EN

HARTNER

Precision Cutting Tools

THREADING TOOLS

NEW COMPLETE PROGRAMME
FOR UNIVERSAL THREAD PRODUCTION

NEW + basic line TiN + top line Fluteless taps + Taps for aluminium + top line JIS

ISO code

P	Steel, high-alloyed steel
M	Stainless steel
K	Grey cast iron, spheroidal cast iron and malleable cast iron
N	Aluminium and other non-ferrous metals
S	Special, super and titanium alloys
H	Hardened steel and chilled cast iron

Pictograms

Tool material

HSS-E | HSS-E-PM

High-speed steel

Surface

bright | steam tempered | nitrided | TiAlN + WC/C | TiCN | TiN

Type

N | TG 100 GG | TG 100 T | TG 100 U | TG 300 T | W

Ø tolerance

2B | 2BX | 4HX | 6GX | 6HX | Class 1/ OH | Class 2/ RH | ISO2/6H | OH2

Standard

DIN 371 | ~DIN 371 | DIN 371/376 | ~DIN 371/376 | DIN 374 | ~DIN 374 | DIN 2189 | DIN 5156 | JISB 4430 | WN

to Hartner standard

Cutting direction

right

Shank form

straight shank

Form

B | C

Hole type

Through holes

Blind holes

Through holes and blind holes

Internal cooling

with IC | without IC

TG 100 U
▼ BASICLINE TAPS

basic line

TG 100 T
▼ TOPLINE TAPS

top line

TG 100 AL
▼ TAPS
FOR ALUMINIUM

TG 100 GG
▼ TAPS
FOR CAST MATERIALS

TG 300 T
▼ HIGH-PERFORMANCE TAPS
FOR CAST MATERIALS

FLUTELESS TAPS

JIS TAPS AND FLUTELESS TAPS

TAPS AND FLUTELESS TAPS
▼ ACCORDING TO DIN STANDARD

Thread type	Tolerance zone	Dimensions to DIN 2184-1	Hole type						
			Tool material	HSS-E					
			Type/form	TG 100 U/B	TG 100 U/B	TG 100 T/B	TG 100 U/C	TG 100 U/C	TG 100 U/C	TG 100 T/C
			Surface	○	T	A	○	T	T	A
				basic line	basic line	top line	basic line	basic line	basic line	top line
										
			Article no. Ø range Page							
M	ISO 2 6H	DIN 371	**80700** M2 - M10 Page 20	**80710** M2 - M10 Page 22		**80730** M2 - M10 Page 21	**80740** M2 - M10 Page 23	**80745** M3 - M20 Page 24	
	6HX				**80800** M2 - M10 Page 25				**80830** M2 - M10 Page 27
	6GX				**80805** M2 - M10 Page 26				**80835** M2 - M10 Page 28
	ISO 2 6H	DIN 376	**80700** M12 - M36 Page 20	**80710** M12 - M24 Page 22		**80730** M12 - M36 Page 21	**80740** M12 - M24 Page 23		
	6HX				**80800** M12 - M30 Page 25				**80830** M12 - M30 Page 27
	6GX				**80805** M12 - M30 Page 26				**80835** M12 - M30 Page 28
MF	ISO 2 6H	DIN 374	**80701** M4x0.5 - M42x1.5 Page 33	**80711** M5x0.5 - M24x1.5 Page 35		**80731** M4x0.5 - M30x2 Page 34	**80741** M5x0.5 - M24x2 Page 36		
	6HX				**80801** M3x0.35 - M36x2 Page 37				**80831** M6x0.75 - M24x1.5 Page 38
UNC	2B	~ DIN 371	**80702** 4-40 - 3/8-16 Page 41	**80712** 4-40 - 3/8-16 Page 43	**80802** 4-40 - 3/8-16 Page 45	**80732** 2-56 - 3/8-16 Page 42	**80742** 6-32 - 3/8-16 Page 44		**80832** 4-40 - 3/8-16 Page 46
	2B	~ DIN 376	**80702** 7/16-14 - 1-8 Page 41	**80712** 7/16-14 - 1-8 Page 43	**80802** 7/16-14 - 1-8 Page 45	**80732** 7/16-14 - 7/8-9 Page 42	**80742** 7/16-14 - 1-8 Page 44		**80832** 7/16-14 - 7/8-9 Page 46
UNF	2B	~ DIN 374	**80703** 4-48 - 1-12 Page 48	**80713** 4-48 - 1-12 Page 50	**80803** 4-48 - 1-12 Page 52	**80733** 3-56 - 1-12 Page 49	**80743** 6-40 - 7/8-14 Page 51		**80833** 10-32 - 1-12 Page 53
G	-	DIN 5156	**80704** G1/8 - G2 Page 55	**80714** G1/16 - G7/8 Page 57	**80804** G1/8 - G1 Page 59	**80734** G1/16 - G2 Page 56	**80744** G1/8 - G1 Page 58		**80834** G1/16 - G1 Page 60

○ bright ○ steam tempered (T) TiN (A) TiAlN+WC/C ● nitrided (C) TiCN

HSS-E			HSS-E-PM
TG 100 AL/B	TG 100 AL/C	TG 100 GG/C	TG 300 T/C
○	○	●	C
			
Article no. Ø range Page			
80760 M2 - M10 Page 29	**80761** M1.6 - M10 Page 30		
		80750 M3 - M10 Page 31	**80850** M5 - M10 Page 32
80760 M12 - M22 Page 29	**80761** M12 - M24 Page 30		
		80750 M12 - M30 Page 31	**80850** M12 - M39 Page 32
		80751 M4x0.5 - M30x1.5 Page 39	**80851** M6x0.75 - M16x1.5 Page 40
		80752 4-40 - 3/8-16 Page 47	
		80752 7/16-14 - 1-8 Page 47	
		80753 4-48 - 1-12 Page 54	
		80754 G1/16 - G2 Page 61	

HSS-E	HSS-E-PM
N/C	T/C
T	C
basic line	top line
	
Article no. Ø range Page	
80900 M3 - M10 Page 62	**80920** M1 - M10 Page 63
	80925 M2 - M10 Page 64
80900 M12 - M39 Page 62	**80920** M12 - M20 Page 63
	80925 M12 - M20 Page 64
80901 M6x0.75 - M24x1.5 Page 65	**80921** M8x1 - M20x1.5 Page 66
80902* 4-40 - 3/8-16 Page 67	**80922** 4-40 - 3/8-10 Page 68
80902* 7/16-14 - 3/4-10 Page 67	**80922** 7/16-14 - 3/4-10 Page 68
80903* 4-48 - 3/4-16 Page 69	**80923** 4-48 - 3/4-16 Page 70
80904 G1/16 - G3/4 Page 71	**80924** G1/8 - G1/2 Page 72

*Tolerance zone 2BX

TAPS AND FLUTELESS TAPS
▼ ACCORDING TO JIS STANDARD

			Hole type					
			Tool material	HSS-E				HSS-E
			Type/form	TG 100 U/B	TG 100 T/B	TG 100 U/C	TG 100 T/C	N/C
			Surface	(T)	(A)	(T)	(A)	(T)
				basic line	top line	basic line	top line	
								
Thread type	Tolerance zone	Dimensions to DIN 2184-1		**Article no.** Ø range Page				**Article no.** Ø range Page
M	Class 1 OH	JIS B 4430		**80780** M2 - M20 Page 73	**80880** M2 - M20 Page 75	**80790** M2 - M20 Page 74	**80890** M2 - M30 Page 76	
	Class 2 RH							**80980** M4 - M20 Page 81
MF	Class 1 OH	JIS B 4430		**80781** M6x0.75 - M20x1.5 Page 77	**80881** M6x0.75 - M20x1.5 Page 79	**80791** M6x0.75 - M20x1.5 Page 78	**80891** M4x0.5 - M22x1.5 Page 80	
	Class 2 RH							**80981** M6x0.75 - M20x1.5 Page 82

(T) TiN (A) TiAlN + WC/C

THE NEW PROGRAMME FOR JIS THREADING TOOLS

basic line WITH TIN COATING:

- for universal application
- thread types M and MF

top line WITH TIALN + WC/C COATING:

- high-performance taps with our new TiAlN coating for improved chip evacuation in every application
- thread types M and MF

FLUTELESS TAPS WITH TIN COATING:

- for chipless threading in a wide range of materials

basic line

TAPS

TG 100 U

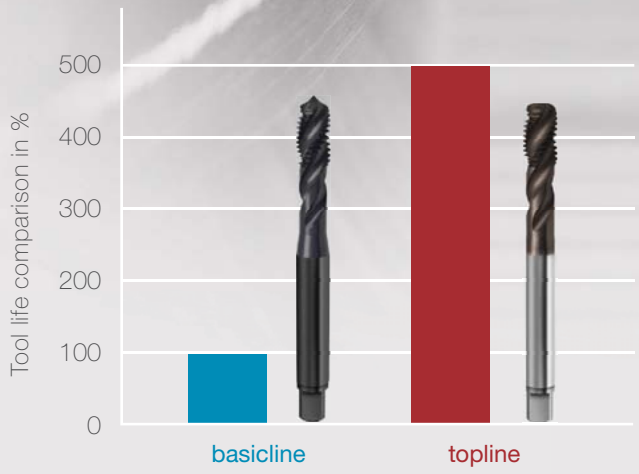
- universal tap for machining general, high-tensile and stainless steels
- highest efficiency thanks to its remarkable price/performance ratio for smaller and mid-size productions
- NEW: with TiN coating

top line

TAPS

TG 100 T

- high-performance tap for demanding machining tasks in general, high-tensile and stainless steels
- optimised cutting edge geometry for optimal chip evacuation
- ultra-smooth multi-layer coating consisting of a base of TiAlN with a hardness of 3000 HV and a top coating of WC/C (Tungsten carbide/carbon layer) to reduce the friction value and the tendency towards cold welding. The result is improved chip flow and an effective wear resistance.
- maximum tool life with excellent thread quality



Test material 1,4301

THE POWER PERFORMERS

TG 100 GG

- tap for the machining of cast materials and short-chipping non-ferrous metals
- cast iron geometry with nitrided surface finish for economical machining
- a remarkable price-performance-ratio for small batch sizes

TG 300 T

- high-performance tap with a wide application range for demanding machining tasks in all cast materials, general and high-tensile steels and aluminium cast alloys
- straight-fluted cutting edge geometry for increased rigidity and to produce short chips
- the combination of the HSS-E-PM tool material, TiCN coating and internal cooling ensures a high wear resistance and provides a process reliable maximum tool life

FORMING

basic line

FLUTELESS TAPS

- fluteless taps for chip-free threading of through and blind holes
- oil grooves ensure optimal coolant supply
- high wear resistance in most materials thanks to TiN coating and special geometry
- the forming process increases the tensile strength in the thread area of the component

top line

HIGH-PERFORMANCE FLUTELESS TAPS

NEW

- thanks to the modified polygon form the torque is reduced by up to 30 %
- increased wear resistance thanks to the application of a new powder metallurgical base material
- improved lubricating effect thanks to the optimised lubrication grooves
- the special surface finish treatment in combination with the TiCN coating ensures increased wear resistance

THE SPECIALIST FOR ALUMINIUM AND ALUMINIUM ALLOYS

TG 100 AL

NEW

- tap for aluminium, aluminium alloys, non-ferrous metals and plastics
- special geometry for the machining of soft materials
- bright surface

SOLID CARBIDE
THREAD MILLING CUTTERS

Further information can be found
in the brochure Thread milling cutters.

P	M	K	N	S	H		Standard	Type	Tool material	Surface	Form	Tolerance	Hole type	d1	Article no.	Page

Taps for ISO metric threads

	●	○	○	○			DIN 371/376	TG 100 U	HSS-E		B	ISO2/6H			basic line	
														M2 - M36	80700	20
	●	○	○	○			DIN 371/376	TG 100 U	HSS-E		C	ISO2/6H			basic line	
														M2 - M36	80730	21
	●	○	○				DIN 371	TG 100 U	HSS-E	T	B	ISO2/6H		NEW	basic line	
														M3 - M24	80710	22
	●	○	○				DIN 371	TG 100 U	HSS-E	T	C	ISO2/6H		NEW	basic line	
														M2 - M24	80740	23
	●	○	○				WN	TG 100 U	HSS-E	T	C	6HX		NEW	basic line	
														M3 - M20	80745	24
	●	●	○	○	○		DIN 371/376	TG 100 T	HSS-E	A	B	6HX			top line	
														M2 - M30	80800	25
	●	●	○	○	○		DIN 371	TG 100 T	HSS-E	A	B	6GX		NEW	top line	
														M2 - M30	80805	26
	●	●	○	○	○		DIN 371/376	TG 100 T	HSS-E	A	C	6HX			top line	
														M2 - M30	80830	27
	●	●	○	○	○		DIN 371	TG 100 T	HSS-E	A	C	6GX		NEW	top line	
														M2 - M30	80835	28
				●			DIN 371	W	HSS-E		B	ISO2/6H		NEW		
														M2 - M22	80760	29
				●			DIN 371	W	HSS-E		C	ISO2/6H		NEW		
														M1,6 - M24	80761	30
			●				DIN 371/376	TG 100 GG	HSS-E		C	6HX				
														M3 - M30	80750	31
	○		●	○			DIN 371/376	TG 300 T	HSS-E HSS-E-PM	C	C	6HX				
														M5 - M39	80850	32

P	M	K	N	S	H		Stand-ard	Type	Tool material	Surface	Form	Toler-ance	Hole type	d1	Article no.	Page

Taps for ISO metric fine threads

DIN 374 | TG 100 U | HSS-E | B | ISO2/6H | basic line

● ○ ○ ○ | M4 x 0,5 - M42 x 1,5 | 80701 | 33

DIN 374 | TG 100 U | HSS-E | C | ISO2/6H | basic line

● ○ ○ ○ | M4 x 0,5 - M30 x 2 | 80731 | 34

DIN 374 | TG 100 U | HSS-E | T | B | ISO2/6H | NEW | basic line

● ○ ○ | M5 x 0,5 - M24 x 1,5 | 80711 | 35

DIN 374 | TG 100 U | HSS-E | T | C | ISO2/6H | NEW | basic line

● ○ ○ | M5 x 0,5 - M24 x 2 | 80741 | 36

DIN 374 | TG 100 T | HSS-E | A | B | 6HX | top line

● ● ○ ○ ○ | M3 x 0,35 - M36 x 2 | 80801 | 37

DIN 374 | TG 100 T | HSS-E | A | C | 6HX | top line

● ● ○ ○ ○ | M6 x 0,75 - M24 x 1,5 | 80831 | 38

DIN 374 | TG 100 GG | HSS-E | C | 6HX

● | M4 x 0,5 - M30 x 1,5 | 80751 | 39

DIN 374 | TG 300 T | HSS-E-PM | C | C | 6HX

○ ● ○ | M6 x 0,75 - M16 x 1,5 | 80851 | 40

Taps for UNC threads

~DIN 371/376 | TG 100 U | HSS-E | B | 2B | basic line

● ○ ○ ○ | 4 - 40 - 1 - 8 | 80702 | 41

~DIN 371/376 | TG 100 U | HSS-E | C | 2B | basic line

● ○ ○ ○ | 2 - 56 - 7/8 - 9 | 80732 | 42

~DIN 371 | TG 100 U | HSS-E | T | B | 2B | NEW | basic line

● ○ ○ | 4 - 40 - 1 - 8 | 80712 | 43

~DIN 371 | TG 100 U | HSS-E | T | C | 2B | NEW | basic line

● ○ ○ | 6 - 32 - 1 - 8 | 80742 | 44

~DIN 371/376 | TG 100 T | HSS-E | A | B | 2B | top line

● ● ○ ○ ○ | 4 - 40 - 1 - 8 | 80802 | 45

P	M	K	N	S	H		Standard	Type	Tool material	Surface	Form	Tolerance	Hole type	d1	Article no.	Page

Taps for UNC threads

●	●	○	○	○		~DIN 371/376	N	HSS-E	A	C	2B		top line
												4 - 40 - 7/8 - 9	**80832** 46

		●				~DIN 371/376	TG 100 GG	HSS-E	●	C	2B		
												4 - 40 - 1 - 8	**80752** 47

Taps for UNF threads

●	○	○	○			~DIN 374	TG 100 U	HSS-E	○	B	2B		basic line
												4 - 48 - 1 - 12	**80703** 48

●	○	○	○			~DIN 374	TG 100 U	HSS-E	○	C	2B		basic line
												3 - 56 - 1 - 12	**80733** 49

●	○	○				~DIN 374	TG 100 U	HSS-E	Ⓣ	B	2B	NEW	basic line
												4 - 48 - 1 - 12	**80713** 50

●	○	○				~DIN 374	TG 100 U	HSS-E	Ⓣ	C	2B	NEW	basic line
												6 - 40 - 7/8 - 14	**80743** 51

●	●	○	○	○		~DIN 374	TG 100 T	HSS-E	A	B	2B		top line
												4 - 48 - 1 - 12	**80803** 52

●	●	○	○	○		~DIN 374	N	HSS-E	A	C	2B		top line
												10 - 32 - 1 - 12	**80833** 53

		●				~DIN 374	TG 100 GG	HSS-E	●	C	2B		
												4 - 48 - 1 - 12	**80753** 54

Taps for BSP threads

●	○	○	○			DIN 5156	TG 100 U	HSS-E	○	B			basic line
												G1/8 - G2	**80704** 55

●	○	○	○			DIN 5156	TG 100 U	HSS-E	○	C			basic line
												G1/16 - G2	**80734** 56

●	○	○				DIN 5156	TG 100 U	HSS-E	Ⓣ	B		NEW	basic line
												G1/16 - G7/8	**80714** 57

P	M	K	N	S	H		Standard	Type	Tool material	Surface	Form	Tolerance	Hole type	d1	Article no.	Page

Taps for BSP threads

●	○	○					DIN 5156	TG 100 U	HSS-E	T	C			NEW	basic line	
														G1/8 - G1	80744	58

●	●	○	○	○			DIN 5156	TG 100 T	HSS-E	A	B				top line	
														G1/8 - G1	80804	59

●	●	○	○	○			DIN 5156	N	HSS-E	A	C				top line	
														G1/16 - G1	80834	60

		●					DIN 5156	TG 100 GG	HSS-E	●	C					
														G1/16 - G2	80754	61

Fluteless taps for ISO metric threads

●	●	○	○				~DIN 371/376	N	HSS-E	T	C	6HX			basic line	
														M3 - M39	80900	62

●	●	●	●	●			~DIN 371	N	HSS-E-PM	C	C	4HX/6HX		NEW	top line	
														M1 - M20	80920	63

●	●	●	●	●			~DIN 371	N	HSS-E-PM	C	C	6GX		NEW	top line	
														M2 - M20	80925	64

Fluteless taps for ISO metric fine threads

●	●	○	○				~DIN 374	N	HSS-E	T	C	6HX			basic line	
														M6 x 0,75 - M24 x 1,5	80901	65

●	●	●	●	●			~DIN 374	N	HSS-E-PM	C	C	6HX		NEW	top line	
														M8 x 1 - M20 x 1,5	80921	66

Fluteless taps for UNC threads

●	●	○	○				~DIN 371/376	N	HSS-E	T	C	2BX			basic line	
														4 - 40 - 3/4 - 10	80902	67

●	●	●	●	●			~DIN 371	N	HSS-E-PM	C	C	2BX		NEW	top line	
														4 - 40 - 3/4 - 10	80922	68

P	M	K	N	S	H		Standard	Type	Tool material	Surface	Form	Tolerance	Hole type	d1	Article no.	Page

Fluteless taps for UNF threads

~DIN 371/374	N	HSS-E	T	C	2BX		basic line
●	●	○	○			4 - 48 - 3/4 - 16	**80903**	69

~DIN 371	N	HSS-E-PM	C	C	2BX	NEW	top line
●	●	●	●	●		4 - 48 - 3/4 - 16	**80923**	70

Fluteless taps for BSP threads

DIN 2189	N	HSS-E	T	C			basic line
●	●	○	○			G1/16 - G3/4	**80904**	71

DIN 2189	N	HSS-E-PM	C	C		NEW	top line
●	●	●	●	●		G1/8 - G1/2	**80924**	72

JIS taps for ISO metric threads

JIS B 4430	TG 100 U	HSS-E	T	B	Class 1/ OH	NEW	basic line
●	○	○				M2 - M20	**80780**	73

JIS B 4430	TG 100 U	HSS-E	T	C	Class 1/ OH	NEW	basic line
●	○	○				M2 - M20	**80790**	74

JIS B 4430	TG 300 T	HSS-E	A	B	OH2	NEW	top line
●	●	○	○	○		M2 - M20	**80880**	75

JIS B 4430	TG 100 T	HSS-E	A	C	OH2	NEW	top line
●	●	○	○	○		M2 - M30	**80890**	76

JIS taps for ISO metric fine threads

JIS B 4430	TG 100 U	HSS-E	T	B	Class 1/ OH	NEW	basic line
●	○	○				M6 x 0,75 - M20 x 1,5	**80781**	77

JIS B 4430	TG 100 U	HSS-E	T	C	Class 1/ OH	NEW	basic line
●	○	○				M6 x 0,75 - M20 x 1,5	**80791**	78

JIS B 4430	TG 300 T	HSS-E	A	B	OH2	NEW	top line
●	●	○	○	○		M6 x 0,75 - M20 x 1,5	**80881**	79

P	M	K	N	S	H		Stand-ard	Type	Tool material	Surface	Form	Toler-ance	Hole type	d1	Article no.	Page

JIS taps for ISO metric fine threads

						JIS B 4430	TG 100 T	HSS-E	A	C	OH2		NEW	top line	
●	●	○	○	○									M4 x 0,5 - M22 x 1,5	**80891**	80

JIS fluteless taps for ISO metric threads

						JIS B 4430	N	HSS-E	T	C	Class 2/ RH				
●	●	○	○										M4 - M20	**80980**	81

JIS fluteless taps for ISO metric fine threads

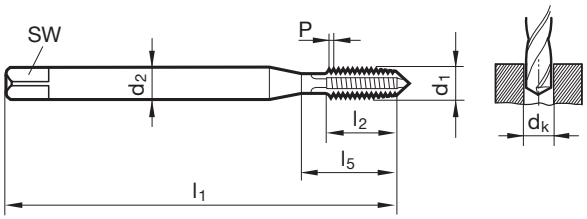
						JIS B 4430	N	HSS-E	T	C	Class 2/ RH				
●	●	○	○										M6 x 0,75 - M20 x 1,5	**80981**	82

Taps for ISO metric threads

Article no. 80700

P	M	K	N	S	H
●	○	○	○		

HSS-E | TG 100 U | ISO2/6H | DIN 371/376 | R | Cyl | B



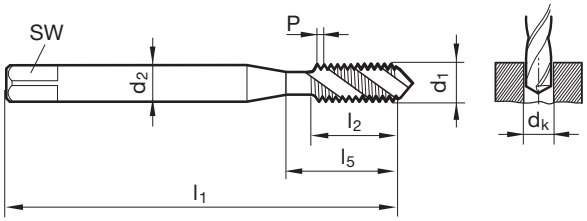
d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
M2	0.40	2.80	2.10	1.60	45.00	8.00	2.000
M3	0.50	3.50	2.70	2.50	56.00	10.00	3.000
M4	0.70	4.50	3.40	3.30	63.00	12.00	4.000
M5	0.80	6.00	4.90	4.20	70.00	14.00	5.000
M6	1.00	6.00	4.90	5.00	80.00	16.00	6.000
M8	1.25	8.00	6.20	6.80	90.00	17.00	8.000
M10	1.50	10.00	8.00	8.50	100.00	20.00	10.000
M12	1.75	9.00	7.00	10.20	110.00	24.00	12.000
M14	2.00	11.00	9.00	12.00	110.00	26.00	14.000
M16	2.00	12.00	9.00	14.00	110.00	26.00	16.000
M18	2.50	14.00	11.00	15.50	125.00	30.00	18.000
M20	2.50	16.00	12.00	17.50	140.00	32.00	20.000
M22	2.50	18.00	14.50	19.50	140.00	32.00	22.000
M24	3.00	18.00	14.50	21.00	160.00	36.00	24.000
M27	3.00	20.00	16.00	24.00	160.00	36.00	27.000
M30	3.50	22.00	18.00	26.50	180.00	40.00	30.000
M36	4.00	28.00	22.00	32.00	200.00	50.00	36.000

Taps for ISO metric threads

Article no. 80730

P	M	K	N	S	H
●	○	○	○		

HSS-E | TG 100 U | ISO2/6H | DIN 371/376 | R | Cyl | C



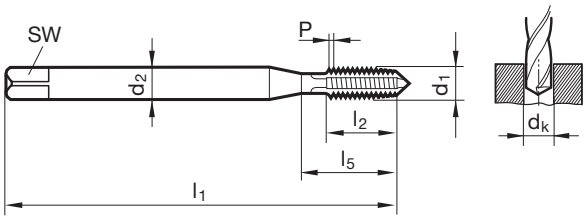
d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
M2	0.40	2.80	2.10	1.60	45.00	4.50	2.000
M3	0.50	3.50	2.70	2.50	56.00	6.00	3.000
M4	0.70	4.50	3.40	3.30	63.00	7.50	4.000
M5	0.80	6.00	4.90	4.20	70.00	8.50	5.000
M6	1.00	6.00	4.90	5.00	80.00	11.00	6.000
M8	1.25	8.00	6.20	6.80	90.00	14.00	8.000
M10	1.50	10.00	8.00	8.50	100.00	16.00	10.000
M12	1.75	9.00	7.00	10.20	110.00	18.50	12.000
M14	2.00	11.00	9.00	12.00	110.00	20.00	14.000
M16	2.00	12.00	9.00	14.00	110.00	20.00	16.000
M20	2.50	16.00	12.00	17.50	140.00	25.00	20.000
M22	2.50	18.00	14.50	19.50	140.00	27.00	22.000
M24	3.00	18.00	14.50	21.00	160.00	30.00	24.000
M27	3.00	20.00	16.00	24.00	160.00	30.00	27.000
M30	3.50	22.00	18.00	26.50	180.00	35.00	30.000
M36	4.00	28.00	22.00	32.00	200.00	40.00	36.000

Taps for ISO metric threads

Article no. 80710

P	M	K	N	S	H
●	○	○			

NEW | HSS-E | T | TG 100 U | ISO2/6H | DIN 371 | R | Cyl | B



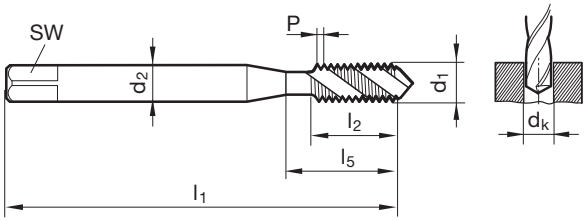
d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
M3	0.50	3.50	2.70	2.50	56.00	10.00	3.000
M4	0.70	4.50	3.40	3.30	63.00	12.00	4.000
M5	0.80	6.00	4.90	4.20	70.00	14.00	5.000
M6	1.00	6.00	4.90	5.00	80.00	16.00	6.000
M8	1.25	8.00	6.20	6.80	90.00	17.00	8.000
M10	1.50	10.00	8.00	8.50	100.00	20.00	10.000
M12	1.75	9.00	7.00	10.20	110.00	24.00	12.000
M14	2.00	11.00	9.00	12.00	110.00	26.00	14.000
M16	2.00	12.00	9.00	14.00	110.00	26.00	16.000
M18	2.50	14.00	11.00	15.50	125.00	30.00	18.000
M20	2.50	16.00	12.00	17.50	140.00	32.00	20.000
M24	3.00	18.00	14.50	21.00	160.00	36.00	24.000

