International Association of Oil & Gas Producers

SPECIFICATION
S-707Q

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Quality Requirements for Actuators for On-off Valves

JIP33
JOINT INDUSTRY PROGRAMME

Revision history

VERSION	DATE	PURPOSE
1.0	October 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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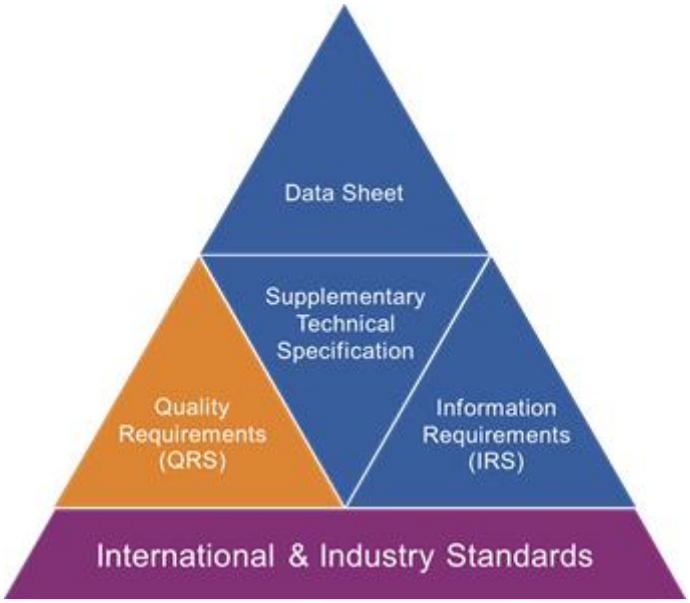
Introduction

The purpose of this quality requirements specification (QRS) is to define quality management requirements for the procurement of actuators for on-off valves in accordance with IOGP S-707, Supplementary Specification to ISO 12490 Actuators for On-off Valves for application in the petroleum and natural gas industries.

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

This QRS shall be used in conjunction with the supplementary requirements specification IOGP S-707, the information requirements specification IOGP S-707L and the equipment data sheet IOGP S-707D 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.



JIP33 Specification for Procurement Documents
Quality Requirements Specification

1 Scope

To specify quality management requirements for the supply of actuators for on-off valves to IOGP S-707 Supplementary Specification to ISO 12490 Actuators for On-off Valves including:

a) supplier quality management system requirements;

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

c) traceability requirements;

d) evidence of conformance;

e) factory acceptance.

2 Normative references

For the purpose of this document, the documents referenced in IOGP S-707 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.

API Specification Q1, *Specification for Quality Management System Requirements for Manufacturing Organizations for the Petroleum and Natural Gas Industry*

IOGP S-707 , *Supplementary Specification to ISO 12490 Actuators for On-off Valves*

ISO 9001, *Quality management systems - Requirements*

ISO 29001, *Petroleum, petrochemical and natural gas industries — Sector-specific quality management systems — Requirements for product and service supply organizations*

3 Terms and definitions

For the purpose of this document, the terms and definitions given in IOGP S-707 and ISO 9000 (normative to ISO 9001) 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 review, inspection, verification and validation activities.

NOTE 2 Assessment activities may be undertaken at a supplier/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 the supplier's control activities by the purchaser (second party) or independent body (third party) based on evaluation of the supplier'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 or purchaser's representative.

3.4 Conformity assessment - Witness point (W)

Point in the chain of activities that the supplier shall notify the purchaser or 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 or purchaser's representative of an activity, operation, process, product or associated information.

3.6 Conformity assessment - Review (R)

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

NOTE Information 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 as 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.

4 Symbols and abbreviations

For purposes of this document, the following abbreviations apply.

CAS conformity assessment system

IRS information requirements specification

QRS quality requirements specification (this document)

5 Quality requirements

5.1 Quality management system

The supplier shall demonstrate that the quality management arrangements established for the supply of products and services conform to ISO 9001, ISO 29001, API Specification Q1 or an equivalent quality management system standard.

5.2 Conformance assessment

5.2.1

Quality plans and inspection and test plans developed as outputs to operational planning and control shall define the specific controls to be implemented by the supplier to ensure conformance with the specified requirements.

5.2.2

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

5.2.3

Quality plans and inspection and test plans shall include provision for the purchaser conformity assessment system (CAS) as specified in the data sheet IOGP S-707D. See Annex A.

5.2.4

Supplier 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 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 or specification requirements or in the scope, the supplier remains responsible for operational planning and control and demonstration of the conformity of products and services with the requirements. See ISO 9001, 8.1 and 8.2.

