

Packaged, Integrally Geared Centrifugal Air Compressors for Petroleum, Chemical, and Gas Industry Services

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Introduction

Users of this standard should be aware that further or differing requirements may be needed for individual applications. This standard 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 appropriate where there is innovative or developing technology. Where an alternative is offered, the vendor should identify any variations from this standard and provide details.

Annex A contains data sheets which purchasers are encouraged to use.

Annex B contains illustrations of typical mounting configurations.

Annex C specifies requirements for lateral analysis.

Annex D contains forms which may be used to indicate vendor drawing and data requirements.

Annex E shows the impact for inlet throttle control vs inlet guide vanes.

Annex F specifies requirements for determining residual unbalance.

Annex G contains an inspector's checklist.

Annex H contains illustrations of nomenclature for integrally geared centrifugal air compressors.

Annex I contains information relative to allowable nozzle loads from purchaser's piping.

This standard requires the purchaser to specify certain details and features. A bullet (•) at the beginning of a paragraph indicates that either a decision by, or further information from, the purchaser is required. Further information should be shown on the data sheets (see example in Annex A) or stated in the quotation request and purchase order.

In this standard, U.S. customary units (USC) are included in brackets for information.

Packaged, Integrally Geared Centrifugal Air Compressors for Petroleum, Chemical, and Gas Industry Services

1 Scope

1.1 This standard covers the minimum requirements for constant-speed, packaged, general purpose, integrally geared centrifugal air compressors, including their accessories for use in the petroleum, chemical, and gas industry services. This standard is not applicable to machines that develop a pressure rise of less than 0.35 bar (5.07 psi) above atmospheric pressure, which are classed as fans or blowers.

NOTE Special purpose and process applications, including Process Air Services, are covered by API 617.

- **1.2** Equipment covered by this standard is considered non-critical, usually spared and may be either of two classifications, basic or special duty. The purchaser shall specify which of the two classifications applies.

Basic packages are vendors' standard packages of proven design, and include minimal additional requirements.

Special duty packages are typically specified for installations that require higher availability, and include additional features and requirements.

1.3 Additional or overriding requirements applicable only to packages that have been specified as "Special Duty" are noted at the end of each section (see 6.12, 7.10, 8.5, D.2.5, and D.3.5.3).

2 Normative References

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) available at the agreed time, applies. Standards referenced in the documents are undated but refer to the specific editions referenced in this section.

ANSI/API Standard 541, Form-Wound Squirrel Cage Induction Motors—500 Horsepower and Larger

ANSI/API Standard 546, Brushless Synchronous Machines—500 kVA and Larger

API Standard 547, General-purpose Form-wound Squirrel Cage Induction Motors 250 Horsepower and Larger

API Standard 611, General-purpose Steam Turbines for Petroleum, Chemical, and Gas Industry Services

API Standard 614, Lubrication, Shaft-sealing, and Control-oil Systems and Auxiliaries for Petroleum, Chemical and Gas Industry Services

ANSI/API Standard 670, Machinery Protection Systems

AGMA 9011-1, Specification for High Speed Helical Gear Units

AGMA 9000-C90, Flexible Couplings—Potential Unbalance Classification

AGMA 9002-B04, Bores and Keyways for Flexible Couplings (Inch Series)

ASME B1.1², Unified Inch Screw Threads (UN and UNR Thread Form)

¹ American Gear Manufacturers Association, 1001 N. Fairfax Street, Suite 500, Alexandria, Virginia, 22314, www.agma.org.

² ASME International, 2 Park Avenue, New York, New York 10016-5990, www.asme.org.