

ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION R 724

ISO GENERAL PURPOSE METRIC SCREW THREADS

BASIC DIMENSIONS

1st EDITION

May 1968

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BRIEF HISTORY

The ISO Recommendation R 724, *ISO general purpose metric screw threads – Basic dimensions*, 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 began in 1962 and led, in 1964, to the adoption of a Draft ISO Recommendation.

In September 1965, this Draft ISO Recommendation (No. 782) 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,
Australia	Hungary	Rep. of
Austria	India	Spain
Belgium	Israel	Sweden
Brazil	Italy	Switzerland
Canada	Japan	Turkey
Chile	Netherlands	U.A.R.
Czechoslovakia	New Zealand	United Kingdom
Denmark	Norway	U.S.A.
Finland	Poland	U.S.S.R.
France	Romania	Yugoslavia

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 May 1968, to accept it as an ISO RECOMMENDATION.

ISO GENERAL PURPOSE METRIC SCREW THREADS

BASIC DIMENSIONS

1. SCOPE

This ISO Recommendation tabulates the basic dimensions for ISO general purpose metric screw threads according to ISO Recommendation R 261.* The values refer to the basic profile according to ISO Recommendation R 68.**

2. APPLICATION

When metric units are given in a national standard, the values should preferably be rounded to three decimal places.

When a conversion to inch units is required, the following rules should be applied :

- (1) divide the relevant figure, found in the tables, by 25.4;
- (2) round the value obtained to four decimal places.

3. CALCULATION

The values given in this ISO Recommendation have been calculated from the following formulae. The values have been given to six decimal places in order to enable a proper conversion to inch units (see section 2).

$$D_2 = D - 2 \times 3/8 H = D - 0.649\,519\,053\,P \text{ mm}$$

$$d_2 = d - 2 \times 3/8 H = d - 0.649\,519\,053\,P \text{ mm}$$

$$D_1 = D - 2 \times 5/8 H = D - 1.082\,531\,755\,P \text{ mm}$$

$$d_1 = d - 2 \times 5/8 H = d - 1.082\,531\,755\,P \text{ mm}$$

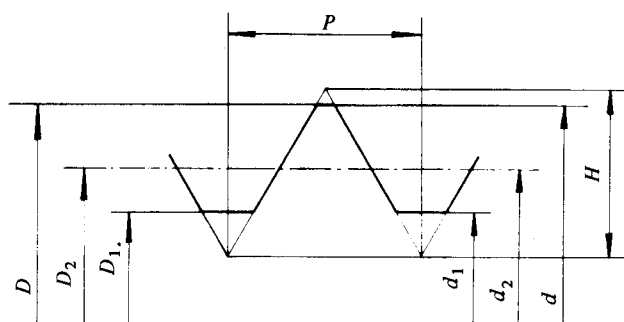
where

- D is the basic major diameter for internal threads,
- D_2 is the basic pitch diameter for internal threads,
- D_1 is the basic minor diameter for internal threads,
- d is the basic major diameter for external threads,
- d_2 is the basic pitch diameter for external threads,
- d_1 is the basic minor diameter for external threads,
- H is the height of fundamental triangle,
- P is the pitch.

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

** At present under revision under the new title, *ISO general purpose screw threads – Basic profile* (Draft ISO Recommendation No. 1498).

