SLOVENSKI STANDARD
SIST EN ISO 15783:2026

01-julij-2026

Centrifugalne črpalke brez tesnila (hermetične črpalke) - Razred II - Specifikacija (ISO 15783:2026)

Seal-less rotodynamic pumps - Class II - Specification (ISO 15783:2026)

Dichtungslose rotodynamische Pumpen - Klasse II - Spezifikation (ISO 15783:2026)

Pompes rotodynamiques sans dispositif d'étanchéité d'arbre Classe II - Spécifications (ISO 15783:2026)

Ta slovenski standard je istoveten z: **EN ISO 15783:2026**

ICS:

23.080	Črpalke	Pumps

SIST EN ISO 15783:2026 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 15783

May 2026

ICS 23.080

Supersedes EN ISO 15783:2003, EN ISO 15783:2003/A1:2008

English Version

Seal-less rotodynamic pumps - Class II - Specification (ISO 15783:2026)

Pompes rotodynamiques sans dispositif d'étanchéité d'arbre - Classe II - Spécifications (ISO 15783:2026)

Wellendichtungslose Kreiselpumpen - Klasse II - Technische Anforderungen (ISO 15783:2026)

This European Standard was approved by CEN on 3 May 2026.

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

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Ref. No. EN ISO 15783:2026 E

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European foreword

This document (EN ISO 15783:2026) has been prepared by Technical Committee ISO/TC 115 "Pumps" in collaboration with 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of an identical text or by endorsement, at the latest by November 2026, and conflicting national standards shall be withdrawn at the latest by November 2026.

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

This document supersedes EN ISO 15783:2003.

Any feedback and questions on this document should be directed to the users’ national standards body/national committee. A complete listing of these bodies can be found on the CEN website.

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Endorsement notice

The text of ISO 15783:2026 has been approved by CEN as EN ISO 15783:2026 without any modification.

International Standard

ISO 15783

Seal-less rotodynamic pumps — Class II — Specification

Pompes rotodynamiques sans dispositif d'étanchéité d'arbre — Classe II — Spécifications

Second edition
2026-05

Reference number
ISO 15783:2026(en)

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Published in Switzerland

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 115, *Pumps,* Subcommittee SC 1, *Dimensions and technical specifications of pumps*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 197, *Pumps*,in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 15783:2002), which has been technically revised. It also incorporates the Amendment ISO 15783:2002/Amd.1:2008.

The main changes are as follows:

— Normative references were extensively revised. Some references have been updated.

— Liquid properties were added in 4.2.1.

— Definition of rigid support added in Note of Table 1.

— Annex F was extensively revised. Hastelloy alloy was also added to Table F.1.

— 4.13.1 and 4.13.3 were added to Annex G;

— Bibliography was extensively revised.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

This document is the first of a series dealing with technical specifications for seal-less pumps; they correspond to two classes of technical specifications, Classes I and II, of which Class I is the more severe requirements.

Where a decision may be required by the purchaser, or agreement is required between the purchaser and manufacturer/supplier, the relevant text is highlighted with • and is listed in Annex G.

Seal-less rotodynamic pumps — Class II — Specification

1 Scope

This document specifies the requirements for seal-less rotodynamic pumps that are driven with permanent magnet coupling (magnet drive pumps) or with canned motor, and which are mainly used in chemical processes, water treatment and petrochemical industries. Their use can be dictated by space, noise, environment or safety regulations.

Seal-less pumps are pumps where an inner rotor is completely contained in a pressure vessel holding the pumped fluid. The pressure vessel or primary containment device is sealed by static seals such as gaskets or O-rings.

Pumps normally conform to recognized standard specifications (e.g. ISO 5199, explosion protection, electromagnetic compatibility), except where special requirements are specified herein.

This document includes design features concerned with installation, maintenance and operational safety of the pumps, and defines those items to be agreed upon between the purchaser and manufacturer/supplier.

Where conformity to this document has been requested and calls for a specific design feature, alternative designs can be offered providing that they satisfy the intent of this document and they are described in detail. Pumps which do not conform with all requirements of this document can also be offered providing that the deviations are fully identified and described.

