GÜHRING

- Taps for metric, metric-fine, UNC, UNF and PT threads
- For universal applications, stainless steel, cast iron and aluminium as well as for hard machining
- HSS-E-PM high-performance taps with new TiAlN-coating for improved chip evacuation and short chip generation

Threading tools to JIS standard

GUHRING – YOUR WORLD-WIDE PARTNER

Your Perfect Choice

JIS Taps and Fluteless Taps Made by Guhring

Green ring taps

- for universal applications
- M, MF, UNC, UNF and PT
- additional long versions

Blue ring taps

- for stainless steel and acid-resistant steels
- M, MF

High performance HSS-E-PM

- blue ring taps with new TiAlN-coating for improved chip evacuation

Cast iron and AlSi taps

- universal thanks to IC for short chips in GG, Al and steel

Hard machining taps

- for hardened steel (45–55 HRC)

Fluteless taps

- for chipless threading in a wide range of materials

Our expertise

- High quality cutting tools made in Germany
- Optimal cutting materials and coatings
- High precision grinding machines for finest tool geometries

Your benefits

- Long tool life
- Best threading results
- Optimal cost-performance-ratio

Comparison yellow ring, green ring and blue ring

Conventional tapping with compensation chucks

Improved guidance with reduced relief angle for less rigid machines

Universal tapping with Synchro chucks or rigid collets

Improved tool life, increased relief angle and back taper for stronger machines

Hard machining taps for hardened steel (45 - 55 HRC)

For tapping operations in materials with a tensile strength in excess of 1200 N/mm2we have developed a HSS-E-PM tap with TiCN coating.
The special design makes the process reliable production of threads in hard materials possible and provides excellent tool life.
Suitable for applications in the mold and die industry as well as for various machine or automotive components following heat treatment.
Recommended cutting speed vc = 2 –8 m/min dependent on the hardness of the component.

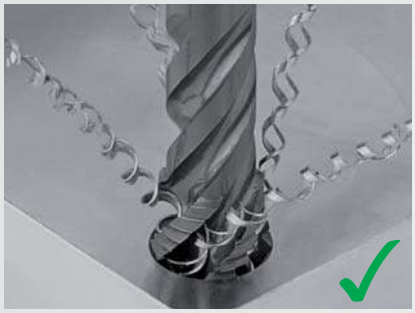
High performance HSS-E-PM blue ring taps with new TiAlN-coating for improved chip evacuation

Wide range of applications:

- stainless steel (martensitic / austenitic)
- steel materials max. 1300 N/m²
- copper-aluminum alloys and cast aluminium alloys

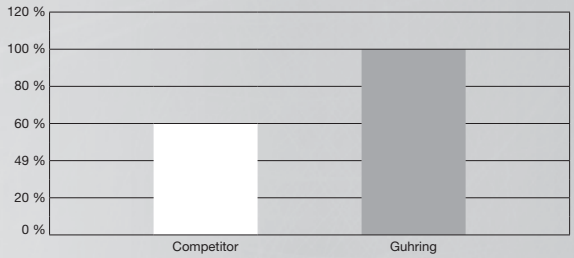
Thread systems M, MF and G.
Improved chip evacuation thanks to special geometry and coating.

Thread chips can cause tool breakage



Controlled chip evacuation with Guhring VA taps

Significantly longer tool life and increased performance thanks to the combination of TiAlN wear-protection coating and WC/C slide coating



Longer tool life thanks to more efficient coating

Universal taps with coolant ducts for short-chipping materials (GG, Al, steel)

Usually, with a tap the chips are evacuated from a blind hole via the spiral flutes. Cast iron, AlSi-alloys, brass and copper alloys are short-chipping materials. Straight-fluted taps are applied for such materials. With taps with coolant ducts, the coolant evacuates the short chips from the blind hole.
Our new straight-fluted M taps (Guhring no. 4448) and MF taps (Guhring no. 4472) with coolant ducts are especially suitable for short-chipping materials.

Evacuating long chips from steel components via the spiral flutes is an increasing problem. Consequently, the aim is to produce short chips with straight-fluted taps and evacuate them from the blind hole with the cooling lubricant. The tap with IC in the machine spindle achieves an improved tool life and surface quality of the thread. Typical applications are the machining of gearboxes, cylinder blocks and heads, crankshafts, pump housings, hydraulic components etc.

	Through holes			Blind holes			
Thread depth	≤3xD						
Tool material	HSS-E						
Type/form	N/B	N/B	N/B	N/B	N R40/C	N R40/C	N R40/C
Surface finish	○	S	C	○	○	S	C
Cooling	⊠	⊠	⊠	⊠	⊠	⊠	⊠
				long version			
	○	○		○	○	○	
							

○○ Tools with colour-ring

Thread type	Tol. zone	Dim. to	Article no. Ø-range						
M	Class 1 OH	JIS B 4430	**1014** M2 – M20 page 12	**1015** M2 – M20 page 12	**7778** M3 – M20 page 14	**4460** M3 – M20 page 28	**1012** M1.2 – M30 page 19	**1013** M2 – M20 page 20	**7777** M3 – M20 page 22
	Class 2 OH		**4420** M2 – M20 page 13	**4421** M2 – M20 page 13			**4426** M2 – M20 page 21	**4427** M2 – M20 page 21	
MF	Class 1 OH	JIS B 4430	**4434** M6x0.75 – M20x1.5 page 34	**4435** M6x0.75 – M20x1.5 page 34		**4461** M6x0.75 – M20x1.5 page 41	**4438** M4x0.5 – M22x1.5 page 37	**4439** M6x0.75 – M20x1.5 page 38	
UNC	Class 1 OH	~ JIS B 4430	**4465** 6-32 – 1-8 page 47				**4454** 2-56 – 1-8 page 48		
UNF	Class 1 OH	~ JIS B 4430	**4455** 6-40 – 1-12 page 49				**4457** 6-40 – 1-12 page 50		
PT	JIS 2	WN							

Universal

Material no. to DIN EN 10 027	Abbreviation
common structural steels	
1.0035	S185 (St33)
1.0421	St 52.0
1.0067	RSt 37-1
1.0425	P265GH
free-cutting steels	
1.0711	9S20
1.0718	11SMnPb30
1.0727	46S20
1.0728	(60 S 20)
case hardened steels	
1.7131	16MnCr5
1.6523	21NiCrMo2-2
1.7321	20MoCr4
1.7325	25MoCr4

Universal

Material no. to DIN EN 10 027	Abbreviation
unalloyed heat-treatable steels	
1.0402	C22
1.1151	C22E
1.0503	C45
1.0601	C60
nitriding steels	
1.8504	34CrAl6
1.8507	34CrAlMo5
1.8509	41CrAlMo7
1.8515	31CrMo12
1.8550	34CrAlNi4
spheroidal graphite iron	
0.7040	EN-GJS-400-15
0.7060	EN-GJS-600-3

Acid./stainl. resist. steels

Material no. to DIN EN 10 027	Abbreviation
sulphured stainless steels	
1.4005	X 12 CrS 13
1.4104	X 14 CrMo S 17
1.4105	X 6 CrMo S 17
1.4305	X 8 CrNi S 18-9
austenitic stainless steels	
1.4300	X 12 CrNi 18-8
1.4301	X 5 CrNi 18-10
1.4541	X 6 CrNiTi 18-10
martensitic stainless steels	
1.4057	X 17 CrNi 16-2
1.4112	X 90 CrMoV 18
1.4006	X 12 Cr 13

- ○ bright
- A TiAlN
- C TiCN
- S TiN
- ⊠ external coolant
- r internal radial coolant
- a internal axial coolant
- through hole
- blind hole

Through holes

Blind holes

≤3xD

HSS-E						HSS-E-PM		HSS-E
N R40/E	N R40/E	N R40/C	N R25/C	VA/B	VA/B	N/B	N/B	VA R40/C
○	Ⓢ	○	○	○	Ⓢ	○	Ⓐ	○
☒	☒	☒	☒	☒	☒	☒	☒	☒
		long version						
O	O	O	O	O	O			O
								
Article no. **Ø-range**								
4432 M2 – M20 page 23	**4433** M2 – M20 page 23	**4462** M2 – M20 page 29		**4422** M2 – M20 page 15	**4423** M2 – M20 page 15	**4468** M2 – M20 page 17	**4470** M2 – M20 page 18	**4428** M2 – M20 page 24
				4424 M2 – M20 page 16	**4425** M2 – M20 page 16			**4430** M2 – M20 page 25
		4463 M6x0.75 – M20x1.5 page 42		**4436** M6x0.75 – M20x1.5 page 35	**4437** M6x0.75 – M20x1.5 page 35	**4469** M6x0.75 – M20x1.5 page 36	**4471** M6x0.75 – M20x1.5 page 36	**4440** M6x0.75 – M20x1.5 page 39
			4464 PT 1/16-28 – PT 1-11 page 51					

Blind holes

Through holes and blind holes

Thread depth	≤3xD					
Tool material	HSS-E	HSS-E-PM		HSS-E	HSS-E-PM	HSS-E	HSS-E-PM
Type/form	VA R40/C	N R45/C	N R45/C	N R40/C	H/D	H/C	H/C
Surface finish	S	○	A	○	C	○	C
Cooling	⊠	⊠	⊠	⊠	⊠	⊠	a
	○			○		◎	
							

Tools with colour-ring

Thread type	Tol. zone	Dim. to	Article no. Ø-range						
M	Class 1 OH	JIS B 4430	**4429** M2 – M20 page 24	**4466** M2 – M20 page 26	**4449** M2 – M20 page 27	**4456** M2 – M20 page 30	**4453** M3 – M12 page 31	**4452** M2 – M20 page 32	**4448** M5 – M20 page 33
	Class 2 OH		**4431** M2 – M20 page 25						
MF	Class 1 OH	JIS B 4430	**4441** M6x0.75 – M20x1.5 page 39	**4467** M6x0.75 – M20x1.5 page 40	**4450** M6x0.75 – M20x1.5 page 40	**4458** M6x0.75 – M20x1.5 page 43	**4459** M8x1 – M12x1 page 44	**4451** M6x0.75 – M20x1.5 page 45	**4472** M6x0.75 – M20x1.5 page 46
UNC	Class 1 OH	~ JIS B 4430							
UNF	Class 1 OH	~ JIS B 4430							
PT	JIS 2	WN							

Universal

Material no. to DIN EN 10 027	Abbreviation
unalloyed heat-treatable steels	
1.4005	X 12 CrS 13
1.4104	X 14 CrMo S 17
1.4105	X 6 CrMo S 17
1.4305	X 8 CrNi S 18-9
nitriding steels	
1.4300	X 12 CrNi 18-8
1.4301	X 5 CrNi 18-10
1.4541	X 6 CrNiTi 18-10
spheroidal graphite iron	
1.4057	X 17 CrNi 16-2
1.4112	X 90 CrMoV 18
1.4006	X 12 Cr 13

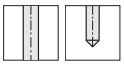
General steels

Material no. to DIN EN 10 027	Abbreviation
Common structural steels	
1.0035	S 185 (St 33)
1.0039	S 235 JRH
1.0036	S 235JRG1+CR
1.0060	E 335 (St 60-2)
Free-cutting steels	
1.0718	11SMnPb30
1.0721	10S20
1.0758	60SPb20
1.0726	35S20
Case hardened steels	
1.0401	(C 15)
1.7016	17 CR3
1.7131	16MnCr5
1.5919	15CrNi6
Unalloyed heat-treatable steels	
1.0402	C 22
1.1151	C22E (Ck 22)
1.0503	C 45
1.1191	C45E (Ck 45)

Cast materials

Material no.	Abbreviation
Cast iron	
0.6015 (GG15)	EN-GJL-150
0.6025 (GG25)	EN-GJL-250
0.6040 (GG40)	EN-JLZ
Spher. grahp. iron mall. cast iron	
0.7040 (GGG40)	EN-GJS-400-15
0.7060 (GGG60)	EN-GJS-600-3
0.8035	EN-GJMW-350-4
0.8135	EN-GJMB-350-10
Compacted graphite iron	
–	EN-GJV250
	EN-GJV350
	EN-GJV400
	EN-GJV500

- bright
- A TiAlN
- C TiCN
- S TiN
- ⊠ external coolant
- r internal radial coolant
- a internal axial coolant
- through hole
- blind hole



Through holes and blind holes

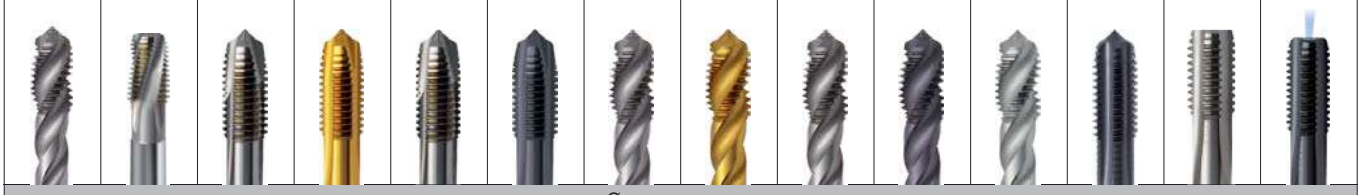
Tool material	HSS-E			Solid carbide
Type/form	N/C	N/C	N/C	N/C
Surface finish	S	S	S	A
Cooling	☒	☒	r	r
			with oil groove	
				

Thread type	Tol. zone	Dim. to	Article no. Ø-range			
M	Class 1 RH	JIS B 4430		**4442** M4 – M20 page 53		
	Class 2 RH		**1017** M1 – M20 page 52	**4443** M4 – M20 page 54	**4446** M5 – M20 page 57	**4447** M5 – M20 page 58
MF	Class 1 RH	JIS B 4430		**4444** M6x0.75 – M20x1.5 page 55		
	Class 2 RH			**4445** M6x0.75 – M20x1.5 page 56		

Fluteless taps
Material examples
Structural steels
Free-cutting steels
Case hardened steels
Heat-treatable steels
Nitriding steels
Unalloyed case hardened steels
Unalloyed heat-treatable steels
Alloyed case hardened steels
Alloyed heat-treatable steels
Alloyed tool steels
High speed tool steels
Aluminium and Al-alloys
Al wrought alloys
Al cast alloys ≤ 10 % Si
Al cast alloys > 10 % Si
Cast iron
Spheroidal graphite iron
Malleable cast iron
Stainless- and acid-resistant steels sulphured, austenitic and martensitic
Brass, short-chipping
Brass, long-chipping
Plastics
Magnesium-alloys
Titanium and Ti-alloys
Ni-alloys

		HSS-E								
		N/B	N/B	N/B	N/B	N R40/C	N R40/C	N R40/C	N R40/E	N R40/E
		○	S	C	○	○	S	C	○	S
		☒	☒	☒	☒	☒	☒	☒	☒	☒
		O	O		O	O	O		O	O
										
	Thread	Ø-range on page								
	M	12,13	12,13	14	28	19,21	20,21	22	23	23
	MF	34	34		41	37	38			
	UNC	47				48				
	UNF	49				50				
	PT									
	Material / ISO Material	Hardness N/mm²	Recommended cutting speed v_c m/min							
P	Struct./free-cutt./unall. heat-treat./case hard. steels	≤ 800	10	15	18	10	10	15	18	10	15
P	Free-cutting steels, unall. case hard. steels, nitr. steels	800 -1 000	8	12	15	8	8	12	15	8	12
P	Alloyed heat-treatable, tool and high speed steels	800 - 1200	6	8	10	6	6	8	10	6	8
M	Stainless steel - easy to machine / sulphured	≤ 750	6	8	10	6	6	8	10	6	8
M	Stainless steel - moderately difficult to machine	750 - 950	6	8	10	6	6	8	10	6	6
K	Cast iron, grey cast iron, spher. graph./mall. cast iron		10	12	16	10	10	12	18	10	12
N	Aluminium, Al-wrought alloys, Al-alloys	≤ 6% Si	10	x	18	10	x	10	18	x	x
N	Aluminium-cast alloys	≥ 6% Si	8	10	18	8	10	8	18	10	10
S	Titanium, Ti-alloys		x	2	2	x	x	2	2	x	2
S	Ni-alloys		x	x	x	x	x	x	x	x	x
H	Hardened steels	45 - 55 HRC	x	x	x	x	x	x	x	x	x
H	Hardened steels	55 - 62 HRC	x	x	x	x	x	x	x	x	x

