



GENERAL CATALOGUE

taps - dies
thread mills - tapping attachments



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A10	MF	98
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A15 L	M	53
A15 L TiN	M	53
A15 S	M	45
A15 S VAP	M	45
A15 S TiN	M	45
A15 S TiCN	M	45
A15 S 4H	M	47
A15 S 4H TiN	M	47
A15 S 6G	M	48
A15 S 6G TiN	M	48
A15 S 7G	M	49
A15 S 7G TiN	M	49
A15 S LH	M	50
A15 S LH TiN	M	50
A16 S	M	51
A16 S TiN	M	51
A17 S	MF	87
A17 S VAP	MF	87
A17 S TiN	MF	87
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A17 S 6G	MF	91
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A18 S VAP	G	124
A18 S TiCN	G	124
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A19 S TiN	UNC	106
A19 S TiCN	UNC	106
A19 S 3B	UNC	106
A19 S TiX2	UNC	107
A20 S	UNF	114
A20 S TiN	UNF	114
A20 S TiCN	UNF	114
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A21 FC TiN	M	38
A22 FC	M	40
A22 FC TiN	M	40
A23 FC	MF	83
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A24 FC	BSW	132
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A26 FC	G	122
A26 FP	G	122
A27 FC	UNC	104
A27 FC TiN	UNC	104
A27 FP	UNC	104
A27 FP TiN	UNC	104
A28 FC	UNF	112
A28 FC TiN	UNF	112
A28 FP	UNF	112
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A29 DIN 376	M	58
A29 DIN 376 TiN	M	58
A29 L	M	59
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A30	MF	92
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A31	BSW	133
A31 TiN	BSW	133
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A33	UNC	108
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A33 3B	UNC	108
A34	UNF	116
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A48 TiCN	G	123
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A49 TiCN	UNC	105
A50 NITR.	UNF	113
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A60 S TiCN	UNC	109
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A70 S TiN	M	60
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A70 S 6G TiN	M	62
A70 S 7G	M	63
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A70 SE	M	65
A70 SE TiN	M	65
A70 S LH	M	66
A70 S LH TiN	M	66
A71 S	MF	95
A71 S VAP	MF	95
A71 S TiN	MF	95
A71 S TiCN	MF	95
A71 S TiX2	MF	96
A71 S 6G	MF	97
A71 S 6G TiN	MF	97
A72	M	72
A72 TiH1	M	72
A76 S	M	67
A76 S TiN	M	67
A80 TiN	M	74
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A80 6GX TiCN	M	75
A80 N TiN	M	76
A80 N TiCN	M	76
A80 N 6GX TiN	M	77
A80 N 6GX TiCN	M	77
A81 TiN	MF	99
A81 TiCN	MF	99
A81 6GX TiN	MF	100
A81 6GX TiCN	MF	100
A81 N TiN	MF	101
A81 N TiCN	MF	101
A81 N 6GX TiN	MF	102
A81 N 6GX TiCN	MF	102
A82 N TiN	G	128
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A120 VAP	M	69
A120 TiN	M	69
A150 VAP	M	54
A150 TiX2	M	54
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A159 S TiN	Rp (BSPP)	129
A160	8-UN	120
A160 TiN	8-UN	120
A170 VAP	M	70
A170 TiX2	M	70
A190	EG-M	78
A701 S	M	64
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TOOL CODE LIST

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TOOL CODE	Thread	Page
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P15 TiH1	M	143
P15 6GX TiH1	M	143
BP15 TiH1	M	143
P17 TiN	MF	158
P17 TiH1	MF	158
P17 6GX TiH1	MF	158
BP17 TiH1	MF	158
P18 TiN	G	164
P18 TiH1	G	164
P29	M	144
P29 TiN	M	144
P29 TiH1	M	144
BP29 TiH1	M	144
P29 E TiH1	M	145
P30	MF	159
P30 TiN	MF	159
P30 TiH1	MF	159
BP30 TiH1	MF	159
P43 V-MAXX	M	140
BP43 V-MAXX	M	140
P43 E V-MAXX	M	141
BP43 E V-MAXX	M	141
P45 V-MAXX	MF	157
BP45 V-MAXX	MF	157
P45 E V-MAXX	MF	157
BP45 E V-MAXX	MF	157
P59 TiN	G	165
P59 TiH1	G	165
P59 E TiH1	G	165
P70 TiN	M	146
P70 TiH1	M	146
BP70 TiH1	M	147
P70 6GX TiH1	M	146
P70 7GX TiH1	M	146
P70 E TiN	M	148
P70 E TiH1	M	148
P70 E 6GX TiH1	M	148
P71 TiN	MF	160
P71 TiH1	MF	160
P71 6GX TiH1	MF	160
BP71 TiH1	MF	160
P71 E TiH1	MF	161
P76 L TiH1	M	149
P80 TiN	M	150
P80 V-MAXX	M	150
P80 6GX TiN	M	150
P80 7GX TiN	M	150
P80 N TiN	M	151
P80 N V-MAXX	M	151
P80 N 6GX TiN	M	151
P80 N 7GX TiN	M	151
P80 E TiN	M	152
P80 N E TiN	M	152
P80 N E V-MAXX	M	152
P80 N E 6GX TiN	M	152
P80 N L TiN	M	155
P80 N LH TiN	M	154
BP80 N TiN	M	153
BP80 N R TiN	M	153
BP80 N R V-MAXX	M	153
BP80 N E V-MAXX	M	153
P81 TiN	MF	162
P81 V-MAXX	MF	162
P81 6GX TiN	MF	162
P81 N TiN	MF	163
P81 N V-MAXX	MF	163
P81 N 6GX TiN	MF	163
P82 N TiN	G	166
P82 N V-MAXX	G	166
P130	M	142
P130 V-MAXX	M	142
P180 N TiN	M	156
P180 N V-MAXX	M	156

S SERIES		
TOOL CODE	Thread	Page
S15 TiN	M	169
S15 TiH1	M	169
BS15 TiH1	M	169
S17 TiN	MF	173
S43 V-MAXX	M	168
BS43 V-MAXX	M	168
S43 E V-MAXX	M	168
BS43 E V-MAXX	M	168
S45 V-MAXX	MF	172
BS45 V-MAXX	MF	172
S70 TiN	M	170
S70 TiH1	M	170
BS70 TiH1	M	170
S71 TiN	MF	174
S80 N TiN	M	171
S80 N V-MAXX	M	171
S80 N 6GX TiN	M	171
BS80 N R TiN	M	171

H SERIES		
TOOL CODE	Thread	Page
HB29	M	177
HB29 V-MAXX	M	177
HB43	M	176
HB43 V-MAXX	M	176
HB43 E V-MAXX	M	176
HB45	MF	180
HB45 V-MAXX	MF	180
HB45 E V-MAXX	MF	180
HB80 N R V-MAXX	M	179
HB81 N R E V-MAXX	M	181
H130	M	178
H130 V-MAXX	M	178

F SERIES		
TOOL CODE	Thread	Page
X200	M	204
X200 LH	M	204
X201	MF	205
X202	BSW	211
X203	G	210
X204	UNC	208
X205	UNF	209
X206	NPT	212

VR SERIES		
TOOL CODE	Thread	Page
VR10 TiAIN	ISO	217
VR20 TiAIN	ISO	217
VR30 TiAIN	ISO	217
VR40 TiAIN	ISO	218
VR45 TiAIN	ISO	218
VR50 TiAIN	ISO	219
VR55 TiAIN	ISO	219
VR10 TiAIN	UN	220
VR20 TiAIN	UN	220
VR40 TiAIN	UN	221
VR45 TiAIN	UN	221
VR50 TiAIN	UN	222
VR55 TiAIN	UN	222
VR10 TiAIN	G	223
VR20 TiAIN	G	223

VA SERIES	
TOOL CODE	Page
DIN 69893 HSK A	228
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SK DIN 69871 AD	229
SK DIN 69871 AD+B	229
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Wrench	234

ARTICLE LEGEND

- A...

P...

S...

H...

B...
- Taps for Generic Applications
- High Performance Taps
- Synchronous Taps
- Solid Carbide Taps
- Taps with internal coolant supply

... FC

Taps for blind holes

... FP

Taps for through holes

... S

Taps with increased relief

... L

Taps with long shank

... N

Forming taps with oil grooves

... R

Forming taps with internal coolant supply and radial outlet

... E

Taps with short chamfer (Form E)

... EG

Taps for wire thread inserts

... LH

Taps with left hand thread

... AZ

Taps with interrupted thread

- SERIES
- MATERIAL
- CHAMFER FORM
- TYPE OF HOLE
- COATING
- LUBRICATION

TAP MATERIAL

- HSS
- Conventional high speed steel
- HSSE
- Conventional high speed steel
- HSSK
- Powder metallurgy high speed steel
- HSSZ
- Powder metallurgy high speed steel
- HSSP
- Powder metallurgy high speed steel
- HM
- Solid Carbide

LUBRICATION

- E
- Emulsion
- O
- Oil
- ML
- Minimum quantity lubrication

TAP APPLICATION TABLE LEGEND

- A1
- 34
- Product code / page
- 20-25
- Ideal tap / cutting speed m/min
- 15-20
- Suitable tap / cutting speed m/min

M	4H
	6H/6HX
	6G/6GX
	7G/7GX
	6H +0,1
MF	6H/6HX
	6G/6GX
UNC	2B/2BX
	3B
UNF	2B/2BX
	3B
8-UN	2B
G	ISO 5969/X
Rp (BSPP)	--
Rc (BSPT)	--
BSW	mc
NPT	--
NPTF	--

ISO 513	Material	Group	Application	R. N/mm ²	Lubrication
P	Steel	P.1	Mild / magnetic steel	200 - 400	E, O, MQL
		P.2	Construction steel, case hardening steel	350 - 700	E, O, MQL
		P.3	Carbon steel	350 - 850	E, O, MQL
		P.4	Alloyed steel / tempered steel	500 - 850	E, O, MQL
		P.5	Alloyed steel / tempered steel	850 - 1200	E, O, MQL
		P.6	Alloyed steel / high strength steel	1200 - 1600	O
		P.7	Ferritic stainless steel, martensitic stainless steel, precipitation hardening	< 1000	E, O, MQL
M	Stainless steel	M.1	Austenitic stainless steel	< 850	E, O, MQL
		M.2	Ferritic+austenitic (Duplex)	< 1000	O, MQL
K	Cast iron	K.1	Grey cast iron	< 1000	E, O, MQL
		K.2	Nodular cast iron, malleable cast iron, tempered cast iron	< 1000	E, O, MQL
		K.3	Austempered ductile iron (ADI)	< 1400	O, MQL
N	Aluminium Aluminium alloys	N.1	Pure aluminium	< 300	E, O, MQL
		N.2	Aluminium wrought and die cast alloys with Si < 0,5% (long chipping)	< 500	E, O, MQL
		N.3	Aluminium wrought and die cast alloys with Si < 10% (medium chipping)	< 500	E, O, MQL
		N.4	Aluminium die cast alloys with Si > 10% (short chipping)	< 600	E, O, MQL
	Copper Copper alloys Brass Bronze	N.5	Pure copper	250 - 350	E, O, MQL
		N.6	Copper alloys (long chipping), soft brass	< 700	E, O, MQL
		N.7	Copper alloys (short chipping), hard brass	< 700	E, O, MQL
		N.8	High strength bronze	700 - 1500	O
	Magnesium Magnesium alloys	N.9	Pure magnesium, magnesium alloys	120 - 300	E, O, MQL
		N.10	High strength magnesium alloys	240 - 400	E, O, MQL
S	Titanium Titanium alloys	S.1	Pure titanium	400 - 600	E, O, MQL
		S.2	Titanium alloys	600 - 1000	O, MQL
	Nickel Nickel alloys	S.3	Pure nickel	400 - 600	E, O, MQL
		S.4	Nickel alloys	600 - 1000	O, MQL
H	Hardened materials	H.1	Alloyed steel, hardness HRC 44-55	-	O
		H.2	Alloyed steel, hardness HRC 56-63	-	O

*For specific material examples see "Technical Information" section on page 248



General Catalogue n° 75 - EN

With over 75 years of experience in the cutting tool industry, Vergnano is one of the world's leading manufacturers of high quality precision threading taps, hobs, end mills and threading dies.

While keeping a firm foothold in the honoured tradition of the Vergnano brand, Vergnano has established itself internationally and is renowned for quality, reliability, flexibility, innovation and commitment.



1944

Company foundation.
Production of end mills



1950

Construction and transfer to new
production plant in Corso Torino, Chieri

1949

Production of taps
commences



1960

Enlargement of
Corso Torino plant

1.000.000

1980

Production reaches 1 million taps per year



2002

Transfer to newly built production plant in Corso Olia, Chieri



2016

New office of German subsidiary opens in Achern



1992

German subsidiary opens, Vergnano GmbH



2008

South Korean subsidiary opens, Vergnano Korea



2019

75th Anniversary of company foundation

M
DIN 13

P
SERIES



P29E
New P29 version with chamfer form E for blind holes

R15

2xD

HSSP

P

K

N

S

M
DIN 13

P
SERIES



P70 7GX TiH1
New P70 version with tolerance 7GX for blind holes

R45

3xD

HSSP

P

M

K

N

S

M
DIN 13

P
SERIES



P76L TiH1
Long P70 version with long through shank for blind holes

R40

3xD

HSSP

P

M

K

N

S

M
DIN 13

P
SERIES



P80N LH TiN
New high performance forming taps for lefthand threads

3xD

HSSK

LH

P

M

N

S

M
DIN 13

P
SERIES



P80N L TiN
New high performance forming taps with long shank








P

M

N

S

M
DIN 13

H
SERIES



HB43E V-MAXX
New HB43 version with chamfer form E for blind holes







K

N

MF
DIN 13

H
SERIES



HB45E V-MAXX
New HB45 version with chamfer form E for blind holes







K

N

MF
DIN 13

H
SERIES



HB81NRE V-MAXX
New solid carbide forming taps with chamfer form E and internal radial coolant







P

M

N

S

GUIDE TO TAP APPLICATION TABLE

ARTICLE LEGEND

A... Taps for Generic Applications
P... High Performance Taps
S... Synchronous Taps
H... Solid Carbide Taps
B... Taps with internal coolant supply

... FC Taps for blind holes
... FP Taps for through holes
... K Taps in HSSK

... S Taps with increased relief
... L Taps with long shank
... N Forming taps with oil grooves
... R Forming taps with internal coolant supply
... E Taps with short chamfer (Form E)
... EG Taps for wire thread inserts
... LH Taps with left hand thread
... AZ Taps with interrupted thread

TAP MATERIAL

HSS Taps with interrupted thread
HSSE Taps with interrupted thread
HSSK Powder metallurgy high speed steel
HSSZ Powder metallurgy high speed steel
HSSP Powder metallurgy high speed steel
HM Solid Carbide

LUBRICATION

E Emulsion
O Oil
MQL Minimum quantity lubrication

TAP APPLICATION TABLE LEGEND

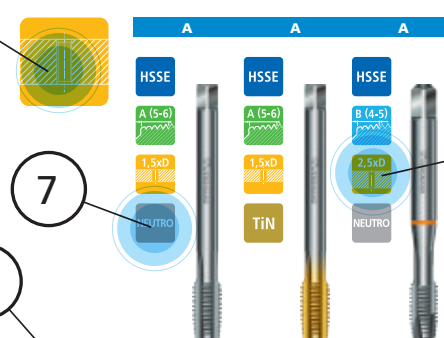
A1 34 Product code / page

● 20-25 Ideal tap speed m/min

○ 15-20 Suitable speed m/min

ISO 513	Material	Group
P	Steel	P.1 Mild / magnetic steel
		P.2 Construction steel, cast
		P.3 Carbon steel
		P.4 Alloyed steel / temper
		P.5 Alloyed steel / temper
		P.6 Alloyed steel / high str
		P.7 Ferritic stainless steel,
M	Stainless steel	M.1 Austenitic stainless ste
		M.2 Ferritic+austenitic (Dup
K	Cast iron	K.1 Grey cast iron
		K.2 Nodular cast iron, mal
		K.3 Austempered ductile i
N	Aluminium	N.1 Pure aluminium
		N.2 Aluminium wrought an
		N.3 Aluminium wrought an
		N.4 Aluminium die cast al
	Copper	N.5 Pure copper
		N.6 Copper alloys (long ch
		N.7 Copper alloys (short d
		N.8 High strength bronze
	Magnesium	N.9 Pure magnesium, mag
		N.10 High strength magnes
S	Titanium	S.1 Pure titanium
		S.2 Titanium alloys
	Nickel	S.3 Pure nickel
		S.4 Nickel alloys
H	Hardened materials	H.1 Alloyed steel, hardnes
		H.2 Alloyed steel, hardnes

VERGNANO TAP APPLICATION TABLE



ISO 513	Group	Product Code	Page
P	P.1	12-15	20-25
	P.2	10-12	15-20
	P.3	8-10	12-15
	P.4		12-15
	P.5		3-5
	P.6		
	P.7		5-7
M	M.1		5-7
	M.2		2-3
K	K.1		
	K.2	8-10	12-15
	K.3		15-20
N	N.1	12-15	20-25
	N.2	10-12	15-20
	N.3	10-12	15-20
	N.4		
	N.5	10-12	15-20
	N.6	8-10	12-15
	N.7		
	N.8		
	N.9		
	N.10		
S	S.1		8-10
	S.2		
	S.3		8-10
	S.4		
H	H.1		
	H.2		

*For specific material examples see "Technical Information" section c

In order to select the correct tap, follow steps 1 to 9.

