ISO/FDIS 2903-2~~:2025(en)~~

ISO/TC 1

Secretariat: SAC

Date: 2025-~~03-05~~04-08

ISO metric trapezoidal screw threads — Tolerances

Part 2: Limits of sizes

Filetages métriques trapézoïdaux ISO — Tolérances

Partie 2: ~~Dimensions limites~~Limites de tailles

FDIS stage

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Published in Switzerland

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Foreword

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This document was prepared by Technical Committee ISO/TC 1, *Screw threads*.

A list of all parts in the ISO 2903 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

ISO metric trapezoidal screw threads — Tolerances

Part 2: Limits of sizes

1 Scope

This document specifies the limits of sizes for major, pitch and minor diameters of ISO metric trapezoidal screw threads (Tr) conforming to ISO 2902 and having basic and design profiles in accordance with ISO 2901.

This document is applicable to the metric trapezoidal screw threads with the seven tolerance classes (7H, 8H, 9H, 7e, 8e, 8c and 9c) recommended in ISO 2903.

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 amendments) applies.

ISO 2903, *ISO metric trapezoidal screw threads — Tolerances*

ISO 5408, *Screw threads — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 5408 apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

4 Limits of sizes

4.1 General

The limits of sizes specified shall be derived from the fundamental deviations and tolerances specified in ISO 2903.

The limits of sizes for major, pitch and minor diameters of screw threads (Tr) have been calculated by the following formulae and rounded to the third decimal place.

Internal thread

Major diameter	$D_{4,\min} = D + 2a_c$
Pitch diameter	$D_{2,\min} = D_2 = D - 0{,}5P$

	$D_{2,max} = D_{2,min} + T_{D2}$
Minor diameter	$D_{1,min} = D_1 = D - P$
	$D_{1,max} = D_{1,min} + T_{D1}$

External thread

Major diameter	~~d_{max}~~$d_{max} = d$
	~~d_{min}~~$d_{min} = d - T_d$
Pitch diameter	$d_{2,max} = d_2 + es = d - 0{,}5P + es$
	$d_{2,min} = d_{2,max} - T_{d2}$
Minor diameter	$d_{3,max} = d_1 - 2a_c = d - P - 2a_c$
	$d_{3,min} = d_{3,max} - T_{d3}$

Where *es* is a negative value.

For the symbols and their definitions see ISO 2903.

The maximum major diameter of internal thread $D_{4,max}$ is not specified.

For the seven tolerance classes and nominal diameter ranges see Table 1~~Table 1.~~

Table 1 — Tr screw threads with the seven recommended tolerance classes

Screw thread	Tolerance class	Nominal diameter mm	Table number
Internal thread	7H	From 8 to 300	Table 2~~Table 2~~
	8H		Table 3~~Table 3~~
	9H	From 8 to 100	Table 4~~Table 4~~
External thread	7e	From 8 to 300	Table 5~~Table 5~~
	8e		Table 6~~Table 6~~
	8c		Table 7~~Table 7~~
	9c	From 8 to 100	Table 8~~Table 8~~

4.2 Internal threads

Limits of sizes for the internal threads with tolerance class 7H shall be as specified in Table 2~~Table 2.~~

Table 2 — Limits of sizes for the internal threads with tolerance class 7H

Dimensions in millimetres

Nominal diameter	Pitch	Major diameter	Pitch diameter		Minor diameter	
D	*P*	$D_{4,min}$	$D_{2,max}$	$D_{2,min}$	$D_{1,max}$	$D_{1,min}$
8	1,5	8,300	7,474	7,250	6,690	6,500
9	1,5	9,300	8,474	8,250	7,690	7,500
9	2	9,500	8,250	8,000	7,236	7,000
10	1,5	10,300	9,474	9,250	8,690	8,500