
Short machine taps and hand taps

Tarauds courts à machine et à main

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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).

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 www.iso.org/patents).

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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 third edition cancels and replaces the second edition (ISO 529:1993), of which it constitutes a minor revision with the following changes:

- added [Annex C](#) 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;
- b) ISO inch threads:
 - “Unified Coarse” series (UNC) and “Unified Fine” series (UNF);
- c) Inch threads, non-recommended:
 - “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.

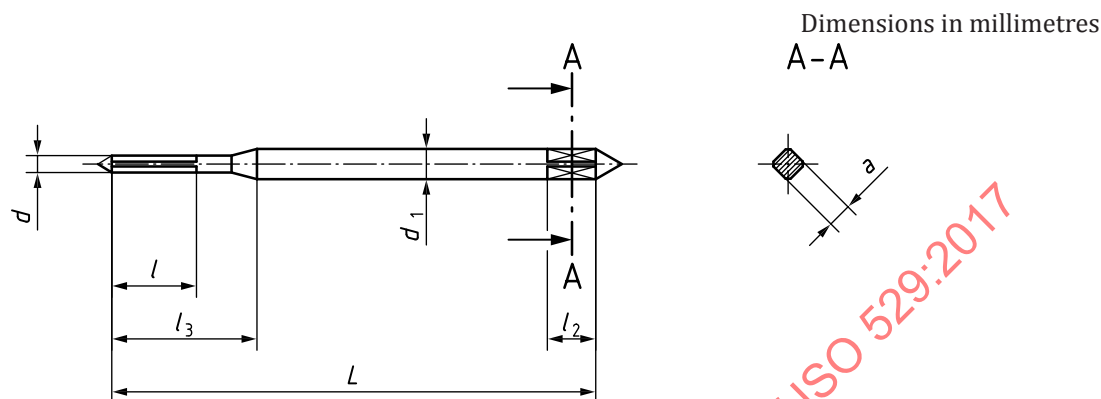
ISO and IEC maintain terminological databases for use in standardization at the following addresses:

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

4 ISO metric threads

4.1 Threads up to M25

4.1.1 Full-diameter shank taps with plain connecting portion



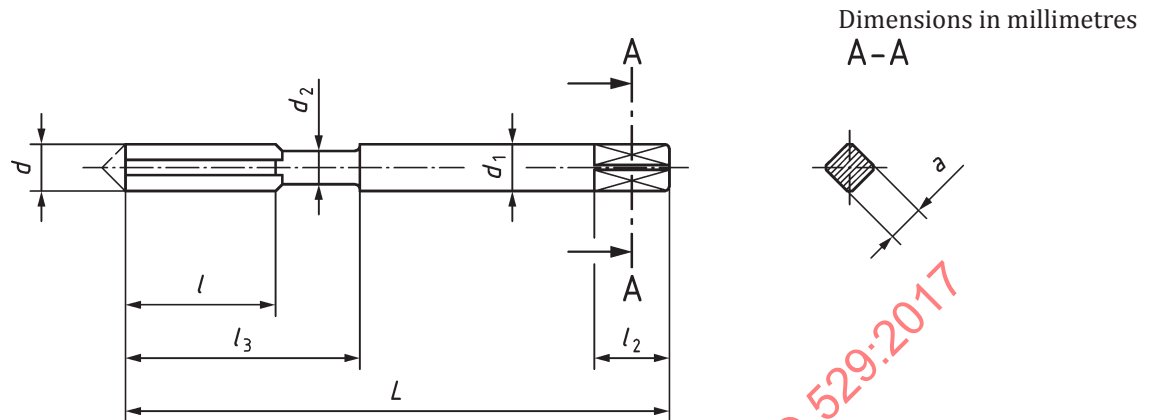
Designation		d nom.	Pitch		d_1 h9b	l^a max	L h16	l_3	Square							
Coarse pitch	Fine pitch		Coarse	Fine					a h11c	l_2 ±0,8						
M1	M1 × 0,2	1	0,25	0,2	2,5	5,5	38,5	10	2	4						
M1,1	M1,1 × 0,2	1,1														
M1,2	M1,2 × 0,2	1,2														
M1,4	M1,4 × 0,2	1,4	0,3		7	40	12									
M1,6	M1,6 × 0,2	1,6	0,35		8	41	13									
M1,8	M1,8 × 0,2	1,8					13,5									
M2	M2 × 0,25	2	0,4	0,25	2,8	9,5	44,5	15,5	2,24	5						
M2,2	M2,2 × 0,25	2,2	0,45													
M2,5	M2,5 × 0,35	2,5	0,45	0,35												

^a Manufacturers, if they wish, may increase the thread length 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.