Taps for ISO metric threads

Article no. 80740

P	M	K	N	S	H
●	○	○			

NEW | HSS-E | T | TG 100 U | ISO2/6H | DIN 371 | R | Cyl | C



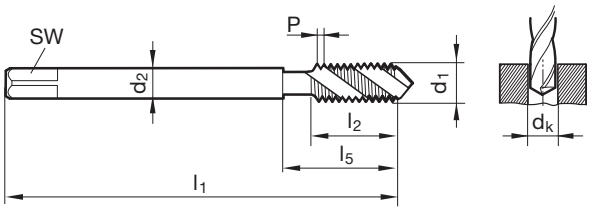
d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
M2	0.40	2.80	2.10	1.60	45.00	4.50	2.000
M3	0.50	3.50	2.70	2.50	56.00	6.00	3.000
M4	0.70	4.50	3.40	3.30	63.00	7.50	4.000
M5	0.80	6.00	4.90	4.20	70.00	8.50	5.000
M6	1.00	6.00	4.90	5.00	80.00	11.00	6.000
M8	1.25	8.00	6.20	6.80	90.00	14.00	8.000
M10	1.50	10.00	8.00	8.50	100.00	16.00	10.000
M12	1.75	9.00	7.00	10.20	110.00	18.50	12.000
M14	2.00	11.00	9.00	12.00	110.00	20.00	14.000
M16	2.00	12.00	9.00	14.00	110.00	20.00	16.000
M20	2.50	16.00	12.00	17.50	140.00	25.00	20.000
M24	3.00	18.00	14.50	21.00	160.00	30.00	24.000

Taps for ISO metric threads

Article no. 80745

P	M	K	N	S	H
●	○	○			

NEW | HSS-E | T | TG 100 U | 6HX | WN | R | Cyl | C



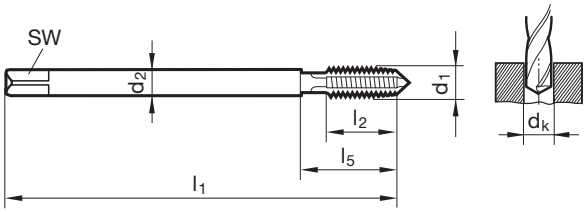
d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
M3	0.50	3.50	2.70	2.50	112.00	6.00	3.000
M4	0.70	2.80	2.10	3.30	112.00	7.50	4.000
M5	0.80	3.50	2.70	4.20	125.00	8.50	5.000
M6	1.00	4.50	3.40	5.00	125.00	11.00	6.000
M8	1.25	6.00	4.90	6.80	140.00	14.00	8.000
M10	1.50	7.00	5.50	8.50	160.00	16.00	10.000
M12	1.75	9.00	7.00	10.20	180.00	18.50	12.000
M16	2.00	12.00	9.00	14.00	220.00	20.00	16.000
M20	2.50	16.00	12.00	17.50	280.00	25.00	20.000

Taps for ISO metric threads

Article no. 80800

P	M	K	N	S	H
●	●	○	○	○	

HSS-E | A | TG 100 T | 6HX | DIN 371/376 | R | Cyl | B



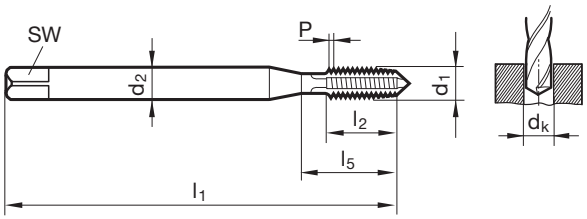
d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
M2	0.40	2.80	2.10	1.60	45.00	8.00	2.000
M2,5	0.45	2.80	2.10	2.05	50.00	9.00	2.500
M3	0.50	3.50	2.70	2.50	56.00	10.00	3.000
M3,5	0.60	4.00	3.00	2.90	56.00	12.00	3.500
M4	0.70	4.50	3.40	3.30	63.00	12.00	4.000
M5	0.80	6.00	4.90	4.20	70.00	14.00	5.000
M6	1.00	6.00	4.90	5.00	80.00	16.00	6.000
M8	1.25	8.00	6.20	6.80	90.00	17.00	8.000
M10	1.50	10.00	8.00	8.50	100.00	20.00	10.000
M12	1.75	9.00	7.00	10.20	110.00	24.00	12.000
M14	2.00	11.00	9.00	12.00	110.00	26.00	14.000
M16	2.00	12.00	9.00	14.00	110.00	26.00	16.000
M18	2.50	14.00	11.00	15.50	125.00	30.00	18.000
M20	2.50	16.00	12.00	17.50	140.00	32.00	20.000
M24	3.00	18.00	14.50	21.00	160.00	36.00	24.000
M27	3.00	20.00	16.00	24.00	160.00	36.00	27.000
M30	3.50	22.00	18.00	26.50	180.00	40.00	30.000

Taps for ISO metric threads

Article no. 80805

P	M	K	N	S	H
●	●	○	○	○	

NEW | HSS-E | A | TG 100 T | 6GX | DIN 371 | R | Cyl | B



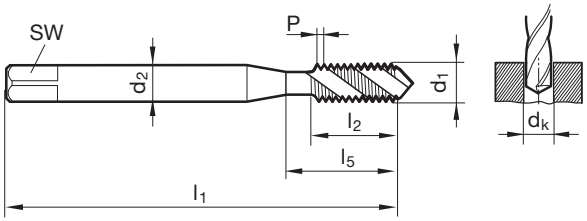
d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
M2	0.40	2.80	2.10	1.60	45.00	8.00	2.000
M2,5	0.45	2.80	2.10	2.05	50.00	9.00	2.500
M3	0.50	3.50	2.70	2.50	56.00	10.00	3.000
M4	0.70	4.50	3.40	3.30	63.00	12.00	4.000
M5	0.80	6.00	4.90	4.20	70.00	14.00	5.000
M6	1.00	6.00	4.90	5.00	80.00	16.00	6.000
M8	1.25	8.00	6.20	6.80	90.00	17.00	8.000
M10	1.50	10.00	8.00	8.50	100.00	20.00	10.000
M12	1.75	9.00	7.00	10.20	110.00	24.00	12.000
M14	2.00	11.00	9.00	12.00	110.00	26.00	14.000
M16	2.00	12.00	9.00	14.00	110.00	26.00	16.000
M18	2.50	14.00	11.00	15.50	125.00	30.00	18.000
M20	2.50	16.00	12.00	17.50	140.00	32.00	20.000
M24	3.00	18.00	14.50	21.00	160.00	36.00	24.000
M30	3.50	22.00	18.00	26.50	180.00	40.00	30.000

Taps for ISO metric threads

Article no. 80830

P	M	K	N	S	H
●	●	○	○	○	

HSS-E | A | TG 100 T | 6HX | DIN 371/376 | R | Cyl | C



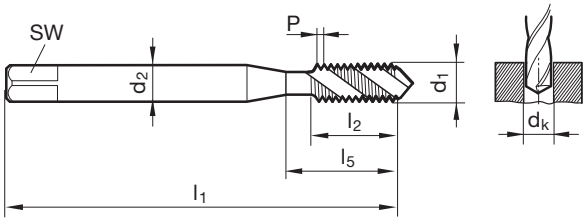
d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
M2	0.40	2.80	2.10	1.60	45.00	4.50	2.000
M2,5	0.45	2.80	2.10	2.05	50.00	5.00	2.500
M3	0.50	3.50	2.70	2.50	56.00	6.00	3.000
M4	0.70	4.50	3.40	3.30	63.00	7.50	4.000
M5	0.80	6.00	4.90	4.20	70.00	8.50	5.000
M6	1.00	6.00	4.90	5.00	80.00	11.00	6.000
M8	1.25	8.00	6.20	6.80	90.00	14.00	8.000
M10	1.50	10.00	8.00	8.50	100.00	16.00	10.000
M12	1.75	9.00	7.00	10.20	110.00	18.50	12.000
M14	2.00	11.00	9.00	12.00	110.00	20.00	14.000
M16	2.00	12.00	9.00	14.00	110.00	20.00	16.000
M18	2.50	14.00	11.00	15.50	125.00	25.00	18.000
M20	2.50	16.00	12.00	17.50	140.00	25.00	20.000
M24	3.00	18.00	14.50	21.00	160.00	30.00	24.000
M30	3.50	22.00	18.00	26.50	180.00	35.00	30.000

Taps for ISO metric threads

Article no. 80835

P	M	K	N	S	H
●	●	○	○	○	

NEW | HSS-E | A | TG 100 T | 6GX | DIN 371 | R | Cyl | C



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
M2	0.40	2.80	2.10	1.60	45.00	4.50	2.000
M2,5	0.45	2.80	2.10	2.05	50.00	5.00	2.500
M3	0.50	3.50	2.70	2.50	56.00	6.00	3.000
M3,5	0.60	4.00	3.00	2.90	56.00	7.00	3.500
M4	0.70	4.50	3.40	3.30	63.00	7.50	4.000
M5	0.80	6.00	4.90	4.20	70.00	8.50	5.000
M6	1.00	6.00	4.90	5.00	80.00	11.00	6.000
M8	1.25	8.00	6.20	6.80	90.00	14.00	8.000
M10	1.50	10.00	8.00	8.50	100.00	16.00	10.000
M12	1.75	9.00	7.00	10.20	110.00	18.50	12.000
M14	2.00	11.00	9.00	12.00	110.00	20.00	14.000
M16	2.00	12.00	9.00	14.00	110.00	20.00	16.000
M18	2.50	14.00	11.00	15.50	125.00	25.00	18.000
M20	2.50	16.00	12.00	17.50	140.00	25.00	20.000
M24	3.00	18.00	14.50	21.00	160.00	30.00	24.000
M30	3.50	22.00	18.00	26.50	180.00	35.00	30.000

Taps for ISO metric threads

Article no. 80760

P	M	K	N	S	H
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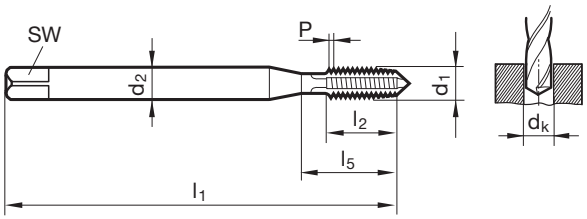
NEW | HSS-E | W | ISO2/6H | DIN 371 | R | Cyl | B



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
M2	0.40	2.80	2.10	1.60	45.00	8.00	2.000
M2,2	0.45	2.80	2.10	1.75	45.00	9.00	2.200
M2,5	0.45	2.80	2.10	2.05	50.00	9.00	2.500
M3	0.50	3.50	2.70	2.50	56.00	10.00	3.000
M4	0.70	4.50	3.40	3.30	63.00	12.00	4.000
M5	0.80	6.00	4.90	4.20	70.00	14.00	5.000
M6	1.00	6.00	4.90	5.00	80.00	16.00	6.000
M8	1.25	8.00	6.20	6.80	90.00	17.00	8.000
M10	1.50	10.00	8.00	8.50	100.00	20.00	10.000
M12	1.75	9.00	7.00	10.20	110.00	24.00	12.000
M14	2.00	11.00	9.00	12.00	110.00	26.00	14.000
M16	2.00	12.00	9.00	14.00	110.00	26.00	16.000
M18	2.50	14.00	11.00	15.50	125.00	30.00	18.000
M20	2.50	16.00	12.00	17.50	140.00	32.00	20.000
M22	2.50	18.00	14.50	19.50	140.00	32.00	22.000

Taps for ISO metric threads

Article no. 80761

P	M	K	N	S	H
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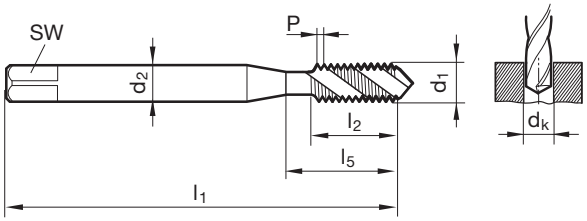
NEW | HSS-E | W | ISO2/6H | DIN 371 | R | Cyl | C



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
M1,6	0.35	2.50	2.10	1.25	40.00	11.60	1.600
M2	0.40	2.80	2.10	1.60	45.00	4.50	2.000
M2,2	0.45	2.80	2.10	1.75	45.00	5.00	2.200
M2,3	0.40	2.80	2.10		45.00	4.50	2.300
M2,5	0.45	2.80	2.10	2.05	50.00	5.00	2.500
M2,6	0.45	2.80	2.10	2.15	50.00	5.00	2.600
M3	0.50	3.50	2.70	2.50	56.00	6.00	3.000
M3,5	0.60	4.00	3.00	2.90	56.00	7.00	3.500
M4	0.70	4.50	3.40	3.30	63.00	7.50	4.000
M5	0.80	6.00	4.90	4.20	70.00	8.50	5.000
M6	1.00	6.00	4.90	5.00	80.00	11.00	6.000
M8	1.25	8.00	6.20	6.80	90.00	14.00	8.000
M10	1.50	10.00	8.00	8.50	100.00	16.00	10.000
M12	1.75	9.00	7.00	10.20	110.00	18.50	12.000
M14	2.00	11.00	9.00	12.00	110.00	20.00	14.000
M16	2.00	12.00	9.00	14.00	110.00	20.00	16.000
M20	2.50	16.00	12.00	17.50	140.00	25.00	20.000
M24	3.00	18.00	14.50	21.00	160.00	30.00	24.000

Taps for ISO metric threads

Article no. 80750

P	M	K	N	S	H
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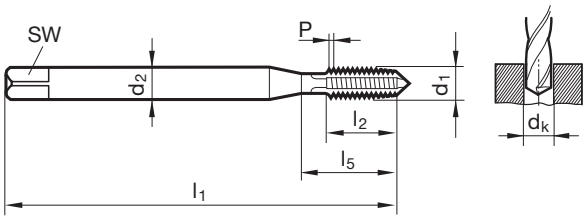
HSS-E | TG 100 GG | 6HX | DIN 371/376 | R | Cyl | C



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
M3	0.50	3.50	2.70	2.50	56.00	10.00	3.000
M3,5	0.60	4.00	3.00	2.90	56.00	12.00	3.500
M4	0.70	4.50	3.40	3.30	63.00	12.00	4.000
M5	0.80	6.00	4.90	4.20	70.00	14.00	5.000
M6	1.00	6.00	4.90	5.00	80.00	16.00	6.000
M8	1.25	8.00	6.20	6.80	90.00	17.00	8.000
M10	1.50	10.00	8.00	8.50	100.00	20.00	10.000
M12	1.75	9.00	7.00	10.20	110.00	24.00	12.000
M14	2.00	11.00	9.00	12.00	110.00	26.00	14.000
M16	2.00	12.00	9.00	14.00	110.00	26.00	16.000
M18	2.50	14.00	11.00	15.50	125.00	30.00	18.000
M20	2.50	16.00	12.00	17.50	140.00	32.00	20.000
M22	2.50	18.00	14.50	19.50	140.00	32.00	22.000
M24	3.00	18.00	14.50	21.00	160.00	36.00	24.000
M27	3.00	20.00	16.00	24.00	160.00	36.00	27.000
M30	3.50	22.00	18.00	26.50	180.00	40.00	30.000

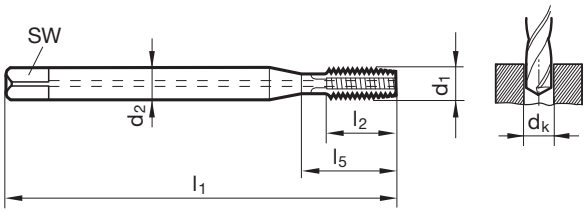
Taps for ISO metric threads with internal cooling

Article no. 80850

P	M	K	N	S	H
○		●	○		

HSS-E / HSS-E-PM | C | TG 300 T | 6HX | DIN 371/376 | R | Cyl | C

<M16 made of HSS-E-PM, ≥M16 made of HSS-E



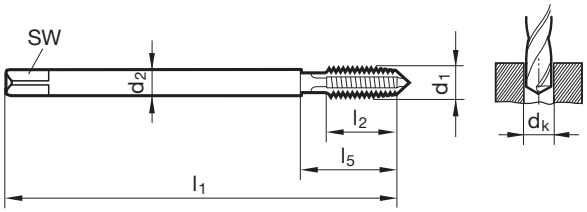
d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
M5	0.80	6.00	4.90	4.20	70.00	14.00	5.000
M6	1.00	6.00	4.90	5.00	80.00	16.00	6.000
M8	1.25	8.00	6.20	6.80	90.00	17.00	8.000
M10	1.50	10.00	8.00	8.50	100.00	20.00	10.000
M12	1.75	9.00	7.00	10.20	110.00	24.00	12.000
M14	2.00	11.00	9.00	12.00	110.00	26.00	14.000
M16	2.00	12.00	9.00	14.00	110.00	26.00	16.000
M20	2.50	16.00	12.00	17.50	140.00	32.00	20.000
M24	3.00	18.00	14.50	21.00	160.00	36.00	24.000
M27	3.00	20.00	16.00	24.00	160.00	36.00	27.000
M30	3.50	22.00	18.00	26.50	180.00	40.00	30.000
M33	3.50	25.00	20.00	29.50	180.00	40.00	33.000
M36	4.00	28.00	22.00	32.00	200.00	50.00	36.000
M39	4.00	32.00	24.00	35.00	200.00	50.00	39.000

Taps for ISO metric fine threads

Article no. 80701

P	M	K	N	S	H
●	○	○	○		

HSS-E | TG 100 U | ISO2/6H | DIN 374 | R | Cyl | B



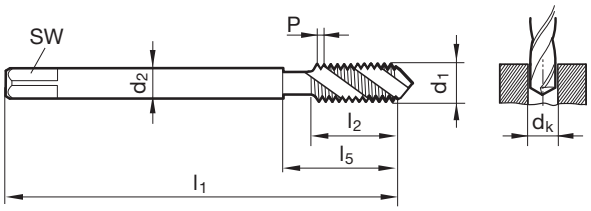
d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
M4 x 0,5	2.80	2.10	3.50	63.00	8.00	4.003
M5 x 0,5	3.50	2.70	4.50	70.00	10.00	5.003
M6 x 0,75	4.50	3.40	5.20	80.00	13.00	6.004
M8 x 0,75	6.00	4.90	7.20	80.00	14.00	8.004
M8 x 1	6.00	4.90	7.00	90.00	17.00	8.005
M10 x 1	7.00	5.50	9.00	90.00	16.00	10.005
M10 x 1,25	7.00	5.50	8.80	100.00	20.00	10.006
M12 x 1	9.00	7.00	11.00	100.00	20.00	12.005
M12 x 1,5	9.00	7.00	10.50	100.00	20.00	12.007
M14 x 1,5	11.00	9.00	12.50	100.00	20.00	14.007
M16 x 1,5	12.00	9.00	14.50	100.00	22.00	16.007
M18 x 1,5	14.00	11.00	16.50	110.00	25.00	18.007
M20 x 1,5	16.00	12.00	18.50	125.00	25.00	20.007
M22 x 1,5	18.00	14.50	20.50	125.00	25.00	22.007
M24 x 1,5	18.00	14.50	22.50	140.00	28.00	24.007
M24 x 2	18.00	14.50	22.00	140.00	28.00	24.008
M26 x 1,5	18.00	14.50	24.50	140.00	28.00	26.007
M27 x 1,5	20.00	16.00	25.50	140.00	28.00	27.007
M27 x 2	20.00	16.00	25.00	140.00	28.00	27.008
M28 x 1,5	20.00	16.00	26.50	140.00	28.00	28.007
M30 x 1,5	22.00	18.00	28.50	150.00	28.00	30.007
M30 x 2	22.00	18.00	28.00	150.00	28.00	30.008
M32 x 1,5	22.00	18.00	30.50	150.00	28.00	32.007
M36 x 1,5	28.00	22.00	34.50	170.00	30.00	36.007
M42 x 1,5	32.00	24.00	40.50	170.00	30.00	42.007

Taps for ISO metric fine threads

Article no. 80731

P	M	K	N	S	H
●	○	○	○		

HSS-E | TG 100 U | ISO2/6H | DIN 374 | R | Cyl | C



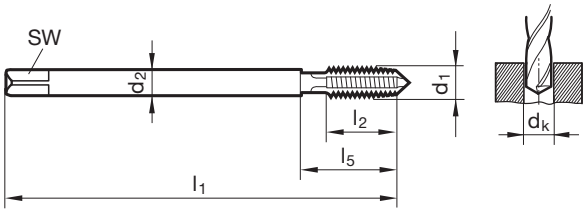
d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
M4 x 0,5	2.80	2.10	3.50	63.00	5.00	4.003
M5 x 0,5	3.50	2.70	4.50	70.00	5.00	5.003
M6 x 0,75	4.50	3.40	5.20	80.00	8.00	6.004
M8 x 1	6.00	4.90	7.00	90.00	11.00	8.005
M10 x 1	7.00	5.50	9.00	90.00	11.00	10.005
M10 x 1,25	7.00	5.50	8.80	100.00	14.00	10.006
M12 x 1	9.00	7.00	11.00	100.00	11.00	12.005
M12 x 1,25	9.00	7.00	10.80	100.00	16.00	12.006
M12 x 1,5	9.00	7.00	10.50	100.00	16.00	12.007
M14 x 1	11.00	9.00	13.00	100.00	11.00	14.005
M14 x 1,25	11.00	9.00	12.80	100.00	15.00	14.006
M14 x 1,5	11.00	9.00	12.50	100.00	15.00	14.007
M16 x 1	12.00	9.00	15.00	100.00	11.00	16.005
M16 x 1,5	12.00	9.00	14.50	100.00	15.00	16.007
M18 x 1	14.00	11.00	17.00	110.00	12.00	18.005
M18 x 1,5	14.00	11.00	16.50	110.00	16.00	18.007
M20 x 1,5	16.00	12.00	18.50	125.00	16.00	20.007
M22 x 1,5	18.00	14.50	20.50	125.00	16.00	22.007
M24 x 2	18.00	14.50	22.00	140.00	22.00	24.008
M26 x 1,5	18.00	14.50	24.50	140.00	20.00	26.007
M27 x 1,5	20.00	16.00	25.50	140.00	20.00	27.007
M27 x 2	20.00	16.00	25.00	140.00	20.00	27.008
M28 x 1,5	20.00	16.00	26.50	140.00	20.00	28.007
M30 x 1,5	22.00	18.00	28.50	150.00	20.00	30.007
M30 x 2	22.00	18.00	28.00	150.00	20.00	30.008

Taps for ISO metric fine threads

Article no. 80711

P	M	K	N	S	H
●	○	○			

NEW | HSS-E | T | TG 100 U | ISO2/6H | DIN 374 | R | Cyl | B



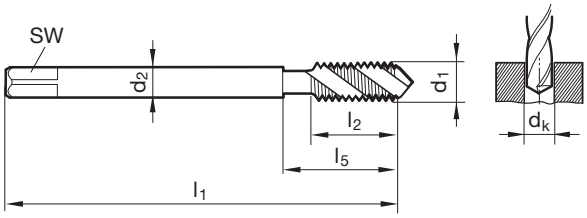
d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
M5 x 0,5	3.50	2.70	4.50	70.00	10.00	5.003
M6 x 0,75	4.50	3.40	5.20	80.00	13.00	6.004
M8 x 1	6.00	4.90	7.00	90.00	17.00	8.005
M10 x 1	7.00	5.50	9.00	90.00	16.00	10.005
M12 x 1	9.00	7.00	11.00	100.00	20.00	12.005
M12 x 1,5	9.00	7.00	10.50	100.00	20.00	12.007
M14 x 1,5	11.00	9.00	12.50	100.00	20.00	14.007
M16 x 1,5	12.00	9.00	14.50	100.00	22.00	16.007
M18 x 1,5	14.00	11.00	16.50	110.00	25.00	18.007
M20 x 1,5	16.00	12.00	18.50	125.00	25.00	20.007
M22 x 1,5	18.00	14.50	20.50	125.00	25.00	22.007
M24 x 1,5	18.00	14.50	22.50	140.00	28.00	24.007

Taps for ISO metric fine threads

Article no. 80741

P	M	K	N	S	H
●	○	○			

NEW | HSS-E | T | TG 100 U | ISO2/6H | DIN 374 | R | Cyl | C



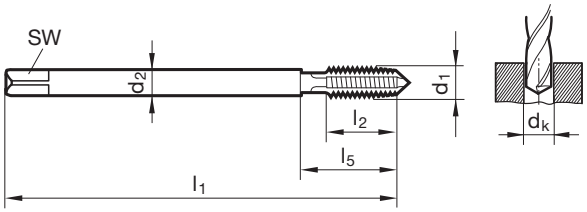
d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
M5 x 0,5	3.50	2.70	4.50	70.00	5.00	5.003
M6 x 0,75	4.50	3.40	5.20	80.00	8.00	6.004
M8 x 0,75	6.00	4.90	7.20	80.00	8.00	8.004
M8 x 1	6.00	4.90	7.00	90.00	11.00	8.005
M10 x 1	7.00	5.50	9.00	90.00	11.00	10.005
M10 x 1,25	7.00	5.50	8.80	100.00	14.00	10.006
M12 x 1	9.00	7.00	11.00	100.00	11.00	12.005
M12 x 1,25	9.00	7.00	10.80	100.00	16.00	12.006
M12 x 1,5	9.00	7.00	10.50	100.00	16.00	12.007
M14 x 1	11.00	9.00	13.00	100.00	11.00	14.005
M14 x 1,5	11.00	9.00	12.50	100.00	15.00	14.007
M16 x 1	12.00	9.00	15.00	100.00	11.00	16.005
M16 x 1,5	12.00	9.00	14.50	100.00	15.00	16.007
M18 x 1	14.00	11.00	17.00	110.00	12.00	18.005
M18 x 1,5	14.00	11.00	16.50	110.00	16.00	18.007
M20 x 1,5	16.00	12.00	18.50	125.00	16.00	20.007
M22 x 1,5	18.00	14.50	20.50	125.00	16.00	22.007
M24 x 1,5	18.00	14.50	22.50	140.00	16.00	24.007
M24 x 2	18.00	14.50	22.00	140.00	22.00	24.008

Taps for ISO metric fine threads

Article no. 80801

P	M	K	N	S	H
●	●	○	○	○	

HSS-E | A | TG 100 T | 6HX | DIN 374 | R | Cyl | B



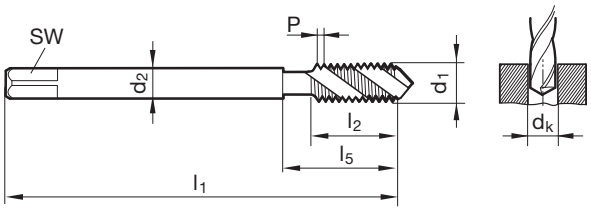
d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
M3 x 0,35	2.20	1.80	2.65	56.00	7.00	3.002
M4 x 0,5	2.80	2.10	3.50	63.00	8.00	4.003
M5 x 0,5	3.50	2.70	4.50	70.00	10.00	5.003
M6 x 0,5	4.50	3.40	5.50	80.00	13.00	6.003
M6 x 0,75	4.50	3.40	5.20	80.00	13.00	6.004
M8 x 0,75	6.00	4.90	7.20	80.00	14.00	8.004
M8 x 1	6.00	4.90	7.00	90.00	17.00	8.005
M10 x 1	7.00	5.50	9.00	90.00	16.00	10.005
M10 x 1,25	7.00	5.50	8.80	100.00	20.00	10.006
M12 x 1	9.00	7.00	11.00	100.00	20.00	12.005
M12 x 1,25	9.00	7.00	10.80	100.00	20.00	12.006
M12 x 1,5	9.00	7.00	10.50	100.00	20.00	12.007
M14 x 1,5	11.00	9.00	12.50	100.00	20.00	14.007
M16 x 1,5	12.00	9.00	14.50	100.00	22.00	16.007
M18 x 1,5	14.00	11.00	16.50	110.00	25.00	18.007
M20 x 1,5	16.00	12.00	18.50	125.00	25.00	20.007
M24 x 1,5	18.00	14.50	22.50	140.00	28.00	24.007
M24 x 2	18.00	14.50	22.00	140.00	28.00	24.008
M36 x 2	28.00	22.00	34.00	170.00	30.00	36.008