- 1 Material
- 2 Material subgroup
- 3 Hole type
- 4 Thread depth
- 5 Thread type
- 6 Tolerance
- 7 Coating
- 8 Tool code (page)
- 9 Cutting parameters

GUIDE TO TAP DATASHEETS

[illegible]

- | | | | |
|---|-------------------------------|----|------------------|
| 1 | Thread type | 8 | Through coolant |
| 2 | Application characteristics | 9 | Direction of cut |
| 3 | Dimensional standard | 10 | Hole type |
| 4 | Recommended application range | 11 | Chamfer form |
| 5 | Sizes | 12 | Tolerance |
| 6 | Price list page reference | 13 | Coating |
| 7 | (•) Standard execution | 14 | Tool code |

GUIDE TO THREAD MILLS DATASHEETS

ISO
DIN 13

1

VERGNANO

SOLID CARBIDE THREAD MILLS
Spiral flutes

12

2

INT HM

VR40
TiAlN

11

VR45
TiAlN

3

10

INT

4

APPLICATION RANGE

ISO	VR40 TiAlN	VR45 TiAlN
P	•	•
M	•	•
K	•	•
N	•	•
S	•	•

For cutting data see page 215

9

3xD

8

RH

7

VR45038080160L

5

VR SERIES

P	M	ØD ₂ h6 [mm]	ØD [mm]	z	L ₂ [mm]	L ₁ [mm]	VR40 TiAlN	VR45 TiAlN
0,3	M1,4	3	1,05	3	4	39		VR450100300400
0,35	M1,6	3	1,2	3	4,8	39		VR450120350400
0,4	M2	6	1,53	3	4,5	58	VR400150400400	
0,4	M2	3	1,53	3	6	39		VR450150400600
0,5	M3	6	2,37	3	6,5	58	VR400230500600	
0,5	M3	6	2,37	3	9,5	58		VR450230500900
0,5	M3	6	2,37	3	9,5	105		VR45023050090L
0,7	M4	6	3,1	3	9	58	VR400310700900	
0,7	M4	6	3,1	3	12,5	58		VR450310701200
0,7	M4	6	3,1	3	12,5	105		VR45031070120L
0,8	M5	6	3,8	3	12,5	58	VR400380801200	
0,8	M5	6	3,8	3	16	58		VR450380801400
0,8	M5	6	3,8	3	16	105		VR45038080160L
1	M6	6	4,65	3	14	58	VR400461001400	
1	M6	6	4,65	3	20	58		VR450461002000
1	M6	6	4,65	3	20	105		VR45046100200L
1,25	M8	6	5,95	3	18	58	VR4005911251800	
1,25	M8	6	6	3	24	58		VR4506011252400
1,5	M10	8	7,8	3	23	64	VR4007811502300	
1,75	M12	10	9	3	26	73	VR4009011752600	
2	M16	12	11,8	4	35	84	VR401182003500	

6

218

€ P.64

- 1 Thread type
- 2 Application characteristics
- 3 Technical Drawing
- 4 Application range
- 5 Sizes
- 6 Price list page reference

- 7 Tool code
- 8 Direction of cut
- 9 Hole type
- 10 Thread
- 11 Coating
- 12 Tool code



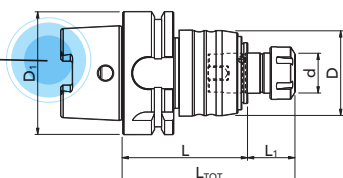
SYNCHRONOUS ER TAPPING ATTACHMENT with QUICK-CHANGE TAP ADAPTOR With internal through coolant capability (*)



DIN 69893 HSK A

1

2



3

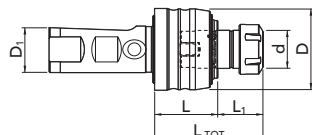
Article Code	Attachment	Tap Size	L	ø D	ø d	ER collet	L ₁	L _{TOT}
	ø D ₁ [mm]		[mm]	[mm]	[mm]		[mm]	[mm]
VA01A06302CH160	HSK-A63	M3 - M8	64	43	20	ER 16	20,5	84,5
VA01A06302CH250	HSK-A63	M6 - M20	97	60	32	ER 25	23,5	120,5
VA01A10002CH400	HSK-A100	M14 - M33	115	87	50	ER 40	28,5	143,5

4

SYNCHRONOUS ER TAPPING ATTACHMENT with QUICK-CHANGE TAP ADAPTOR With internal through coolant capability (*)



DIN 1835 B+E



VA
SERIES

Article Code	Attachment	Tap Size	L	ø D	ø d	ER collet	L ₁	L _{TOT}
	ø D ₁ [mm]		[mm]	[mm]	[mm]		[mm]	[mm]
VA01C02502CH160	25	M3 - M8	34	43	20	ER 16	20,5	54,5
VA01C02502CH250	25	M6 - M20	56	60	32	ER 25	23,5	79,5
VA01C04002CH400	40	M14 - M33	80	87	50	ER 40	28,5	108,5

(*) For coolant pressure above 50 bars a special nut screw is available on request

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€ P.67

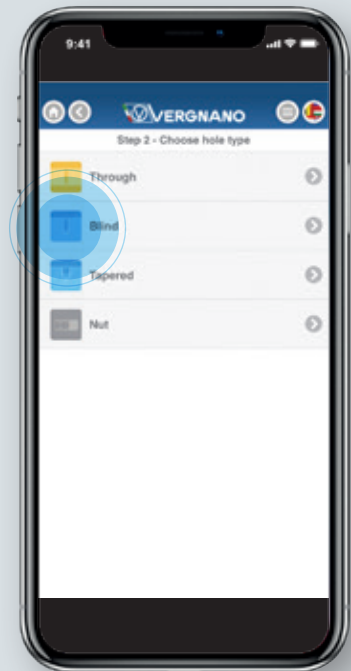
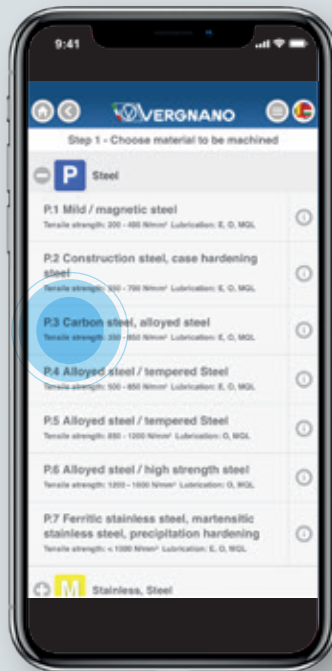
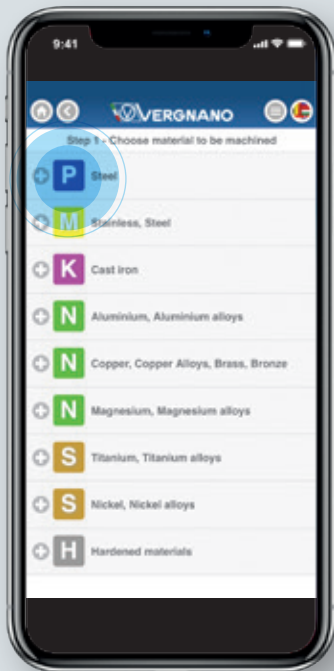
5

- 1 Application characteristics
- 2 Technical Drawing
- 3 Size
- 4 Tool code
- 5 Price list page reference

GUIDE TO TAPPFINDER APP

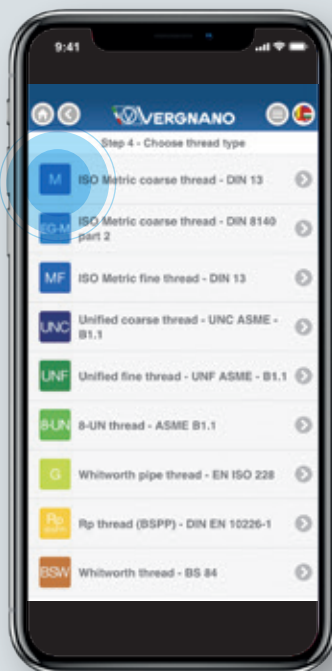
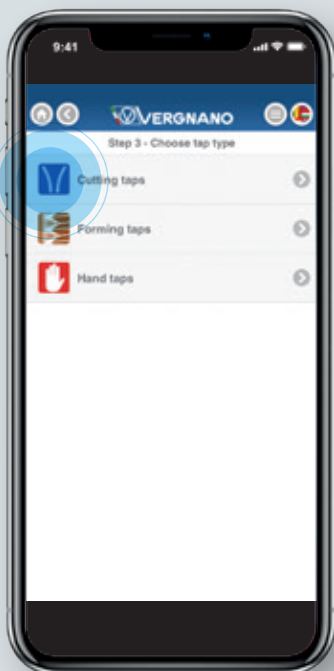


Download TappFinder for iOS or Andriod



1-2
Select material to machine

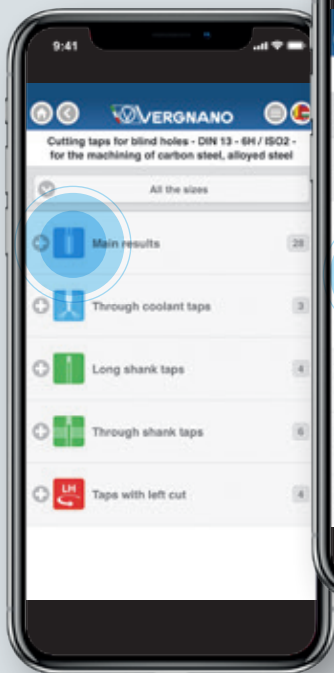
3
Select type of hole



4
Select cutting or forming tap

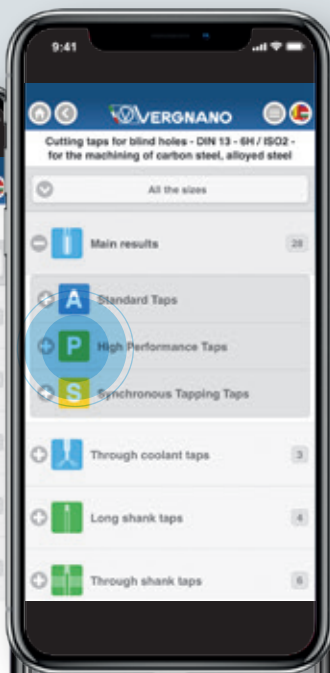
5
Select thread type

6
Select thread tolerance



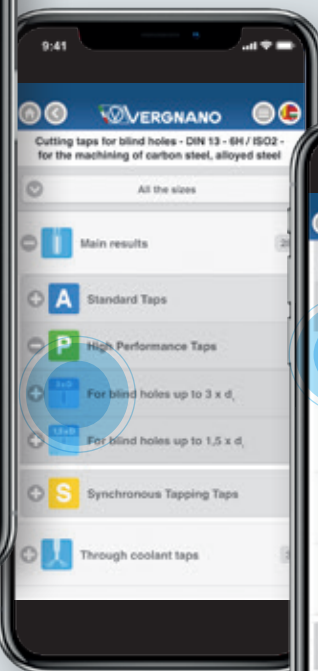
7

From results select suitable tap



8

Select tap series



9

Select thread depth



10

Select tap



11

Browse available sizes



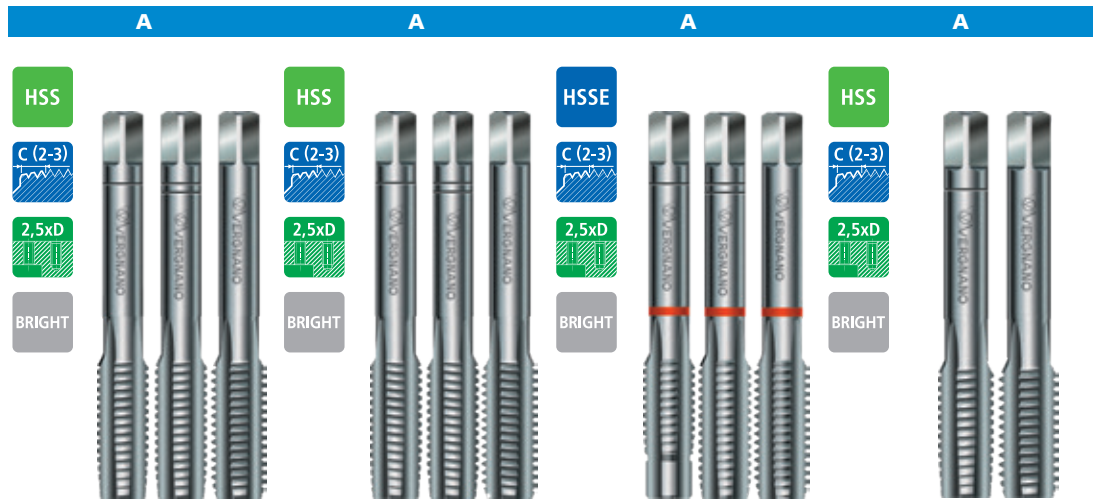
12

Browse technical properties



13

Browse working parameters



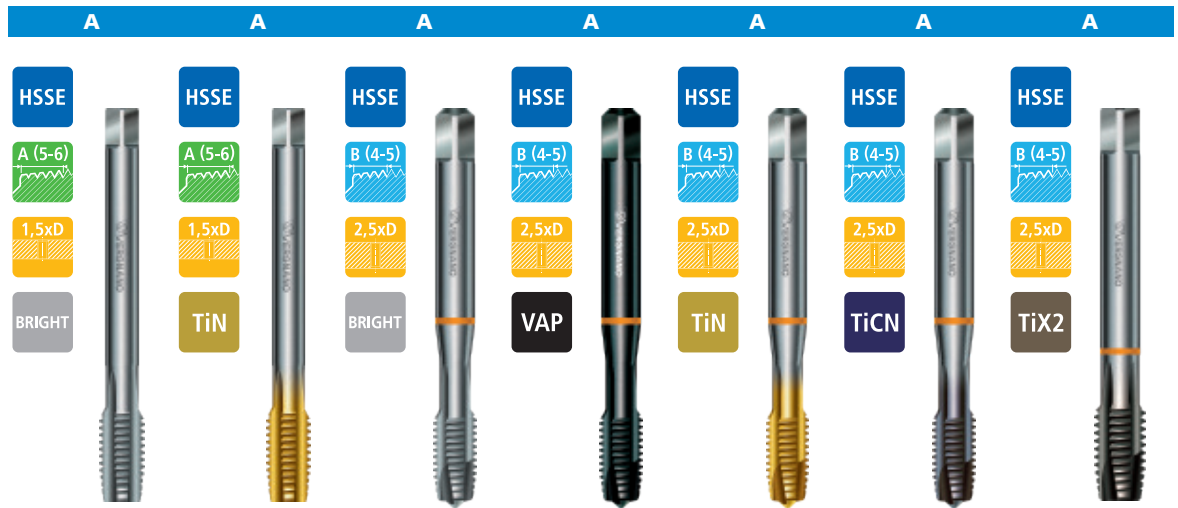
M	4H								
	6H/6HX	A1	34	A1 LH	36	A100	37		
	6G/6GX								
	7G/7GX								
	6H +0,1								
MF	6H/6HX							A2	79
	6G/6GX								
UNC	2B/2BX	A7	103						
	3B								
UNF	2B/2BX							A8	111
	3B								
8-UN	2B								
G	ISO 5969/X							A5	121
Rp (BSPP)	--								
Rc (BSPT)	--								
BSW	mc	A4	131						
NPT	--								
NPTF	--								
ISO 513	Group								
P	P.1	●		●		●		●	
	P.2	●		●		●		●	
	P.3	●		●		●		●	
	P.4	●		●		●		●	
	P.5					●			
	P.6								
	P.7	●		●		●		●	
M	M.1	○		○		●		○	
	M.2	○		○		●		○	
K	K.1	○		○		●		○	
	K.2	●		●		●		●	
	K.3					●			
N	N.1	●		●		●		●	
	N.2	●		●		●		●	
	N.3	●		●		●		●	
	N.4	○		○		●		○	
	N.5	●		●		●		●	
	N.6	●		●		●		●	
	N.7	●		●		●		●	
	N.8					●			
	N.9					●			
	N.10					●			
S	S.1	○		○		●		○	
	S.2					○			
	S.3	○		○		●		○	
	S.4					○			
H	H.1								
	H.2								



A6	130		
A6 B	134	A6 BZ	135
A6 F	136	A6 FZ	137

○ 12-15	● 12-15
● 10-15	
● 10-12	
● 8-10	
○ 3-5	
○ 2-3	● 2-3
○ 2-3	● 2-3
	○ 2-3
○ 10-12	
● 10-12	
	● 12-15
○ 12-15	● 12-15
○ 10-12	
○ 10-12	
	● 10-12
○ 6-8	● 6-8
○ 10-12	
○ 2-3	
○ 6-8	
○ 2-3	
	○ 5-8
	○ 5-8

