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Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

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- All comments should be submitted online at <https://standardsdevelopment.bsigroup.com/>. You will need to register in order to comment.

Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/ Figure/Table/Note	Type of comment	Comment (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	



DRAFT International Standard

ISO/DIS 2903-2

ISO metric trapezoidal screw threads — - Tolerances —

Part 2: Limits of sizes

ICS: ISO ics

ISO/TC 1

Secretariat: **SAC**

Voting begins on:
2024-09-04

Voting terminates on:
2024-11-27

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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).

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For an explanation of the voluntary nature of standards, 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 www.iso.org/iso/foreword.html.

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 having basic and design profiles in accordance with ISO 2901.

This document is applicable to the metric trapezoidal screw threads with the seven recommended tolerance classes specified in ISO 2903. See [Table 1](#).

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

Screw thread	Tolerance class	Nominal diameter	Table number	Remark
Internal thread	7H	From 8 to 300	Table 2	On page 2
	8H		Table 3	On page 8
	9H	From 8 to 100	Table 4	On page14
External thread	7e	From 8 to 300	Table 5	On page 17
	8e		Table 6	On page 23
	8c		Table 7	On page 29
	9c	From 8 to 100	Table 8	On page 35

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 are 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

$$\begin{aligned} \text{Major diameter} \quad D_{4 \min} &= D + 2a_c \\ \text{Pitch diameter} \quad D_{2 \min} &= D_2 = D - 0,5P \\ D_{2 \max} &= D_{2 \min} + T_{D2} \\ \text{Minor diameter} \quad D_{1 \min} &= D_1 = D - P \\ D_{1 \max} &= D_{1 \min} + T_{D1} \end{aligned}$$

External thread

$$\begin{aligned} \text{Major diameter} \quad d_{\max} &= d \\ d_{\min} &= d - T_d \\ \text{Pitch diameter} \quad d_{2 \max} &= d_2 + es = d - 0,5P + es \\ d_{2 \min} &= d_{2 \max} - T_{d2} \\ \text{Minor diameter} \quad d_{3 \max} &= d_1 - 2a_c = d - P - 2a_c \\ d_{3 \min} &= d_{3 \max} - T_{d3} \end{aligned}$$

Where es is a negative value.

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

4.2 Internal threads

Limits of sizes for the internal threads with tolerance class 7H shall be as specified in [Table 2](#).

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

Dimensions in millimetres

Nominal diameter D	Pitch P	Major diameter	Pitch diameter		Minor diameter	
		$D_{4 \min}$	$D_{2 \max}$	$D_{2 \min}$	$D_{1 \max}$	$D_{1 \min}$
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
10	2	10,500	9,250	9,000	8,236	8,000
11	2	11,500	10,250	10,000	9,236	9,000
11	3	11,500	9,780	9,500	8,315	8,000
12	2	12,500	11,265	11,000	10,236	10,000

Table 2 (continued)

Nominal diameter D	Pitch P	Major diameter	Pitch diameter		Minor diameter	
		$D_{4 \min}$	$D_{2 \max}$	$D_{2 \min}$	$D_{1 \max}$	$D_{1 \min}$
12	3	12,500	10,800	10,500	9,315	9,000
14	2	14,500	13,265	13,000	12,236	12,000
14	3	14,500	12,800	12,500	11,315	11,000
16	2	16,500	15,265	15,000	14,236	14,000
16	4	16,500	14,355	14,000	12,375	12,000
18	2	18,500	17,265	17,000	16,236	16,000
18	4	18,500	16,355	16,000	14,375	14,000
20	2	20,500	19,265	19,000	18,236	18,000
20	4	20,500	18,355	18,000	16,375	16,000
22	3	22,500	20,800	20,500	19,315	19,000
22	5	22,500	19,875	19,500	17,450	17,000
22	8	23,000	18,475	18,000	14,630	14,000
24	3	24,500	22,835	22,500	21,315	21,000
24	5	24,500	21,900	21,500	19,450	19,000
24	8	25,000	20,500	20,000	16,630	16,000
26	3	26,500	24,835	24,500	23,315	23,000
26	5	26,500	23,900	23,500	21,450	21,000
26	8	27,000	22,500	22,000	18,630	18,000
28	3	28,500	26,835	26,500	25,315	25,000
28	5	28,500	25,900	25,500	23,450	23,000
28	8	29,000	24,500	24,000	20,630	20,000
30	3	30,500	28,835	28,500	27,315	27,000
30	6	31,000	27,450	27,000	24,500	24,000
30	10	31,000	25,530	25,000	20,710	20,000
32	3	32,500	30,835	30,500	29,315	29,000
32	6	33,000	29,450	29,000	26,500	26,000
32	10	33,000	27,530	27,000	22,710	22,000
34	3	34,500	32,835	32,500	31,315	31,000
34	6	35,000	31,450	31,000	28,500	28,000
34	10	35,000	29,530	29,000	24,710	24,000
36	3	36,500	34,835	34,500	33,315	33,000
36	6	37,000	33,450	33,000	30,500	30,000
36	10	37,000	31,530	31,000	26,710	26,000
38	3	38,500	36,835	36,500	35,315	35,000
38	7	39,000	34,975	34,500	31,560	31,000
38	10	39,000	33,530	33,000	28,710	28,000
40	3	40,500	38,835	38,500	37,315	37,000
40	7	41,000	36,975	36,500	33,560	33,000
40	10	41,000	35,530	35,000	30,710	30,000
42	3	42,500	40,835	40,500	39,315	39,000
42	7	43,000	38,975	38,500	35,560	35,000
42	10	43,000	37,530	37,000	32,710	32,000

