# INTERNATIONAL STANDARD

ISO 529

Third edition 2017-03

## Short machine taps and hand taps

Tarauds courts à machine et à main

## iTeh STANDARD PREVIEW (standards.iteh.ai)

ISO 529:2017 https://standards.iteh.ai/catalog/standards/sist/2a88e2d4-ca61-475e-a535-80496ea77a81/iso-529-2017



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Con	tents		Page
Forew	ord		iv
1	Scope		1
2	Norm	ative references	1
3	Terms	and definitions	1
4		tric threads Threads up to M25 4.1.1 Full-diameter shank taps with plain connecting portion 4.1.2 Full-diameter shank taps with recess 4.1.3 Relieved-shank taps Threads above M25	2 2 3 4
		<ul><li>4.2.1 Relieved-shank taps for coarse pitch metric thread</li><li>4.2.2 Relieved-shank taps for fine pitch metric thread</li></ul>	
5	<b>ISO</b> in 5.1	ch threads, "Unified coarse" (UNC) and "Unified fine" (UNF) series  "Unified" series threads up to 25,4 mm	
6	Non-r 6.1 6.2	"British Standard Whitworth" (BSW) and "British Standard Fine" (BSF) threads 6.1.1 Full-diameter shank taps with recess 6.1.2 Relieved-shank taps SO 529:2017  "British Association" (BA) threads ds/sist/2a88e2d4-ca61-475e-a535- 6.2.1 Full-diameter shank taps with plan connecting portion 6.2.2 Full-diameter shank taps with recess 6.2.3 Relieved-shank taps	13 14 16 16
Annex	A (nor range	mative) Shank diameter, overall length and thread length as a function of of diameters and pitches	19
Annex	<b>B</b> (info	ormative) Shank diameters and size of driving squares (Extract from ISO 237)	22
	c C (info	ormative) Relationship between designations in this document and 3399 series	
Biblio		· · · · · · · · · · · · · · · · · · ·	

## **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 <a href="www.iso.org/directives">www.iso.org/directives</a>).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see <a href="https://www.iso.org/patents">www.iso.org/patents</a>).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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: <a href="https://www.iso.org/iso/foreword.html">www.iso.org/iso/foreword.html</a>. (standards.iteh.ai)

This document was prepared by Technical Committee ISO/TC 29, Small tools, Subcommittee SC 9, Tools with defined cutting edges, cutting items.  $\frac{ISO\ 529:2017}{\text{https://standards.iteh.ai/catalog/standards/sist/2a88e2d4-ca61-475e-a535-abs}$ 

This third edition cancels and replaces the second edition (ISO7529:1993), of which it constitutes a minor revision with the following changes:

added <u>Annex C</u> giving the relationship between the symbols of this document and the symbols according to the ISO 13399 series.

## Short machine taps and hand taps

## 1 Scope

This document specifies the general dimensions of short machine taps and hand taps. These dimensions, established as functions of the thread diameter and pitch, are the following:

- length of thread (maximum);
- overall length;
- shank diameter and dimensions of driving square;
- dimensions of the connecting portion between the shank and threaded part.

This document is applicable to taps intended for cutting the following threads:

- a) ISO metric threads:
  - coarse pitch;
  - fine pitch;

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- b) ISO inch threads:
  - (standards.iteh.ai)"Unified Coarse" series (UNC) and "Unified Fine" series (UNF);
- c) Inch threads, non-recommended: ISO 529:2017 https://standards.itch.ai/catalog/standards/sist/2a88e2d4-ca61-475e-a535-
  - "British Standard Whitworth" (BSW) and "British Standard Fine" (BSF);
  - "British Association" (BA).

NOTE 1 The overall length, thread length and diameters of shank for taps whose thread diameter and pitch are not listed in tables are given in Table A.1.

NOTE 2 Annex B gives an abstract from ISO 237 for shank diameters and size of driving squares, for information.

NOTE 3 Technical specifications for taps covered by this document (including marking) are given in ISO 8830.

#### 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

#### 3 Terms and definitions

No terms and definitions are listed in this document.