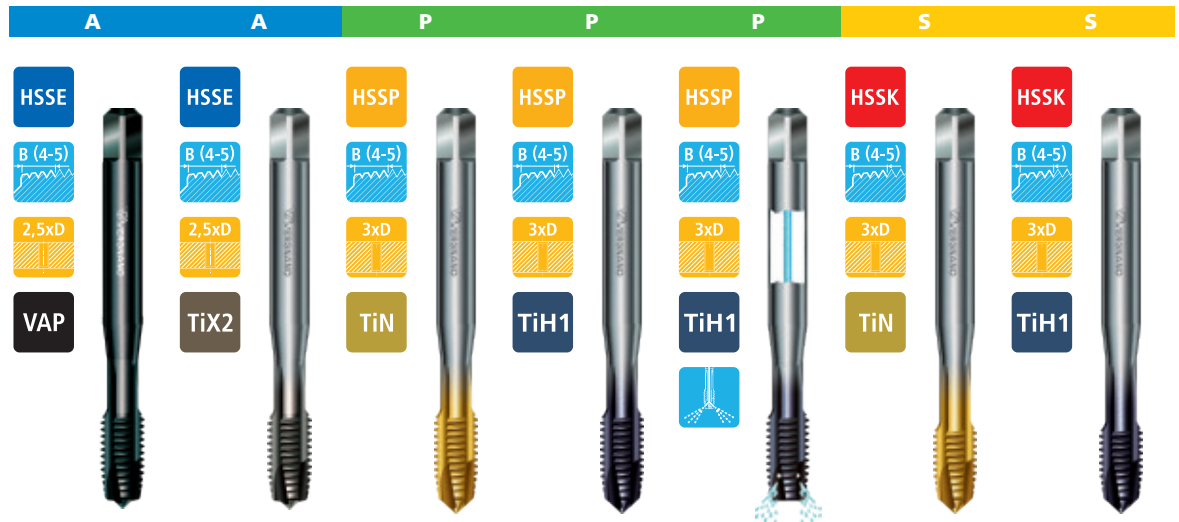
TAP APPLICATION TABLE



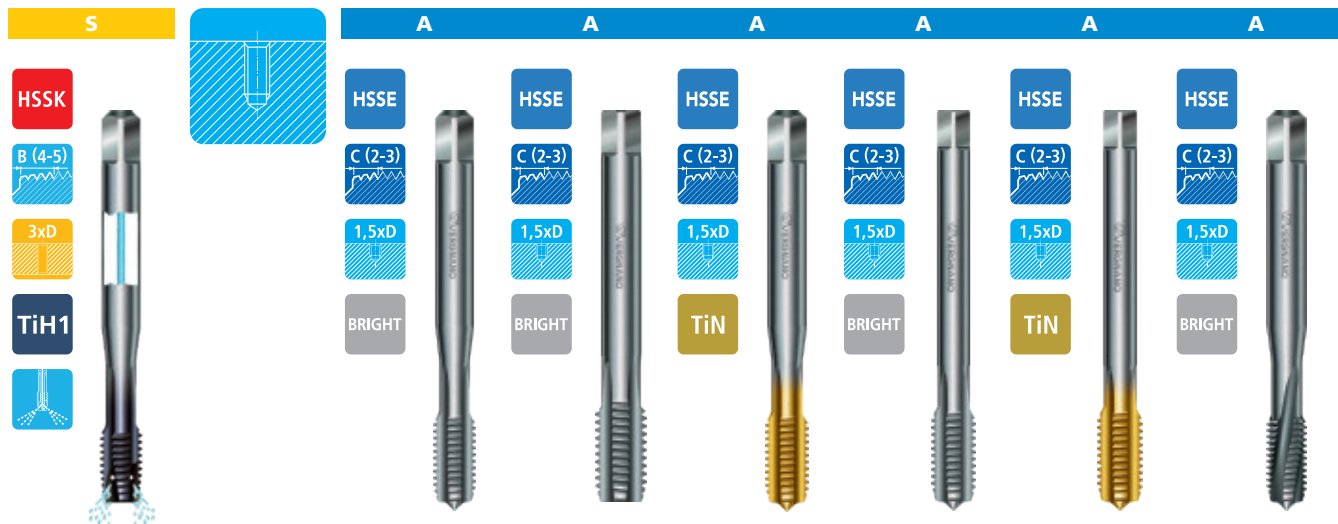
M	4H				A15 S	47			A15 S	47				
	6H/6HX				A15 S	45	A15 S	45	A15 S	45	A15 S	45		
	6G/6GX				A15 S	48			A15 S	48				
	7G/7GX				A15 S	49			A15 S	49				
	6H +0,1													
MF	6H/6HX				A17 S	87	A17 S	87	A17 S	87	A17 S	87	A17 S	90
	6G/6GX				A17 S	91			A17 S	91				
UNC	2B/2BX	A27 FP	104	A27 FP	104	A19 S	106		A19 S	106	A19 S	106	A19 S	107
	3B					A19 S	106							
UNF	2B/2BX	A28 FP	112	A28 FP	112	A20 S	114		A20 S	114	A20 S	114	A20 S	115
	3B					A20 S	114							
8-UN	2B					A119	119		A119	119				
G	ISO 5969/X	A26 FP	122			A18 S	124	A18 S	124		A18 S	124	A18 S	124
Rp (BSPP)	--													
Rc (BSPT)	--													
BSW	mc	A24 FP	132											
NPT	--													
NPTF	--													
ISO 513	Group													
P	P.1	○ 12-15	● 20-25	○ 18-20	○ 18-20	○ 30-35	○ 30-35							
	P.2	● 10-12	● 15-20	● 20-25	● 20-25	● 30-35	● 30-35							
	P.3	● 8-10	● 12-15	● 15-20	● 15-20	● 25-30	● 25-30							
	P.4			● 12-15	● 12-15	● 20-25	● 20-25							
	P.5			○ 3-5	○ 3-5	● 10-15	● 10-15							
	P.6													
	P.7			○ 5-7	○ 5-7	● 10-15	● 10-15	● 10-15						
M	M.1			○ 5-7	○ 5-7	● 10-15	● 10-15	● 10-15						
	M.2			○ 2-3	○ 2-3	○ 6-8	○ 6-8	○ 6-8						
K	K.1													
	K.2	● 8-10	● 12-15	● 15-20	● 15-20	● 25-30	● 25-30							
	K.3													
N	N.1	○ 12-15	● 20-25	○ 18-20	○ 18-20	○ 30-35	○ 30-35							
	N.2	○ 10-12	○ 15-20	● 20-25	● 20-25	● 30-35	● 30-35							
	N.3	○ 10-12	○ 15-20	● 20-25	● 20-25	● 30-35	● 30-35							
	N.4													
	N.5	○ 10-12	● 15-20	○ 15-18	○ 15-18	○ 25-30	○ 25-30							
	N.6	○ 8-10	○ 12-15	● 15-18	● 15-18	● 25-30	● 25-30							
	N.7													
	N.8													
	N.9													
	N.10													
S	S.1			○ 8-10	○ 8-10									
	S.2													
	S.3			○ 8-10	○ 8-10	○ 12-15	○ 12-15							
	S.4													
H	H.1													
	H.2													



TAP APPLICATION TABLE



		A		A		P		P		P		S		S	
		HSSE		HSSE		HSSP		HSSP		HSSP		HSSK		HSSK	
		B (4-5)		B (4-5)		B (4-5)		B (4-5)		B (4-5)		B (4-5)		B (4-5)	
		2.5xD		2.5xD		3xD		3xD		3xD		3xD		3xD	
		VAP		TiX2		TiN		TiH1		TiH1		TiN		TiH1	
M	4H														
	6H/6HX	A150	54	A150	54	P15	143	P15	143	BP15	143	S15	169	S15	169
	6G/6GX							P15	143						
	7G/7GX														
	6H +0,1														
MF	6H/6HX					P17	158	P17	158	BP17	158	S17	173		
	6G/6GX							P17	158						
UNC	2B/2BX														
	3B														
UNF	2B/2BX														
	3B														
8-UN	2B														
G	ISO 5969/X					P18	164	P18	164						
Rp (BSPP)	--														
Rc (BSPT)	--														
BSW	mc														
NPT	--														
NPTF	--														
ISO 513	Group														
P	P.1											● 50-60		● 50-60	
	P.2					○ 30-40		○ 30-40		○ 30-40		● 50-60		● 50-60	
	P.3					● 25-35		● 25-35		● 25-30		● 45-55		● 45-55	
	P.4					● 20-30		● 20-30		● 20-30		● 40-50		● 40-50	
	P.5					● 10-20		● 10-20		● 10-20		● 15-25		● 15-25	
	P.6					● 8-10		● 8-10		● 8-10					
	P.7	● 10-12		● 18-20		● 10-20		● 10-20		● 10-20		● 15-25		● 15-25	
M	M.1	● 10-12		● 18-20		● 10-20		● 10-20		● 10-20		● 15-25		● 15-25	
	M.2	● 8-10		● 10-12		● 6-8		● 6-8		● 6-8		● 10-20		● 10-20	
K	K.1														
	K.2					● 25-35		● 25-35		● 25-35		● 45-55		● 45-55	
	K.3														
N	N.1											● 50-60		● 50-60	
	N.2					● 30-40		● 30-40		● 30-40		● 45-55		● 45-55	
	N.3					● 30-40		● 30-40		● 30-40		● 45-55		● 45-55	
	N.4														
	N.5											● 40-50		● 40-50	
	N.6					● 25-30		● 25-30		● 25-30		● 35-45		● 35-45	
	N.7														
	N.8														
	N.9														
	N.10														
S	S.1													● 15-25	
	S.2							○ 12-18		○ 12-18				○ 10-20	
	S.3											● 15-25		● 15-25	
	S.4					○ 12-18		○ 12-18		○ 12-18		○ 10-20		○ 10-20	
H	H.1														
	H.2														



BS15	169

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●	50-60
●	50-60
●	45-55
●	40-50
●	15-25

●	15-25
●	15-25
●	10-20

●	45-55
---	-------

●	50-60
●	45-55
●	45-55

●	40-50
●	35-45

●	15-25
○	10-20
●	15-25
○	10-20

A21 FC	38		A21 FC	38	A22 FC	40	A22 FC	40	A29	55
									A29	57
A23 FC	83	A23 FC LH	83	A23 FC	83				A30	92
A27 FC	104			A27 FC	104				A33	108
									A33	108
A28 FC	112			A28 FC	112				A34	116
									A34	116
A26 FC	122								A32	125
A24 FC	132								A31	133

○	12-15	○	12-15	●	20-25	○	12-15	●	20-25	●	18-20
●	10-12	●	10-12	●	15-20	●	10-12	●	15-20	●	15-18
●	8-10	●	8-10	●	12-15	●	8-10	●	12-15	●	12-15
										●	10-12

●	8-10	●	8-10	●	12-15	●	8-10	●	12-15	●	12-15
---	------	---	------	---	-------	---	------	---	-------	---	-------

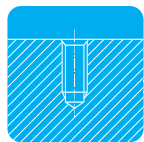
○	12-15	○	12-15	●	20-25	○	12-15	●	20-25	●	18-20
○	10-12	○	10-12	○	15-20	○	10-12	○	15-20	●	15-18
○	10-12	○	10-12	○	15-20	○	10-12	○	15-20	●	15-18
○	10-12	○	10-12	●	15-20	○	10-12	●	15-20	●	15-18
○	8-10	○	8-10	○	12-15	○	8-10	○	12-15	●	12-15

									○	6-8
									○	6-8

TAP APPLICATION TABLE

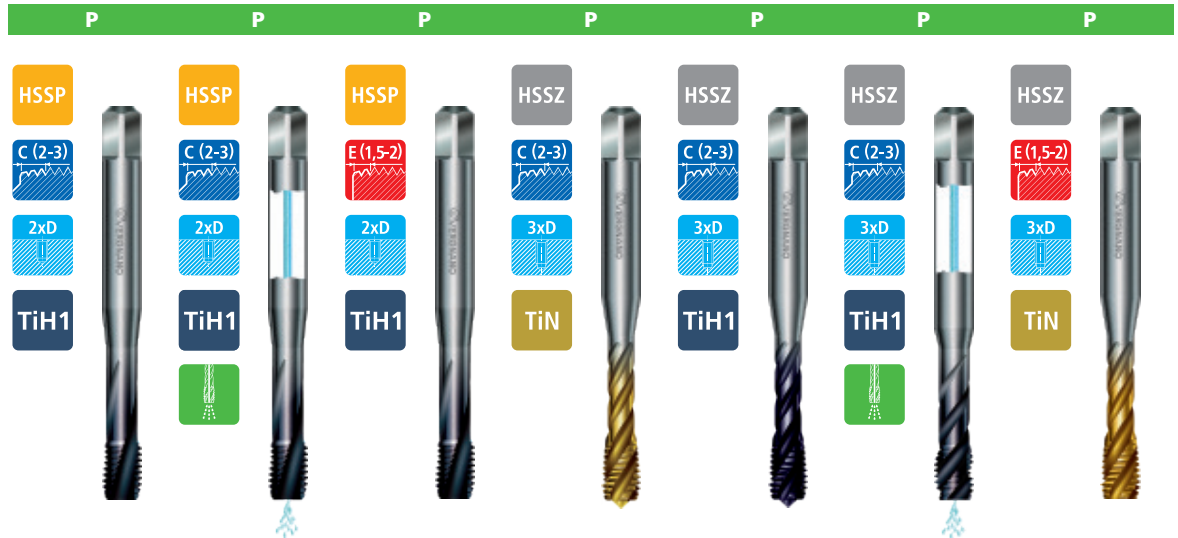


		A		A		A		A		A		A		A	
		HSSE		HSSE		HSSE		HSSE		HSSE		HSSE		HSSE	
		C (2-3)		C (2-3)		C (2-3)		C (2-3)		C (2-3)		C (2-3)		C (2-3)	
		1.5xD		1.5xD		1.5xD		1.5xD		1.5xD		1.5xD		2.5xD	
		VAP		TiN		BRIGHT		TiN		BRIGHT		TiN		BRIGHT	
M	4H													A70 S	61
	6H/6HX	A29	55	A29	55	A29 376	58	A29 376	58	A29 L	59	A29 L	59	A70 S	60
	6G/6GX			A29	57									A70 S	62
	7G/7GX													A70 S	63
	6H +0,1													A701 S	64
MF	6H/6HX			A30	92									A71 S	95
	6G/6GX													A71 S	97
UNC	2B/2BX			A33	108									A60 S	109
	3B														
UNF	2B/2BX			A34	116									A61 S	117
	3B														
8-UN	2B													A160	120
G	ISO 5969/X			A32	125									A59 S	126
Rp (BSPP)	--													A159 S	129
Rc (BSPT)	--														
BSW	mc			A31	133										
NPT	--														
NPTF	--														
ISO 513	Group														
P	P.1	●	18-20	●	30-35	●	18-20	●	30-35	●	18-20	●	30-35	●	15-20
	P.2	●	15-18	●	25-30	●	15-18	●	25-30	●	15-18	●	25-30	●	12-15
	P.3	●	12-15	●	20-25	●	12-15	●	20-25	●	12-15	●	20-25	●	10-12
	P.4	●	10-12	●	15-20	●	10-12	●	15-20	●	10-12	●	15-20	●	6-8
	P.5			●	5-10			●	5-10			●	5-10	○	6-8
	P.6													○	6-8
	P.7													○	6-8
M	M.1													○	6-8
	M.2														
K	K.1														
	K.2	●	12-15	●	20-25	●	12-15	●	20-25	●	12-15	●	20-25	●	12-15
	K.3														
N	N.1	●	18-20	○	30-35	●	18-20	○	30-35	●	18-20	○	30-35	○	18-20
	N.2	●	15-18	●	25-30	●	15-18	●	25-30	●	15-18	●	25-30	○	15-18
	N.3	●	15-18	●	25-30	●	15-18	●	25-30	●	15-18	●	25-30	●	15-18
	N.4														
	N.5	●	15-18	○	25-30	●	15-18	○	25-30	●	15-18	○	25-30		
	N.6	●	12-15	●	20-25	●	12-15	●	20-25	●	12-15	●	20-25	●	15-18
	N.7														
	N.8														
	N.9														
	N.10														
S	S.1	○	6-8			○	6-8			○	6-8			○	6-8
	S.2														
	S.3	○	6-8	○	8-10	○	6-8	○	8-10	○	6-8	○	8-10	○	6-8
	S.4														
H	H.1														
	H.2														