		HSS-E			Solid carbide
		N/C	N/C	N/C	N/C
		S	S	S	A
		☒	☒	r	r
					
	Thread	Ø-range on page			
	M	52	53,54	57	58
	MF		55,56		
	UNC				
	UNF				
	PT				
	Material / ISO Material	Hardness N/mm²	Recommended cutting speed v_c m/min		
P	Struct./free-cutt./unall. heat-treat./case hard. steels	≤ 800	10	12	15	25
P	Free-cutting steels, unall. case hard. steels, nitr. steels	800 -1 000	10	12	15	25
P	Alloyed heat-treatable, tool and high speed steels	800 - 1200	8	10	12	20
M	Stainless steel - easy to machine / sulphured	≤ 750	4	8	10	15
M	Stainless steel - moderately difficult to machine	750 - 950	4	8	10	15
K	Cast iron, grey cast iron, spher. graph./mall. cast iron		15	15	20	30
N	Aluminium, Al-wrought alloys, Al-alloys	≤ 6% Si	15	20	25	40
N	Aluminium-cast alloys	≥ 6% Si	15	20	25	40
S	Titanium, Ti-alloys		4	4	6	15
S	Ni-alloys		4	4	6	12
H	Hardened steels	45 - 55 HRC	x	x	x	x
H	Hardened steels	55 - 62 HRC	x	x	x	x

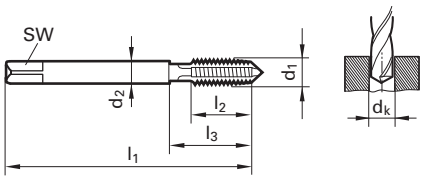
HSS-E				HSS-E-PM		HSS-E		HSS-E-PM		HSS-E	HSS-E-PM	HSS-E	HSS-E-PM
N R40/E	N R25/C	VA/B	VA/B	N/B	N/B	VA R40/C	VA R40/C	N R45	N R45	N R40/C	H/D	H/C	H/C
○	○	○	Ⓢ	○	Ⓐ	○	Ⓢ	○	Ⓐ	○	Ⓒ	○	Ⓒ
☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	ⓐ
◯	◯	◯	◯			◯	◯			◯		◎	
													
Ø-range on page													
29		15,16	15,16	17	18	24,25	24,25	26	27	30	31	32	33
42		35	35	36	36	39	39	40	40	43	44	45	46
	51												
Recommended cutting speed v_c m/min													
10	10	10	15	12	20	10	15	12	20	10	x	x	x
8	8	8	12	12	18	8	12	12	18	4	x	x	15
6	6	6	8	8	15	6	8	8	15	x	x	x	12
6	6	8	10	10	12	8	10	10	12	x	x	x	x
6	6	8	10	10	12	8	10	10	12	x	x	x	x
10	10	10	12	12	20	10	12	12	20	6	15	20	25
10	x	10	x	12	20	10	x	12	20	10	x	x	x
8	10	8	10	12	20	8	10	12	20	x	15	15	25
x	x	x	2	x	2	x	2	x	2	x	x	x	x
x	x	x	x	x	2	x	x	x	2	x	x	x	x
x	x	x	x	x	x	x	x	x	x	x	4	x	x
x	x	x	x	x	x	x	x	x	x	x	x	x	x

JIS machine taps for ISO metric threads

Class 1
OH

Cutting Data page 10-11

Tool material	HSS-E	
Surface finish	◯	Ⓢ
Type	N	N
Form	B	B
Cutting direction	right-hand	right-hand



Article no.	**1014**	**1015**

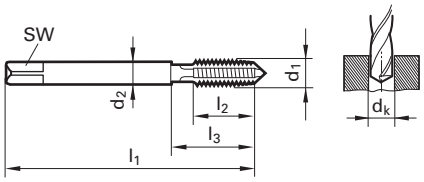
d1	P	Tolerance	d2	SW	dk	l1	l2	l3
	mm		mm		mm	mm	mm	mm
M 2	0.40	OH2	3.000	2.50	1.600	40.00	8.00	15.00
M 2.5	0.45	OH2	3.000	2.50	2.050	44.00	9.00	16.00
M 3	0.50	OH2	4.000	3.20	2.500	46.00	10.00	19.00
M 4	0.70	OH2	5.000	4.00	3.300	52.00	12.00	20.00
M 5	0.80	OH2	5.500	4.50	4.200	60.00	14.00	24.00
M 6	1.00	OH2	6.000	4.50	5.000	62.00	16.00	29.00
M 7	1.00	OH2	6.200	5.00	6.000	65.00	16.00	33.00
M 8	1.25	OH2	6.200	5.00	6.800	70.00	17.00	37.00
M 9	1.25	OH2	7.000	5.50	7.800	72.00	17.00	38.00
M10	1.50	OH2	7.000	5.50	8.500	75.00	20.00	41.00
M12	1.75	OH3	8.500	6.50	10.200	82.00	24.00	48.00
M14	2.00	OH3	10.500	8.00	12.000	88.00	26.00	48.00
M16	2.00	OH3	12.500	10.00	14.000	95.00	26.00	52.00
M18	2.50	OH4	14.000	11.00	15.500	100.00	30.00	55.00
M20	2.50	OH4	15.000	12.00	17.500	105.00	32.00	58.00

JIS machine taps for ISO metric threads

Class 2
OH

Cutting Data page 10-11

Tool material	HSS-E	
Surface finish	◯	Ⓢ
Type	N	N
Form	B	B
Cutting direction	right-hand	right-hand



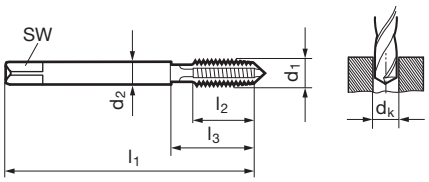
	Article no.	4420	4421

d1	P	Tolerance	d2	SW	dk	l1	l2	l3
	mm		mm		mm	mm	mm	mm
M 2	0.40	OH4	3.000	2.50	1.600	40.00	8.00	15.00
M 2.5	0.45	OH4	3.000	2.50	2.050	44.00	0.ßß	16.00
M 3	0.50	OH4	4.000	3.20	2.500	46.00	10.00	19.00
M 4	0.70	OH4	5.000	4.00	3.300	52.00	12.00	20.00
M 5	0.80	OH4	5.500	4.50	4.200	60.00	14.00	24.00
M 6	1.00	OH4	6.000	4.50	5.000	62.00	16.00	29.00
M 8	1.25	OH5	6.200	5.00	6.800	70.00	17.00	37.00
M10	1.50	OH5	7.000	5.50	8.500	75.00	20.00	41.00
M12	1.75	OH5	8.500	6.50	10.200	82.00	24.00	48.00
M14	2.00	OH5	10.500	8.00	12.000	88.00	26.00	48.00
M16	2.00	OH5	12.500	10.00	14.000	95.00	26.00	52.00
M18	2.50	OH5	14.000	11.00	15.500	100.00	30.00	55.00
M20	2.50	OH5	15.000	12.00	17.500	105.00	32.00	58.00

JIS machine taps for ISO metric threads

Cutting Data page 10-11

Tool material	**HSS-E**
Surface finish	C
Type	N
Form	B
Cutting direction	right-hand



Article no. **7778**

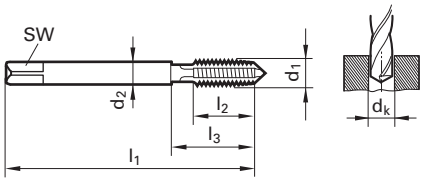
d1	P	Tolerance	d2	SW	dk	l1	l2	l3
	mm		mm		mm	mm	mm	mm
M3	0.500	OH2	4.000	3.200	2.50	46.000	10.000	19.000
M4	0.700	OH3	5.000	4.000	3.30	52.000	12.000	20.000
M5	0.800	OH3	5.500	4.500	4.20	60.000	14.000	24.000
M6	1.000	OH3	6.000	4.500	5.00	62.000	16.000	29.000
M8	1.250	OH3	6.200	5.000	6.80	70.000	17.000	37.000
M10	1.500	OH3	7.000	5.500	8.50	75.000	20.000	41.000
M12	1.750	OH4	8.500	6.500	10.20	82.000	24.000	48.000
M14	2.000	OH4	10.500	8.000	12.00	88.000	26.000	48.000
M16	2.000	OH4	12.500	10.000	14.00	95.000	26.000	52.000
M18	2.500	OH5	14.000	11.000	15.50	100.000	30.000	55.000
M20	2.500	OH5	15.000	12.000	17.50	105.000	32.000	58.000

JIS machine taps for ISO metric threads

Class 1
OH

Cutting Data page 10-11

Tool material	HSS-E	
Surface finish	◯	Ⓢ
Type	VA	VA
Form	B	B
Cutting direction	right-hand	right-hand



Article no.	**4422**	**4423**

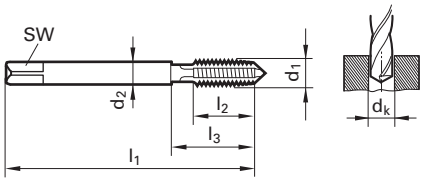
d1	P	Tolerance	d2	SW	dk	l1	l2	l3
	mm		mm		mm	mm	mm	mm
M 2	0.40	OH2	3.000	2.50	1.600	40.00	8.00	15.00
M 2.5	0.45	OH2	3.000	2.50	2.050	44.00	9.00	16.00
M 3	0.50	OH2	4.000	3.20	2.500	46.00	10.00	19.00
M 4	0.70	OH2	5.000	4.00	3.300	52.00	12.00	20.00
M 5	0.80	OH2	5.500	4.50	4.200	60.00	14.00	24.00
M 6	1.00	OH2	6.000	4.50	5.000	62.00	16.00	29.00
M 8	1.25	OH2	6.200	5.00	6.800	70.00	17.00	37.00
M10	1.50	OH2	7.000	5.50	8.500	75.00	20.00	41.00
M12	1.75	OH3	8.500	6.50	10.200	82.00	24.00	48.00
M14	2.00	OH3	10.500	8.00	12.000	88.00	26.00	48.00
M16	2.00	OH3	12.500	10.00	14.000	95.00	26.00	52.00
M18	2.50	OH4	14.000	11.00	15.500	100.00	30.00	55.00
M20	2.50	OH4	15.000	12.00	17.500	105.00	32.00	58.00

JIS machine taps for ISO metric threads

Class 2
OH

Cutting Data page 10-11

Tool material	HSS-E	
Surface finish	◯	Ⓢ
Type	VA	VA
Form	B	B
Cutting direction	right-hand	right-hand



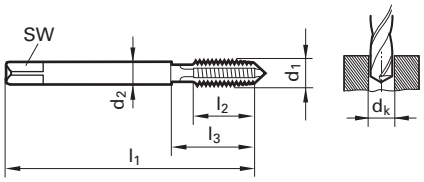
Article no.	**4424**	**4425**

d1	P	Tolerance	d2	SW	dk	l1	l2	l3
	mm		mm		mm	mm	mm	mm
M 2	0.40	OH4	3.000	2.50	1.600	40.00	8.00	15.00
M 2.5	0.45	OH4	3.000	2.50	2.050	44.00	9.00	16.00
M 3	0.50	OH4	4.000	3.20	2.500	46.00	10.00	19.00
M 4	0.70	OH4	5.000	4.00	3.300	52.00	12.00	20.00
M 5	0.80	OH4	5.500	4.50	4.200	60.00	14.00	24.00
M 6	1.00	OH4	6.000	4.50	5.000	62.00	16.00	29.00
M 8	1.25	OH5	6.200	5.00	6.800	70.00	17.00	37.00
M10	1.50	OH5	7.000	5.50	8.500	75.00	20.00	41.00
M12	1.75	OH5	8.500	6.50	10.200	82.00	24.00	48.00
M14	2.00	OH5	10.500	8.00	12.000	88.00	26.00	48.00
M16	2.00	OH5	12.500	10.00	14.000	95.00	26.00	52.00
M18	2.50	OH5	14.000	11.00	15.500	100.00	30.00	55.00
M20	2.50	OH5	15.000	12.00	17.500	105.00	32.00	58.00

JIS machine taps for ISO metric threads

Cutting Data page 10-11

Tool material	**HSS-E-PM**
Surface finish	◯
Type	N
Form	B
Cutting direction	right-hand



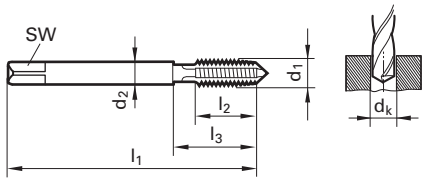
Article no. **4468**

d1	P	Tolerance	d2	SW	dk	l1	l2	l3
	mm		mm		mm	mm	mm	mm
M 2	0.40	OH1.5	3.000	2.50	1.600	40.00	8.00	15.00
M 2.5	0.45	OH2	3.000	2.50	2.050	44.00	9.00	16.00
M 3	0.50	OH2	4.000	3.20	2.500	46.00	10.00	19.00
M 4	0.70	OH3	5.000	4.00	3.300	52.00	12.00	20.00
M 5	0.80	OH3	5.500	4.50	4.200	60.00	14.00	24.00
M 6	1.00	OH2	6.000	4.50	5.000	62.00	16.00	29.00
M 8	1.25	OH2	6.200	5.00	6.800	70.00	17.00	37.00
M10	1.50	OH2	7.000	5.50	8.500	75.00	20.00	41.00
M12	1.75	OH4	8.500	6.50	10.200	82.00	24.00	48.00
M16	2.00	OH4	12.500	10.00	14.000	95.00	26.00	52.00
M20	2.50	OH5	15.000	12.00	17.500	105.00	32.00	58.00

JIS machine taps for ISO metric threads

Cutting Data page 10-11

Tool material	**HSS-E-PM**
Surface finish	A
Type	N
Form	B
Cutting direction	right-hand



Article no. **4470**

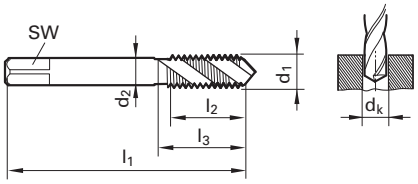
d1	P	Tolerance	d2	SW	dk	l1	l2	l3
	mm		mm		mm	mm	mm	mm
M 2	0.40	OH1.5	3.000	2.50	1.600	40.00	8.00	15.00
M 2.5	0.45	OH2	3.000	2.50	2.050	44.00	9.00	16.00
M 3	0.50	OH2	4.000	3.20	2.500	46.00	10.00	19.00
M 4	0.70	OH3	5.000	4.00	3.300	52.00	12.00	20.00
M 5	0.80	OH3	5.500	4.50	4.200	60.00	14.00	24.00
M 6	1.00	OH2	6.000	4.50	5.000	62.00	16.00	29.00
M 8	1.25	OH2	6.200	5.00	6.800	70.00	17.00	37.00
M10	1.50	OH2	7.000	5.50	8.500	75.00	20.00	41.00
M12	1.75	OH4	8.500	6.50	10.200	82.00	24.00	48.00
M14	2.00	OH4	10.500	8.00	12.000	88.00	26.00	48.00
M16	2.00	OH4	12.500	10.00	14.000	95.00	26.00	52.00
M18	2.50	OH5	14.000	11.00	15.500	100.00	30.00	55.00
M20	2.50	OH5	15.000	12.00	17.500	105.00	32.00	58.00

