Threading and Gauging of Rotary Shouldered Connections

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Introduction

This standard is based on API Specification 7, *Specification for Rotary Drill Stem Elements*.

The function of this part of this standard is to define the connections design and the gauging required for rotary drill stem elements. It also defines the testing required to verify compliance with these requirements. As rotary drill stem elements are very mobile, moving from rig to rig, design control is an important element required to ensure the interchangeability and performance of product manufactured by different sources.

Users of this standard should be aware that further or differing requirements may be needed for individual applications. This standard is not intended to inhibit a vendor from offering, or the purchaser from accepting, alternative equipment or engineering solutions for the individual application. This may be particularly applicable where there is innovative or developing technology. Where an alternative is offered, the vendor should identify any variations from this standard and provide details.

Threading and Gauging of Rotary Shouldered Connections

1 Scope

1.1 Coverage

This standard specifies the following requirements on rotary shouldered connections for use in petroleum and natural gas industries: dimensional requirements on threads and thread gauges, stipulations on gauging practice and gauge specifications, as well as instruments and methods for inspection of thread connections. These connections are intended primarily for use in drill-string components.

Other supplementary specifications can be agreed between interested parties for special tolerance requirements, qualification, testing, inspection, and finishing. This standard applies both to newly manufactured connections and connections that are recut after service. It should be realized that recut connections are subject to additional inspection and testing—the user is referred to API 7G-2 for such information.

This standard is applicable to preferred rotary shouldered connection designs. These are traceable to an internationally supported system of gauges and calibration that can be described as number (NC) style, regular (REG) style, or full-hole (FH) style.

1.2 Application of the API Monogram

If the product (gauge) is manufactured at a facility licensed by API and, it is intended to be supplied bearing the API Monogram, the requirements of Annex A apply.

2 Normative References

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

API Specification 5DP, *Specification for Drill Pipe*

API Specification 7-1, *Specification for Rotary Drill Stem Elements*

ISO 1302 [1], *Geometrical Product Specifications (GPS)—Indication of surface texture in technical product documentation*

ISO 10424-1, *Petroleum and natural gas industries—Rotary drilling equipment—Part 1: Rotary drill stem elements*

ISO 11961, *Petroleum and natural gas industries—Steel drill pipe*

ISO/IEC [2] 17025, *General requirements for the competence of testing and calibration laboratories*

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[1] International Organization for Standardization, 1, ch. de la Voie-Creuse, Case postale 56, CH-1211 Geneva 20, Switzerland, www.iso.org.

[2] International Electrotechnical Commission, 3, rue de Varembé, P.O. Box 131, CH-1211 Geneva 20, Switzerland, www.iec.ch.

3 Terms, Definitions, Symbols, and Abbreviations

3.1 Terms and Definitions

For the purposes of this document, the following terms and definitions apply.

3.1.1
bevel diameter
Outside diameter of the contact face of the rotary shouldered connection.

3.1.2
blunt start
A thread with removal of the incomplete thread at the starting end.

NOTE May also be referred to as Higbee or other similar name.

3.1.3
box connection
box end
Threaded connection on oil country tubular goods with internal (female) threads.

3.1.4
box thread
Internal (female) threads of a rotary shouldered connection.

3.1.5
break-in
Procedure applied to newly manufactured threads to assure correct mating.

3.1.6
calibration system
Documented system of gauge calibration and control.

3.1.7
cold rolling
(cold working)
Plastic deformation of the surface of the connection at a temperature low enough to induce strain hardening.

3.1.8
first perfect thread
Thread furthest from the sealing face on a pin, or closest to the sealing face on a box, where both the crest and the root are fully formed.

3.1.9
full depth thread
Thread in which the thread root lies on the minor cone of an external thread or lies on the major cone of an internal thread.

3.1.10
full-hole (FH) style
Type and size of rotary shouldered connection, covered by this standard, having thread form of V-040 or V-050.

NOTE The number relates to a historical drill pipe size.