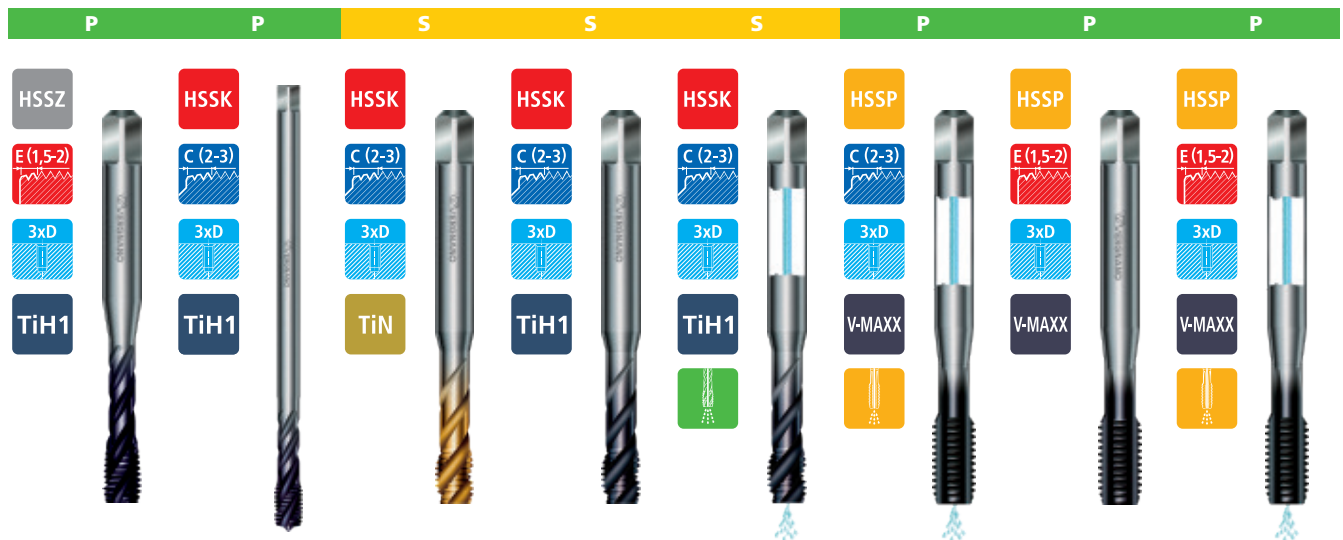
M	4H								
	6H/6HX	A76 S	67	A76 S	67	A70 L	68	A70 L	68
	6G/6GX								
	7G/7GX								
	6H +0,1								
MF	6H/6HX								
	6G/6GX								
UNC	2B/2BX								
	3B								
UNF	2B/2BX								
	3B								
8-UN	2B								
G	ISO 5969/X								
Rp (BSPP)	--								
Rc (BSPT)	--								
BSW	mc								
NPT	--								
NPTF	--								
ISO 513	Group								
P	P.1				● 12-15	● 25-30	● 12-15	● 12-15	● 25-30
	P.2	● 15-20	● 25-30	● 10-15	● 20-25	● 10-15	● 10-15	● 10-15	● 20-25
	P.3	● 12-15	● 20-25	○ 8-10	○ 15-20	○ 8-10	○ 8-10	○ 8-10	○ 15-20
	P.4	● 10-12	● 15-20						
	P.5	○ 6-8	● 5-10						
	P.6								
	P.7	○ 6-8	● 8-10						
M	M.1	○ 6-8	● 8-10						
	M.2		○ 3-5						
K	K.1								
	K.2	● 12-15	● 20-25	○ 8-10	○ 15-20	○ 8-10	○ 8-10	○ 8-10	○ 15-20
	K.3								
N	N.1			● 12-15	○ 25-30	● 12-15	● 12-15	○ 25-30	
	N.2	○ 18-20	○ 30-35	● 12-15	● 25-30	● 12-15	● 12-15	● 25-30	
	N.3	● 15-18	● 25-30	○ 10-12	○ 20-25	○ 10-12	○ 10-12	○ 20-25	
	N.4								
	N.5			● 10-12	○ 20-25	● 10-12	● 10-12	○ 20-25	
	N.6	● 15-18	● 25-30	● 10-12	● 20-25	● 10-12	● 10-12	● 20-25	
	N.7								
	N.8								
	N.9								
	N.10								
S	S.1	○ 6-8							
	S.2								
	S.3	○ 6-8	○ 8-10						
	S.4								
H	H.1								
	H.2								

23



		P		P		P		P		P		P		P	
		HSSP		HSSP		HSSP		HSSZ		HSSZ		HSSZ		HSSZ	
		C (2-3)		C (2-3)		E (1,5-2)		C (2-3)		C (2-3)		C (2-3)		E (1,5-2)	
		2xD		2xD		2xD		3xD		3xD		3xD		3xD	
		TiH1		TiH1		TiH1		TiN		TiH1		TiH1		TiN	
															
M	4H														
	6H/6HX	P29	144	BP29	144	P29 E	145	P70	146	P70	146	BP70	147	P70 E	148
	6G/6GX									P70	146				
	7G/7GX									P70	146				
	6H +0,1														
MF	6H/6HX	P30	159	BP30	159			P71	160	P71	160	BP71	160		
	6G/6GX									P71	160				
UNC	2B/2BX														
	3B														
UNF	2B/2BX														
	3B														
8-UN	2B														
G	ISO 5969/X							P59	165	P59	165				
Rp (BSPP)	--														
Rc (BSPT)	--														
BSW	mc														
NPT	--														
NPTF	--														
ISO 513	Group														
P	P.1							○	25-35	○	25-35	○	25-35	○	25-35
	P.2														
	P.3	●	25-30	●	25-30	●	25-30	●	20-30	●	20-30	●	20-30	●	20-30
	P.4	●	20-25	●	20-25	●	20-25	●	15-25	●	15-25	●	15-25	●	15-25
	P.5	●	10-15	●	10-15	●	10-15	●	5-15	●	5-15	●	5-15	●	5-15
	P.6	●	5-10	●	5-10	●	5-10	○	5-8	○	5-8	○	5-8	○	5-8
	P.7	●	10-15	●	10-15	●	10-15	●	10-15	●	10-15	●	10-15	●	10-15
M	M.1							●	10-15	●	10-15	●	10-15	●	10-15
	M.2							●	5-7	●	5-7	●	5-7	●	5-7
K	K.1														
	K.2	●	25-30	●	25-30	●	25-30	●	20-30	●	20-30	●	20-30	●	20-30
	K.3														
N	N.1														
	N.2							○	30-40	○	30-40	○	30-40	○	30-40
	N.3	●	25-30	●	25-30	●	25-30	●	25-35	●	25-35	●	25-35	●	25-35
	N.4														
	N.5														
	N.6	●	25-30	●	25-30	●	25-30	●	25-35	●	25-35	●	25-35	●	25-35
	N.7	●	20-25	●	20-25	●	20-25								
	N.8														
	N.9														
	N.10														
S	S.1									●	10-15	●	10-15		
	S.2	●	2-3	●	2-3	●	2-3								
	S.3							●	10-15	●	10-15	●	10-15	●	10-15
	S.4	●	2-3	●	2-3	●	2-3								
H	H.1														
	H.2														

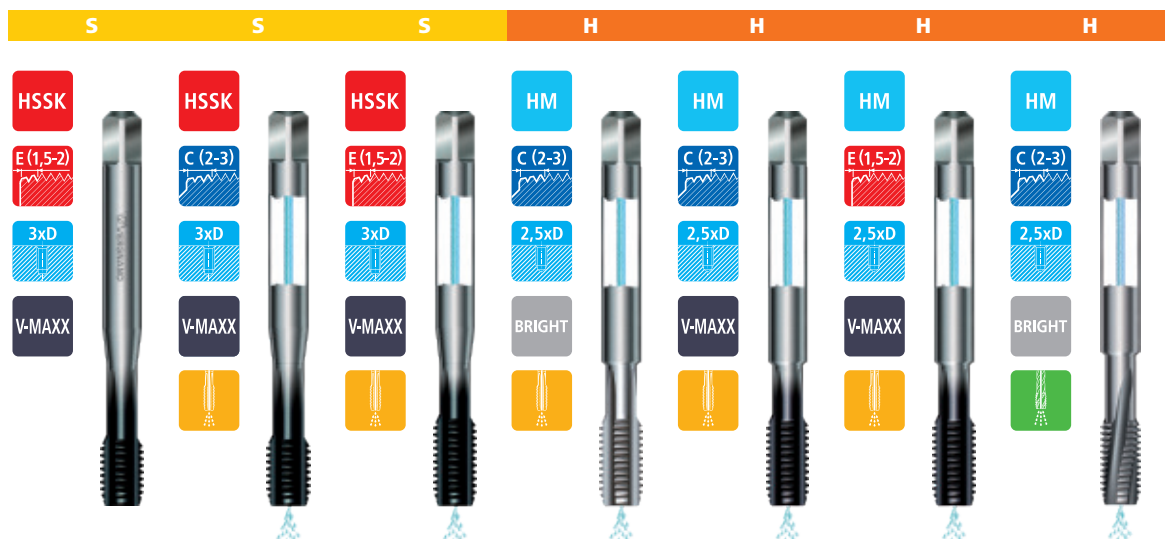
TAP APPLICATION TABLE

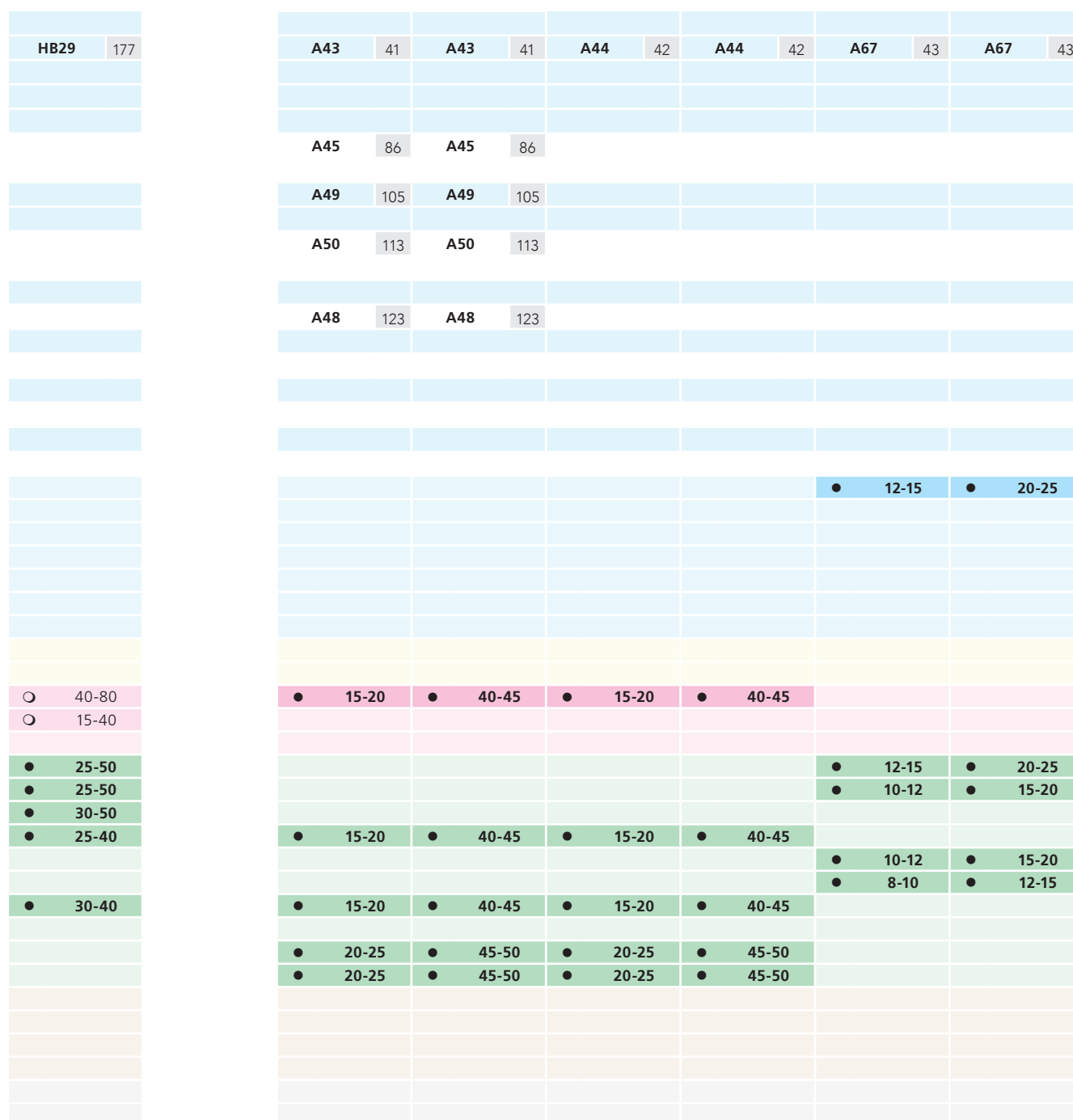


P70 E	148	P76 L	149	S70	170	S70	170	BS70	170	BP43	140	P43 E	141	BP43 E	141
P70 E	148														
P71 E	161			S71	174					BP45	157	P45 E	157	BP45 E	157

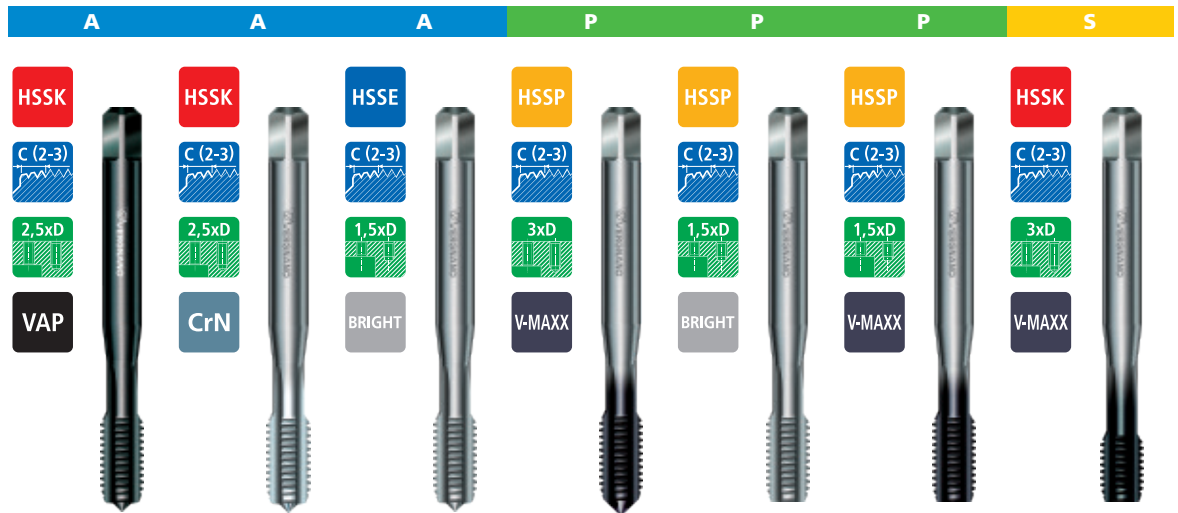
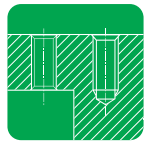
P59 E	165														

○	25-35	○	25-35	●	45-55	●	45-55	●	45-55						
●	20-30	●	20-30	●	45-55	●	45-55	●	45-55						
●	15-25	●	15-25	●	40-50	●	40-50	●	40-50						
●	5-15	●	5-15	●	35-45	●	35-45	●	35-45						
○	5-8	○	5-8	●	15-20	●	15-20	●	15-20						
●	10-15	●	10-15	●	15-20	●	15-20	●	15-20						
●	10-15	●	10-15	●	15-20	●	15-20	●	15-20						
●	5-7	●	5-7												
●	20-30	●	20-30	●	40-50	●	40-50	●	40-50	●	40-50	●	40-50	●	40-50
										○	10-20	○	10-20	○	10-20
○	30-40	○	30-40	●	45-55	●	45-55	●	45-55						
●	25-35	●	25-35	●	40-50	●	40-50	●	40-50						
				●	40-50	●	40-50	●	40-50	●	40-50	●	40-50	●	40-50
				●	35-45	●	35-45	●	35-45						
●	25-35	●	25-35	●	30-40	●	30-40	●	30-40						
										●	40-50	●	40-50	●	40-50
										●	45-55	●	45-55	●	45-55
										●	45-55	●	45-55	●	45-55
●	10-15	●	10-15			●	15-20	●	15-20						
●	10-15	●	10-15	●	15-20	○	5-15	○	5-15						
				○	5-15	○	5-15	○	5-15						

[illegible]

