

SLOVENSKI STANDARD

SIST EN ISO 10440-1:2001

01-junij-2001

Petroleum and natural gas industries - Rotary-type positive displacement compressors - Part 1: Process compressors (oil-free) (ISO 10440-1:2000)

Petroleum and natural gas industries - Rotary-type positive displacement compressors - Part 1: Process compressors (oil-free) (ISO 10440-1:2000)

Erdöl- und Erdgasindustrie - Rotierende Verdränger- Kompressoren - Teil 1: Prozesskompressoren (ölfrei) (ISO 10440-1:2000)

Industries du pétrole et du gaz naturel - Compresseurs volumétriques de type rotatif - Partie 1: Compresseurs de procédé (sans huile) (ISO 10440-1:2000)

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Ta slovenski standard je istoveten z: EN ISO 10440-1:2000

ICS:

23.140	Kompresorji in pnevmatični stroji	Compressors and pneumatic machines
75.180.20	Predelovalna oprema	Processing equipment

SIST EN ISO 10440-1:2001

en

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN ISO 10440-1

December 2000

ICS 07.018.20

English version

Petroleum and natural gas industries - Rotary-type positive displacement compressors - Part 1: Process compressors (oil-free) (ISO 10440-1:2000)

Industries du pétrole et du gaz naturel - Compresseurs volumétriques de type rotatif - Partie 1: Compresseurs de procédé (sans huile) (ISO 10440-1:2000)

Erdöl- und Erdgasindustrie - Rotierende Verdränger-Kompressoren - Teil 1: Prozesskompressoren (ölfrei) (ISO 10440-1:2000)

This European Standard was approved by CEN on 1 December 2000.

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 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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

Management Centre: rue de Stassart, 36 B-1050 Brussels

CORRECTED 2003-10-01

Foreword

The text of the International Standard ISO 10440-1:2000 has been prepared by Technical Committee ISO/TC 118 "Compressors, pneumatic tools and pneumatic machines" in collaboration with Technical Committee CEN/TC 12 "Materials, equipment and offshore structures for petroleum and natural gas industries", 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 June 2001, and conflicting national standards shall be withdrawn at the latest by June 2001.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Endorsement notice

The text of the International Standard ISO 10440-1:2000 was approved by CEN as a European Standard without any modification.

NOTE: Normative references to International Standards are listed in annex ZA (normative).

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Annex ZA
(normative)**Normative references to international publications
with their relevant European publications**

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).

NOTE Where an International Publication has been modified by common modifications, indicated by (mod.), the relevant EN/HD applies.

Publication	Year	Title	EN	Year
ISO 10441	1999	Petroleum and natural gas industries - Flexible couplings for mechanical power transmission - Special purpose applications	ISO 10441	1999
ISO 13706	1998	Petroleum and natural gas industries - Air-cooled heat exchangers	EN ISO 13706	2000

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INTERNATIONAL STANDARD

ISO
10440-1

First edition
2000-12-01

Petroleum and natural gas industries — Rotary-type positive-displacement compressors —

Part 1: Process compressors (oil-free)

iTeh STANDARD PREVIEW
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*Industries du pétrole et du gaz naturel — Compresseurs volumétriques de
type rotatif —*

Partie 1: Compresseurs de procédé (sans huile)

SIST EN ISO 10440-1:2001

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Reference number
ISO 10440-1:2000(E)

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Printed in Switzerland

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ISO 10440-1:2000(E)

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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

International Standard ISO 10440-1 was prepared by Technical Committee ISO/TC 118, Compressors, pneumatic tools and pneumatic machines, and Technical Committee ISO/TC 67, *Materials, equipment and offshore structures for petroleum and natural gas industries*, Subcommittee SC 6, *Processing equipment and systems*.

ISO 10440 consists of the following parts, under the general title *Petroleum and natural gas industries — Rotary-type positive-displacement compressors*: **(standards.iteh.ai)**

- *Part 1: Process compressors (oil-free)* [SIST EN ISO 10440-1:2001](https://standards.iteh.ai/catalog/standards/sist/bae8077a-5c4c-4c2f-b2fe-713274fcc635/sist-en-iso-10440-1-2001)
- *Part 2: Packaged air compressors (oil-free)* <https://standards.iteh.ai/catalog/standards/sist/bae8077a-5c4c-4c2f-b2fe-713274fcc635/sist-en-iso-10440-1-2001>

Annex A forms a normative part of this part of ISO 10440.

Introduction

This part of ISO 10440 is based on the 2nd edition of API 619. This part of ISO 10440 is not intended to obviate the need for sound engineering judgement as to when and where this standard should be utilized, and users should be aware that further or differing requirements may be needed for individual applications.

This part of ISO 10440 is not intended to inhibit a vendor from offering, or the purchaser from accepting, alternative equipment or engineering solutions for the individual application. This may be particularly applicable where there is innovative or developing technology. Where an alternative is offered, the vendor should identify any variations from this part of ISO 10440 and provide details.

Standards referenced herein may be replaced by other international or national standards that can be shown to meet or exceed the requirements of the referenced standards.

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Petroleum and natural gas industries — Rotary-type positive-displacement compressors —

Part 1: Process compressors (oil-free)

1 Scope

This part of ISO 10440 specifies requirements and gives recommendations for helical, spiral and straight lobe rotary compressors used for vacuum or pressure, or both, for use in the petroleum and natural gas industries. This part of ISO 10440 is applicable to compressors that are in continuous duty and are unspared. This part of ISO 10440 does not apply to standard air compressors, liquid ring compressors, vane-type compressors, or compressors in oxygen-bearing gas service using flammable liquid for injection or flooding.

