

Positive Displacement Pumps—Rotary

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Contents

	Page
1 Scope.....	1
2 Normative References	1
3 Terms and Definitions	4
4 General	10
4.1 Unit Responsibility	10
4.3 Pump Designations.....	10
5.1 [•] Units of Measure.....	16
5.2 Statutory Requirements	16
5.3 Documentation Requirements	16
6 Basic Design	16
6.1 General	16
6.2 Selection and Rating of Pump Type.....	19
6.3 Pressure-containing and Pressure-retaining Parts	19
6.4 Casing Connections.....	20
6.5 Auxiliary Connections	21
6.6 Flanges	22
6.7 External Forces and Moments.....	23
6.8 Rotating Elements	25
6.9 Mechanical Shaft Seals	26
6.10 Bearings and Bearing Housings	27
6.11 Vibration Limits	28
6.12 Lubrication	29
6.13 Materials	30
6.14 Nameplates and Rotation Arrows	36
7 Accessories	36
7.1 Drivers	36
7.2 Couplings and Guards.....	38
7.3 Belt Drives	40
7.4 Baseplates.....	41
7.5 Pressure-limiting Valves (PLVs).....	43
7.6 Controls and Instrumentation.....	44
7.7 Auxiliary Piping	44
7.8 Pulsation and Vibration Control Requirements for Multiphase Skids.....	44
7.9 Special Tools	44
8 Inspection, Testing, and Preparation for Shipment.....	45
8.1 General	45
8.2 Inspection	45
8.3 Testing	47
8.4 Preparation for Shipment.....	51
9 Vendor's Data	52
9.1 General	52
Annex A (informative) Rotary Pump Datasheets	53

Contents

	Page
Annex B (informative) Factors Affecting Twin Screw Pump Wear Rate and Volumetric Efficiency	64
Annex C (informative) Inspector's Checklist.....	69
Annex D (informative) Contract Documents and Engineering Design Data.....	71
Annex E (informative) Rotary Pump Vendor Drawing and Data Requirements (VDDRs).....	76
Annex F (informative) Net Positive Suction Head (NPSH) vs Net Positive Inlet Pressure (NPIP)	88
Annex G (informative) Typical P&D for MPP Pumps.....	90
Bibliography.....	91

Figures

1	Sliding Vane Pump (Vane in Rotor)	11
2	Single Lobe Pump	11
3	Three Lobe Pump	12
4	External Gear Pump	12
5	Internal Gear Pump	12
6	Progressing/Progressive Cavity Pump (PCP)	13
7	Twin Screw Pump (with Timed Gears).....	13
8	Three-screw Pump (with Untimed Gears)	13
9	Rotary Pump Consolidated Range Chart (Typical Range in SI Units).....	14
10	Rotary Pump Consolidated Range Chart (Typical Range in USC Units).....	15

Tables

1	Pump Classification Type Identification	10
2	Nozzle Loadings	23
3	Welding Requirements	34
4	Material Inspection Standards	46
5	Test Tolerances	50
C.1	Inspector's Checklist.....	69

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 character, 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.

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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) and 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 900, *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*