JIS machine taps for ISO metric threads

Class 1
OH

Cutting Data page 10-11

Tool material	**HSS-E**
Surface finish	◯
Type	N R40
Form	C
Cutting direction	right-hand



Article no. **1012**

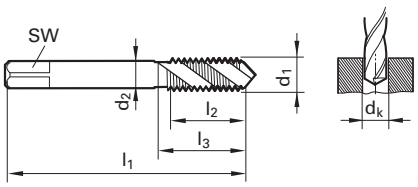
d1	P	Tolerance	d2	SW	dk	l1	l2	l3
	mm		mm		mm	mm	mm	mm
M1.2	0.25	OH1	3.000	2.50	0.950	36.00	9.00	9.00
M1.4	0.30	OH1	3.000	2.50	1.100	36.00	11.00	11.00
M1.6	0.35	OH1	3.000	2.50	1.250	36.00	13.00	13.00
M1.7	0.35	OH1	3.000	2.50	1.300	36.00	13.00	13.00
M2	0.40	OH1	3.000	2.50	1.600	40.00	15.00	15.00
M2.3	0.40	OH1	3.000	2.50	1.900	44.00	15.00	15.00
M2.5	0.45	OH1	3.000	2.50	2.050	44.00	16.00	16.00
M2.6	0.45	OH1	3.000	2.50	2.100	44.00	16.00	16.00
M3	0.50	OH2	4.000	3.20	2.500	46.00	19.00	19.00
M3.5	0.60	OH2	4.000	3.20	2.900	48.00	19.00	19.00
M4	0.70	OH2	5.000	4.00	3.300	52.00	20.00	20.00
M5	0.80	OH2	5.500	4.50	4.200	60.00	24.00	24.00
M6	1.00	OH2	6.000	4.50	5.000	62.00	29.00	29.00
M7	1.00	OH2	6.200	5.00	6.000	65.00	33.00	33.00
M8	1.25	OH2	6.200	5.00	6.800	70.00	37.00	37.00
M9	1.25	OH2	7.000	5.50	7.800	72.00	38.00	38.00
M10	1.50	OH2	7.000	5.50	8.500	75.00	41.00	41.00
M12	1.75	OH3	8.500	6.50	10.200	82.00	48.00	48.00
M14	2.00	OH3	10.500	8.00	12.000	88.00	48.00	48.00
M16	2.00	OH3	12.500	10.00	14.000	95.00	52.00	52.00
M18	2.50	OH4	14.000	11.00	15.500	100.00	55.00	55.00
M20	2.50	OH4	15.000	12.00	17.500	105.00	58.00	58.00
M22	2.50	OH4	17.000	13.00	19.500	115.00	63.00	63.00
M24	3.00	OH4	19.000	15.00	21.000	120.00	66.00	66.00
M30	3.50	OH4	23.000	17.00	16.500	135.00	74.00	74.00

JIS machine taps for ISO metric threads

Class 1
OH

Cutting Data page 10-11

Tool material	**HSS-E**
Surface finish	S
Type	N R40
Form	C
Cutting direction	right-hand



Article no. **1013**

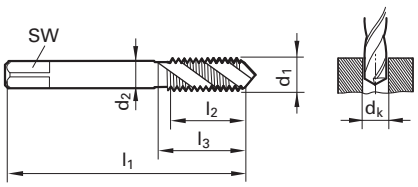
d1	P	Tolerance	d2	SW	dk	l1	l2	l3
	mm		mm		mm	mm	mm	mm
M 2	0.40	OH2	3.000	2.50	1.600	40.00	4.50	15.00
M 2.5	0.45	OH2	3.000	2.50	2.050	44.00	5.00	16.00
M 3	0.50	OH2	4.000	3.20	2.500	46.00	6.00	19.00
M 4	0.70	OH2	5.000	4.00	3.300	52.00	7.50	20.00
M 5	0.80	OH2	5.500	4.50	4.200	60.00	8.50	24.00
M 6	1.00	OH2	6.000	4.50	5.000	62.00	11.00	29.00
M 7	1.00	OH2	6.200	5.00	6.000	65.00	16.00	33.00
M 8	1.25	OH2	6.200	5.00	6.800	70.00	14.00	37.00
M 9	1.25	OH2	7.000	5.50	7.800	72.00	17.00	38.00
M10	1.50	OH2	7.000	5.50	8.500	75.00	16.00	41.00
M12	1.75	OH3	8.500	6.50	10.200	82.00	18.50	48.00
M14	2.00	OH3	10.500	8.00	12.000	88.00	20.00	48.00
M16	2.00	OH3	12.500	10.00	14.000	95.00	20.00	52.00
M18	2.50	OH4	14.000	11.00	15.500	100.00	25.00	55.00
M20	2.50	OH4	15.000	12.00	17.500	105.00	25.00	58.00

JIS machine taps for ISO metric threads

Class 2
OH

Cutting Data page 10-11

Tool material	HSS-E	
Surface finish	○	S
Type	N R40	N R40
Form	C	C
Cutting direction	right-hand	right-hand



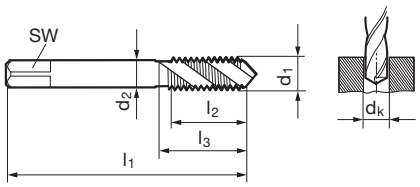
Article no.	4426	4427

d1	P	Tolerance	d2	SW	dk	l1	l2	l3
	mm		mm		mm	mm	mm	mm
M 2	0.40	OH4	3.000	2.50	1.600	40.00	4.50	15.00
M 2.5	0.45	OH4	3.000	2.50	2.050	44.00	5.00	16.00
M 3	0.50	OH4	4.000	3.20	2.500	46.00	6.00	19.00
M 4	0.70	OH4	5.000	4.00	3.300	52.00	7.50	20.00
M 5	0.80	OH4	5.500	4.50	4.200	60.00	8.50	24.00
M 6	1.00	OH4	6.000	4.50	5.000	62.00	11.00	29.00
M 8	1.25	OH5	6.200	5.00	6.800	70.00	14.00	37.00
M10	1.50	OH5	7.000	5.50	8.500	75.00	16.00	41.00
M12	1.75	OH5	8.500	6.50	10.200	82.00	18.50	48.00
M14	2.00	OH5	10.500	8.00	12.000	88.00	20.00	48.00
M16	2.00	OH5	12.500	10.00	14.000	95.00	20.00	52.00
M18	2.50	OH5	14.000	11.00	15.500	100.00	25.00	55.00
M20	2.50	OH5	15.000	12.00	17.500	105.00	25.00	58.00

JIS machine taps for ISO metric threads

Cutting Data page 10-11

Tool material	**HSS-E**
Surface finish	C
Type	N R40
Form	C
Cutting direction	right-hand



Article no. **7777**

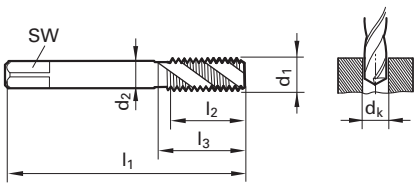
d1	P	Tolerance	d2	SW	dk	l1	l2	l3
	mm		mm		mm	mm	mm	mm
M3	0.500	OH2	4.000	3.200	2.50	46.000	6.000	19.000
M4	0.700	OH3	5.000	4.000	3.30	52.000	7.500	20.000
M5	0.800	OH3	5.500	4.500	4.20	60.000	8.500	24.000
M6	1.000	OH3	6.000	4.500	5.00	62.000	11.000	29.000
M8	1.250	OH3	6.200	5.000	6.80	70.000	14.000	37.000
M10	1.500	OH3	7.000	5.500	8.50	75.000	16.000	41.000
M12	1.750	OH4	8.500	6.500	10.20	82.000	18.500	48.000
M14	2.000	OH4	10.500	8.000	12.00	88.000	20.000	48.000
M16	2.000	OH4	12.500	10.000	14.00	95.000	20.000	52.000
M18	2.500	OH5	14.000	11.000	15.50	100.000	25.000	55.000
M20	2.500	OH5	15.000	12.000	17.50	105.000	25.000	58.000

JIS machine taps for ISO metric threads

Class 1
OH

Cutting Data page 10-11

Tool material	HSS-E	
Surface finish	○	S
Type	N R40	N R40
Form	E	E
Cutting direction	right-hand	right-hand



Article no.	4432	4433

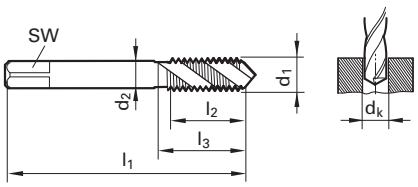
d1	P	Tolerance	d2	SW	dk	l1	l2	l3
	mm		mm		mm	mm	mm	mm
M 2	0.40	OH2	3.000	2.50	1.600	40.00	4.50	15.00
M 2.5	0.45	OH2	3.000	2.50	2.050	44.00	5.00	16.00
M 3	0.50	OH2	4.000	3.20	2.500	46.00	6.00	19.00
M 4	0.70	OH2	5.000	4.00	3.300	52.00	7.50	20.00
M 5	0.80	OH2	5.500	4.50	4.200	60.00	8.50	24.00
M 6	1.00	OH2	6.000	4.50	5.000	62.00	11.00	29.00
M 8	1.25	OH2	6.200	5.00	6.800	70.00	14.00	37.00
M10	1.50	OH2	7.000	5.50	8.500	75.00	16.00	41.00
M12	1.75	OH3	8.500	6.50	10.200	82.00	18.50	48.00
M14	2.00	OH3	10.500	8.00	12.000	88.00	20.00	48.00
M16	2.00	OH3	12.500	10.00	14.000	95.00	20.00	52.00
M18	2.50	OH4	14.000	11.00	15.500	100.00	25.00	55.00
M20	2.50	OH4	15.000	12.00	17.500	105.00	25.00	58.00

JIS machine taps for ISO metric threads

Class 1
OH

Cutting Data page 10-11

Tool material	HSS-E	
Surface finish	◯	Ⓢ
Type	VA R40	VA R40
Form	C	C
Cutting direction	right-hand	right-hand



	Article no.	4428	4429

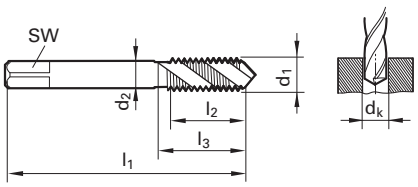
d1	P	Tolerance	d2	SW	dk	l1	l2	l3
	mm		mm		mm	mm	mm	mm
M 2	0.40	OH2	3.000	2.50	1.600	40.00	4.50	15.00
M 2.5	0.45	OH2	3.000	2.50	2.050	44.00	5.00	16.00
M 3	0.50	OH2	4.000	3.20	2.500	46.00	6.00	19.00
M 4	0.70	OH2	5.000	4.00	3.300	52.00	7.50	20.00
M 5	0.80	OH2	5.500	4.50	4.200	60.00	8.50	24.00
M 6	1.00	OH2	6.000	4.50	5.000	62.00	11.00	29.00
M 8	1.25	OH2	6.200	5.00	6.800	70.00	14.00	37.00
M10	1.50	OH2	7.000	5.50	8.500	75.00	16.00	41.00
M12	1.75	OH3	8.500	6.50	10.200	82.00	18.50	48.00
M14	2.00	OH3	10.500	8.00	12.000	88.00	20.00	48.00
M16	2.00	OH3	12.500	10.00	14.000	95.00	20.00	52.00
M18	2.50	OH4	14.000	11.00	15.500	100.00	25.00	55.00
M20	2.50	OH4	15.000	12.00	17.500	105.00	25.00	58.00

JIS machine taps for ISO metric threads

Class 2
OH

Cutting Data page 10-11

Tool material	HSS-E	
Surface finish	○	S
Type	VA R40	VA R40
Form	C	C
Cutting direction	right-hand	right-hand



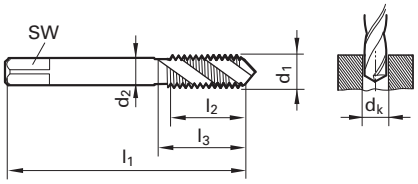
	Article no.	4430	4431

d1	P	Tolerance	d2	SW	dk	l1	l2	l3
	mm		mm		mm	mm	mm	mm
M 2	0.40	OH4	3.000	2.50	1.600	40.00	4.50	4.50
M 2.5	0.45	OH4	3.000	2.50	2.050	44.00	5.00	5.00
M 3	0.50	OH4	4.000	3.20	2.500	46.00	6.00	6.00
M 4	0.70	OH4	5.000	4.00	3.300	52.00	7.50	7.50
M 5	0.80	OH4	5.500	4.50	4.200	60.00	8.50	8.50
M 6	1.00	OH4	6.000	4.50	5.000	62.00	11.00	11.00
M 8	1.25	OH5	6.200	5.00	6.800	70.00	14.00	14.00
M10	1.50	OH5	7.000	5.50	8.500	75.00	16.00	16.00
M12	1.75	OH5	8.500	6.50	10.200	82.00	18.50	18.50
M14	2.00	OH5	10.500	8.00	12.000	88.00	20.00	20.00
M16	2.00	OH5	12.500	10.00	14.000	95.00	20.00	20.00
M18	2.50	OH5	14.000	11.00	15.500	100.00	25.00	25.00
M20	2.50	OH5	15.000	12.00	17.500	105.00	25.00	25.00

JIS machine taps for ISO metric threads

Cutting Data page 10-11

Tool material	**HSS-E-PM**
Surface finish	◯
Type	N R45
Form	C
Cutting direction	right-hand



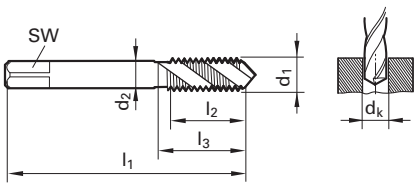
Article no. **4466**

d1	P	Tolerance	d2	SW	dk	l1	l2	l3
	mm		mm		mm	mm	mm	mm
M2	0.40	OH1.5	3.000	2.50	1.600	40.00	8.00	15.00
M2.5	0.45	OH2	3.000	2.50	2.050	44.00	9.00	16.00
M3	0.50	OH2	4.000	3.20	2.500	46.00	10.00	19.00
M4	0.70	OH3	5.000	4.00	3.300	52.00	12.00	20.00
M5	0.80	OH3	5.500	4.50	4.200	60.00	14.00	24.00
M6	1.00	OH3	6.000	4.50	5.000	62.00	16.00	29.00
M8	1.25	OH3	6.200	5.00	6.800	70.00	17.00	37.00
M10	1.50	OH3	7.000	5.50	8.500	75.00	20.00	41.00
M12	1.75	OH4	8.500	6.50	10.200	82.00	24.00	48.00
M16	2.00	OH4	12.500	10.00	14.000	95.00	26.00	52.00
M20	2.50	OH5	15.000	12.00	17.500	105.00	32.00	58.00

JIS machine taps for ISO metric threads

Cutting Data page 10-11

Tool material	**HSS-E-PM**
Surface finish	A
Type	N R45
Form	C
Cutting direction	right-hand



