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## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 809:1998+A1:2009 sisaldab Euroopa standardi EN 809:1998+A1:2009 ingliskeelset teksti.

Standard on kinnitatud Eesti Standardikeskuse 31.12.2009 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.

Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on .

Standard on kättesaadav Eesti standardiorganisatsioonist.

This Estonian standard EVS-EN 809:1998+A1:2009 consists of the English text of the European standard EN 809:1998+A1:2009.

This standard is ratified with the order of Estonian Centre for Standardisation dated 31.12.2009 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.

Date of Availability of the European standard text .

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ICS 23.080

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English Version

## Pumps and pump units for liquids - Common safety requirements

Pompes et groupes motopompes pour liquides -  
Prescriptions communes de sécurité

Pumpen und Pumpenaggregate für Flüssigkeiten -  
Allgemeine sicherheitstechnische Anforderungen

This European Standard was approved by CEN on 7 November 1997 and includes Corrigendum 1 issued by CEN on 20 March 2002 and Amendment 1 approved by CEN on 20 August 2009.

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 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 Management Centre has the same status as the official versions.

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## Foreword

This document (EN 809:1998+A1:2009) has been prepared by Technical Committee CEN/TC 197 "Pumps", the secretariat of which is held by AFNOR.

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 2010, and conflicting national standards shall be withdrawn at the latest by April 2010.

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 includes Amendment 1, approved by CEN on 2009-08-20 and Corrigendum 1, issued by CEN on 2001-02-14.

This document supersedes EN 809:1998.

The start and finish of text introduced or altered by amendment is indicated in the text by tags **A1** and **A1**.

The modifications of the related CEN Corrigendum have been implemented at the appropriate places in the text and are indicated by the tags **AC** and **AC**.

This European Standard 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).

**A1** For relationship with EU Directive(s), see informative Annexes ZA and ZB, which are integral parts of this document. **A1**

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, 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.

## Introduction

This Standard has been prepared to be a harmonized standard to provide one means of conformity with the Essential requirements of the Machinery Directive and associated EFTA Regulations.

**A1** This European Standard is a type C standard as stated in EN ISO 12100-1.

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

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 this type C standard.

The extent to which hazards are covered is indicated in Clause 4 "List of hazards" of this European Standard. **A1**

## 1 Scope

**A1** This European Standard establishes the technical safety requirements for:

- constructing;
- assembling;
- erecting;
- operating;
- servicing;

a liquid pump or pump unit. It contains a list of significant hazards, which can arise with the use of a liquid pump or pump unit, and establishes the requirements and/or protective measures which will lead to a reduction of the risks.

Liquid pumps covered by this European Standard are:

- rotodynamic pumps;
- rotary positive displacement pumps;
- reciprocating displacement pumps;

supplied separately without drive (electric motor or internal combustion engine).

In general, pumps are defined as being terminated by their inlet and outlet connections as well as by their shaft ends. Pumps supplied in this form are usually called bareshaft pumps. They are 'machines' in the definition of the Machinery Directive.

The assembly of a bareshaft pump with its driver can require measures that are outside the scope of this European Standard.

Pump units are described as:

Liquid pumps together with a driver and including transmission elements, baseplates, and any auxiliary equipment.

This European Standard does not deal either with the technical safety requirements for the design or manufacture of drivers nor of auxiliary equipment. It does not set down either requirements for the risks directly arising from means provided for the portability, transportability and mobility of pump units during or between periods of their operation, nor the requirements for transmission shafts linking a tractor or other self-propelled machinery to a pump.

This European Standard does not cover pumps and pump units for the following applications:

- pumps and pump units whose only power source is directly applied manual effort;
- pumps and pump units for medical use used in direct contact with the patient;
- pumps and pump units specially designed or put into service for nuclear purposes which, in the event of failure, can result in an emission of radioactivity;
- pumps and pump units for use on seagoing vessels or mobile off-shore units;
- pumps and pump units specially designed for military or police purposes.

Neither does it cover pumps and pump units for hydraulic power transmission.

Specific requirements for particular features of pumps additional to the common requirements set out in this standard can be found in other standards such as EN 1028, EN 1151, EN 1829, and in the European Standards on submersible pump units and for liquid pumps for the use in agrifoodstuff industries.

This European Standard is not applicable to pumps and pump units which are manufactured before the date of publication of this European Standard. A1

## 2 Normative references

A1) 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 349, *Safety of machinery — Minimum gaps to avoid crushing of parts of the human body*

EN 894-1, *Safety of machinery — Ergonomics requirements for the design of displays and control actuators — Part 1: General principles for human interactions with displays control actuators*

EN 894-2, *Safety of machinery — Ergonomics requirements for the design of displays and control actuators — Part 2: Displays*

EN 894-3, *Safety of machinery — Ergonomics requirements for the design of displays and control actuators — Part 3: Control actuators*

EN 953, *Safety of machinery — Guards — General requirements for the design and construction of fixed and movable guards*

EN 1037, *Safety of machinery — Prevention of unexpected start-up*

EN 12162, *Liquid pumps — Safety requirements — Procedure for hydrostatic testing*

EN 12723, *Liquid pumps — General terms for pumps and installations — Definitions, quantities, letter symbols and units*

EN 60034-5:2001, *Rotating electrical machines — Part 5: Degrees of protection provided by the integral design of rotating electrical machines (IP code) — Classification (IEC 60034-5:2000)*

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

EN 60529:1991, *Degrees of protection provided by enclosures (IP code) (IEC 60529:1989)*

EN ISO 5199, *Technical specifications for centrifugal pumps — Class II (ISO 5199:2002)*

EN ISO 9905, *Technical specifications for centrifugal pumps — Class I (ISO 9905:1994)*

EN ISO 9908, *Technical specifications for centrifugal pumps — Class III (ISO 9908:1993)*

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)*

EN ISO 13732-1, *Ergonomics of the thermal environment — Methods for the assessment of human responses to contact with surfaces — Part 1: Hot surfaces (ISO 13732-1:2006)*

EN ISO 13850, *Safety of machinery — Emergency stop — Principles for design (ISO 13850:2006)*

EN ISO 13857, *Safety of machinery — Safety distances to prevent hazard zones being reached by the upper and lower limbs (ISO 13857:2008)*

EN ISO 14121-1, *Safety of machinery — Risk assessment — Part 1: Principles (ISO 14121-1:2007)*

EN ISO 14847, *Rotary positive displacement pumps — General requirements (ISO 14847:1999)*

EN ISO 20361, *Liquid pumps and pump units — Noise test code — Grades 2 and 3 of accuracy (ISO 20361:2007) <sup>A1</sup>*

### 3 Definitions

For the purposes of this Standard, the definitions contained in <sup>A1</sup> EN 12723 <sup>A1</sup> shall apply.

Further the following definition applies :

#### 3.1

##### **Auxiliary equipment**

Components or sub-assemblies mounted as part of the pump unit and necessary for the operation of the pump or pump unit, for example, seal flush system, lubrication system, cooling system, etc..

#### <sup>A1</sup> 3.2

##### **partly completed machinery/pump**

assembly of components which still needs a considerable number of additional components or at least one major component to fulfil its task

NOTE Subassemblies without any hydraulic component is not be classified as partly completed machinery. <sup>A1</sup>