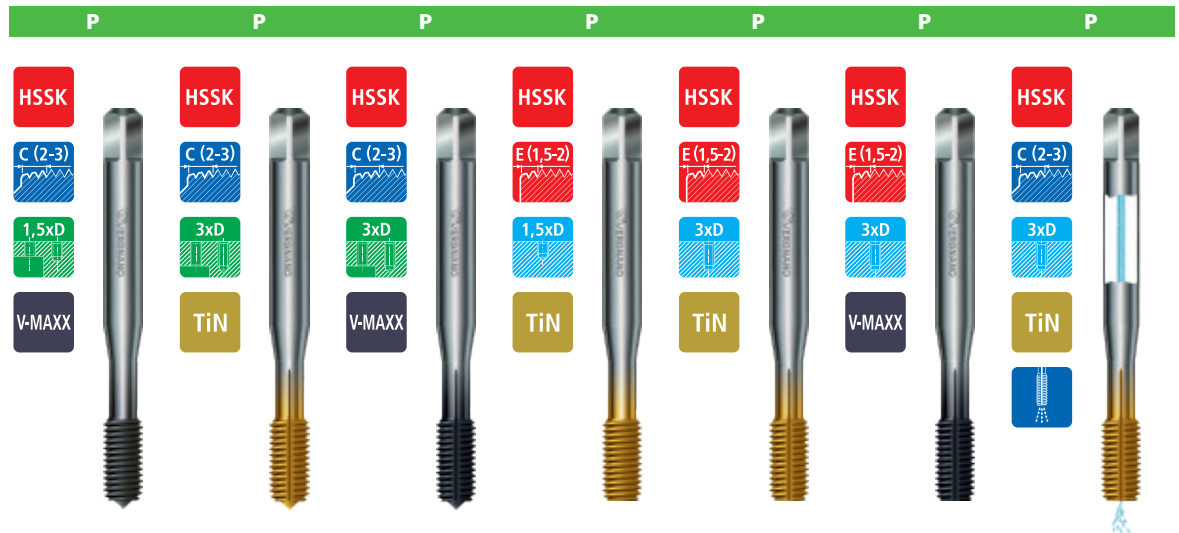


TAP APPLICATION TABLE

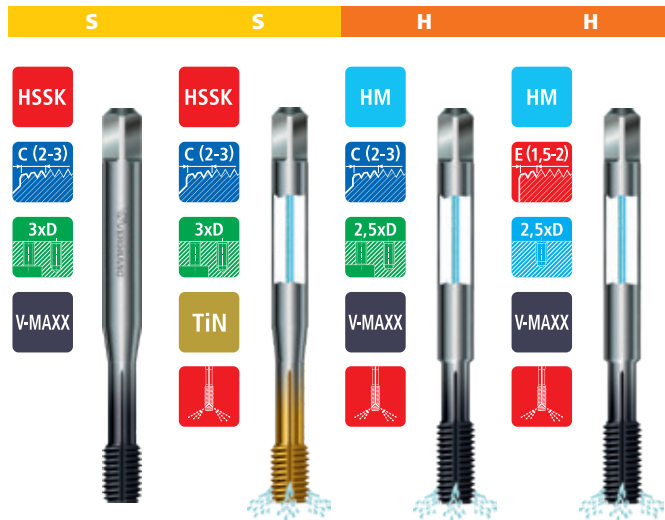


		A	A	A	P	P	P	S
M	4H							
	6H/6HX	A110 44	A110 44	A190-EG 78	P43 140	P130 142	P130 142	S43 168
	6G/6GX							
	7G/7GX							
	6H +0,1							
MF	6H/6HX				P45 157			S45 172
	6G/6GX							
UNC	2B/2BX							
	3B							
UNF	2B/2BX							
	3B							
8-UN	2B							
G	ISO 5969/X							
Rp (BSPP)	--							
Rc (BSPT)	--							
BSW	mc							
NPT	--							
NPTF	--							
ISO 513	Group							
P	P.1			○ 12-15				
	P.2			● 10-12				
	P.3			● 8-10				
	P.4							
	P.5							
	P.6					● 2-3	● 5-8	
	P.7							
M	M.1							
	M.2							
K	K.1				● 40-50			● 55-65
	K.2			● 8-10				
	K.3				○ 10-20			○ 20-30
N	N.1			○ 12-15				
	N.2			○ 10-12				
	N.3			○ 10-12				
	N.4				● 40-50			● 55-65
	N.5			○ 10-12				
	N.6			○ 8-10				
	N.7				● 40-50			● 55-65
	N.8					● 3-5	● 8-10	
	N.9				● 45-55			● 55-65
	N.10				● 45-55			● 55-65
S	S.1	● 6-8	● 10-12					
	S.2	● 3-5	● 6-8					
	S.3							
	S.4							
H	H.1							
	H.2							

[illegible]



		P		P		P		P		P		P		P	
		HSSK		HSSK		HSSK		HSSK		HSSK		HSSK		HSSK	
M	4H														
	6H/6HX	P80	150	P80 N	151	P80 N	151	P80 E	152	P80 N E	152	P80 N E	152	BP80 N	153
	6G/6GX			P80 N	151					P80 N E	152				
	7G/7GX			P80 N	151										
	6H +0,1														
MF	6H/6HX	P81	162	P81 N	163	P81 N	163								
	6G/6GX			P81 N	163										
UNC	2B/2BX														
	3B														
UNF	2B/2BX														
	3B														
8-UN	2B														
G	ISO 5969/X			P82 N	166	P82 N	166								
Rp (BSPP)	--														
Rc (BSPT)	--														
BSW	mc														
NPT	--														
NPTF	--														
ISO 513	Group														
P	P.1	●	40-45	●	40-45	●	40-45	●	40-45	●	40-45	●	40-45	●	40-45
	P.2	●	40-45	●	40-45	●	40-45	●	40-45	●	40-45	●	40-45	●	40-45
	P.3	●	35-40	●	35-40	●	35-40	●	35-40	●	35-40	●	35-40	●	35-40
	P.4	●	30-35	●	30-35	●	30-35	●	30-35	●	30-35	●	30-35	●	30-35
	P.5	●	15-20	●	15-20	●	15-20	●	15-20	●	15-20	●	15-20	●	15-20
	P.6														
	P.7	●	15-20	●	15-20	●	15-20	●	15-20	●	15-20	●	15-20	●	15-20
M	M.1	●	15-20	●	15-20	●	15-20	●	15-20	●	15-20	●	15-20	●	15-20
	M.2														
K	K.1														
	K.2														
	K.3														
N	N.1	●	40-45	●	40-45	●	40-45	●	40-45	●	40-45	●	40-45	●	40-45
	N.2	●	40-45	●	40-45	●	40-45	●	40-45	●	40-45	●	40-45	●	40-45
	N.3	●	35-40	●	35-40	●	35-40	●	35-40	●	35-40	●	35-40	●	35-40
	N.4														
	N.5	●	40-45	●	40-45	●	40-45	●	40-45	●	40-45	●	40-45	●	40-45
	N.6	●	40-45	●	40-45	●	40-45	●	40-45	●	40-45	●	40-45	●	40-45
	N.7														
	N.8														
	N.9														
	N.10														
S	S.1														
	S.2														
	S.3	●	10-15	●	10-15	●	10-15	●	10-15	●	10-15	●	10-15	●	10-15
	S.4	○	5-10	○	5-10	○	5-10	○	5-10	○	5-10	○	5-10	○	5-10
H	H.1														
	H.2														



TAPPING OIL



M	4H				
	6H/6HX	S80 N	171	BS80 N R	171
	6G/6GX				
	7G/7GX				
MF	6H/6HX				
	6G/6GX				HB81 N R E 181
UNC	2B/2BX				
	3B				
UNF	2B/2BX				
	3B				
8-UN	2B				
G	ISO 5969/X				
Rp (BSPP)	--				
Rc (BSPT)	--				
BSW	mc				
NPT	--				
NPTF	--				
ISO 513	Group				
P	P.1	●	50-60	●	50-60
	P.2	●	50-60	●	50-60
	P.3	●	45-55	●	45-55
	P.4	●	40-50	●	40-50
	P.5	●	20-30	●	20-30
	P.6				
	P.7	●	25-35	●	25-35
M	M.1	●	25-35	●	25-35
	M.2	●	15-25	●	15-25
K	K.1				
	K.2				
	K.3				
N	N.1	●	50-60	●	50-60
	N.2	●	50-60	●	50-60
	N.3	●	45-55	●	45-55
	N.4				
	N.5	●	50-60	●	50-60
	N.6	●	50-60	●	50-60
	N.7				
	N.8				
	N.9				
	N.10				
S	S.1				
	S.2				
	S.3	●	10-20	●	10-20
	S.4	○	5-15	○	5-15
H	H.1				
	H.2				

VTO-100

Suitable for tapping with cutting or forming taps on all materials. Available only in EU countries

€ P.69

A SERIES

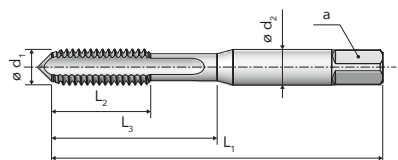
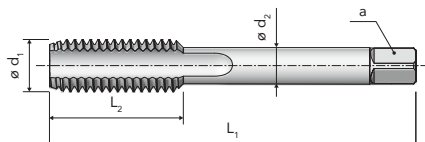
Taps for Generic Applications

HAND TAPS for blind and through holes

In sets of three pieces



HSS

A1
ROUGHINGA1
SECONDA1
FINISHINGA1
SETDIN 352
≤ M6DIN 352
≥ M7

APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A1 ROUGHING	A1 SECOND	A1 FINISHING	A1 SET
P	P.1-4	•	•	•	•
	P.7	•	•	•	•
K	K.2	•	•	•	•
N	N.1-3	•	•	•	•
	N.5-7	•	•	•	•



Ød1 [mm]	P [mm]	L1 js 16 [mm]	L2 [mm]	L3 [mm]	Ød2 h9 [mm]	a h12 [mm]	z [-]	[mm]	A1 ROUGHING	A1 SECOND	A1 FINISHING	A1 SET
M 2	0,4	36	7,5	12	2,8	2,1	3	1,6	•	•	•	•
2,2	0,45	36	8,5	13,5	2,8	2,1	3	1,75	•	•	•	•
2,3	0,4	36	8,5	13,5	2,8	2,1	3	1,9	•	•	•	•
2,5	0,45	40	8,5	14,5	2,8	2,1	3	2,05	•	•	•	•
2,6	0,45	40	8,5	14,5	2,8	2,1	3	2,1	•	•	•	•
3	0,5	40	10	18	3,5	2,7	3	2,5	•	•	•	•
3,5	0,6	45	11	20	4	3	3	2,9	•	•	•	•
4	0,7	45	12	21	4,5	3,4	3	3,3	•	•	•	•
4,5	0,75	50	13	23	6	4,9	3	3,7	•	•	•	•
5	0,8	50	14	24	6	4,9	3	4,2	•	•	•	•
6	1	56	16	28	6	4,9	3	5	•	•	•	•
7	1	56	19	-	6	4,9	3	6	•	•	•	•
8	1,25	63	22	-	6	4,9	3	6,8	•	•	•	•
9	1,25	63	22	-	7	5,5	3	7,8	•	•	•	•
10	1,5	70	24	-	7	5,5	3	8,5	•	•	•	•
11	1,5	70	24	-	8	6,2	3	9,5	•	•	•	•
12	1,75	75	28	-	9	7	4	10,2	•	•	•	•
14	2	80	30	-	11	9	4	12	•	•	•	•
16	2	80	32	-	12	9	4	14	•	•	•	•
18	2,5	95	34	-	14	11	4	15,5	•	•	•	•
20	2,5	95	34	-	16	12	4	17,5	•	•	•	•
22	2,5	100	34	-	18	14,5	4	19,5	•	•	•	•
24	3	110	38	-	18	14,5	4	21	•	•	•	•
27	3	110	38	-	20	16	4	24	•	•	•	•
30	3,5	125	45	-	22	18	4	26,5	•	•	•	•
33	3,5	125	50	-	25	20	4	29,5	•	•	•	•



HSS

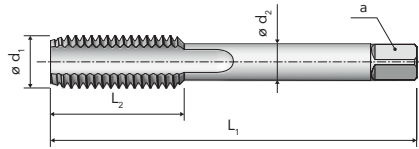
A1
ROUGHING

A1
SECOND

A1
FINISHING

A1
SET

DIN 352


A
SERIES

APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A1 ROUGHING	A1 SECOND	A1 FINISHING	A1 SET
P	P.1-4	•	•	•	•
	P.7	•	•	•	•
K	K.2	•	•	•	•
N	N.1-3	•	•	•	•
	N.5-7	•	•	•	•



«

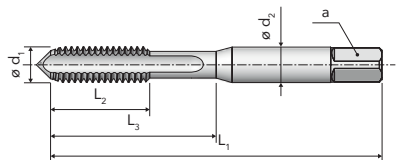
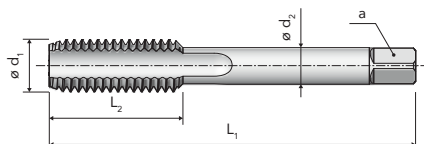
Ød ₁	P	L ₁ js 16	L ₂	L ₃	Ød ₂ h9	a h12	z		A1 ROUGHING	A1 SECOND	A1 FINISHING	A1 SET
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]				
M 36	4	150	56	-	28	22	4	32	•	•	•	•
39	4	150	60	-	32	24	4	35	•	•	•	•
42	4,5	150	60	-	32	24	4	37,5	•	•	•	•
45	4,5	160	65	-	36	29	4	40,5	•	•	•	•
48	5	180	70	-	36	29	4	43	•	•	•	•
52	5	180	70	-	40	32	5	47	•	•	•	•
56	5,5	180	70	-	40	32	5	50,5	•	•	•	•

HAND TAPS for blind and through holes

In sets of three pieces



HSS

A1 LH
ROUGHINGA1 LH
SECONDA1 LH
FINISHINGA1 LH
SETDIN 352
≤ M6DIN 352
≥ M8

APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A1 LH ROUGHING	A1 LH SECOND	A1 LH FINISHING	A1 LH SET
P	P.1-4	•	•	•	•
	P.7	•	•	•	•
K	K.2	•	•	•	•
N	N.1-3	•	•	•	•
	N.5-7	•	•	•	•



Ød ₁	P	L ₁ js 16	L ₂	L ₃	Ød ₂ h9	a h12	Z	Ød ₁	A1 LH ROUGHING	A1 LH SECOND	A1 LH FINISHING	A1 LH SET
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]				
M 2,6	0,45	40	8,5	14,5	2,8	2,1	3	2,1	•	•	•	•
3	0,5	40	10	18	3,5	2,7	3	2,5	•	•	•	•
3,5	0,6	45	11	20	4	3	3	2,9	•	•	•	•
4	0,7	45	12	21	4,5	3,4	3	3,3	•	•	•	•
5	0,8	50	14	24	6	4,9	3	4,2	•	•	•	•
6	1	56	16	28	6	4,9	3	5	•	•	•	•
8	1,25	63	22	-	6	4,9	3	6,8	•	•	•	•
10	1,5	70	24	-	7	5,5	3	8,5	•	•	•	•
12	1,75	75	28	-	9	7	4	10,2	•	•	•	•
14	2	80	30	-	11	9	4	12	•	•	•	•
16	2	80	32	-	12	9	4	14	•	•	•	•
18	2,5	95	34	-	14	11	4	15,5	•	•	•	•
20	2,5	95	34	-	16	12	4	17,5	•	•	•	•
22	2,5	100	34	-	18	14,5	4	19,5	•	•	•	•
24	3	110	38	-	18	14,5	4	21	•	•	•	•
27	3	110	38	-	20	16	4	24	•	•	•	•
30	3,5	125	45	-	22	18	4	26,5	•	•	•	•



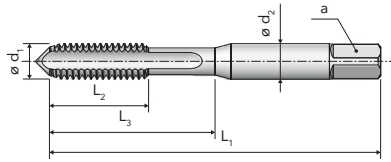
A100
ROUGHING

A100
SECOND

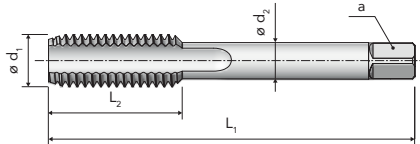
A100 FINISHING

A100
SET

DIN 352
≤ M6



DIN 352
≥ M8



A SERIES

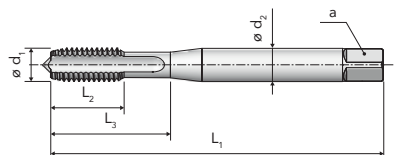
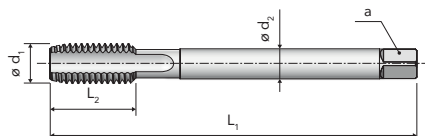
APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A100 ROUGHING	A100 SECOND	A100 FINISHING	A100 SET
P	P.1-5	●	●	●	●
	P.7	●	●	●	●
M	M.1-2	●	●	●	●
K	K.1-3	●	●	●	●
N	N.1-10	●	●	●	●
S	S.1	●	●	●	●
	S.3	●	●	●	●

[illegible]


A21 FC
 BRIGHT

A21 FC
 TiN

DIN 371
 $\leq M10$

DIN 376
 $\geq M11$

APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A21 FC BRIGHT	A21 FC TiN		
P	P.1		• 20-25		
	P.2	• 10-12	• 15-20		
	P.3	• 8-10	• 12-15		
K	K.2	• 8-10	• 12-15		
N	N.1		• 20-25		
	N.5		• 15-20		