Taps for ISO metric fine threads

Article no. 80831

P	M	K	N	S	H
●	●	○	○	○	

HSS-E | A | TG 100 T | 6HX | DIN 374 | R | Cyl | C



d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
M6 x 0,75	4.50	3.40	5.20	80.00	8.00	6.004
M8 x 0,75	6.00	4.90	7.20	80.00	8.00	8.004
M8 x 1	6.00	4.90	7.00	90.00	11.00	8.005
M10 x 1	7.00	5.50	9.00	90.00	11.00	10.005
M10 x 1,25	7.00	5.50	8.80	100.00	14.00	10.006
M12 x 1	9.00	7.00	11.00	100.00	11.00	12.005
M12 x 1,25	9.00	7.00	10.80	100.00	16.00	12.006
M12 x 1,5	9.00	7.00	10.50	100.00	16.00	12.007
M14 x 1,5	11.00	9.00	12.50	100.00	15.00	14.007
M16 x 1,5	12.00	9.00	14.50	100.00	15.00	16.007
M18 x 1,5	14.00	11.00	16.50	110.00	16.00	18.007
M20 x 1,5	16.00	12.00	18.50	125.00	16.00	20.007
M24 x 1,5	18.00	14.50	22.50	140.00	16.00	24.007

Taps for ISO metric fine threads

Article no. 80751

P	M	K	N	S	H
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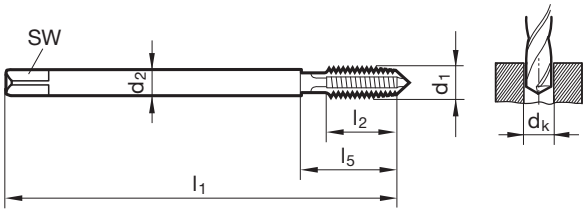
HSS-E | TG 100 GG | 6HX | DIN 374 | R | Cyl | C



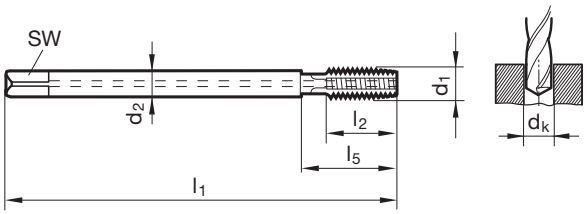
d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
M4 x 0,5	2.80	2.10	3.50	63.00	8.00	4.003
M5 x 0,5	3.50	2.70	4.50	70.00	10.00	5.003
M6 x 0,75	4.50	3.40	5.20	80.00	13.00	6.004
M8 x 0,75	6.00	4.90	7.20	80.00	14.00	8.004
M8 x 1	6.00	4.90	7.00	90.00	17.00	8.005
M10 x 1	7.00	5.50	9.00	90.00	16.00	10.005
M12 x 1	9.00	7.00	11.00	100.00	20.00	12.005
M12 x 1,5	9.00	7.00	10.50	100.00	20.00	12.007
M14 x 1,5	11.00	9.00	12.50	100.00	20.00	14.007
M16 x 1,5	12.00	9.00	14.50	100.00	22.00	16.007
M18 x 1,5	14.00	11.00	16.50	110.00	25.00	18.007
M20 x 1,5	16.00	12.00	18.50	125.00	25.00	20.007
M22 x 1,5	18.00	14.50	20.50	125.00	25.00	22.007
M24 x 1,5	18.00	14.50	22.50	140.00	28.00	24.007
M27 x 1,5	20.00	16.00	25.50	140.00	28.00	27.007
M30 x 1,5	22.00	18.00	28.50	150.00	28.00	30.007

Taps for ISO metric fine threads with internal cooling

Article no. 80851

P	M	K	N	S	H
○		●	○		

HSS-E-PM | C | TG 300 T | 6HX | DIN 374 | R | Cyl | C



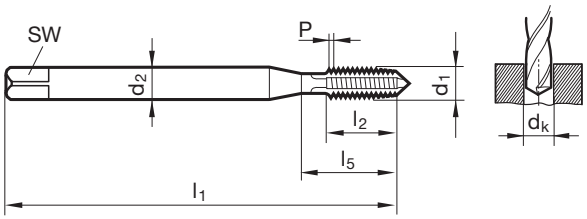
d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
M6 x 0,75	4.50	3.40	5.20	80.00	13.00	6.004
M8 x 0,75	6.00	4.90	7.20	80.00	14.00	8.004
M8 x 1	6.00	4.90	7.00	90.00	17.00	8.005
M10 x 1	7.00	5.50	9.00	90.00	16.00	10.005
M10 x 1,25	7.00	5.50	8.80	100.00	20.00	10.006
M12 x 1	9.00	7.00	11.00	100.00	20.00	12.005
M12 x 1,25	9.00	7.00	10.80	100.00	20.00	12.006
M12 x 1,5	9.00	7.00	10.50	100.00	20.00	12.007
M14 x 1,5	11.00	9.00	12.50	100.00	20.00	14.007
M16 x 1,5	12.00	9.00	14.50	100.00	22.00	16.007

Taps for UNC threads

Article no. 80702

P	M	K	N	S	H
●	○	○	○		

HSS-E | TG 100 U | 2B | ~DIN 371/376 | R | Cyl | B



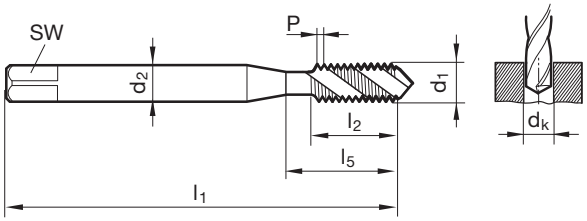
d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
4 - 40	3.50	2.70	2.35	56.00	11.00	2.845
6 - 32	4.00	3.00	2.85	56.00	12.00	3.505
8 - 32	4.50	3.40	3.50	63.00	12.00	4.166
10 - 24	6.00	4.90	3.90	70.00	14.00	4.826
1/4 - 20	7.00	5.50	5.10	80.00	16.00	6.350
5/16 - 18	8.00	6.20	6.60	90.00	18.00	7.938
3/8 - 16	10.00	8.00	8.00	100.00	20.00	9.525
7/16 - 14	8.00	6.20	9.40	100.00	22.00	11.113
1/2 - 13	9.00	7.00	10.80	110.00	25.00	12.700
5/8 - 11	12.00	9.00	13.50	110.00	30.00	15.875
3/4 - 10	14.00	11.00	16.50	125.00	33.00	19.050
7/8 - 9	18.00	14.50	19.50	140.00	35.00	22.225
1 - 8	18.00	14.50	22.25	160.00	38.00	25.400

Taps for UNC threads

Article no. 80732

P	M	K	N	S	H
●	○	○	○		

HSS-E | TG 100 U | 2B | ~DIN 371/376 | R | Cyl | C



d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
2 - 56	2.80	2.10	1.85	45.00	5.00	2.184
4 - 40	3.50	2.70	2.35	56.00	7.00	2.845
6 - 32	4.00	3.00	2.85	56.00	8.00	3.505
8 - 32	4.50	3.40	3.50	63.00	8.00	4.166
10 - 24	6.00	4.90	3.90	70.00	11.00	4.826
1/4 - 20	7.00	5.50	5.10	80.00	13.00	6.350
5/16 - 18	8.00	6.20	6.60	90.00	14.00	7.938
3/8 - 16	10.00	8.00	8.00	100.00	16.00	9.525
7/16 - 14	8.00	6.20	9.40	100.00	18.00	11.113
1/2 - 13	9.00	7.00	10.80	110.00	20.00	12.700
9/16 - 12	11.00	9.00	12.20	110.00	21.00	14.288
5/8 - 11	12.00	9.00	13.50	110.00	24.00	15.875
3/4 - 10	14.00	11.00	16.50	125.00	25.00	19.050
7/8 - 9	18.00	14.50	19.50	140.00	28.00	22.225

Taps for UNC threads

Article no. 80712

P	M	K	N	S	H
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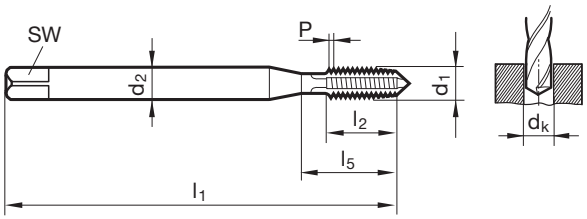
NEW | HSS-E | T | TG 100 U | 2B | ~DIN 371 | R | Cyl | B



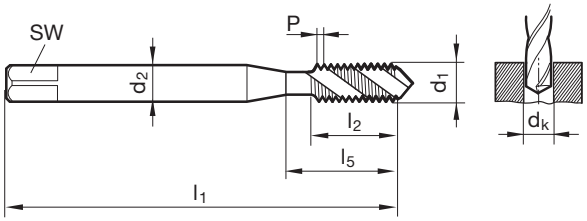
d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
4 - 40	3.50	2.70	2.35	56.00	11.00	2.845
6 - 32	4.00	3.00	2.85	56.00	12.00	3.505
8 - 32	4.50	3.40	3.50	63.00	12.00	4.166
10 - 24	6.00	4.90	3.90	70.00	14.00	4.826
12 - 24	6.00	4.90	4.50	80.00	16.00	5.486
1/4 - 20	7.00	5.50	5.10	80.00	16.00	6.350
5/16 - 18	8.00	6.20	6.60	90.00	18.00	7.938
3/8 - 16	10.00	8.00	8.00	100.00	20.00	9.525
1/2 - 13	9.00	7.00	10.80	110.00	25.00	12.700
5/8 - 11	12.00	9.00	13.50	110.00	30.00	15.875
3/4 - 10	14.00	11.00	16.50	125.00	33.00	19.050
7/8 - 9	18.00	14.50	19.50	140.00	35.00	22.225
1 - 8	18.00	14.50	22.25	160.00	38.00	25.400

Taps for UNC threads

Article no. 80742

P	M	K	N	S	H
●	○	○			

NEW | HSS-E | T | TG 100 U | 2B | ~DIN 371 | R | Cyl | C



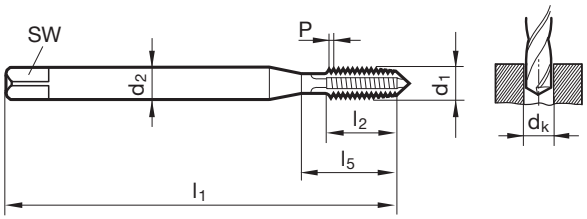
d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
6 - 32	4.00	3.00	2.85	56.00	8.00	3.505
8 - 32	4.50	3.40	3.50	63.00	8.00	4.166
10 - 24	6.00	4.90	3.90	70.00	11.00	4.826
1/4 - 20	7.00	5.50	5.10	80.00	13.00	6.350
5/16 - 18	8.00	6.20	6.60	90.00	14.00	7.938
3/8 - 16	10.00	8.00	8.00	100.00	16.00	9.525
7/16 - 14	8.00	6.20	9.40	100.00	18.00	11.113
1/2 - 13	9.00	7.00	10.80	110.00	20.00	12.700
5/8 - 11	12.00	9.00	13.50	110.00	24.00	15.875
3/4 - 10	14.00	11.00	16.50	125.00	25.00	19.050
7/8 - 9	18.00	14.50	19.50	140.00	28.00	22.225
1 - 8	18.00	14.50	22.25	160.00	32.00	25.400

Taps for UNC threads

Article no. 80802

P	M	K	N	S	H
●	●	○	○	○	

HSS-E | A | TG 100 T | 2B | ~DIN 371/376 | R | Cyl | B



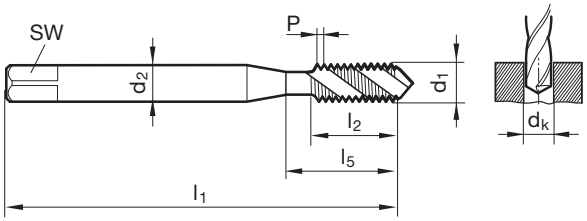
d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
4 - 40	3.50	2.70	2.35	56.00	11.00	2.845
6 - 32	4.00	3.00	2.85	56.00	12.00	3.505
8 - 32	4.50	3.40	3.50	63.00	12.00	4.166
10 - 24	6.00	4.90	3.90	70.00	14.00	4.826
1/4 - 20	7.00	5.50	5.10	80.00	16.00	6.350
5/16 - 18	8.00	6.20	6.60	90.00	18.00	7.938
3/8 - 16	10.00	8.00	8.00	100.00	20.00	9.525
7/16 - 14	8.00	6.20	9.40	100.00	22.00	11.113
1/2 - 13	9.00	7.00	10.80	110.00	25.00	12.700
9/16 - 12	11.00	9.00	12.20	110.00	28.00	14.288
5/8 - 11	12.00	9.00	13.50	110.00	30.00	15.875
3/4 - 10	14.00	11.00	16.50	125.00	33.00	19.050
7/8 - 9	18.00	14.50	19.50	140.00	35.00	22.225
1 - 8	18.00	14.50	22.25	160.00	38.00	25.400

Taps for UNC threads

Article no. 80832

P	M	K	N	S	H
●	●	○	○	○	

HSS-E | A | N | 2B | ~DIN 371/376 | R | Cyl | C



d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
4 - 40	3.50	2.70	2.35	56.00	7.00	2.845
6 - 32	4.00	3.00	2.85	56.00	8.00	3.505
8 - 32	4.50	3.40	3.50	63.00	8.00	4.166
10 - 24	6.00	4.90	3.90	70.00	11.00	4.826
1/4 - 20	7.00	5.50	5.10	80.00	13.00	6.350
5/16 - 18	8.00	6.20	6.60	90.00	14.00	7.938
3/8 - 16	10.00	8.00	8.00	100.00	16.00	9.525
7/16 - 14	8.00	6.20	9.40	100.00	18.00	11.113
1/2 - 13	9.00	7.00	10.80	110.00	20.00	12.700
9/16 - 12	11.00	9.00	12.20	110.00	21.00	14.288
5/8 - 11	12.00	9.00	13.50	110.00	24.00	15.875
3/4 - 10	14.00	11.00	16.50	125.00	25.00	19.050
7/8 - 9	18.00	14.50	19.50	140.00	28.00	22.225

Taps for UNC threads

Article no. 80752

P	M	K	N	S	H
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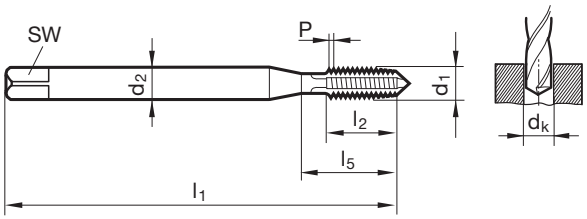
HSS-E | TG 100 GG | 2B | ~DIN 371/376 | R | Cyl | C



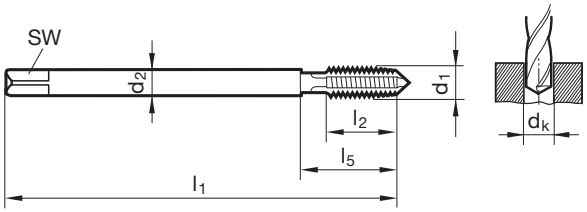
d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
4 - 40	3.50	2.70	2.35	56.00	11.00	2.845
6 - 32	4.00	3.00	2.85	56.00	12.00	3.505
8 - 32	4.50	3.40	3.50	63.00	12.00	4.166
10 - 24	6.00	4.90	3.90	70.00	14.00	4.826
1/4 - 20	7.00	5.50	5.10	80.00	16.00	6.350
5/16 - 18	8.00	6.20	6.60	90.00	18.00	7.938
3/8 - 16	10.00	8.00	8.00	100.00	20.00	9.525
7/16 - 14	8.00	6.20	9.40	100.00	22.00	11.113
1/2 - 13	9.00	7.00	10.80	110.00	25.00	12.700
9/16 - 12	11.00	9.00	12.20	110.00	28.00	14.288
5/8 - 11	12.00	9.00	13.50	110.00	30.00	15.875
3/4 - 10	14.00	11.00	16.50	125.00	33.00	19.050
7/8 - 9	18.00	14.50	19.50	140.00	35.00	22.225
1 - 8	18.00	14.50	22.25	160.00	38.00	25.400

Taps for UNF threads

Article no. 80703

P	M	K	N	S	H
●	○	○	○		

HSS-E | TG 100 U | 2B | ~DIN 374 | R | Cyl | B



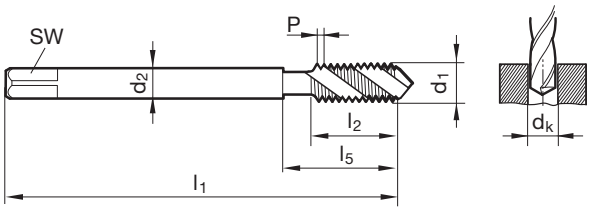
d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
4 - 48	2.20	1.80	2.40	56.00	10.00	2.845
6 - 40	2.50	2.10	2.95	56.00	11.00	3.505
10 - 32	3.50	2.70	4.10	70.00	14.00	4.826
1/4 - 28	4.50	3.40	5.50	80.00	16.00	6.350
3/8 - 24	7.00	5.50	8.50	90.00	18.00	9.525
5/8 - 18	12.00	9.00	14.50	110.00	22.00	15.875
7/8 - 14	18.00	14.50	20.40	140.00	25.00	22.225
1 - 12	18.00	14.50	23.25	160.00	28.00	25.400

Taps for UNF threads

Article no. 80733

P	M	K	N	S	H
●	○	○	○		

HSS-E | TG 100 U | 2B | ~DIN 374 | R | Cyl | C



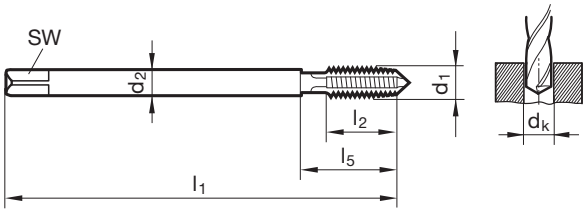
d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
3 - 56	1.80	1.40	2.15	50.00	5.00	2.515
4 - 48	2.20	1.80	2.40	56.00	6.00	2.845
6 - 40	2.50	2.10	2.95	56.00	6.50	3.505
8 - 36	2.80	2.10	3.50	63.00	7.00	4.166
10 - 32	3.50	2.70	4.10	70.00	8.50	4.826
1/4 - 28	4.50	3.40	5.50	80.00	9.50	6.350
3/8 - 24	7.00	5.50	8.50	90.00	11.50	9.525
7/16 - 20	8.00	6.20	9.90	100.00	13.00	11.113
1/2 - 20	9.00	7.00	11.50	100.00	13.00	12.700
5/8 - 18	12.00	9.00	14.50	100.00	15.00	15.875
7/8 - 14	18.00	14.50	20.40	125.00	19.00	22.225
1 - 12	18.00	14.50	23.25	140.00	22.00	25.400

Taps for UNF threads

Article no. 80713

P	M	K	N	S	H
●	○	○			

NEW | HSS-E | T | TG 100 U | 2B | ~DIN 374 | R | Cyl | B



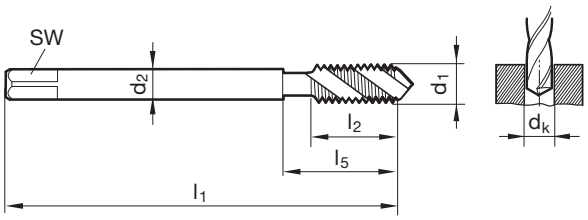
d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
4 - 48	2.20	1.80	2.40	56.00	10.00	2.845
6 - 40	2.50	2.10	2.95	56.00	11.00	3.505
10 - 32	3.50	2.70	4.10	70.00	14.00	4.826
1/4 - 28	4.50	3.40	5.50	80.00	16.00	6.350
3/8 - 24	7.00	5.50	8.50	90.00	18.00	9.525
5/8 - 18	12.00	9.00	14.50	100.00	22.00	15.875
7/8 - 14	18.00	14.50	20.40	125.00	25.00	22.225
1 - 12	18.00	14.50	23.25	140.00	28.00	25.400

Taps for UNF threads

Article no. 80743

P	M	K	N	S	H
●	○	○			

NEW | HSS-E | T | TG 100 U | 2B | ~DIN 374 | R | Cyl | C



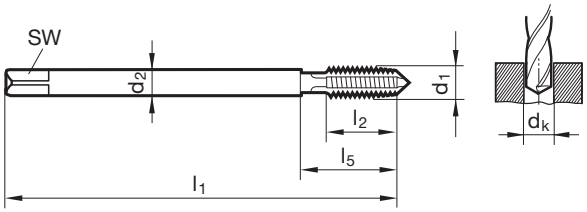
d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
6 - 40	2.50	2.10	2.95	56.00	6.50	3.505
8 - 36	2.80	2.10	3.50	63.00	7.00	4.166
10 - 32	3.50	2.70	4.10	70.00	8.50	4.826
1/4 - 28	4.50	3.40	5.50	80.00	9.50	6.350
5/16 - 24	6.00	4.90	6.90	90.00	11.50	7.938
3/8 - 24	7.00	5.50	8.50	90.00	11.50	9.525
7/16 - 20	8.00	6.20	9.90	100.00	13.00	11.113
1/2 - 20	9.00	7.00	11.50	100.00	13.00	12.700
5/8 - 18	12.00	9.00	14.50	100.00	15.00	15.875
7/8 - 14	18.00	14.50	20.40	125.00	19.00	22.225

Taps for UNF threads

Article no. 80803

P	M	K	N	S	H
●	●	○	○	○	

HSS-E | A | TG 100 T | 2B | ~DIN 374 | R | Cyl | B



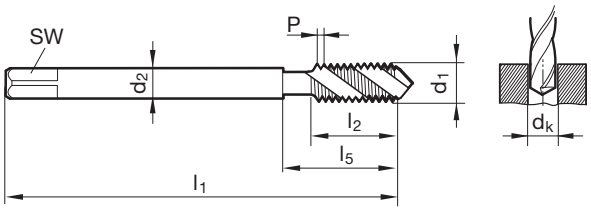
d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
4 - 48	2.20	1.80	2.40	56.00	10.00	2.845
6 - 40	2.50	2.10	2.95	56.00	11.00	3.505
8 - 36	2.80	2.10	3.50	63.00	12.00	4.166
10 - 32	3.50	2.70	4.10	70.00	14.00	4.826
1/4 - 28	4.50	3.40	5.50	80.00	16.00	6.350
5/16 - 24	6.00	4.90	6.90	90.00	17.00	7.938
3/8 - 24	7.00	5.50	8.50	90.00	18.00	9.525
7/16 - 20	8.00	6.20	9.90	100.00	22.00	11.113
5/8 - 18	12.00	9.00	14.50	100.00	22.00	15.875
7/8 - 14	18.00	14.50	20.40	125.00	25.00	22.225
1 - 12	18.00	14.50	23.25	140.00	28.00	25.400

Taps for UNF threads

Article no. 80833

P	M	K	N	S	H
●	●	○	○	○	

HSS-E | A | N | 2B | ~DIN 374 | R | Cyl | C



d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
10 - 32	3.50	2.70	4.10	70.00	8.50	4.826
12 - 28	4.00	3.00	4.60	80.00	9.50	5.486
1/4 - 28	4.50	3.40	5.50	80.00	9.50	6.350
5/16 - 24	6.00	4.90	6.90	90.00	11.50	7.938
3/8 - 24	7.00	5.50	8.50	90.00	11.50	9.525
7/16 - 20	8.00	6.20	9.90	100.00	13.00	11.113
1/2 - 20	9.00	7.00	11.50	100.00	13.00	12.700
5/8 - 18	12.00	9.00	14.50	100.00	15.00	15.875
7/8 - 14	18.00	14.50	20.40	125.00	19.00	22.225
1 - 12	18.00	14.50	23.25	140.00	22.00	25.400

Taps for UNF threads

Article no. 80753

P	M	K	N	S	H
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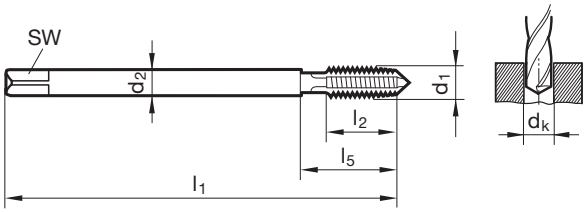
HSS-E | TG 100 GG | 2B | ~DIN 374 | R | Cyl | C



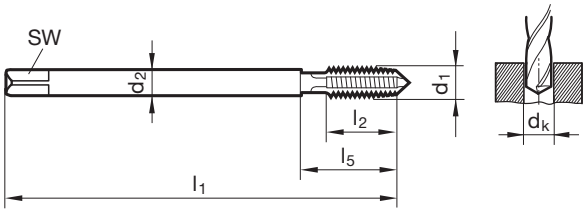
d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
4 - 48	2.20	1.80	2.40	56.00	10.00	2.845
6 - 40	2.50	2.10	2.95	56.00	11.00	3.505
8 - 36	2.80	2.10	3.50	63.00	12.00	4.166
10 - 32	3.50	2.70	4.10	70.00	14.00	4.826
1/4 - 28	4.50	3.40	5.50	80.00	16.00	6.350
5/16 - 24	6.00	4.90	6.90	90.00	17.00	7.938
3/8 - 24	7.00	5.50	8.50	90.00	18.00	9.525
7/16 - 20	8.00	6.20	9.90	100.00	22.00	11.113
1/2 - 20	9.00	7.00	11.50	100.00	20.00	12.700
9/16 - 18	11.00	9.00	12.90	100.00	22.00	14.288
3/4 - 16	14.00	11.00	17.50	110.00	25.00	19.050
7/8 - 14	18.00	14.50	20.40	125.00	25.00	22.225
1 - 12	18.00	14.50	23.25	140.00	28.00	25.400

Taps for BSP threads

Article no. 80704

P	M	K	N	S	H
●	○	○	○		

HSS-E | TG 100 U | DIN 5156 | R | Cyl | B



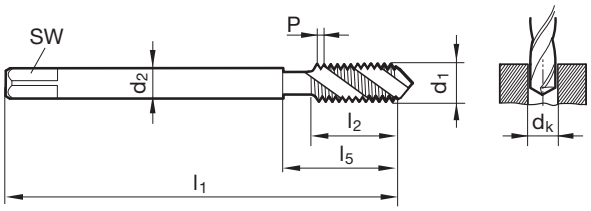
d1	P inch	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
G1/8	28.00	7.00	5.50	8.80	90.00	18.00	9.728
G1/4	19.00	11.00	9.00	11.80	100.00	20.00	13.157
G3/8	19.00	12.00	9.00	15.25	100.00	22.00	16.662
G1/2	14.00	16.00	12.00	19.00	125.00	25.00	20.955
G3/4	14.00	20.00	16.00	24.50	140.00	28.00	26.441
G1	11.00	25.00	20.00	30.75	160.00	30.00	33.249
G1 1/4	11.00	32.00	24.00	39.50	170.00	30.00	41.910
G1 1/2	11.00	36.00	29.00	45.25	190.00	32.00	47.803
G2	11.00	45.00	35.00	57.00	220.00	40.00	59.614