Table 2 (continued)

Nominal diameter D	Pitch P	Major diameter	Pitch diameter		Minor diameter	
		$D_{4 \text{ min}}$	$D_{2 \text{ max}}$	$D_{2 \text{ min}}$	$D_{1 \text{ max}}$	$D_{1 \text{ min}}$
44	3	44,500	42,835	42,500	41,315	41,000
44	7	45,000	40,975	40,500	37,560	37,000
44	12	45,000	38,560	38,000	32,800	32,000
46	3	46,500	44,855	44,500	43,315	43,000
46	8	47,000	42,530	42,000	38,630	38,000
46	12	47,000	40,630	40,000	34,800	34,000
48	3	48,500	46,855	46,500	45,315	45,000
48	8	49,000	44,530	44,000	40,630	40,000
48	12	49,000	42,630	42,000	36,800	36,000
50	3	50,500	48,855	48,500	47,315	47,000
50	8	51,000	46,530	46,000	42,630	42,000
50	12	51,000	44,630	44,000	38,800	38,000
52	3	52,500	50,855	50,500	49,315	49,000
52	8	53,000	48,530	48,000	44,630	44,000
52	12	53,000	46,630	46,000	40,800	40,000
55	3	55,500	53,855	53,500	52,315	52,000
55	9	56,000	51,060	50,500	46,670	46,000
55	14	57,000	48,670	48,000	41,900	41,000
60	3	60,500	58,855	58,500	57,315	57,000
60	9	61,000	56,060	55,500	51,670	51,000
60	14	62,000	53,670	53,000	46,900	46,000
65	4	65,500	63,400	63,000	61,375	61,000
65	10	66,000	60,560	60,000	55,710	55,000
65	16	67,000	57,710	57,000	50,000	49,000
70	4	70,500	68,400	68,000	66,375	66,000
70	10	71,000	65,560	65,000	60,710	60,000
70	16	72,000	62,710	62,000	55,000	54,000
75	4	75,500	73,400	73,000	71,375	71,000
75	10	76,000	70,560	70,000	65,710	65,000
75	16	77,000	67,710	67,000	60,000	59,000
80	4	80,500	78,400	78,000	76,375	76,000
80	10	81,000	75,560	75,000	70,710	70,000
80	16	82,000	72,710	72,000	65,000	64,000
85	4	85,500	83,400	83,000	81,375	81,000
85	12	86,000	79,630	79,000	73,800	73,000
85	18	87,000	76,750	76,000	68,120	67,000
90	4	90,500	88,400	88,000	86,375	86,000
90	12	91,000	84,630	84,000	78,800	78,000
90	18	92,000	81,750	81,000	73,120	72,000
95	4	95,500	93,425	93,000	91,375	91,000
95	12	96,000	89,670	89,000	83,800	83,000
95	18	97,000	86,800	86,000	78,120	77,000

Table 2 (continued)