4. BASIC DIMENSIONS IN MILLIMETRES



Nominal diameter	Pitch P	Major diameter D, d	Pitch diameter D_2, d_2	Minor diameter D_1, d_1
1	0.25	1.000 000	0.837 620	0.729 367
	0.2	1.000 000	0.870 096	0.783 494
1.1	0.25	1.100 000	0.937 620	0.829 367
	0.2	1.100 000	0.970 096	0.883 494
1.2	0.25	1.200 000	1.037 620	0.929 367
	0.2	1.200 000	1.070 096	0.983 494
1.4	0.3	1.400 000	1.205 144	1.075 240
	0.2	1.400 000	1.270 096	1.183 494
1.6	0.35	1.600 000	1.372 668	1.221 114
	0.2	1.600 000	1.470 096	1.383 494
1.8	0.35	1.800 000	1.572 668	1.421 114
	0.2	1.800 000	1.670 096	1.583 494
2	0.4	2.000 000	1.740 192	1.566 987
	0.25	2.000 000	1.837 620	1.729 367
2.2	0.45	2.200 000	1.907 716	1.712 861
	0.25	2.200 000	2.037 620	1.929 367
2.5	0.45	2.500 000	2.207 716	2.012 861
	0.35	2.500 000	2.272 668	2.121 114
3	0.5	3.000 000	2.675 240	2.458 734
	0.35	3.000 000	2.772 668	2.621 114
3.5	0.6	3.500 000	3.110 289	2.850 481
	0.35	3.500 000	3.272 668	3.121 114
4	0.7	4.000 000	3.545 337	3.242 228
	0.5	4.000 000	3.675 240	3.458 734
4.5	0.75	4.500 000	4.012 861	3.688 101
	0.5	4.500 000	4.175 240	3.958 734
5	0.8	5.000 000	4.480 385	4.133 975
	0.5	5.000 000	4.675 240	4.458 734
5.5	0.5	5.500 000	5.175 240	4.958 734
6	1	6.000 000	5.350 481	4.917 468
	0.75	6.000 000	5.512 861	5.188 101
7	1	7.000 000	6.350 481	5.917 468
	0.75	7.000 000	6.512 861	6.188 101
8	1.25	8.000 000	7.188 101	6.646 835
	1		7.350 481	6.917 468
	0.75		7.512 861	7.188 101
9	1.25	9.000 000	8.188 101	7.646 835
	1		8.350 481	7.917 468
	0.75		8.512 861	8.188 101

4. BASIC DIMENSIONS IN MILLIMETRES (continued)

Nominal diameter	Pitch P	Major diameter D, d	Pitch diameter D_2, d_2	Minor diameter D_1, d_1
10	1.5	10.000 000	9.025 721	8.376 202
	1.25		9.188 101	8.646 835
	1		9.350 481	8.917 468
	0.75		9.512 861	9.188 101
11	1.5	11.000 000	10.025 721	9.376 202
	1		10.350 481	9.917 468
	0.75		10.512 861	10.188 101
12	1.75	12.000 000	10.863 342	10.105 569
	1.5		11.025 721	10.376 202
	1.25		11.188 101	10.646 835
	1		11.350 481	10.917 468
14	2	14.000 000	12.700 962	11.834 936
	1.5		13.025 721	12.376 202
	1.25		13.188 101	12.646 835
	1		13.350 481	12.917 468
15	1.5	15.000 000	14.025 721	13.376 202
	1		14.350 481	13.917 468
16	2	16.000 000	14.700 962	13.834 936
	1.5		15.025 721	14.376 202
	1		15.350 481	14.917 468
17	1.5	17.000 000	16.025 721	15.376 202
	1		16.350 481	15.917 468
18	2.5	18.000 000	16.376 202	15.293 671
	2		16.700 962	15.834 936
	1.5		17.025 721	16.376 202
	1		17.350 481	16.917 468
20	2.5	20.000 000	18.376 202	17.293 671
	2		18.700 962	17.834 936
	1.5		19.025 721	18.376 202
	1		19.350 481	18.917 468
22	2.5	22.000 000	20.376 202	19.293 671
	2		20.700 962	19.834 936
	1.5		21.025 721	20.376 202
	1		21.350 481	20.917 468
24	3	24.000 000	22.051 443	20.752 405
	2		22.700 962	21.834 936
	1.5		23.025 721	22.376 202
	1		23.350 481	22.917 468
25	2	25.000 000	23.700 962	22.834 936
	1.5		24.025 721	23.376 202
	1		24.350 481	23.917 468
26	1.5	26.000 000	25.025 721	24.376 202
27	3	27.000 000	25.051 443	23.752 405
	2		25.700 962	24.834 936
	1.5		26.025 721	25.376 202
	1		26.350 481	25.917 468
28	2	28.000 000	26.700 962	25.834 936
	1.5		27.025 721	26.376 202
	1		27.350 481	26.917 468