Taps for BSP threads

Article no. 80734

P	M	K	N	S	H
●	○	○	○		

HSS-E | TG 100 U | DIN 5156 | R | Cyl | C



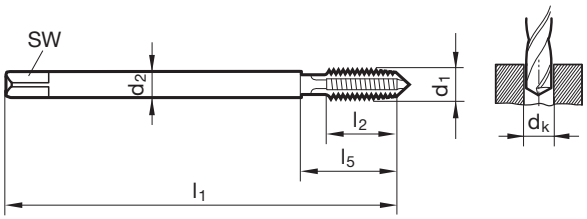
d1	P inch	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
G1/16	28.00	6.00	4.90	6.80	90.00	11.00	7.723
G1/8	28.00	7.00	5.50	8.80	90.00	11.00	9.728
G1/4	19.00	11.00	9.00	11.80	100.00	14.00	13.157
G3/8	19.00	12.00	9.00	15.25	100.00	14.00	16.662
G1/2	14.00	16.00	12.00	19.00	125.00	18.00	20.955
G3/4	14.00	20.00	16.00	24.50	140.00	20.00	26.441
G1	11.00	25.00	20.00	30.75	160.00	24.00	33.249
G1 1/4	11.00	32.00	24.00	39.50	170.00	25.00	41.910
G1 1/2	11.00	36.00	29.00	45.25	190.00	27.00	47.803
G2	11.00	45.00	35.00	57.00	220.00	32.00	59.614

Taps for BSP threads

Article no. 80714

P	M	K	N	S	H
●	○	○			

NEW | HSS-E | T | TG 100 U | DIN 5156 | R | Cyl | B



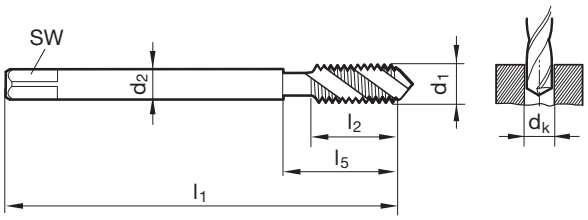
d1	P inch	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
G1/16	28.00	6.00	4.90	6.80	90.00	18.00	7.723
G1/8	28.00	7.00	5.50	8.80	90.00	18.00	9.728
G1/4	19.00	11.00	9.00	11.80	100.00	20.00	13.157
G3/8	19.00	12.00	9.00	15.25	100.00	22.00	16.662
G1/2	14.00	16.00	12.00	19.00	125.00	25.00	20.955
G3/4	14.00	20.00	16.00	24.50	140.00	28.00	26.441
G7/8	14.00	22.00	18.00	28.25	150.00	28.00	30.201

Taps for BSP threads

Article no. 80744

P	M	K	N	S	H
●	○	○			

NEW | HSS-E | T | TG 100 U | DIN 5156 | R | Cyl | C



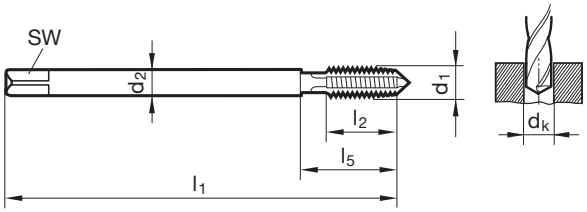
d1	P inch	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
G1/8	28.00	7.00	5.50	8.80	90.00	11.00	9.728
G1/4	19.00	11.00	9.00	11.80	100.00	14.00	13.157
G3/8	19.00	12.00	9.00	15.25	100.00	14.00	16.662
G1/2	14.00	16.00	12.00	19.00	125.00	18.00	20.955
G3/4	14.00	20.00	16.00	24.50	140.00	20.00	26.441
G1	11.00	25.00	20.00	30.75	160.00	24.00	33.249

Taps for BSP threads

Article no. 80804

P	M	K	N	S	H
●	●	○	○	○	

HSS-E | A | TG 100 T | DIN 5156 | R | Cyl | B



d1	P inch	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
G1/8	28.00	7.00	5.50	8.80	90.00	18.00	9.728
G1/4	19.00	11.00	9.00	11.80	100.00	20.00	13.157
G3/8	19.00	12.00	9.00	15.25	100.00	22.00	16.662
G1/2	14.00	16.00	12.00	19.00	125.00	25.00	20.955
G5/8	14.00	18.00	14.50	21.00	125.00	25.00	22.911
G3/4	14.00	20.00	16.00	24.50	140.00	28.00	26.441
G7/8	14.00	22.00	18.00	28.25	150.00	28.00	30.201
G1	11.00	25.00	20.00	30.75	160.00	30.00	33.249

Taps for BSP threads

Article no. 80834

P	M	K	N	S	H
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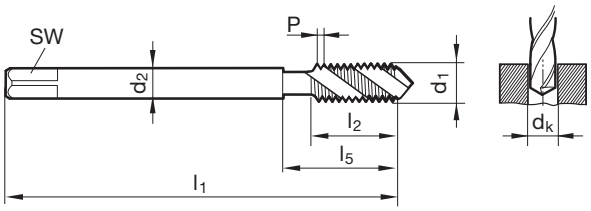
HSS-E | A | N | DIN 5156 | R | Cyl | C



d1	P inch	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
G1/16	28.00	6.00	4.90	6.80	90.00	11.00	7.723
G1/8	28.00	7.00	5.50	8.80	90.00	11.00	9.728
G1/4	19.00	11.00	9.00	11.80	100.00	14.00	13.157
G3/8	19.00	12.00	9.00	15.25	100.00	14.00	16.662
G1/2	14.00	16.00	12.00	19.00	125.00	18.00	20.955
G5/8	14.00	18.00	14.50	21.00	125.00	18.00	22.911
G3/4	14.00	20.00	16.00	24.50	140.00	20.00	26.441
G7/8	14.00	22.00	18.00	28.25	150.00	22.00	30.201
G1	11.00	25.00	20.00	30.75	160.00	24.00	33.249

Taps for BSP threads

Article no. 80754

P	M	K	N	S	H
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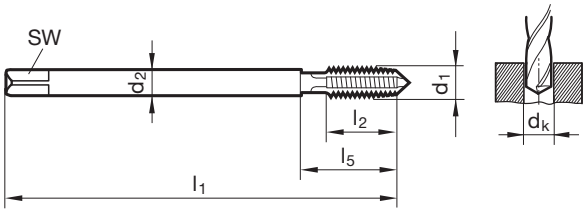
HSS-E | TG 100 GG | DIN 5156 | R | Cyl | C



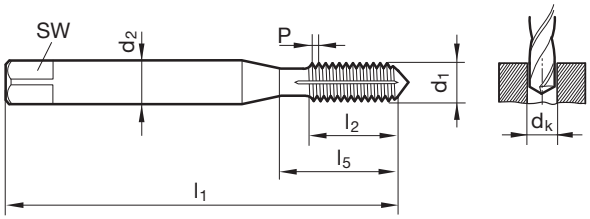
d1	P inch	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
G1/16	28.00	6.00	4.90	6.80	90.00	18.00	7.723
G1/8	28.00	7.00	5.50	8.80	90.00	18.00	9.728
G1/4	19.00	11.00	9.00	11.80	100.00	20.00	13.157
G3/8	19.00	12.00	9.00	15.25	100.00	22.00	16.662
G1/2	14.00	16.00	12.00	19.00	125.00	25.00	20.955
G5/8	14.00	18.00	14.50	21.00	125.00	25.00	22.911
G3/4	14.00	20.00	16.00	24.50	140.00	28.00	26.441
G7/8	14.00	22.00	18.00	28.25	150.00	28.00	30.201
G1	11.00	25.00	20.00	30.75	160.00	30.00	33.249
G1 1/8	11.00	28.00	22.00	35.50	170.00	30.00	37.897
G1 1/4	11.00	32.00	24.00	39.50	170.00	30.00	41.910
G1 3/8	11.00	36.00	29.00	41.75	180.00	32.00	44.323
G1 1/2	11.00	36.00	29.00	45.25	190.00	32.00	47.803
G1 3/4	11.00	40.00	32.00	51.00	190.00	40.00	53.746
G2	11.00	45.00	35.00	57.00	220.00	40.00	59.614

Fluteless taps for ISO metric threads

Article no. 80900

P	M	K	N	S	H
●	●	○	○		

NEW | HSS-E | T | N | 6HX | ~DIN 371/376 | R | Cyl | C



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
M3	0.50	3.50	2.70	2.80	56.00	10.00	3.000
M3,5	0.60	4.00	3.00	3.25	56.00	12.00	3.500
M4	0.70	4.50	3.40	3.70	63.00	12.00	4.000
M5	0.80	6.00	4.90	4.65	70.00	14.00	5.000
M6	1.00	6.00	4.90	5.55	80.00	16.00	6.000
M8	1.25	8.00	6.20	7.40	90.00	17.00	8.000
M10	1.50	10.00	8.00	9.30	100.00	20.00	10.000
M12	1.75	9.00	7.00	11.20	110.00	24.00	12.000
M14	2.00	11.00	9.00	13.10	110.00	26.00	14.000
M16	2.00	12.00	9.00	15.10	110.00	26.00	16.000
M18	2.50	14.00	11.00	16.90	125.00	30.00	18.000
M20	2.50	16.00	12.00	18.90	140.00	32.00	20.000
M22	2.50	18.00	14.50	20.90	140.00	32.00	22.000
M24	3.00	18.00	14.50	22.70	160.00	36.00	24.000
M27	3.00	20.00	16.00	25.70	160.00	36.00	27.000
M30	3.50	22.00	18.00	28.50	180.00	40.00	30.000
M33	3.50	25.00	20.00	31.50	180.00	40.00	33.000
M36	4.00	28.00	22.00	34.30	200.00	50.00	36.000
M39	4.00	32.00	24.00	37.30	200.00	50.00	39.000

Fluteless taps for ISO metric threads

Article no. 80920

P	M	K	N	S	H
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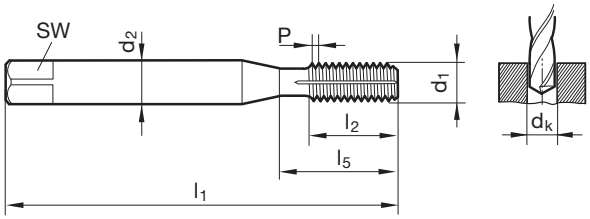
NEW | HSS-E-PM | C | N | 4HX/6HX | ~DIN 371 | R | Cyl | C



d1	P	d2	SW	dk	l1	l2	Code no.
	mm	mm	mm	mm	mm	mm	
M1	0.25	2.50	2.10	0.90	40.00	4.00	1.000
M1,2	0.25	2.50	2.10	1.10	40.00	4.80	1.200
M1,4	0.30	2.50	2.10	1.25	40.00	5.60	1.400
M1,6	0.35	2.50	2.10	1.45	40.00	6.40	1.600
M1,7	0.35	2.50	2.10	1.55	40.00	6.80	1.700
M1,8	0.35	2.50	2.10	1.65	40.00	7.30	1.800
M2	0.40	2.80	2.10	1.85	45.00	8.00	2.000
M2,5	0.45	2.80	2.10	2.30	50.00	9.00	2.500
M3	0.50	3.50	2.70	2.80	56.00	10.00	3.000
M4	0.70	4.50	3.40	3.70	63.00	12.00	4.000
M5	0.80	6.00	4.90	4.65	70.00	14.00	5.000
M6	1.00	6.00	4.90	5.55	80.00	16.00	6.000
M8	1.25	8.00	6.20	7.40	90.00	17.00	8.000
M10	1.50	10.00	8.00	9.30	100.00	20.00	10.000
M12	1.75	9.00	7.00	11.20	110.00	24.00	12.000
M14	2.00	11.00	9.00	13.10	110.00	26.00	14.000
M16	2.00	12.00	9.00	15.10	110.00	26.00	16.000
M20	2.50	16.00	12.00	18.90	140.00	32.00	20.000

Fluteless taps for ISO metric threads

Article no. 80925

P	M	K	N	S	H
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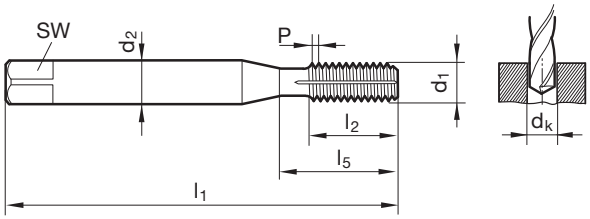
NEW | HSS-E-PM | C | N | 6GX | ~DIN 371 | R | Cyl | C



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
M2	0.40	2.80	2.10	1.85	45.00	8.00	2.000
M2,5	0.45	2.80	2.10	2.30	50.00	9.00	2.500
M3	0.50	3.50	2.70	2.80	56.00	10.00	3.000
M4	0.70	4.50	3.40	3.70	63.00	12.00	4.000
M5	0.80	6.00	4.90	4.65	70.00	14.00	5.000
M6	1.00	6.00	4.90	5.55	80.00	16.00	6.000
M8	1.25	8.00	6.20	7.40	90.00	17.00	8.000
M10	1.50	10.00	8.00	9.30	100.00	20.00	10.000
M12	1.75	9.00	7.00	11.20	110.00	24.00	12.000
M14	2.00	11.00	9.00	13.10	110.00	26.00	14.000
M16	2.00	12.00	9.00	15.10	110.00	26.00	16.000
M20	2.50	16.00	12.00	18.90	140.00	32.00	20.000

Fluteless taps for ISO metric fine threads

Article no. 80901

P	M	K	N	S	H
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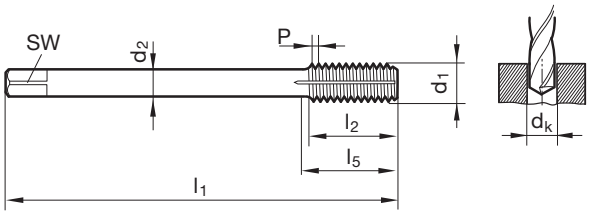
HSS-E | T | N | 6HX | ~DIN 374 | R | Cyl | C



d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
M6 x 0,75	4.50	3.40	5.65	80.00	13.00	6.004
M8 x 0,75	6.00	4.90	7.65	80.00	14.00	8.004
M8 x 1	6.00	4.90	7.55	90.00	17.00	8.005
M10 x 1	7.00	5.50	9.55	90.00	16.00	10.005
M10 x 1,25	7.00	5.50	9.40	100.00	20.00	10.006
M12 x 1	9.00	7.00	11.55	100.00	20.00	12.005
M12 x 1,25	9.00	7.00	11.40	100.00	20.00	12.006
M12 x 1,5	9.00	7.00	11.30	100.00	20.00	12.007
M14 x 1	11.00	9.00	13.55	100.00	20.00	14.005
M14 x 1,5	11.00	9.00	13.30	100.00	20.00	14.007
M16 x 1	12.00	9.00	15.55	100.00	22.00	16.005
M16 x 1,5	12.00	9.00	15.30	100.00	22.00	16.007
M18 x 1	14.00	11.00	17.55	110.00	25.00	18.005
M18 x 1,5	14.00	11.00	17.30	110.00	25.00	18.007
M20 x 1	16.00	12.00	19.55	125.00	25.00	20.005
M20 x 1,5	16.00	12.00	19.30	125.00	25.00	20.007
M22 x 1,5	18.00	14.50	21.30	125.00	25.00	22.007
M24 x 1,5	18.00	14.50	23.30	140.00	28.00	24.007

Fluteless taps for ISO metric fine threads

Article no. 80921

P	M	K	N	S	H
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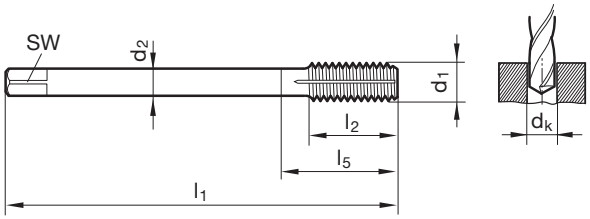
NEW | HSS-E-PM | C | N | 6HX | ~DIN 374 | R | Cyl | C



d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
M8 x 1	6.00	4.90	7.55	90.00	17.00	8.005
M10 x 1	7.00	5.50	9.55	90.00	16.00	10.005
M10 x 1,25	7.00	5.50	9.40	100.00	20.00	10.006
M12 x 1,25	9.00	7.00	11.40	100.00	20.00	12.006
M12 x 1,5	9.00	7.00	11.30	100.00	20.00	12.007
M14 x 1,25	11.00	9.00	13.40	100.00	20.00	14.006
M14 x 1,5	11.00	9.00	13.30	100.00	20.00	14.007
M16 x 1,5	12.00	9.00	15.30	100.00	22.00	16.007
M20 x 1,5	16.00	12.00	19.30	125.00	25.00	20.007

Fluteless taps for UNC threads

Article no. 80902

P	M	K	N	S	H
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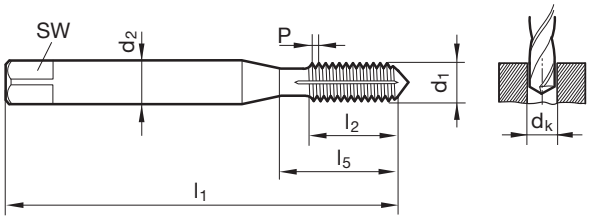
NEW | HSS-E | T | N | 2BX | ~DIN 371/376 | R | Cyl | C



d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
4 - 40	3.50	2.70	2.55	56.00	11.00	2.845
5 - 40	3.50	2.70	2.90	56.00	11.00	3.175
6 - 32	4.00	3.00	3.15	56.00	12.00	3.505
8 - 32	4.50	3.40	3.80	63.00	12.00	4.166
10 - 24	6.00	4.90	4.35	70.00	14.00	4.826
12 - 24	6.00	4.90	5.00	80.00	16.00	5.486
1/4 - 20	7.00	5.50	5.75	80.00	16.00	6.350
5/16 - 18	8.00	6.20	7.30	90.00	18.00	7.938
3/8 - 16	10.00	8.00	8.80	100.00	20.00	9.525
7/16 - 14	8.00	6.20	10.30	100.00	22.00	11.113
1/2 - 13	9.00	7.00	11.80	110.00	25.00	12.700
9/16 - 12	11.00	9.00	13.30	110.00	28.00	14.288
5/8 - 11	12.00	9.00	14.80	110.00	30.00	15.875
3/4 - 10	14.00	11.00	17.90	125.00	33.00	19.050

Fluteless taps for UNC threads

Article no. 80922

P	M	K	N	S	H
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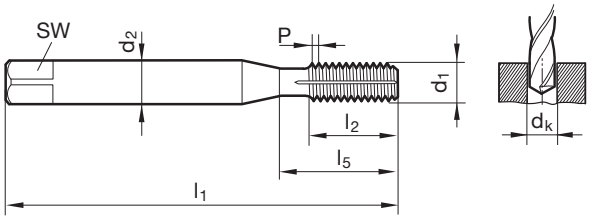
NEW | HSS-E-PM | C | N | 2BX | ~DIN 371 | R | Cyl | C



d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
4 - 40	3.50	2.70	2.55	56.00	11.00	2.845
6 - 32	4.00	3.00	3.15	56.00	12.00	3.505
8 - 32	4.50	3.40	3.80	63.00	12.00	4.166
10 - 24	6.00	4.90	4.35	70.00	14.00	4.826
12 - 24	6.00	4.90	5.00	80.00	16.00	5.486
1/4 - 20	7.00	5.50	5.75	80.00	16.00	6.350
5/16 - 18	8.00	6.20	7.30	90.00	18.00	7.938
3/8 - 16	10.00	8.00	8.80	100.00	20.00	9.525
7/16 - 14	8.00	6.20	10.30	100.00	22.00	11.113
1/2 - 13	9.00	7.00	11.80	110.00	25.00	12.700
9/16 - 12	11.00	9.00	13.30	110.00	28.00	14.288
5/8 - 11	12.00	9.00	14.80	110.00	30.00	15.875
3/4 - 10	14.00	11.00	17.90	125.00	33.00	19.050

Fluteless taps for UNF threads

Article no. 80903

P	M	K	N	S	H
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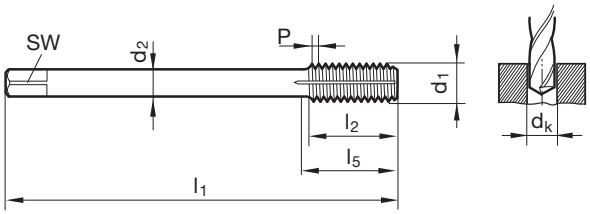
NEW | HSS-E | T | N | 2BX | ~DIN 371/374 | R | Cyl | C



d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
4 - 48	3.50	2.70	2.60	56.00	10.00	2.845
5 - 44	3.50	2.70	2.90	56.00	10.00	3.175
6 - 40	4.00	3.00	3.20	56.00	11.00	3.505
8 - 36	4.50	3.40	3.85	63.00	12.00	4.166
10 - 32	6.00	4.90	4.45	70.00	14.00	4.826
12 - 28	6.00	4.90	5.10	80.00	16.00	5.486
1/4 - 28	7.00	5.50	5.95	80.00	16.00	6.350
5/16 - 24	8.00	6.20	7.45	90.00	17.00	7.938
3/8 - 24	10.00	8.00	9.05	100.00	18.00	9.525
7/16 - 20	8.00	6.20	10.55	100.00	22.00	11.113
1/2 - 20	9.00	7.00	12.10	100.00	20.00	12.700
9/16 - 18	11.00	9.00	13.65	100.00	22.00	14.288
5/8 - 18	12.00	9.00	15.25	100.00	22.00	15.875
3/4 - 16	14.00	11.00	18.35	110.00	25.00	19.050

Fluteless taps for UNF threads

Article no. 80923

P	M	K	N	S	H
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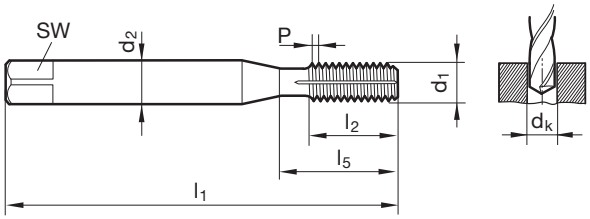
NEW | HSS-E-PM | C | N | 2BX | ~DIN 371 | R | Cyl | C



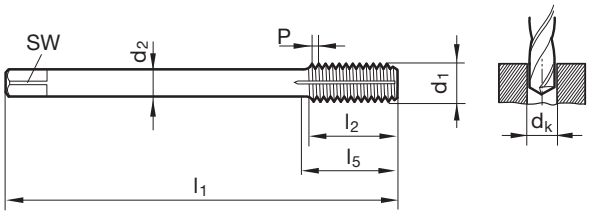
d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
4 - 48	3.50	2.70	2.60	56.00	10.00	2.845
6 - 40	4.00	3.00	3.20	56.00	11.00	3.505
8 - 36	4.50	3.40	3.85	63.00	12.00	4.166
10 - 32	6.00	4.90	4.45	70.00	14.00	4.826
12 - 28	6.00	4.90	5.10	80.00	16.00	5.486
1/4 - 28	7.00	5.50	5.95	80.00	16.00	6.350
5/16 - 24	8.00	6.20	7.45	90.00	17.00	7.938
3/8 - 24	10.00	8.00	9.05	90.00	18.00	9.525
7/16 - 20	8.00	6.20	10.55	100.00	22.00	11.113
1/2 - 20	9.00	7.00	12.10	100.00	20.00	12.700
9/16 - 18	11.00	9.00	13.65	100.00	22.00	14.288
5/8 - 18	12.00	9.00	15.25	100.00	22.00	15.875
3/4 - 16	14.00	11.00	18.35	110.00	25.00	19.050

Fluteless taps for BSP threads

Article no. 80904

P	M	K	N	S	H
●	●	○	○		

HSS-E | T | N | DIN 2189 | R | Cyl | C



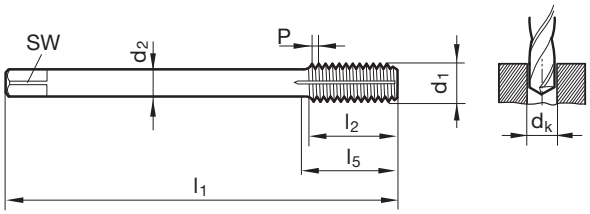
d1	P inch	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
G1/16	28.00	6.00	4.90	7.30	90.00	18.00	7.723
G1/8	28.00	7.00	5.50	9.30	90.00	18.00	9.728
G1/4	19.00	11.00	9.00	12.50	100.00	20.00	13.157
G3/8	19.00	12.00	9.00	16.00	100.00	22.00	16.662
G1/2	14.00	16.00	12.00	20.00	125.00	25.00	20.955
G3/4	14.00	20.00	16.00	25.50	140.00	28.00	26.441

Fluteless taps for BSP threads

Article no. 80924

P	M	K	N	S	H
•	•	•	•	•	

NEW | HSS-E-PM | C | N | DIN 2189 | R | Cyl | C



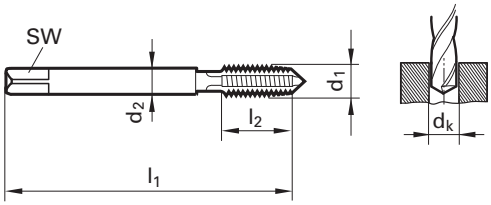
d1	P inch	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
G1/8	28.00	7.00	5.50	9.30	90.00	18.00	9.728
G1/4	19.00	11.00	9.00	12.50	100.00	20.00	13.157
G3/8	19.00	12.00	9.00	16.00	100.00	22.00	16.662
G1/2	14.00	16.00	12.00	20.00	125.00	25.00	20.955

JIS taps for ISO metric threads

Article no. 80780

P	M	K	N	S	H
●	○	○			

NEW | HSS-E | T | TG 100 U | Class 1/ OH | JISB 4430 | R | Cyl | B



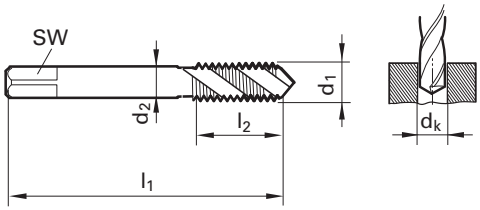
d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
M2	0.40	3.00	2.50	1.60	40.00	8.00	2.000
M2,5	0.45	3.00	2.50	2.05	44.00	9.00	2.500
M3	0.50	4.00	3.20	2.50	46.00	10.00	3.000
M4	0.70	5.00	4.00	3.30	52.00	12.00	4.000
M5	0.80	5.50	4.50	4.20	60.00	14.00	5.000
M6	1.00	6.00	4.50	5.00	62.00	16.00	6.000
M8	1.25	6.20	5.00	6.80	70.00	17.00	8.000
M10	1.50	7.00	5.50	8.50	75.00	20.00	10.000
M12	1.75	8.50	6.50	10.20	82.00	24.00	12.000
M14	2.00	10.50	8.00	12.00	88.00	26.00	14.000
M16	2.00	12.50	10.00	14.00	95.00	26.00	16.000
M18	2.50	14.00	11.00	15.50	100.00	30.00	18.000
M20	2.50	15.00	12.00	17.50	105.00	32.00	20.000