ISO2
6H

ISO2
6H

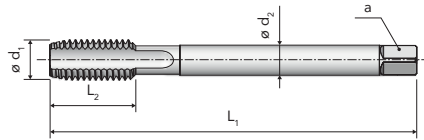

Ød ₁	P	L ₁ js 16	L ₂	L ₃	Ød ₂ h9	a h12	Z		A21 FC BRIGHT	A21 FC TiN		
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]				
M 2	0,4	45	7	11	2,8	2,1	3	1,6	•	•		
2,5	0,45	50	9	15	2,8	2,1	3	2,05	•	•		
3	0,5	56	10	18	3,5	2,7	3	2,5	•	•		
3,5	0,6	56	11	20	4	3	3	2,9	•	•		
4	0,7	63	12	21	4,5	3,4	3	3,3	•	•		
5	0,8	70	14	24,5	6	4,9	3	4,2	•	•		
6	1	80	16	29	6	4,9	3	5	•	•		
7	1	80	16	29	7	5,5	3	6	•	•		
8	1,25	90	18	33	8	6,2	3	6,8	•	•		
9	1,25	90	18	33	9	7	3	7,8	•	•		
10	1,5	100	20	36	10	8	3	8,5	•	•		
11	1,5	100	22	-	8	6,2	3	9,5	•	•		
12	1,75	110	24	-	9	7	3	10,2	•	•		
14	2	110	25	-	11	9	3	12	•	•		
16	2	110	28	-	12	9	3	14	•	•		
18	2,5	125	32	-	14	11	3	15,5	•	•		
20	2,5	140	32	-	16	12	4	17,5	•	•		
22	2,5	140	32	-	18	14,5	4	19,5	•	•		
24	3	160	36	-	18	14,5	4	21	•	•		
27	3	160	36	-	20	16	4	24	•	•		
30	3,5	180	40	-	22	18	4	26,5	•	•		
33	3,5	180	40	-	25	20	4	29,5	•	•		
36	4	200	55	-	28	22	4	32	•	•		
39	4	200	60	-	32	24	4	35	•			
42	4,5	200	60	-	32	24	4	37,5	•			
45	4,5	220	65	-	36	29	4	40,5	•			



HSSE

A21 FC
BRIGHT

DIN 376



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A21 FC BRIGHT			
P	P.2	● 10-12			
	P.3	● 8-10			
K	K.2	● 8-10			

ISO2
6H



<<

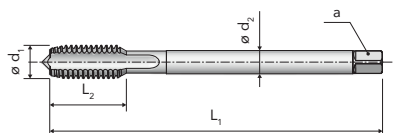
[illegible]



A22 FC
BRIGHT

A22 FC
TiN

DIN 376



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A22 FC BRIGHT	A22 FC TiN		
P	P.1		● 20-25		
	P.2	● 10-12	● 15-20		
	P.3	● 8-10	● 12-15		
K	K.2	● 8-10	● 12-15		
N	N.1		● 20-25		
	N.5		● 15-20		

ISO26H

ISO2
6H

1,5xD

1,5xD

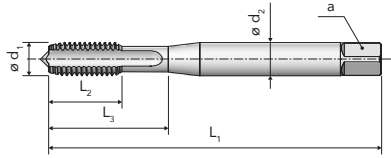
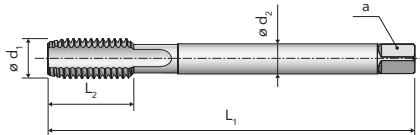
[illegible]



HSSE

A43
NITRIDED

A43
TiCN

DIN 371
≤ M10

DIN 376
≥ M11


APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A43 NITRIDED	A43 TiCN		
K	K.1	● 15-20	● 40-45		
N	N.4	● 15-20	● 40-45		
	N.7	● 15-20	● 40-45		
	N.9-10	● 20-25	● 45-50		

6HX

6HX



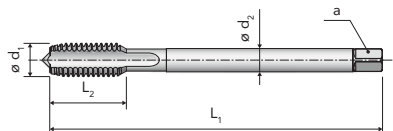
Ød ₁	P	L ₁ js 16	L ₂	L ₃	Ød ₂ h9	a h12	z		A43 NITRIDED	A43 TiCN		
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]				
M 3	0,5	56	10	18	3,5	2,7	3	2,5	●	●		
3,5	0,6	56	11	20	4	3	3	2,9	●	●		
4	0,7	63	12	21	4,5	3,4	3	3,3	●	●		
5	0,8	70	14	24,5	6	4,9	3	4,2	●	●		
6	1	80	16	29	6	4,9	4	5	●	●		
7	1	80	16	29	7	5,5	4	6	●	●		
8	1,25	90	18	33	8	6,2	4	6,8	●	●		
9	1,25	90	18	33	9	7	4	7,8	●	●		
10	1,5	100	20	36	10	8	4	8,5	●	●		
11	1,5	100	22	-	8	6,2	4	9,5	●	●		
12	1,75	110	24	-	9	7	4	10,2	●	●		
14	2	110	25	-	11	9	4	12	●	●		
16	2	110	28	-	12	9	4	14	●	●		
18	2,5	125	32	-	14	11	4	15,5	●	●		
20	2,5	140	32	-	16	12	4	17,5	●	●		
22	2,5	140	32	-	18	14,5	4	19,5	●	●		
24	3	160	36	-	18	14,5	5	21	●	●		
27	3	160	36	-	20	16	5	24	●	●		
30	3,5	180	40	-	22	18	5	26,5	●	●		
33	3,5	180	40	-	25	20	5	29,5	●	●		
36	4	200	55	-	28	22	5	32	●	●		



A44
NITRIDED

A44
TiCN

DIN 376



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A44	A44		
		NITRIDED	TiCN		
K	K.1	● 15-20	● 40-45		
N	N.4	● 15-20	● 40-45		
	N.7	● 15-20	● 40-45		
	N.9-10	● 20-25	● 45-50		

6HX

6HX



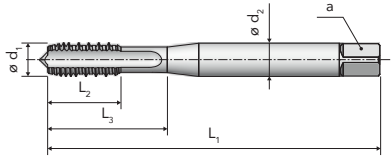
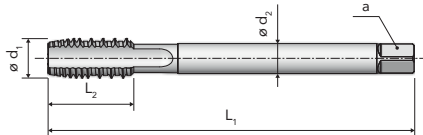
2,5xD

2,5xD

[illegible]


A67
BRIGHT

A67
TiH1

DIN 371
≤ M10

DIN 376
≥ M12


APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A67 BRIGHT	A67 TiH1		
P	P.1	• 12-15	• 20-25		
N	N.1	• 12-15	• 20-25		
	N.2	• 10-12	• 15-20		
	N.5	• 10-12	• 15-20		
	N.6	• 8-10	• 12-15		

ISO2
6H

ISO2
6H


Ød ₁	P	L ₁ js 16	L ₂	L ₃	Ød ₂ h9	a h12	z		A67 BRIGHT	A67 TiH1		
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]				
M 3	0,5	56	10	18	3,5	2,7	3	2,5	•	•		
4	0,7	63	12	21	4,5	3,4	3	3,3	•	•		
5	0,8	70	14	24,5	6	4,9	3	4,2	•	•		
6	1	80	16	29	6	4,9	3	5	•	•		
8	1,25	90	18	33	8	6,2	3	6,8	•	•		
10	1,5	100	20	36	10	8	3	8,5	•	•		
12	1,75	110	24	-	9	7	3	10,2	•	•		
14	2	110	25	-	11	9	3	12	•	•		
16	2	110	28	-	12	9	3	14	•	•		
18	2,5	125	32	-	14	11	3	15,5	•	•		
20	2,5	140	32	-	16	12	3	17,5	•	•		

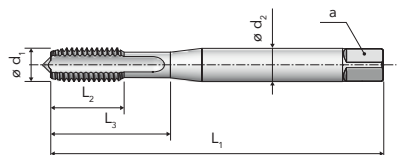
MACHINE TAPS for blind and through holes
Straight flutes / for titanium and titanium alloys



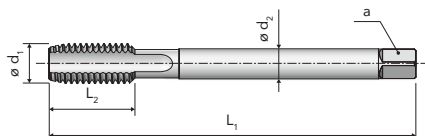
A110
VAP

A110
CrN

DIN 371
≤ M10



DIN 376
≥ M12



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A110 VAP	A110 CrN		
S	S.1	● 6-8	● 10-12		
	S.2	● 3-5	● 6-8		

ISO2
6H

ISO2
6H

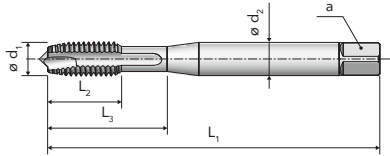
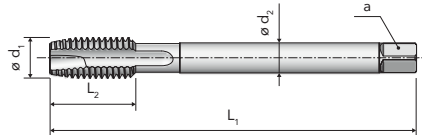
[illegible]


A15 S
BRIGHT

A15 S
VAP

A15 S
TiN

A15 S
TiCN

DIN 371
≤ M10

DIN 376
≥ M11

A
SERIES

APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A15 S BRIGHT	A15 S VAP	A15 S TiN	A15 S TiCN
P	P.2	• 20-25	• 20-25	• 30-35	• 30-35
	P.3	• 15-20	• 15-20	• 25-30	• 25-30
	P.4	• 12-15	• 12-15	• 20-25	• 20-25
	P.5			• 10-15	• 10-15
M	M.1			• 10-15	• 10-15
	M.2	• 15-20	• 15-20	• 25-30	• 25-30
N	N.2-3	• 20-25	• 20-25	• 30-35	• 30-35
	N.6	• 15-18	• 15-18	• 25-30	• 25-30

ISO2
6H


2,5xD


ISO2
6H


2,5xD


ISO2
6H


2,5xD


ISO2
6H


2,5xD

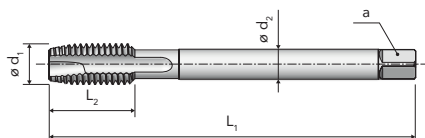


Ød1	P	L1 js 16	L2	L3	Ød2 h9	a h12	z		A15 S BRIGHT	A15 S VAP	A15 S TiN	A15 S TiCN
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]				
M 2	0,4	45	7	11	2,8	2,1	2	1,6	•	•	•	•
2,2	0,45	45	8	13	2,8	2,1	2	1,75	•	•	•	•
2,3	0,4	45	8	13	2,8	2,1	2	1,9	•	•	•	•
2,5	0,45	50	9	15	2,8	2,1	3	2,05	•	•	•	•
2,6	0,45	50	9	15	2,8	2,1	3	2,1	•	•	•	•
3	0,5	56	10	18	3,5	2,7	3	2,5	•	•	•	•
3,5	0,6	56	11	20	4	3	3	2,9	•	•	•	•
4	0,7	63	12	21	4,5	3,4	3	3,3	•	•	•	•
5	0,8	70	14	24,5	6	4,9	3	4,2	•	•	•	•
6	1	80	16	29	6	4,9	3	5	•	•	•	•
7	1	80	16	29	7	5,5	3	6	•	•	•	•
8	1,25	90	18	33	8	6,2	3	6,8	•	•	•	•
9	1,25	90	18	33	9	7	3	7,8	•	•	•	•
10	1,5	100	20	36	10	8	3	8,5	•	•	•	•
11	1,5	100	22	-	8	6,2	3	9,5	•	•	•	•
12	1,75	110	24	-	9	7	4	10,2	•	•	•	•
14	2	110	25	-	11	9	4	12	•	•	•	•
16	2	110	28	-	12	9	4	14	•	•	•	•
18	2,5	125	32	-	14	11	4	15,5	•	•	•	•
20	2,5	140	32	-	16	12	4	17,5	•	•	•	•
22	2,5	140	32	-	18	14,5	4	19,5	•	•	•	•
24	3	160	36	-	18	14,5	4	21	•	•	•	•
27	3	160	36	-	20	16	4	24	•	•	•	•
30	3,5	180	40	-	22	18	4	26,5	•	•	•	•
33	3,5	180	40	-	25	20	5	29,5	•	•	•	•
36	4	200	55	-	28	22	5	32	•	•	•	•



A15 S
BRIGHT

DIN 376



APPLICATION RANGE - CUTTING SPEED m/min

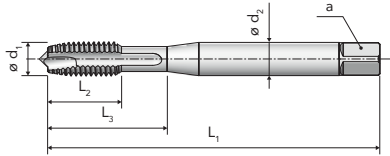
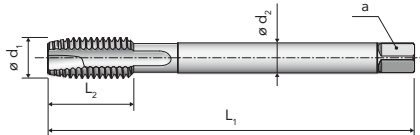
ISO	MG	A15 S BRIGHT			
P	P.2	● 20-25			
	P.3	● 15-20			
	P.4	● 12-15			
K	K.2	● 15-20			
N	N.2-3	● 20-25			
	N.6	● 15-18			

ISO2
6H

[illegible]


A15 S 4H
BRIGHT

A15 S 4H
TiN

DIN 371
≤ M10

DIN 376
≥ M12


APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A15 S 4H BRIGHT	A15 S 4H TiN		
P	P.2	• 20-25	• 30-35		
	P.3	• 15-20	• 25-30		
	P.4	• 12-15	• 20-25		
	P.5		• 10-15		
	P.7		• 10-15		
M	M.1		• 10-15		
K	K.2	• 15-20	• 25-30		
N	N.2-3	• 20-25	• 30-35		
	N.6	• 15-18	• 25-30		

ISO1
4H

ISO1
4H


Ød1	P	L1 js 16	L2	L3	Ød2 h9	a h12	Z		A15 S 4H BRIGHT	A15 S 4H TiN		
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]				
M 2	0,4	45	7	11	2,8	2,1	2	1,6	•	•		
2,5	0,45	50	9	15	2,8	2,1	3	2,05	•	•		
3	0,5	56	10	18	3,5	2,7	3	2,5	•	•		
4	0,7	63	12	21	4,5	3,4	3	3,3	•	•		
5	0,8	70	14	24,5	6	4,9	3	4,2	•	•		
6	1	80	16	29	6	4,9	3	5	•	•		
8	1,25	90	18	33	8	6,2	3	6,8	•	•		
10	1,5	100	20	36	10	8	3	8,5	•	•		
12	1,75	110	24	-	9	7	4	10,2	•	•		
14	2	110	25	-	11	9	4	12	•	•		
16	2	110	28	-	12	9	4	14	•	•		

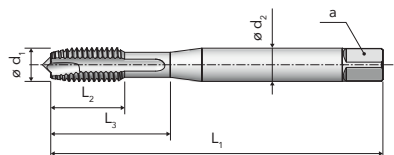


A15 S 6G
BRIGHT

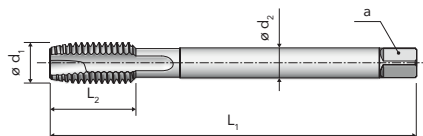
A15 S 6G
TiN

A
SERIES

DIN 371
≤ M10



DIN 376
≥ M12



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A15 S 6G BRIGHT	A15 S 6G TiN		
P	P.2	● 20-25	● 30-35		
	P.3	● 15-20	● 25-30		
	P.4	● 12-15	● 20-25		
	P.5		● 10-15		
	P.7		● 10-15		
M	M.1		● 10-15		
K	K.2	● 15-20	● 25-30		
N	N.2-3	● 20-25	● 30-35		
	N.6	● 15-18	● 25-30		

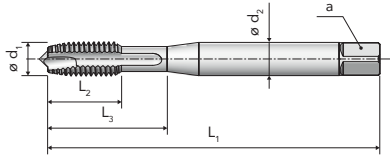
[illegible]



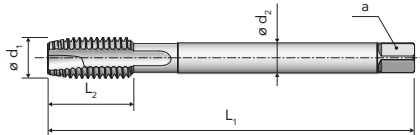
A15 S 7G
BRIGHT

A15 S 7G
TiN

DIN 371
≤ M10



DIN 376
≥ M12



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A15 S 7G BRIGHT	A15 S 7G TiN		
P	P.2	● 20-25	● 30-35		
	P.3	● 15-20	● 25-30		
	P.4	● 12-15	● 20-25		
	P.5		● 10-15		
	P.7		● 10-15		
M	M.1		● 10-15		
K	K.2	● 15-20	● 25-30		
N	N.2-3	● 20-25	● 30-35		
	N.6	● 15-18	● 25-30		

7G

7G

[illegible]

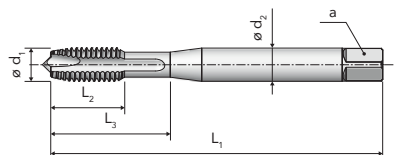


A15 S LH
BRIGHT

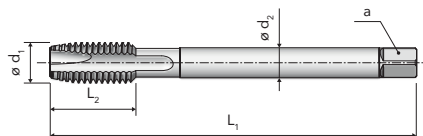
A15 S LH
TiN

A
SERIES

DIN 371
≤ M10



DIN 376
≥ M12



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A15 S LH BRIGHT	A15 S LH TiN		
P	P.2	● 20-25	● 30-35		
	P.3	● 15-20	● 25-30		
	P.4	● 12-15	● 20-25		
	P.5		● 10-15		
	P.7		● 10-15		
M	M.1		● 10-15		
K	K.2	● 15-20	● 25-30		
N	N.2-3	● 20-25	● 30-35		
	N.6	● 15-18	● 25-30		

