International Association of Oil & Gas Producers

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Quality Requirements for Ball Valves

Revision history

VERSION	DATE	AMENDMENTS
3.0	January 2019	Issued for Publication
2.0	December 2016	For Information Only

Acknowledgements

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

Disclaimer

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Foreword

This specification package was prepared under a Joint Industry Project 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). Ten key oil and gas companies from the IOGP membership participated in developing this specification under JIP33 Phase 2 with the objective to leverage and improve industry level standardization for projects 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, based on the ten participating members’ company specifications, resulting in a common and jointly approved specification, and building on recognized industry and/or international standards.

The specification package has been developed in consultation with a broad user and supplier base to promote the opportunity to realize benefits from standardization and achieve significant cost reductions for upstream project costs. The JIP33 work groups performed their activities in accordance with IOGP’s Competition Law Guidelines (November 2014).

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 vision from the CPC industry is to standardize specifications for global procurement for equipment and packages, facilitating improved standardization of major projects across the globe. While individual oil and gas companies have been improving standardization within their own businesses, this has limited value potential and the industry lags behind other industries and has eroded value by creating bespoke components in projects. The specification package aims to significantly reduce this waste, decrease project costs and improve schedule through pre-competitive collaboration on standardization.

Following agreement of the relevant JIP33 work group and approval by the JIP33 Steering Committee, the IOGP Management Committee has agreed to the publication of this specification package by IOGP. Where adopted by the individual operating companies, the specification package aims to supersede existing company documentation for the purpose of industry-harmonized standardization.

This document was previously issued as Purchase Order Quality Requirements (POQR) for API 6D – Ball Valves. Phase 2 of the JIP33 project introduced this replacement Quality Requirements Specification (QRS). The revision numbering of this QRS follows on from the POQR.

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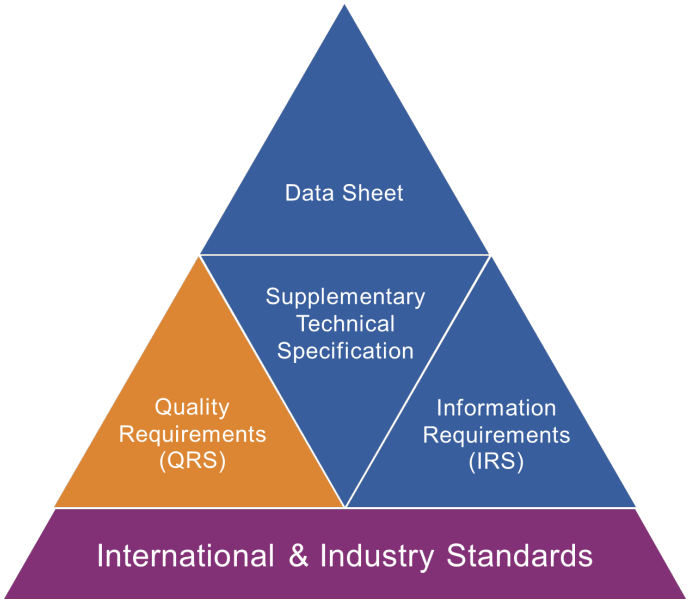
Introduction

The purpose of this quality requirements specification (QRS) is to define quality management requirements for the supply of ball valves in accordance with IOGP S-562 Supplementary Requirements to API Specification 6D Ball Valves for application in the petroleum and natural gas industries.

The QRS includes a conformity assessment system (CAS) which specifies standardized user interventions against quality management activities at four different levels. The applicable CAS level is specified by the user in the purchase order.

This QRS shall be used in conjunction with the supplementary requirements specification (IOGP S-562) and the information requirements specification (IOGP S-562L) which together comprise the full set of specification documents. The Introduction section in the supplementary requirements specification provides further information on the purpose of each of these documents and the order of precedence for their use. It should be noted that this specification package for ball valves does not include a data sheet.