JIS taps for ISO metric threads

Article no. 80790

P	M	K	N	S	H
●	○	○			

NEW | HSS-E | T | TG 100 U | Class 1/ OH | JISB 4430 | R | Cyl | C



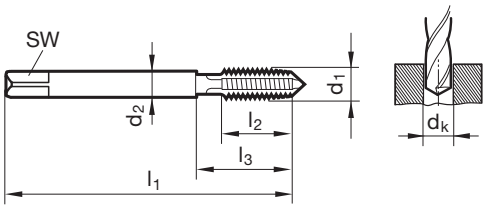
d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
M2	0.40	3.00	2.50	1.60	40.00	4.50	2.000
M2,5	0.45	3.00	2.50	2.05	44.00	5.00	2.500
M3	0.50	4.00	3.20	2.50	46.00	6.00	3.000
M4	0.70	5.00	4.00	3.30	52.00	7.50	4.000
M5	0.80	5.50	4.50	4.20	60.00	8.50	5.000
M6	1.00	6.00	4.50	5.00	62.00	11.00	6.000
M8	1.25	6.20	5.00	6.80	70.00	14.00	8.000
M10	1.50	7.00	5.50	8.50	75.00	16.00	10.000
M12	1.75	8.50	6.50	10.20	82.00	18.50	12.000
M14	2.00	10.50	8.00	12.00	88.00	20.00	14.000
M16	2.00	12.50	10.00	14.00	95.00	20.00	16.000
M18	2.50	14.00	11.00	15.50	100.00	25.00	18.000
M20	2.50	15.00	12.00	17.50	105.00	25.00	20.000

JIS taps for ISO metric threads

Article no. 80880

P	M	K	N	S	H
●	●	○	○	○	

NEW | HSS-E | A | TG 300 T | OH2 | JISB 4430 | R | Cyl | B



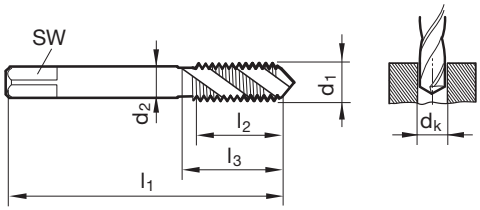
d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
M2	0.40	3.00	2.50	1.60	40.00	8.00	2.000
M2,5	0.45	3.00	2.50	2.05	44.00	9.00	2.500
M3	0.50	4.00	3.20	2.50	46.00	10.00	3.000
M4	0.70	5.00	4.00	3.30	52.00	12.00	4.000
M5	0.80	5.50	4.50	4.20	60.00	14.00	5.000
M6	1.00	6.00	4.50	5.00	62.00	16.00	6.000
M7	1.00	6.20	5.00	6.00	65.00	16.00	7.000
M8	1.25	6.20	5.00	6.80	70.00	17.00	8.000
M9	1.25	7.00	5.50	7.80	72.00	17.00	9.000
M10	1.50	7.00	5.50	8.50	75.00	20.00	10.000
M12	1.75	8.50	6.50	10.20	82.00	24.00	12.000
M14	2.00	10.50	8.00	12.00	88.00	26.00	14.000
M16	2.00	12.50	10.00	14.00	95.00	26.00	16.000
M18	2.50	14.00	11.00	15.50	100.00	30.00	18.000
M20	2.50	15.00	12.00	17.50	105.00	32.00	20.000

JIS taps for ISO metric threads

Article no. 80890

P	M	K	N	S	H
●	●	○	○	○	

NEW | HSS-E | A | TG 100 T | OH2 | JISB 4430 | R | Cyl | C



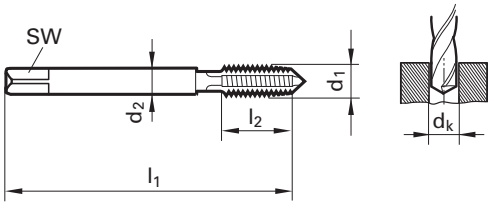
d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
M2	0.40	3.00	2.50	1.60	40.00	4.50	2.000
M2,3	0.40	3.00	2.50		42.00	4.50	2.300
M2,5	0.45	3.00	2.50	2.05	44.00	5.00	2.500
M2,6	0.45	3.00	2.50	2.15	44.00	5.00	2.600
M3	0.50	4.00	3.20	2.50	46.00	6.00	3.000
M3,5	0.60	4.00	3.20	2.90	48.00	7.00	3.500
M4	0.70	5.00	4.00	3.30	52.00	7.50	4.000
M5	0.80	5.50	4.50	4.20	60.00	8.50	5.000
M6	1.00	6.00	4.50	5.00	62.00	11.00	6.000
M7	1.00	6.20	5.00	6.00	65.00	11.00	7.000
M8	1.25	6.20	5.00	6.80	70.00	14.00	8.000
M9	1.25	7.00	5.50	7.80	72.00	14.00	9.000
M10	1.50	7.00	5.50	8.50	75.00	16.00	10.000
M12	1.75	8.50	6.50	10.20	82.00	18.50	12.000
M14	2.00	10.50	8.00	12.00	88.00	20.00	14.000
M16	2.00	12.50	10.00	14.00	95.00	20.00	16.000
M18	2.50	14.00	11.00	15.50	100.00	25.00	18.000
M20	2.50	15.00	12.00	17.50	105.00	25.00	20.000
M22	2.50	17.00	13.00	19.50	115.00	27.00	22.000
M24	3.00	19.00	15.00	21.00	120.00	30.00	24.000
M30	3.50	23.00	17.00	26.50	135.00	35.00	30.000

JIS taps for ISO metric fine threads

Article no. 80781

P	M	K	N	S	H
●	○	○			

NEW | HSS-E | T | TG 100 U | Class 1/ OH | JIS B 4430 | R | Cyl | B



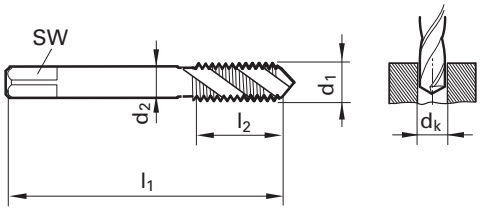
d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
M6 x 0,75	6.00	4.50	5.20	62.00	13.00	6.004
M8 x 1	6.20	5.00	7.00	70.00	17.00	8.005
M10 x 1	7.00	5.50	9.00	70.00	16.00	10.005
M10 x 1,25	7.00	5.50	8.80	75.00	20.00	10.006
M12 x 1	8.50	6.50	11.00	70.00	20.00	12.005
M12 x 1,25	8.50	6.50	10.80	80.00	20.00	12.006
M12 x 1,5	8.50	6.50	10.50	82.00	20.00	12.007
M14 x 1,5	10.50	8.00	12.50	88.00	20.00	14.007
M16 x 1,5	12.50	10.00	14.50	95.00	22.00	16.007
M20 x 1,5	15.00	12.00	18.50	95.00	25.00	20.007

JIS taps for ISO metric fine threads

Article no. 80791

P	M	K	N	S	H
●	○	○			

NEW | HSS-E | T | TG 100 U | Class 1/ OH | JIS B 4430 | R | Cyl | C



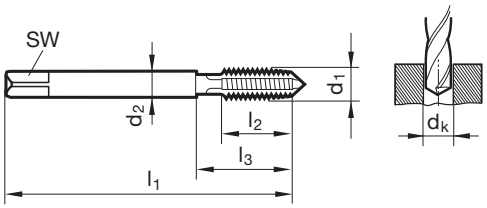
d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
M6 x 0,75	6.00	4.50	5.20	62.00	8.00	6.004
M8 x 1	6.20	5.00	7.00	70.00	11.00	8.005
M10 x 1	7.00	5.50	9.00	70.00	11.00	10.005
M10 x 1,25	7.00	5.50	8.80	75.00	14.00	10.006
M12 x 1	8.50	6.50	11.00	70.00	11.00	12.005
M12 x 1,25	8.50	6.50	10.80	80.00	16.00	12.006
M12 x 1,5	8.50	6.50	10.50	82.00	16.00	12.007
M14 x 1,5	10.50	8.00	12.50	88.00	15.00	14.007
M16 x 1,5	12.50	10.00	14.50	95.00	15.00	16.007
M20 x 1,5	15.00	12.00	18.50	95.00	16.00	20.007

JIS taps for ISO metric fine threads

Article no. 80881

P	M	K	N	S	H
●	●	○	○	○	

NEW | HSS-E | A | TG 300 T | OH2 | JIS B 4430 | R | Cyl | B



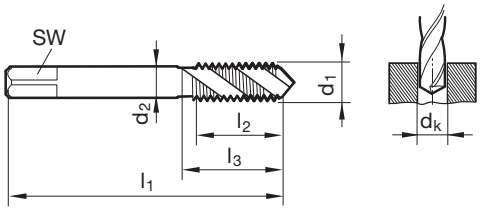
d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
M6 x 0,75	6.00	4.50	5.20	62.00	13.00	6.004
M8 x 1	6.20	5.00	7.00	70.00	17.00	8.005
M10 x 1	7.00	5.50	9.00	70.00	16.00	10.005
M10 x 1,25	7.00	5.50	8.80	75.00	20.00	10.006
M12 x 1	8.50	6.50	11.00	70.00	20.00	12.005
M12 x 1,25	8.50	6.50	10.80	80.00	20.00	12.006
M12 x 1,5	8.50	6.50	10.50	82.00	20.00	12.007
M14 x 1,5	10.50	8.00	12.50	88.00	20.00	14.007
M16 x 1,5	12.50	10.00	14.50	95.00	22.00	16.007
M18 x 1,5	14.00	11.00	16.50	95.00	25.00	18.007
M20 x 1,5	15.00	12.00	18.50	95.00	25.00	20.007

JIS taps for ISO metric fine threads

Article no. 80891

P	M	K	N	S	H
●	●	○	○	○	

NEW | HSS-E | A | TG 100 T | OH2 | JIS B 4430 | R | Cyl | C



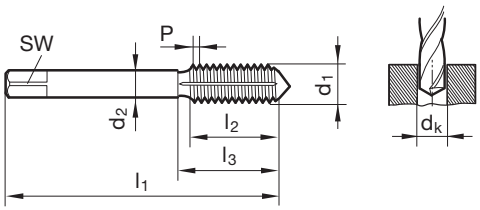
d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
M4 x 0,5	5.00	4.00	3.50	52.00	5.00	4.003
M5 x 0,5	5.50	4.50	4.50	52.00	5.00	5.003
M6 x 0,5	6.00	4.50	5.50	52.00	5.00	6.003
M6 x 0,75	6.00	4.50	5.20	62.00	8.00	6.004
M8 x 0,75	6.20	5.00	7.20	62.00	8.00	8.004
M8 x 1	6.20	5.00	7.00	70.00	11.00	8.005
M10 x 1	7.00	5.50	9.00	70.00	11.00	10.005
M10 x 1,25	7.00	5.50	8.80	75.00	14.00	10.006
M12 x 1	8.50	6.50	11.00	70.00	11.00	12.005
M12 x 1,25	8.50	6.50	10.80	80.00	16.00	12.006
M12 x 1,5	8.50	6.50	10.50	82.00	16.00	12.007
M14 x 1,5	10.50	8.00	12.50	88.00	15.00	14.007
M16 x 1,5	12.50	10.00	14.50	95.00	15.00	16.007
M18 x 1,5	14.00	11.00	16.50	95.00	16.00	18.007
M20 x 1,5	15.00	12.00	18.50	95.00	16.00	20.007
M22 x 1,5	17.00	13.00	20.50	95.00	16.00	22.007

JIS fluteless taps for ISO metric threads

Article no. 80980

P	M	K	N	S	H
●	●	○	○		

NEW | HSS-E | T | N | Class 2/ RH | JISB 4430 | R | Cyl | C



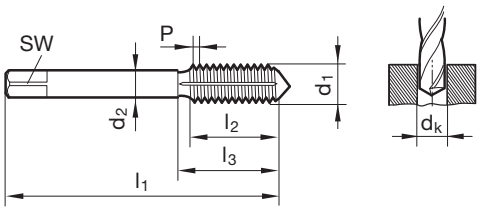
d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
M4	0.70	5.00	4.00	3.70	52.00	12.00	4.000
M5	0.80	5.50	4.50	4.65	60.00	14.00	5.000
M6	1.00	6.00	4.50	5.55	62.00	16.00	6.000
M8	1.25	6.20	5.00	7.40	70.00	17.00	8.000
M10	1.50	7.00	5.50	9.30	75.00	20.00	10.000
M12	1.75	8.50	6.50	11.20	82.00	24.00	12.000
M16	2.00	12.50	10.00	15.10	95.00	26.00	16.000
M20	2.50	15.00	12.00	18.90	105.00	32.00	20.000

JIS fluteless taps for ISO metric fine threads

Article no. 80981

P	M	K	N	S	H
●	●	○	○		

HSS-E | T | N | Class 2/ RH | JIS B 4430 | R | Cyl | C



d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	Code no.
M6 x 0,75	6.00	4.50	5.65	62.00	13.00	6.004
M8 x 1	6.20	5.00	7.55	70.00	17.00	8.005
M10 x 1	7.00	5.50	9.55	70.00	16.00	10.005
M10 x 1,25	7.00	5.50	9.40	75.00	20.00	10.006
M12 x 1	8.50	6.50	11.55	70.00	20.00	12.005
M12 x 1,25	8.50	6.50	11.40	80.00	20.00	12.006
M12 x 1,5	8.50	6.50	11.30	82.00	20.00	12.007
M14 x 1,5	10.50	8.00	13.30	88.00	20.00	14.007
M16 x 1,5	12.50	10.00	15.30	95.00	22.00	16.007
M20 x 1,5	15.00	12.00	19.30	95.00	25.00	20.007

TECHNICAL SECTION

Overview applicable standards for DIN 2184

DIN 2184 stipulates the major dimensions for taps and fluteless taps required for the thread production with nominal diameter d1 > 0.9 ... 113 mm. Part 1 is the general plan of dimensions for a long tool version, part 2 the general plan of dimensions for the short tool version. In accordance with the nominal diameter range and dependent on the thread pitch, the number of teeth and the ratio total lenght, the general plan of dimensions includes the max. thread lenght, the shank designs (reinforced or reduced shank). A detailed illustration of shank forms and characteristic features can be found on the following pages.

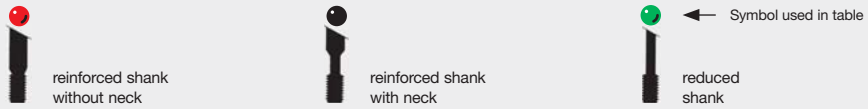
Taps

DIN 2184-1			DIN 2184-2			
Machine taps, long			Hand taps and short machine taps			
ISO metric standard threads	ISO metric fine threads		ISO metric standard threads	ISO metric fine threads		
DIN 371 DIN 376	DIN 371 DIN 374		DIN 352	DIN 2181		
UNC/BSW* thread	UNF thread	G thread	UNC/BSW thread	UNF thread	G thread	Pg thread
~DIN 371 ~DIN 376	~DIN 371 ~DIN 374	DIN 5156	~DIN 352	~DIN 2181	DIN 5157	DIN 40 432

Fluteless taps

DIN 2184-1				
DIN 2174		DIN 2184-1		
ISO metric standard threads	ISO metric fine thread	UNC thread	UNF thread	G thread
previously DIN 371 DIN 376	previously DIN 371 DIN 374	previously ~DIN 371 ~DIN 376	previously ~DIN 371 ~DIN 374	previously DIN 5156

Shank forms threading tools



Thread type	DIN		contained in the general plan	Nominal diameter ranges mm			
	Taps	Fluteless taps		0.9 ... 2.6	> 2.6 ... 6.35	> 6.35 ... 10.0	> 10.0
M/MJ ISO metric standard threads	DIN 371		2184-1	●	●	●	-
	DIN 376		2184-1	●	●	●	●
	DIN 352		2184-**2**	●	●	●	●
	DIN 2174		2184-1	●	●	●	●
MF/MJF ISO metric fine threads	DIN 371		2184-1	●	●	●	-
	DIN 374		2184-1	-	●	●	●
	DIN 2181		2184-**2**	●	●	●	●
	DIN 2174		2184-1	●	●	●	●
UNC/UNJC/BSW threads	~DIN 371		2184-1	●	●	●	-
	~DIN 374		2184-1	●	●	●	●
	~DIN 352		2184-**2**	●	●	●	●
UNF/UNJF threads	~DIN 371		2184-1	●	●	●	-
	~DIN 374		2184-1	-	●	●	●
	~DIN 2181		2184-**2**	●	●	●	●
G threads	DIN 5156		2184-1	-	●	●	●
	DIN 5157		2184-**2**	-	●	●	●
Pg threads	DIN 40 432		2184-**2**	-	-	-	●

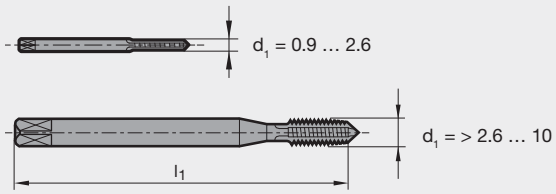
DIN characteristic features

DIN 2184-1 General plan of dimensions

Nominal Ø mm	Shank designs mm			Pitch mm	Total length mm	max. thread length mm
	reinforced shank		reduced shank			
from…to	Ø	Effective length	Ø			
0.9…1.20	2.5	5.5	-	≤0.20	40	5.5
1.20…1.40	2.5	7.0	-	≤0.35	40	7.0
1.40…1.80	2.5	8.0	-	≤0.35	40	8.0
1.80…2.00	2.8	8.0	-	≤0.40	45	8.0
2.00…2.30	2.8	9.0	-	≤0.40	45	9.0
2.30…2.60	2.8	9.0	-	≤0.50	50	9.0
2.60…3.20	3.5	18	2.2	≤0.45	56	8.0
2.60…3.20	3.5	18	2.2	0.50…0.60	56	11.0
3.20…3.55	4.0	20	2.5	≤0.50	56	9.0
3.20…3.55	4.0	20	2.5	0.60…0.80	56	12.0
3.55…4.20	4.5	21	2.8	≤0.50	63	10.0
3.55…4.20	4.5	21	2.8	0.60…0.80	63	13.0
4.20…4.55	6.0	25	3.5	≤0.60	70	12.0
4.20…4.55	6.0	25	3.5	0.70…0.80	70	16.0
4.55…5.00	6.0	25	3.5	≤0.75	70	12.0
4.55…5.00	6.0	25	3.5	0.80…1.00	70	16.0
5.00…5.60	6.0	30	4.0	≤0.75	80	12.0
5.00…5.60	6.0	30	4.0	0.80…1.00	80	17.0
5.60…6.10	6.0	30	4.5	≤0.80	80	14.0
5.60…6.10	6.0	30	4.5	1.0	80	19.0
6.10…6.40	7.0	30	4.5	≤0.80	80	14.0
6.10…6.40	7.0	30	4.5	1.00…1.25	80	19.0
6.40…7.00	7.0	30	5.5	≤0.80	80	14.0
6.40…7.00	7.0	30	5.5	1.00…1.25	80	19.0
7.00…8.00	8.0	30	6.0	≤0.80	80	18.0
7.00…8.00	8.0	35	6.0	1.00…1.50	90	22.0
8.00…9.00	9.0	30	7.0	≤0.80	90	18.0
8.00…9.00	9.0	35	7.0	1.00…1.50	90	22.0
9.00…10.15	10.0	35	7.0	≤1.00	90	20.0
9.00…10.15	10.0	39	7.0	1.25…1.50	100	24.0
10.15…11.15	-	-	8.0	0.25…1.00	90	20.0
10.15…11.15	-	-	8.0	1.25…1.75	100	24.0
11.15…12.80	-	-	9.0	0.25…1.50	100	22.0
11.15…12.80	-	-	9.0	1.75…2.00	110	28.0
12.80…14.35	-	-	11.0	0.25…1.50	100	22.0
12.80…14.35	-	-	11.0	1.75…2.00	110	30.0
14.35…17.10	-	-	12.0	0.25…1.50	100	22.0
14.35…17.10	-	-	12.0	1.75…2.00	110	32.0
17.10…19.10	-	-	14.0	0.25…1.50	110	25.0
17.10…19.10	-	-	14.0	1.75…2.50	125	34.0
19.10…21.15	-	-	16.0	0.25…1.75	125	25.0
19.10…21.15	-	-	16.0	2.00…2.50	140	34.0
21.15…23.00	-	-	18.0	0.25…1.75	125	25.0
21.15…23.00	-	-	18.0	2.00…2.50	140	34.0
23.00…26.00	-	-	18.0	0.25…2.00	140	28.0
23.00…26.00	-	-	18.0	2.50…3.00	160	38.0
26.00…28.15	-	-	20.0	0.25…2.00	140	28.0
26.00…28.15	-	-	20.0	2.50…3.00	160	38.0
28.15…30.20	-	-	22.0	0.25…2.00	150	28.0
28.15…30.20	-	-	22.0	2.50…3.50	180	45.0
30.20…32.00	-	-	22.0	0.25…2.00	150	28.0
30.20…32.00	-	-	22.0	2.50…3.50	180	50.0
32.00…33.30	-	-	25.0	0.25…2.00	160	30.0
32.00…33.30	-	-	25.0	2.50…3.50	180	50.0
33.30…38.20	-	-	28.0	0.25…2.00	170	30.0
33.30…38.20	-	-	28.0	2.50…4.50	200	56.0
38.20…42.00	-	-	32.0	0.25…2.00	170	30.0
38.20…42.00	-	-	32.0	2.50…4.50	200	60.0
42.00…45.00	-	-	36.0	0.25…2.00	180	32.0
42.00…45.00	-	-	36.0	2.50…3.00	200	50.0
42.00…45.00	-	-	36.0	3.50…5.00	220	69.0
45.00…50.00	-	-	36.0	0.25…2.00	190	82.0
45.00…50.00	-	-	36.0	2.50…3.00	225	50.0
45.00…50.00	-	-	36.0	3.50…5.00	250	70.0

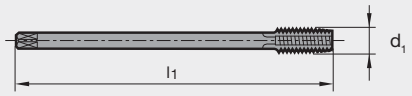
DIN characteristic features

DIN 371
in the general plan DIN 2184-**1**



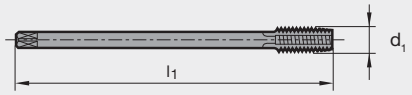
Standard for machine taps with
reinforced shank for standard ISO metric threads
and ISO metric fine threads. Long version.
Shank design in accordance with
diameter ranges shown opposite (mm).

DIN 376
in the general plan DIN 2184-**1**



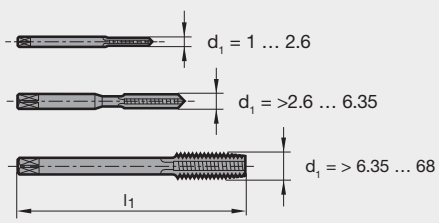
Standard for machine taps with reduced shank
(machine nut tap) for standard ISO metric threads.
Long version.
Diameter range d1 = 1.6 … 68 mm
(≤ Ø M3, shank without square)

DIN 374
in the general plan DIN 2184-**1**



Standard for machine taps with reduced shank
(machine nut tap) for ISO metric fine threads.
Long version.
Diameter range d1 = 3 … 52 mm

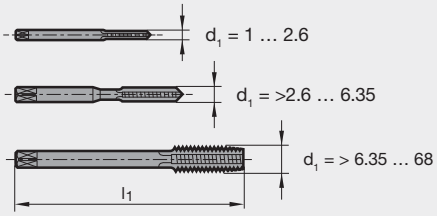
DIN 352
in the general plan DIN 2184-**2**



Standard for hand and machine taps for
standard ISO metric threads. Short version.
Shank design in accordance with
diameter ranges shown opposite (mm).

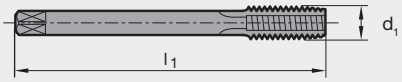
DIN characteristic features

DIN 2181
in the general plan DIN 2184-**2**



Standard for hand and machine taps for standard ISO metric threads. Short version. Shank design in accordance with diameter ranges shown opposite (mm).

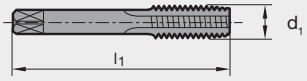
DIN 5156
in the general plan DIN 2184-**1**



Standard for machine taps for pipe thread to DIN EN ISO 228 and for taps for pipe thread to DIN EN 10226. Long version.

Diameter ranges for taps
to DIN EN ISO 228 from G 1/16" to G4"
to DIN EN 10226 from Rp 1/16" to Rp 4"

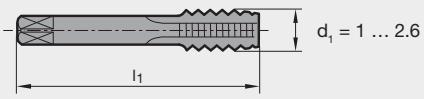
DIN 5157
in the general plan DIN 2184-**2**



Standard for machine taps for BSPP threads to DIN ISO 228 and for BSP threads to DIN EN 10 226-1. Short version.

Diameter ranges:
BSPP threads G 1/16" ... G 4"
BSP threads Rp 1/16" ... Rp 4"

DIN 40 432
in the general plan DIN 2184-**2**

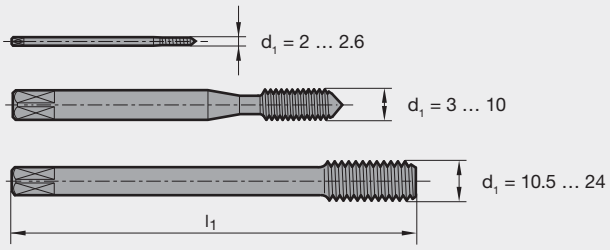


Standard for machine taps for steel armoured conduit threads to DIN 40 430. Short version.

Diameter range:
Pg 7 (12.5 mm) ... Pg 48 (59.3 mm)
Will be replaced by DIN 374 ISO 3 6G.

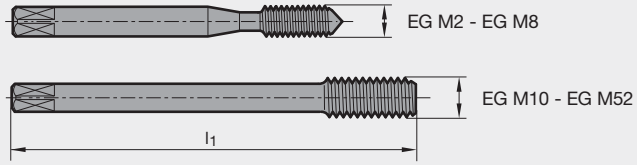
DIN characteristic features

DIN 2174
in the general plan DIN 2184-**1**



Standard for fluteless taps for standard ISO metric threads and ISO metric fine threads.
Long version.
Shank design in accordance with diameter ranges shown opposite (mm).