ISO26H



2,5xD



ISO2
6H

[illegible]

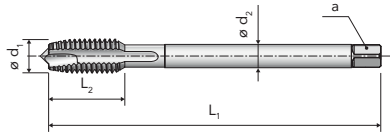
MACHINE TAPS for through holes
Straight flutes with spiral point / through shank



A16 S
BRIGHT

A16 S
TiN

DIN 376



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A16 S BRIGHT	A16 S TiN		
P	P.2	● 20-25	● 30-35		
	P.3	● 15-20	● 25-30		
	P.4	● 12-15	● 20-25		
	P.5		● 10-15		
	P.7		● 10-15		
M	M.1		● 10-15		
K	K.2	● 15-20	● 25-30		
N	N.2-3	● 20-25	● 30-35		
	N.6	● 15-18	● 25-30		

ISO2
6H



ISO2
6H

[illegible]

MACHINE TAPS for through holes

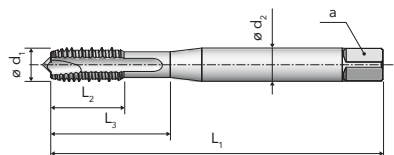
Straight flutes with spiral point / interrupted thread



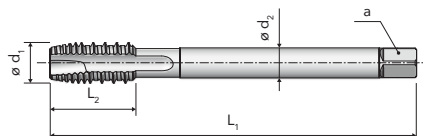
A15 AZ
BRIGHT

A15 AZ
TiH1

DIN 371
≤ M10



DIN 376
≥ M12



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A15 AZ BRIGHT	A15 AZ TiH1		
P	P.1	• 18-20	• 30-35		
N	N.1	• 18-20	• 30-40		
	N.2	• 15-18	• 30-40		
	N.5	• 15-18	• 30-35		
	N.6	• 12-15	• 30-35		

ISO2
6H

ISO2
6H



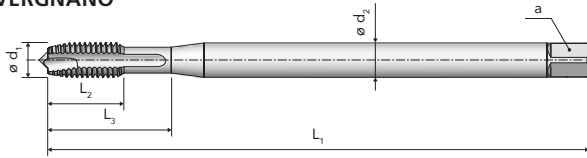
Ød ₁	P	L ₁ js 16	L ₂	L ₃	Ød ₂ h9	a h12	Z		A15 AZ BRIGHT	A15 AZ TiH1		
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]				
M 3	0,5	56	10	18	3,5	2,7	3	2,5	•	•		
4	0,7	63	12	21	4,5	3,4	3	3,3	•	•		
5	0,8	70	14	24,5	6	4,9	3	4,2	•	•		
6	1	80	16	29	6	4,9	3	5	•	•		
8	1,25	90	18	33	8	6,2	3	6,8	•	•		
10	1,5	100	20	36	10	8	3	8,5	•	•		
12	1,75	110	24	-	9	7	3	10,2	•	•		
14	2	110	25	-	11	9	3	12	•	•		
16	2	110	28	-	12	9	3	14	•	•		



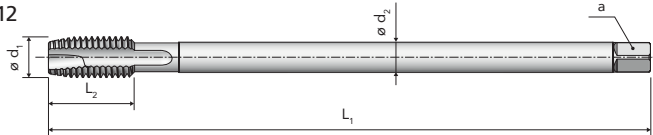
A15 L
BRIGHT

A15 L
TiN

NORM VERGNANO
 $\leq M10$



NORM VERGNANO
≥ M12



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A15 L BRIGHT	A15 L TiN		
P	P.1	● 18-20	● 30-35		
	P.2	● 15-18	● 25-30		
	P.3	● 12-15	● 20-25		
N	N.1	● 18-20			
	N.2	● 15-18	● 25-30		
	N.5	● 15-18			
	N.6	● 12-15	● 20-25		

ISO2
6H



ISO2
6H



Ød ₁	P	L ₁ js 16	L ₂	L ₃	Ød ₂ h9	a h12	z		A15 L BRIGHT	A15 L TiN		
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]				
M 3	0,5	112	10	18	3,5	2,7	3	2,5	●	●		
4	0,7	112	12	21	4,5	3,4	3	3,3	●	●		
5	0,8	125	14	24,5	6	4,9	3	4,2	●	●		
6	1	125	16	29	6	4,9	3	5	●	●		
8	1,25	140	18	33	8	6,2	3	6,8	●	●		
10	1,5	160	20	36	10	8	3	8,5	●	●		
12	1,75	180	24	-	9	7	3	10,2	●	●		
16	2	200	28	-	12	9	3	14	●	●		
20	2,5	225	32	-	16	12	4	17,5	●	●		

MACHINE TAPS for through holes
Straight flutes with spiral point / for stainless steel



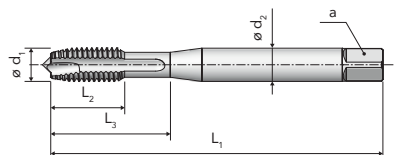
HSSE

A150
VAP

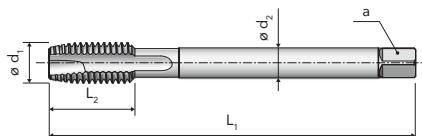
A150
TiX₂

A
SERIES

DIN 371
≤ M10



DIN 376
≥ M12



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A150 VAP	A150 TiX2		
P	P.7	● 10-12	● 18-20		
M	M.1	● 10-12	● 18-20		
	M.2	● 8-10	● 10-20		

6HX

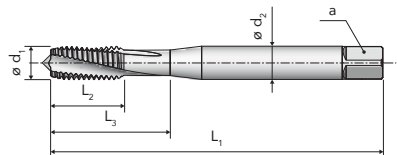
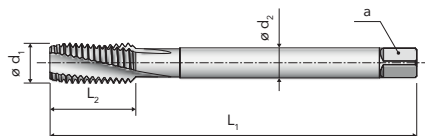
6HX

[illegible]


A29
BRIGHT

A29
VAP

A29
TiN

DIN 371
≤ M10

DIN 376
≥ M11

A
SERIES

APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A29 BRIGHT	A29 VAP	A29 TiN
P	P.1	• 18-20	• 18-20	• 30-35
	P.2	• 15-18	• 15-18	• 25-30
	P.3	• 12-15	• 12-15	• 20-25
	P.4	• 10-12	• 10-12	• 15-20
	P.5			• 5-10
K	K.2	• 12-15	• 12-15	• 20-25
N	N.1	• 18-20	• 18-20	
	N.2-3	• 15-18	• 15-18	• 25-30
	N.5	• 15-18	• 15-18	
	N.6	• 12-15	• 12-15	• 20-25

ISO2
6H

ISO2
6H

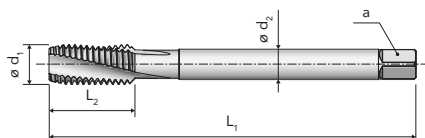
ISO2
6H


Ød ₁	P	L ₁ js 16	L ₂	L ₃	Ød ₂ h9	a h12	z		A29 BRIGHT	A29 VAP	A29 TiN
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]			
M 2	0,4	45	7	11	2,8	2,1	3	1,6	•	•	•
2,2	0,45	45	8	13	2,8	2,1	3	1,75	•		
2,3	0,4	45	8	13	2,8	2,1	3	1,9	•		
2,5	0,45	50	9	15	2,8	2,1	3	2,05	•	•	•
2,6	0,45	50	9	15	2,8	2,1	3	2,1	•		
3	0,5	56	10	18	3,5	2,7	3	2,5	•	•	•
3,5	0,6	56	11	20	4	3	3	2,9	•	•	•
4	0,7	63	12	21	4,5	3,4	3	3,3	•	•	•
4,5	0,75	70	14	24,5	6	4,9	3	3,7	•		
5	0,8	70	14	24,5	6	4,9	3	4,2	•	•	•
6	1	80	16	29	6	4,9	3	5	•	•	•
7	1	80	16	29	7	5,5	3	6	•	•	•
8	1,25	90	18	33	8	6,2	3	6,8	•	•	•
9	1,25	90	18	33	9	7	3	7,8	•	•	•
10	1,5	100	20	36	10	8	3	8,5	•	•	•
11	1,5	100	22	-	8	6,2	3	9,5	•		
12	1,75	110	24	-	9	7	3	10,2	•	•	•
14	2	110	25	-	11	9	3	12	•	•	•
16	2	110	28	-	12	9	3	14	•	•	•
18	2,5	125	32	-	14	11	3	15,5	•	•	•
20	2,5	140	32	-	16	12	4	17,5	•	•	•
22	2,5	140	32	-	18	14,5	4	19,5	•	•	•
24	3	160	36	-	18	14,5	4	21	•	•	•
27	3	160	36	-	20	16	4	24	•	•	•
30	3,5	180	40	-	22	18	4	26,5	•	•	•
33	3,5	180	40	-	25	20	5	29,5	•	•	•



A29
BRIGHT

DIN 376



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A29 BRIGHT			
P	P.1	● 18-20			
	P.2	● 15-18			
	P.3	● 12-15			
	P.4	● 10-12			
K	K.2	● 12-15			
N	N.1	● 18-20			
	N.2-3	● 15-18			
	N.5	● 15-18			
	N.6	● 12-15			

ISO2
6H



«

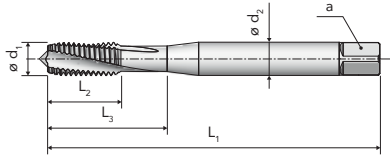
[illegible]



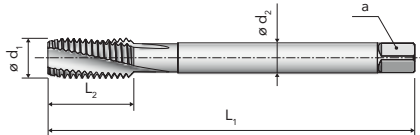
A29 6G
BRIGHT

A29 6G
TiN

DIN 371
≤ M10



DIN 376
≥ M12



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A29 6G BRIGHT	A29 6G TiN		
P	P.1	● 18-20	● 30-35		
	P.2	● 15-18	● 25-30		
	P.3	● 12-15	● 20-25		
	P.4	● 10-12	● 15-20		
	P.5		● 5-10		
K	K.2	● 12-15	● 20-25		
N	N.1	● 18-20			
	N.2-3	● 15-18	● 25-30		
	N.5	● 15-18			
	N.6	● 12-15	● 20-25		

[illegible]

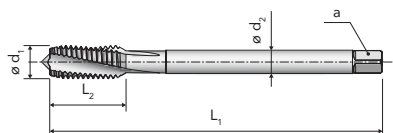


A29 DIN 376 **A29 DIN 376**
BRIGHT TiN

A29 DIN 376

TiN

DIN 376



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A29 DIN 376	A29 DIN 376		
		BRIGHT	TiN		
P	P.1	● 18-20	● 30-35		
	P.2	● 15-18	● 25-30		
	P.3	● 12-15	● 20-25		
	P.4	● 10-12	● 15-20		
	P.5		● 5-10		
K	K.2	● 12-15	● 20-25		
N	N.1	● 18-20			
	N.2-3	● 15-18	● 25-30		
	N.5	● 15-18			
	N.6	● 12-15	● 20-25		

ISO2
6H



1,5xD



RH



ISO2
6H



1,5xD



RH

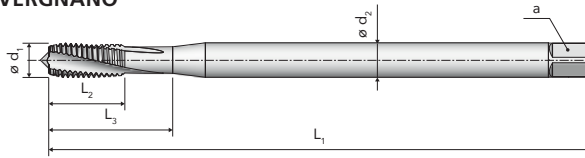
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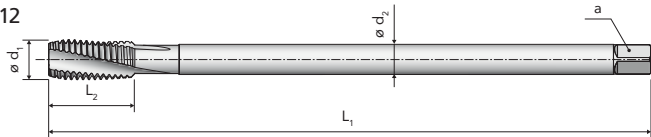
A29 L
BRIGHT

A29 L
TiN

NORM VERGNANO
≤ M10



NORM VERGNANO
≥ M12



APPLICATION RANGE - CUTTING SPEED m/min

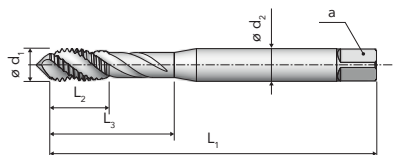
ISO	MG	A29 L BRIGHT	A29 L TiN		
P	P.1	● 18-20	● 30-35		
	P.2	● 15-18	● 25-30		
	P.3	● 12-15	● 20-25		
	P.4	● 10-12	● 15-20		
	P.5		● 5-10		
K	K.2	● 12-15	● 20-25		
N	N.1	● 18-20			
	N.2-3	● 15-18	● 25-30		
	N.5	● 15-18			
	N.6	● 12-15	● 20-25		

ISO2
6H



ISO2
6H

[illegible]

A70 S
BRIGHTA70 S
VAPA70 S
TiNA70 S
TiCNDIN 371
≤ M10DIN 376
≥ M11

APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A70 S BRIGHT	A70 S VAP	A70 S TiN	A70 S TiCN
P	P.2	● 15-20	● 15-20	● 25-30	● 25-30
	P.3	● 12-15	● 12-15	● 20-25	● 20-25
	P.4	● 10-12	● 10-12	● 15-20	● 15-20
	P.5			● 5-10	● 5-10
M	M.1			● 8-10	● 8-10
	M.2			● 8-10	● 8-10
K	K2	● 12-15	● 12-15	● 20-25	● 20-25
N	N.3	● 15-18	● 15-18	● 25-30	● 25-30
	N.6	● 15-18	● 15-18	● 25-30	● 25-30

ISO2
6HISO2
6HISO2
6HISO2
6H

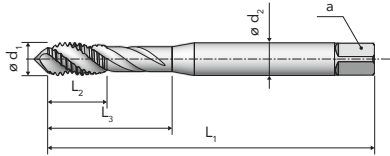
Ød1	P	L1 js 16	L2	L3	Ød2 h9	a h12	z		A70 S BRIGHT	A70 S VAP	A70 S TiN	A70 S TiCN
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]				
M 2	0,4	45	6	12	2,8	2,1	3	1,6	●	●	●	●
2,5	0,45	50	6,5	15	2,8	2,1	3	2,05	●	●	●	●
3	0,5	56	7	15	3,5	2,7	3	2,5	●	●	●	●
3,5	0,6	56	8	18,5	4	3	3	2,9	●	●	●	●
4	0,7	63	8,5	21	4,5	3,4	3	3,3	●	●	●	●
5	0,8	70	10	24,5	6	4,9	3	4,2	●	●	●	●
6	1	80	12	29	6	4,9	3	5	●	●	●	●
7	1	80	12	29	7	5,5	3	6	●	●	●	●
8	1,25	90	15	33	8	6,2	3	6,8	●	●	●	●
9	1,25	90	15	33	9	7	3	7,8	●	●	●	●
10	1,5	100	17,5	38	10	8	3	8,5	●	●	●	●
11	1,5	100	17,5	-	8	6,2	3	9,5	●	●	●	●
12	1,75	110	18	-	9	7	4	10,2	●	●	●	●
14	2	110	20,5	-	11	9	4	12	●	●	●	●
16	2	110	20,5	-	12	9	4	14	●	●	●	●
18	2,5	125	25,5	-	14	11	4	15,5	●	●	●	●
20	2,5	140	29,5	-	16	12	4	17,5	●	●	●	●
22	2,5	140	29,5	-	18	14,5	4	19,5	●	●	●	●
24	3	160	35,5	-	18	14,5	4	21	●	●	●	●
27	3	160	37,5	-	20	16	5	24	●	●	●	●
30	3,5	180	42	-	22	18	5	26,5	●	●	●	●
33	3,5	180	43,5	-	25	20	5	29,5	●	●	●	●
36	4	200	47	-	28	22	5	32	●	●	●	●
42	4,5	200	55	-	32	24	6	37,5	●	●	●	●
48	5	250	59,5	-	36	29	6	43	●	●	●	●
52	5	250	59,5	-	40	32	6	47	●	●	●	●



A70 S 4H
BRIGHT

A70 S 4H
TiN

DIN 371
≤ M10



DIN 376
≥ M12



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A70 S 4H BRIGHT	A70 S 4H TiN		
P	P.2	● 15-20	● 25-30		
	P.3	● 12-15	● 20-25		
	P.4	● 10-12	● 15-20		
	P.5		● 5-10		
	P.7		● 8-10		
M	M.1		● 8-10		
K	K2	● 12-15	● 20-25		
N	N.3	● 15-18	● 25-30		
	N.6	● 15-18	● 25-30		

ISO1
4H



ISO1
4H

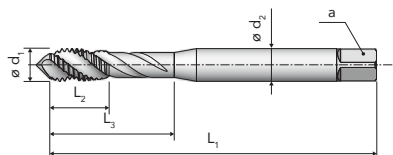
[illegible]



A70 S 6G
BRIGHT

A70 S 6G
TiN

DIN 371
≤ M10



DIN 376
≥ M12



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A70 S 6G BRIGHT	A70 S 6G TiN		
P	P.2	● 15-20	● 25-30		
	P.3	● 12-15	● 20-25		
	P.4	● 10-12	● 15-20		
	P.5		● 5-10		
	P.7		● 8-10		
M	M.1		● 8-10		
K	K.2	● 12-15	● 20-25		
N	N.3	● 15-18	● 25-30		
	N.6	● 15-18	● 25-30		

