
**Petroleum and natural gas
industries — Aluminium alloy drill
pipe thread connection gauging**

*Industries du pétrole et du gaz naturel — Calibrage des raccords
filetés des tiges de forage en alliage d'aluminium*

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information.

The committee responsible for this document is ISO/TC 67, *Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries*.

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Introduction

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

This International Standard includes requirements of various natures. These are identified by the use of certain verbal forms:

- “shall” is used to indicate that a provision is mandatory;
- “should” is used to indicate that a provision is not mandatory, but recommended as good practice;
- “may” is used to indicate that a provision is optional.

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Petroleum and natural gas industries — Aluminium alloy drill pipe thread connection gauging

1 Scope

This International Standard specifies the technical delivery condition, manufacturing process, material requirements, configuration and dimensions, and verification and inspection procedures for aluminium alloy drill pipes manufactured in accordance with ISO 15546.

This International Standard also specifies the gauging procedure for taper buttress thread (right and left) and adjoining tapered stabilizing shoulders (bores) made of aluminium alloy drill pipes and related steel tool joints.

2 Normative references

The following documents, 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 15546, *Petroleum and natural gas industries — Aluminium alloy drill pipe*

3 Terms, definitions and symbols

3.1 Terms and definitions

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

3.1.1

complete set of gauges

set of screw and plain gauges of one standard size, associated among themselves under metrological characteristics

3.1.2

gauge plane

imaginary plane, perpendicular to the thread axis of rotary shouldered connections at which the pitch diameter at gauge point is measured

3.1.3

master gauge

gauge used for calibration of other gauges

3.1.4

pitch

axial distance between successive threads, which, in a single start thread, is equivalent to lead

3.1.5

plain plug gauge

gauge to control internal diameter over the basic plane of the internal taper thread or diameter in the design plane of plain tapered bore of the drill pipe tool joint

Note 1 to entry: See Reference.[1]

3.1.6

plain ring gauge

gauge to control external diameter over the basic plane of the external taper thread or diameter in the design plane of plain tapered shoulder of drill pipe

3.1.7

reference plane

imaginary plane, perpendicular to the thread axis of rotary shouldered connections used for design and inspection of the thread

3.1.8

screw plug gauge

gauge to control normalized effective and external diameters of the internal taper thread with buttress profile

3.1.9

screw ring gauge

gauge to control normalized effective and internal diameters of the external taper thread with buttress profile

3.1.10

stabilizing shoulder

taper surface adjoining drill pipe taper thread and used for increase of fatigue resistance of connection with drill pipe tool joint

Note 1 to entry: See Reference.^[1]

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3.1.11

working gauge

gauge used for gauging rotary shouldered connections

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3.2 Symbols

The following symbols are used in this International Standard.

- d_1 diameter at the plug gauge plane
- d_2 external thread diameter at the plug gauge reference plane
- d_3 internal thread diameter at the plug gauge reference plane
- d_4 diameter of the major cone base of a plain plug gauge
- d_5 diameter of the minor cone base of a plain plug gauge
- d_6 diameter of the bore of a screw ring gauge
- d_7 internal thread diameter at the gauge plane of a ring gauge
- d_8 external thread diameter at the gauge plane of a ring gauge
- L_1 length of a plain plug gauge for thread gauging
- L_2 length of a plain plug gauge for the taper bore gauging

4 Technical specifications on gauges

4.1 Types of gauges

4.1.1 Gauges of the following types should be manufactured:

- R: working screw plug gauge;
- G: working plain plug gauge for thread gauging;
- G-S: working plain plug gauge for gauging of drill pipe tool joint bore;
- R-P: working screw ring-gauge with perfect profile;
- R-N: working screw ring-gauge with not perfect profile;
- K-G-R: master plain plug gauge for a screw ring-gauge R-P;
- G: working plain ring gauge for thread gauging;
- K-G-G: master plain plug gauge for a plain ring gauge G;
- G-S: working plain ring gauge for the pipe shoulder gauging;
- K-G-G-S: working plain plug gauge for the gauging of ring gauge G-S.

