

# SLOVENSKI STANDARD

## SIST EN ISO 10439-2:2015

01-maj-2015

Nadomešča:  
SIST EN ISO 10439:2004

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### Petrokemična industrija ter industrija za predelavo nafte in zemeljskega plina - Aksialni, radialni in ekspanzijski kompresorji - 2. del: Radialni in aksialni kompresorji brez vključenega pogona (ISO 10439-2:2015)

Petroleum, petrochemical and natural gas industries - Axial and centrifugal compressors  
and expander-compressors - Part 2: Non-integrally geared centrifugal and axial  
compressors (ISO 10439-2:2015)

Erdöl-, petrochemische und Erdgasindustrie - Axial- und Radialkompressoren und  
Expanderkompressoren für Sonderanwendungen zur Handhabung von Gas oder  
Prozessluft - Teil 2: Radial- und Axialkompressoren ohne integrierte Getriebeeinheit (ISO  
10439-2:2015)

Industries du pétrole, de la pétrochimie et du gaz naturel - Compresseurs axiaux et  
centrifuges et compresseurs-détenteurs - Partie 2: Compresseurs centrifuges et axiaux  
sans multiplicateur intégré (ISO 10439-2:2015)

**Ta slovenski standard je istoveten z: EN ISO 10439-2:2015**

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#### **ICS:**

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

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN ISO 10439-2**

February 2015

ICS 71.120.99; 75.180.20

Supersedes EN ISO 10439:2002

English Version

**Petroleum, petrochemical and natural gas industries - Axial and centrifugal compressors and expander-compressors - Part 2: Non-integrally geared centrifugal and axial compressors (ISO 10439-2:2015)**

Industries du pétrole, de la pétrochimie et du gaz naturel - Compresseurs axiaux et centrifuges et compresseurs-détenteurs - Partie 2: Compresseurs centrifuges et axiaux sans multiplicateur intégré (ISO 10439-2:2015)

Erdöl-, petrochemische und Erdgasindustrie - Axial- und Radialkompressoren und Expanderkompressoren - Teil 2: Radial- und Axialkompressoren ohne integrierte Getriebeeinheit (ISO 10439-2:2015)

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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.

[SIST EN ISO 10439-2:2015](https://standards.iteh.ai/SIST/EN/ISO/10439-2/2015)

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## Foreword

This document (EN ISO 10439-2:2015) has been prepared by Technical Committee ISO/TC 118 "Compressors and pneumatic tools, machines and equipment" in collaboration with Technical Committee CEN/TC 12 "Materials, equipment and offshore structures for petroleum, petrochemical 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 August 2015, and conflicting national standards shall be withdrawn at the latest by August 2015.

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INTERNATIONAL  
STANDARD

ISO  
10439-2

First edition  
2015-02-15

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**Petroleum, petrochemical and natural  
gas industries — Axial and centrifugal  
compressors and expander-  
compressors —**

Part 2:

**Non-integrally geared centrifugal and  
axial compressors  
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*Industries du pétrole, de la pétrochimie et du gaz naturel —*

*Compresseurs axiaux et centrifuges et compresseurs-détenteurs —*

*Partie 2: Compresseurs centrifuges et axiaux sans multiplicateur intégré*



Reference number  
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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](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT), see the following URL: [Foreword - Supplementary information](#)

The committee responsible for this document is ISO/TC 118, *Compressors and pneumatic tools, machines and equipment*, Subcommittee SC 1, *Process compressors*.

This first edition, together with ISO 10439-1, ISO 10439-3, and ISO 10439-4, cancels and replaces ISO 10439:2002.

ISO 10439 consists of the following parts, under the general title *Petroleum, petrochemical and natural gas industries — Axial and centrifugal compressors and expander-compressors*:

- *Part 1: General requirements*
- *Part 2: Non-integrally geared centrifugal and axial compressors*
- *Part 3: Integrally geared centrifugal compressors*
- *Part 4: Expander-compressors*

## ISO 10439-2:2015(E)

## Introduction

This International Standard is based on the 7th edition of the American Petroleum Institute standard API 617.

Further or differing requirements might be needed for individual applications. This International Standard is not intended to inhibit a supplier from offering, or the purchaser from accepting, alternative equipment or engineering solutions for the individual application. This can be particularly appropriate where there is innovative or developing technology. Where an alternative is offered, the supplier should identify any variations from this part of ISO 10439 and provide details.

An asterisk (\*) at the beginning of the paragraph of a clause or subclause indicates that either a decision is required or further information is to be provided by the purchaser. This information is indicated on data sheets or stated in the enquiry or purchase order (see examples in [Annex A](#) in this part of ISO 10439, ISO 10439-3:2015, Annex A, and ISO 10439-4:2015, Annex A).

