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ISO 965-1

Fifth edition
2026-04

ISO general purpose metric screw threads — Tolerances —

Part 1: Principles and basic data

Filetages métriques ISO pour usages généraux — Tolérances —

Partie 1: Principes et données fondamentales

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Foreword

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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).

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

This fifth edition cancels and replaces the fourth edition (ISO 965-1:2013), which has been technically revised. It also incorporates the Amendment ISO 965-1:2013/Amd.1:2021.

The main changes are as follows:

— in Clauses 6, 7 and A.1, the last paragraphs (special tolerances) have been added;

— Clause 10 and Clause 13.5 have been added;

— Annex B has been added, and the symbol T_{d3} has been added in Clause 4.

A list of all parts in the ISO 965 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 general purpose metric screw threads — Tolerances —

Part 1: Principles and basic data

1 Scope

This document specifies a tolerance system for ISO general purpose metric screw threads (M) conforming to ISO 261 having basic and design profiles in accordance with ISO 68-1.

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 68-1, *ISO general purpose screw threads — Basic and design profiles — Part 1: Metric screw threads*

ISO 261, *ISO general purpose metric screw threads — General plan*

ISO 1502, *ISO general-purpose metric screw threads — Gauges and gauging*

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 Symbols

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

Symbol	Meaning
D	major diameter of internal thread (nominal diameter)
d	major diameter of external thread (nominal diameter)
D_2	pitch diameter of internal thread
d_2	pitch diameter of external thread
D_1	minor diameter of internal thread
d_1	minor diameter of external thread on basic profile
d_3	minor diameter of external thread on design profile
P	pitch
Ph	lead
H	fundamental triangle height

Symbol	Meaning
S	designation for short length group of thread engagement
N	designation for normal length group of thread engagement
L	designation for long length group of thread engagement
T	tolerance
T_{D1}, T_{D2}, T_d, T_{d2}, T_{d3}	tolerances for D_1, D_2, d, d_2 and d_3
EI	lower deviations of internal thread (fundamental deviations)
es	upper deviations of external thread (fundamental deviations)
$R_{1\,\mathrm{min}}$	minimum root radius of external thread on design profile
C	root truncation of external thread on design profile

5 Tolerance system

The tolerance system consists of tolerance grades and tolerance positions. The tolerance grades are expressed by number, such as 4, 6 and 8. The tolerance positions are expressed by letter, such as H, G, h and g. The tolerance class designation shall be the combination of the number and the letter, for example 6H and 6g.

6 Tolerance positions

The following tolerance positions are standardized:

— for internal threads:

  — G with positive fundamental deviation (EI), shown in Figure 1;

  — H with zero fundamental deviation (EI), shown in Figure 2.

— for external threads:

  — a, b, c, d, e, f and g with negative fundamental deviations (es), shown in Figure 3;

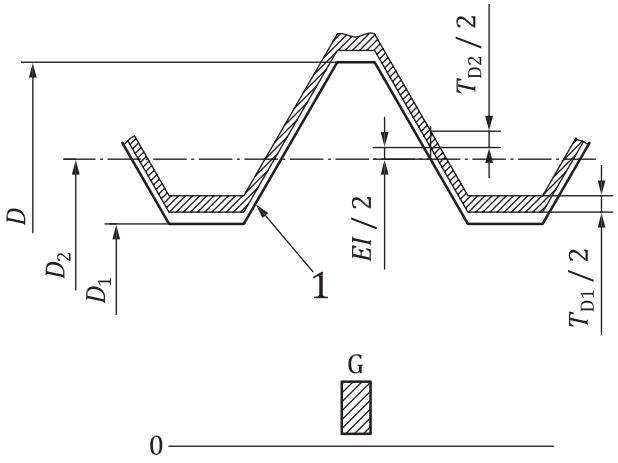
  — h with zero fundamental deviation (es), shown in Figure 4.

NOTE For the tolerance positions az, AZ and AX used for hot dip galvanized screw threads, see ISO 965-4 and ISO 965-5.

The established tolerance positions comply with the needs of coating thickness and suitability for screw thread assembly.

The fundamental deviations for internal and external threads shall be as specified in Table 1.

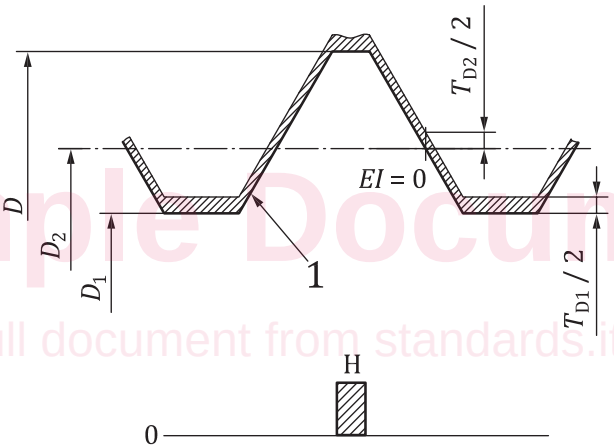
For the special pitches which are not included in Table 1, their fundamental deviations should be calculated by the formulae given in Annex A. These special fundamental deviation values shall be specified in the relevant threaded product documents.



Key

1 basic profile

Figure 1 — Internal threads with tolerance position G



Key

1 basic profile

Figure 2 — Internal threads with tolerance position H