6 Certification and 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 the supplier 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, 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
(normative)
Purchaser conformity assessment requirements

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

	PURCHASER ASSESSMENT ACTIVITIES	CAS			
		A	B	C	D
1	**Operational planning and control activities**				
1.1	Quality planning (ISO 9001, API Specification Q1, ISO 29001, 8.1 and ISO 10005) (IOGP S-707, 2.3)	H	H	-	-
1.2	Inspection and test planning (ISO 9001, API Specification Q1, ISO 29001, 8.1 and ISO 10005) (IOGP S-707, 2.3)	H	H	R	R
1.3	Pre-Inspection/Pre-production planning	H	H	W	-
2	**Design and development activities**				
2.1	Design and development				
2.1.1	Orientation, accessibility and maintainability (IOGP S-707, 7.13, 9.3.1.3)	H	H	H	R
2.1.2	Cross section drawings with bill of material (IOGP S-707, 10.1, Table 6, Table 7)	H	H	H	R
2.1.3	Calculations (torque, air receiver / accumulator calculations) (IOGP S-707, 6.3.1, 8.1.2, 8.2, 9.1, 9.2, 8.1.7.1, 8.1.7.2.1, 8.1.7.2.2, 8.1.7.3.1, 8.1.7.3.2, 8.1.7.3.3, 9.3.1.1, 9.3.5.2)	H	H	H	R
2.1.4	Schematic for pneumatic, hydraulic and electro-hydraulic actuators (IOGP S-707, 6.2.4.1, 7.1.4.10, 9.3.3.3, 9.3.4, 9.3.5.3, 9.3.5.4, 9.3.8.4, 9.3.8.5)	H	H	R	R
2.1.5	Material selection for components (IOGP S-707, 10.1, 10.1.a) - g), 10.2, 10.3.1, 10.3.3, 10.3.4, 10.4, 10.5, 10.6, 10.7, Table 6, Table 7)	H	H	-	-
2.2	Type test validation / verification				
2.2.1	Actuator and motor type test (IOGP S-707, 6.2.1, 7.0, 7.1.1.1.2, 7.1.1.1.3, 7.1.1.1.4, 7.1.2.3, 7.1.3.2)	H	R	-	-
2.2.2	Hazardous area classification verification for electric actuator, accessories such as solenoid valve, positioner, junction box, limit switches and any other electric/electronic instrument. (IOGP S-707, 7.0)	H	R	R	R
2.2.3	Failure data / SIL certificate verification (IOGP S-707, 7.17.1.2, 9.3.8.6)	H	R	R	-
2.2.4	IP verification for actuator and accessories (IOGP S-707, 7.0)	H	R	R	R
2.2.5	Fire proofing type test (IOGP S-707, 7.18)	H	R	R	R

2.3	Welding procedure qualification				
2.3.1	Procedure qualification for welding, including repair welding, of pressure-containing parts and attachment welding to pressure-containing parts to ISO 15607, ISO 15609 (all parts), ISO 15614-1 or ASME BPVC Section IX. (IOGP S-707, 11.3, 11.1, 11.4)	H	R	-	-
2.3.2	Procedure qualification for welding, including repair welding, of structural welds, including mounting kit to ANSI/AWS D1.1 /D1.1M or equivalent (IOGP S-707, 11.2)	H	R	-	-
2.3.3	Non-destructive examination personnel qualification to ISO 9712, EN 473 or ASNT SNT-TC-1A Level II (IOGP S-707, 12.3.1)	H	R	-	-
3	**Control of external supply**				
3.1	External supply scope, risk assessment and controls (ISO 9001, 8.4)	H	R	-	-
4	**Production and service provision**				
4.1	Assembly				
4.1.1	Welder performance qualification (WPQ) (IOGP S-707, 11.1, 11.2)	H	R	-	-
4.1.2	NDE for pressure-containing parts (IOGP S-707, 12.1.2, 12.4.2)	H	W	-	-
4.2	Materials verification				
4.2.1	Material traceability for pressure-containing parts, spring and bolting for pressure-containing parts as per ISO 10474 or EN 10204, 3.1 certificate (IOGP S-707, 10.1, 10.3.1, 10.3.2, 10.3.3, 10.4, 10.5, Table 6)	H	R	R	-
4.2.2	Material compliance for mechanically loaded parts, mounting kits and bolting for mechanically loaded parts/mounting kit as per ISO 10474 or EN 10204, 2.2 test report (IOGP S-707,10.5, 10.6)	H	R	R	-
4.2.3	Material traceability for pressure-containing parts and bolts exposed to sour service to ISO 15156/17945, all parts - ISO 10474 or EN 10204, 3.1 certificate (applicable for pipe line gas actuators) (IOGP S-707, 6.2.2, 10.7)	H	R	R	-
4.3	Actuator testing				
4.3.1	Control panel functional testing and bill of material check (one per type prior to mass production) (IOGP S-707, 13.6, 13.1)	H	W	W	-
4.3.2	Actuator testing (IOGP S-707, 13.2, 13.4, 13.6, 13.1, 13.3, 13.5.1, 13.5.2.1, 13.5.2.2, 13.5.3, 13.5.4.1, 13.5.4.2, A.1.1, A.1.2, Table 1, Table 2, Table 8)	H	W	W	W
4.3.3	Actuator coating verification (IOGP S-707, Clause 14, Table G.1, Table G.2)	H	W	R	-
5	**Release of actuator from actuator supplier or manufacturer's works**				
5.1	Verify conformance to purchase order including as applicable				
5.1.1	Preparation for handling, packing, preservation and storage for actuator only. Not applicable if purchase order for assembly is placed with valve manufacturer or integrator (IOGP S-707, Clause 16)	W	R	R	-
5.1.2	Final documentation review for actuator only as per IOGP S-707L. Not applicable if purchase order for assembly is placed with valve manufacturer or integrator (IOGP S-707, Clause 17)	H	R	R	R

