

---

GYghUj b]`XY]`g]ghYa cj `nUXcj cX`hY\_c Y[ U[ cf]j Uc``ba `UdUUrca `!&"XY.  
J UfbcgfbY`nU hYj Y]b`dfYg\_i yUb`Y!`BUdUUbY` fdU\_YZfY[ i `WY`g\_Y]b`j UfbcgfbY  
bUdfUj YZ`XbYj b]`fYnYfj cUf`]

Parts for supply systems for demand appliance with liquid fuels - Part 2: Safety requirements and tests - Feed pumps, control and safety devices, operating vessels

Bauelemente für Versorgungsanlagen für Verbrauchsstellen mit flüssigen Brennstoffen - Teil 2: Sicherheitstechnische Anforderungen und Prüfungen - Förderaggregate, Regel- und Sicherheitseinrichtungen, Betriebsbehälter, Deutsche Fassung prEN 12514-2:2008

oSIST prEN 12514-2:2009  
<https://standards.ict.nl/catalog/standaards/sist/c66e8bc-46dc-4857-992a-f856390d83c0/sist-pr-en-12514-2>  
Composants des systèmes d'alimentation pour les brûleurs de combustibles liquides - Partie 2 : Prescriptions de sécurité et essais - Pompes, dispositifs de régulation et de sécurité, réservoirs

**Ta slovenski standard je istoveten z: prEN 12514-2 rev**

**ICS:**

27.060.10      Ö[ ]ā ā ā ā ā[ ^Å Å Å[      Liquid and solid fuel burners  
\* [ ]ā[

**oSIST prEN 12514-2:2009**                      **en**

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[oSIST prEN 12514-2:2009](#)

<https://standards.iteh.ai/catalog/standards/sist/e8bebf5c-46dc-4837-992a-143cd04a2170/osist-pren-12514-2-2009>

EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**DRAFT**  
**prEN 12514-2**

June 2009

ICS 27.060.10

Will supersede EN 12514-1:2000, EN 12514-2:2000

English Version

## Parts for supply systems for consuming units with liquid fuels - Part 2: Safety requirements and tests - Feed pumps, control and safety devices, service vessels

Appareils et éléments de construction pour le transfert au consommateur de liquide combustible - Partie 2 : Prescriptions de sécurité et essais - Pompes aspirantes et refoulantes, réservoirs, accumulateurs à membrane, moyens de contrôle et de mesure

Bauelemente für Versorgungsanlagen für Verbrauchsstellen mit flüssigen Brennstoffen - Teil 2: Sicherheitstechnische Anforderungen und Prüfungen - Förderaggregate, Regel- und Sicherheitseinrichtungen, Betriebsbehälter

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 47.

If this draft becomes a European Standard, 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.

This draft European Standard was established by CEN 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 Management Centre has the same status as the official versions.

[oSIST prEN 12514-2:2009](https://standards.iteh.ai/)

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, 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 and United Kingdom.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