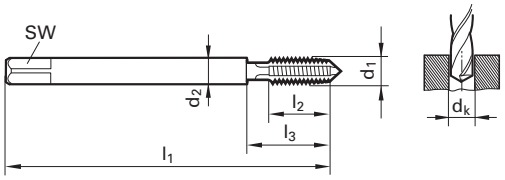
Article no. **4449**

d1	P	Tolerance	d2	SW	dk	l1	l2	l3
	mm		mm		mm	mm	mm	mm
M2	0.40	OH1.5	3.000	2.50	1.600	40.00	8.00	15.00
M2.5	0.45	OH2	3.000	2.50	2.050	44.00	9.00	16.00
M3	0.50	OH2	4.000	3.20	2.500	46.00	10.00	19.00
M4	0.70	OH3	5.000	4.00	3.300	52.00	12.00	20.00
M5	0.80	OH3	5.500	4.50	4.200	60.00	14.00	24.00
M6	1.00	OH3	6.000	4.50	5.000	62.00	16.00	29.00
M8	1.25	OH3	6.200	5.00	6.800	70.00	17.00	37.00
M10	1.50	OH3	7.000	5.50	8.500	75.00	20.00	41.00
M12	1.75	OH4	8.500	6.50	10.200	82.00	24.00	48.00
M14	2.00	OH4	10.500	9.00	12.000	88.00	26.00	48.00
M16	2.00	OH4	12.500	10.00	14.000	95.00	26.00	52.00
M18	2.50	OH5	14.000	11.00	15.500	100.00	30.00	55.00
M20	2.50	OH5	15.000	12.00	17.500	105.00	32.00	58.00

JIS machine taps with long shank for ISO metric threads

Cutting Data page 10-11

Tool material	**HSS-E**
Surface finish	◯
Type	N
Form	B
Cutting direction	right-hand



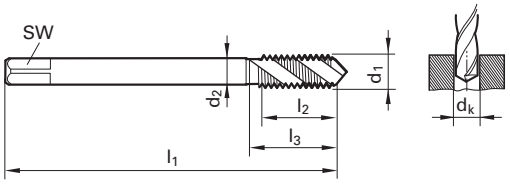
Article no. **4460**

Code no.	d1	P	Tolerance	d2	SW	dk	l1	l2	l3
		mm		mm		mm	mm	mm	mm
3.000	M3	0.50	OH2	4.000	3.20	2.500	100.00	10.00	19.00
4.000	M4	0.70	OH2	5.000	4.00	3.300	100.00	12.00	21.00
5.000	M5	0.80	OH2	5.500	4.50	4.200	100.00	14.00	25.00
6.000	M6	1.00	OH2	6.000	4.50	5.000	150.00	16.00	29.00
8.000	M8	1.25	OH2	6.200	5.00	6.800	150.00	17.00	37.00
10.000	M10	1.50	OH2	7.000	5.50	8.500	150.00	20.00	41.00
12.000	M12	1.75	OH2	8.500	6.50	10.200	150.00	24.00	48.00
14.000	M14	2.00	OH2	10.500	8.00	12.000	150.00	26.00	48.00
16.000	M16	2.00	OH2	12.500	10.00	14.000	150.00	26.00	52.00
20.000	M20	2.50	OH3	15.000	12.00	17.500	200.00	32.00	58.00

JIS machine taps with long shank for ISO metric threads

Cutting Data page 10-11

Tool material	**HSS-E**
Surface finish	◯
Type	N R40
Form	C
Cutting direction	right-hand



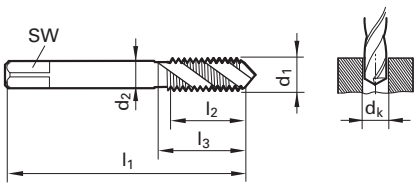
Article no. **4462**

Code no.	d1	P	Tolerance	d2	SW	dk	l1	l2	l3
		mm		mm		mm	mm	mm	mm
2.000	M2	0.40	OH1	3.000	2.50	1.600	100.00	4.50	15.00
2.500	M2.5	0.45	OH1	3.000	2.50	2.050	100.00	5.00	16.00
3.000	M3	0.50	OH2	4.000	3.20	2.500	100.00	6.00	19.00
3.010	M3	0.50	OH2	4.000	3.20	2.500	150.00	6.00	19.00
4.000	M4	0.70	OH2	5.000	4.00	3.300	100.00	7.50	20.00
4.010	M4	0.70	OH2	5.000	4.00	3.300	150.00	7.50	20.00
5.000	M5	0.80	OH2	5.500	4.50	4.200	100.00	8.00	25.00
5.010	M5	0.80	OH2	5.500	4.50	4.200	150.00	8.00	25.00
6.000	M6	1.00	OH2	6.000	4.50	5.000	100.00	11.00	29.00
6.010	M6	1.00	OH2	6.000	4.50	5.000	150.00	11.00	29.00
8.000	M8	1.25	OH2	6.200	5.00	6.800	100.00	14.00	37.00
8.010	M8	1.25	OH2	6.200	5.00	6.800	150.00	14.00	37.00
10.000	M10	1.50	OH2	7.000	5.50	8.500	100.00	16.00	41.00
10.010	M10	1.50	OH2	7.000	5.50	8.500	150.00	16.00	41.00
12.000	M12	1.75	OH2	8.500	6.50	10.200	100.00	18.50	48.00
12.010	M12	1.75	OH2	8.500	6.50	10.200	150.00	18.50	48.00
14.010	M14	2.00	OH2	10.500	8.00	12.000	150.00	20.00	48.00
16.010	M16	2.00	OH2	12.500	10.00	14.000	150.00	20.00	52.00
18.000	M18	2.50	OH3	14.000	11.00	15.500	200.00	25.00	55.00
20.010	M20	2.50	OH3	15.000	12.00	17.500	150.00	27.00	58.00
20.000	M20	2.50	OH3	15.000	12.00	17.500	200.00	25.00	58.00

JIS machine taps for ISO metric threads and less rigid machines

Cutting Data page 10-11

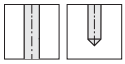
Tool material	**HSS-E**
Surface finish	◯
Type	N R40
Form	C
Cutting direction	right-hand



Article no. **4456**

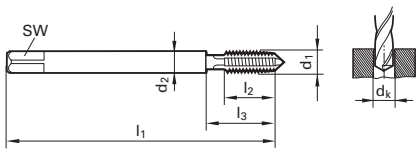
d1	P	Tolerance	d2	SW	dk	l1	l2	l3
	mm		mm		mm	mm	mm	mm
M2	0.40	OH2	3.000	2.50	1.600	40.00	4.50	15.00
M2.5	0.45	OH2	3.000	2.50	2.050	44.00	5.00	16.00
M3	0.50	OH2	4.000	3.20	2.500	46.00	6.00	19.00
M4	0.70	OH2	5.000	4.00	3.300	52.00	7.50	20.00
M5	0.80	OH2	5.500	4.50	4.200	60.00	8.50	24.00
M6	1.00	OH2	6.000	4.50	5.000	62.00	11.00	29.00
M8	1.25	OH2	6.200	5.00	6.800	70.00	14.00	37.00
M10	1.50	OH2	7.000	5.50	8.500	75.00	16.00	41.00
M12	1.75	OH3	8.500	6.50	10.200	82.00	18.50	48.00
M14	2.00	OH3	10.500	8.00	12.000	88.00	20.00	48.00
M16	2.00	OH3	12.500	10.00	14.000	95.00	20.00	52.00
M18	2.50	OH4	14.000	11.00	15.500	100.00	25.00	55.00
M20	2.50	OH4	15.000	12.00	17.500	105.00	25.00	58.00

JIS machine taps for ISO metric threads and for hardened steel (42-45 HRC)



Cutting Data page 10-11

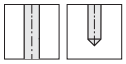
Tool material	**HSS-E-PM**
Surface finish	C
Type	H
Form	D
Cutting direction	right-hand



Article no. **4453**

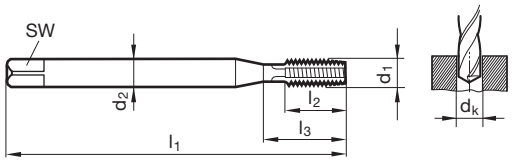
d1	P	Tolerance	d2	SW	dk	l1	l2	l3
	mm		mm		mm	mm	mm	mm
M3	0.50	OH3	4.000	3.20	2.600	46.00	11.00	19.00
M4	0.70	OH3	5.000	4.00	3.400	52.00	13.00	21.00
M5	0.80	OH3	5.500	4.50	4.300	60.00	16.00	24.00
M6	1.00	OH3	6.000	4.50	5.100	62.00	19.00	29.00
M8	1.25	OH3	6.200	5.00	6.900	70.00	22.00	
M10	1.50	OH3	7.000	5.50	8.600	75.00	24.00	
M12	1.75	OH3	8.500	6.50	10.400	82.00	29.00	

JIS machine taps for ISO metric threads and cast iron



Cutting Data page 10-11

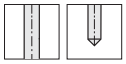
Tool material	**HSS-E**
Surface finish	◯
Type	H
Form	C
Cutting direction	right-hand



Article no. **4452**

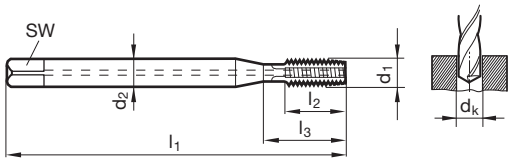
d1	P	Tolerance	d2	SW	dk	l1	l2	l3
	mm		mm		mm	mm	mm	mm
M2	0.40	OH2	3.000	2.50	1.600	40.00	8.00	15.00
M2.5	0.45	OH2	3.000	2.50	2.050	44.00	9.00	16.00
M3	0.50	OH3	4.000	3.20	2.500	46.00	11.00	19.00
M4	0.70	OH3	5.000	4.00	3.300	52.00	13.00	20.00
M5	0.80	OH3	5.500	4.50	4.200	60.00	16.00	24.00
M6	1.00	OH3	6.000	4.50	5.000	62.00	19.00	29.00
M8	1.25	OH4	6.200	5.00	6.800	70.00	22.00	37.00
M10	1.50	OH4	7.000	5.50	8.500	75.00	24.00	41.00
M12	1.75	OH5	8.500	6.50	10.200	82.00	29.00	48.00
M14	2.00	OH5	10.500	8.00	12.000	88.00	30.00	48.00
M16	2.00	OH5	12.500	10.00	14.000	95.00	32.00	52.00
M18	2.50	OH5	14.000	11.00	15.500	100.00	37.00	55.00
M20	2.50	OH5	15.000	12.00	17.500	105.00	37.00	58.00

JIS machine taps with IC for ISO metric threads and cast iron



Cutting Data page 10-11

Tool material	**HSS-E-PM**
Surface finish	C
Type	H
Form	C
Cutting direction	right-hand



Article no. **4448**

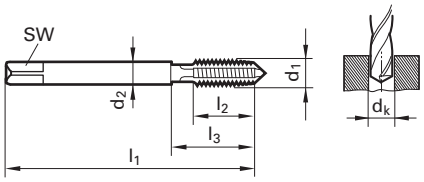
d1	P	Tolerance	d2	SW	dk	l1	l2	l3
	mm		mm		mm	mm	mm	mm
M5	0.80	OH3	5.500	4.50	4.200	60.00	16.00	24.00
M6	1.00	OH3	6.000	4.50	5.000	62.00	19.00	29.00
M8	1.25	OH4	6.200	5.00	6.800	70.00	22.00	37.00
M10	1.50	OH4	7.000	5.50	8.500	75.00	24.00	41.00
M12	1.75	OH5	8.500	6.50	10.200	82.00	29.00	48.00
M14	2.00	OH5	10.500	8.00	12.000	88.00	30.00	48.00
M16	2.00	OH5	12.500	10.00	14.000	95.00	32.00	52.00
M18	2.50	OH5	14.000	11.00	15.500	100.00	37.00	55.00
M20	2.50	OH5	15.000	12.00	17.500	105.00	37.00	58.00

JIS machine taps for ISO metric fine threads

Class 1
OH

Cutting Data page 10-11

Tool material	HSS-E	
Surface finish	◯	Ⓢ
Type	N	N
Form	B	B
Cutting direction	right-hand	right-hand



Article no.	**4434**	**4435**

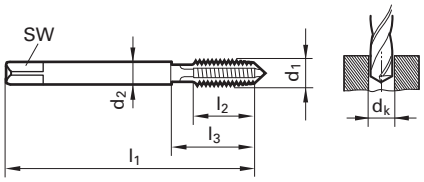
Code no.	d1 X P	Tolerance	d2	SW	dk	l1	l2	l3
			mm		mm	mm	mm	mm
6.004	M6x0.75	OH2	6.000	4.50	5.200	62.00	13.00	30.00
8.005	M8x1	OH2	6.200	5.00	7.000	70.00	16.00	35.00
10.005	M10x1	OH2	7.000	5.50	9.000	70.00	16.00	35.00
10.006	M10x1.25	OH2	7.000	5.50	8.800	75.00	20.00	39.00
12.005	M12x1	OH2	8.500	6.50	11.000	70.00	20.00	40.00
12.006	M12x1.25	OH2	8.500	6.50	10.800	80.00	20.00	40.00
12.007	M12x1.5	OH2	8.500	6.50	10.500	82.00	20.00	40.00
14.007	M14x1.5	OH2	10.500	8.00	12.500	88.00	20.00	40.00
16.007	M16x1.5	OH2	12.500	10.00	14.500	95.00	22.00	44.00
18.007	M18x1.5	OH2	14.000	11.00	16.500	100.00	25.00	55.00
20.007	M20x1.5	OH2	14.000	12.00	18.500	95.00	25.00	44.00

JIS machine taps for ISO metric fine threads

Class 1
OH

Cutting Data page 10-11

Tool material	HSS-E	
Surface finish	○	S
Type	VA	VA
Form	B	B
Cutting direction	right-hand	right-hand



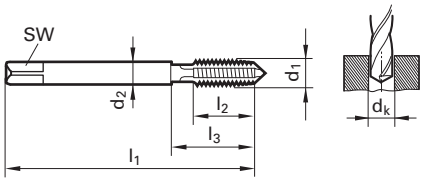
Article no.	**4436**	**4437**

Code no.	d1 X P	Tolerance	d2	SW	dk	l1	l2	l3
			mm		mm	mm	mm	mm
6.004	M6 x0,75	OH2	6.000	4.50	5.200	62.00	13.00	30.00
8.005	M8 x1	OH2	6.200	5.00	7.000	70.00	16.00	35.00
10.005	M10 x1	OH2	7.000	5.50	9.000	70.00	16.00	35.00
10.006	M10 x1,25	OH2	7.000	5.50	8.800	75.00	20.00	39.00
12.005	M12 x1	OH2	8.500	6.50	11.000	70.00	20.00	40.00
12.006	M12 x1,25	OH2	8.500	6.50	10.800	80.00	20.00	40.00
12.007	M12 x1,5	OH2	8.500	6.50	10.500	82.00	20.00	40.00
14.007	M14 x1,5	OH2	10.500	8.00	12.500	88.00	20.00	40.00
16.007	M16 x1,5	OH2	12.500	10.00	14.500	95.00	22.00	44.00
20.007	M20 x1,5	OH2	15.000	12.00	18.500	95.00	25.00	44.00

JIS machine taps for ISO metric fine threads

Cutting Data page 10-11

Tool material	HSS-E-PM	
Surface finish	○	A
Type	N	N
Form	B	B
Cutting direction	right-hand	right-hand



