire
3	optional vapour recovery	BN	brown colour of the wire
4	listener line	RD	red colour of the wire

Figure 3 — Wiring between the PID and the listener contact