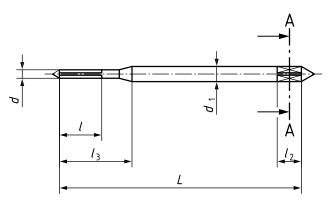
ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <a href="http://www.electropedia.org/">http://www.electropedia.org/</a>
- ISO Online browsing platform: available at <a href="http://www.iso.org/obp">http://www.iso.org/obp</a>

### 4 ISO metric threads

## 4.1 Threads up to M25

## 4.1.1 Full-diameter shank taps with plain connecting portion



Dimensions in millimetres A - A



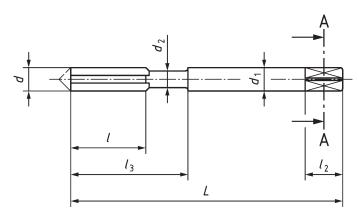
De	signation		Pitch						Square	
Coarse pitch	Fine pitch	d nom.	Coarse	Fine	d <sub>1</sub> h9 <sup>b</sup>	<i>l</i> a max.	<i>L</i> h16	$l_3$	а h11 <sup>c</sup>	l <sub>2</sub> ±0,8
M1	$M1 \times 0.2$	1	LOT	ANID	A DD			7		
M1,1	$M1,1 \times 0,2$	1,1	h <sub>0,25</sub> T	AND	ARD	PRE	38,5	10		
M1,2	$M1,2 \times 0,2$	1,2	(st	anda	rds.it	eh.ai)				
M1,4	$M1,4 \times 0,2$	1,4	0,3	0,2	2,5	7	40	12	2	4
M1,6	$M1,6 \times 0,2$	1,6	0.25	ISC	529:2017			12		
M1,8	$M1,8 \times 0,2$	https://stan	dards.iteh.a	i/catalog/sta	ndards/sist/2	2a88 <b>&amp;</b> 2d4-c	a61-4175e-a	1535-3		
M2	$M2 \times 0,25$	2	0,4	80496ea// 0,25	a81/iso-529	9-2017		13,5		
M2,2	$M2,2 \times 0,25$	2,2	0,45	0,25	20	9,5	445	15,5	2,24	5
M2,5	$M2,5 \times 0,35$	2,5	0,45	0,35	2,8	7,3	44,5	13,5	2,24	3

Manufacturers, if they wish, may increase the thread length to  $1 + \frac{l_3 - l}{2}$ .

b In accordance with ISO 237, tolerance h9 applies to precision shanks. For non-precision shanks, the tolerance is h11.

In accordance with ISO 237, the tolerance is enlarged to h12 when including errors of form of the square and of its position in relation to the shank.

#### 4.1.2 Full-diameter shank taps with recess



Dimensions in millimetres A - A



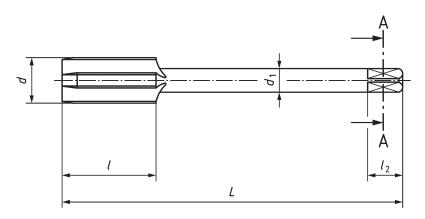
De	Designation		Pitch								Square	
Coarse pitch	Fine pitch	d nom.	Coarse	Fine	d <sub>1</sub> h9 <sup>b</sup>	<i>l</i> a max.	<i>L</i> h16	$d_2$ a	l <sub>3</sub>	а h11 <sup>c</sup>	l <sub>2</sub> ±0,8	
М3	$M3 \times 0.35$	3	0,5	0,35	3,15	11	48	2,12	18	2,5	5	
M3,5	$M3,5 \times 0,3,5$	3,5	0,6	0,33	3,55		50	2,5	20	2,8	3	
M4	M4 × 0,5	Ten S	0,7	<b>IDAI</b>	RD P	R <sub>13</sub> V	IE <sub>53</sub> V	2,8	21	3,15	6	
M4,5	$M4,5 \times 0,5$	4,5	0,75	dasad	4,5	(:0	33	3,15	21	3,55	0	
M5	$M5 \times 0,5$	5	0,8	d&fd	<b>5.1</b> 5 <b>E</b> 1	1.46)	58	3,55	25	4	7	
_	$M5,5 \times 0,5$	5,5	_	ISO 520	5,6	17	62	4	26	4,5	7	
M6	$M6 \times 0.75_{tos}$	Vstandards	iteh.aj/cata	log/st <del>zu</del> dar	ds/sist/2a88	8e2d <b>/9</b> ca6	1-47 <u>66</u> -a5	35-4,5	30	5	8	
M7	$M7 \times 0,75$	7	8049	6ea77a81/	so- <i>5</i> 20-20		00	5,3	30	5,6	0	
M8	M8 × 1	8	1,25		8	22	72	6	35	6,3	9	
M9	M9 × 1	9	1,25	1	9	22	/ 4	7,1	36	7,1	10	
M10	M10 × 1	10	1 5		10	24	00	7.5	39	8	11	
M10	M10 × 1,25	10	1,5	1,25	10	24	80	7,5	39	0	11	