JIP33 Specification for Procurement Documents
Quality Requirements Specification

1 Scope

To specify quality management requirements for the supply of ball valves to IOGP S-562 including:

a) manufacturer quality management system requirements;

b) purchaser conformity assessment (surveillance and inspection) activities;

c) traceability requirements;

d) evidence of conformance.

2 Normative references

For the purpose of this document, the documents referenced in IOGP S-562 and those listed below, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 9001:2015	Quality management systems - Requirements
API Specification Q1	Specification for Quality Management System Requirements for Manufacturing Organizations for the Petroleum and Natural Gas Industries
IOGP S-562	Supplementary Requirements to API Specification 6D Ball Valves

3 Terms and definitions

For the purpose of this document, the terms and definitions given in ISO 9000:2015 (normative to ISO 9001:2015) and the following shall apply.

3.1 Conformity assessment

Demonstration that requirements relating to a product, process, system, person or body are fulfilled.

NOTE 1 Conformity assessment (or assessment) includes but is not limited to inspection, verification and validation activities.

NOTE 2 Assessment activities may be undertaken at a manufacturer or sub-supplier's premises, virtually by video link, desktop sharing, etc. or by review of information formally submitted for acceptance or for information.

3.2 Conformity assessment system (CAS)

Systems providing different levels of assessment of manufacturer's control activities by the purchaser (second-party) or independent body (third-party) based on evaluation of the manufacturer's capability to conform to the product or service specification and obligatory requirements.

NOTE CAS A reflects the highest risk and associated extent of verification. CAS D is the lowest.

3.3 Conformity assessment - hold point (H)

Point in the chain of activities beyond which an activity shall not proceed without the approval of the purchaser / purchaser's representative.

3.4 Conformity assessment - witness point (W)

Point in the chain of activities that the manufacturer shall notify the purchaser / purchaser's representative before proceeding. The operation or process may proceed without witness if the purchaser does not attend after the agreed notice period.

3.5 Conformity assessment - surveillance (S)

Observation, monitoring or review by the purchaser / purchaser's representative of an activity, operation, process, product or associated information.

3.6 Conformity assessment - review (R)

Review of the manufacturer's information to verify conformance to requirements.

NOTE Review requirements are managed on a surveillance basis and as such do not impose schedule constraints, unless specified as hold points in Annex A or conditions nominated in the applicable IRS.

3.7 Critical

That deemed by the organization, product specification, or purchaser as mandatory, indispensable or essential, needed for a stated purpose or task, and requiring specific action.

3.8 Quality specification level (QSL)

Level defining the extent of control activities, typically including verification, inspection and testing to be undertaken by manufacturer to demonstrate conformance with requirements based on determination of service risk or obligations.

4 Symbols and abbreviations

For purposes of this document, the following symbols and abbreviations apply:

CAS Conformity assessment system

5 Quality requirements

5.1 Quality management system

The manufacturer shall demonstrate that the quality management arrangements established for the supply of products and services conform to ISO 9001, API Specification Q1 or equivalent quality management system standard agreed with the purchaser.

5.2 Conformance assessment

Quality plans and inspection and test plans developed as outputs to operational planning and control for the products and services shall define the specific controls to be implemented by the manufacturer and when applicable, sub-manufacturers, to ensure conformance with the specified requirements.

Controls shall address both internally and externally sourced processes products and services

Quality plans and inspection and test plans shall include provisions for:

a) Quality specification level (QSL) as specified in the purchase order and defined in S-562.

b) The purchaser's CAS as specified in the valve data sheet or purchase order. See Annex A.

The manufacturer's performance in meeting the requirements will be routinely assessed during execution of the scope and where appropriate, corrective action requested and conformity assessment activities increased or decreased consistent with criticality and risk.

NOTE 1 For industrial well proven solutions CAS level D is specified unless risk assessment indicates that a more stringent CAS-level is required.