^c 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



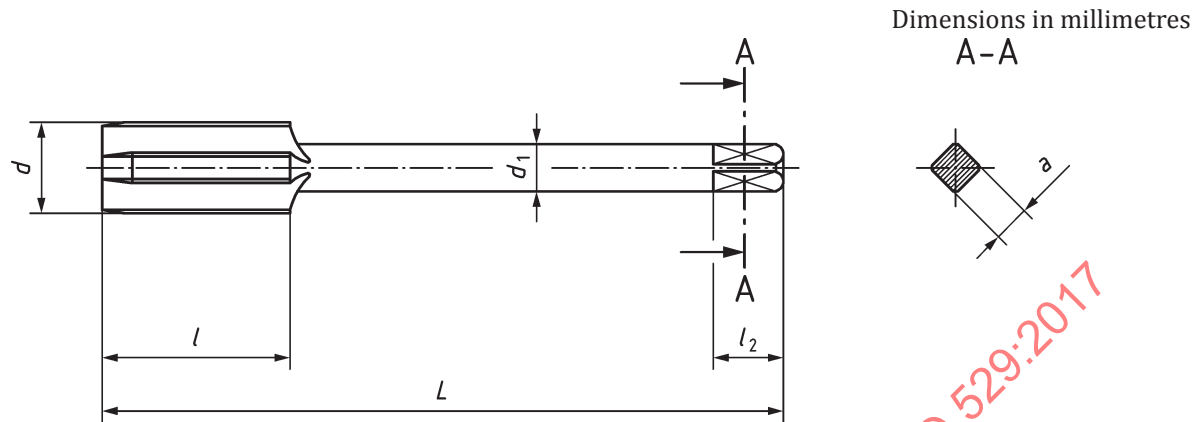
Designation		d nom.	Pitch		d_1 h9 ^b	l^a max.	L h16	d_2^a	l_3	Square	
Coarse pitch	Fine pitch		Coarse	Fine						a h11 ^c	l_2 $\pm 0,8$
M3	M3 $\times$ 0,35	3	0,5	0,35	3,15	11	48	2,12	18	2,5	5
M3,5	M3,5 $\times$ 0,35	3,5	0,6		3,55		50	2,5	20	2,8	
M4	M4 $\times$ 0,5	4	0,7	0,5	4	13	53	2,8	21	3,15	6
M4,5	M4,5 $\times$ 0,5	4,5	0,75		4,5			3,15		3,55	
M5	M5 $\times$ 0,5	5	0,8		5	16	58	3,55	25	4	7
—	M5,5 $\times$ 0,5	5,5	—		5,6	17	62	4	26	4,5	7
M6	M6 $\times$ 0,75	6	1	0,75	6,3	19	66	4,5	30	5	8
M7	M7 $\times$ 0,75	7			7,1			5,3		5,6	
M8	M8 $\times$ 1	8	1,25	1	8	22	72	6	35	6,3	9
M9	M9 $\times$ 1	9			9			7,1		7,1	10
M10	M10 $\times$ 1	10	1,5	1,25	10	24	80	7,5	39	8	11
	M10 $\times$ 1,25										

^a 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.

^c 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



Designation		<i>d</i> nom.	Pitch		<i>d</i> ₁ h9 ^a	<i>l</i> max.	<i>L</i> h16	Square						
Coarse pitch	Fine pitch		Coarse	Fine				<i>a</i> h11 ^b	<i>l</i> ₂ ±0,8					
M3	M3 × 0,35	3	0,5	0,35	2,24	11	48	1,8	4					
M3,5	M3,5 × 0,3,5	3,5	0,6		2,5		50	2						
M4	M4 × 0,5	4	0,7	0,5	3,15	13	53	2,5	5					
M4,5	M4,5 × 0,5	4,5	0,75		3,55					2,8				
M5	M5 × 0,5	5	0,8		4	16	58	3,15	6					
—	M5,5 × 0,5	5,5	—	17		62								
M6	M6 × 0,75	6	1	0,75	4,5	19	66	3,55	7					
M7	M7 × 0,75	7			5,6			4,5						
M8	M8 × 1	8	1,25	1	6,3	22	72	5	8					
M9	M9 × 1	9			7,1			5,6						
M10	M10 × 1	10	1,5	1,25	8	24	80	6,3	9					
	M10 × 1,25													
M11	—	11				—				25	85			
M12	M12 × 1,25	12	1,75	1,25	9	29	89	7,1	10					
	M12 × 1,5			1,5										
M14	M14 × 1,25	14	2	1,25	11,2	30	95	9	12					
	M14 × 1,5			1,5										
—	M15 × 1,5	15								12,5	32	102	10	13
M16	M16 × 1,5	16												
—	M17 × 1,5	17	—											
M18	M18 × 1,5	18	2,5	2	14	37	112	11,2	14					
	M18 × 2			1,5										
M20	M20 × 1,5	20		2						1,5				
	M20 × 2			2										
M22	M22 × 1,5	22		1,5						16	38	118	12,5	16
	M22 × 2			2										

^a 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.

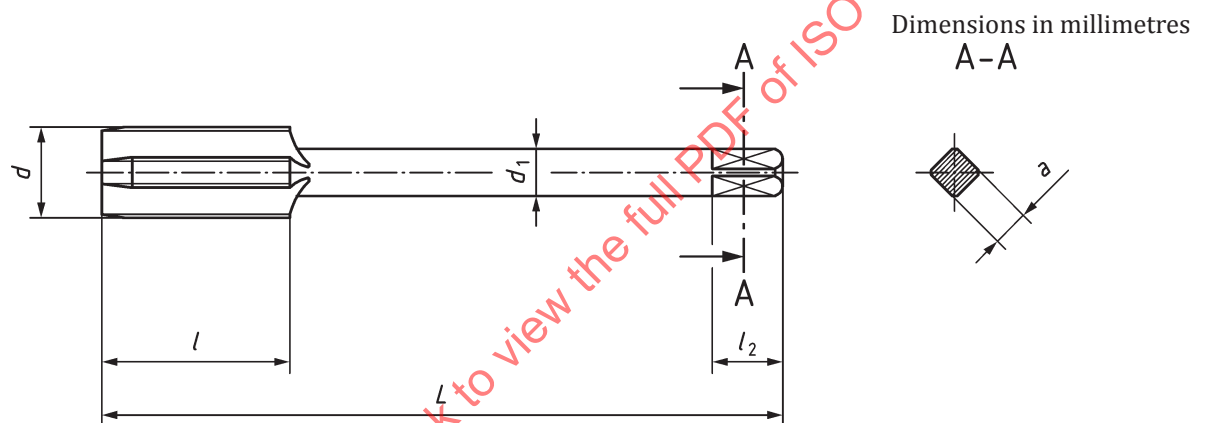
Designation		d nom.	Pitch		d_1 h9 ^a	l max.	L h16	Square	
Coarse pitch	Fine pitch		Coarse	Fine				a h11 ^b	l_2 $\pm 0,8$
M24	M24 $\times$ 1,5	24	3	1,5	18	45	130	14	18
	M24 $\times$ 2			2					
—	M25 $\times$ 1,5	25	—	1,5					
	M25 $\times$ 2			2					

^a 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.