The recess of full diameter shank taps with recess is optional at the manufacturer's discretion. If the recess is not required, such taps shall have a thread length equal to  $l + \frac{l_3 - l}{2}$ .

b In accordance with ISO 237, tolerance h9 applies to precision shanks. For non-precision shanks, the tolerance is h11.

In accordance with ISO 237, the tolerance is enlarged to h12 when including errors of form of the square and of its position in relation to the shank.

### 4.1.3 Relieved-shank taps



Dimensions in millimetres A-A



Desig	nation		Pito	ch				Squa	re
Coarse pitch	Fine pitch	d nom.	Coarse	Fine	d <sub>1</sub> h9 <sup>a</sup>	l max.	<i>L</i> h16	а h11 <sup>b</sup>	l <sub>2</sub> ±0,8
М3	M3 × 0,35	3	0,5	0,35	2,24	11	48	1,8	4
M3,5	$M3,5 \times 0,3,5$	3,5	0,6	0,33	2,5		50	2	4
M4	M4 × 0,5	Teh S	<b>T_0,7</b>	ARD	3,15	<b>V</b> 13 F	$V_{53}$	2,5	5
M4,5	$M4,5 \times 0,5$	4,5	0,75	0.5	3,55		33	2,8	3
M5	$M5 \times 0,5$	5	Sta <sub>,8</sub> ua	ar@s.i	ten.a.	16	58	3,15	
_	$M5,5 \times 0,5$	5,5		0.520.201	7	17	62	3,13	6
M6	$M6 \times 0.75$	standards it	eh.ai/catalog/s	tanda <del>nd</del> s/sis	/ t/2a <mark>4</mark> x5 t/2a8862d4	-ca6 <u>1</u> 94756	-a525-	3,55	
M7	$M7 \times 0.75$	7	80496ea7	7a81/iso-5	29- <b>25)6</b> 7	19	00	4,5	7
M8	M8 × 1	8	1,25		6,3	22	72	5	8
M9	M9 × 1	9	1,23	1	7,1	22	72	5,6	0
M10	M10 × 1	10				24	80		
MITO	M10 × 1,25	10	1,5	1,25	8	24	80	6,3	9
M11	_	11		_		25	85		
M12	M12 × 1,25	12	1,75	1,25	9	29	89	7,1	10
IVIIZ	M12 × 1,5	12	1,73	1,5	9	29	09	7,1	10
M14	M14 × 1,25	14		1,25					
MITT	M14 × 1,5	14	2		11,2	30	95	9	12
_	M15 × 1,5	15							
M16	M16 × 1,5	16		1,5	12,5	32	102	10	13
_	M17 × 1,5	17	_		12,3	32	102	10	15
M18	M18 × 1,5	18							
MIO	M18 × 2	10		2	14	37	112	11,2	14
M20	M20 × 1,5	20	2,5	1,5	14	37	114	11,4	14
IVIZU	M20 × 2	20		2					
M22	M22 × 1,5	22		1,5	16	38	118	12,5	16
14177	M22 × 2	22		2	10	30	110	14,0	10

In accordance with ISO 237, tolerance h9 applies to precision shanks. For non-precision shanks, the tolerance is h11.

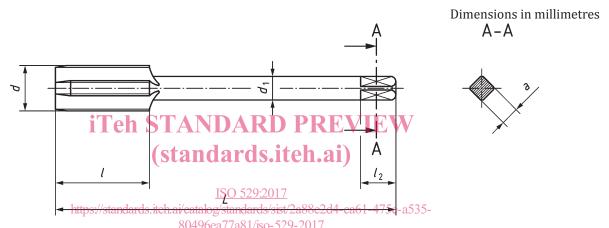
b In accordance with ISO 237, the tolerance is enlarged to h12 when including errors of form of the square and of its position in relation to the shank.

