International Association of Oil & Gas Producers

SPECIFICATION
S-700

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Supplementary Specification to API 671 Special Purpose Couplings

JIP33
JOINT INDUSTRY PROGRAMME

Revision history

VERSION	DATE	PURPOSE
1.0	May 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).

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 special purpose couplings in accordance with API 671 4th Ed. 2010 – Special Purpose Couplings for Petroleum, Chemical and Gas Industry Services and co-publication (an identical adoption of ISO 10441 2nd Ed. 2007 – Petroleum, petrochemical and natural gas industries – Flexible couplings for mechanical power transmission – Special-purpose applications) for application in the petroleum and natural gas industries.

This 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-700: Supplementary Specification to API 671 Special Purpose Couplings

This specification defines the technical requirements for the supply of the equipment and is written as an overlay to API 671, following the API 671 clause structure. Clauses from API 671 not amended by this specification apply as written to the extent applicable to the scope of supply.

Modifications to API 671 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-700D: Data Sheet for Special Purpose Couplings

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-700Q: Quality Requirements for Special Purpose Couplings

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-700L: Information Requirements for Special Purpose Couplings

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 671 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 671.

1 Scope

Replace second sentence of second paragraph with

This supplementary specification applies to metallic flexible element type couplings only.

2 Normative references

Delete from clause

ISO 2491, *Thin parallel keys and their corresponding keyways (Dimensions in millimetres)*

Add to clause

API Standard 671:2010, *Special Purpose Couplings for Petroleum, Chemical and Gas Industry Services*

ANSI/AGMA 9002-C14, *Bores and Keyways for Flexible Couplings, Inch Series*

ANSI/AGMA 9112-B15, *Bores and Keyways for Flexible Couplings, Metric Series*

5 Coupling selection

5.2

Add to first paragraph

The design life calculations of the coupling and the coupling-to-shaft juncture shall take into account the frequency of starts per unit time.

Replace second paragraph with

Flexible metallic element special-purpose couplings shall have a service life of at least 20 years and at least five years of uninterrupted operation between maintenance intervals.

6 Coupling design

6.12

Delete "If specified"

Add to subclause

For motor driven units and generators, transient events shall include:

— phase to phase short circuit;

— phase to ground short circuit;

— motor breaker re-closure;

— faulty synchronization to the grid.

7 Coupling ratings

7.2

Replace second paragraph with

Within the IOM, the vendor shall advise the components to be inspected following the occurrence of torque greater than the peak torque rating.

8 Coupling requirements

8.1 Metallic flexible-element couplings

8.1.4

Replace second sentence with

The coupling and coupling guard shall be designed so that an external cooling system is not required.

8.1.6

Delete "Unless otherwise agreed,"

8.5 Integral flanges

8.5.2

Delete "Unless otherwise specified,"

8.6 Hubs

8.6.2 Tapered-bore hubs

Add new subclause

8.6.2.8

Hydraulically-fitted hubs shall be designed for safe installation and removal without risk of damage to the hub bore or shaft end.

NOTE Depending on coupling size and torque rating, these design features should, where applicable, incorporate:

— a machined internal scroll within the hub bore to assist with distribution of hydraulic oil over the length of the bore;

— O-ring seals;

— single piece backup rings to prevent O-ring extrusion by oil pressure.

8.6.3 Additional requirements for keyed hubs

8.6.3.2

Replace "ANSI/AGMA 9002 or ISO 2491" with

ANSI/AGMA 9002-C14 or ANSI/AGMA 9112-B15

8.12 Dynamics

8.12.2

Replace last sentence with

The vendor shall perform these calculations and state the assumptions used.

9 Balance

9.3 Balance criteria

9.3.11 Balance mandrels

9.3.11.1

In fourth paragraph, replace "should" with

shall

9.3.11.3

In second paragraph, replace "should" with

shall

9.4 Trim balance holes

Delete "If specified," from first paragraph

10 Materials

10.5

Delete second and third sentences

11 Accessories

Add new subclause

11.7

The hydraulic pump shall be rated for at least the hydraulic pressures required for installation and removal of hydraulically fitted hubs.

Add new subclause

11.8

The pressure rating of hoses and fittings shall be at least equal to the rating pressure of the hydraulic pump.

12 Manufacturing quality, inspection, testing and preparation for shipment

12.1 Manufacturing quality

12.1.2

Replace first sentence with

Repair of defects by welding or plating in the torque-transmitting path shall not be allowed.

12.3 Inspection

12.3.5

Delete last sentence

12.5 Preparation for shipment

Add new subclause

12.5.7

Markings shall be included in the coupling drawing.

13 Vendor data

13.2 Proposals and contract data

13.2.3 Data

13.2.3.2

Add item d) to list

d) inspection and test equipment calibration certificates;

Add item e) to list

e) declaration of conformance;

Add item f) to list

f) Ex certificates (when specified in the data sheet as operating in a hazardous area);

Add item g) to list

g) non-destructive examination procedures;

Add item h) to list

h) non-destructive testing operator qualifications.

13.2.3.6

Replace subclause with

The vendor shall submit a list of special tools included in the purchase order.

Annex H
(normative)
Coupling guards

H.4 Fully enclosed guards

H.4.7

Add to subclause after "connection for"

oil mist or

Bibliography

Delete from section

[1] ISO 1940-1:2003 Mechanical vibration — Balance quality requirements for rotors in a constant (rigid) state — Part 1: Specification and verification of balance tolerances

Add to section

[8] ISO 21940-11 Mechanical vibration — Rotor balancing — Part 11: Procedures and tolerances for rotors with rigid behaviour

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