International Association of Oil & Gas Producers

SPECIFICATION
S-611Q

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Quality Requirements for Steel and CRA Gate Valves

Revision history

VERSION	DATE	AMENDMENTS
1.0	May 2019	Issued for Publication

Acknowledgements

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Foreword

This specification 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.

This specification 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.

This specification aims to significantly reduce this waste, decrease project costs and improve schedule through pre-competitive collaboration on standardization. This document defines the supplementary requirements to recognized industry standards API Standard 600, Thirteenth Edition 2015, Steel Gate Valves – Flanged and Butt-welding Ends, Bolted Bonnets and API Standard 603, Eighth Edition 2013 – Flanged and Butt-welding Ends, which are indispensable for the application of this specification.

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

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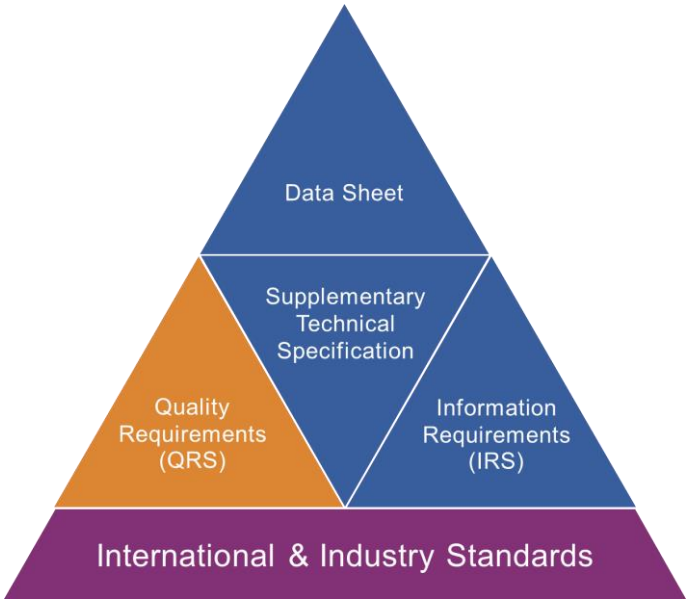
Introduction

The purpose of this quality requirements specification (QRS) is to define quality management requirements for the supply of gate valves in accordance with IOGP S-611 Supplementary Requirements to API 600 Steel Gate Valves and to API 603 CRA Gate 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 equipment datasheet.

This QRS shall be used in conjunction with the supplementary requirements specification (S-611) and the information requirements specification (S-611L) 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 gate 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 gate valves to IOGP S-611 Supplementary Requirements to API 600 Steel Gate Valves and to API 603 CRA Gate Valves 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 S-611 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 Organisations for the Petroleum and Natural Gas Industries
IOGP-S-611	Supplementary Requirements to API 600 Steel Gate Valves and to API 603 CRA Gate 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 supplier 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)

The 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)

The 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 specified in the associated 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 the 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/or 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/or inspection and test plans developed as outputs to operational planning and control for the products and/or 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/inspection and test plans shall include provisions for:

a) Quality specification level as specified in the purchase order and defined in S-611.

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/specification requirements or in the scope, the manufacturer remains responsible for operational planning and control and demonstration of the conformity of products and/or 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 the 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 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, 8.1, and ISO 10005)	R	R		
1.2	Inspection and test plan (ISO 9001, 8.1, and ISO 10005)	H	R	R	
1.3	Pre-Inspection / Pre-production meeting	H	S	S	
1.4	Review of deviations against purchase order and non-conformity process review	R	R	R	R
1.5	Review of calibration controls and validity for pressure, measuring and inspection equipment (S-611, H.2.9)	R			
1.6	Review of handling, protection, preservation, storage and shipping Procedure (S-611, Section 9)	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 ((API 600, API 603, and S-611, 5)	R	R		
2.3	Fire type-testing certification (ISO 10497, and S-611, 5.15)	R	R		
2.4	Fugitive emission type testing certification (API 624, ISO 15848-1, and S-611, Annex J)	R	R		
2.5	Process Qualification/Validation (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 hard facing, weld overlay and weld repair (WPS, PQR, etc. (reference IRS) (S-611, 7.3,7.4,7.5 and S-563 EDS)	H	R	R	
2.5.3	Heat Treatment and PWHT (S-563)	H	R		
2.5.4	NDE (S-611, Annex H)	R	R	R	
2.5.5	Painting and Preservation specification review (S-611, 9.1)	R	R	R	
2.5.6	FAT and testing procedure review (S-611, Annex H)	H	R	R	
3	**Control of external supply**				
3.1	Sub-suppliers for pressure containing and controlling parts	H	R	R	
3.2	Goods receiving inspection review of all incoming materials for compliance to purchase order	S	S		
4	**Production and service provision**				
4.1	Materials and component manufacturing				
4.1.1	Weld repairs on castings (S-611, 7.3)	W	S		
4.1.2	Weld repairs on welds (S-611, 7.4 and 7.5)	W	S		
4.1.3	Non-destructive examination as per QSL (S-611, 7.1 and Annex H, ASME B16.34, and S-563 MDS)	W	S		

	PURCHASER ASSESSMENT ACTIVITIES	CAS			
		A	B	C	D
4.1.4	Welding and welder qualifications (S-611, 6.3.1,6.3.2)	W	S		
4.1.5	Welding controls including production and NDE (S-611, 6.3)	W	S		
4.1.6	Overlays and hard-facing (S-563 EDS)	W	S		
4.1.7	Painting: manufacturers standard or special painting specification (S-611, 9.1)	W	S		
4.2	**Valve parts inspection including**				
4.2.1	Material traceability and certification review as per S-563 MDS/EDS 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 sequence including bolting torque	S			
4.3.2	Testing for specified QSL (S-611, Annex H) including valve draining and cleaning (S-611, 9)	H	W	W	W
4.3.3	Gear Lubrication (S-611, 5.11)	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-611, 9.5, 10.1)	W	W	S	
5.1.2	Manufacturers records book final documentation, certification and installation, operating and maintenance manual (IOM) (S-611, 10.2)	H	R		
5.2	Final equipment inspection release note (S-611, 10.2)	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 parts	3.1 3.2 (QSL4)	I	
	Metallic pressure controlling parts	3.1	I	
	Metallic non-pressure containing and non-pressure controlling parts	2.2	II	
	Non-metallic parts	2.2	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, 5.14	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, the 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 materials being qualified for production.

E. Level I - Full Traceability – Material is uniquely identified and its history tracked from manufacture through stockists (where applicable) to the 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 – The manufacturer maintains a system to identify material throughout manufacture, with traceability to a material certificate.

G. Level III - Compliance Traceability – The manufacturer maintains a system of traceability that enables a declaration of compliance to be issued by the manufacturer.

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