5.1.3	Release equipment (actuator). Not applicable if purchase order for assembly is placed valve manufacturer or integrator	H	H	H	H
6	**Valve and actuator integration monitoring and factory acceptance test**				
6.1	Monitor assembly, internal testing with actuator, valve, actuator control equipment and accessories (IOGP S-707, Clause 15, 6.3.1, 13.7.1, 13.7.2, 6.4, 7.1.4.2, 7.1.4.4, 7.1.4.8, 7.11, 7.17.1.1, 7.17.2.1, 7.17.2.2, 7.17.2.4, 7.9.1, 9.3.9.2, Table 3, Table 4, Table 8, Table 9)	W	S	-	-
6.2	Functional and performance test, completeness against purchase order requirements, ITP and approved drawings. (IOGP S-707, Clause 15, 6.3.1, 13.7.1, 13.7.2, 6.4, 7.1.1.2.1, 7.1.1.2.2, 7.1.1.2.3, 7.1.1.2.4, 7.1.1.2.5, 7.1.1.2.6, 7.1.4.2, 7.1.4.4, 7.1.4.8, 7.11, 7.17.1.1, 7.17.2.1, 7.17.2.2, 7.17.2.4, 7.9.1, 9.3.9.2, Table 3, Table 4, Table 8, Table 9)	H	W	W	W
6.3	Hydraulic oil cleanliness (for actuator with control components) (IOGP S-707, 13.8.1, 13.8.2)	H	W	R	R
7	**Release of complete assembly from supplier**				
7.1	Verify conformance to purchase order including as applicable				
7.1.1	Preparation for handling, packing, preservation and storage (IOGP S-707, Clause 16)	W	R	R	-
7.1.2	Final documentation review as per IOGP S-707L (IOGP S-707, Clause 17)	H	R	R	R
7.1.3	Release equipment	H	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 Clause 3 of this document.

Annex B
(normative)
Certification traceability and requirements

Item		Certificate Type	Traceability level	Additional Requirements
Actuator	Actuator pressure-containing components, spring and bolts	3.1	Level II	
	Actuator mechanically loaded components, mounting kit and bolting for mechanically loaded parts/mounting kit.	2.2	Level III	
	Actuator pressure-containing parts and bolts exposed to sour service	3.1	Level II	

Explanatory notes

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

Traceability

A. **Level I - Full Traceability** - Material is uniquely identified and its history tracked from manufacture through stockists (where applicable) to the supplier 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).

B. **Level II - Type Traceability** - The supplier maintains a system to identify material throughout manufacture, with traceability to a material certificate.

C. **Level III - Compliance Traceability** - The supplier maintains a system of traceability that enables a declaration of compliance to be issued by the supplier.

Registered Office
City Tower
40 Basinghall Street
14th Floor
London EC2V 5DE
United Kingdom

T +44 (0)20 3763 9700
F +44 (0)20 3763 9701
reception@iogp.org

Brussels Office
Bd du Souverain,165
4th Floor
B-1160 Brussels
Belgium

T +32 (0)2 566 9150
F +32 (0)2 566 9159
reception@iogp.org

Houston Office
10777 Westheimer Road
Suite 1100
Houston, Texas 77042
United States

T +1 (713) 470 0315
reception@iogp.org

www.iogp.org