**Warning** : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



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

**Management Centre: Avenue Marnix 17, B-1000 Brussels**

## Contents

	Page
Foreword.....	4
<b>1 Scope .....</b>	<b>5</b>
<b>2 Normative references .....</b>	<b>5</b>
<b>3 Terms and definitions .....</b>	<b>6</b>
<b>4 Safety requirements .....</b>	<b>6</b>
<b>4.1 General requirements.....</b>	<b>6</b>
4.1.1 Materials .....	6
4.1.2 Construction requirements.....	6
4.1.3 Pressure strength .....	6
4.1.4 Temperature range .....	6
4.1.5 Pipeline connections.....	7
4.1.6 Outlet pressure and supply volume.....	7
4.1.7 Function.....	7
4.1.8 Fitness for use .....	7
4.1.9 External leak-tightness .....	7
4.1.10 Internal leak-tightness.....	7
4.1.11 Inlet pressure .....	7
<b>4.2 Part related requirements .....</b>	<b>8</b>
4.2.1 Feed pump.....	8
4.2.2 Control and safety devices .....	10
4.2.3 Service vessel .....	12
4.2.4 Service tank.....	13
4.2.5 Number of cycles for the fitness-for-use test .....	13
<b>5 Testing .....</b>	<b>13</b>
<b>5.1 Testing the fitness for use of the feed pump.....</b>	<b>13</b>
5.1.1 General.....	13
5.1.2 Testing the fitness for use of the complete feed pump.....	14
5.1.3 Testing of the fitness for use of safety and control devices.....	14
<b>5.2 Testing of outlet pressure and supply volume.....</b>	<b>14</b>
5.2.1 General.....	14
5.2.2 Type testing.....	14
5.2.3 Factory production control.....	15
<b>5.3 Test of the leak-tightness of the service tank.....</b>	<b>15</b>
5.3.1 Type testing.....	15
5.3.2 Factory production control.....	15
<b>5.4 Type testing of the temperature sensitive control unit of type TB.....</b>	<b>15</b>
5.4.1 Testing of the switch point at $t_{s,max}$ .....	15
5.4.2 Testing of the switch point at $t_{a,max}$ .....	15
<b>5.5 Testing of the feed pump for the maximum outlet pressure <math>\leq 4</math> bar .....</b>	<b>15</b>
<b>5.6 Functional test of the feed pump with control and safety devices .....</b>	<b>16</b>
5.6.1 Testing of the control device.....	16
5.6.2 Testing of safety devices .....	16
<b>5.7 Evaluation of conformity.....</b>	<b>18</b>
<b>6 Marking, packaging, and instruction .....</b>	<b>18</b>
<b>6.1 General.....</b>	<b>18</b>
<b>6.2 Marking .....</b>	<b>18</b>
<b>6.3 Instructions for installation, maintenance and operation .....</b>	<b>18</b>
<b>Annex A (normative) Machine related hazards – safety requirements and/or protective measures .....</b>	<b>19</b>

<b>A.1</b>	<b>General</b> .....	<b>19</b>
<b>A.2</b>	<b>List of significant hazards</b> .....	<b>19</b>
<b>A.3</b>	<b>Safety requirements and /or protective measures</b> .....	<b>19</b>
<b>A.3.1</b>	<b>General</b> .....	<b>19</b>
<b>A.4</b>	<b>Verification of machine safety requirements and/or protective measures</b> .....	<b>22</b>
<b>A.5</b>	<b>Informations for marking, packaging, and instruction</b> .....	<b>22</b>
<b>A.5.1</b>	<b>General</b> .....	<b>22</b>
<b>A.5.2</b>	<b>Instructions for installation, maintenance and operation</b> .....	<b>22</b>
	<b>Bibliography</b> .....	<b>23</b>

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[oSIST prEN 12514-2:2009](https://standards.iteh.ai/catalog/standards/sist/e8bebf5c-46dc-4837-992a-143cd04a2170/osist-pren-12514-2-2009)

<https://standards.iteh.ai/catalog/standards/sist/e8bebf5c-46dc-4837-992a-143cd04a2170/osist-pren-12514-2-2009>

## Foreword

This document (prEN 12514-2:2009) has been prepared by Technical Committee CEN/TC 47 "Atomizing oil burners and their components – Function – Safety – Testing", the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 12514-1:2000, EN 12514-2:2000.

According to edition 2000 the following fundamental changes are given:

- standards new structured;
- technical requirements revised;
- number of cycles for the fitness-for-use test added;
- marking, packing and instructions revised;
- harmonization of the standard to the Machinery Directive (MD) 2006/42/EC.

This standard consists of 4 Parts:

*Parts for supply systems for consuming units with liquid fuel*

*Part 1: Safety requirements and tests — Terminology, general requirements*

*Part 2: Safety requirements and tests — Feed pumps, control and safety devices, service vessels*

*Part 3: Safety requirements and tests — Valves and meters*

*Part 4: Safety requirements and tests — Pipings and parts within pipelines*

## 1 Scope

This European Standard applies to the following parts of supply systems for the automatic supply of liquid fuel to one or more consuming units from one or more tanks:

- a) feed pumps;
- b) control and safety devices;
- c) service tanks;
- d) service vessels.

The combination of single parts is acceptable.