4. BASIC DIMENSIONS IN MILLIMETRES (continued)

Nominal diameter	Pitch P	Major diameter D, d	Pitch diameter D_2, d_2	Minor diameter D_1, d_1
30	3.5	30.000 000	27.726 683	26.211 139
	3		28.051 443	26.752 405
	2		28.700 962	27.834 936
	1.5		29.025 721	28.376 202
	1		29.350 481	28.917 468
32	2	32.000 000	30.700 962	29.834 936
	1.5		31.025 721	30.376 202
33	3.5	33.000 000	30.726 683	29.211 139
	3		31.051 443	29.752 405
	2		31.700 962	30.834 936
	1.5		32.025 721	31.376 202
35	1.5	35.000 000	34.025 721	33.376 202
36	4	36.000 000	33.401 924	31.669 873
	3		34.051 443	32.752 405
	2		34.700 962	33.834 936
	1.5		35.025 721	34.376 202
38	1.5	38.000 000	37.025 721	36.376 202
39	4	39.000 000	36.401 924	34.669 873
	3		37.051 443	35.752 405
	2		37.700 962	36.834 936
	1.5		38.025 721	37.376 202
40	3	40.000 000	38.051 443	36.752 405
	2		38.700 962	37.834 936
	1.5		39.025 721	38.376 202
42	4.5	42.000 000	39.077 164	37.128 607
	4		39.401 924	37.669 873
	3		40.051 443	38.752 405
	2		40.700 962	39.834 936
	1.5		41.025 721	40.376 202
45	4.5	45.000 000	42.077 164	40.128 607
	4		42.401 924	40.669 873
	3		43.051 443	41.752 405
	2		43.700 962	42.834 936
	1.5		44.025 721	43.376 202
48	5	48.000 000	44.752 405	42.587 341
	4		45.401 924	43.669 873
	3		46.051 443	44.752 405
	2		46.700 962	45.834 936
	1.5		47.025 721	46.376 202
50	3	50.000 000	48.051 443	46.752 405
	2		48.700 962	47.834 936
	1.5		49.025 721	48.376 202
52	5	52.000 000	48.752 405	46.587 341
	4		49.401 924	47.669 873
	3		50.051 443	48.752 405
	2		50.700 962	49.834 936
	1.5		51.025 721	50.376 202

4. BASIC DIMENSIONS IN MILLIMETRES (continued)

Nominal diameter	Pitch P	Major diameter D, d	Pitch diameter D_2, d_2	Minor diameter D_1, d_1
55	4	55.000 000	52.401 924	50.669 873
	3		53.051 443	51.752 405
	2		53.700 962	52.834 936
	1.5		54.025 721	53.376 202
56	5.5	56.000 000	52.427 645	50.046 075
	4		53.401 924	51.669 873
	3		54.051 443	52.752 405
	2		54.700 962	53.834 936
58	1.5		55.025 721	54.376 202
	4	58.000 000	55.401 924	53.669 873
	3		56.051 443	54.752 405
	2		56.700 962	55.834 936
	1.5		57.025 721	56.376 202
60	5.5	60.000 000	56.427 645	54.046 075
	4		57.401 924	55.669 873
	3		58.051 443	56.752 405
	2		58.700 962	57.834 936
62	1.5		59.025 721	58.376 202
	4	62.000 000	59.401 924	57.669 873
	3		60.051 443	58.752 405
	2		60.700 962	59.834 936
	1.5		61.025 721	60.376 202
64	6	64.000 000	60.102 886	57.504 809
	4		61.401 924	59.669 873
	3		62.051 443	60.752 405
	2		62.700 962	61.834 936
65	1.5		63.025 721	62.376 202
	4	65.000 000	62.401 924	60.669 873
	3		63.051 443	61.752 405
	2		63.700 962	62.834 936
	1.5		64.025 721	63.376 202
68	6	68.000 000	64.102 886	61.504 809
	4		65.401 924	63.669 873
	3		66.051 443	64.752 405
	2		66.700 962	65.834 936
70	1.5		67.025 721	66.376 202
	6	70.000 000	66.102 886	63.504 809
	4		67.401 924	65.669 873
	3		68.051 443	66.752 405
	2		68.700 962	67.834 936
72	1.5		69.025 721	68.376 202
	6	72.000 000	68.102 886	65.504 809
	4		69.401 924	67.669 873
	3		70.051 443	68.752 405
	2		70.700 962	69.834 936
	1.5		71.025 721	70.376 202