Article no.	**4469**	**4471**

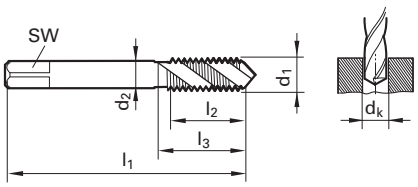
Code no.	d1 X P	Tolerance	d2	SW	dk	l1	l2	l3
			mm		mm	mm	mm	mm
6.004	M6x0.75	OH2	6.000	4.50	5.200	62.00	13.00	30.00
8.005	M8x1	OH3	6.200	5.00	7.000	70.00	16.00	35.00
10.005	M10x1	OH3	7.000	5.50	9.000	70.00	16.00	35.00
10.006	M10x1.25	OH3	7.000	5.50	8.800	75.00	20.00	39.00
12.005	M12x1	OH3	8.500	6.50	11.000	70.00	20.00	40.00
12.006	M12x1.25	OH3	8.500	6.50	10.800	80.00	20.00	40.00
12.007	M12x1.5	OH3	8.500	6.50	10.500	82.00	20.00	40.00
14.007	M14x1.5	OH3	10.500	8.00	12.500	88.00	20.00	40.00
16.007	M16x1.5	OH3	12.500	10.00	14.500	95.00	22.00	44.00
20.007	M20x1.5	OH4	14.000	12.00	18.500	95.00	25.00	44.00

JIS machine taps for ISO metric fine threads

Class 1
OH

Cutting Data page 10-11

Tool material	**HSS-E**
Surface finish	◯
Type	N R40
Form	C
Cutting direction	right-hand



Article no. **4438**

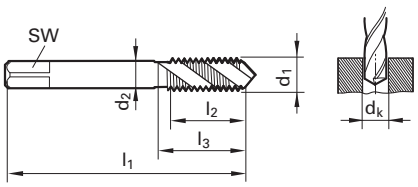
Code no.	d1 X P	Tolerance	d2	SW	dk	l1	l2	l3
			mm		mm	mm	mm	mm
4.003	M4x0.5	OH2	5.000	4.00	3.500	52.00	5.00	20.00
5.003	M5x0.5	OH2	5.500	4.50	4.500	60.00	5.00	25.00
6.003	M6x0.5	OH2	6.000	4.50	5.500	62.00	8.00	30.00
6.004	M6x0.75	OH2	6.000	4.50	5.200	62.00	8.00	30.00
8.004	M8x0.75	OH2	6.200	5.00	7.200	70.00	11.00	35.00
8.005	M8x1	OH2	6.200	5.00	7.000	70.00	11.00	35.00
10.005	M10x1	OH2	7.000	5.50	9.000	70.00	11.00	35.00
10.006	M10x1.25	OH2	7.000	5.50	8.800	75.00	14.00	39.00
12.005	M12x1	OH2	8.500	6.50	11.000	70.00	11.00	40.00
12.006	M12x1.25	OH2	8.500	6.50	10.800	80.00	16.00	40.00
12.007	M12x1.5	OH2	8.500	6.50	10.500	82.00	16.00	40.00
14.007	M14x1.5	OH2	10.500	8.00	12.500	88.00	15.00	40.00
16.007	M16x1.5	OH2	12.500	10.00	14.500	95.00	15.00	44.00
18.007	M18x1.5	OH2	14.000	11.00	16.500	100.00	16.00	55.00
20.007	M20x1.5	OH2	14.000	12.00	18.500	95.00	16.00	44.00
22.007	M22x1.5	OH2	17.000	13.000	20.500	115.00	16.00	63.00

JIS machine taps for ISO metric fine threads

Class 1
OH

Cutting Data page 10-11

Tool material	**HSS-E**
Surface finish	S
Type	N R40
Form	C
Cutting direction	right-hand



Article no. **4439**

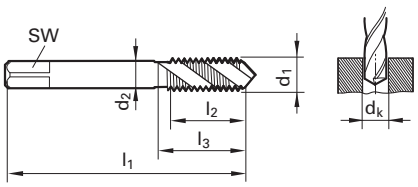
Code no.	d1 X P	Tolerance	d2	SW	dk	l1	l2	l3
			mm		mm	mm	mm	mm
6.004	M6x0.75	OH2	6.000	4.50	5.200	62.00	8.00	30.00
8.005	M8x1	OH2	6.200	5.00	7.000	70.00	11.00	35.00
10.005	M10x1	OH2	7.000	5.50	9.000	70.00	11.00	35.00
10.006	M10x1.25	OH2	7.000	5.50	8.800	75.00	14.00	39.00
12.005	M12x1	OH2	8.500	6.50	11.000	70.00	11.00	40.00
12.006	M12x1.25	OH2	8.500	6.50	10.800	80.00	16.00	40.00
12.007	M12x1.5	OH2	8.500	6.50	10.500	82.00	16.00	40.00
14.007	M14x1.5	OH2	10.500	8.00	12.500	88.00	15.00	40.00
16.007	M16x1.5	OH2	12.500	10.00	14.500	95.00	15.00	44.00
18.007	M18x1.5	OH2	14.000	11.00	16.500	100.00	16.00	55.00
20.007	M20x1.5	OH2	14.000	12.00	18.500	95.00	16.00	44.00

JIS machine taps for ISO metric fine threads

Class 1
OH

Cutting Data page 10-11

Tool material	HSS-E	
Surface finish	○	S
Type	VA R40	VA R40
Form	C	C
Cutting direction	right-hand	right-hand



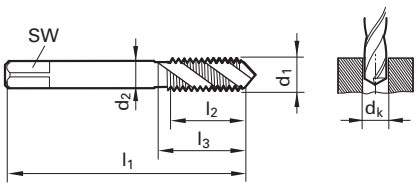
Article no.	4440	4441

Code no.	d1 X P	Tolerance	d2	SW	dk	l1	l2	l3
			mm		mm	mm	mm	mm
6.004	M6 x0.75	OH2	6.000	4.50	5.200	62.00	8.00	30.00
8.005	M8 x1	OH2	6.200	5.00	7.000	70.00	11.00	35.00
10.005	M10 x1	OH2	7.000	5.50	9.000	70.00	11.00	35.00
10.006	M10 x1.25	OH2	7.000	5.50	8.800	75.00	14.00	39.00
12.005	M12 x1	OH2	8.500	6.50	11.000	70.00	11.00	40.00
12.006	M12 x1.25	OH2	8.500	6.50	10.800	80.00	16.00	40.00
12.007	M12 x1.5	OH2	8.500	6.50	10.500	82.00	16.00	40.00
14.007	M14 x1.5	OH2	10.500	8.00	12.500	88.00	15.00	40.00
16.007	M16 x1.5	OH2	12.500	10.00	14.500	95.00	15.00	44.00
20.007	M20 x1.5	OH2	15.000	12.00	18.500	95.00	16.00	44.00

JIS machine taps for ISO metric fine threads

Cutting Data page 10-11

Tool material	HSS-E-PM	
Surface finish	○	A
Type	N R45	N R45
Form	C	C
Cutting direction	right-hand	right-hand



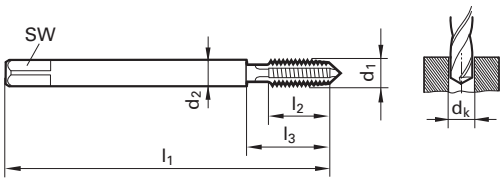
Article no.	**4467**	**4450**

Code no.	d1 X P	Tolerance	d2	SW	dk	l1	l2	l3
			mm		mm	mm	mm	mm
6.004	M6x0.75	OH2	6.000	4.50	5.200	62.00	8.00	30.00
8.005	M8x1	OH3	6.200	5.00	7.000	70.00	11.00	35.00
10.005	M10x1	OH3	7.000	5.50	9.000	70.00	11.00	35.00
10.006	M10x1.25	OH3	7.000	5.50	8.800	75.00	14.00	39.00
12.005	M12x1	OH3	8.500	6.50	11.000	70.00	11.00	40.00
12.006	M12x1.25	OH3	8.500	6.50	10.800	80.00	16.00	40.00
12.007	M12x1.5	OH3	8.500	6.50	10.500	82.00	16.00	40.00
14.007	M14x1.5	OH3	10.500	8.00	12.500	88.00	15.00	40.00
16.007	M16x1.5	OH3	12.500	10.00	14.500	95.00	15.00	44.00
20.007	M20x1.5	OH4	14.000	12.00	18.500	95.00	16.00	44.00

JIS machine taps with long shank for ISO metric fine threads

Cutting Data page 10-11

Tool material	**HSS-E**
Surface finish	◯
Type	N
Form	B
Cutting direction	right-hand



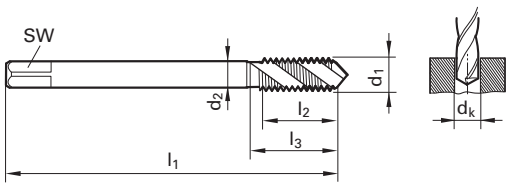
Article no. **4461**

Code no.	d1 X P	Tolerance	d2	SW	dk	l1	l2	l3
			mm		mm	mm	mm	mm
6.004	M6x0.75	OH2	6.000	4.50	5.200	150.00	13.00	30.00
8.005	M8x1	OH2	6.200	5.00	7.000	150.00	16.00	35.00
10.005	M10x1	OH2	7.000	5.50	9.000	150.00	16.00	35.00
10.006	M10x1.25	OH2	7.000	5.50	8.800	150.00	20.00	39.00
12.005	M12x1	OH2	8.500	6.50	11.000	150.00	20.00	40.00
12.006	M12x1.25	OH2	8.500	6.50	10.800	150.00	20.00	40.00
12.007	M12x1.5	OH2	8.500	6.50	10.500	150.00	20.00	40.00
14.007	M14x1.5	OH2	10.500	8.00	12.500	150.00	20.00	40.00
16.007	M16x1.5	OH2	12.500	10.00	14.500	150.00	22.00	44.00
20.007	M20x1.5	OH2	14.000	12.00	18.500	200.00	25.00	44.00

JIS machine taps with long shank for ISO metric fine threads

Cutting Data page 10-11

Tool material	**HSS-E**
Surface finish	◯
Type	N R40
Form	C
Cutting direction	right-hand



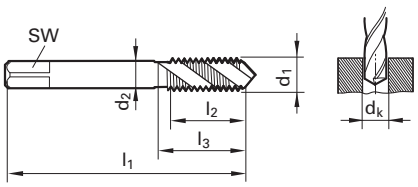
Article no. **4463**

Code no.	d1 X P	Tolerance	d2	SW	dk	l1	l2	l3
			mm		mm	mm	mm	mm
6.004	M6x0.75	OH2	6.000	4.50	5.200	150.00	8.00	30.00
8.005	M8x1	OH2	6.200	5.00	7.000	150.00	11.00	35.00
10.005	M10x1	OH2	7.000	5.50	9.000	150.00	11.00	35.00
10.006	M10x1.25	OH2	7.000	5.50	8.800	150.00	14.00	39.00
12.005	M12x1	OH2	8.500	6.50	11.000	150.00	11.00	40.00
12.006	M12x1.25	OH2	8.500	6.50	10.800	150.00	16.00	40.00
12.007	M12x1.5	OH2	8.500	6.50	10.500	150.00	16.00	40.00
14.007	M14x1.5	OH2	10.500	8.00	12.500	150.00	15.00	40.00
16.007	M16x1.5	OH2	12.500	10.00	14.500	150.00	15.00	44.00
20.007	M20x1.5	OH2	14.000	12.00	18.500	200.00	16.00	44.00

JIS machine taps for ISO metric fine threads and less rigid machines

Cutting Data page 10-11

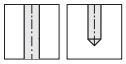
Tool material	**HSS-E**
Surface finish	◯
Type	N R40
Form	C
Cutting direction	right-hand



Article no. **4458**

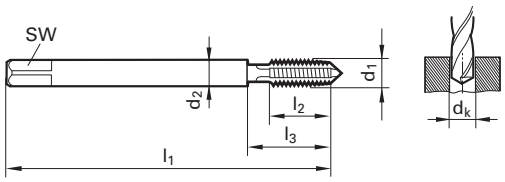
Code no.	d1 X P	Tolerance	d2	SW	dk	l1	l2	l3
			mm		mm	mm	mm	mm
6.004	M6x0.75	OH2	6.000	4.50	5.200	62.00	8.00	30.00
8.005	M8x1	OH3	6.200	5.00	7.000	70.00	11.00	35.00
10.005	M10x1	OH3	7.000	5.50	9.000	70.00	11.00	35.00
10.006	M10x1.25	OH3	7.000	5.50	8.800	75.00	14.00	39.00
12.005	M12x1	OH3	8.500	6.50	11.000	70.00	11.00	40.00
12.006	M12x1.25	OH3	8.500	6.50	10.800	80.00	16.00	40.00
12.007	M12x1.5	OH3	8.500	6.50	10.500	82.00	16.00	40.00
14.007	M14x1.5	OH3	10.500	8.00	12.500	88.00	15.00	40.00
16.007	M16x1.5	OH3	12.500	10.00	14.500	95.00	15.00	44.00
20.007	M20x1.5	OH4	14.000	12.00	18.500	95.00	16.00	44.00

JIS machine taps for ISO metric fine threads and for hardened steel (45-55 HRC)



Cutting Data page 10-11

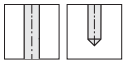
Tool material	**HSS-E-PM**
Surface finish	C
Type	H
Form	D
Cutting direction	right-hand



Article no. **4459**

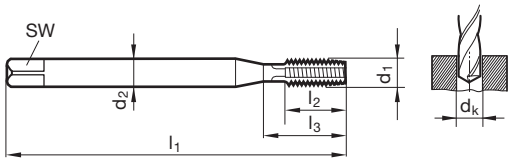
Code no.	d1 X P	Tolerance	d2	SW	dk	l1	l2	l3
			mm		mm	mm	mm	mm
8.005	M8x1	OH3	6.200	5.00	7.100	70.00	19.00	
10.005	M10x1	OH3	7.000	5.50	9.100	75.00	24.00	
10.006	M10x1.25	OH3	7.000	5.50	8.900	75.00	24.00	
12.006	M12x1.25	OH4	8.500	6.50	10.900	82.00	29.00	
12.007	M12x1.5	OH3	8.500	6.50	10.600	82.00	29.00	

JIS machine taps for ISO metric fine threads and cast iron



Cutting Data page 10-11

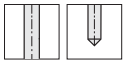
Tool material	**HSS-E**
Surface finish	◯
Type	H
Form	C
Cutting direction	right-hand



Article no. **4451**

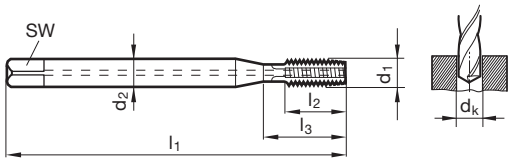
Code no.	d1 X P	Tolerance	d2	SW	dk	l1	l2	l3
			mm		mm	mm	mm	mm
6.004	M6x0.75	OH3	6.000	4.50	5.200	62.00	13.00	30.00
8.005	M8x1	OH3	6.200	5.00	7.000	70.00	16.00	35.00
10.005	M10x1	OH3	7.000	5.50	9.000	70.00	16.00	35.00
10.006	M10x1.25	OH4	7.000	5.50	8.800	75.00	20.00	39.00
12.005	M12x1	OH3	8.500	6.50	11.000	70.00	20.00	40.00
12.006	M12x1.25	OH4	8.500	6.50	10.800	80.00	20.00	40.00
12.007	M12x1.5	OH4	8.500	6.50	10.500	82.00	20.00	40.00
14.007	M14x1.5	OH4	10.500	8.00	12.500	88.00	20.00	40.00
16.007	M16x1.5	OH4	12.500	10.00	14.500	95.00	22.00	44.00
20.007	M20x1.5	OH4	15.000	12.00	18.500	95.00	25.00	44.00