4.2 Threads above M25

4.2.1 Relieved-shank taps for coarse pitch metric thread

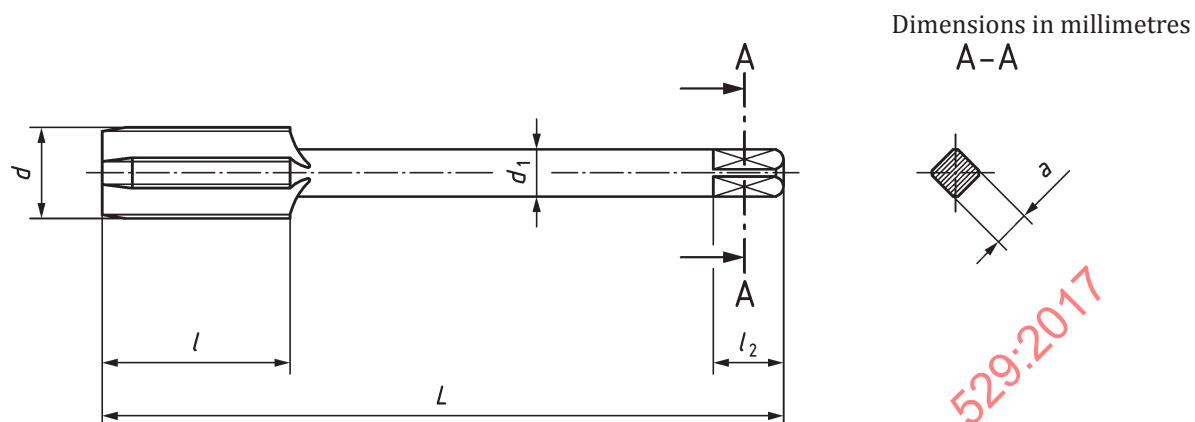


Designation	d nom.	Pitch	d_1 h9 ^a	l max	L h16	Square	
						a h11 ^b	l_2 ±1,6
M27	27	3	20	45	135	16	20
M30	30	3,5		48	138		
M33	33			22,4	51	151	18
M36	36	4	25	57	162	20	24
M39	39			28	60	170	22,4
M42	42	4,5	31,5				
M45	45				35,5	70	200
M48	48	5	40	76			
M52	52					79	224
M56	56	5,5	45	234	35,5		
M60	60						45
M64	64	6	45	234	35,5	38	
M68	68						

^a 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.

4.2.2 Relieved-shank taps for fine pitch metric thread



Designation	d nom.	Pitch	d_1 h9 ^a	l max.	L h16	Square	
						a h11 ^b	l_2 ±1,6
M27 × 1,5	27	1,5	20	37	127	16	20
M27 × 2		2					
M28 × 1,5	28	1,5					
M28 × 2		2					
M30 × 1,5	30	1,5					
M30 × 2		2					
M30 × 3		3					
M32 × 1,5	32	1,5	22,4	37	137	18	22
M32 × 2		2					
M33 × 1,5	33	1,5					
M33 × 2		2					
M33 × 3		3					
M35 × 1,5	35	1,5	25	39	144	20	24
M36 × 1,5	36	2					
M36 × 2		3					
M36 × 3		3					
M39 × 1,5	39	1,5	28	39	149	22,4	26
M39 × 2		2					
M39 × 3		3					
M40 × 1,5	40	1,5		39	149		
M40 × 2		2					
M40 × 3		3					
M42 × 1,5	42	1,5		39	149		
M42 × 2		2					
M42 × 3		3					
M42 × 4		4					

^a 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	d nom.	Pitch	d_1 h9 ^a	l max.	L h16	Square	
						a h11 ^b	l_2 $\pm 1,6$
M45 × 1,5	45	1,5	31,5	45	165	25	28
M45 × 2		2					
M45 × 3		3		67	187		
M45 × 4		4					
M48 × 1,5	48	1,5		45	165		
M48 × 2		2					
M48 × 3		3		67	187		
M48 × 4		4					
M50 × 1,5	50	1,5		45	165	28	31
M50 × 2		2					
M50 × 3		3		67	187		
M52 × 1,5	52	1,5	35,5	45	175		
M52 × 2		2					
M52 × 3		3		70	200		
M52 × 4		4					
M55 × 1,5	55	1,5		45	175		
M55 × 2		2					
M55 × 3		3		70	200		
M55 × 4		4					
M56 × 1,5	56	1,5		45	175	40	42
M56 × 2		2					
M56 × 3		3		70	200		
M56 × 4		4					
M70 × 6	70	6	45	79	234	35,5	38
M72 × 6	72					40	42
M75 × 6	75						
M76 × 6	76		50	83	258		
M80 × 6	80						
M85 × 6	85		56	86	261	45	46
M90 × 6	90						
M95 × 6	95						
M100 × 6	100			89	279		

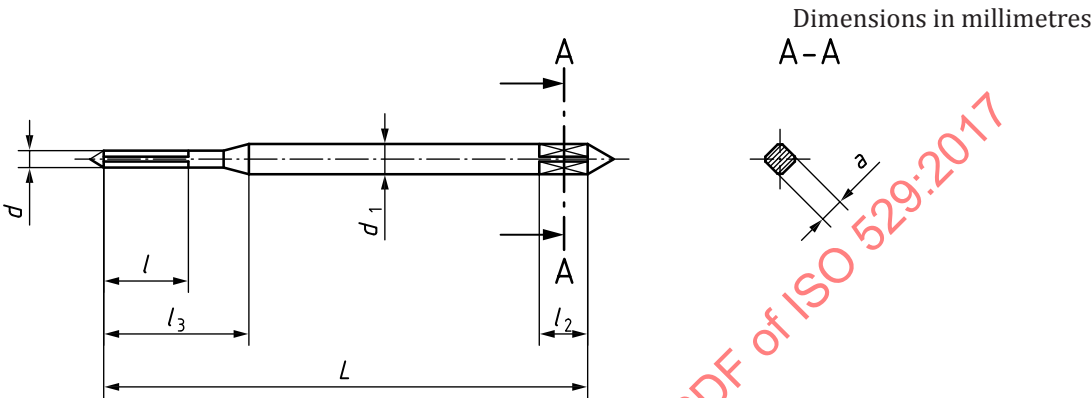
^a In accordance with ISO 237, tolerance h9 applies to precision shanks. For non-precision shanks, the tolerance is h11.

