

Supplementary Specification to API Standard 677 General Purpose Gear Units

Revision history

VERSION	DATE	PURPOSE
1.0	July 2020	Issued for Use

Acknowledgements

This IOGP Specification was prepared by a Joint Industry Programme 33 Standardization of Equipment Specifications for Procurement organized by IOGP with support by the World Economic Forum (WEF).

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Foreword

This specification was prepared under Joint Industry Programme 33 (JIP33) "Standardization of Equipment Specifications for Procurement" organized by the International Oil & Gas Producers Association (IOGP) with the support from the World Economic Forum (WEF). Companies from the IOGP membership participated in developing this specification to leverage and improve industry level standardization globally in the oil and gas sector. The work has developed a minimized set of supplementary requirements for procurement, with life cycle cost in mind, resulting in a common and jointly agreed specification, building on recognized industry and international standards.

Recent trends in oil and gas projects have demonstrated substantial budget and schedule overruns. The Oil and Gas Community within the World Economic Forum (WEF) has implemented a Capital Project Complexity (CPC) initiative which seeks to drive a structural reduction in upstream project costs with a focus on industry-wide, non-competitive collaboration and standardization. The CPC vision is to standardize specifications for global procurement for equipment and packages. JIP33 provides the oil and gas sector with the opportunity to move from internally to externally focused standardization initiatives and provide step change benefits in the sector's capital projects performance.

This specification has been developed in consultation with a broad user and supplier base to realize benefits from standardization and achieve significant project and schedule cost reductions.

The JIP33 work groups performed their activities in accordance with IOGP's Competition Law Guidelines (November 2014).

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Introduction

The purpose of this specification is to define a minimum common set of requirements for the procurement of general purpose gear units in accordance with API Standard 677, Third Edition, November 2016, General-Purpose Gear Units for Petroleum, Chemical and Gas Industry Services for application in the petroleum and natural gas industries.

This JIP33 specification follows a common document structure comprising the four documents as shown below, which together with the purchase order define the overall technical specification for procurement.



JIP33 Specification for Procurement Documents Supplementary Technical Specification

This specification is to be applied in conjunction with the supporting data sheet, quality requirements specification (QRS) and information requirements specification (IRS) as follows.

IOGP S-712: Supplementary Specification to API Standard 677 General Purpose Gear Units

This specification defines the technical requirements for the supply of the equipment and is written as an overlay to API Standard 677, following the API Standard 677 clause structure. Clauses from API Standard 677 not amended by this specification apply as written to the extent applicable to the scope of supply

Modifications to API Standard 677 defined in this specification are identified as Add (add to clause or add new clause), Replace (part of or entire clause) or Delete.

IOGP S-712D: Data Sheet for General Purpose Gear Units

The data sheet defines application specific requirements, attributes and options specified by the purchaser for the supply of equipment to the technical specification. The data sheet may also include fields for supplier provided information attributes subject to purchaser's technical evaluation. Additional purchaser supplied documents may also be incorporated or referenced in the data sheet to define scope and technical requirements for enquiry and purchase of the equipment.

IOGP S-712Q: Quality Requirements for General Purpose Gear Units

The QRS defines quality management system requirements and the proposed extent of purchaser conformity assessment activities for the scope of supply. Purchaser conformity assessment activities are defined through the selection of one of four generic conformity assessment system (CAS) levels on the basis of evaluation of the associated service and supply chain risks. The applicable CAS level is specified by the purchaser in the data sheet or in the purchase order.

IOGP S-712L: Information Requirements for General Purpose Gear Units

The IRS defines the information requirements, including contents, format, timing and purpose to be provided by the supplier. It may also define specific conditions which invoke information requirements.

The terminology used within this specification and the supporting data sheet, QRS and IRS follows that of API Standard 677 and is in accordance with ISO/IEC Directives, Part 2 as appropriate.

The data sheet and IRS are published as editable documents for the purchaser to specify application specific requirements. The supplementary specification and QRS are fixed documents.

The order of precedence (highest authority listed first) of the documents shall be:

- a) regulatory requirements;
- b) contract documentation (e.g. purchase order);
- c) purchaser defined requirements (data sheet, QRS, IRS,);
- d) this specification;
- e) API Standard 677.

1 General

1.2 ALTERNATIVE DESIGNS

Add to clause

Alternative design proposals shall have equal or greater operating reliability based on proven experience.

Add to clause

Acceptance of alternative proposals shall be subject to the purchaser's approval.

2 Basic Design

2.1 GENERAL

2.1.1

Replace "AGMA 6010" with

AGMA 6013

2.1.4

Add to clause

The purchaser shall specify the driven equipment's operating envelope covering all operating points including rated operating point, minimum and maximum speed, and minimum and maximum torque.

2.1.7

Add to clause

The purchaser shall specify cooling medium design conditions and requirements for the design of heat exchangers.

2.5 CASINGS

2.5.1 Design Parameters

2.5.1.3

Add to clause

Shimming between the housing and bearing is not permitted.

2.5.1.4

Add to clause

The material of construction for internal piping shall be SS 316L minimum.

2.5.1.5

Add to clause

Internal lube oil system tubing and fitting components shall be 316 stainless steel minimum.

2.5.1.10

Add to clause

Purge oil mist shall not be applied.

Add new clause

2.5.1.14

Fasteners internal to the gearbox shall be positively locked or retained.

Note: The use of a thread-locking compound alone is not considered positive locking.

2.6 CASING CONNECTIONS

2.6.2 Lube-oil Connections

2.6.2.1

Add to clause

Oil supply and drain connections shall be flanged.

2.6.2.2

Replace second sentence with

Plugs shall be 316 stainless steel minimum.

2.7 GEAR ELEMENTS

2.7.2 Quality Assurance

2.7.2.3

Add to clause

The gear tooth accuracy shall be verified in accordance with ISO 1328-1.

2.7.3 Shafts

2.7.3.2

In first sentence, delete "If specified, or"

2.8 DYNAMICS

2.8.3 Balance

2.8.3.1

Replace definition of U_{max} with

U_{max} = residual unbalance, in g·mm (oz·in),

5 Vendor's Data

5.2 PROPOSALS

5.2.3 Technical Data

Add item n. to list

- n. A list of installations having gears similar to the proposed unit, operating under conditions of equal or more severe service.

APPENDIX A—GENERAL-PURPOSE GEAR DATA SHEETS

Replace Appendix A with IOGP S-712D

APPENDIX E—VENDOR DRAWING AND DATA REQUIREMENTS

Replace Appendix E with IOGP S-712L

APPENDIX F—REFERENCED SPECIFICATIONS

Add to appendix

AGMA 6013 Standard for Industrial Enclosed Gear Drives

Delete from appendix

AGMA 6010 Standard for Spur, Helical, Herringbone and Bevel Enclosed Drives

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