JIS machine taps with IC for ISO metric fine threads and cast iron



Cutting Data page 10-11

Tool material	**HSS-E-PM**
Surface finish	◯
Type	H
Form	C
Cutting direction	right-hand



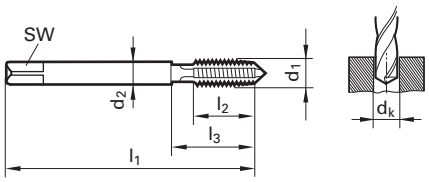
Article no. **4472**

Code no.	d1 X P	Tolerance	d2	SW	dk	l1	l2	l3
			mm		mm	mm	mm	mm
6.004	M6x0.75	OH3	6.000	4.50	5.200	62.00	13.00	30.00
8.005	M8x1	OH3	6.200	5.00	7.000	70.00	16.00	35.00
9.005	M9x1	OH3	7.000	5.50	8.000	70.00	16.00	35.00
10.005	M10x1	OH3	7.000	5.50	9.000	70.00	16.00	35.00
10.006	M10x1.25	OH4	7.000	5.50	8.800	75.00	20.00	39.00
12.005	M12x1	OH3	8.500	6.50	11.000	70.00	20.00	40.00
12.006	M12x1.25	OH4	8.500	6.50	10.800	80.00	20.00	40.00
12.007	M12x1.5	OH4	8.500	6.50	10.500	82.00	20.00	40.00
14.007	M14x1.5	OH4	10.500	8.00	12.500	88.00	20.00	40.00
16.007	M16x1.5	OH4	12.500	10.00	14.500	95.00	22.00	44.00
20.007	M20x1.5	OH4	15.000	12.00	18.500	95.00	25.00	44.00

JIS machine taps for UNC threads

Cutting Data page 10-11

Tool material	**HSS-E**
Surface finish	◯
Type	N
Form	B
Cutting direction	right-hand



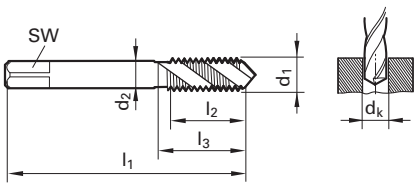
Article no. **4465**

Code no.	d1 X P	Tolerance	d2	SW	dk	l1	l2	l3
			mm		mm	mm	mm	mm
3.505	No.6-32	OH2	4.00	3.20	2.85	48.00	12.00	21.00
4.166	No.8-32	OH2	5.00	4.00	3.50	52.00	12.00	21.00
4.826	No.10-24	OH2	5.50	4.50	3.90	60.00	14.00	25.00
5.486	No.12-24	OH2	5.50	4.50	4.50	60.00	16.00	25.00
6.350	1/4-20	OH3	6.00	4.50	5.10	62.00	16.00	29.00
7.938	5/16-18	OH3	6.10	5.00	6.60	70.00	18.00	37.00
9.525	3/8-16	OH3	7.00	5.50	8.00	75.00	20.00	41.00
11.113	7/16-14	OH3	8.00	6.00	9.40	80.00	22.00	48.00
12.700	1/2-13	OH3	9.00	7.00	10.80	85.00	25.00	48.00
14.288	9/16-12	OH3	10.50	8.00	12.20	90.00	28.00	48.00
15.875	5/8-11	OH3	12.00	9.00	13.50	95.00	30.00	52.00
19.050	3/4-10	OH3	14.00	11.00	16.50	105.00	33.00	58.00
22.225	7/8-9	OH4	17.00	13.00	19.50	115.00	35.00	63.00
25.400	1-8	OH4	20.00	15.00	22.25	125.00	38.00	68.00

JIS machine taps for UNC threads

Cutting Data page 10-11

Tool material	**HSS-E**
Surface finish	◯
Type	N R40
Form	C
Cutting direction	right-hand



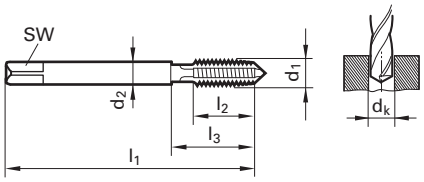
Article no. **4454**

Code no.	d1 X P	Tolerance	d2	SW	dk	l1	l2	l3
			mm		mm	mm	mm	mm
2.184	No.2-56	OH1	3.00	2.50	1.85	42.00	5.00	21.00
2.845	No.4-40	OH1	3.00	2.50	2.35	44.00	7.00	21.00
3.175	No.5-40	OH1	4.00	3.20	2.65	46.00	7.00	21.00
3.505	No.6-32	OH2	4.00	3.20	2.85	48.00	8.00	21.00
4.166	No.8-32	OH2	5.00	4.00	3.50	52.00	8.00	21.00
4.826	No.10-24	OH2	5.50	4.50	3.90	60.00	11.00	25.00
5.486	No.12-24	OH2	5.50	4.50	4.50	60.00	11.00	25.00
6.350	1/4-20	OH3	6.00	4.50	5.10	62.00	13.00	29.00
7.938	5/16-18	OH3	6.10	5.00	6.60	70.00	14.00	37.00
9.525	3/8-16	OH3	7.00	5.50	8.00	75.00	16.00	41.00
11.113	7/16-14	OH3	8.00	6.00	9.40	80.00	18.00	48.00
12.700	1/2-13	OH3	9.00	7.00	10.80	85.00	20.00	48.00
14.288	9/16-12	OH3	10.50	8.00	12.20	90.00	21.00	48.00
15.875	5/8-11	OH3	12.00	9.00	13.50	95.00	24.00	52.00
19.050	3/4-10	OH3	14.00	11.00	16.50	105.00	25.00	58.00
22.225	7/8-9	OH4	17.00	13.00	19.50	115.00	28.00	63.00
25.400	1-8	OH4	20.00	15.00	22.25	125.00	32.00	68.00

JIS machine taps for UNF threads

Cutting Data page 10-11

Tool material	**HSS-E**
Surface finish	◯
Type	N
Form	B
Cutting direction	right-hand



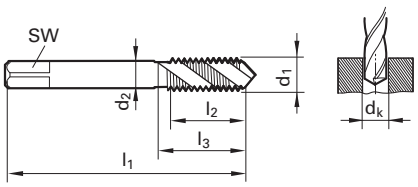
Article no. **4455**

Code no.	d1 X P	Tolerance	d2	SW	dk	l1	l2	l3
			mm		mm	mm	mm	mm
3.505	No.6-40	OH2	4.00	3.20	2.95	48.00	11.00	21.00
4.166	No.8-36	OH2	5.00	4.00	3.50	52.00	12.00	21.00
4.826	No.10-32	OH2	5.50	4.50	4.10	60.00	14.00	25.00
5.486	No.12-28	OH2	5.50	4.50	4.60	60.00	16.00	25.00
6.350	1/4_28	OH2	6.00	4.50	5.50	62.00	16.00	29.00
7.938	5/16-24	OH3	6.10	5.00	6.90	70.00	18.00	37.00
9.525	3/8_24	OH3	7.00	5.50	8.50	75.00	18.00	41.00
11.113	7/16-20	OH3	8.00	6.00	9.90	80.00	22.00	48.00
12.700	1/2-20	OH3	9.00	7.00	11.50	85.00	20.00	48.00
14.288	9/16-18	OH3	10.50	8.00	12.90	90.00	22.00	48.00
15.875	5/8-18	OH3	12.00	9.00	14.50	95.00	22.00	52.00
19.050	3/4-16	OH3	14.00	11.00	17.50	105.00	25.00	58.00
22.225	7/8-14	OH3	17.00	13.00	20.40	115.00	25.00	63.00
25.400	1-12	OH3	20.00	15.00	23.25	125.00	28.00	68.00

JIS machine taps for UNF threads

Cutting Data page 10-11

Tool material	**HSS-E**
Surface finish	◯
Type	N R40
Form	C
Cutting direction	right-hand



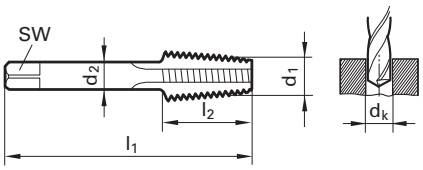
Article no. **4457**

Code no.	d1 X P	Tolerance	d2	SW	dk	l1	l2	l3
			mm		mm	mm	mm	mm
3.505	No.6-40	OH2	4.00	3.20	2.95	48.00	6.50	21.00
4.166	No.8-36	OH2	5.00	4.00	3.50	52.00	7.00	21.00
4.826	No.10-32	OH2	5.50	4.50	4.10	60.00	8.50	25.00
5.486	No.12-28	OH2	5.50	4.50	4.60	60.00	9.00	25.00
6.350	1/4-28	OH2	6.00	4.50	5.50	62.00	9.00	29.00
7.938	5/16-24	OH3	6.10	5.00	6.90	70.00	11.00	37.00
9.525	3/8-24	OH3	7.00	5.50	8.50	75.00	11.00	41.00
11.113	7/16-20	OH3	8.00	6.00	9.90	80.00	13.00	48.00
12.700	1/2-20	OH3	9.00	7.00	11.50	85.00	13.00	48.00
14.288	9/16-18	OH3	10.50	8.00	12.90	90.00	14.00	48.00
15.875	5/8-18	OH3	12.00	9.00	14.50	95.00	15.00	52.00
19.050	3/4-16	OH3	14.00	11.00	17.50	105.00	16.00	58.00
22.225	7/8-14	OH3	17.00	13.00	20.40	115.00	19.00	63.00
25.400	1-12	OH3	20.00	15.00	23.25	125.00	22.00	68.00

JIS machine taps for PT threads

Cutting Data page 10-11

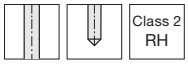
Tool material	**HSS-E**
Surface finish	◯
Type	N R25
Form	C
Cutting direction	right-hand



Article no. **4464**

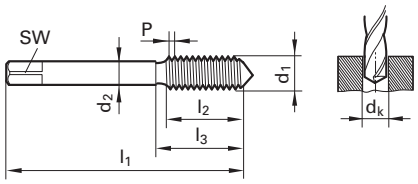
Code no.	d1 X P	Tolerance	d2	SW	dk	l1	l2	l3
			mm		mm	mm	mm	mm
7.723	PT1/16-28	JIS2	8.000	6.00	6.20	55.00	18.00	
9.728	PT1/8-28	JIS2	8.000	6.00	8.20	55.00	19.00	
13.157	PT1/4-19	JIS2	11.00	9.00	10.90	62.00	28.00	
16.662	PT3/8-19	JIS2	14.00	11.00	14.40	65.00	28.00	
20.955	PT1/2-14	JIS2	18.00	14.00	18.00	80.00	35.00	
26.441	PT3/4-14	JIS2	23.00	17.00	23.00	85.00	35.00	
33.249	PT1-11	JIS2	26.00	21.00	29.00	95.00	45.00	

JIS fluteless taps w/o oil grooves for ISO metric threads



Cutting Data page 10-11

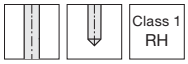
Tool material	**HSS-E**
Surface finish	S
Type	N
Form	C
Cutting direction	right-hand



Article no. **1017**

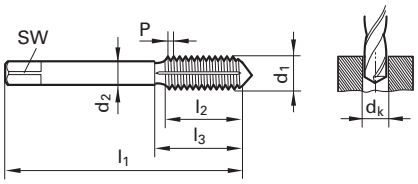
d1	P	Tolerance	d2	SW	dk	l1	l2	l3
	mm		mm		mm	mm	mm	mm
M 1	0.25	RH4	3.000	2.50	0.900	36.00	4.00	
M 1.2	0.25	RH4	3.000	2.50	1.100	36.00	4.80	
M 1.4	0.30	RH4	3.000	2.50	1.250	36.00	5.60	
M 1.6	0.35	RH4	3.000	2.50	1.450	36.00	6.40	
M 1.7	0.35	RH4	3.000	2.50	1.550	36.00	6.80	
M 1.8	0.35	RH4	3.000	2.50	1.650	36.00	7.20	
M 2	0.40	RH4	3.000	2.50	1.850	40.00	8.00	15.00
M 2.5	0.45	RH4	3.000	2.50	2.300	44.00	9.00	16.00
M 3	0.50	RH5	4.000	3.20	2.800	46.00	10.00	19.00
M 4	0.70	RH6	5.000	4.00	3.700	52.00	12.00	20.00
M 5	0.80	RH6	5.500	4.50	4.650	60.00	14.00	24.00
M 6	1.00	RH7	6.000	4.50	5.550	62.00	16.00	29.00
M 8	1.25	RH7	6.200	5.00	7.400	70.00	17.00	37.00
M10	1.50	RH7	7.000	5.50	9.300	75.00	20.00	41.00
M12	1.75	RH8	8.500	6.50	11.200	82.00	24.00	48.00
M14	2.00	RH10	10.500	8.00	13.100	88.00	26.00	48.00
M16	2.00	RH10	12.500	10.00	15.100	95.00	26.00	52.00
M18	2.50	RH11	14.000	11.00	16.900	100.00	30.00	55.00
M20	2.50	RH11	15.000	12.00	18.900	105.00	32.00	58.00

JIS fluteless taps with oil grooves for ISO metric threads



Cutting Data page 10-11

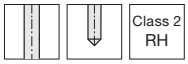
Tool material	**HSS-E**
Surface finish	S
Type	N
Form	C
Cutting direction	right-hand



Article no. **4442**

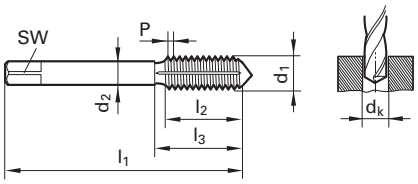
d1	P	Tolerance	d2	SW	dk	l1	l2	l3
	mm		mm		mm	mm	mm	mm
M 4	0.70	RH4	5.000	4.00	3.700	52.00	12.00	20.00
M 5	0.80	RH4	5.500	4.50	4.650	60.00	14.00	24.00
M 6	1.00	RH5	6.000	4.50	5.550	62.00	16.00	29.00
M 8	1.25	RH5	6.200	5.00	7.400	70.00	17.00	37.00
M10	1.50	RH5	7.000	5.50	9.300	75.00	20.00	41.00
M12	1.75	RH5	8.500	6.50	11.200	82.00	24.00	48.00
M16	2.00	RH6	12.500	10.00	15.100	95.00	26.00	52.00
M20	2.50	RH6	15.000	12.00	18.900	105.00	32.00	58.00

JIS fluteless taps with oil grooves for ISO metric threads



Cutting Data page 10-11

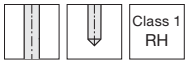
Tool material	**HSS-E**
Surface finish	S
Type	N
Form	C
Cutting direction	right-hand



Article no. **4443**

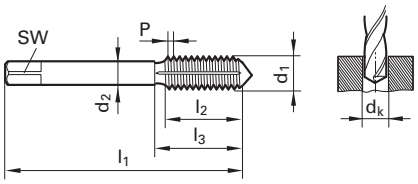
d1	P	Tolerance	d2	SW	dk	l1	l2	l3
	mm		mm		mm	mm	mm	mm
M 4	0.70	RH6	5.000	4.00	3.700	52.00	12.00	20.00
M 5	0.80	RH6	5.500	4.50	4.650	60.00	14.00	24.00
M 6	1.00	RH7	6.000	4.50	5.550	62.00	16.00	29.00
M 8	1.25	RH7	6.200	5.00	7.400	70.00	17.00	37.00
M10	1.50	RH7	7.000	5.50	9.300	75.00	20.00	41.00
M12	1.75	RH8	8.500	6.50	11.200	82.00	24.00	48.00
M16	2.00	RH10	12.500	10.00	15.100	95.00	26.00	52.00
M20	2.50	RH11	15.000	12.00	18.900	105.00	32.00	58.00

