

GP 10-02-02	Positive Displacement Pumps - Rotary	June 2001
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Positive Displacement Pumps - Rotary

GP 10-02-02

Scope

- 1) [I] This Global Practice (GP) refers to API STD 676-2, 2nd Edition, December 1994 (re-affirmed March 2000), which is part of this GP.
- 2) [I] All requirements specified in this GP are additions to those of API STD 676-2 unless specifically noted as exceptions. Paragraph numbers in this GP which do not appear in API STD 676-2 are new paragraphs.
- 3) [I] An asterisk (*) indicates that a decision by Purchaser is required or that additional information is furnished by Purchaser.

Note: A bullet (•) is shown in API STD 676-2 indicating that a Purchaser's decision is required.

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1. Required References

[I] This Section lists Practices and Standards that shall be used with this GP.

1.1. Global Practices–ExxonMobil Engineering Practices

GP 02-01-01	Plant Noise Design Criteria
GP 10-11-01	Sizing of Drivers and Transmissions for Compressors, Fans, and Pumps
GP 18-07-01	Welding Procedures
GP 18-10-01	Additional Requirements for Materials
GP 18-12-01	Positive Material Identification
GP 20-01-01	Inspection of Equipment and Materials

1.2. ExxonMobil Data Sheets

ExxonMobil Data Sheets	ExxonMobil Data Sheet Home Page
T100202C01	Positive Displacement Pumps - Rotary Pump (API 676-2nd) - Customary Units
T100202M01	Positive Displacement Pumps - Rotary Pump (API 676-2nd) - Metric Units

1.3. API–American Petroleum Institute

API STD 676-2	Positive Displacement Pumps - Rotary Errata; 06/15/1999 R(2000)
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1.4. ASME–American Society of Mechanical Engineers

ASME SEC VIII D1	BPVC Section VIII - Rules for Construction of Pressure Vessels - Division 1
ASME B16.11	Forged Fittings, Socket-Welding and Threaded
ASME B31.3	Process Piping

1.5. ASTM–American Society for Testing and Materials

ASTM A 395/A 395M	Standard Specification for Ferritic Ductile Iron Pressure-Retaining Castings for Use at Elevated Temperatures
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1.6. NACE–National Association of Corrosion Engineers

NACE MR0175	Sulfide Stress Cracking Resistant Metallic Materials for Oilfield Equipment Item No. 21304
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2. Additional Requirements

* [I] The following Practices shall be used with this GP as specified by Purchaser.

2.1. Global Practices–ExxonMobil Engineering Practices

GP 03-03-12	Oil Mist Lubrication Systems
GP 03-12-01	Valve Selection
GP 03-16-01	Flanged Joints, Gaskets, and Bolting
GP 10-01-03	Shaft Sealing Systems for Centrifugal and Rotary Pumps
GP 10-07-01	General Purpose Steam Turbines
GP 10-10-02	General Purpose Gear Units
GP 16-09-01	Low Voltage AC Motors Up to 200 HP (150 kW)
GP 16-09-02	AC Motors: Medium Voltage and Low Voltage Over 200 HP (150 kW)
GP 18-03-04	Pressure Casting Quality and Inspection
GP 18-04-01	Postweld Heat Treatment of Equipment Handling Alkaline Solutions

3. Revisions to API Standard 676

[I] All headings contained herein correspond to paragraph numbering within API STD 676-2 and reflect additions, substitutions, modifications, and deletions. All provisions not modified or deleted remain in force.

Modifications to Section 1: General

1.1. Addition: Scope

[I] Vendor Qualification: Rotary pumps shall be supplied by vendors qualified by experience to manufacture the units proposed. To qualify, a Vendor must have at least two pumps of comparable rating and design performing satisfactorily in a similar service.

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1.4.27. Addition: Definition of Terms

[I] Pressure casing is the composite of all stationary pressure containing parts of the pump, including all nozzles, seal glands, seal chambers, and other attached parts but excluding stationary and rotating members of mechanical seals.

Modifications to Section 2: Basic Design

2.1.4. Exception: General

[E], [I] Noise: Pump vendors shall furnish noise emission data for the quoted equipment with their proposal per [GP 02-01-01](#).

2.1.11. Addition: General

* [I] Pumps and auxiliaries shall be suitable for unsheltered outdoor installation in the climatic zone specified.

2.1.14. Addition: General

[E] Pumps and packing shall be consistent with local environmental and industrial hygiene requirements.

2.2.2. Addition: Pressure Casings

[S] Areas of the pump which are normally subjected to suction pressure shall be designed to permit, as a minimum, a hydrostatic test pressure equal to the casing maximum allowable outlet working pressure.

2.3.1. Exception: Casing Connections

* [S] Flanged suction connections shall be suitable for the maximum suction pressure and pumping temperature. The hydrostatic test pressure of suction flanges shall be equal to, or greater than, the pump casing hydrostatic test pressure associated with casing maximum allowable outlet working pressure.

2.3.3. Addition: Casing Connections

a. [S] Valved vent and drain connections shall be braced and supplied with threaded, non-seal welded round head plugs per ASME B16.11.

b. Bracing design shall be as shown in Figure 1:

1. Gusseting material for welded gussets shall be of the same nominal chemistry as the connected parts except that carbon steel may be used for gusseting P-1, P-3, P-4, and P-5 materials.
2. Connections shall be braced in two planes with gussets having a minimum thickness of $\frac{3}{16}$ in. (5 mm), minimum width $\frac{3}{4}$ in. (19 mm), as shown in Figure 1.
3. * Gusset attachment welds to a pressure boundary shall be postweld heat treated (PWHT) whenever: (1) PWHT is required for all welds, based on service conditions (see Paragraph 2.9.4.6); (2) PWHT is required in the alloy steel component to which the attachment is to be made, based on ASME B31.3 PWHT criteria for butt welds in alloy steel materials—whether or not butt welds are used in the assembly.
4. * Proposals to use clamped or bolted gusset designs shall be submitted to Purchaser for approval by the Owner's Engineer.

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