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

EN 12266-2:2002, *Industrial valves — Testing of valves — Part 2: Tests, test procedures and acceptance criteria; Supplementary requirements*

prEN 12514-1:2009, *Parts for supply systems for consuming units with liquid fuel — Part 1: Safety requirements and tests — Terminology, general requirements*

prEN 12514-3:2009; *Parts for supply systems for consuming units with liquid fuel — Part 3: Safety requirements and tests — Valves and meters*

prEN 12514-4, *Parts for supply systems for consuming units with liquid fuel — Part 4: Safety requirements and tests — Pipework and parts within pipes*

EN 12639, *Liquid pumps and pump units — Noise test code — Grade 2 and grade 3 of accuracy*

EN 14597, *Temperature control devices and temperature limiters for heat generating systems*

EN 50156-1, *Electrical equipment for furnaces and ancillary equipment - Part 1: Requirements for application design and installation*

EN 60335-1; *Household and similar electrical appliances — Safety — Part 1: General requirements (IEC 60335-1:2001, modified + Corrigendum 1 (ed. 4.0):2002 + A1:2004 + Corrigendum 1 (ed. 4.1):2005 + A2:2006 + Corrigendum 1 (A2):2006)*

EN 60335-2-102, *Household and similar electrical appliances - Safety - Part 2-102: Particular requirements for gas, oil and solide-fuel burning appliances having electrical connections (IEC 60335-2-102:2004, modified)*

EN 60529, *Degrees of protection provided by enclosures (IP code) (IEC 60529:1989 + A1:1999)*

EN ISO 2719, *Determination of flash point — Pensky-Martens closed cup method (ISO 2719:2002)*

**prEN 12514-2:2009 (E)**

EN ISO 4871, *Acoustics - Declaration and verification of noise emission values of machinery and equipment (ISO 4871:1996)*

EN ISO 12100-1, *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)*

IEC 60038, *IEC standard voltages (IEC 60038:1983 + A1:1994 + A2:1997)*

CLC TR 50404, *Electrostatics. Code of practice for the avoidance of hazards due to static electricity*

**3 Terms and definitions**

For the purposes of this document, the terms and definitions given in prEN 12514-1 and in EN ISO 12100-1 apply.

**4 Safety requirements****4.1 General requirements****4.1.1 Materials**

According to prEN 12514-1.

Test according to annex D.3 of prEN 12514-1:2009.

<https://standards.iteh.ai/catalog/standards/sist/e8beb5c-46dc-4837-992a-143cd04a2170/osist-pren-12514-2-2009>

**4.1.2 Construction requirements**

According to prEN 12514-1.

Test according to annex D.3 of prEN 12514-1:2009.

**4.1.3 Pressure strength**

According to prEN 12514-1.

Test according to annex D.1 of prEN 12514-1:2009.

Additional test of thermoplastic materials according to annex C of prEN 12514-1:2009.

**4.1.4 Temperature range**

According to prEN 12514-1.

Test according to annex D.3 of prEN 12514-1:2009.

Additional test of parts designed for  $t_{s,min} = -20$  °C according to annex F of prEN 12514-1:2009.

Additional test of thermoplastic materials according to annex C of prEN 12514-1:2009.



#### 4.1.5 Pipeline connections

According to prEN 12514-4.

Test according to annex D.3 of prEN 12514-1:2009 and prEN 12514-4.

#### 4.1.6 Outlet pressure and supply volume

The supply volume shall be determined as a function of the outlet pressure with the liquid fuel according to prEN 12514-1 indicated by the manufacturer.

Test according to 5.2.

#### 4.1.7 Function

The part related functions according to 4.2 shall be demonstrated in accordance with clause 5:

- during type testing, prior and after the fitness-for-use test according to 4.1.8;
- during factory production control.

#### 4.1.8 Fitness for use

The fitness-for-use test shall be conducted during type testing.

For the part related number of cycles, refer to 4.2.5.

The fitness-for-use test shall be carried out at a temperature  $t_t = (20 \pm 5) \text{ }^\circ\text{C}$ .

Test according to 5.1. <https://standards.iteh.ai/catalog/standards/sist/e8beb5c-46dc-4837-992a-143cd04a2170/osist-pren-12514-2-2009>

#### 4.1.9 External leak-tightness

No visible leakage.