^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



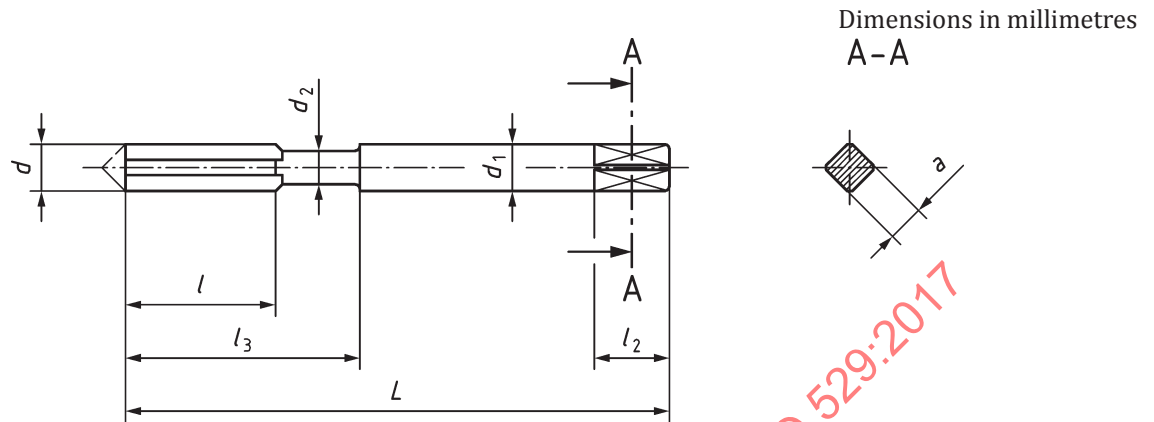
Designation		d nom.	Pitch ≈		d ₁ h9 ^b	l ^a max.	L h16	l ₃	Square	
UNC	UNF		UNC	UNF					a h11 ^c	l ₂ ±0,8
—	No.0-80-UNF	1,524	—	0,318	2,5	8	41	13	2	4
No.1-64-UNC	No.1-72-UNF	1,854	0,397	0,353				13,5		
No.2-56-UNC	No.2-64-UNF	2,184	0,454	0,397	2,8	9,5	44,5	15,5	2,24	5
No.3-48-UNC	No.3-56-UNF	2,515	0,529	0,454						

^a Manufacturers, if they wish, may increase the thread length 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.

^c 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.

5.1.2 Full-diameter shank taps with recess



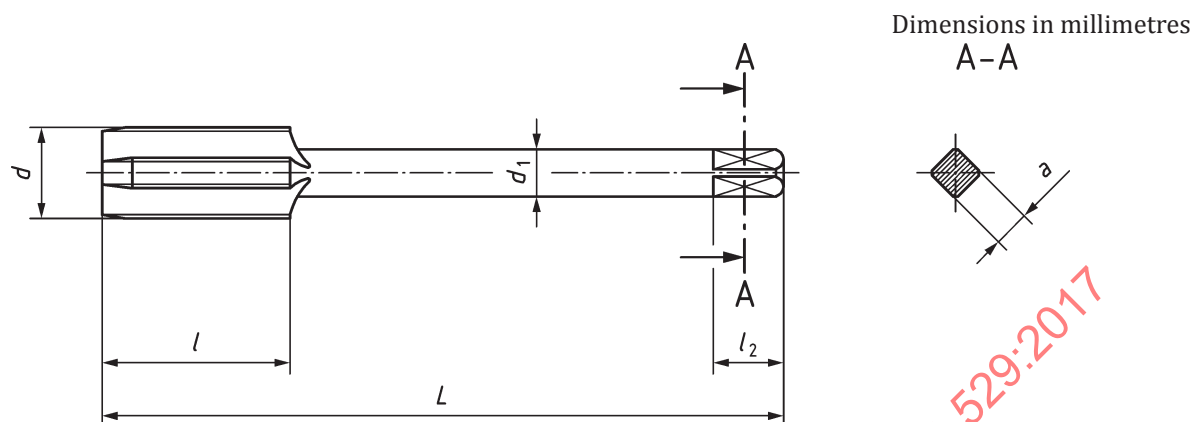
Designation		d nom.	Pitch $\approx$		d_1 h9 ^b	l_a max.	L h16	d_2^b min.	l_3	Square	
UNC	UNF		UNC	UNF						a h11 ^c	l_2 $\pm 0,8$
No.4-40-UNC	No.4-48-UNF	2,845	0,635	0,529	3,15	11	48	2,12	18	2,5	5
No.5-40-UNC	No.5-44-UNF	3,175		0,577				2,36			
No.6-32-UNC	No.6-40-UNF	3,505	0,794	0,635	3,55	13	50	2,5	20	2,8	6
No.8-32-UNC	No.8-36-UNF	4,166		0,706	4,5		53	3,15	21	3,55	
No.10-24-UNC	No.10-32-UNF	4,826	1,058	0,794	5	16	58	3,55	25	4	7
No.12-24-UNC	No.12-28-UNF	5,486		0,907	5,6	17	62	4,25	26	4,5	
1/4-20-UNC	1/4-28-UNF	6,35	1,27	1,058	6,3	19	66	4,5	30	5	8
5/16-18-UNC	5/16-24-UNF	7,938	1,411		8	22	72	6	35	6,3	9
3/8-16-UNC	3/8-24-UNF	9,525	1,588		10	24	80	7,5	39	8	11

^a 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.

^c 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.