NOTE A bullet (●) at the beginning of a paragraph indicates that either a decision is required or further information is to be provided by the purchaser. This information should be indicated on the data sheets (see annex A), otherwise it should be stated in the quotation request or in the order.

2 Normative references

[SIST EN ISO 10440-1:2001](https://standards.iteh.ai/catalog/standards/sist/bae8077a-5c4c-4c2f-b2fe-7d32746c935f/iso-10440-1:2000)

[https://standards.iteh.ai/catalog/standards/sist/bae8077a-5c4c-4c2f-b2fe-](https://standards.iteh.ai/catalog/standards/sist/bae8077a-5c4c-4c2f-b2fe-7d32746c935f/iso-10440-1:2000)

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 10440. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 10440 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 7-1, *Pipe threads where pressure-tight joints are made on the threads — Part 1: Dimensions, tolerances and designation.*

ISO 262, *ISO general-purpose metric screw threads — Selected sizes for screws, bolts and nuts.*

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

ISO 1217, *Displacement compressors — Acceptance tests.*

ISO 1328-1:1995, *Cylindrical gears — ISO system of accuracy — Part 1: Definitions and allowable values of deviations relevant to corresponding flanks of gear teeth.*

ISO 1940-1:1986, *Mechanical vibration — Balance quality requirements of rigid rotors — Part 1: Determination of permissible residual unbalance.*

ISO 5167-1, *Measurement of fluid flow by means of pressure differential devices — Part 1: Orifice plates, nozzles and Venturi tubes inserted in circular cross-section conduits running full.*

ISO 7005-1, *Metallic flanges — Part 1: Steel flanges.*

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ISO 9329-2, *Seamless steel tubes for pressure purposes — Technical delivery conditions — Part 2: Unalloyed and alloyed steels with specified elevated temperature properties.*

ISO 9329-4, *Seamless steel tubes for pressure purposes — Technical delivery conditions — Part 4: Austenitic stainless steels.*

ISO 10441, *Petroleum and natural gas industries — Flexible couplings for mechanical power transmission — Special purpose applications.*

ISO 10816-1, *Mechanical vibration — Evaluation of machine vibration by measurements on non-rotating parts — Part 1: General guidelines.*

ISO 10816-3, *Mechanical vibration — Evaluation of machine vibration by measurements on non-rotating parts — Part 3: Industrial machines with nominal power above 15 kW and nominal speeds between 120 r/min and 15 000 r/min when measured in situ.*

ISO 13706, *Petroleum and natural gas industry — Air-cooled heat exchangers.*

EFC 17, *Corrosion resistant alloys for oil and gas production: guidance on general requirements and test methods for H₂S service* (ISBN 1 86125 001 0 P).¹⁾

ASTM E 125, *Reference photographs for magnetic particle indications on ferrous castings.*

ASTM E 709, *Standard guide for magnetic particle examination.*

ANSI/API 614, *Lubrication, shaft-sealing, and control-oil systems for special-purpose application.*

ANSI/API 670, *Vibration, axial-position, and bearing-temperature monitoring systems.*

NACE MR0175, *Sulfide stress cracking resistant metallic materials for oilfield equipment.*

NACE TM0177, *Standard test method for laboratory testing of metals for resistance to sulfide stress cracking and stress corrosion cracking in H₂S environments.*

NACE TM0198, *Slow strain rate test method for screening corrosion resistant alloys (CRAs) for stress corrosion cracking in sour oilfield service.*

NEMA SM23, *Steam turbines for mechanical drive service.*

3 Terms and definitions

For the purposes of this part of ISO 10440, the following terms and definitions apply.

3.1

axially [horizontally] split

⟨casing joints⟩ parallel to the shaft centreline

3.2

maximum allowable differential pressure

highest differential pressure that can be permitted in the casing under the most severe operating conditions of minimum suction pressure and discharge pressure equal to the relief valve setting

3.3

maximum allowable discharge temperature

maximum continuous discharge temperature for which the manufacturer has designed the equipment

1) Issued by: European Federation of Corrosion, The Institute of Materials, 1 Carlton House Terrace, London SW1Y 5DB, GB.

3.4**maximum allowable speed**

highest speed of the power input rotor at which the manufacturer's design will permit continuous operation

NOTE It is expressed in revolutions per minute.

3.5**maximum allowable working pressure**

maximum continuous pressure for which the manufacturer has designed the equipment (or any part to which the term is referred) when handling the specified fluid at the specified temperature

3.6**maximum sealing pressure**

highest pressure expected at the seals during any specified static or operating conditions and during startup or shutdown

3.7**minimum allowable speed**

lowest speed of the power input rotor at which the manufacturer's design will permit continuous operation for the lowest rated conditions

NOTE It is expressed in revolutions per minute.

3.8**pressure casing**

composite of all stationary pressure-containing parts of the unit, including all nozzles and other attached parts

3.9**pressure design code**

recognized pressure vessel standard specified or agreed by the purchaser

EXAMPLE ASME VIII. <https://standards.iteh.ai/catalog/standards/sist/bae8077a-5c4c-4c2f-b2fe-713274fcc635/sist-en-iso-10440-1-2001>

3.10**radially [vertically] split**

⟨casing joints⟩ transverse to the shaft centreline

3.11**rated capacity**

capacity, in cubic metres per hour, required by the rated conditions

3.12**rated conditions**

specified conditions at which operation is expected and/or optimum efficiency is expected

3.13**rated discharge pressure**

highest pressure required to meet the conditions the purchaser specifies for the intended service

3.14**rated discharge temperature**

predicted actual operating temperature resulting from rated conditions

3.15**rated power**

maximum power the compressor and any shaft-driven appurtenances require for any of the rated conditions, including the effect of any equipment (such as pulsation suppression devices, process piping, intercoolers, aftercoolers, and separators) furnished by the compressor vendor