JIS fluteless taps with oil grooves for ISO metric fine threads



Cutting Data page 10-11

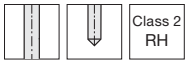
Tool material	**HSS-E**
Surface finish	S
Type	N
Form	C
Cutting direction	right-hand



Article no. **4444**

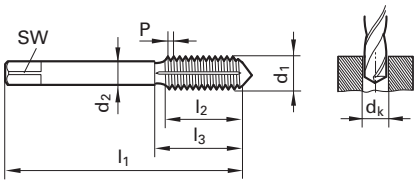
Code no.	d1xP	Tolerance	d2	SW	dk	l1	l2	l3
			mm		mm	mm	mm	mm
6.004	M6 x0.75	RH4	6.000	4.50	5.650	62.00	13.00	30.00
8.005	M8 x1	RH4	6.200	5.00	7.550	70.00	16.00	35.00
10.005	M10 x1	RH5	7.000	5.50	9.550	70.00	16.00	35.00
10.006	M10 x1.25	RH5	7.000	5.50	9.400	75.00	20.00	39.00
12.005	M12 x1	RH5	8.500	6.50	11.550	70.00	20.00	40.00
12.006	M12 x1.25	RH5	8.500	6.50	11.400	80.00	20.00	40.00
12.007	M12 x1.5	RH5	8.500	6.50	11.300	82.00	20.00	40.00
14.007	M14 x1.5	RH5	10.500	8.00	13.300	88.00	20.00	40.00
16.007	M16 x1.5	RH5	12.500	10.00	15.300	95.00	22.00	44.00
20.007	M20 x1.5	RH6	15.000	12.00	19.300	95.00	25.00	44.00

JIS fluteless taps with oil grooves for ISO metric fine threads



Cutting Data page 10-11

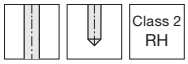
Tool material	**HSS-E**
Surface finish	Ⓢ
Type	N
Form	C
Cutting direction	right-hand



Article no. **4445**

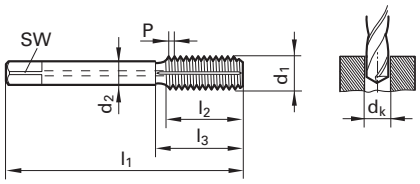
Code no.	d1xP	Tolerance	d2	SW	dk	l1	l2	l3
			mm		mm	mm	mm	mm
6.004	M6 x0.75	RH6	6.000	4.50	5.650	62.00	13.00	30.00
8.005	M8 x1	RH7	6.200	5.00	7.550	70.00	16.00	35.00
10.005	M10 x1	RH7	7.000	5.50	9.550	70.00	16.00	35.00
10.006	M10 x1.25	RH7	7.000	5.50	9.400	75.00	20.00	39.00
12.005	M12 x1	RH7	8.500	6.50	11.550	70.00	20.00	40.00
12.006	M12 x1.25	RH7	8.500	6.50	11.400	80.00	20.00	40.00
12.007	M12 x1.5	RH7	8.500	6.50	11.300	82.00	20.00	40.00
14.007	M14 x1.5	RH9	10.500	8.00	13.300	88.00	20.00	40.00
16.007	M16 x1.5	RH9	12.500	10.00	15.300	95.00	22.00	44.00
20.007	M20 x1.5	RH10	15.000	12.00	19.300	95.00	25.00	44.00

JIS fluteless taps with oil grooves for ISO metric threads



Cutting Data page 10-11

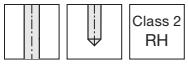
Tool material	**HSS-E**
Surface finish	Ⓢ
Type	N
Form	C
Cutting direction	right-hand



Article no. **4446**

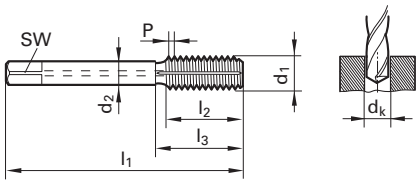
d1	P	Tolerance	d2	SW	dk	l1	l2	l3
	mm		mm		mm	mm	mm	mm
M 5	0.80	RH6	5.500	4.50	4.650	60.00	14.00	24.00
M 6	1.00	RH7	6.000	4.50	5.550	62.00	16.00	29.00
M 8	1.25	RH7	6.200	5.00	7.400	70.00	17.00	37.00
M10	1.50	RH7	7.000	5.50	9.300	75.00	20.00	41.00
M12	1.75	RH8	8.500	6.50	11.200	82.00	24.00	48.00
M16	2.00	RH10	12.500	10.00	15.100	95.00	26.00	52.00
M20	2.50	RH11	15.000	12.00	18.900	105.00	32.00	58.00

JIS fluteless taps with oil grooves for ISO metric threads



Cutting Data page 10-11

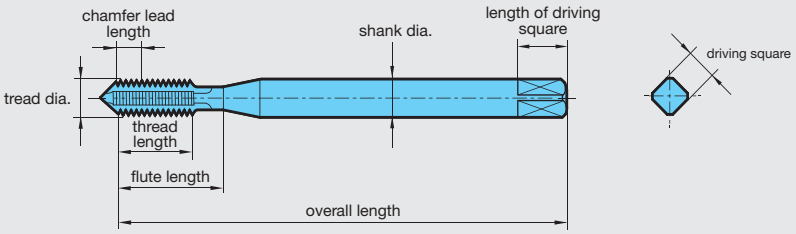
Tool material	**Solid carbide**
Surface finish	A
Type	N
Form	C
Cutting direction	right-hand



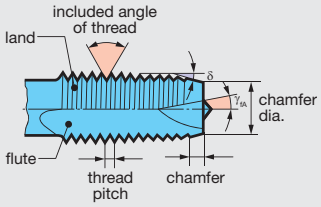
Article no. **4447**

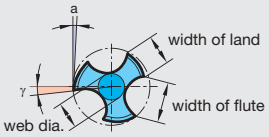
d1	P	Tolerance	d2	SW	dk	l1	l2	l3
	mm		mm		mm	mm	mm	mm
M 5	0.80	RH6	5.500	4.50	4.650	60.00	8.50	24.00
M 6	1.00	RH7	6.000	4.50	5.550	62.00	11.00	29.00
M 8	1.25	RH7	6.200	5.00	7.400	70.00	14.00	37.00
M10	1.50	RH7	7.000	5.50	9.300	75.00	16.00	41.00
M12	1.75	RH8	8.500	6.50	11.200	82.00	18.50	48.00
M16	2.00	RH10	12.500	10.00	15.100	95.00	20.00	52.00
M20	2.50	RH11	15.000	12.00	18.900	105.00	25.00	58.00

Definitions and angles, centres and flute forms



δ = chamfer angle
γ_{fA} = spiral point angle
α = clearance angle
γ = rake angle





Flute forms

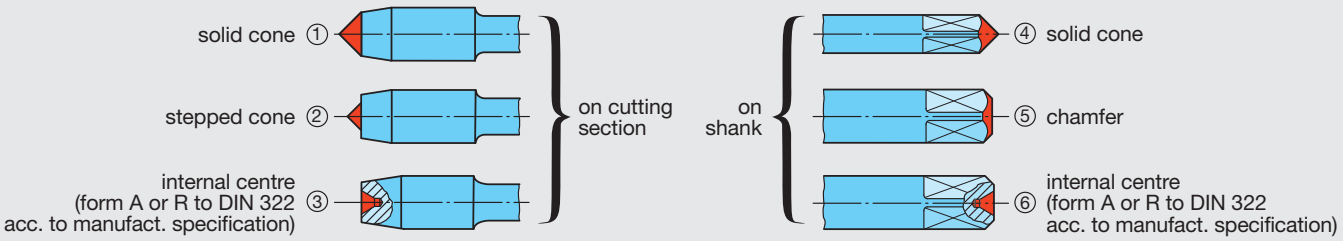
straight fluted, form C **without spiral point**

straight fluted, form B **with spiral point**

helix angle **15°**

helix angle **40°**

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



Thread dia. range mm	Centre on cutting section		Centre on shank
	with chamfer forms A, C, D, E	with chamfer form B	
≤ 4.2	①	①	④⑤⑥
> 4.2 … 5.6	①②	①	④⑤⑥
> 5.6 … 10.0	①②③	①②③	④⑤⑥
> 10.0	③	③	⑥

Coolant duct geometries

axial coolant delivery with axial coolant duct exit

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

Chamfer forms, selection and application

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

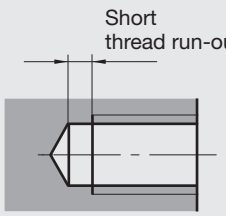
medium, 3.5 - 5 threads
for short
through holes

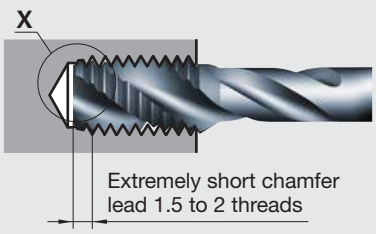
Form E

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

Why is Guhring increasingly offering Form E taps?

In addition to the conventional Form B and C for machine taps we are increasingly including Form E tools in our standard range. Thus, we are taking into account the increasing demand for taps with which threads can be produced as close as possible to the bottom of the bore when machining blind holes and to produce deepest threads as possible when machining through holes.



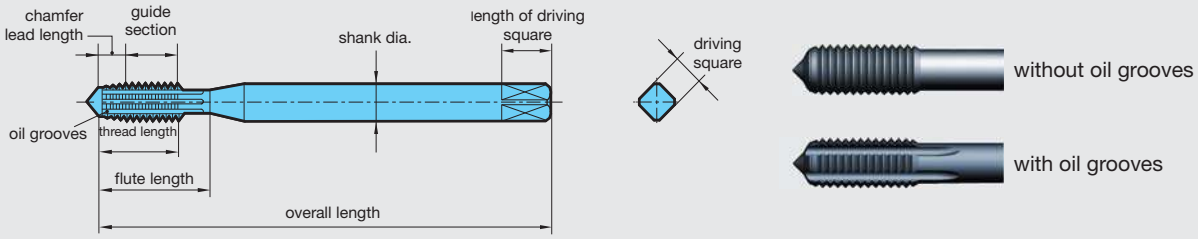


X 2:1

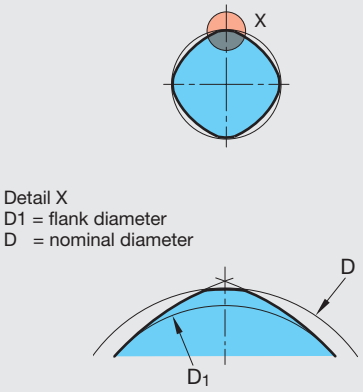
Taps with Form E feature an extremely short chamfer lead with only 1.5 to 2 threads. On modern machines and tapping chucks any inferior guidance of the tool in comparison to Forms B and C with long chamfer lead are eliminated. The run-out of the tap is impossible thanks to the rigid tool clamping. Taps with Form E can provide a significant advantage in the production of very deep reaching, fully tapped threads.

Definitions, angles, centres, thread tolerances and fits

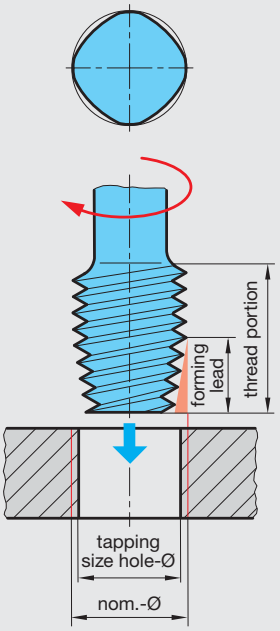
Thread portion



Cross section of fluteless tap

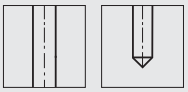


The principle



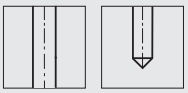
Types of tapping size hole

with fluteless taps without oil grooves for thread depth ≤ 1 x D

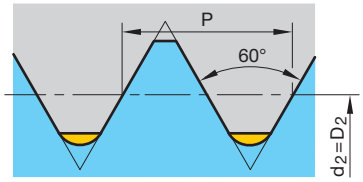
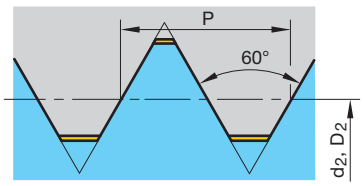
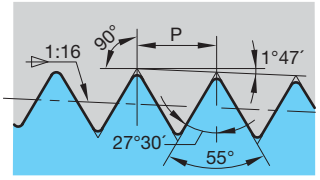


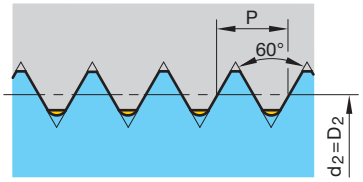
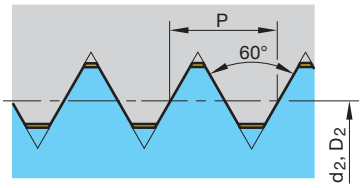
for thread depth ≥ 1 x D

with fluteless taps with oil grooves for all thread depths



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
PT Taper Pipe Thread (identical to Rc and BSPT)		
	JIS B 0203 Japanese Industrial Standard	Internal thread for 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

external thread

internal thread

play

Std. ISO metric threads DIN 13

nom. Ø	pitch P	tapping size hole Ø	core diameter of int. thread 6H	
		DIN 336	min.	max.
	mm	mm	mm	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

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 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

UNC threads ASME B1.1

nom. Ø	threads per inch	tapping size hole Ø DIN 336 mm	core diameter of int. thread 2B min. mm	max. mm
Nr. 1 -	64	**1.55**	1.425	1.580
Nr. 2 -	56	**1.85**	1.694	1.872
Nr. 3 -	48	**2.10**	1.941	2.146
Nr. 4 -	40	**2.35**	2.157	2.385
Nr. 5 -	40	**2.65**	2.487	2.698
Nr. 6 -	32	**2.85**	2.642	2.896
Nr. 8 -	32	**3.50**	3.302	3.531
Nr. 10 -	24	**3.90**	3.683	3.937
Nr. 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

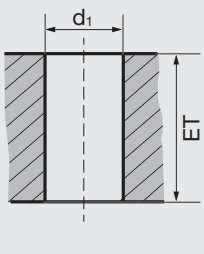
UNF threads ASME B1.1

nom. Ø	threads per inch	tapping size hole Ø DIN 336 mm	core diameter of int. thread 2B min. mm	max. mm
Nr. 1 -	72	**1.55**	1.473	1.610
Nr. 2 -	64	**1.85**	1.755	1.910
Nr. 3 -	56	**2.15**	2.024	2.197
Nr. 4 -	48	**2.40**	2.271	2.459
Nr. 5 -	44	**2.70**	2.550	2.741
Nr. 6 -	40	**2.95**	2.819	3.023
Nr. 8 -	36	**3.50**	3.404	3.607
Nr. 10 -	32	**4.10**	3.962	4.166
Nr. 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