5.1.3 Relieved-shank taps



Designation		d nom.	Pitch $\approx$		d_1 h9 ^a	r max.	L h16	Square	
UNC	UNF		UNC	UNF				a h11 ^b	l_2 $\pm 0,8$
No.5-40-UNC	No.5-44-UNF	3,175	0,635	0,577	2,24	11	48	1,8	4
No.6-32-UNC	No.6-40-UNF	3,505	0,794	0,635	2,5	13	50	2	
No.8-32-UNC	No.8-36-UNF	4,166		0,706	3,15		53	2,5	5
No.10-24-UNC	No.10-32-UNF	4,826	1,058	0,794	3,55	16	58	2,8	
No.12-24-UNC	No.12-28-UNF	5,486		0,907	4	17	62	3,15	6
1/4-20-UNC	1/4-28-UNF	6,35	1,27	1,058	4,5	19	66	3,55	
5/16-18-UNC	5/16-24-UNF	7,938	1,411		6,3	22	72	5	8
3/8-16-UNC	3/8-24-UNF	9,525	1,588	1,27	7,1	24	80	5,6	
7/16-14-UNC	7/16-20-UNF	11,112	1,814		8	25	85	6,3	9
1/2-13-UNC	1/2-20-UNF	12,7	1,954	1,411	9	29	89	7,1	10
9/16-12-UNC	9/16-18-UNF	14,288	2,117		11,2	30	95	9	12
5/8-11-UNC	5/8-18-UNF	15,875	2,309	1,588	12,5	32	102	10	13
3/4-10-UNC	3/4-16-UNF	19,05	2,54		14	37	112	11,2	14
7/8-9-UNC	7/8-14-UNF	22,225	2,822	1,814	16	38	118	12,5	16
1-8-UNC	1-12-UNF	25,4	3,175	2,117	18	45	130	14	18

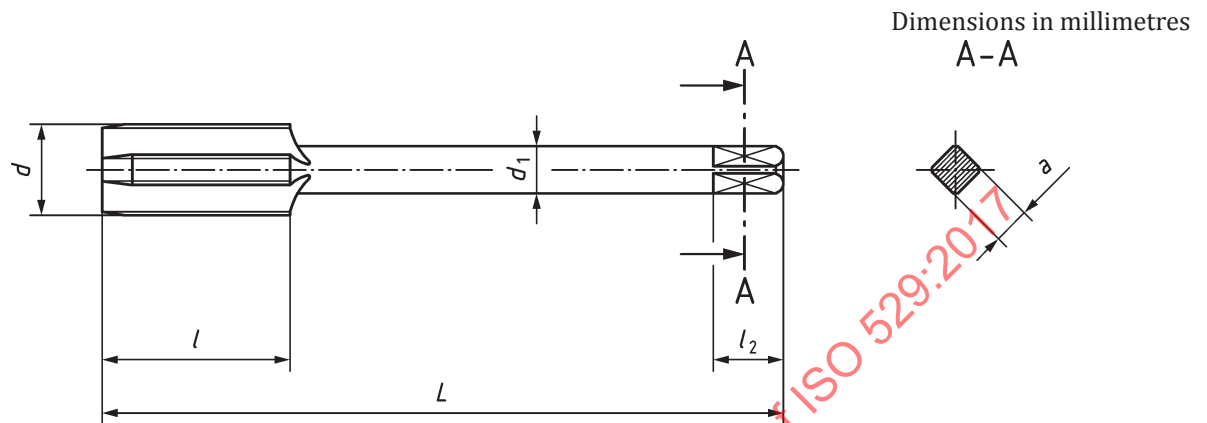
NOTE Some shank diameters are not in accordance with Table A.1 in Annex A.

^a 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.

5.2 “Unified” series threads above 25,4 mm

5.2.1 Relieved-shank taps for “Unified coarse” series threads

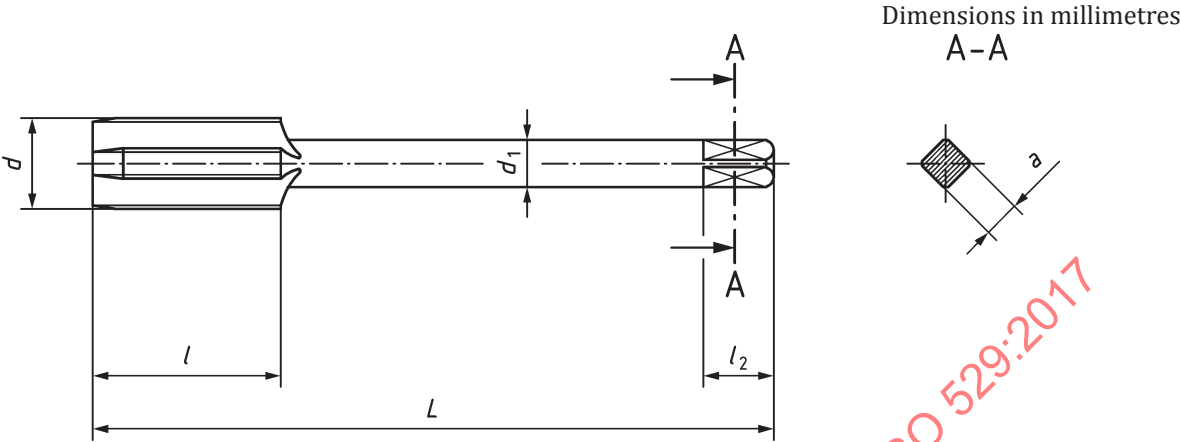


Designation	d nom	Pitch $\approx$	d_1 h9a	l max.	L h16	Square	
						a h11b	l_2 $\pm 1,6$
1 1/8-7-UNC	28,575	3,629	20	48	138	16	20
1 1/4-7-UNC	31,75		22,4	51	151	18	22
1 3/8-6-UNC	34,925	4,233	25	57	162	20	24
1 1/2-6-UNC	38,1		28	60	170	22,4	26
1 3/4-5-UNC	44,45	5,08	31,5	67	187	25	28
2-4 1/2-UNC	50,8	5,644	35,5	70	200	28	31
2 1/4-4 1/2-UNC	57,15		40	76	221	31,5	34
2 1/2-4-UNC	63,5	79		224			
2 3/4-4-UNC	69,85	45	234	35,5	38		
3-4-UNC	76,2	6,35	50	83	258	40	42
3 1/4-4-UNC	82,55			86	261		
3 1/2-4-UNC	88,9		56	89	279	45	46
3 3/4-4-UNC	95,25						
4-4-UNC	101,6						

^a 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 including errors of form of the square and of its position to the shank.

