
**Hand taps for parallel and taper pipe
threads — General dimensions and
marking**

*Tarauts à main pour filetages cylindrique et conique de tuyauterie —
Dimensions générales et marquage*





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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 on 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 the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 29, *Small tools*, Subcommittee SC 9, *Tools with defined cutting edges, cutting items*.

This fourth edition cancels and replaces the third edition (ISO 2284:1987), of which it constitutes a minor revision with the following changes:

- added [Annex B](#) giving the relationship between the symbols of this document and the symbols according to the ISO 13399 series.

Hand taps for parallel and taper pipe threads — General dimensions and marking

1 Scope

This document specifies the general dimensions and marking of hand taps for pipe threads.

It is applicable to the two following types of tap:

- taps for parallel threads (see [Figure 1](#) and [Table 1](#)),
- taps for taper threads (see [Figure 2](#) and [Table 2](#)),

having threads in accordance with ISO 7-1 and ISO 228-1.

Furthermore, it gives in [Annex A](#) the bases used for calculation of the dimensions, and in Annex B the relationship between designations in this document and the ISO 13399 series.

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 237, *Rotating tools with parallel shanks — Diameters of shanks and sizes of driving squares*

ISO 5969, *Ground thread taps for pipe threads G series and Rp series — Tolerances on the threaded portion*

3 Terms and definitions

No terms and definitions are listed in this document.

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 General dimensions

The general dimensions are given in [Table 1](#) and [Table 2](#).

Shank diameters and driving squares shall conform to the specifications given in ISO 237, the tolerances being as follows:

- on diameter, d_1 :
 - h9 for precision shanks;
 - h11 for other shanks;
- on width across flats, a :
 - h11;
 - h12 (including errors of form of the square and of its position in relation to the shank).

5 Marking

Taps in accordance with this document and with the requirements of ISO 5969 shall be marked, on the shank, with the following indications:

- a) the letter designating the thread series;
- b) the designation of the thread.

A G series parallel thread tap with designation 3/4 shall be marked as follows:

G 3/4

An Rp series parallel thread tap with designation 1/4 shall be marked as follows:

Rp 1/4

An Rc series taper thread tap with designation 1 shall be marked as follows:

Rc 1

Where tools comply in all respects with the relevant International Standards, the symbol ISO may be appended to the mark at the discretion of the manufacturer.

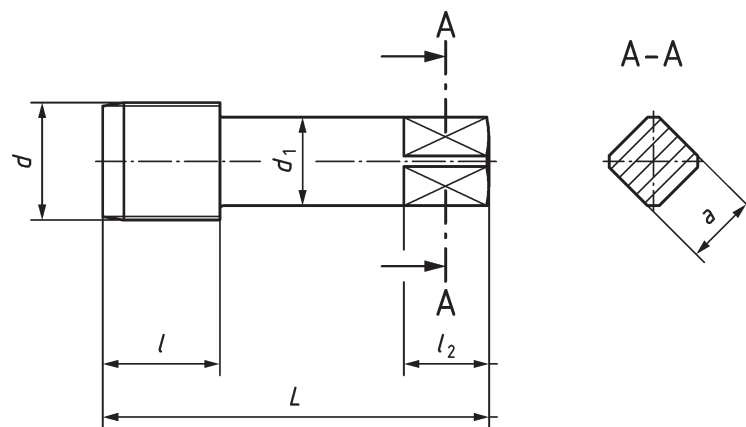


Figure 1 — Tap for parallel threads — G series and Rp series

Table 1 — Taps for parallel threads — G series and Rp series

Dimensions in millimetres

Thread designation	Number of threads in 25,4 mm	d nom.	Pitch \approx	d_1 h9	l +2 -1	L	Square	
							a h11	l_2
1/16	28	7,723	0,907	5,6	14	52	4,5	7
1/8	28	9,728		8	15	59	6,3	9
1/4	19	13,157	1,337	10	19	67	8	11
3/8	19	16,662		12,5	21	75	10	13
1/2	14	20,955	1,814	16	26	87	12,5	16
(5/8)	14	22,911		18		91	14	18
3/4	14	26,441		20	28	96	16	20
(7/8)	14	30,201		22,4	29	102	18	22
1	11	33,249	2,309	25	33	109	20	24
1 1/4	11	41,91		31,5	36	119	25	28
1 1/2	11	47,803		35,5	37	125	28	31
(1 3/4)	11	53,746				39		
2	11	59,614		40	41	140	31,5	34
(2 1/4)	11	65,71			42	142		
2 1/2	11	75,184		45	45	153	35,5	38
3	11	87,884		50	48	164	40	42
3 1/2	11	100,33		63	50	173	50	51
4	11	113,03		71	53	185	56	56

NOTE The sizes shown in parentheses are to be avoided whenever possible.

