Flow-control Devices for Side-pocket Mandrels

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Introduction

This specification has been developed by users/purchasers and suppliers/manufacturers of subsurface flow-control devices used in side-pocket mandrels (hereafter called flow-control devices) intended for use in the worldwide petroleum and natural gas industry. This specification is intended to provide requirements and information to all parties who are involved in the specification, selection, manufacture, testing, and use of flow-control devices. Further, this specification addresses supplier/manufacturer requirements that set the minimum parameters with which suppliers/manufacturers shall comply to claim conformity with this specification.

This specification has been structured to support varying requirements in design validation, device functional testing, and quality levels. These variations allow the user/purchaser to select the grade for a specific application.

Design validation grades. There are four design validation grades for flow-control devices that provide the user/purchaser with a range of technical and performance requirements. This ensures that the devices supplied according to this specification meet the requirements and that the user/purchaser is able to compare these requirements with their preference or application and determine whether additional requirements will be placed on the supplier/manufacturer.

It is important that users of this specification be aware that requirements in addition to those outlined herein might be needed for individual applications. This specification is not intended to inhibit a supplier/manufacturer from offering, or the user/purchaser from accepting, alternative equipment or engineering solutions. This can be particularly applicable where there is innovative or developing technology. Where an alternative is offered, it is the responsibility of the supplier/manufacturer to identify any variations from this specification and to provide details.

Device functional testing grades. There are four device functional testing grades for flow-control devices that provide the user/purchaser with a range of choices for confirming that individual devices manufactured under this specification meet the design specifications.

Quality levels. There are two quality levels that provide the user/purchaser with the choice of requirements to meet specific preferences or applications. Additional quality upgrades can be specified by the user/purchaser as supplemental requirements.

In addition to this specification, API 19G1 provides requirements for side-pocket mandrels used in the petroleum and natural gas industry. API 19G3, provides requirements for running, pulling and kick-over tools, and latches used in conjunction with side-pocket mandrel flow-control devices.

Flow-control Devices for Side-pocket Mandrels

1 Scope

This specification provides requirements for subsurface flow-control devices used in side-pocket mandrels intended for use in the worldwide petroleum and natural gas industry. This specification addresses injection-pressure-operated (IPO), production-pressure-operated (PPO), pilot, orifice, and dummy flow-control devices. This includes requirements for specifying, selecting, designing, manufacturing, quality control, testing, and preparation for the shipping of flow-control devices. Additionally, it includes information regarding performance testing and calibration requirements.

The installation and retrieval of flow-control devices is outside the scope of this specification. Additionally, this specification is not applicable to flow-control devices used in center-set mandrels or with tubing-retrievable applications.

This specification does not include requirements for side-pocket mandrels, running, pulling, kick-over tools, or latches that may or may not be covered in other API documents. Reconditioning of used flow-control devices is outside the scope of this specification.

2 Normative References

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any addenda) applies.

API Q1, *Specification for Quality Management*

API 19G1, *Side-pocket Mandrels*

API 19G3, *Running Tools, Pulling Tools, and Kick-over Tools and Latches for Side-pocket Mandrels*

API 19G4, *Practices for Side-pocket Mandrels and Related Equipment*

ANSI/NACE MR0175 [1], *Petroleum and natural gas industries—Materials for use in H_2S-containing environments in oil and gas production—Parts 1, 2, and 3*

ANSI/ASQ Z1.4 [2], *Sampling Procedures and Tables for Inspection by Attributes*

ANSI/NCSL Z540.3 [3], *Requirements for the Calibration of Measuring and Test Equipment*

ASME *Boiler and Pressure Vessel Code* [4], Section II—Part C: *Specification for Welding Rods, Electrodes and Filler Metal*

ASME *Boiler and Pressure Vessel Code*, *Section IX: Welding and Brazing Qualification*

ASTM A370 [5], *Standard Test Methods and Definitions for Mechanical Testing of Steel Products*

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2 American Society for Quality, 600 North Plankinton Avenue, Milwaukee, Wisconsin 53203, asq.org.
3 NCSL International, 5766 Central Avenue, Suite 150, Boulder, Colorado 80301, www.ncsli.org.
4 American Society of Mechanical Engineers, Two Park Avenue, New York, New York 10016-5990, www.asme.org.
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