

ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION

R 965/III

ISO GENERAL PURPOSE METRIC SCREW THREADS
TOLERANCES

DEVIATIONS FOR CONSTRUCTIONAL THREADS

1st EDITION

February 1969

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BRIEF HISTORY

The ISO Recommendation R 965/III, *ISO general purpose metric screw threads – Tolerances – Deviations for constructional threads*, was drawn up by Technical Committee ISO/TC 1, *Screw threads*, the Secretariat of which is held by the Sveriges Standardiseringskommission (SIS).

Work on this question by the Technical Committee led, in 1964, to the adoption of the proposed tolerance system for ISO metric screw threads.

In September 1966, a Draft ISO Recommendation (No. 981) was circulated to all the ISO Member Bodies for enquiry. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies :

Argentina	Germany	South Africa, Rep. of
Australia	Greece	Spain
Austria	India	Sweden
Belgium	Israel	Switzerland
Brazil	Italy	Turkey
Canada	Japan	U.A.R.
Chile	Korea, Rep. of	United Kingdom
Czechoslovakia	Netherlands	U.S.A.
Denmark	New Zealand	Yugoslavia
Finland	Norway	
France	Romania	

No Member Body opposed the approval of the Draft.

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided, in February 1969, to accept it as an ISO RECOMMENDATION.

FOREWORD

This document is one of a number of ISO Recommendations determining tolerances for ISO metric screw threads.

The complete set of these ISO Recommendations is made up as follows :

- ISO/R 965/I, *ISO general purpose metric screw threads – Tolerances – Principles and basic data;*
- ISO/R 965/II, *ISO general purpose metric screw threads – Tolerances – Limits of sizes for commercial bolt and nut threads -- Medium quality;*
- ISO/R 965/III (this document), *ISO general purpose metric screw threads – Tolerances -- Deviations for constructional threads;*
- ISO/R . . . *, *ISO miniature screw threads.*

• At present Draft ISO Recommendation No. 1501.

CONTENTS

	Page
1. Scope	5
2. Designations	5
3. Application	5
4. Deviations	6

ISO GENERAL PURPOSE METRIC SCREW THREADS TOLERANCES DEVIATIONS FOR CONSTRUCTIONAL THREADS

1. SCOPE

This ISO Recommendation tabulates deviations for pitch and crest diameters for ISO general purpose metric screw threads according to ISO Recommendation R 261*.

2. DESIGNATIONS

Tolerances according to this ISO Recommendation are designated by the relevant tolerance class as found under the heading "Tolerance class" in the tables.

Examples :

M6-6H

M6-5g6g

A fit between threaded parts is indicated by the nut thread tolerance designation followed by the bolt thread tolerance designation separated by a stroke.

Example :

M6-6H/5g6g

3. APPLICATION

3.1 Deviations

The deviations specified in this document are derived from the fundamental deviations and tolerances specified in ISO Recommendation R 965/I, *ISO general purpose metric screw threads – Tolerances – Principles and basic data*.

3.2 Root contours

For nut threads as well as bolt threads the actual root contour should not in any point transgress the basic profile.

The tabulated values for the minor diameter of the bolt thread are calculated on the basis of an $H/6$ truncation and are to be used for stress calculations, etc.

For coated threads the tolerances apply to the parts *before* coating unless otherwise stated. After coating, the actual thread profile should not in any point transgress the maximum material limits for position H or h respectively.

* At present under revision, under the new title, *ISO general purpose metric screw threads – General plan* (Draft ISO Recommendation No. 1499).

4. DEVIATIONS

ES, es = upper deviation*EI, ei* = lower deviation

Basic major diameter		Pitch	Nut thread						Bolt thread					
over	up to and incl.		Tolerance class	Pitch diameter		Minor diameter		Tolerance class	Major diameter		Pitch diameter		Minor diameter (for stress calculations, etc.)	
				ES	EI	ES	EI		es	ei	es	ei		
				μm	μm	μm	μm		μm	μm	μm	μm		
mm	mm	mm												
0.99	1.4	0.2	—	—	—	—	—	3h4h	0	-36	0	-24	-29	
			4H	+40	0	+38	0	4h	0	-36	0	-30	-29	
			5G	—	—	—	—	5g6g	-17	-73	-17	-55	-46	
			5H	—	—	—	—	5h4h	0	-36	0	-38	-29	
			—	—	—	—	—	5h6h	0	-56	0	-38	-29	
			—	—	—	—	—	6e	—	—	—	—	—	
			6G	—	—	—	—	6g	-17	-73	-17	-65	-46	
			6H	—	—	—	—	6h	0	-56	0	-48	-29	
			—	—	—	—	—	7e6e	—	—	—	—	—	
			7G	—	—	—	—	7g6g	—	—	—	—	—	
			7H	—	—	—	—	7h6h	—	—	—	—	—	
			8G	—	—	—	—	8g	—	—	—	—	—	
			8H	—	—	—	—	9g8g	—	—	—	—	—	
		0.25	—	—	—	—	—	3h4h	0	-42	0	-26	-36	
			4H	+45	0	+45	0	4h	0	-42	0	-34	-36	
			5G	+74	+18	+74	+18	5g6g	-18	-85	-18	-60	-54	
			5H	+56	0	+56	0	5h4h	0	-42	0	-42	-36	
			—	—	—	—	—	5h6h	0	-67	0	-42	-36	
			—	—	—	—	—	6e	—	—	—	—	—	
			6G	—	—	—	—	6g	-18	-85	-18	-71	-54	
			6H	—	—	—	—	6h	0	-67	0	-53	-36	
			—	—	—	—	—	7e6e	—	—	—	—	—	
			7G	—	—	—	—	7g6g	—	—	—	—	—	
			7H	—	—	—	—	7h6h	—	—	—	—	—	
			8G	—	—	—	—	8g	—	—	—	—	—	
			8H	—	—	—	—	9g8g	—	—	—	—	—	
		0.3	—	—	—	—	—	3h4h	0	-48	0	-28	-43	
			4H	+48	0	+53	0	4h	0	-48	0	-36	-43	
			5G	+78	+18	+85	+18	5g6g	-18	-93	-18	-63	-61	
			5H	+60	0	+67	0	5h4h	0	-48	0	-45	-43	
			—	—	—	—	—	5h6h	0	-75	0	-45	-43	
			—	—	—	—	—	6e	—	—	—	—	—	
			6G	+93	+18	+103	+18	6g	-18	-93	-18	-74	-61	
			6H	+75	0	+85	0	6h	0	-75	0	-56	-43	
			—	—	—	—	—	7e6e	—	—	—	—	—	
			7G	—	—	—	—	7g6g	—	—	—	—	—	
			7H	—	—	—	—	7h6h	—	—	—	—	—	
			8G	—	—	—	—	8g	—	—	—	—	—	
			8H	—	—	—	—	9g8g	—	—	—	—	—	