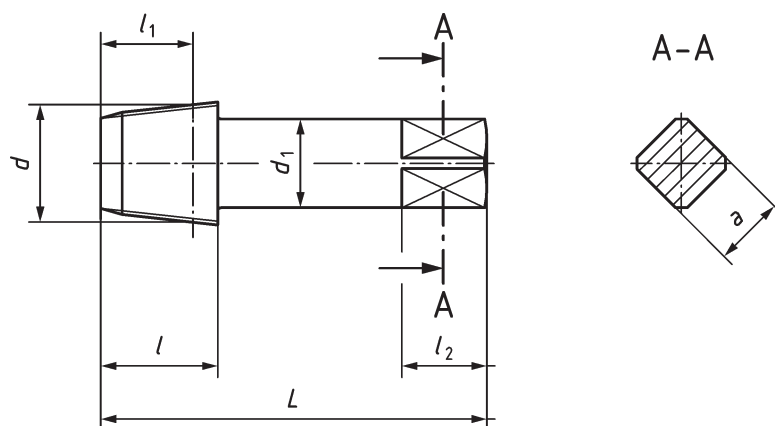


Figure 2 — Tap for taper threads — Rc series

Table 2 — Taps for taper threads — Rc series

Dimensions in millimetres

Thread designation	Number of threads in 25,4 mm	d nom.	Pitch ≈	d ₁ h9	l +2 -1	L	l ₁ max.	Square	
								a h11	l ₂
1/16	28	7,723	0,907	5,6	14	52	10,1	4,5	7
1/8	28	9,728		8	15	59		6,3	9
1/4	19	13,157	1,337	10	19	67	15	8	11
3/8	19	16,662		12,5	21	75	15,4	10	13
1/2	14	20,955	1,814	16	26	87	20,5	12,5	16
3/4	14	26,441		20	28	96	21,8	16	20
1	11	33,249	2,309	25	33	109	26	20	24
1 1/4	11	41,91		31,5	36	119	28,3	25	28
1 1/2	11	47,803		35,5	37	125	28,3	28	31
2	11	59,614		40	41	140	32,7	31,5	34
2 1/2	11	75,184		45	45	153	37,1	35,5	38
3	11	87,884		50	48	164	40,2	40	42
3 1/2	11	100,33		63	50	173	41,9	50	51
4	11	113,03		71	53	185	46,2	56	56

Annex A (informative)

Bases for calculation of the dimensions

A.1 General

This document has been prepared on the basis of empirical formulae extracted from standards and existing practice in various countries, and by taking ISO 529 into consideration.

A.2 Threaded length

The threaded length consists of the entering length and the full thread length. We therefore have [Formula \(A.1\)](#):

$$5 p + 3,08 d^{0,55} \tag{A.1}$$

The first term of this formula corresponds to the maximum entering length of threads.

A.3 Shank length

The shank length consists of the “free” length (outside the tap holder) of the shank, that length supposed to be absorbed by the clamp of the tapping machine and the length of the driving square; we therefore have [Formula \(A.2\)](#):

$$(6,3 d^{0,45}) + (10 d_1^{0,25}) + l_2 \tag{A.2}$$

The first term of this formula corresponds to the free length, the second to the length absorbed by the clamp and the third to the length of the square.

Annex B (informative)

Relationship between designations in this document and the ISO 13399 series

For the relationship between the designations in this document and preferred symbols according to the ISO 13399 series, see [Table B.1](#).

Table B.1 — Relationship between designations in this document and the ISO 13399 series

Symbol in this document	Reference in this document	Property name in the ISO 13399 series	Symbol in the ISO 13399 series	Reference in the ISO 13399 series
Thread	Table 1 Table 2	thread diameter, inch fraction	TDFR	726E3EACB6BE4
Number of threads in 25,4 mm	Table 1 Table 2	threads per inch	TPI	71D1A6AAC8707
d_1	Table 1 Table 2	connection diameter machine side	DCONMS	71EBDBF5060E6
$d_1 h9$	Table 1 Table 2	tolerance class connection diameter machine side	TCDCONMS	72719B2BD8041
l	Table 1 Table 2	thread cutting part length	THL	71E02C65BB9DA
L	Table 1 Table 2	overall length	OAL	71D078EB7C086
Pitch	Table 1 Table 2	thread pitch	TP	71CEAEC08D4B0

Bibliography

- [1] ISO 7-1, *Pipe threads where pressure-tight joints are made on the threads — Part 1: Dimensions, tolerances and designation*
- [2] ISO 228-1, *Pipe threads where pressure-tight joints are not made on the threads — Part 1: Dimensions, tolerances and designation*
- [3] ISO 529, *Short machine taps and hand taps*
- [4] ISO 13399 (all parts), *Cutting tool data representation and exchange*