NOTE 2 Irrespective of conformity assessment requirements defined by the purchaser, either, by reference to standard and specification requirements or in the scope, the manufacturer remains responsible for operational planning and control and demonstration of the conformity of products and services with the requirements. See ISO 9001:2015, 8.1 and 8.2.

6 Traceability

Material certification and traceability shall be maintained in accordance with Annex B.

7 Control of nonconforming products and services

Nonconformance with specified requirements identified by or to manufacturer prior to or during the delivery of the products and services shall be corrected such that the specified requirements are satisfied or the purchaser's acceptance of the nonconformance agreed in accordance with purchase order conditions. See ISO 9001:2015, 8.2.3, 8.2.4, 8.5.6 and 8.7.

8 Evidence (conformance records)

Plans, procedures, methods and resultant records shall be provided in accordance with the associated IRS.

Annex A Purchaser conformity assessment requirements

This annex defines four conformity assessment systems (CAS) or levels of purchaser assessment.

The manufacturer shall provide for the specified CAS when developing quality plans and inspection and test plans in accordance with Section 5.

	PURCHASER ASSESSMENT ACTIVITIES	CAS			
		A	B	C	D
1	**Operational planning and control activities**				
1.1	Quality plan (ISO 9001, API Q1, 8.1 and ISO 10005)	R	R		
1.2	Inspection and test plan (ISO 9001, API Q1, 8.1 and ISO 10005)	H	R	R	
1.3	Pre-Inspection/Pre-production planning review against compliance with purchase order	H	S	S	
1.4	deviations against purchase order and non-conformity process review	R	R	R	R
1.5	calibration controls and validity for pressure, measuring and inspection equipment. (API 6D, 8.2 and 13.1)	R			
1.6	Handling, protection, preservation, storage and shipping procedure (S-562, 12)	R	R	R	
2	**Design and development activities**				
2.1	Review of drawing against valve datasheet and purchase order	H	R	R	R
2.2	Design review (S-562, Annex N. 5.1 and 13.1)	R	R		
2.3	Fire type-test certification(S-562, 5.22)	R	R		
2.4	Fugitive Emission Type Testing certification(S-562, 9.9)	R	R		
2.5	Process Qualification/Validation (API 6D, 1.4 and ISO 9001, 8.5.1 f) including as applicable:				
2.5.1	Material specification review against purchase order (verifying requirements from S-563 is transferred correctly to the sub-manufacturers)	R	R		
2.5.2	Welding including weld repair (WPS, PQR, etc. (reference IRS) (S-562, 7.2)	H	R	R	
2.5.3	Heat Treatment and PWHT (API 6D, 6.10)	H	R		
2.5.4	NDE (S-562, 8.1, Annex G and J)	R	R	R	
2.5.5	Painting and Preservation specification review (S-562, 10)	R	R	R	
2.5.6	Elastomers and thermoplastics. (S-562, 5.27and 6.3)	R	R		
2.5.7	FAT and testing procedure (S-562, Annex J)	H	R	R	
3	**Control of external supply**				
3.1	Sub-supplier list for pressure containing and controlling parts	H	R	R	
3.2	Goods receiving inspection of all incoming materials for compliance to purchase order	S	S		
4	**Production and service provision**				
4.1	**Materials and component manufacturing**				