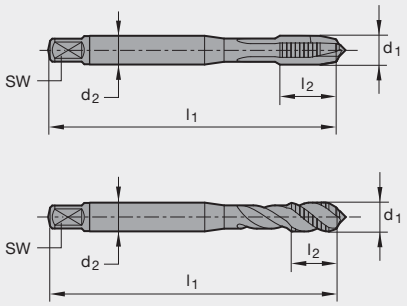
DIN 40 435
in the general plan DIN 2184-**1**



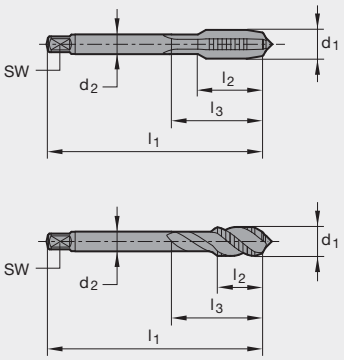
Standard for machine taps for tapped holes (EG) for wire thread inserts as in DIN 8140 for ISO metric threads.
Standard thread tapped holes EG M2 to EG M52 and fine thread tapped holes EG M8 x1 to EG M48 x 3

Comparison of standards

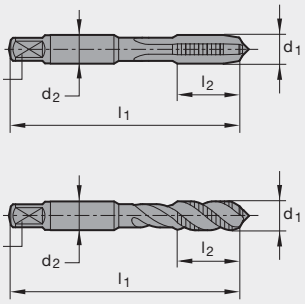
DIN 2184-1
DIN 2184-2



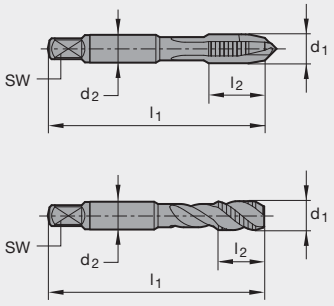
JIS B 4430
Japan Industrial Standard



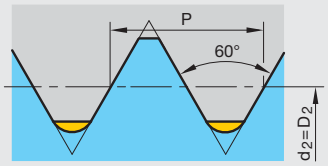
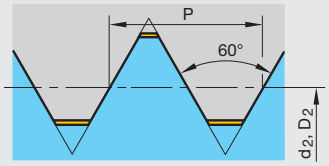
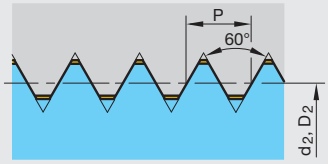
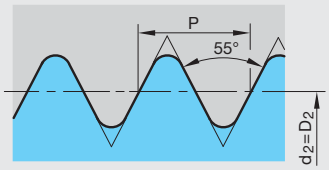
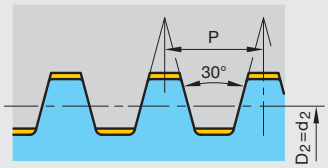
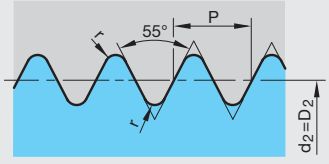
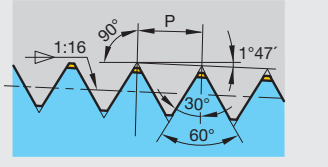
ISO 529

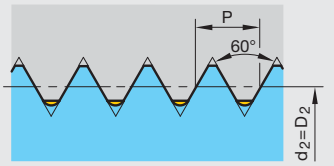
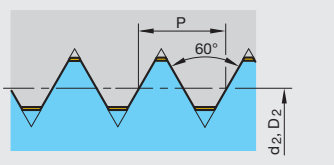
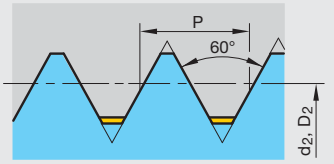
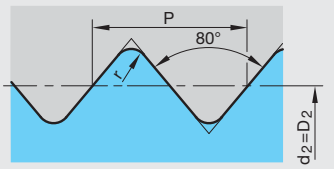
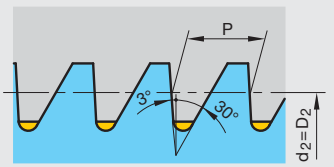
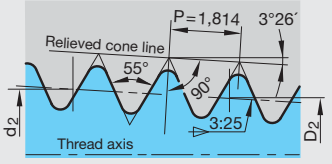
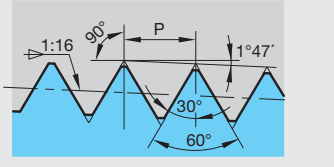


ASME B94.9
The American Society
of Mechanical Engineers

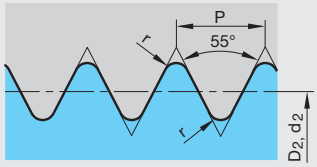
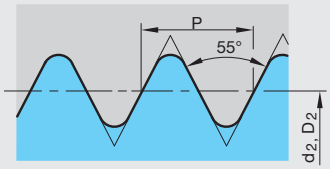
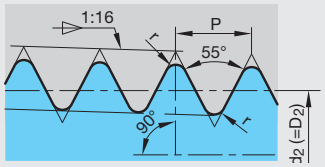
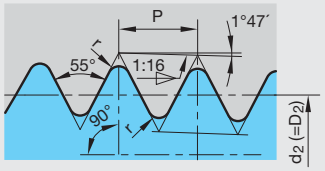
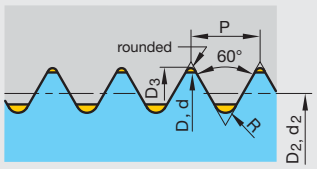
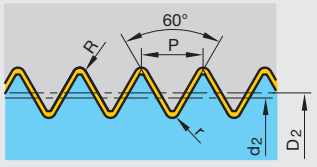
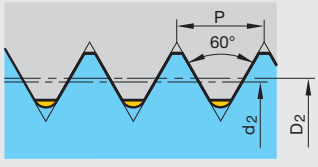


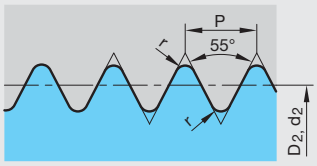
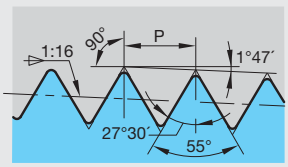
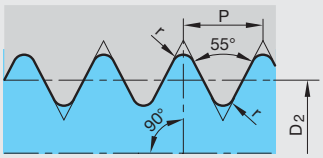
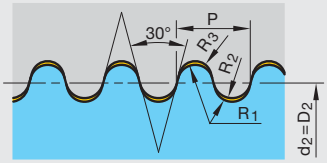
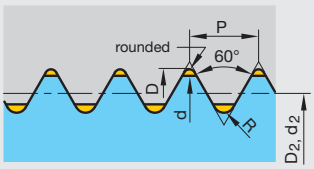
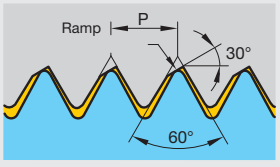
The characteristics of different thread types

Geometry drawing	Standard	Application
M ISO metric thread		
	DIN 13-1	General standard thread
UNC Unified National Coarse thread		
	ASME B1.1	General UN standard thread
UNEF Unified National Extra Fine thread		
	ASME B1.1	General UN extra fine thread
G Cylindrical Pipe thread without thread sealing connections		
	DIN EN ISO 228-1	Threads for pipes, pipe connections and fittings
TR ISO metric trapezoidal thread		
	DIN 103	General, draw collets, rolling stock
W Cylindrical Whitworth thread		
	DIN 477	Side connector and accessories for gas bottle valves
NPT American Standard Pipe thread tapered for sealing		
	ANSI/ ASME B1.20.1	Pipe threads and fittings

Geometry drawing	Standard	Application
MF ISO metric fine thread		
	DIN 13-2 to DIN 13-11	General fine thread
UNF Unified National Fine thread		
	ASME B1.1 ISO metric trapezoidal thread	General UN fine thread
UNS Unified Special thread		
	ASME B1.1	General UN special thread
PG steel conduit thread		
	DIN 40430 cylindrical round thread	Electrical engineering
S metric saw thread		
	DIN 513	When absorbing uni-directional forces
W Whitworth taper thread		
	DIN 477	Threaded connection in gas cylinder bottles for valves
NPTF American Standard Pipe thread tapered for dry sealing		
	ANSI B1.20.3	Pipe threads and fittings

The characteristics of different thread types

Geometry drawing	Standard	Application
BSW cylindrical Whitworth thread		
	B.S. 84 British Standard	Threads for pipes, pipe connections and fittings
BSP pipe thread cylindrical (identical to G)		
	B.S. 93 British Standard	Threads for pipes, pipe connections and fittings
R Whitworth pipe thread tapered external thread		
	DIN EN 10226-1 (based on ISO 7-1) replace-ment for DIN 2999-1	External thread for pipe threads and fittings (for in the thread sealing connections)
Rc Whitworth pipe thread tapered internal thread		
	DIN ISO 10226-2 (hardly used in Europe, replaceable with pipe threads to ISO 7-1)	Internal thread for pipe threads and fittings (for in the thread sealing connections)
MJ thread metric thread		
	DIN ISO 5855-1	For the aerospace industry
Vg valve thread		
	DIN 7756	Valves for car tyres manifold block
MFS		
	DIN 8141	Interference fits in aluminium cast alloys

Geometry drawing	Standard	Application
BSF Whitworth fine thread cylindrical		
	B.S. 84 British Standard Fine	Threads for pipes, pipe connections and fittings
BSPT pipe thread tapered (identical to Rc)		
	B.S. 93 British Standard	Internal thread for pipe threads and fittings
Rp Whitworth pipe thread cylindrical internal thread		
	DIN EN 10226-1 (based on ISO 7-1) Replace-ment for DIN 2999-1	Internal thread for pipe threads and fittings (for in the thread sealing connections)
RD cylindrical round thread		
	DIN 405	General, load hook, mining, food industry
UNJ inch thread		
	ISO 3161	For the aerospace industry
MSG lock nut thread		
	Hartner standard	Self-locking thread transmission housing etc.

External thread

Internal thread

Play

Tapping size holes for thread cutting

Standard ISO metric threads DIN 13

Nom. Ø	Pitch P	Tapping size hole Ø	Core diameter of int. thread 6H*	
	mm	DIN 336 mm	min. mm	max. mm
M 1	0.25	**0.75**	0.729	0.785
M 1.1	0.25	**0.85**	0.829	0.885
M 1.2	0.25	**0.95**	0.929	0.985
M 1.4	0.30	**1.10**	1.075	1.142
M 1.6	0.35	**1.25**	1.221	1.321
M 1.8	0.35	**1.45**	1.421	1.521
M 2	0.40	**1.60**	1.567	1.679
M 2.2	0.45	**1.75**	1.713	1.838
M 2.5	0.45	**2.05**	2.013	2.138
M 3	0.50	**2.50**	2.459	2.599
M 3.5	0.60	**2.90**	2.850	3.010
M 4	0.70	**3.30**	3.242	3.422
M 4.5	0.75	**3.70**	3.688	3.878
M 5	0.80	**4.20**	4.134	4.334
M 6	1.00	**5.00**	4.917	5.153
M 7	1.00	**6.00**	5.917	6.153
M 8	1.25	**6.80**	6.647	6.912
M 9	1.25	**7.80**	7.647	7.912
M 10	1.50	**8.50**	8.376	8.676
M 11	1.50	**9.50**	9.376	9.676
M 12	1.75	**10.20**	10.106	10.441
M 14	2.00	**12.00**	11.835	12.210
M 16	2.00	**14.00**	13.835	14.210
M 18	2.50	**15.50**	15.294	15.744
M 20	2.50	**17.50**	17.294	17.744
M 22	2.50	**19.50**	19.294	19.744
M 24	3.00	**21.00**	20.752	21.252
M 27	3.00	**24.00**	23.752	24.252
M 30	3.50	**26.50**	26.211	26.771
M 33	3.50	**29.50**	29.211	29.771
M 36	4.00	**32.00**	31.670	32.270
M 39	4.00	**35.00**	34.670	35.270
M 42	4.50	**37.50**	37.129	37.799
M 45	4.50	**40.50**	40.129	40.799
M 48	5.00	**43.00**	42.587	43.297
M 52	5.00	**47.00**	46.587	47.297
M 56	5.50	**50.50**	50.046	50.796

ISO metric fine threads DIN 13

Nom. Ø x Pitch P	Tapping size hole Ø	Core diameter of int. thread 6H	
mm	DIN 336 mm	min. mm	max. mm
M 2.5 x 0.35	**2.15**	2.121	2.221
M 3.0 x 0.35	**2.65**	2.621	2.721
M 3.5 x 0.35	**3.15**	3.121	3.221
M 4.0 x 0.50	**3.50**	3.459	3.599
M 4.5 x 0.50	**4.00**	3.959	4.099
M 5.0 x 0.50	**4.50**	4.459	4.599
M 5.5 x 0.50	**5.00**	4.959	5.099
M 6.0 x 0.75	**5.20**	5.188	5.378
M 7.0 x 0.75	**6.20**	6.188	6.378
M 8.0 x 0.50	**7.50**	7.459	7.599
M 8.0 x 0.75	**7.20**	7.188	7.378
M 8.0 x 1.00	**7.00**	6.917	7.153
M 9.0 x 0.75	**8.20**	8.188	8.378
M 9.0 x 1.00	**8.00**	7.917	8.153
M 10 x 0.75	**9.20**	9.188	9.378
M 10 x 1.00	**9.00**	8.917	9.153
M 10 x 1.25	**8.80**	8.647	8.912
M 11 x 0.75	**10.20**	10.188	10.378
M 11 x 1.00	**10.00**	9.917	10.153
M 12 x 1.00	**11.00**	10.917	11.153
M 12 x 1.25	**10.80**	10.647	10.912
M 12 x 1.50	**10.50**	10.376	10.676
M 14 x 1.00	**13.00**	12.917	13.153
M 14 x 1.25	**12.80**	12.647	12.912
M 14 x 1.50	**12.50**	12.376	12.676
M 15 x 1.00	**14.00**	13.917	14.153
M 15 x 1.50	**13.50**	13.376	13.676
M 16 x 1.00	**15.00**	14.917	15.153
M 16 x 1.25	**14.80**	14.647	14.912
M 16 x 1.50	**14.50**	14.376	14.676
M 17 x 1.00	**16.00**	15.917	16.153
M 17 x 1.50	**15.50**	15.376	15.676
M 18 x 1.00	**17.00**	16.917	17.153
M 18 x 1.50	**16.50**	16.376	16.676
M 20 x 1.00	**19.00**	18.917	19.153
M 20 x 1.50	**18.50**	18.376	18.676
M 20 x 2.00	**18.00**	17.835	18.210
M 22 x 1.00	**21.00**	20.917	21.153
M 22 x 1.50	**20.50**	20.376	20.676
M 22 x 2.00	**20.00**	19.835	20.210
M 24 x 1.00	**23.00**	22.917	23.153
M 24 x 1.50	**22.50**	22.376	22.676
M 24 x 2.00	**22.00**	21.835	22.210
M 25 x 1.00	**24.00**	23.917	24.153
M 25 x 1.50	**23.50**	23.376	23.676
M 25 x 2.00	**23.00**	22.835	23.210
M 27 x 1.00	**26.00**	25.917	26.153
M 27 x 1.50	**25.50**	25.376	25.676
M 27 x 2.00	**25.00**	24.835	25.210
M 28 x 1.00	**27.00**	26.917	27.153
M 28 x 1.50	**26.50**	26.376	26.676
M 28 x 2.00	**26.00**	25.835	26.210
M 30 x 1.00	**29.00**	28.917	29.153
M 30 x 1.50	**28.50**	28.376	28.676
M 30 x 2.00	**28.00**	27.835	28.210
M 30 x 3.00	**27.00**	26.752	27.252
M 32 x 1.50	**30.50**	30.376	30.676
M 32 x 2.00	**30.00**	29.835	30.210
M 33 x 1.50	**31.50**	31.376	31.676
M 33 x 2.00	**31.00**	30.835	31.210
M 33 x 3.00	**30.00**	29.752	30.252
M 35 x 1.50	**33.50**	33.376	33.676
M 36 x 1.50	**34.50**	34.376	34.676

* M 1.1 up to M 1.4 tapping size hole of internal thread 5H

UNC threads ASME B1.1

Nom. Ø	Thread per inch	Tapping size hole Ø DIN 336 mm	Core diameter of int. thread 2B min. mm	max. mm
No. 1	64	**1.55**	1.425	1.580
No. 2	56	**1.85**	1.694	1.872
No. 3	48	**2.10**	1.941	2.146
No. 4	40	**2.35**	2.157	2.385
No. 5	40	**2.65**	2.487	2.698
No. 6	32	**2.85**	2.642	2.896
No. 8	32	**3.50**	3.302	3.531
No. 10	24	**3.90**	3.683	3.937
No. 12	24	**4.50**	4.343	4.597
1/4	20	**5.10**	4.978	5.258
5/16	18	**6.60**	6.401	6.731
3/8	16	**8.00**	7.798	8.153
7/16	14	**9.40**	9.144	9.550
1/2	13	**10.80**	10.592	11.024
9/16	12	**12.20**	11.989	12.446
5/8	11	**13.50**	13.386	13.868
3/4	10	**16.50**	16.307	16.840
7/8	9	**19.50**	19.177	19.761
1	8	**22.25**	21.971	22.606
1 1/8	7	**25.00**	24.638	25.349
1 1/4	7	**28.00**	27.813	28.524
1 3/8	6	**30.75**	30.353	31.115
1 1/2	6	**34.00**	33.528	34.290
1 3/4	5	**39.50**	38.938	39.802
2	4.5	**45.00**	44.679	45.593

MJ threads DIN ISO 5855

Nom. Ø	x	Pitch P	Tapping size hole Ø	Core diameter of int. thread 5H*	
		mm	mm	min. mm	max. mm
MJ 3	x	0.50	**2.60**	2.513	2.653
MJ 4	x	0.70	**3.40**	3.318	3.498
MJ 5	x	0.80	**4.30**	4.221	4.421
MJ 6	x	0.50	**5.55**	5.513	5.625
MJ 6	x	0.75	**5.35**	5.269	5.419
MJ 6	x	1.00	**5.10**	5.026	5.216
MJ 8	x	0.50	**7.55**	7.513	7.625
MJ 8	x	0.75	**7.35**	7.269	7.419
MJ 8	x	1.00	**7.10**	7.026	7.216
MJ 8	x	1.25	**6.90**	6.782	6.994
MJ 10	x	1.00	**9.10**	9.026	9.216
MJ 10	x	1.25	**8.90**	8.782	8.994
MJ 10	x	1.50	**8.60**	8.539	8.775
MJ 12	x	1.75	**10.40**	10.295	10.560
MJ 16	x	2.00	**14.20**	14.051	14.351

UNJC threads ISO 3161

Nom. Ø	Thread per inch	Tapping size hole Ø mm	Core diameter of int. thread 3B min. mm	max. mm
No. 6	32	**2.85**	2.733	2.939
No. 8	32	**3.55**	3.393	3.599
No. 10	24	**4.00**	3.795	4.064
No. 12	24	**4.60**	4.455	4.704
1/4	20	**5.30**	5.113	5.387
5/16	18	**6.75**	6.563	6.833
3/8	16	**8.20**	7.978	8.255
7/16	14	**9.60**	9.346	9.639
1/2	13	**11.00**	10.798	11.095
9/16	12	**12.40**	12.228	12.482
5/8	11	**13.80**	13.627	13.904

* MJ3 x 0.50 up to MJ 5 x 0.80 tapping size hole of internal thread 6H

UNJF threads ISO 3161

Nom. Ø	Thread per inch	Tapping size hole Ø mm	Core diameter of int. thread 3B min. mm	max. mm
No. 6	40	**3.00**	2.888	3.053
No. 8	36	**3.60**	3.480	3.663
No. 10	32	**4.20**	4.054	4.255
No. 12	28	**4.75**	4.602	4.816
1/4	28	**5.60**	5.466	5.662
5/16	24	**7.00**	6.906	7.109
3/8	24	**8.60**	8.494	8.679
7/16	20	**10.00**	9.876	10.084
1/2	20	**11.60**	11.463	11.661
9/16	18	**13.00**	12.913	13.122
5/8	18	**14.60**	14.501	14.702

Tapping size holes for thread cutting

UNF threads ASME B1.1				
Nom. Ø	Thread per inch	Tapping size hole Ø DIN 336 mm	Core diameter of int. thread 2B min. mm	Core diameter of int. thread 2B max. mm
No. 1 -	72	**1.55**	1.473	1.610
No. 2 -	64	**1.85**	1.755	1.910
No. 3 -	56	**2.15**	2.024	2.197
No. 4 -	48	**2.40**	2.271	2.459
No. 5 -	44	**2.70**	2.550	2.741
No. 6 -	40	**2.95**	2.819	3.023
No. 8 -	36	**3.50**	3.404	3.607
No. 10 -	32	**4.10**	3.962	4.166
No. 12 -	28	**4.60**	4.496	4.724
1/4 -	28	**5.50**	5.359	5.588
5/16 -	24	**6.90**	6.782	7.036
3/8 -	24	**8.50**	8.382	8.636
7/16 -	20	**9.90**	9.728	10.033
1/2 -	20	**11.50**	11.328	11.608
9/16 -	18	**12.90**	12.751	13.081
5/8 -	18	**14.50**	14.351	14.681
3/4 -	16	**17.50**	17.323	17.678
7/8 -	14	**20.40**	20.269	20.650
1 -	12	**23.25**	23.114	23.571
1 1/8 -	12	**26.50**	26.289	26.746
1 1/4 -	12	**29.50**	29.464	29.921
1 3/8 -	12	**32.75**	32.639	33.096
1 1/2 -	12	**36.00**	35.814	36.271

BSW threads BS84				
Nom. Ø	Thread per inch	Tapping size hole Ø mm	Core diameter of int. thread min. mm	Core diameter of int. thread max. mm
W 1/16	60	**1.20**	1.045	1.230
W 3/32	48	**1.80**	1.704	1.912
W 1/8	40	**2.50**	2.362	2.591
W 5/32	32	**3.20**	2.952	3.214
W 3/16	24	**3.60**	3.407	3.745
W 7/32	24	**4.50**	4.201	4.539
W 1/4	20	**5.10**	4.724	5.156
W 5/16	18	**6.50**	6.130	6.590
W 3/8	16	**7.90**	7.492	7.987
W 7/16	14	**9.20**	8.789	9.330
W 1/2	12	**10.50**	9.989	10.591
W 9/16	12	**12.00**	11.577	12.179
W 5/8	11	**13.50**	12.918	13.558
W 3/4	10	**16.25**	15.797	16.483
W 7/8	9	**19.25**	18.611	19.353
W 1	8	**22.00**	21.334	22.147
W 1 1/8	7	**24.50**	23.928	24.832
W 1 1/4	7	**27.75**	27.103	28.007
W 1 3/8	6	**30.50**	29.504	30.528
W 1 1/2	6	**33.50**	32.679	33.703
W 1 5/8	5	**35.50**	34.769	35.963
W 1 3/4	5	**39.00**	37.944	39.138
W 2	4.5	**44.50**	43.571	44.877

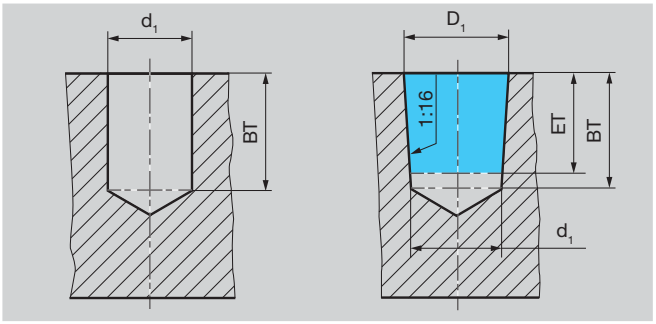
BSP threads (DIN-ISO 228-1)				
Nom. Ø	Thread per inch	Tapping size hole Ø DIN 336 mm	Core diameter of int. thread min. mm	Core diameter of int. thread max. mm
G 1/16	28	**6.80**	6.561	6.843
G 1/8	28	**8.80**	8.566	8.848
G 1/4	19	**11.80**	11.445	11.890
G 3/8	19	**15.25**	14.950	15.395
G 1/2	14	**19.00**	18.631	19.172
G 5/8	14	**21.00**	20.587	21.128
G 3/4	14	**24.50**	24.117	24.658
G 7/8	14	**28.25**	27.877	28.418
G 1	11	**30.75**	30.291	30.931
G 1 1/8	11	**35.50**	34.939	35.579
G 1 1/4	11	**39.50**	38.952	39.592
G 1 1/2	11	**45.25**	44.845	45.485
G 1 3/4	11	**51.00**	50.788	51.428
G 2	11	**57.00**	56.656	57.296

Steel armoured conduit threads to DIN 40430				
Nom. Ø	Thread per inch	Tapping size hole Ø mm	Core diameter of int. thread min. mm	Core diameter of int. thread max. mm
Pg 7	20	**11.40**	11.280	11.430
Pg 9	18	**14.00**	13.860	14.010
Pg 11	18	**17.30**	17.260	17.410
Pg 13.5	18	**19.00**	19.060	19.210
Pg 16	18	**21.30**	21.160	21.310
Pg 21	16	**26.90**	26.780	27.030
Pg 29	16	**35.50**	35.480	35.730
Pg 36	16	**45.50**	45.480	45.730
Pg 42	16	**52.50**	52.480	52.730
Pg 48	16	**57.80**	57.780	58.030

NPT ANSI B 2.1
American tapered pipe thread 1:16

Version A (avoid if possible)

Version B



Nom. Ø	Thread per inch	Tapp. size hole Ø cylindrical (A) d1	Tapp. size hole Ø conical (B) D1	Cutting depth ET mm	Cutting depth BT (min) mm
1/16	- 27	**6.15**	6.39	9.29	10.7
1/8	- 27	**8.40**	8.74	9.32	10.8
1/4	- 18	**11.10**	**11.36**	13.52	15.6
3/8	- 18	**14.30**	**14.80**	13.83	16.0
1/2	- 14	**17.90**	**18.32**	18.07	20.8
3/4	- 14	**23.30**	**23.67**	18.55	21.3
1	- 11,5	**29.00**	**29.69**	22.29	25.6
1 1/4	- 11,5	**37.70**	**38.45**	22.80	26.1
1 1/2	- 11,5	**43.70**	**44.52**	22.80	26.1
2	- 11,5	**55.60**	**56.56**	23.20	26.5
2 1/2	- 8	**66.30**	**67.62**	31.75	36.3
3	- 8	**82.30**	**83.52**	33.74	38.5

Metric/metric fine EG-threads (EG M14 x 1.25) for wire thread inserts DIN 8140				
Nom. Ø x Pitch P	Tapping size hole Ø mm	Core diameter of int. thread min. mm	Core diameter of int. thread max. mm
EG M 4 x 0.70	**4.20**	4.152	4.292
EG M 5 x 0.80	**5.25**	5.174	5.334
EG M 6 x 1.00	**6.30**	6.217	6.407
EG M 8 x 1.25	**8.40**	8.271	8.483
EG M10 x 1.50	**10.50**	10.324	10.560
EG M12 x 1.75	**12.50**	12.379	12.644
EG M14 x 1.25	**14.40**	14.271	14.483
EG M16 x 2.00	**16.50**	16.433	16.733

UNC (UNC-STI) EG-threads for wire thread inserts ASME B18.29.1				
Nom. Ø	Thread per inch	Tapping size hole Ø mm	Core diameter of int. thread min. mm	Core diameter of int. thread max. mm
EG No. 6 -	32	**3.80**	3.678	3.879
EG No. 8 -	32	**4.40**	4.338	4.524
EG No. 10 -	24	**5.20**	5.055	5.283
EG No. 12 -	24	**5.80**	5.715	5.944
EG 1/4 -	20	**6.70**	6.624	6.868
EG 5/16 -	18	**8.40**	8.242	8.489
EG 3/8 -	16	**10.00**	9.868	10.127
EG 7/16 -	14	**11.60**	11.506	11.783
EG 1/2 -	13	**13.30**	13.122	13.393
EG 9/16 -	12	**14.90**	14.747	15.032
EG 5/8 -	11	**16.50**	16.375	16.673

UNF (UNF-STI) EG-threads for wire thread inserts ASME B18.29.1				
Nom. Ø	Thread per inch	Tapping size hole Ø mm	Core diameter of int. thread min. mm	Core diameter of int. thread max. mm
EG No. 6 -	40	**3.70**	3.644	3.818
EG No. 8 -	36	**4.40**	4.321	4.498
EG No. 10 -	32	**5.10**	4.999	5.184
EG No. 12 -	28	**5.70**	5.682	5.809
EG 1/4 -	28	**6.60**	6.546	6.721
EG 5/16 -	24	**8.25**	8.166	8.352
EG 3/8 -	24	**9.80**	9.754	9.931
EG 7/16 -	20	**11.50**	11.389	11.585
EG 1/2 -	20	**13.10**	12.974	13.172
EG 9/16 -	18	**14.70**	14.592	14.798
EG 5/8 -	18	**16.25**	16.180	16.386