Whenever documents include contradictory requirements, they are applied in the following sequence of priority:

a) purchase order (or inquiry, if no order placed), see Annexes C and D;

b) data sheet (see Annex A) or technical sheet or specification;

c) this document;

d) other standards.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

ISO 76, *Rolling bearings — Static load ratings*

ISO 281, *Rolling bearings — Dynamic load ratings and rating life*

ISO 3744, *Acoustics — Determination of sound power levels and sound energy levels of noise sources using sound pressure — Engineering methods for an essentially free field over a reflecting plane*

ISO 3746, *Acoustics — Determination of sound power levels and sound energy levels of noise sources using sound pressure — Survey method using an enveloping measurement surface over a reflecting plane*

ISO 5199, *Technical specifications for centrifugal pumps — Class II*

ISO 7005-1, *Pipe flanges — Part 1: Steel flanges for industrial and general service piping systems*

ISO 7005-2, *Metallic flanges — Part 2: Cast iron flanges*

ISO 7005-3, *Metallic flanges — Part 3: Copper alloy and composite flanges*

ISO 9906, *Rotodynamic pumps — Hydraulic performance acceptance tests — Grades 1, 2 and 3*

ISO 25178-601, *Geometrical product specifications (GPS) — Surface texture: Areal — Part 601: Design and characteristics of contact (stylus) instruments*

IEC 60034 (all parts), *Rotating electrical machines*

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

3 Terms and definitions

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

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
magnetic drive pump
MDP
pump in which the shaft power of the drive is transferred to the impeller of the pump by means of a permanent magnetic field, which passes through a containment barrier (shell) to an inner rotor having permanent magnets or an induction device

3.2
canned motor pump
CMP
pump in which the stator of an electric motor is separated from the rotor by a sealed containment barrier (liner)

Note 1 to entry: The rotor runs in the liquid being pumped or in another liquid.

Note 2 to entry: The shaft power is transmitted by means of an electromagnetic field.

3.3
seal-less rotodynamic pump
pump design in which the impeller shaft also carries the rotor of either a canned induction motor or a synchronous or an asynchronous magnetic drive

Note 1 to entry: The design does not use a dynamic shaft seal as a primary containment device. Static seals are the means used for containing the fluid.

3.3.1
hydraulic end
end of the pump which transfers mechanical energy into the liquid being pumped

3.3.2
lubrication
flow necessary in a magnetic drive in the area between the inner magnet and the containment shell, or in a canned motor between the rotor and the sleeve, for dissipation of the heat due to inherent Eddy current losses in metallic containment shells and frictional heat generation from bearings, and for lubrication

Note 1 to entry: Internal pump bearings are lubricated and cooled by the pumped fluid or an external, compatible flushing fluid.

3.3.3
close coupled
<MDP> coupling arrangement in which the motor is supplied with a flange adapter which mounts directly onto the casing or body of the pump and in which the outer magnet ring is mounted onto the motor shaft

3.3.4
air gap
<MDP> radial distance between the inner diameter (ID) of the outer magnet assembly and the outer diameter (OD) of the containment shell

3.4
break-out torque
torque load applied to the drive shaft with the rotor locked at the point at which magnetic decoupling occurs

3.5
magnetic coupling
device which transmits torque through the use of magnet(s) attached to the drive and driven shafts

3.6
inner magnet ring
rows of magnets operating within the containment shell, driven by the *outer magnet ring* (3.7)

Note 1 to entry: The inner magnet ring is mounted on the same rotating element as the pump impeller.

3.7
outer magnet ring
rows of permanent magnets securely fixed to a carrier, evenly spaced to provide a uniform magnetic field

Note 1 to entry: outer magnet ring, while rotating, transmits power through a containment shell, driving the inner magnet ring or torque ring.

3.8
Eddy currents
electrical currents generated in a conductive material when strong magnetic fields are rotated around it

3.8.1
Eddy current loss
power loss resulting from *Eddy currents* (3.8)

Note 1 to entry: The energy in these Eddy currents is normally dissipated as heat due to the electrical resistance of the material.

3.8.2
decouple
failure of a synchronous *magnetic coupling* (3.5) to rotate synchronously, or the stall condition of an eddy current drive

3.9
Containment

3.9.1
sheath
thin-walled hermetically sealed enclosure fitted to the inner rotor enclosing the *inner magnet ring* (3.6) (MDP) or rotor laminations (CMP)

Note 1 to entry: See Figures 1 and 2.