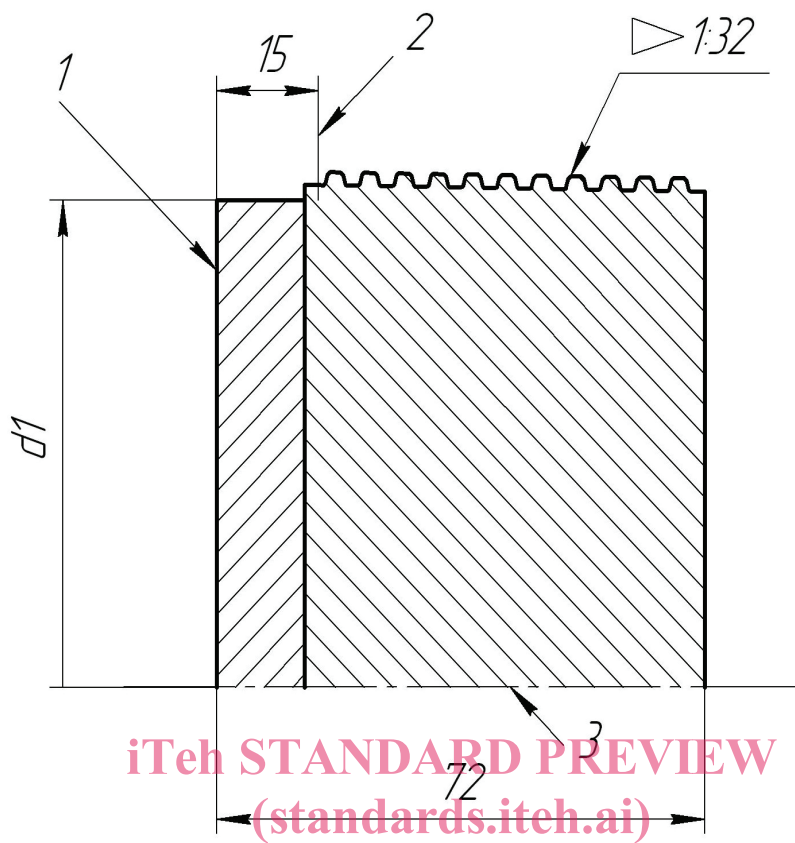
4.1.2 The scope of gauges is given in Annex A.

4.2 Thread profile, basic dimensions and tolerance

4.2.1 The basic dimensions of working and master gauges, thread profile and their limit deviation are specified in Figures 1 to 8 and in Tables 1 to 5.

NOTE For symbols, see 3.2.

