

Positive Displacement Pumps—Rotary

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Introduction

This standard is based on the accumulated knowledge and experience of manufacturers and users of rotary positive displacement pumps. The objective of this standard is to provide a purchase specification to facilitate the procurement and manufacturer of rotary positive displacement pumps for use in petroleum, chemical, and gas industry services.

The primary purpose of this standard is to establish minimum requirements. This limitation in scope is one of charter as opposed to interest and concern.

Energy conservation is of concern and has become increasingly important in all aspects of equipment design, application, and operation. Thus innovative, energy-conserving approaches should be aggressively pursued by the manufacturer and the user during these steps. Alternative approaches that may result in improving energy utilization should be thoroughly investigated and brought forth. This is especially true of new equipment proposals, since the evaluation of purchase options will be based increasingly on total life costs as opposed to acquisition cost alone. Equipment manufacturers, in particular, are encouraged to suggest alternatives to those specified when such approaches achieve improved energy effectiveness and reduced total life costs without sacrifice of safety or reliability.

This standard requires the purchaser to specify certain details and features. Although it is recognized that the purchaser may desire to modify, delete, or amplify sections of this standard, it is strongly recommended that such modifications, deletions, and amplifications be made by supplementing this standard, rather than by rewriting or incorporating sections thereof into another standard.

API standards are published as an aid to procurement of standardized equipment and materials. These standards are not intended to inhibit purchasers or producers from purchasing or producing products made to other standards.

Positive Displacement Pumps—Rotary

1 Scope

This standard covers the minimum requirements for rotary positive displacement process pumps and pump units for use in the petroleum, petrochemical, and gas industry services. Controlled-volume pumps, hydraulically driven pumps and positive displacement reciprocating pumps are not included (see API 674 for positive displacement reciprocating pumps and API 675 for controlled-volume pumps).

For rotary positive displacement pumps in auxiliary services (e.g. lube oil systems), manufacturer's standard with demonstrated experience is acceptable.

- Annex A contains datasheets which purchasers are encouraged to use (informative).
- Annex B provides guidance for factors affecting twin screw efficiencies (informative).
- Annex C contains an inspector's checklist (informative).
- Annex D contains information on Contract Documents and Engineering Design Data (informative)
- Annex E contains forms which may be used to indicate vendor drawing and data requirements (VDDRs) (informative).
- Annex F gives guidance regarding net positive suction head (NPSH) vs net positive inlet pressure (NPIP) (informative).
- Annex G provides a typical P&ID for multiphase pump skids (informative).

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 datasheets (see example in Annex A) or stated in the quotation request and purchase order.

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) applies.

API Recommended Practice 500, *Recommended Practice for Classification of Locations for Electrical Installations at Petroleum Facilities Classified as Class I, Division 1, and Division 2*

API 500, *Classification of Locations for Electrical Installations in Petroleum Refineries*

API Recommended Practice 520, *Sizing, Selection, and Installation of Pressure-Relieving Devices in Refineries; Part I—Sizing and Selection*

API Recommended Practice 520, *Sizing, Selection, and Installation of Pressure-relieving Devices in Refineries; Part II—Installation*

API Standard 526, *Flanged Steel Pressure Relief Valves*

API Standard 541, *Form-wound Squirrel-cage Induction Motors—500 Horsepower and Larger*

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