5.2.2 Relieved-shank taps for “Unified fine” series threads



Designation	d nom.	Pitch $\approx$	d_1 h9 ^a	l max.	Square		
					L h16	a h11 ^b	l_2 $\pm 1,6$
1 1/8-12-UNF	28,575	2,117	20	37	127	16	20
1 1/4-12-UNF	31,75		22,4		137	18	22
1 3/8-12-UNF	34,925		25	39	144	20	24
1 1/2-12-UNF	38,1		28		149	22,4	26

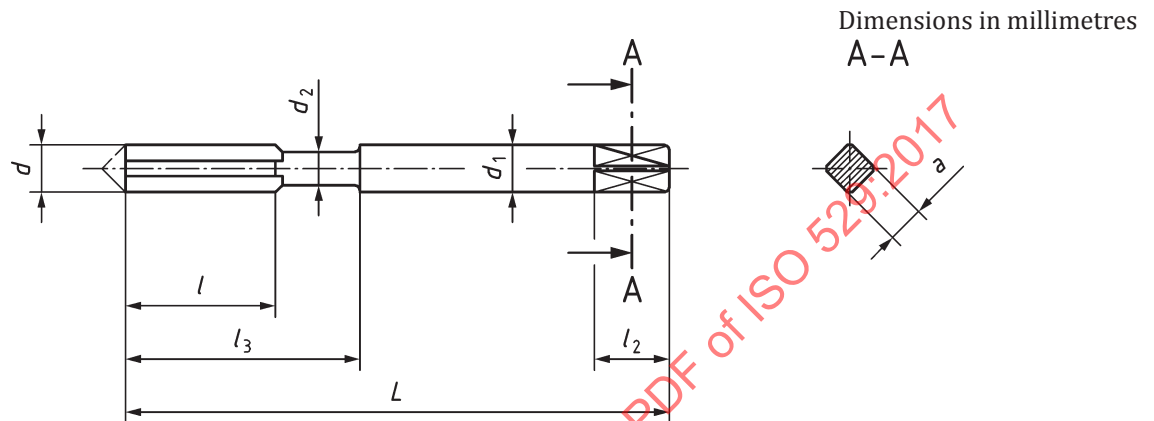
^a In accordance with ISO 237, tolerance h9 applies to precision shanks. For non-precision shanks, the tolerance is h11.

^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.

6 Non-recommended inch threads

6.1 “British Standard Whitworth” (BSW) and “British Standard Fine” (BSF) threads

6.1.1 Full-diameter shank taps with recess



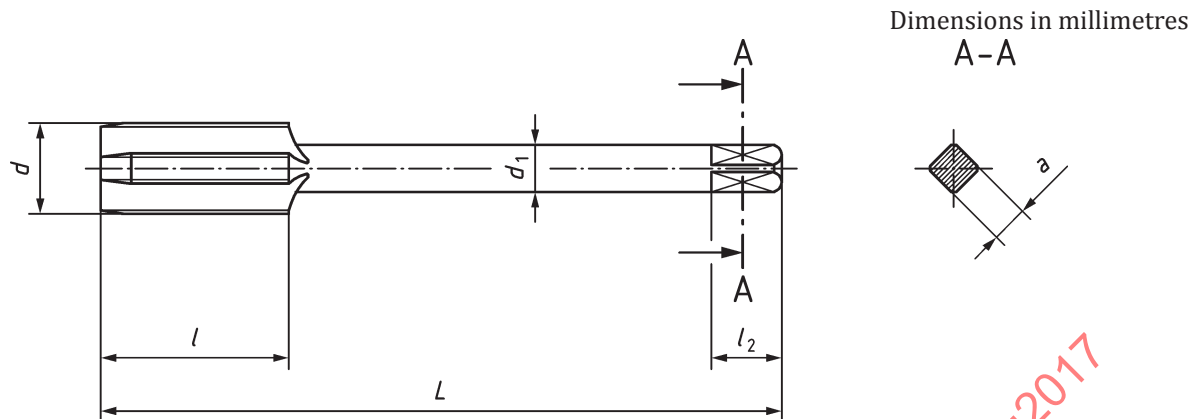
Designation		d nom.	Pitch $\approx$		d_1 h9 ^b	l^a max.	L h16	d_2^a min.	l_3	Square	
BSW	BSF		BSW	BSF						a h11 ^c	l_2 $\pm 0,8$
1/8-40-BSW	—	3,175	0,635	—	3,15	11	48	2,36	18	2,5	5
3/16-24-BSW	3/16-32-BSF	4,762	1,058	0,794	5	16	58	3,55	25	4	7
—	7/32-28-BSF	5,556	—	0,907	5,6	17	62	4,25	26	4,5	
1/4-20-BSW	1/4-26-BSF	6,35	1,27	0,977	6,3	19	66	4,5	30	5	8
—	9/32-26-BSF	7,144	—		7,1			5,6		5,6	
5/16-18-BSW	5/16-22-BSF	7,938	1,411	1,154	8	22	72	6	35	6,3	9
3/8-16-BSW	3/8-20-BSF	9,525	1,588	1,27	10	24	80	7,5	39	8	11

^a 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.

^c 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.