4. BASIC DIMENSIONS IN MILLIMETRES (continued)

Nominal diameter	Pitch <i>P</i>	Major diameter <i>D, d</i>	Pitch diameter <i>D₂, d₂</i>	Minor diameter <i>D₁, d₁</i>
75	4	75.000 000	72.401 924	70.669 873
	3		73.051 443	71.752 405
	2		73.700 962	72.834 936
	1.5		74.025 721	73.376 202
76	6	76.000 000	72.102 886	69.504 809
	4		73.401 924	71.669 873
	3		74.051 443	72.752 405
	2		74.700 962	73.834 936
	1.5		75.025 721	74.376 202
78	2	78.000 000	76.700 962	75.834 936
80	6	80.000 000	76.102 886	73.504 809
	4		77.401 924	75.669 873
	3		78.051 443	76.752 405
	2		78.700 962	77.834 936
	1.5		79.025 721	78.376 202
82	2	82.000 000	80.700 962	79.834 936
85	6	85.000 000	81.102 886	78.504 809
	4		82.401 924	80.669 873
	3		83.051 443	81.752 405
	2		83.700 962	82.834 936
90	6	90.000 000	86.102 886	83.504 809
	4		87.401 924	85.669 873
	3		88.051 443	86.752 405
	2		88.700 962	87.834 936
95	6	95.000 000	91.102 886	88.504 809
	4		92.401 924	90.669 873
	3		93.051 443	91.752 405
	2		93.700 962	92.834 936
100	6	100.000 000	96.102 886	93.504 809
	4		97.401 924	95.669 873
	3		98.051 443	96.752 405
	2		98.700 962	97.834 936
105	6	105.000 000	101.102 886	98.504 809
	4		102.401 924	100.669 873
	3		103.051 443	101.752 405
	2		103.700 962	102.834 936
110	6	110.000 000	106.102 886	103.504 809
	4		107.401 924	105.669 873
	3		108.051 443	106.752 405
	2		108.700 962	107.834 936
115	6	115.000 000	111.102 886	108.504 809
	4		112.401 924	110.669 873
	3		113.051 443	111.752 405
	2		113.700 962	112.834 936
120	6	120.000 000	116.102 886	113.504 809
	4		117.401 924	115.669 873
	3		118.051 443	116.752 405
	2		118.700 962	117.834 936