Recommended tapping size holes for thread forming

Standard ISO metric threads DIN 13

Nom. Ø mm	Pitch P	Tapp. size hole Ø mm	Tapp. size hole Ø min. mm	Tapp. size hole Ø max. mm	Core Ø of int. thread 7H* min. mm	Core Ø of int. thread 7H* max. mm
M 2	0.40	**1.85**	1.84	1.88	1.567	1.679
M 2.2	0.45	**2.00**	2.01	2.05	1.713	1.838
M 2.5	0.45	**2.30**	2.28	2.32	2.013	2.138
M 3	0.50	**2.80**	2.78	2.85	2.459	2.639
M 3.5	0.60	**3.25**	3.23	3.30	2.850	3.050
M 4	0.70	**3.70**	3.68	3.76	3.242	3.466
M 4.5	0.75	**4.20**				
M 5	0.80	**4.65**	4.62	4.71	4.134	4.384
M 6	1.00	**5.55**	5.52	5.62	4.917	5.217
M 7	1.00	**6.55**	6.52	6.62	5.917	6.217
M 8	1.25	**7.40**	7.36	7.47	6.647	6.982
M 9	1.25	**8.40**	8.36	8.47	7.647	7.982
M 10	1.50	**9.30**	9.26	9.38	8.376	8.751
M 11	1.50	**10.30**	10.26	10.38	9.376	9.751
M 12	1.75	**11.20**	11.15	11.29	10.106	10.531
M 14	2.00	**13.10**	13.05	13.20	11.835	12.310
M 16	2.00	**15.10**	15.05	15.20	13.835	14.310
M 18	2.50	**16.90**	16.83	17.02	15.294	15.854
M 20	2.50	**18.90**	18.83	19.02	17.294	17.854
M 22	2.50	**20.90**	20.83	21.02	19.294	19.854
M 24	3.00	**22.70**	22.62	22.80	20.752	21.382
M 27	3.00	**25.70**	25.62	25.80	23.752	24.382
M 30	3.50	**28.50**	28.40	28.60	26.211	26.921
M 33	3.50	**31.50**	31.40	31.60	29.211	29.921
M 36	4.00	**34.30**	34.17	34.40	31.670	32.420
M 39	4.00	**37.30**	37.17	37.40	34.670	35.420
M 42	4.50	**40.10**	39.95	40.20	37.129	37.979

* M 2 up to M 2.5 tapping size hole of internal thread 6H

ISO metric fine threads DIN 13

Nom. Ø mm	x	Pitch P	Tapp. size hole Ø mm	Tapp. size hole Ø min. mm	Tapp. size hole Ø max. mm	Core Ø of int. thread 7H* min. mm	Core Ø of int. thread 7H* max. mm
M 2.5	x	0.35	**2.35**	2.35	2.38	2.121	2.221
M 3	x	0.35	**2.85**	2.85	2.88	2.621	2.721
M 4	x	0.35	**3.85**	3.85	3.88	3.621	3.721
M 4	x	0.50	**3.80**	3.78	3.83	3.459	3.639
M 5	x	0.50	**4.80**	4.78	4.83	4.459	4.639
M 5.5	x	0.50	**5.30**	5.28	5.33	4.959	5.139
M 6	x	0.75	**5.65**	5.62	5.70	5.188	5.424
M 7	x	0.75	**6.65**	6.62	6.70	6.188	6.424
M 8	x	0.75	**7.65**	7.62	7.70	7.188	7.424
M 8	x	1.00	**7.55**	7.52	7.62	6.917	7.217
M 9	x	0.75	**8.65**	8.62	8.70	8.188	8.424
M 9	x	1.00	**8.55**	8.52	8.62	7.917	8.217
M 10	x	0.75	**9.65**	9.62	9.70	9.188	9.424
M 10	x	1.00	**9.55**	9.52	9.62	8.917	9.217
M 10	x	1.25	**9.40**	9.36	9.47	8.647	8.982
M 11	x	0.75	**10.65**	10.62	10.70	10.188	10.424
M 11	x	1.00	**10.55**	10.52	10.62	9.917	10.217
M 12	x	1.00	**11.55**	11.52	11.62	10.917	11.217
M 12	x	1.25	**11.40**	11.36	11.47	10.647	10.982
M 12	x	1.50	**11.30**	11.26	11.38	10.376	10.751
M 14	x	1.00	**13.55**	13.52	13.62	12.917	13.217
M 14	x	1.25	**13.40**	13.36	13.47	12.647	12.982
M 14	x	1.50	**13.30**	13.26	13.38	12.376	12.751
M 15	x	1.00	**14.55**	14.52	14.62	13.917	14.217
M 15	x	1.50	**14.30**	14.26	14.38	13.376	13.751
M 16	x	1.00	**15.55**	15.52	15.62	14.917	15.217
M 16	x	1.50	**15.30**	15.26	15.38	14.376	14.751

* M 2.5 x 0.35 up to M 4 x 0.35 tapping size hole of internal thread 6H

Nom. Ø mm	x	Pitch P	Tapp. size hole Ø mm	Tapp. size hole Ø min. mm	Tapp. size hole Ø max. mm	Core Ø of int. thread 7H* min. mm	Core Ø of int. thread 7H* max. mm
M 17	x	1.00	**16.55**	16.52	16.62	15.917	16.217
M 17	x	1.50	**16.30**	16.26	16.38	15.376	15.751
M 18	x	1.00	**17.55**	17.52	17.62	16.917	17.217
M 18	x	1.50	**17.30**	17.26	17.38	16.376	16.751
M 18	x	2.00	**17.10**	17.05	17.20	15.835	16.310
M 20	x	1.00	**19.55**	19.52	19.62	18.917	19.217
M 20	x	1.50	**19.30**	19.26	19.38	18.376	19.751
M 24	x	1.00	**23.55**	23.52	23.62	22.917	23.217
M 24	x	1.50	**23.30**	23.26	23.38	22.376	22.751
M 24	x	2.00	**23.10**	23.05	23.20	21.835	22.310
M 27	x	1.50	**26.30**	26.26	26.38	25.376	25.751
M 30	x	1.50	**29.30**	29.26	29.38	28.376	28.751
M 33	x	1.50	**32.30**	32.26	32.38	31.376	31.751
M 36	x	1.50	**35.30**	35.26	35.38	34.376	34.751
M 39	x	1.50	**38.30**	38.26	38.38	37.376	37.751
M 42	x	1.50	**41.30**	41.26	41.38	42.376	42.751

Tapping size hole diameter tolerance zone for thread forming (to DIN 13, section 50)

Due to the tensile strength it is not necessary to adhere to the tapping size hole diameter tolerance class 6H; tolerance class 7H satisfies the requirement that the flank coverage of external and internal threads should not fall below 0.32 x P. In addition, formed threads generally possess a higher tensile strength in comparison to cut threads thanks to an uninterrupted grain flow and subsequent work hardening.

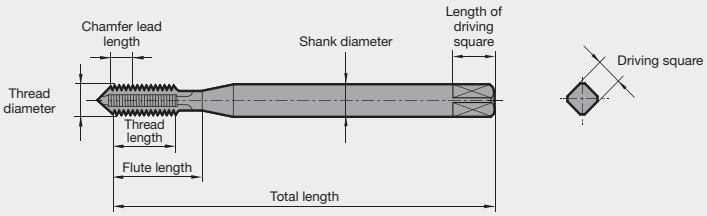
Recommended tapping size holes for thread forming

UNC threads ASME B1.1						
Nom. Ø	Thread per inch	Tapp. size hole Ø mm	Tapp. size hole Ø min. mm	Tapp. size hole Ø max. mm	Core Ø of int. thread 2B min. mm	Core Ø of int. thread 2B max. mm
No. 1 -	64	**1.68**	1.67	1.70	1.425	1.580
No. 2 -	56	**1.98**	1.97	2.01	1.694	1.872
No. 3 -	48	**2.28**	2.27	2.32	1.941	2.146
No. 4 -	40	**2.55**	2.54	2.59	2.157	2.385
No. 5 -	40	**2.90**	2.89	2.94	2.487	2.698
No. 6 -	32	**3.15**	3.14	3.19	2.642	2.896
No. 8 -	32	**3.80**	3.78	3.82	3.302	3.531
No.10 -	24	**4.35**	4.33	4.39	3.683	3.937
No.12 -	24	**5.00**	4.97	5.03	4.343	4.597
1/4 -	20	**5.75**	5.72	5.80	4.978	5.258
5/16 -	18	**7.30**	7.26	7.37	6.401	6.731
3/8 -	16	**8.80**	8.77	8.88	7.798	8.153
7/16 -	14	**10.30**	10.27	10.37	9.144	9.550
1/2 -	13	**11.80**	11.77	11.88	10.592	11.024
9/16 -	12	**13.30**	13.28	13.39	11.989	12.446
5/8 -	11	**14.80**	14.78	14.90	13.386	13.868
3/4 -	10	**17.90**	17.85	17.97	16.307	16.840
7/8 -	9	**21.00**	20.95	21.10	19.177	19.761
1 -	8	**24.00**	23.95	24.12	21.971	22.606

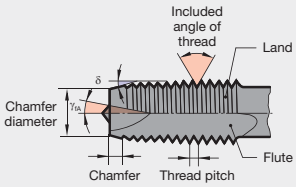
UNF threads ASME B1.1						
Nom. Ø	Thread per inch	Tapp. size hole Ø mm	Tapp. size hole Ø min. mm	Tapp. size hole Ø max. mm	Core Ø of int. thread 2B min. mm	Core Ø of int. thread 2B max. mm
No. 1 -	72	**1.70**	1.69	1.72	1.473	1.610
No. 2 -	64	**2.00**	1.99	2.03	1.755	1.910
No. 3 -	56	**2.30**	2.29	2.34	2.024	2.197
No. 4 -	48	**2.60**	2.59	2.63	2.271	2.459
No. 5 -	44	**2.90**	2.89	2.93	2.550	2.741
No. 6 -	40	**3.20**	3.19	3.24	2.819	3.023
No. 8 -	36	**3.85**	3.83	3.88	3.404	3.607
No.10 -	32	**4.45**	3.43	4.49	3.962	4.166
No.12 -	28	**5.10**	5.07	5.13	4.496	4.724
1/4 -	28	**5.95**	5.92	5.99	5.359	5.588
5/16 -	24	**7.45**	7.42	7.50	6.782	7.036
3/8 -	24	**9.05**	9.02	9.10	8.838	8.636
7/16 -	20	**10.55**	10.48	10.58	9.728	10.033
1/2 -	20	**12.10**	12.08	12.18	11.328	11.608
9/16 -	18	**13.65**	13.61	13.72	12.751	13.081
5/8 -	18	**15.25**	15.21	15.32	14.351	14.681
3/4 -	16	**18.35**	15.30	18.41	17.323	17.678
7/8 -	14	**21.40**	21.35	21.49	20.269	20.650
1 -	12	**24.45**	24.40	24.54	23.114	23.571

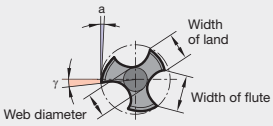
BSP threads DIN EN ISO 228-1						
Nom. Ø	Thread per inch	Tapp. size hole Ø mm	Tapp. size hole Ø min. mm	Tapp. size hole Ø max. mm	Core Ø of int. thread min. mm	Core Ø of int. thread max. mm
G 1/16	28	**7.30**	7.28	7.35	6.561	6.843
G 1/8	28	**9.30**	9.28	9.35	8.566	8.848
G 1/4	19	**12.50**	12.48	12.55	11.445	11.890
G 3/8	19	**16.00**	15.98	16.05	14.950	15.395
G 1/2	14	**20.00**	19.98	20.12	18.631	19.172
G 5/8	14	**22.00**	21.98	22.12	20.587	21.128
G 3/4	14	**25.50**	25.48	25.62	24.117	24.658
G 7/8	14	**29.25**	29.23	29.37	27.877	28.418
G 1	11	**32.00**	31.98	32.15	30.291	30.931
G 1 1/4	11	**40.75**	40.70	40.85	38.952	39.592

Definitions and angles, centres and flute forms



d = Try square
g_{fA} = Spiral point angle
a = Clearance angle
g = Rake angle





Flute forms

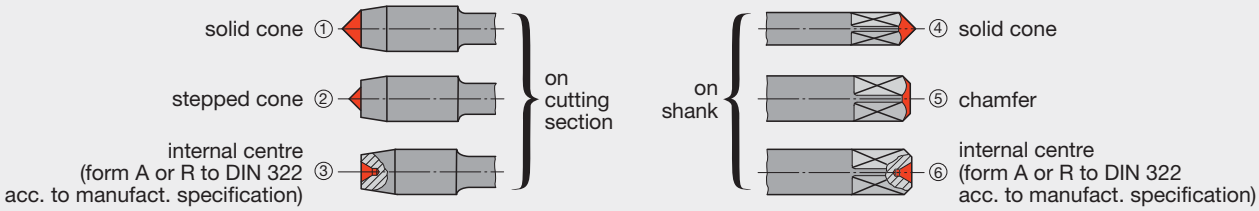
straight fluted, form C
without spiral point

straight fluted, form B
with spiral point

Helix angle **15°**

Helix angle **40°**

Types of centres (standard, to DIN 2197/DIN 2175)



Thread diameter range mm	Centre on cutting section		Centre on shank
	with chamfer forms A, C, D, E	with chamfer form B	
≤ 4.2	①	①	④ ⑤ ⑥
> 4.2 … 5.6	① ②	①	④ ⑤ ⑥
> 5.6 … 10.0	① ② ③	① ② ③	④ ⑤ ⑥
> 10.0	③	③	⑥

Coolant duct geometries

axial coolant supply with axial coolant duct exit

axial coolant supply with radial coolant duct exit in the flutes at the chamfer

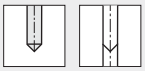
Chamfer forms – selection and application

When cutting internal threads, all the machining is carried out by the cutting teeth of the chamfer. Therefore, a decision on the best type of chamfer form has to be carefully made as both tool life and quality of thread are thereby greatly affected.

Generally speaking, the form and length of chamfer depend on the type of hole to be tapped. The tapping of through holes does not normally give rise to any difficulties whereas the production of blind holes can create certain problems associated with the need to evacuate swarf in the reverse direction to the feed, i.e. up to the flutes of the tap and then cut off such swarf when the tap is reversed out of the hole.

The length of chamfer is determined by taking into account various conflicting factors. To avoid overloading, premature bluntness and oversize threads the number of chamfer cutting threads must not be kept too low. A too long chamfer lead, however, increases the torque and thus the danger of breakage. The spiral point with form B ensures a chip removal always in the direction of feed.

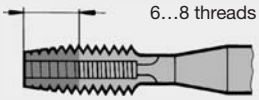
Through hole



Blind hole

Chamfer forms to DIN 2197

Form A



long, 6 - 8 threads for short through holes

Form B

medium, 3.5 - 5.5 threads, with spiral point,
for all through holes and deep tapping holes
in medium and long-chipping materials

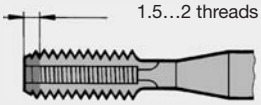
Form C

short, 2 - 3 threads for blind holes
and generally for aluminium, grey cast iron and brass

Form D

medium, 3.5 - 5 threads for short through holes

Form E

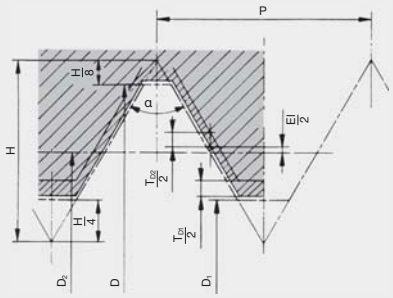


very short, 1.5 - 2 threads, for blind holes with little run-out depth

Form F

extremely short, 1 - 1.5 threads,
for blind holes with little run-out depth. Avoid use if possible.

Taps for ISO metric threads DIN EN 22857 (extract)



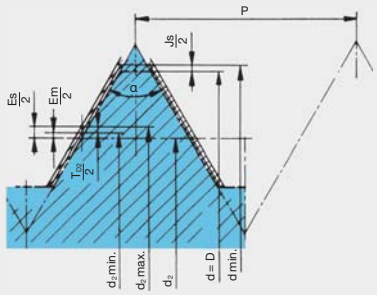
Profile of the internal thread

Basic profile:

D Major diameter
D_1 Nominal diameter of tapping size hole
D_2 Basic pitch diameter
P Pitch of diameter
a Included angle of thread
H Height of peak to peak thread profile
EI basic deviation of pitch, zero with tolerance zone H, positive with tolerance zone G

Tolerances:

T_{D1} Tolerance on tapping size hole diameter
T_{D2} Tolerance on tap pitch diameter



Profile of the tap

Basic profile:

d=D	Major diameter
d min.	Permissible min. tap major diameter
Js	Minimum clearance on major diameter
$d_2=D_2$	Basic pitch diameter
d_2 min.	Minimum tap pitch diameter
d_2 max.	Maximum tap pitch diameter
Es	Upper deviation of pitch diameter
Em	Lower deviation of pitch diameter

Tolerances:

T_{d2} Tolerance on tap pitch diameter

With the aim of unifying threads on an international basis, the ISO thread was brought out and has in the meantime been accepted by all concerned. Nowadays the ISO metric thread is the most common type. As you can see, our tap program demonstrates this fact in the clearest possible way.

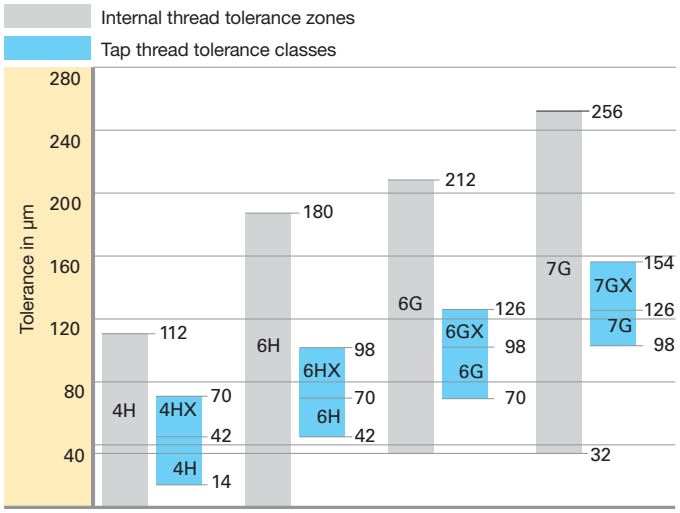
Tolerance qualities (figure identification)
Tolerance qualities of external threads are defined by figures 3 to 9, those of internal threads by figures 4 to 8. 3 stands for the narrowest and 9 for the widest tolerance.

Tolerance positions (letter identification)
ISO metric internal threads are identified by capital letters A to H, ISO metric external threads by small letters a to h. Tolerance zones A to G have positive and a to g negative basic pitch deviations in contrast to the tolerance zones H and h which commence at zero. Generally, tolerance zones H and g are used. For threads destined for surface treatment tolerance zones G and e are applied.

When manufacturing ISO external threads the deviations that are determined for the major diameter with regard to the tolerance zones a to g have to be taken into account.

Tolerance zones (internal thread)/
Tolerance classes (tap)
Quality and position of tolerance determine the tolerance zone, which is identified by the appropriate figures and letters. The abbreviation for the tolerance class of tap corresponds to the tolerance zone of the internal thread for which the tap is used in most cases. Therefore, it is not identical with the tolerance zone of the cut internal thread in every application. Taps with deviating tolerances according to DIN 802 part 1 will be given additional marking "X" (6 HX, 6 GX).
We recommend the application of taps in accordance with the adjacent table:

Tolerance zone/tolerance class allocation



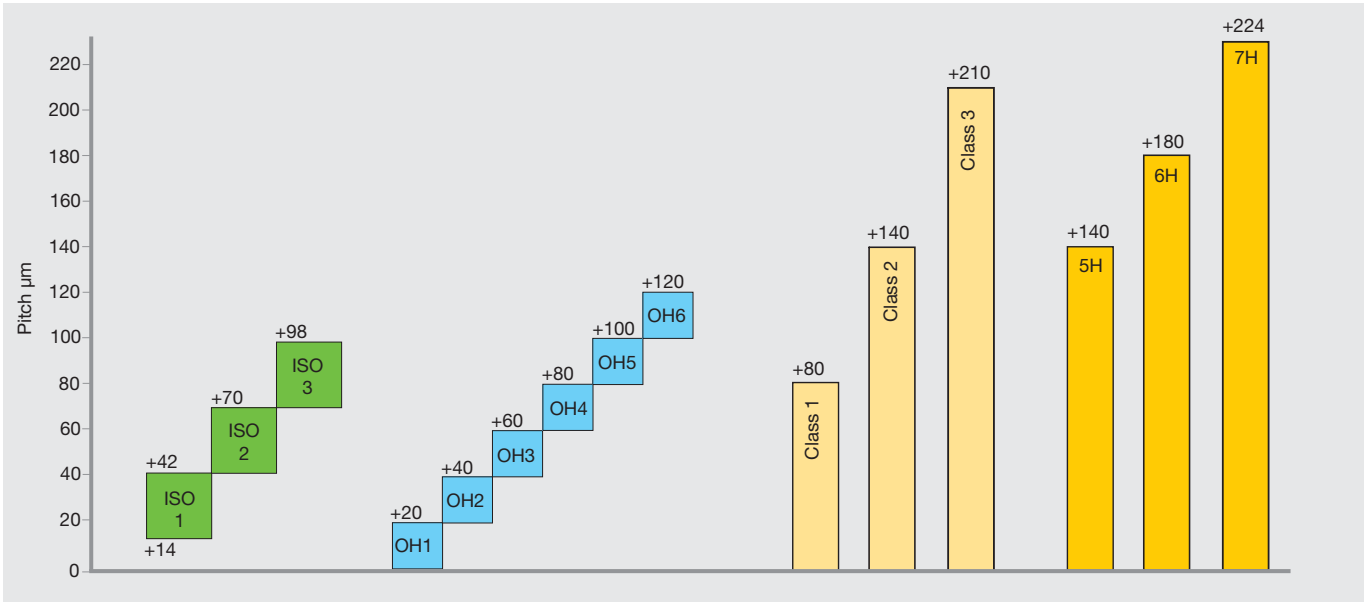
DIN EN 22857		Tolerance zone of internal thread to be cut					DIN 802 part 1 (withdrawn)
Application class of tap							Tolerance class of tap
Designation*	Reference						
Class 1	ISO 1	4H	5H				4H
Class 2	ISO 2			6H			6H
Class 3	ISO 3				6G		6G
-	-					7G	7G

* The tolerance of the 3 application classes is calculated in accordance to the following data dependent on one tolerance unit t the value of which corresponds to the value of the basic pitch diameter T_{D2} in tolerance class 5 of the internal thread (polished to a pitch of 0.2 mm):
t = T_{D2} Tolerance class 5 of internal thread

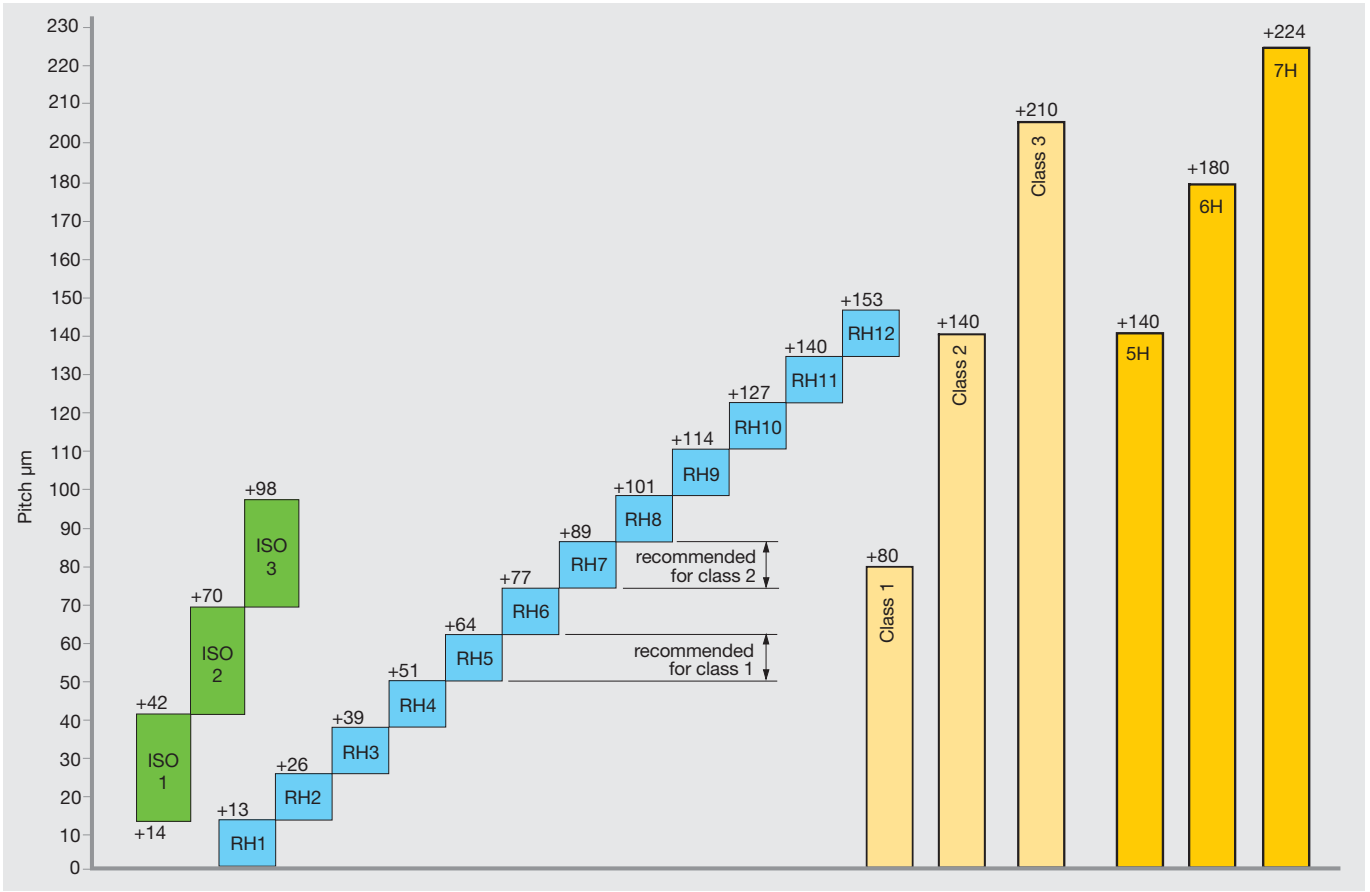
General information for tapping

OH limits for JIS taps

ISO limits
OH limits
JIS internal thread
ISO internal thread



RH limits for JIS fluteless taps



upper limit: 0,0127×n
lower limit: 0,0127×n - 0,0127
unit: mm / n = RH number

Taps for ISO metric threads DIN EN 22857 (extract)

Thread clearances and fits

Fits between internal and external threads are separated by a diagonal stroke, as for example 6H/6g (internal/external thread). The fit has to be selected in conjunction with the appropriate thread connection.
The tolerance zones of the tolerance classes fine, medium and coarse are allocated to three screw-in lengths short S), normal (N) and long (L). Generally, the following rules apply for selecting a tolerance class:

Fine tolerance zone (S):
For precision threads, when only a small variation in the fit is permitted.

Medium tolerance zone (N):
General application

Coarse tolerance zone (L):
There are no special precision requirements and in cases where production difficulties may occur, e.g. thread production in hotrolled rods, deep blind holes or plastic components.

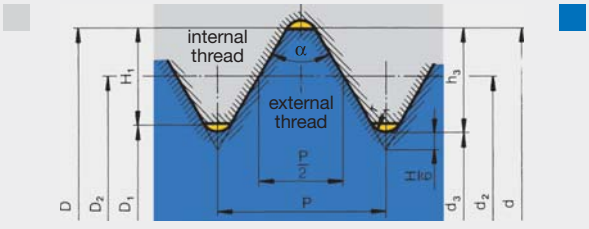
Screw-in lengths
The quality of thread connection is also affected by the screw-in length. The ISO tolerance system was, especially as regards the pitch diameter, divided into three groups, i.e.