Designation			Pitch					Squa	re
Coarse pitch	Fine pitch	d nom.	Coarse	Fine	d <sub>1</sub> h9 <sup>a</sup>	<i>l</i> max.	<i>L</i> h16	а h11 <sup>b</sup>	l <sub>2</sub> ±0,8
MOA	M24 × 1,5	24	3	1,5	18	45	130	14	10
M24	M24 × 2			2					
	M25 × 1,5	25	_	1,5					18
_	M25 × 2	25		2					

In accordance with ISO 237, tolerance h9 applies to precision shanks. For non-precision shanks, the tolerance is h11.

#### 4.2 Threads above M25

## 4.2.1 Relieved-shank taps for coarse pitch metric thread



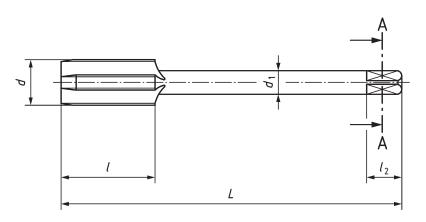
Designation		Pitch	1X 1/1SO-5/29-70			Squ	are
	d nom.		d <sub>1</sub> h9 <sup>a</sup>	l max	<i>L</i> h16	а h11 <sup>b</sup>	l <sub>2</sub> ±1,6
M27	27	3	20	45	135	16	20
M30	30	2 5	20	48	138	10	20
M33	33	3,5	22,4	51	151	18	22
M36	36	4	25	57	162	20	24
M39	39	4	28	60	170	22,4	26
M42	42	4.5	20		170		20
M45	45	4,5	31,5	67	187	25	28
M48	48	5	31,3	07	107	23	20
M52	52	] 5	35,5	70	200	28	31
M56	56		35,5	70	200	20	31
M60	60	5,5	40	76	221	21 년	34
M64	64	6	40	70	224	31,5	34
M68	68	6	45	79	234	35,5	38

In accordance with ISO 237, tolerance h9 applies to precision shanks. For non-precision shanks, the tolerance is h11.

 $<sup>^{</sup>b}$  In accordance with ISO 237, the tolerance is enlarged to h12 when including errors of form of the square and of its position in relation to the shank.

b In accordance with ISO 237, the tolerance is enlarged to h12 when including errors of form of the square and of its position to the shank.

## 4.2.2 Relieved-shank taps for fine pitch metric thread



Dimensions in millimetres A-A



Designation		Pitch				Sqı	iare
	d nom.		d <sub>1</sub> h9 <sup>a</sup>	l max.	<i>L</i> h16	a h11 <sup>b</sup>	l <sub>2</sub> ±1,6
M27 × 1,5	27	1,5					
M27 × 2	27	2					
M28 × 1,5	28	iTels S	<b>CAND</b> A	RD, PR	EVALEV	V	
M28 × 2	20	2	20	ARD, PR ds.iteh.	127	16	20
M30 × 1,5		1,5	tanuar		ai)		
M30 × 2	30	2	ISO	520-2017			
M30 × 3	htts	ns://standards.itel	180 nai/catalog/stan	029.201 / 48 dards/sst/2a88e	2d4-ca01-475e-	a535-	
M32 × 1,5	32	1,5	80496ea77a	81/iso-529-201	7		
M32 × 2	32	2		37	137		
M33 × 1,5		1,5	22,4	37	157	18	22
M33 × 2	33	2					
M33 × 3		3		51	151		
M35 × 1,5	35	1,5					
M36 × 1,5		1,3	25	39	144	20	24
M36 × 2	36	2	25				24
M36 × 3		3		57	162		
M39 × 1,5		1,5		39	149		
M39 × 2	39	2		37	147		
M39 × 3		3		60	170		
M40 × 1,5		1,5		39	149		
M40 × 2	40	2	28	37	147	22,4	26
M40 × 3		3	20	60	170	22,T	20
M42 × 1,5		1,5		39	149		
M42 × 2	42	2		39	147		
M42 × 3	74	3		60	170		
M42 × 4		4		00	1/0		

In accordance with ISO 237, tolerance h9 applies to precision shanks. For non-precision shanks, the tolerance is h11.

b In accordance with ISO 237, the tolerance is enlarged to h12 when including errors of form of the square and of its position to the shank.