This International Standard includes the following annexes:

- [Annex A](#): Datasheets;
- [Annex B](#): Vendor (Supplier) data and drawing requirements (VDDR);
- [Annex C](#): Centrifugal compressor nomenclature;
- [Annex D](#): Typical materials;
- [Annex E](#): Inspector's checklist;
- [Annex F](#): Nozzle forces and moments;
- [Annex G](#): Full load, full pressure, full speed testing;

[Annex A](#) forms a normative part of this part of ISO 10439. [Annex B](#) to [Annex G](#) are for information only.

In this International Standard, where practical, US Customary units are included in parentheses for information.

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# Petroleum, petrochemical and natural gas industries — Axial and centrifugal compressors and expander- compressors —

## Part 2:

## Non-integrally geared centrifugal and axial compressors

### 1 Scope

This part of ISO 10439 specifies minimum requirements and gives recommendations for axial compressors, single-shaft, and integrally geared process centrifugal compressors and expander-compressors for special purpose applications that handle gas or process air in the petroleum, petrochemical, and natural gas industries. This part of ISO 10439 specifies requirements for non-integrally geared centrifugal and axial compressors, in addition to the general requirements specified in ISO 10439-1. These machines do not have gears integral with their casing but can have external gears.

NOTE See ISO 10439-3 for integrally geared process compressors, or API 672 for packaged plant instrument air compressors.

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### 2 Normative references (standards.iteh.ai)

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.

ISO 10439-1:2015, *Petroleum, petrochemical and natural gas industries — Axial and centrifugal compressors and expander-compressors — Part 1: General requirements*

ISO 10438 (all parts), *Petroleum, petrochemical and natural gas industries — Lubrication, shaft-sealing and control-oil systems and auxiliaries*

ISO 5389, *Turbocompressors — Performance test code*

API 670, *Machinery protection systems*

ASME PTC 10-1997, *Performance test code on compressors and exhausters*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 10439-1 and the following apply.

NOTE Certain terms are depicted graphically in [Figures 1](#) to [3](#).

### 4 General

#### 4.1 Dimensions and units

The dimensional and unit requirements shall be in accordance with ISO 10439-1.

## ISO 10439-2:2015(E)

## 4.2 Statutory requirements

The statutory requirements shall be in accordance with ISO 10439-1.

## 4.3 Unit responsibility

The unit responsibilities shall be in accordance with ISO 10439-1.