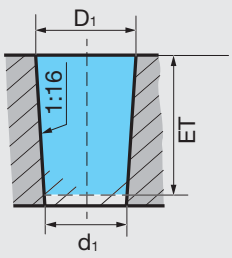
PT JIS B 0203 TAPER PIPE THREAD CONE 1:16

nom. Ø	threads per inch	tapping size hole Ø **Version A** d1	tapping size hole Ø Ø **Version B** D1	cutting depth **ET** mm
PT 1/16 -	28	6.20	6.60	6.20
PT 1/8 -	28	8.20	8.60	6.20
PT 1/4 -	19	10.90	11.50	9.40
PT 3/8 -	19	14.40	15.00	9.70
PT 1/2 -	14	17.90	18.70	12.70
PT 3/4 -	14	23.30	24.20	14.10
PT 1 -	11	29.30	30.30	16.20

Version A
(avoid if possible)



Version B



Std. ISO metric threads DIN 13

nom. Ø	pitch P	tapping size hole Ø	tapping size hole Ø		core diameter of int. thread 7H	
			min.	max.	min.	max.
	mm	mm	mm	mm	mm	mm
M 1	0.25		0.729	0.785		
M 1.1	0.25		0.829	0.885		
M 1.2	0.25		0.929	0.985		
M 1.4	0.30		1.076	1.142		
M 1.6	0.35		1.221	1.321		
M 1.8	0.35		1.421	1.521		
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

Std. ISO metric fine threads DIN 13

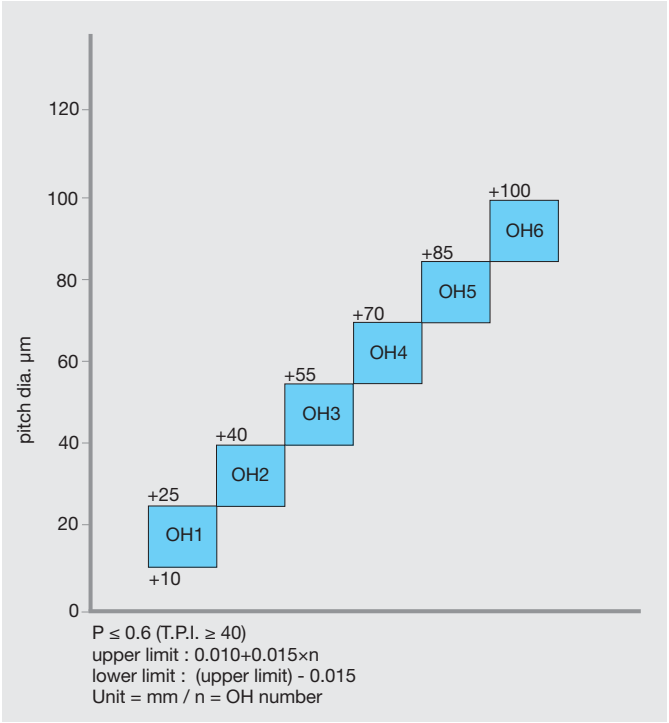
nom. Ø	x	pitch P	tapping size hole Ø	tapping size hole Ø		core diameter of int. thread 7H	
				min.	max.	min.	max.
		mm	mm	mm	mm	mm	mm
M 6	x	0.75	**5.65**	5.62	5.70	5.188	5.424
M 7	x	0.75	**6.65**	6.62	6.70	6.188	6.424
M 8	x	0.75	**7.65**	7.62	7.70	7.188	7.424
M 8	x	1.00	**7.55**	7.52	7.62	6.917	7.217
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 20	x	1.50	**19.30**	19.26	19.38	18.376	19.751

Tapping size hole dia. 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.

Pitch ≤ 0.6

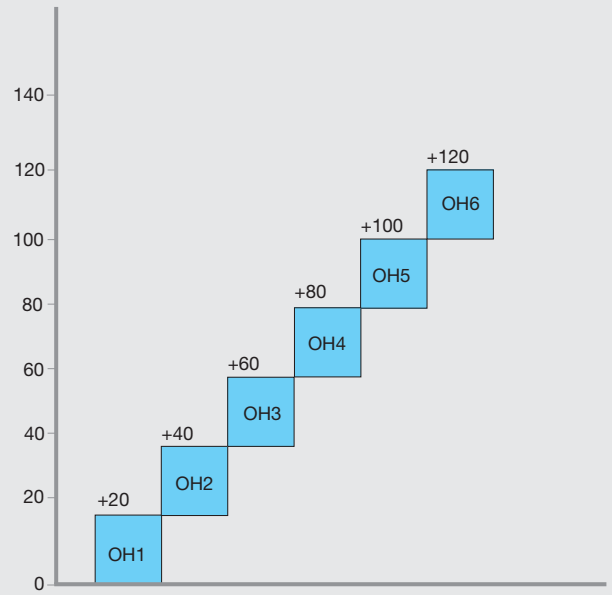
OH limits



P ≤ 0.6 (T.P.I. ≥ 40)
upper limit : 0.010+0.015×n
lower limit : (upper limit) - 0.015
Unit = mm / n = OH number

Pitch ≥ 0.7

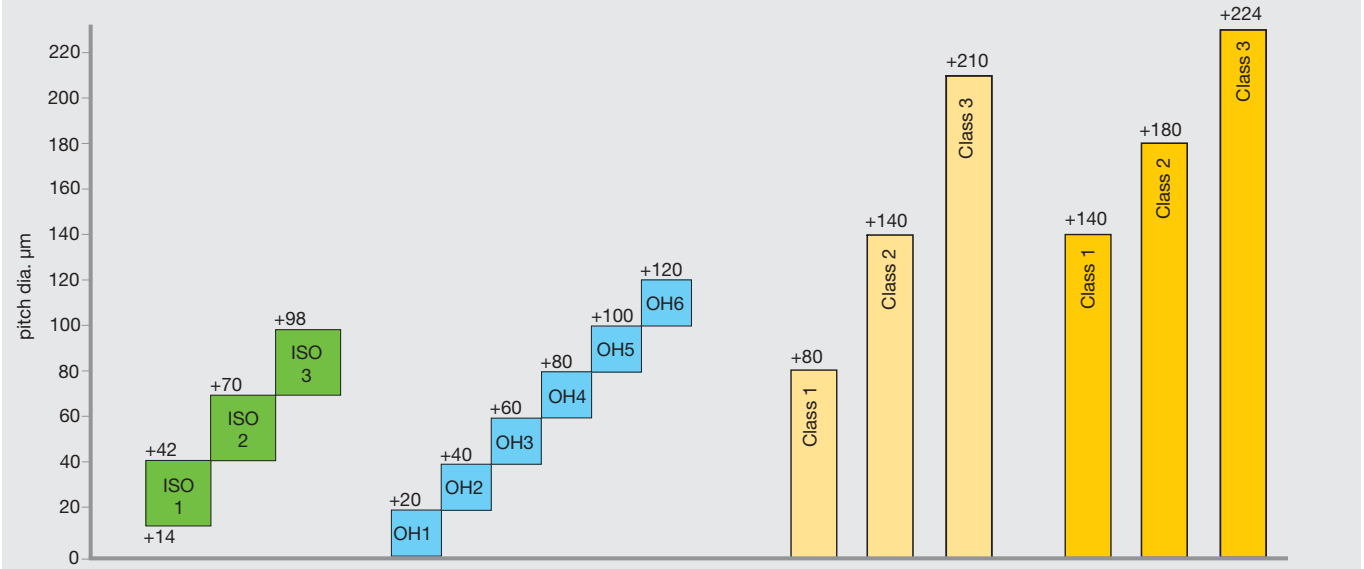
OH limits

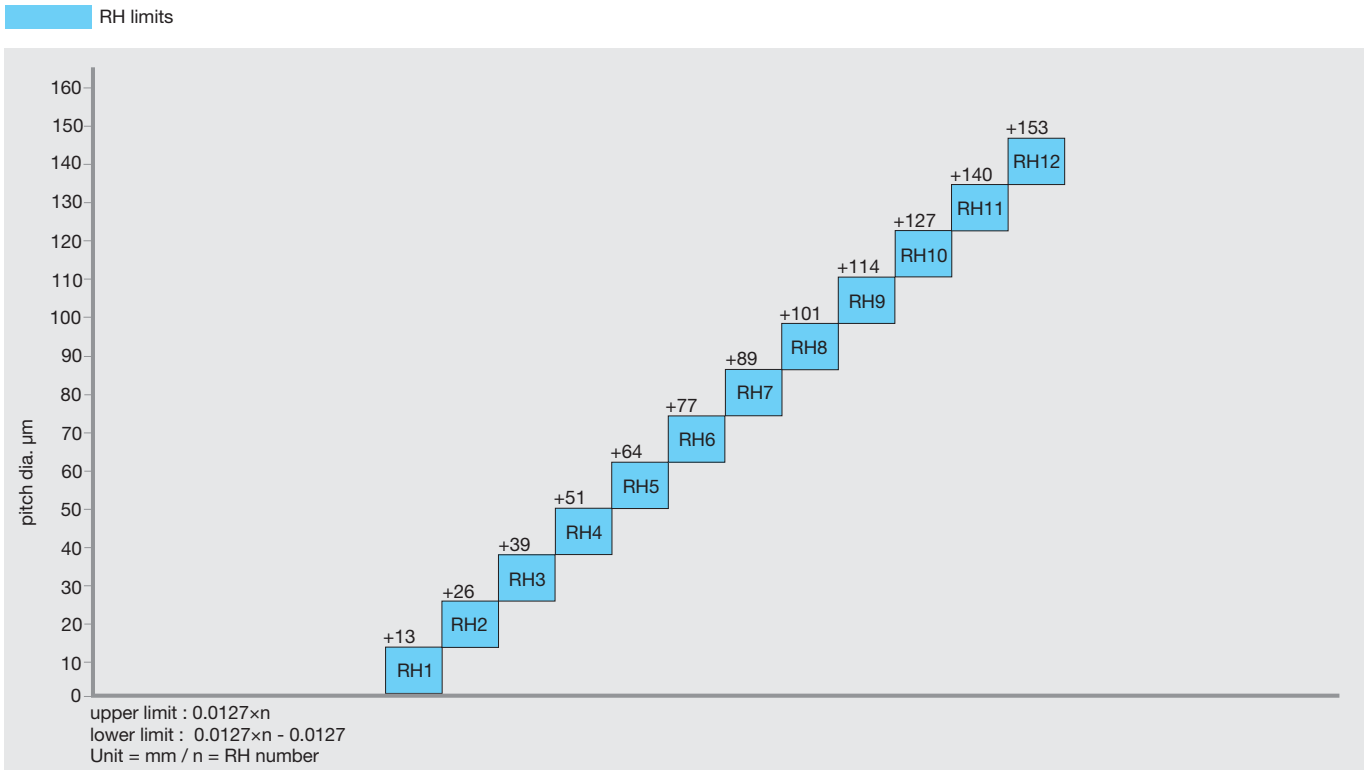


P ≥ 0.7 (T.P.I. ≤ 36)
upper limit : 0.020×n
lower limit : (upper limit) - 0.020
Unit = mm / n = OH number

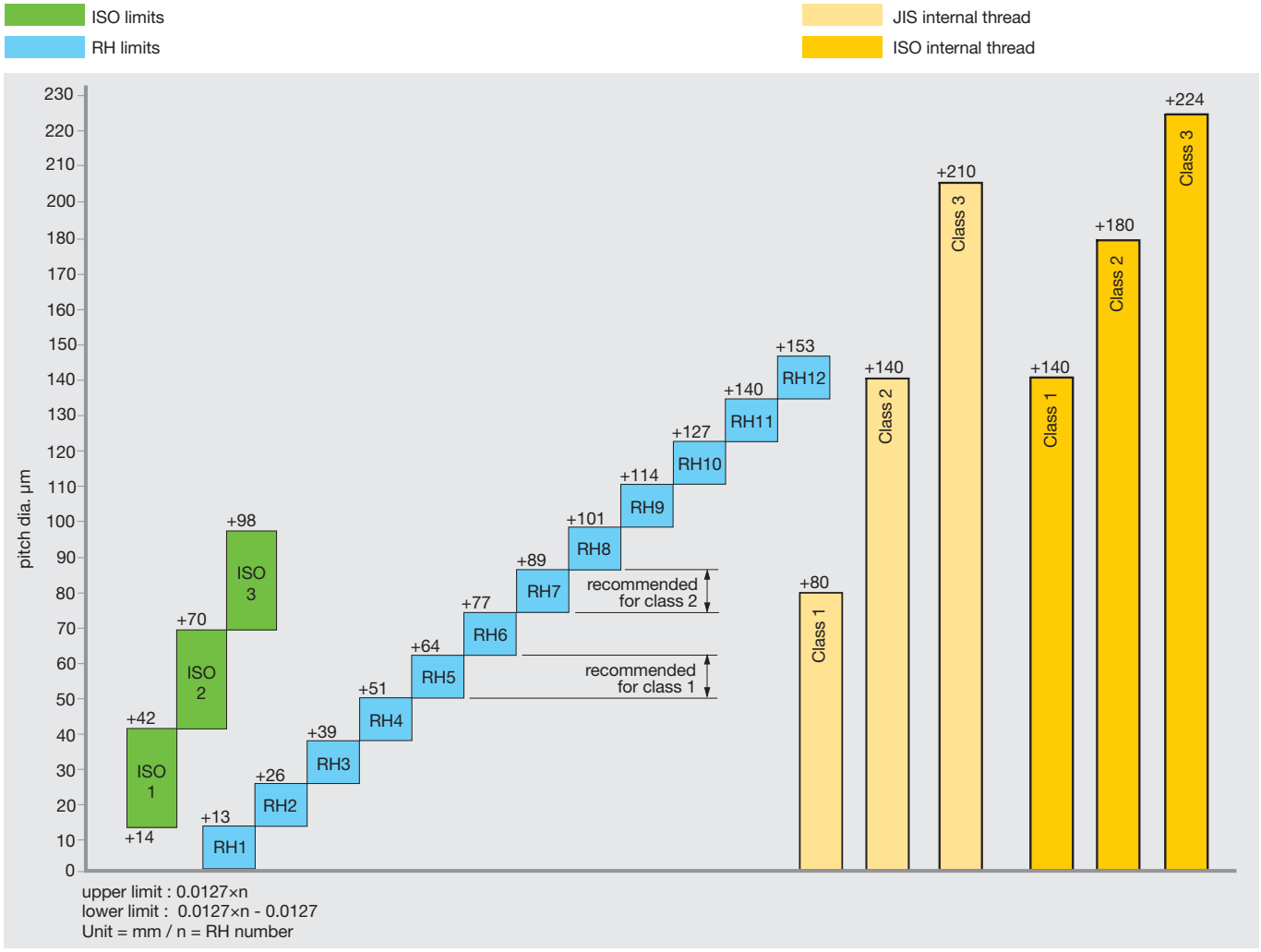
Example M10 (x 1.5)

ISO limits
OH limits
JIS internal thread
ISO internal thread





Example M10 (x 1.5)



GÜHROSYNC

0.3 mm minimal compensation
for up to 75% reduced axial forces

for internal, peripheral or
MQL cooling lubrication

high concentricity and
application speed

elastic polymer elements for effective axial
and torsion damping of force peaks

quick and simple handling, slim design

long-life metal spring packet with progressive
force/travel characteristic curve

maximum tool life
and thread accuracy

The new GÜHROSync tapping chuck

Synchro and hydraulic clamping technology intelligently combined

by GUHRING

SAME PRICE
MORE PERFORMANCE

GÜHROSYNC

by GUHRING

147 149/18065-VI-25 | Printed in Germany | 2018

GÜHRING KG | Telephone: + 49 74 31 17-0 | Fax: + 49 74 31 17-21279

Herderstraße 50-54 | 72458 Albstadt | Germany | info@guehring.de | www.guehring.de