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**BS EN ISO 10439-1:2015**



**BSI Standards Publication**

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

Part 1: General requirements

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This British Standard is the UK implementation of EN ISO 10439-1:2015. Together with BS EN ISO 10439-2:2015, BS EN ISO 10439-3:2015 and BS EN ISO 10439-4:2015, it supersedes BS EN ISO 10439:2002, which will be withdrawn upon publication of all parts of the series.

The UK participation in its preparation was entrusted by Technical Committee MCE/8, Compressors, pneumatic tools, pneumatic machines and vacuum technology, to Panel MCE/8/-1, Compressors - Safety.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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## EUROPÄISCHE NORM

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

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This European Standard was approved by CEN on 8 November 2014.

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-CENELEC Management Centre or to any CEN member.

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

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## Foreword

This document (EN ISO 10439-1:2015) 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.

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 supersedes EN ISO 10439:2002.

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, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

### Endorsement notice

The text of ISO 10439-1:2015 has been approved by CEN as EN ISO 10439-1:2015 without any modification.

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## Introduction

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

Users of this International Standard should be aware that further or differing requirements may 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 may be particularly appropriate where there is innovative or developing technology. Where an alternative is offered, the supplier should identify any variations from this International Standard 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 should be indicated on data sheets or stated in the enquiry or purchase order (see examples in ISO 10439-2:2015, Annex A, ISO 10439-3:2015, Annex A, and ISO 10439-4:2015, Annex A).

This International Standard includes the following annexes:

- [Annex A](#): Procedure for the determination of residual unbalance;
- [Annex B](#): Typical shaft end seals;
- [Annex C](#): Requirements for lateral analysis reports;
- [Annex D](#): Requirements for torsional analysis reports;
- [Annex E](#): Magnetic bearings;
- [Annex F](#): Dry gas seal testing at manufacturer's shop;
- [Annex G](#): Guidelines for anti-surge systems;
- [Annex H](#): Typical bid tab template.

[Annex A](#), [Annex C](#), [Annex D](#), [Annex E](#), and [Annex F](#) form a normative part of this part of ISO 10439. [Annex B](#), [Annex G](#), and [Annex H](#) 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 1: General requirements

### 1 Scope

This International Standard 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 general requirements applicable to all such machines.

This International Standard does not apply to fans (these are covered by API 673) or blowers that develop less than 34 kPa (5 psi) pressure rise above atmospheric pressure. This International Standard also does not apply to packaged, integrally geared centrifugal plant, and instrument air compressors, which are covered by API 672. Hot gas expanders over 300 °C (570 °F) are not covered by this International Standard.

This part of ISO 10439 contains information pertinent to all equipment covered by the other parts of ISO 10439. It shall be used in conjunction with the following parts of ISO 10439, as applicable to the specific equipment covered:

- ISO 10439-2;
- ISO 10439-3;
- ISO 10439-4.

### 2 Normative references

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.

NOTE Typical documents submitted as a user inquiry or order are user specifications, industry specifications, (such as ISO and API specifications), data sheets, meeting notes, and supplemental agreements.

ISO 261, *ISO general purpose metric screw threads — General plan*

ISO 6708, *Pipework components — Definition and selection of DN (nominal size)*

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 8068, *Lubricants, industrial oils and related products (class L) — Family T (Turbines) — Specification for lubricating oils for turbines*

ISO 21940-32, *Mechanical vibration — Rotor balancing — Part 32: Shaft and fitment key convention*

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