S	(Short)	= short screw-in length
N	(Normal)	= normal screw-in length
L	(Long)	= long screw-in length

The following fit should be selected for normal screw-in length N: To ensure a tighter fit of thread connections, we recommend for short screw-in lengths a narrower fit. As far as long screw-in lengths are concerned, fits with a larger tolerance must be used to compensate for pitch deviations.

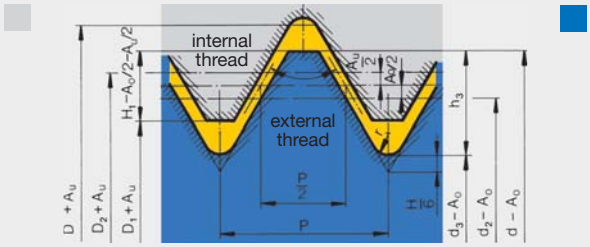
Thread fits with varying flank clearance

Diameter D of **internal** thread — Diameter d of **external** thread



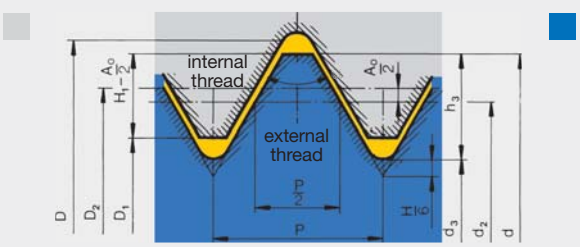
Fine thread fit without flank clearance (H/h-fit)

Diameter D of **internal** thread — Diameter d of **external** thread



Coarse thread fit with wide flank clearance (G/g or G/e-fit) in external and internal thread.

Diameter D of **internal** thread — Diameter d of **external** thread

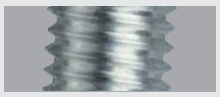
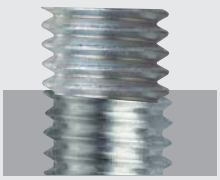


Medium thread fit with close flank clearance (H/h or H/e-fit) by basic deviation of external thread

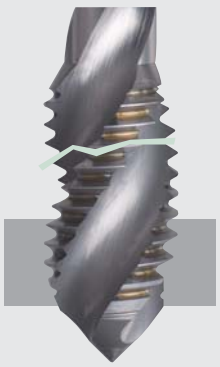
Explanation of symbols

D	=	nominal Ø of internal thread
D_1	=	tapping size hole Ø of internal thread
D_2	=	basic pitch Ø of internal thread
d	=	nominal Ø of external thread
d_2	=	basic pitch Ø of external thread
d_3	=	tapping size hole Ø of external thread
P	=	pitch
a	=	included angle of thread
H	=	height of peak to peak thread profile
A_o	=	upper tolerance limit
A_u	=	lower tolerance limit

Application problems with new taps

	Problem	Possible causes	Solution
1	**Thread produced is too large**	incorrect tap, tap geometry not suitable for the application	apply correct tap for the material to be machined
		tapping size hole too small	observe tapping size hole table in the technical section. Note different tapping size hole diameters for fluteless taps
		alignment error of tapping size hole or position	- check for correct tool clamping - apply floating tap holder - check core drill
		machine spindle axially restricted	- use mechanical feed - apply tension/compression tap chuck
		cold welding at the flank of the tap	- apply new tap - apply coated tap - optimise lubrication
		lead of tap unsatisfactory due to insufficient thread depth	- tap with forced feed - apply tap with modified lead
		cutting speed too high	- reduce cutting speed - improve lubrication
		lubrication or coolant supply insufficient	ensure sufficient and suitable coolant supply and check concentration
		tolerance specification on tap does not correspond to specifications on drawing and/or thread gauge	apply correct tap for required tolerances
2	**Thread axially miscut**	spiral-fluted taps, corresponding to our design, are applied with too much pressure for initial tapping	with spiral-fluted taps only light pressure required for initial tapping. The tap should immediately be applied within the tension/compression range
		initial tapping pressure too low for taps with spiral point corresponding to our form “B”	taps with spiral point or left hand spiral require higher axial pressure. Ensure tap operates within the tension/ compression range
3	**Thread produced is too small**	tolerance specification on tap does not correspond to specifications on drawing and/or thread gauge	apply correct tap for required tolerance
		incorrect tap	apply correct tap for the material to be machined
		tap does not cut accurately (thread plug gauge)	avoid strong axial forces during the cutting process
		machine spindle is axially too rigid	apply tension/compression chuck

Application problems with new taps

	Problem	Possible causes	Solution
4	**Thread surface not according to requirements** 	cutting edge geometry not suitable for the application	apply “correct” tap for the material to be machined
		cutting speed too high	- reduce cutting speed - optimise lubrication
		insufficient coolant (concentration and supply)	ensure suitable coolant and sufficient volume
		chip congestion	apply suitable tap type
		tapping size hole too small	observe tapping size hole diameter specifications to DIN 336 or respective standards. Observe table for fluteless taps
		with tough, hard materials loading on tool too much or pitch too steep	apply hand tap sets
		built-up edge	apply coated tap
		cold welding	improve coolant supply
5	**Tool life insufficient**	surface hardening of tappinge size hole	- check drill (cutting edge) for wear - heat or surface treatment following thread production
		reasons listed under: “thread surface not according to requirements“	reasons listed under: thread surface “not according to requirements“
		chip congestion	apply correct tap
6	**Tool breakage during advance or return** 	tapping size hole too small	observe tapping size hole dia. acc. to DIN 336 or respective standards
		teeth of chamfer lead overloaded	- longer chamfer lead (blind or through hole) - increase no. of teeth of chamfer lead by increasing no. of flutes - apply tap sets
		tap hits bottom of tapping size hole	- check hole depth - apply tension/compression tap chuck
		- lack of or incorrect chamfer of tapping size hole - postional or angle error of tapping size hole	- correct chamfer angle of tapping size hole - ensure correct tool clamping - apply floating tap holder - check core drill
		- tool hardness not suitable for the application - cutting edge geometry not suitable for the application	apply suitable tap for the individual application

Application problems with reground taps

	Problem	Possible causes	Solution
7	**Thread produced is too large**	burrs	remove burrs
		cutting edge geometry (chamfer lead, rake-, chamfer-, spiral point angle) not retained	- observe technical specifications when regrinding - observe regrinding instruction
8	**Thread produced is too small**	worn section has not been reground correctly	- regrind again or apply new tool - observe max. regrinding limits
		tap too small due to no. of regrinds	- max. regrinding limit reached - apply new tap
9	**Thread produced not according to requirements**	burrs	remove burrs
		cutting edge geometry (chamfer lead, rake-, chamfer-, spiral point angle) not retained	- observe technical specifications when regrinding - observe regrinding instruction
		peak-to-valley height of the reground tap too large	- regrind again or apply new tool - observe max. regrinding limits
		cold welding at the flanks	remove cold welding marks
10	**Tool life insufficient**	cutting edge geometry (chamfer lead, rake-, chamfer-, spiral point angle) not retained	- regrind again or apply new tool - observe max. regrinding limits
		loss of tap hardness due to heat development during the regrinding process	- check quality of grinding wheel - check coolant supply
		loss of coating	- recoat - check coating of the material to be machined

General information thread forming

Fluteless taps are used for the forming of internal threads without chip removal. In contrast to conventional tapping where material is cut from the workpiece, thread forming is a pressure deformation process without chip removal for the production of internal threads. During the process the material is cold formed without interrupting the grain flow.

According to DIN 8583, thread forming is described as “pressing the thread into the workpiece with a tool possessing a spiral working area”. The spiral threaded, polygonal portion of the fluteless tap is “screwed” into the pre-drilled workpiece with an appropriate constant feed rate equal to the thread pitch. Hereby the thread profile is pressed gradually via the forming lead into the material of the workpiece so to speak. Subsequently, the pressure in the deformation zone exceeds the compression limit, the workpiece becomes ductile and is deformed. The material yields radially, “flows” along the thread profile in the unoccupied base of the tool and forms the minor diameter of the internal thread. The flow process creates the process specific form pockets (claws).

The tapping size hole diameter is heavily dependent on the formability of the material, the workpiece geometry and the required effective depth of the thread. In comparison to conventional tapping, a larger diameter tapping size hole should be selected. With a larger diameter tapping size hole the load on the tool is reduced whilst increasing the tool life. Thanks to the uninterrupted grain flow, the loading capacity of the thread remains sufficient with a 50% effective thread depth.

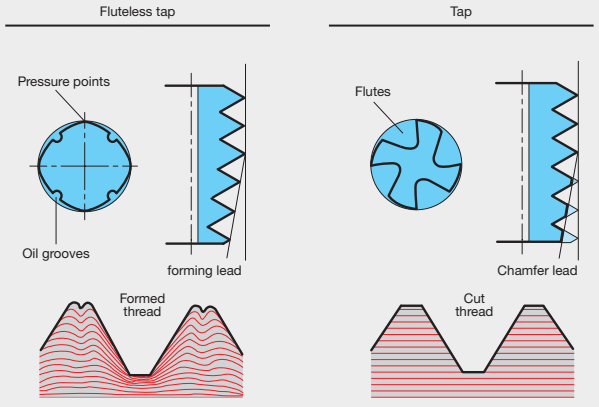
The partially formed crests of the thread with decreasing effective thread depth are a typical characteristic of threads produced by the thread forming process. With the flanks of the thread fully formed, they have no influence on the tensile strength of the thread. If necessary, the required deformation level of the thread should be determinded by performing a test.

Lubrication is of significant importance. The lubrication prevents material from building up on the thread flanks and ensures that the necessary torque for the forming process is not too high. Therefore, under no circumstances should there ever be a break-down in lubrication! Preference should be given to lubricants such as cooling agents of oils containing graphite such as those used in rolling processes. Always follow the rule: “The better the lubrication the easier the thread forming process!”

It offers the following advantages

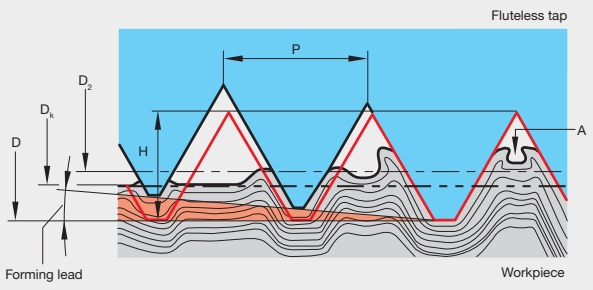
- no chip formation
- one tool for the production of threads in through and blind holes
- application in wide range of materials
- no cutting errors
- pitch and angle of thread errors that can occur with thread cutting are eliminated
- internal threads produced by thread forming possess a higher tensile strength particularly at the thread flanks thanks to the so-called “uninterrupted grain flow” and the cold forming process
- the surface of the thread is improved
- fluteless taps can be applied at higher speeds because the formability of many materials increases with the forming speed. This does not have a negative effect on the tool life.
- reduced danger of breakage through rigid design

Process
The production of internal threads without chip removal (thread forming) in comparison to conventional tapping



Flow characteristics of the material during thread forming and the deformation process

D = nominal Ø
D2 = flank Ø
Dk = hole Ø
H = profile height
P = thread pitch
A = form pocket (claw)
— finished internal thread



General information thread forming

Conventional fluteless taps, produced by a grinding process only, show traces of microscopic, very fine grinding marks on the surface of the tool. This also applies to the threaded portion of the tool required to perform the thread forming operation.

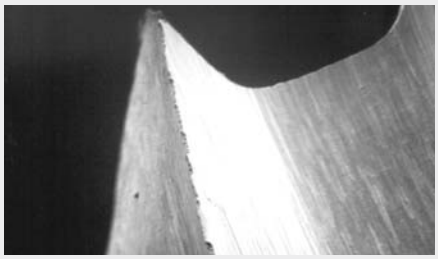
This surface topography (structure) has a negative effect on the friction between the tool and the material to be re-formed as well as on the herewith associated heat development, on the necessary torque and last but not least on the wear of the pressure points of the fluteless tap. In addition, the “grinding marks” encourage the build-up of the material to be re-formed in the thread flanks of the fluteless tap. This is also called cold welding.

Thanks to a special process to improve the surface topography (structure), Hartner’s new fluteless taps no longer possess these “grinding marks”. This has been confirmed in research and tool life studies in varying materials under production conditions.

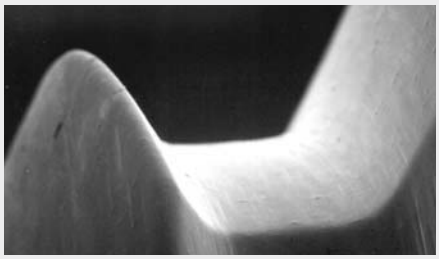
For the user, a longer tool life and increased cutting speeds are the benefits of this special process. The tool life can be increased considerably depending on the material to be machined and the application conditions. A 100 % increase in tool life is not unusual.

The improved surface topography is not only of benefit to tools with bright finish. Particularly coated tools also benefit from the new process. Outer contour and forming lead greatly determine the performance of the fluteless tap. Numerous tests have shown that fluteless taps with optimal pressure point geometry and quantity achieve increased tool life and dimensional accuracy.

Further improvements in quality are achieved when the fluteless tap is produced completely in one setting and with one grinding wheel - set-up with a special roll. Pitch errors between the thread crests and former lead transition area do not occur as with the conventional grinding process.

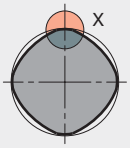


Tooth of a conventional fluteless tap

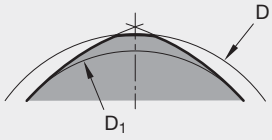


Optimised surface of a Hartner profile fluteless tap

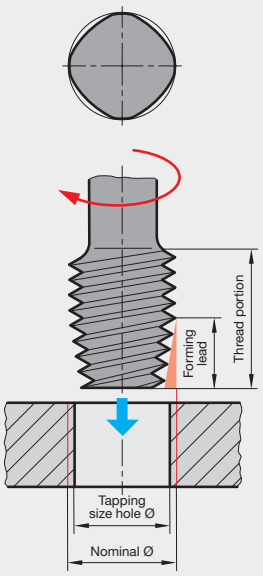
Cross section of fluteless tap



Detail x
D1 = flank diameter
D = nominal diameter

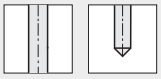


Operating principle



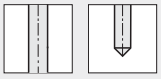
Types of tapping size hole

Fluteless taps without oil grooves
for thread depth ≤ 1 x D



for thread depth ≥ 1 x D

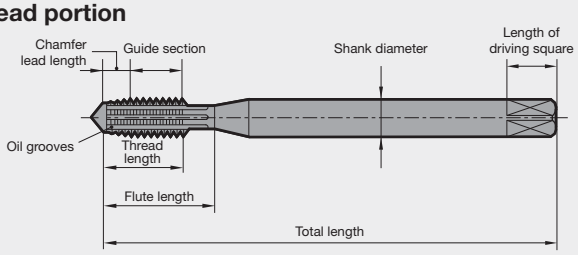
Fluteless tap with oil grooves
for all thread depths

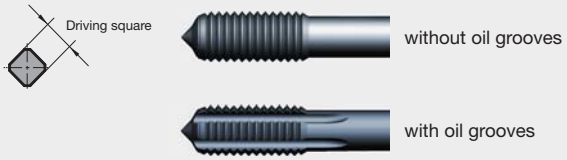


General information thread forming

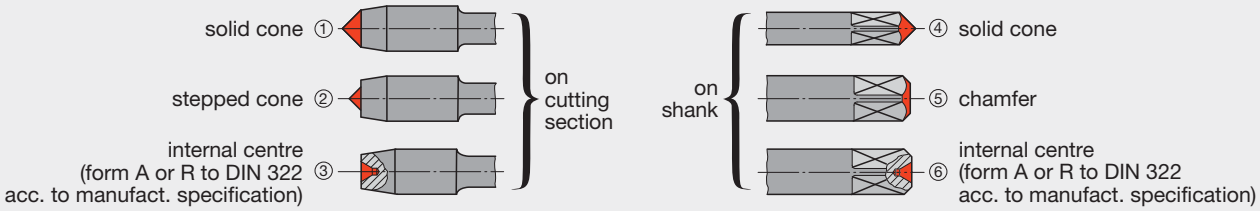
Definitions and angles, centres, thread tolerances and fits

Thread portion





Types of centres (standard, to DIN 2197/DIN 2175)



Thread diameter range mm	Centre on cutting section		Centre on shank
	with chamfer forms A, C, D, E	with chamfer form B	
≤ 4,2	①	①	④ ⑤ ⑥
> 4,2 … 5,6	① ②	①	④ ⑤ ⑥
> 5,6 … 10,0	① ② ③	① ② ③	④ ⑤ ⑥
> 10,0	③	③	⑥

Thread tolerances and fits

Fits between internal and external threads are separated by a diagonal stroke, as for example 6H/6g (internal/external).
The fit has to be selected in conjunction with the appropriate thread connection.
The tolerance zones of the tolerance classes fine, medium and coarse are allocated to three screw-in lengths short S), normal (N) and long (L). Generally, the following rules apply for selecting a tolerance class:

Fine tolerance zone (S):
For precision threads, when only a small variation in the fit is permitted.

Screw-in lengths
The quality of thread connection is also affected by the screwin length. The ISO tolerance system was, especially as regards the pitch diameter, divided into three groups, i.e.

S (Short) = short screw-in length
N (Normal) = normal screw-in length
L (Long) = long screw-in length

Medium tolerance zone (N):
General application

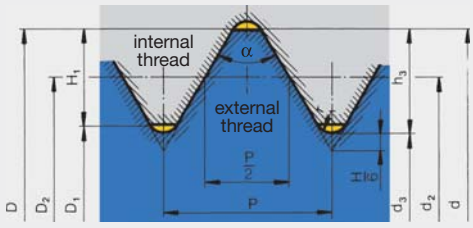
Coarse tolerance zone (L):
There are no special precision requirements and in cases where production difficulties may occur, e.g. thread production in hotrolled rods, deep blind holes or plastic components.

The following fit should be selected for normal screw-in length N: to ensure a tighter fit of thread connections, we recommend for short screw-in lengths a narrower fit.

Definitions and angles, centres, thread tolerances and fits

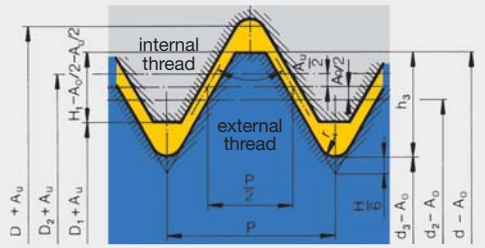
Thread fit with varying flank clearance

Diameter D of **internal** thread — Diameter d of **external** thread



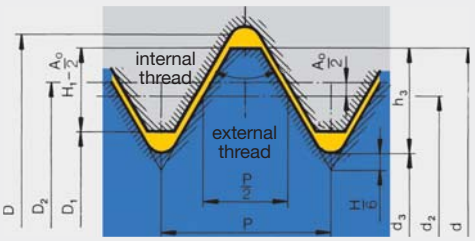
Fine thread fit without flank clearance (H/h-fit)

Diameter D of **internal** thread — Diameter d of **external** thread



Coarse thread fit with wide flank clearance (G/g or G/e-fit) in external and internal thread.

Diameter D of **internal** thread — Diameter d of **external** thread



Medium thread fit with close flank clearance (H/h or H/e-fit) by basic deviation of external thread

Explanation of symbols

D	=	Ø nominal of internal thread
D_1	=	tapping size hole Ø of internal thread
D_2	=	basic pitch Ø of internal thread
d	=	Ø nominal of external thread
d_2	=	basic pitch Ø of external thread
d_3	=	tapping size hole Ø of external thread
P	=	pitch
a	=	included angle of thread
H	=	height of peak to peak thread profile
A_o	=	upper tolerance limit
A_u	=	lower tolerance limit

Tapping size hole diameter

With fluteless tapping, the tapping size hole diameter influences the distinction of the formed thread. A too small tapping size hole diameter results in an over-forming of the thread which must definitely be prevented because this can lead to tool breakage. A too large tapping size hole is acceptable with certain tolerances because formed threads have a sufficient loading capacity from a 50 % bearing depth.

Tapping size hole diameter is too large:
- thread not formed
- large form pocket (claw)
- height of profile too low

Optimal tapping size hole diameter:
- thread fully formed
- small form pocket (claw)
- optimal height of profile

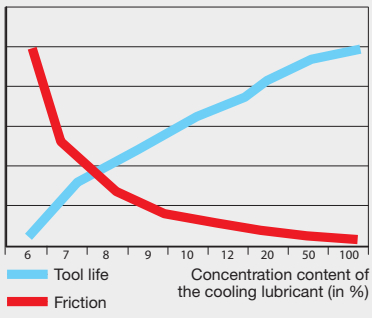
Tapping size hole too small:
- thread over-formed
- no form pocket (claw)
- profile too high

Cooling lubricants with fluteless taps

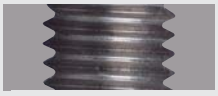
With fluteless taps the main task of the coolant is lubrication. The better the lubrication with the maximum concentration, the longer the tool life.
There are two different types of lubricant:

Oil based lubricants
These are mineral oils with the best lubricating characteristics. They reduce friction and achieve optimal life.

Soluble lubricants
These soluble lubricants are a concentrate thinned to an emulsion prior to the use with water. The concentration must not be below 6%. A content more than 12% is ideal in order to achieve a long life thanks to a good lubrication effect.



Application problems with new fluteless taps

	Problem	Possible causes	Solution
1	**Thread produced is too large** 	insufficient tool clamping	apply synchro chuck
		fluteless tap with short cutting portion	apply fluteless tap with long cutting portion
2	**Thread produced is too small** 	tapping size hole diameter too large	select correct tapping size hole diameter according to table
3	**Thread overformed** 	tapping size hole diameter too small	select correct tapping size hole diameter according to table
4	**Poor surface finish** 	cold welding on the tool	increase oil content in lubricant or apply neat oil
		lubricant with too little oil content	increase oil content in lubricant or apply neat oil
5	**Tool life insufficient**	lubricant with too little oil content	increase oil content in lubricant or apply neat oil
		tapping size hole diameter too small	select correct tapping size hole diameter according to table
		cutting speed too high	adjust cutting speed
		lubricant soiled	check filtration

Application problems with new fluteless taps

	Problem	Possible causes	Solution
6	**Tool breakage** 	lubricant with too little oil content	increase oil content in lubricant or apply neat oil
		tapping size hole diameter too small	select correct tapping size hole diameter according to table
		incorrect tool clamping	check tool clamping

Application recommendations

The cutting values shown below are standard values.
These values can be adapted upwards or downwards according to the specific application.
In case your specific material is not listed in the table below, please feel free to contact us.

●● optimally suited
● partly suitable
x not suitable

ISO	Material group	Hardness	Material example	Material no.
P	Structural and free cutting steels, heat-treatable steels unalloyed	< 800 N/m²	S235JR C15 11SMnPb30	1,0037 1,0401 1,0718
	Free-cutting steels, unalloyed case hardened steels, nitriding steels	800 - 1000 N/m²	S355J2 C60 31CrMo12	1,0577 1,0601 1,8515
	Alloyed heat-treatable steels, tool steels, high speed steels	800 - 1200 N/m²	42CrMo4 36CrNiMo4 X36CrMo17 HS 6-5-2	1,7225 1,6511 1,2316 1,3343
M	Stainless steels, sulphured, austenitic	< 1000 N/m²	X5CrNi18-10 X6CrNiTi18-10 X8CrNiS18-9	1,4301 1,4571 1,4305
	Stainless- and acidresistant steels, martensitic	< 1000 N/m²	X17CrNi16-2 X90CrMoV18 X2CrTi12	1,4057 1,4112 1,4512
	Duplex and Super Duplex	< 1300 N/m²	X2CrNiMoN22-5-3 X2CrNiMoN25-7-4 X2CrNiMoCuWn25-7-4	1,4462 1,441 1,4501
K	Cast Iron	300 HB	EN-GJL-150 EN-GJL-250 EN-GJL-300	0,6015 0,6025 0,603
	Spheroidal graphite iron and malleable cast iron	350 HB	EN-GJS-400-15 EN-GJS-600-3 EN-GJS-700-2	0,704 0,706 0,707
	ADI, GGV	1000 N/m² 350 HB	EN-GJS1000-5 EN-GJV250 EN-GJV400	
N	Aluminium and wrought alloys	< 450 N/m²	Al99,5H AlMgSi1 AlZn4,5Mg	3,025 3,2315 3,4335
	Aluminium cast alloys	< 600 N/m²	GD-AlSi5Cu1Mg GD-AlSi8Cu3 G-AlSi9Mg G-AlSi12	3,2134 3,2162 3,2373 3,2581
	Magnesium alloys	< 500 N/m²	GDMgAl8Zn1	3,5812,08
	Copper and copper alloys	long-chipping	CuZn20 CuZn37Pb0,5 short-chipping CuZn43Pb2	2,025 2,0332 2,038 2,041
	Copper special alloys	< 1400 N/m²	Ampco	
	Plastics [Thermoplaste, Duroplaste]	long-chipping	PMMA, POM, PVC short-chipping	
S	Titanium and titanium alloys	< 1200 N/m²	Titanium TiAl5Sn2 TiAl6V4	3,7025 3,7115 3,7165
	Nickel, cobalt, iron alloys	< 1400 N/m²	Hasteloy C4 Inconel 718 Nimonic	2,461 2,4668 2,4634
H	High tensile steels, hardened steels	45 - 55 HRC 55 - 62 HRC	Hardox PM30	

Application recommendations

basic line				top line								top line		basic line	
															
TG 100 U		TG 100 U		TG 100 T		TG 100 AL		TG 100 GG		TG 300 T		Fluteless taps		Fluteless taps	
Suitability	v_c (m/min.)	Suitability	v_c (m/min.)	Suitability	v_c (m/min.)	Suitability	v_c (m/min.)	Suitability	v_c (m/min.)	Suitability	v_c (m/min.)	Suitability	v_c (m/min.)	Suitability	v_c (m/min.)
●●	10	●●	12	●●	20	x		x		x		●●	20	●●	25
●●	8	●●	10	●●	15	x		x		●●	15	●●	15	●●	25
●	6	●	8	●●	10	x		x		●●	12	●	8	●●	15
●	6	●	8	●●	12	x		x		x		●●	6	●●	15
x		x		●●	10	x		x		x		●	4	●●	10
x		x		●●	6	x		x		x		●	4	●●	6
●	10	●	12	●	15	x		●●	20	●●	30	x		x	
●	8	●	10	●	15	x		●●	20	●●	20	●	15	●	30
x		x		●	8	x		●	8	●●	15	●	10	●●	25
●	10	x		●	12	●●	15	x		x		x		●	15
●	8	x		●	15	x		x		●●	30	●	15	●●	30
x		x		x		x		x		x		x		x	
●	10	x		●	12	●●	15	x		x		●	15	●	30
x		x		x		x		●	4	●	6	x		x	
x		x		x		●	8	x		x		x		x	
x		x		●	3	x		x		x		x		●●	8
x		x		●	2	x		x		x		x		●●	8
x x		x x		x x		x x		x x		x x		x x		x x	

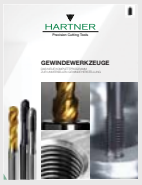
THE HARTNER PROGRAMME

▼ FU 500 / FN 500

▼ GUN DRILLS

▼ INOX DRILLS

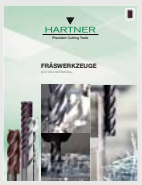
▼ MICRO PRECISION DRILLS



▼ THREADING TOOLS

▼ TS-DRILLS

▼ TF 100 MULTI-MILL



▼ SOLID CARBIDE
MILLING CUTTERS

▼ CHAMFERING
MILLING CUTTERS

▼ MULTIPLEX

▼ MULTIPLEX HPC

▼ TM VENDING MACHINES

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