
**ISO metric trapezoidal screw
threads — Tolerances**

Filetages métriques trapézoïdaux ISO — Tolérances

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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 World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

The committee responsible for this document is ISO/TC 1, *Screw threads*.

This third edition cancels and replaces the second edition (ISO 2903:1993), Clauses 1, 13 and 14, and Table 7 of which have been technically revised (now [Clauses 1](#), [11](#) and [12](#), and [Table 5](#)).

ISO metric trapezoidal screw threads — Tolerances

1 Scope

This document specifies a tolerance system for metric trapezoidal screw threads in accordance with ISO 2902. The tolerances refer to the design profile in accordance with ISO 2901.

The tolerance system does not apply to trapezoidal screw threads with special requirements on axial displacement, for example, machine tool lead and feed screws and nuts.

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 965-1, *ISO general purpose metric screw threads — Tolerances — Part 1: Principles and basic data*

ISO 2901, *ISO metric trapezoidal screw threads — Basic and design profiles*

ISO 2902, *ISO metric trapezoidal screw threads — General plan*

3 Terms and definitions

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

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

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

4 Symbols

For the purposes of this document, the following symbols apply.

D_4	basic major diameter of internal thread
D	nominal diameter (internal thread)
D_2	basic pitch diameter of internal thread
D_1	basic minor diameter of internal thread
d	basic major diameter of external thread (nominal diameter)
d_2	basic pitch diameter of external thread
d_3	basic minor diameter of external thread
P	pitch
Ph	lead

N	designation for normal group of thread engagement
L	designation for long group of thread engagement
T	tolerance
$T_{D2}, T_{D1}, T_d, T_{d2}, T_{d3}$	tolerances for D_2, D_1, d, d_2 and d_3 , respectively (no tolerance for D_4)
El, ei	lower limit deviations
ES, es	upper limit deviations

5 Tolerance system

The system is based on the tolerance system for ISO general-purpose metric screw threads of ISO 965-1.

6 Tolerance positions

The following tolerance positions are standardized for the pitch diameters.

- For internal threads: H with zero fundamental deviation (El). See [Figure 1](#).
- For external threads: c and e with negative fundamental deviation (es). See [Figure 2](#).

The tolerance position for the minor diameter (D_1) and the major diameter (D_4) of the internal threads is always H, i.e. with zero fundamental deviation (El).

The tolerance position for the major diameter (d) and minor diameter (d_3) of the external threads is in all cases h, i.e. with zero fundamental deviation (es), and it is independent of the tolerance positions of the pitch diameter.

The fundamental deviations for the pitch diameters of internal and external threads are given in [Table 1](#).

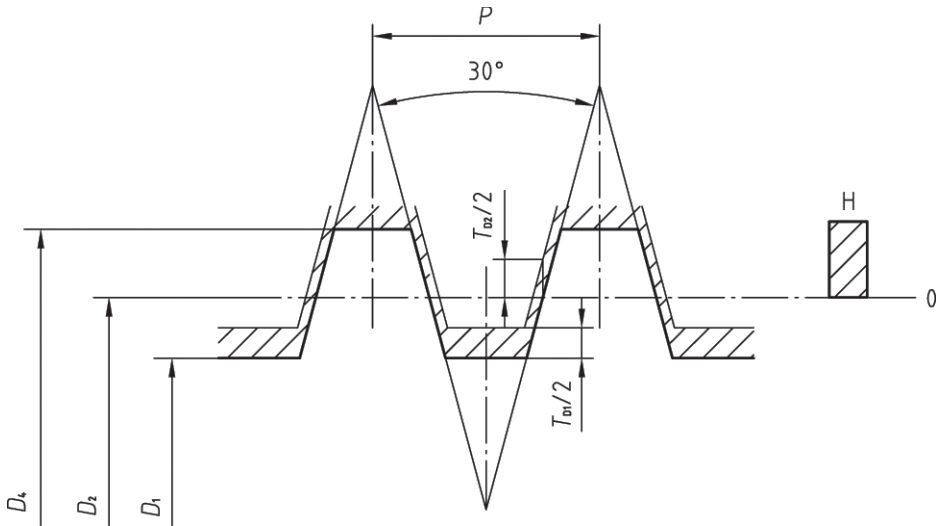


Figure 1 — Internal threads with tolerance position H

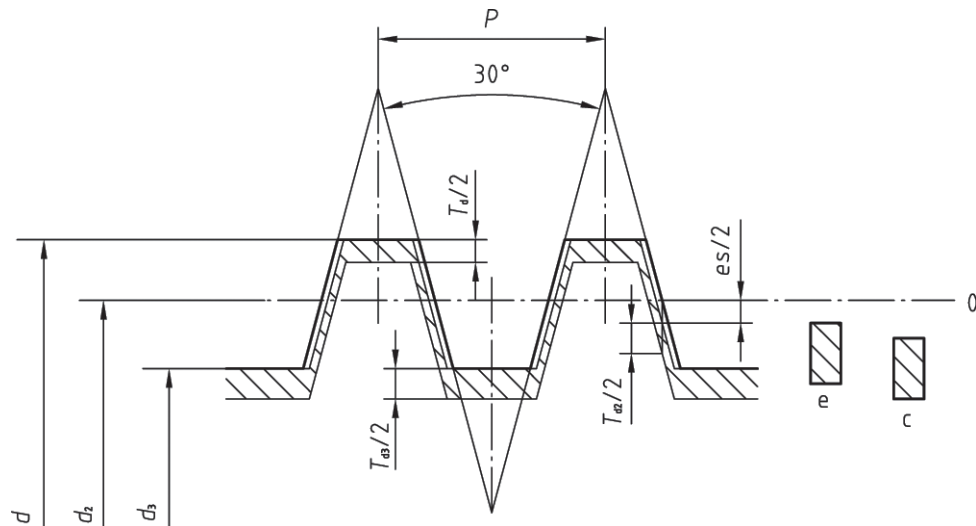


Figure 2 — External threads with tolerance positions c and e for the pitch diameter

Table 1 — Fundamental deviations for the pitch diameters of internal and external threads

Pitch P	Fundamental deviations		
	Internal threads D_2	External threads d_2	
	H El	c es	e es
mm	μm	μm	μm
1,5	0	-140	-67
2	0	-150	-71
3	0	-170	-85
4	0	-190	-95
5	0	-212	-106
6	0	-236	-118
7	0	-250	-125
8	0	-265	-132
9	0	-280	-140
10	0	-300	-150
12	0	-335	-160
14	0	-355	-180
16	0	-375	-190
18	0	-400	-200
20	0	-425	-212
22	0	-450	-224
24	0	-475	-236
28	0	-500	-250
32	0	-530	-265
36	0	-560	-280
40	0	-600	-300
44	0	-630	-315