## 4.4 Basic design

## 4.4.1 Performance

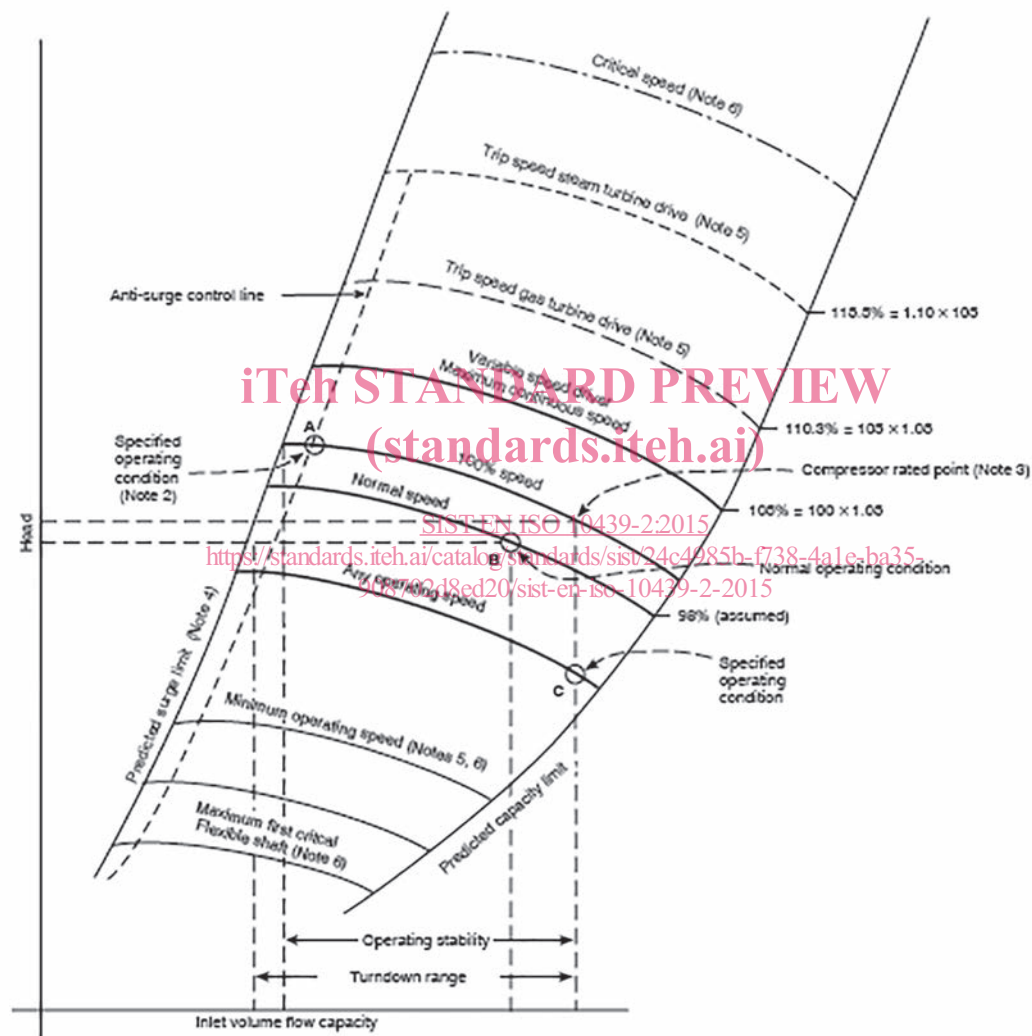


Figure 1 — Centrifugal compressor performance map — Illustration of terms

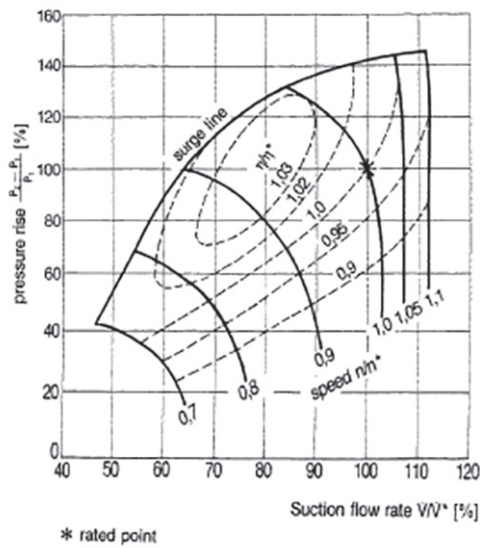


Figure 2 — Axial compressor performance map — variable speed

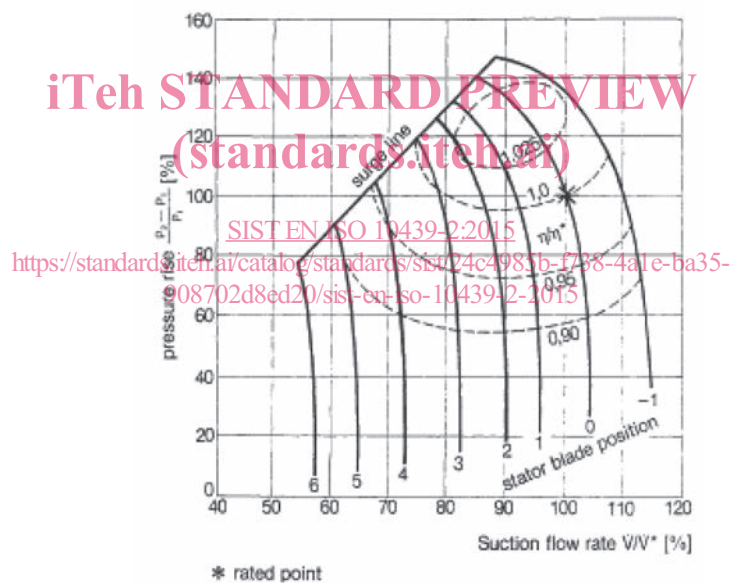


Figure 3 — Axial compressor performance map — variable stator vanes

NOTE [Figure 1](#) is a typical operating map for a centrifugal compressor. [Figures 2](#) and [3](#) are typical operating maps for an axial compressor.

**4.4.1.1** The sectional head-capacity characteristic curve shall rise continuously from the rated point to predicted surge. The compressor, without the use of a bypass, shall be suitable for continuous operation at any capacity at least 10 % greater than the predicted surge capacity shown in the proposal.

**4.4.1.2** The supplier shall provide an overload limit for axial compressors to avoid damaging blade stresses.

## 4.5 Materials

Materials shall be in accordance with ISO 10439-1:2015, 4.5.

NOTE Refer to [Annex D](#) for typical materials.