Designation		Pitch				Squ	iare
	d nom.		d <sub>1</sub> h9 <sup>a</sup>	<i>l</i> max.	<i>L</i> h16	а h11b	l <sub>2</sub> ±1,6
M45 × 1,5		1,5		45	165		
M45 × 2	45	2		45	165		
M45 × 3	45	3		67	187		
M45 × 4		4		67	107		
M48 × 1,5		1,5		45	165		
M48 × 2	40	2	31,5	45	103	25	28
M48 × 3	48	3		67	187		
M48 × 4		4		0/	187		
M50 × 1,5		1,5		4.5	165		
M50 × 2	50	2		45	165		
M50 × 3		3		67	187		
M52 × 1,5		1,5		4.5	175		
M52 × 2	52	2		45	175		31
M52 × 3	32	3		70	200		
M52 × 4		4			200	28	
M55 × 1,5		1,5		PREV	175 F.W		
M55 × 2	i <sub>5</sub> Tel	STAN	D <sub>35</sub> RD				
M55 × 3	35-	3		70	200		
M55 × 4		(Stanc	lards.it	ten.ai)	200		
M56 × 1,5		1,5	100 520,2017	45	175		
M56 × 2	http <b>5</b> %standa	urds iteh ai/catalo	ISO 529:2017 g/standards/sist		-475e-a535-		
M56 × 3	парубанка	3 80496	ea77a81/iso-52	9-20170	200		
M56 × 4		4		70	200		
M70 × 6	70						
M72 × 6	72		45	79	234	35,5	38
M75 × 6	75						
M76 × 6	76			83	258		
M80 × 6	80	6	50	03	230	40	42
M85 × 6	85		30	0.6	2/4	40	42
M90 × 6	90			86	261		
M95 × 6	95		E.6	00	270	45	16
M100 × 6	100		56	89	279	45	46

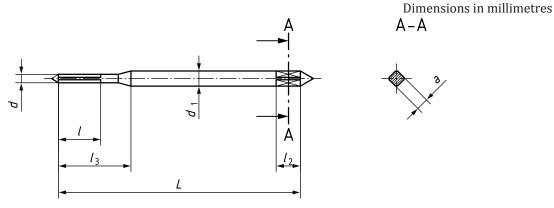
In accordance with ISO 237, tolerance h9 applies to precision shanks. For non-precision shanks, the tolerance is h11.

b In accordance with ISO 237, the tolerance is enlarged to h12 when including errors of form of the square and of its position to the shank.

## 5 ISO inch threads, "Unified coarse" (UNC) and "Unified fine" (UNF) series

## 5.1 "Unified" series threads up to 25,4 mm

#### 5.1.1 Full-diameter shank taps with plain connecting portion



Designation		Tab C'	Pitch		) DD				Squ	are
UNC	UNF	Teh S' nom.	UNC	UNF	d₁ ∙h9b	la max.	L h16	l <sub>3</sub>	<i>a</i> h11 <sup>c</sup>	l <sub>2</sub> ±0,8
_	No.0-80-UNF	1,524	_	0,318	2 5	8	41	13	2	4
No.1-64-UNC	No.1-72-UNF	1,854	0,397 <u>I</u>	500535301	2,5 7	0	41	13,5	4	4
No.2-56-UNC	No.2-64-UNEs:	//sta <b>2,184</b> s.ite	h.a0;45:4og/	sta <b>0,397</b> /si	st/2a88e2	d4-ca61- 9,5	475e-a53 44,5	35- 15,5	2,24	5
No.3-48-UNC	No.3-56-UNF	2,515	6,526ea	77 <sub>0</sub> ,454-	129 <b>=20</b> 17	7,3	44,5	13,5	2,24	3

Manufacturers, if they wish, may increase the thread length to  $1 + \frac{l_3 - l}{2}$ .

In accordance with ISO 237, tolerance h9 applies to precision shanks. For non-precision shanks, the tolerance is h11.

<sup>&</sup>lt;sup>c</sup> In accordance with ISO 237, the tolerance is enlarged to h12 when including errors of form of the square and of its position in relation to the shank.