6.1.2 Relieved-shank taps



Designation			Pitch					Square		
			$\approx$				a	l_2		
BSW	BSF	d nom.	BSW	BSF	d_1 h9 ^a	l max.	L h16	h11 ^b	nom.	tol.
1/8-40-BSW	—	3,175	0,635	—	2,24	11	48	1,8	4	±0,8
3/16-24-BSW	3/16-32-BSF	4,762	1,058	0,794	3,55	16	58	2,8	5	
—	7/32-28-BSF	5,556	—	0,907	4	17	62	3,15	6	
1/4-20-BSW	1/4-26-BSF	6,35	1,27	0,977	4,5	19	66	3,55		
—	9/32-26-BSF	7,144	—		5,6		4,5	7		
5/16-18-BSW	5/16-22-BSF	7,938	1,411	1,154	6,3	22	72	5	8	
3/8-16-BSW	3/8-20-BSF	9,525	1,588	1,27	7,1	24	80	5,6		
7/16-14-BSW	7/16-18-BSF	11,112	1,814	1,411	8	25	85	6,3	9	
1/2-12-BSW	1/2-16-BSF	12,7	2,117	1,588	9	29	89	7,1	10	
9/16-12-BSW	9/16-16-BSF	14,288			11,2	30	95	9	12	
5/8-11-BSW	5/8-14-BSF	15,875	2,309	1,814	12,5	32	102	10	13	
11/16-11-BSW	11/16-14-BSF	17,462			14	37	112	11,2	14	
3/4-10-BSW	3/4-12-BSF	19,05	2,54	2,117	16	38	118	12,5	16	
7/8-9-BSW	7/8-11-BSF	22,225	2,822	2,309						
1-8-BSW	1-10-BSF	25,4	3,175	2,54	18	45	130	14	18	

NOTE Some shank diameters are not in accordance with Table A.1 in Annex A.

^a 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					Square		
			$\approx$					a	l_2	
BSW	BSF	d nom.	BSW	BSF	d_1 h9 ^a	l max.	L h16	h11 ^b	nom.	tol.
1 1/8-7-BSW	1 1/8-9-BSF	28,575	3,629	2,822	20	48	138	16	20	±1,6
1 1/4-7-BSW	1 1/4-9-BSF	31,75			22,4	51	151	18	22	
—	1 3/8-8-BSF	34,925	—	3,175	25	57	162	20	24	
1 1/2-6-BSW	1 1/2-8-BSF	38,1	4,233		28	60	170	22,4	26	
—	1 5/8-8-BSF	41,275	—							
1 3/4-5-BSW	1 3/4-7-BSF	44,45	5,08	3,629	31,5	67	187	25	28	
2-4 1/2-BSW	2-7-BSF	50,8	5,644		35,5	70	200	28	31	
2 1/4-4-BSW	2 1/4-6-BSF	57,15	6,35	4,233	40	76	221	31,5	34	
2 1/2-4-BSW	2 1/2-6-BSF	63,5				79	224			
2 3/4-3 1/2-BSW	2 3/4-6-BSF	69,85	7,257	5,08	45	79	234	35,5	38	
3-3 1/2-BSW	3-5-BSF	76,2				83	258			
3 1/4-3 1/4-BSW	3 1/4-5-BSF	82,55	7,815	5,08	50	86	261	40	42	
3 1/2-3 1/4-BSW	3 1/2-4 1/2-BSF	88,9								
3 3/4-3-BSW	3 3/4-4 1/2-BSF	95,25	8,467	5,644	56	89	279	45	46	
4-3-BSW	4-4 1/2-BSF	101,6								

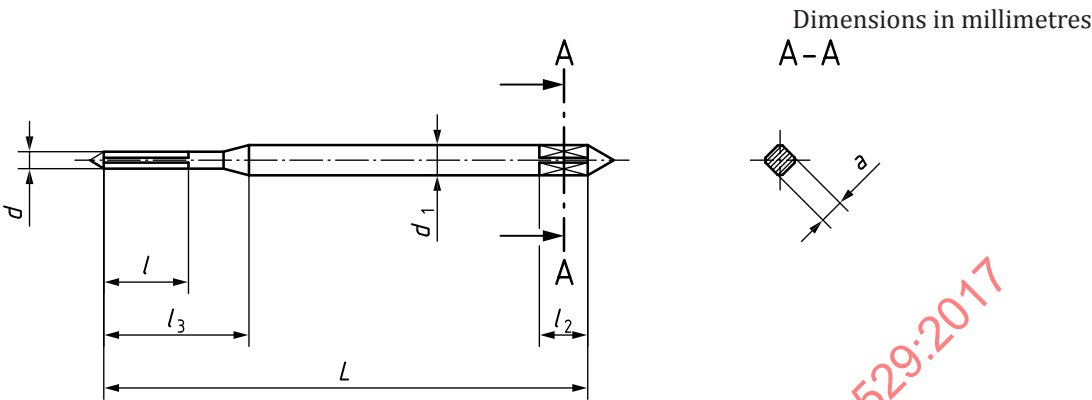
NOTE Some shank diameters are not in accordance with [Table A.1](#) in [Annex A](#).

^a 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.

6.2 “British Association” (BA) threads

6.2.1 Full-diameter shank taps with plain connecting portion



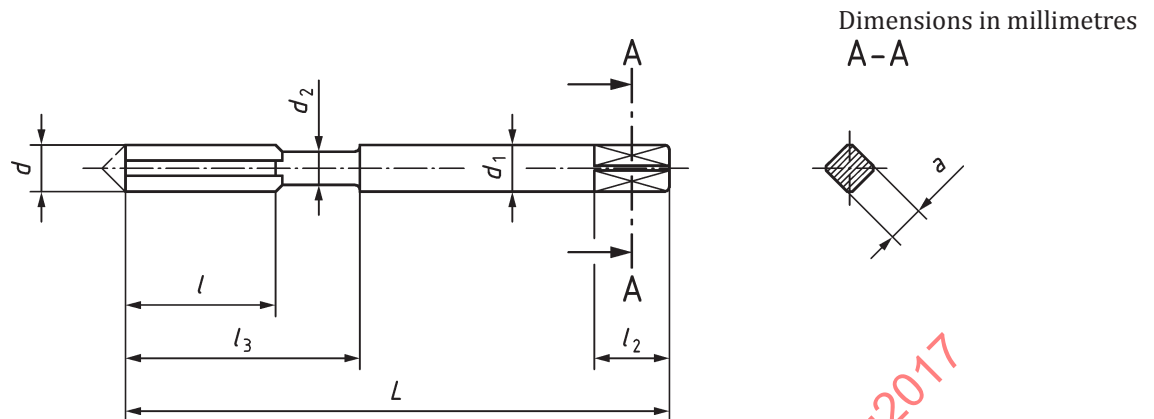
Designation	<i>d</i> nom.	Pitch	<i>d</i> ₁ h9 ^b	<i>l</i> ^a max.	<i>L</i> h16	Square		
						<i>l</i> ₃	<i>a</i> h11 ^c	<i>l</i> ₂ ±0,8
BA No. 14	1	0,23	2,5	5,5	38,5	10	2	4
BA No. 13	1,2	0,25		8	40	11,5		
BA No. 12	1,3	0,28			41	13		
BA No. 11	1,5	0,31				13,5		
BA No. 10	1,7	0,35						
BA No. 9	1,9	0,39						
BA No. 8	2,2	0,43	2,8	9,5	44,5	15,5	2,24	5
BA No. 7	2,5	0,48						
BA No. 6	2,8	0,53						