	PURCHASER ASSESSMENT ACTIVITIES	CAS			
		A	B	C	D
4.1.2	Weld repairs on castings or forgings (S-562, 7.5 and 7.6)	W	S		
4.1.3	Non-metallic materials (S-562, 5.27)	S	S		
4.1.4	NDE as per QSL (S-562, 8.1 and Annex J, ASME B16.34 and S-563, MDS and EDS	W	S		
4.1.5	Welding and welder qualifications (S-562, 7.2 and 7.6)	W	S		
4.1.6	Welding controls including production and NDE (S-562, Section 7, Annex J)	W	S		
4.1.7	Overlays and hard-facing (S-563, EDS)	W	S		
4.1.8	Painting: manufacturers standard or special painting specification (S-562, Section 10)	W	S		
4.2	**Valve parts inspection including**				
4.2.1	Material traceability and certification per MDS and EDS (S-563) and Annex B	R	R	R	R
4.2.2	Visual and dimensional check of pressure containing and pressure controlling parts according to machining drawings	S	S		
4.3	**Assembly inspection and testing**				
4.3.1	Verify assembly including bolting torque and sequence, threaded fittings, critical sealing elements, gearbox, lifting points SWL (API 6D,S-562)	S			
4.3.2	Testing for specified QSL (S-562, Table J.3) including valve draining, cleaned and thoroughly vacuum dried (API 6D, 9.7)	H	W	W	W
4.3.3	Gearbox lubrication (S-562, 5.18.6)	W	S	S	
5	**Release of product or service**				
5.1	**Verify conformance to purchase order including as applicable**				
5.1.1	Final inspection, including visual, weight, legible markings, dimensional, painting, preservation, packing, nameplates and labelling (S-562, 13.1)	W	W	S	
5.1.2	Manufacturers records book final documentation, certification and IOM (Installation, Operating and Maintenance Instructions Manual) (S-562, 13.2)	H	R		
5.2	Final equipment Release Note (S-562, 13.2)	H	H	H	
	H is hold point, W is witness point, S is surveillance, and R is review. NOTE Definitions for these terms are provided in Section 3.				

Annex B Material traceability and certification requirements

Item		Certificate type	Material traceability level	Additional requirements
Valves specified as QSL-1, QSL-2, QSL-3 and QSL-4	Metallic pressure containing or controlling parts	3.1 3.2 (QSL4)	I	
	Metallic non-pressure containing parts	2.2	II	
	Non-metallic parts	2.1	III	
Welded components including	Casting weld repairs Pup piece welds Lifting attachments	2.2 2.2 2.2	II II II	Weld maps to be retained to provide traceability of each weld to applicable WPS, Welder, consumable batch and NDE reports
Lifting Points	As per S-562, 5.19	2.1	II	

Explanatory notes:

Material Inspection Certificates shall be provided in accordance with ISO 10474 or EN 10204.

A. "2.1" Declaration of Compliance with the purchase order - A document in which the Manufacturer declares that the products supplied are in compliance with the requirements of the purchase order, without inclusion of any test results.

B. "2.2" Test Report - A document in which the Manufacturer declares that the products supplied are in compliance with the requirements of the purchase order, and in which test results are supplied based on non-specific inspection and testing.

C. "3.1" Inspection Certificate - A document with test results based on specific inspection and testing, issued by the Manufacturer and validated by the Manufacturer's authorized inspection representative independent of the manufacturing department.

D. "3.2" Inspection Certificate - A document prepared by both the Manufacturer's authorized inspection representative, independent of the manufacturing department, and the Company nominated representative or the inspector designated by the official regulations in which they declare that the products supplied are in compliance with the requirements of the order and for which test results are supplied.

   Additionally, Company has specified that all material product testing associated with "3.2" Inspection Certificates shall be performed in the presence of either a Company nominated representative or the inspector designated by the official regulations, and the resultant test report stamped as "Witnessed". Failure to adhere to this requirement may lead to rejection of all material(s) being qualified for production.

E. Level I - Full Traceability - Material is uniquely identified and its history tracked from manufacture through stockists (where applicable) to Manufacturer and to actual position on the equipment with specific location defined on a material placement record. (The traceability to a specific location only applies to skids / packaged equipment, not to bulks)

F. Level II - Type Traceability - Manufacturer maintains a system to identify material throughout manufacture, with traceability to a material certificate.

G. Level III - Compliance Traceability - Manufacturer maintains a system of traceability that enables a Declaration of Compliance to be issued by the Manufacturer.

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