Nominal diameter D	Pitch P	Major diameter	Pitch diameter		Minor diameter	
		$D_{4 \text{ min}}$	$D_{2 \text{ max}}$	$D_{2 \text{ min}}$	$D_{1 \text{ max}}$	$D_{1 \text{ min}}$
100	4	100,500	98,425	98,000	96,375	96,000
100	12	101,000	94,670	94,000	88,800	88,000
100	20	102,000	90,800	90,000	81,180	80,000
105	4	105,500	103,425	103,000	101,375	101,000
105	12	106,000	99,670	99,000	93,800	93,000
105	20	107,000	95,800	95,000	86,180	85,000
110	4	110,500	108,425	108,000	106,375	106,000
110	12	111,000	104,670	104,000	98,800	98,000
110	20	112,000	100,800	100,000	91,180	90,000
115	6	116,000	112,500	112,000	109,500	109,000
115	14	117,000	108,710	108,000	101,900	101,000
115	22	117,000	104,850	104,000	94,250	93,000
120	6	121,000	117,500	117,000	114,500	114,000
120	14	122,000	113,710	113,000	106,900	106,000
120	22	122,000	109,850	109,000	99,250	98,000
125	6	126,000	122,500	122,000	119,500	119,000
125	14	127,000	118,710	118,000	111,900	111,000
125	22	127,000	114,850	114,000	104,250	103,000
130	6	131,000	127,500	127,000	124,500	124,000
130	14	132,000	123,710	123,000	116,900	116,000
130	22	132,000	119,850	119,000	109,250	108,000
135	6	136,000	132,500	132,000	129,500	129,000
135	14	137,000	128,710	128,000	121,900	121,000
135	24	137,000	123,900	123,000	112,320	111,000
140	6	141,000	137,500	137,000	134,500	134,000
140	14	142,000	133,710	133,000	126,900	126,000
140	24	142,000	128,900	128,000	117,320	116,000
145	6	146,000	142,500	142,000	139,500	139,000
145	14	147,000	138,710	138,000	131,900	131,000
145	24	147,000	133,900	133,000	122,320	121,000
150	6	151,000	147,500	147,000	144,500	144,000
150	16	152,000	142,750	142,000	135,000	134,000
150	24	152,000	138,900	138,000	127,320	126,000
155	6	156,000	152,500	152,000	149,500	149,000
155	16	157,000	147,750	147,000	140,000	139,000
155	24	157,000	143,900	143,000	132,320	131,000
160	6	161,000	157,500	157,000	154,500	154,000
160	16	162,000	152,750	152,000	145,000	144,000
160	28	162,000	146,950	146,000	133,500	132,000
165	6	166,000	162,500	162,000	159,500	159,000
165	16	167,000	157,750	157,000	150,000	149,000
165	28	167,000	151,950	151,000	138,500	137,000

Table 2 (continued)

Nominal diameter D	Pitch P	Major diameter	Pitch diameter		Minor diameter	
		$D_{4 \text{ min}}$	$D_{2 \text{ max}}$	$D_{2 \text{ min}}$	$D_{1 \text{ max}}$	$D_{1 \text{ min}}$
170	6	171,000	167,500	167,000	164,500	164,000
170	16	172,000	162,750	162,000	155,000	154,000
170	28	172,000	156,950	156,000	143,500	142,000
175	8	176,000	171,560	171,000	167,630	167,000
175	16	177,000	167,750	167,000	160,000	159,000
175	28	177,000	161,950	161,000	148,500	147,000
180	8	181,000	176,560	176,000	172,630	172,000
180	18	182,000	171,800	171,000	163,120	162,000
180	28	182,000	166,950	166,000	153,500	152,000
185	8	186,000	181,600	181,000	177,630	177,000
185	18	187,000	176,850	176,000	168,120	167,000
185	32	187,000	170,060	169,000	154,600	153,000
190	8	191,000	186,600	186,000	182,630	182,000
190	18	192,000	181,850	181,000	173,120	172,000
190	32	192,000	175,060	174,000	159,600	158,000
195	8	196,000	191,600	191,000	187,630	187,000
195	18	197,000	186,850	186,000	178,120	177,000
195	32	197,000	180,060	179,000	164,600	163,000
200	8	201,000	196,600	196,000	192,630	192,000
200	18	202,000	191,850	191,000	183,120	182,000
200	32	202,000	185,060	184,000	169,600	168,000
210	8	211,000	206,600	206,000	202,630	202,000
210	20	212,000	200,900	200,000	191,180	190,000
210	36	212,000	193,120	192,000	175,800	174,000
220	8	221,000	216,600	216,000	212,630	212,000
220	20	222,000	210,900	210,000	201,180	200,000
220	36	222,000	203,120	202,000	185,800	184,000
230	8	231,000	226,600	226,000	222,630	222,000
230	20	232,000	220,900	220,000	211,180	210,000
230	36	232,000	213,120	212,000	195,800	194,000
240	8	241,000	236,600	236,000	232,630	232,000
240	22	242,000	229,900	229,000	219,250	218,000
240	36	242,000	223,120	222,000	205,800	204,000
250	12	251,000	244,710	244,000	238,800	238,000
250	22	252,000	239,900	239,000	229,250	228,000
250	40	252,000	231,120	230,000	211,900	210,000
260	12	261,000	254,710	254,000	248,800	248,000
260	22	262,000	249,900	249,000	239,250	238,000
260	40	262,000	241,120	240,000	221,900	220,000
270	12	271,000	264,710	264,000	258,800	258,000
270	24	272,000	258,950	258,000	247,320	246,000
270	40	272,000	251,120	250,000	231,900	230,000