4. BASIC DIMENSIONS IN MILLIMETRES (continued)

Nominal diameter	Pitch P	Major diameter D, d	Pitch diameter D_2, d_2	Minor diameter D_1, d_1
125	6	125.000 000	121.102 886	118.504 809
	4		122.401 924	120.669 873
	3		123.051 443	121.752 405
	2		123.700 962	122.834 936
130	6	130.000 000	126.102 886	123.504 809
	4		127.401 924	125.669 873
	3		128.051 443	126.752 405
	2		128.700 962	127.834 936
135	6	135.000 000	131.102 886	128.504 809
	4		132.401 924	130.669 873
	3		133.051 443	131.752 405
	2		133.700 962	132.834 936
140	6	140.000 000	136.102 886	133.504 809
	4		137.401 924	135.669 873
	3		138.051 443	136.752 405
	2		138.700 962	137.834 936
145	6	145.000 000	141.102 886	138.504 809
	4		142.401 924	140.669 873
	3		143.051 443	141.752 405
	2		143.700 962	142.834 936
150	6	150.000 000	146.102 886	143.504 809
	4		147.401 924	145.669 873
	3		148.051 443	146.752 405
	2		148.700 962	147.834 936
155	6	155.000 000	151.102 886	148.504 809
	4		152.401 924	150.669 873
	3		153.051 443	151.752 405
160	6	160.000 000	156.102 886	153.504 809
	4		157.401 924	155.669 873
	3		158.051 443	156.752 405
165	6	165.000 000	161.102 886	158.504 809
	4		162.401 924	160.669 873
	3		163.051 443	161.752 405
170	6	170.000 000	166.102 886	163.504 809
	4		167.401 924	165.669 873
	3		168.051 443	166.752 405
175	6	175.000 000	171.102 886	168.504 809
	4		172.401 924	170.669 873
	3		173.051 443	171.752 405
180	6	180.000 000	176.102 886	173.504 809
	4		177.401 924	175.669 873
	3		178.051 443	176.752 405
185	6	185.000 000	181.102 886	178.504 809
	4		182.401 924	180.669 873
	3		183.051 443	181.752 405
190	6	190.000 000	186.102 886	183.504 809
	4		187.401 924	185.669 873
	3		188.051 443	186.752 405

4. BASIC DIMENSIONS IN MILLIMETRES (continued)

Nominal diameter	Pitch P	Major diameter D, d	Pitch diameter D_2, d_2	Minor diameter D_1, d_1
195	6	195.000 000	191.102 886	188.504 809
	4		192.401 924	190.669 873
	3		193.051 443	191.752 405
200	6	200.000 000	196.102 886	193.504 809
	4		197.401 924	195.669 873
	3		198.051 443	196.752 405
205	6	205.000 000	201.102 886	198.504 809
	4		202.401 924	200.669 873
	3		203.051 443	201.752 405
210	6	210.000 000	206.102 886	203.504 809
	4		207.401 924	205.669 873
	3		208.051 443	206.752 405
215	6	215.000 000	211.102 886	208.504 809
	4		212.401 924	210.669 873
	3		213.051 443	211.752 405
220	6	220.000 000	216.102 886	213.504 809
	4		217.401 924	215.669 873
	3		218.051 443	216.752 405
225	6	225.000 000	221.102 886	218.504 809
	4		222.401 924	220.669 873
	3		223.051 443	221.752 405
230	6	230.000 000	226.102 886	223.504 809
	4		227.401 924	225.669 873
	3		228.051 443	226.752 405
235	6	235.000 000	231.102 886	228.504 809
	4		232.401 924	230.669 873
	3		233.051 443	231.752 405
240	6	240.000 000	236.102 886	233.504 809
	4		237.401 924	235.669 873
	3		238.051 443	236.752 405
245	6	245.000 000	241.102 886	238.504 809
	4		242.401 924	240.669 873
	3		243.051 443	241.752 405
250	6	250.000 000	246.102 886	243.504 809
	4		247.401 924	245.669 873
	3		248.051 443	246.752 405
255	6	255.000 000	251.102 886	248.504 809
	4		252.401 924	250.669 873
260	6	260.000 000	256.102 886	253.504 809
	4		257.401 924	255.669 873
265	6	265.000 000	261.102 886	258.504 809
	4		262.401 924	260.669 873
270	6	270.000 000	266.102 886	263.504 809
	4		267.401 924	265.669 873
275	6	275.000 000	271.102 886	268.504 809
	4		272.401 924	270.669 873
280	6	280.000 000	276.102 886	273.504 809
	4		277.401 924	275.669 873