Dimensions in millimetres

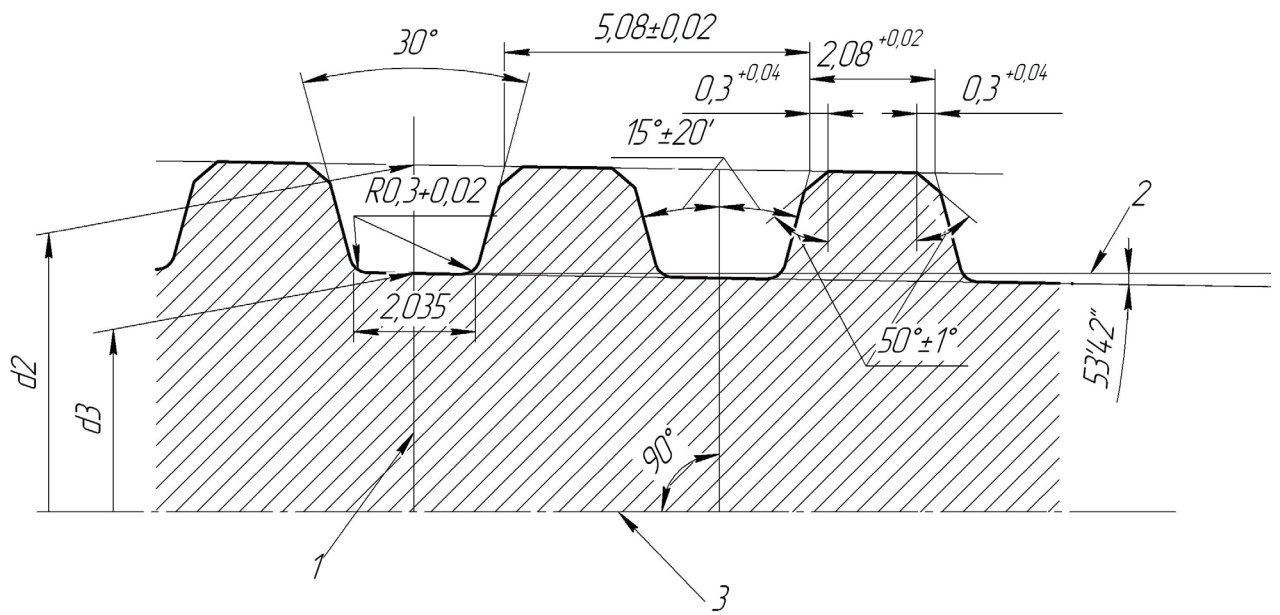


- Key**
- 1 gauge plane
 - 2 reference plane
 - 3 thread axis

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Figure 1 — Plug gauge characteristics (R type)

Dimensions in millimetres

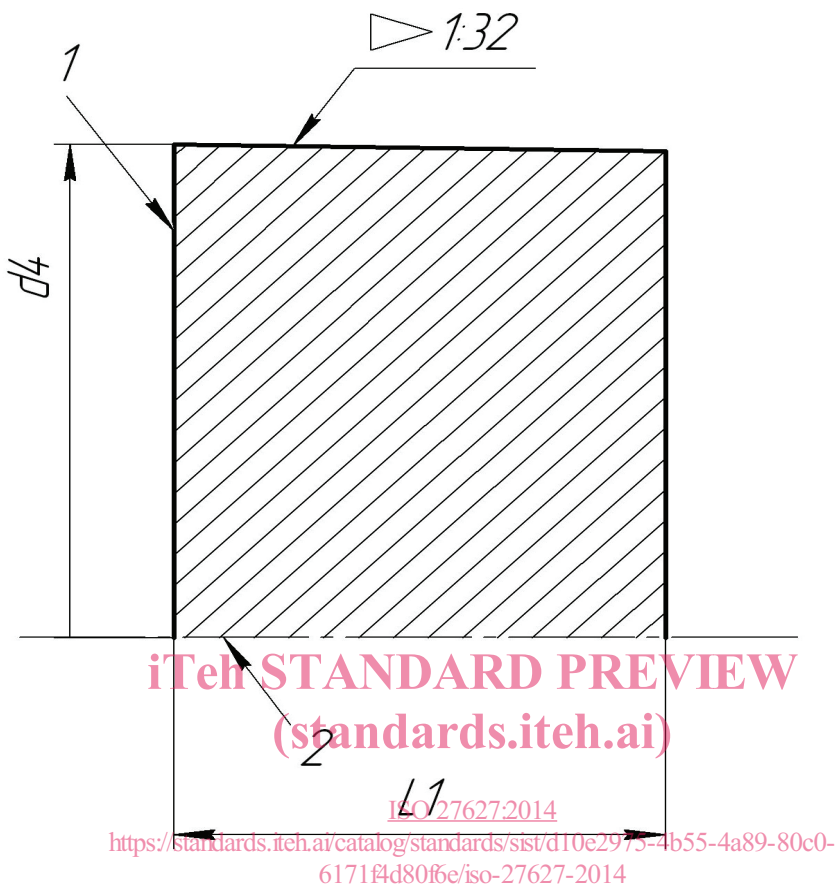


Key

- 1 reference plane
- 2 line parallel to the gauge thread axis
- 3 thread axis

NOTE Numbers with an asterisk (*) are reference dimensions.

Figure 2 — Thread form for a plug gauge (R type)
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- Key**
- 1 gauge plane
 - 2 axis gauge

Figure 3 — Gauges of G and G-S types