Test according to annex D.2 of prEN 12514-1:2009.

Test of the service tank according to 5.3.

#### 4.1.10 Internal leak-tightness

The internal leak-tightness needs to be demonstrated for parts with shut-off function or check valves only.

The testing of internal leak-tightness shall be carried out:

- during type testing, after the fitness-for-use test;
- during factory production control.

The leakage rate shall not exceed leakage rate B of EN 12266-2.

Testing of the backseal, test P21 – EN 12266-2:2002.

#### 4.1.11 Inlet pressure

Determine the minimum and maximum inlet pressures.

**prEN 12514-2:2009 (E)**

Test according to 5.2.2.

**4.1.12 Electrical safety**

According to prEN 12514-1.

For feed pumps, control and safety devices the following requirements apply additionally according to prEN 12514-1.

When the environmental conditions (pollution degree and over voltage category) exceed those specified in EN 60335-2-102 the electrical safety and equipment shall comply with EN 50156-1 and EN 60335-1.

Motors, controls and all other electric parts shall be so protected by suitable guards, shields or grilles of adequate size, strength and durability that they are not liable to be touched accidentally. The degree of protection shall be at least IP 20, according to EN 60529. Removal of such guards, shields or grilles shall be possible only with the use of commonly available tools.

**4.2 Part related requirements****4.2.1 Feed pump****4.2.1.1 Functional characteristics**

Feed pumps shall be designed as a series in accordance with Table 1.

NOTE If required, the feed pump may be combined with a leak detection system according to EN 13160-4, see Figure 9 to Figure 11 of prEN 12514-1:2009.

Test according to annex D.3 of prEN 12514-1:2009.

For feed pumps with level control device which have to be filled manually prior to commissioning, the maximum filling height  $h_{\max}$  shall be indicated.

Test of the declared value according to annex D.3 of prEN 12514-1:2009.

For feed pumps with service vessel, the lowest response pressure  $p_{o,r,a}$  of the low limit controller shall not fall below the operating pressure by more than 50 mbar at the opening of the liquid fuel supply, see Figure 1.

For the assignment of the switch points of the control and safety devices for feed pumps with service vessel, see Figure 1 and for feed pumps with service tank, see Figure 2.

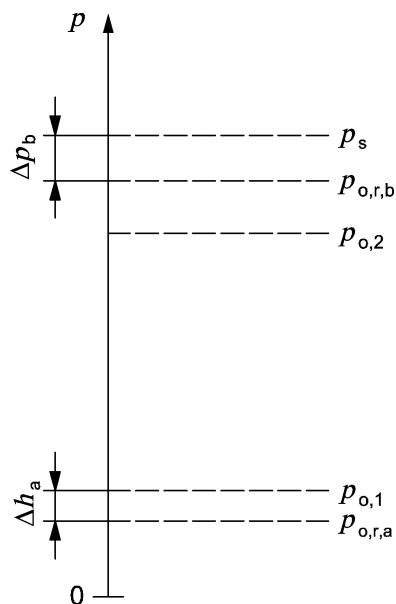
Test according to 5.6.

For feed pumps with service vessels or service tanks, the manufacturer shall declare the suction volume.

For feed pumps with service vessel, it shall be ensured that no overpressure build-up can occur in the connected suction pipeline.

For feed pumps where the outlet pressure is limited to  $\leq 4$  bar by design, this value shall be verified in accordance with 5.5.

A filter with a maximum mesh size of 0,05 mm shall be integrated. If no filter element is integrated, a filter complying with 4.2.9 of prEN 12514-3:2009 shall be mounted at the fuel-inlet of the feed pump.

**Key**

$p_{o,r,a}$  response pressure of the low limit controller

$p_{o,1}$  operating pressure at opening of liquid fuel supply

$p_{o,2}$  operating pressure at closing of liquid fuel supply

$p_{o,r,b}$  response pressure of the high or low limit controller

$p_s$  maximum allowable pressure

$\Delta p_a = (p_{o,1} - p_{o,r,a}) \leq 50 \text{ mbar}$

$\Delta p_b = p_s - p_{o,r,b}$

**Figure 1 — Assignment of the switch points of the control and safety devices for feed pumps with service vessel**