^a Manufacturers if they wish may increase the thread length 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.

^c 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.

6.2.2 Full-diameter shank taps with recess



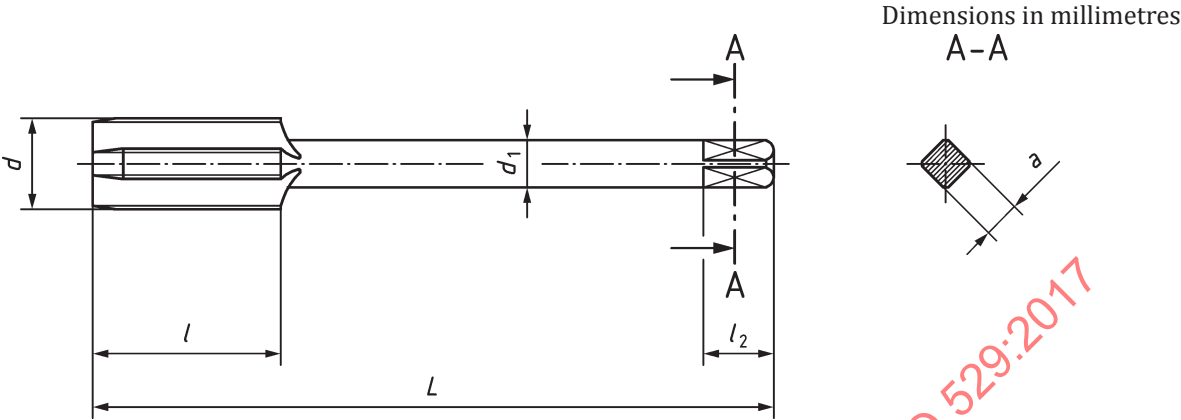
Designation	d nom.	Pitch	d ₁ h9 ^b	l ^a max.	L h16	d ₂ ^a min.	l ₃	Square	
								a h11 ^c	l ₂ ±0,8
BA No. 5	3,2	0,59	3,15	11	48	2,12	18	2,5	5
BA No. 4	3,6	0,66	3,55	13	50	2,5	20	2,8	
BA No. 3	4,1	0,73	4,5		53	3,15	21	3,55	6
BA No. 2	4,7	0,81	5	16	58	3,55	25	4	7
BA No. 1	5,3	0,9	5,6	17	62	4,25	26	4,5	
BA No. 0	6	1	6,3	19	66	4,5	30	5	8

^a 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.

^c 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.

6.2.3 Relieved-shank taps



Designation	<i>d</i> nom.	Pitch	<i>d</i> ₁ h9 ^b	<i>l</i> max.	<i>L</i> h16	Square	
						<i>a</i> h11 ^b	<i>l</i> ₂ ±0,8
BA No. 5	3,2	0,59	2,24	11	48	1,8	4
BA No. 4	3,6	0,66	2,5	13	50	2	
BA No. 3	4,1	0,73	3,15		53	2,5	5
BA No. 2	4,7	0,81	3,55	16	58	2,8	
BA No. 1	5,3	0,9	4	17	62	3,15	6
BA No. 0	6	1	4,5	19	66	3,55	

NOTE Some shank diameters are not in accordance with [Table A.1](#) in [Annex A](#).

^a 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.

Annex A
(normative)

**Shank diameter, overall length and thread length as a function of
range of diameters and pitches**

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Table A.1

Diameter ranges <i>d</i> mm		Metric pitches, in millimetres			0,2	0,23 0,25	0,28 0,35	0,39 0,4	0,43 0,45	0,48 0,53
		Number of threads per inch			—	—	80 72	64	56	48
		Inch pitches converted to millimetres (approximately)			—	—	0,318 0,353	0,397	0,454	0,529
		Shank diameter <i>d</i> ₁ , mm								
from (ex- cluding)	to (in- cluding)	Full-diameter shank tap with plain connecting portion	Full- diameter shank tap with recess	Relieved- shank tap						
0,9	1,25	2,5	—	—	38,5 ; 5,5					
1,25	1,4				40 ; 7					
1,4	1,8				41 ; 8					
1,8	2									
2	2,8	2,8						44,5 ; 9,5		
2,8	3,2	—	3,15	2,24				48 ; 11		
3,2	3,6		3,55	2,5				50 ; 13		
3,6	4		4	3,15				53 ; 13		
4	4,5		4,5	3,55				58 ; 16		
4,5	5		5	4				62 ; 17		
5	5,6		5,6	4						
5,6	6,35		6,3	4,5						
6,35	7,2		7,1	5,6						
7,2	8		8	6,3						
8	9		9	7,1						
9	10		10	8						
10	10,6		—	8						
10,6	11,8			8						
11,8	13,2			9						
13,2	15			11,2						
15	17			12,5						
17	19			14						
19	21,2			16						
21,2	23,6			18						
23,6	26,5			20						
26,5	28			22,4						
28	30			25						
30	33,5			28						
33,5	37,5	—	—	31,5						
37,5	42,5			35,5						
42,5	45			40						
45	50			45						
50	56			50						
56	63			56						
63	67									
67	75									
75	80									
80	90									
90	101,6									

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