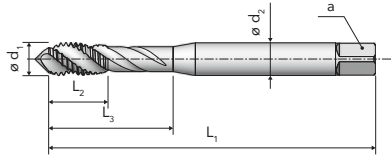
[illegible]



A70 S 7G
BRIGHT

A70 S 7G
TiN

DIN 371
≤ M10



DIN 376
≥ M12



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A70 S 7G BRIGHT	A70 S 7G TiN		
P	P.2	● 15-20	● 25-30		
	P.3	● 12-15	● 20-25		
	P.4	● 10-12	● 15-20		
	P.5		● 5-10		
	P.7		● 8-10		
M	M.1		● 8-10		
K	K2	● 12-15	● 20-25		
N	N.3	● 15-18	● 25-30		
	N.6	● 15-18	● 25-30		

7G

7G

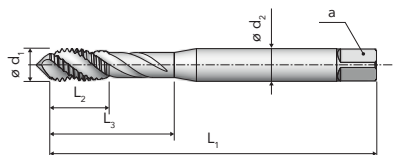
[illegible]



A701 S
BRIGHT

A701 S
TiN

DIN 371
≤ M10



DIN 376
≥ M12



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A701 S BRIGHT	A701 S TiN		
P	P.2	● 15-20	● 25-30		
	P.3	● 12-15	● 20-25		
	P.4	● 10-12	● 15-20		
	P.5		● 5-10		
	P.7		● 8-10		
M	M.1		● 8-10		
K	K.2	● 12-15	● 20-25		
N	N.3	● 15-18	● 25-30		
	N.6	● 15-18	● 25-30		

6H
+0,1mm

6H
+0,1mm

[illegible]

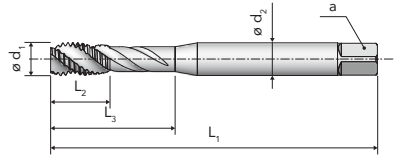
MACHINE TAPS for blind holes
40° spiral flutes / back tapered / chamfer form E



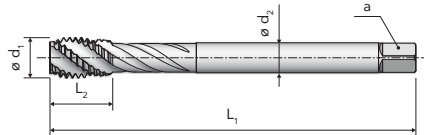
A70 SE
BRIGHT

A70 SE
TiN

DIN 371
≤ M10



DIN 376
≥ M12



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A70 SE BRIGHT	A70 SE TiN		
P	P.2	● 15-20	● 25-30		
	P.3	● 12-15	● 20-25		
	P.4	● 10-12	● 15-20		
	P.5		● 5-10		
	P.7		● 8-10		
M	M.1		● 8-10		
K	K2	● 12-15	● 20-25		
N	N.3	● 15-18	● 25-30		
	N.6	● 15-18	● 25-30		

ISO2
6H

ISO2
6H

[illegible]

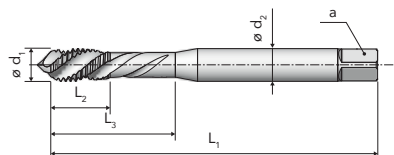
MACHINE TAPS for blind holes
40° spiral flutes / back tapered



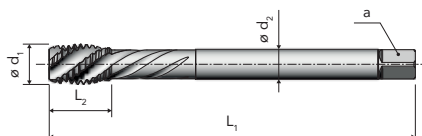
A70 S LH
BRIGHT

A70 S LH
TiN

DIN 371
≤ M10



DIN 376
≥ M12



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A70 S LH BRIGHT	A70 S LH TiN		
P	P.2	● 15-20	● 25-30		
	P.3	● 12-15	● 20-25		
	P.4	● 10-12	● 15-20		
	P.5		● 5-10		
	P.7		● 8-10		
M	M.1		● 8-10		
K	K.2	● 12-15	● 20-25		
N	N.3	● 15-18	● 25-30		
	N.6	● 15-18	● 25-30		

ISO26262



ISO2
6H

[illegible]

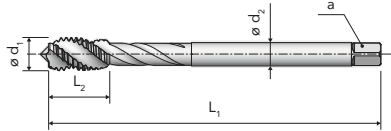
MACHINE TAPS for blind holes
40° spiral flutes / back tapered / through shank



A76 S
BRIGHT

A76 S
TiN

DIN 376



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A76 S BRIGHT	A76 S TiN		
P	P.2	● 15-20	● 25-30		
	P.3	● 12-15	● 20-25		
	P.4	● 10-12	● 15-20		
	P.5		● 5-10		
	P.7		● 8-10		
M	M.1		● 8-10		
K	K2	● 12-15	● 20-25		
N	N.3	● 15-18	● 25-30		
	N.6	● 15-18	● 25-30		

ISO2
6H

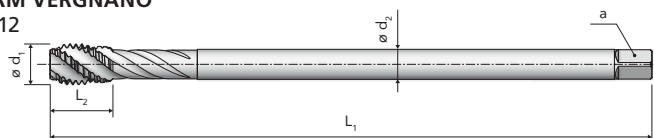
ISO2
6H

[illegible]



A70 L
TiN

NORM VERGNANO
≥ M12



ISO2
6H



ISO	MG	A70 L BRIGHT	A70 L TiN		
P	P.1	● 12-15	● 25-30		
	P.2	● 10-15	● 20-25		
N	N.1	● 12-15			
	N.2	● 12-15	● 25-30		
	N.5	● 10-12			
	N.6	● 10-12	● 20-25		

MACHINE TAPS for blind holes
40° spiral flutes / back tapered

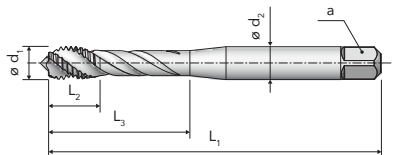


A120
BRIGHT

A120
VAP

A120
TiN

DIN 371
≤ M10



DIN 376
≥ M12



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A120 BRIGHT	A120 VAP	A120 TiN	
P	P.1	● 12-15	● 12-15	● 25-30	
	P.2	● 10-15	● 10-15	● 20-25	
N	N.1	● 12-15	● 12-15		
	N.2	● 12-15	● 12-15	● 25-30	
	N.5	● 10-12	● 10-12		
	N.6	● 10-12	● 10-12	● 20-25	

ISO2
6H



ISO2
6H



ISO2
6H



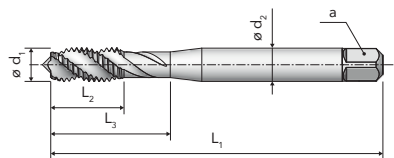
Ød ₁	P	L ₁ js 16	L ₂	L ₃	Ød ₂ h9	a h12	z		A120 BRIGHT	A120 VAP	A120 TiN	
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]				
M 2	0,4	45	5	14	2,8	2,1	3	1,6	●	●	●	
2,5	0,45	50	5	18	2,8	2,1	3	2,05	●	●	●	
3	0,5	56	5	21	3,5	2,7	3	2,5	●	●	●	
4	0,7	63	5	27	4,5	3,4	3	3,3	●	●	●	
5	0,8	70	6,5	30	6	4,9	3	4,2	●	●	●	
6	1	80	7	34,5	6	4,9	3	5	●	●	●	
8	1,25	90	9	38,5	8	6,2	3	6,8	●	●	●	
10	1,5	100	11	43	10	8	3	8,5	●	●	●	
12	1,75	110	13	-	9	7	3	10,2	●	●	●	
14	2	110	16,5	-	11	9	3	12	●	●	●	
16	2	110	19,5	-	12	9	3	14	●	●	●	
18	2,5	125	24	-	14	11	3	15,5	●	●	●	
20	2,5	140	25,5	-	16	12	3	17,5	●	●	●	
22	2,5	140	25,5	-	18	14,5	3	19,5	●	●	●	
24	3	160	32	-	18	14,5	3	21	●	●	●	



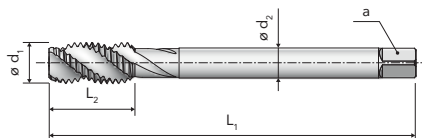
A170
VAP

A170
TiX₂

DIN 371
≤ M10



DIN 376
≥ M12



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A170 VAP	A170 TiX2		
P	P.7	● 6-8	● 8-10		
M	M.1	● 6-8	● 8-10		
	M.2		● 5-7		

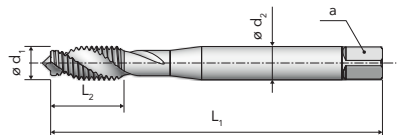
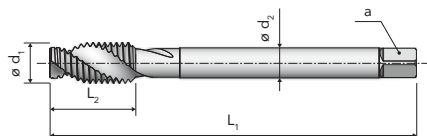
6HX

6HX

[illegible]


A62
BRIGHT

A62
TiH1

DIN 371
≤ M10

DIN 376
≥ M11


APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A62 BRIGHT	A62 TiH1		
N	N.1-2	• 12-15	• 25-30		
	N.5-6	• 10-12	• 20-25		
S	S.1	• 6-8	• 10-12		
	S.3	• 6-8	• 10-12		

ISO2
6H

ISO2
6H


Ød ₁	P	L ₁ js 16	L ₂	L ₃	Ød ₂ h9	a h12	z		A62 BRIGHT	A62 TiH1		
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]				
M 2	0,4	45	7	11	2,8	2,1	2	1,6	•	•		
2,2	0,45	45	8	13	2,8	2,1	2	1,75	•	•		
2,3	0,4	45	8	13	2,8	2,1	2	1,9	•	•		
2,5	0,45	50	9	15	2,8	2,1	2	2,05	•	•		
2,6	0,45	50	9	15	2,8	2,1	2	2,1	•	•		
3	0,5	56	10	18	3,5	2,7	2	2,5	•	•		
3,5	0,6	56	11	20	4	3	2	2,9	•	•		
4	0,7	63	12	21	4,5	3,4	2	3,3	•	•		
5	0,8	70	14	24,5	6	4,9	2	4,2	•	•		
6	1	80	16	29	6	4,9	2	5	•	•		
7	1	80	16	29	7	5,5	2	6	•	•		
8	1,25	90	18	33	8	6,2	2	6,8	•	•		
9	1,25	90	18	33	9	7	2	7,8	•	•		
10	1,5	100	20	36	10	8	2	8,5	•	•		
11	1,5	100	20	-	8	6,2	2	9,5	•	•		
12	1,75	110	24	-	9	7	2	10,2	•	•		
14	2	110	25	-	11	9	2	12	•	•		
16	2	110	28	-	12	9	3	14	•	•		

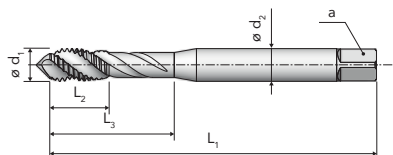
MACHINE TAPS for blind holes
40° spiral flutes / back tapered / for light alloys



A72
BRIGHT

A72
TiH1

DIN 371
≤ M10



DIN 376
≥ M12



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A72 BRIGHT	A72 TiH1		
P	P.1	● 12-15	● 25-30		
N	N.1-2	● 12-15	● 25-30		
	N.3	● 10-12	● 20-25		
	N.5-6	● 10-12	● 20-25		

ISO2
6H

ISO2
6H

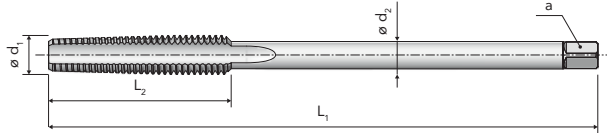
[illegible]



HSSE

A9
BRIGHT

DIN 357



APPLICATION RANGE - CUTTING SPEED m/min

ISO2
6H

ISO	MG	A9 BRIGHT			
P	P.1	● 18-20			
	P.2	● 15-18			
	P.3	● 12-15			



RH

[illegible]

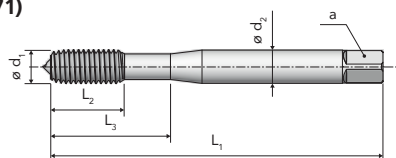


HSSE

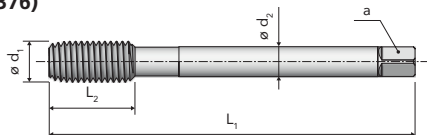
A80
TiN

A80
TiCN

DIN 2174 (371)
≤ M10



DIN 2174 (376)
≥ M12



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A80 TiN	A80 TiCN		
P	P.1-2	● 40-45	● 40-45		
	P.3	● 35-40	● 35-40		
N	N.1-2	● 40-45	● 40-45		
	N.3	● 35-40	● 35-40		
	N.5-6	● 40-45	● 40-45		

6HX

6HX



1,5xD

[illegible]

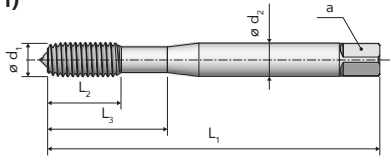


HSSE

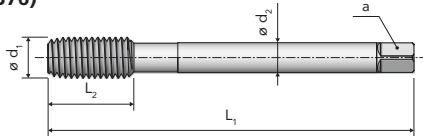
A80 6GX
TiN

A80 6GX
TiCN

DIN 2174 (371)
≤ M10



DIN 2174 (376)
≥ M12



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A80 6GX TiN	A80 6GX TiCN		
P	P.1-2	● 40-45	● 40-45		
	P.3	● 35-40	● 35-40		
N	N.1-2	● 40-45	● 40-45		
	N.3	● 35-40	● 35-40		
	N.5-6	● 40-45	● 40-45		

6GX

6GX

[illegible]

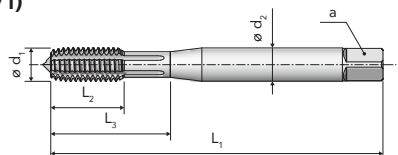


HSSE

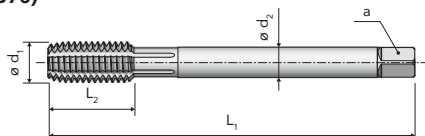
A80 N
TiN

A80 N
TiCN

DIN 2174 (371)
≤ M10



DIN 2174 (376)
≥ M12



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A80 N TiN	A80 N TiCN		
P	P.1-2	● 40-45	● 40-45		
	P.3	● 35-40	● 35-40		
N	N.1-2	● 40-45	● 40-45		
	N.3	● 35-40	● 35-40		
	N.5-6	● 40-45	● 40-45		

6HX

6HX

[illegible]

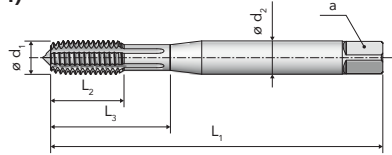


HSSE

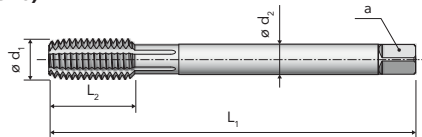
A80 N 6GX
TiN

A80 N 6GX
TiCN

DIN 2174 (371)
≤ M10



DIN 2174 (376)
≥ M12



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A80 N 6GX	A80 N 6GX		
		TiN	TiCN		
P	P.1-2	● 40-45	● 40-45		
	P.3	● 35-40	● 35-40		
N	N.1-2	● 40-45	● 40-45		
	N.3	● 35-40	● 35-40		
	N.5-6	● 40-45	● 40-45		

6GX

6GX

[illegible]

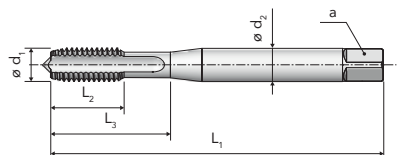


HSSE

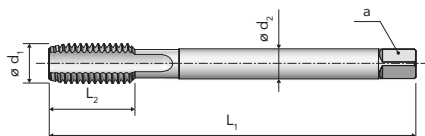
A190
BRIGHT

A
SERIES

DIN 40435
≤ EG-M8



DIN 40435
≥ EG-M10



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A190 BRIGHT			
P	P.2	● 10-12			
	P.3	● 8-10			
K	K.2	● 8-10			

**6H
mod**

[illegible]

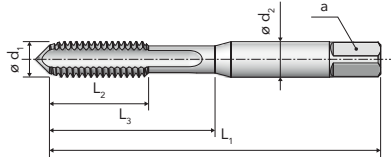


A2
ROUGHING

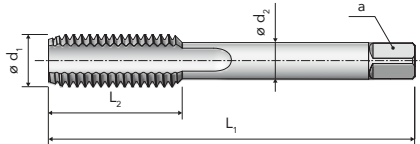
A2
FINISHING

A2
SET

DIN 2181
≤ M6



DIN2181
≥ M7



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A2 ROUGHING	A2 FINISHING	A2 SET
P	P.1-4	•	•	•
	P.7	•	•	•
K	K.2	•	•	•
N	N.1-3	•	•	•
	N.5-7	•	•	•



ISO2
6H



ISO2
6H



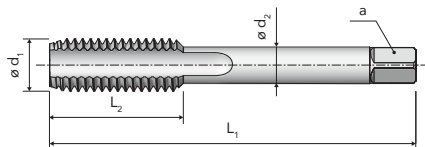
Ød ₁	P	L ₁ js 16	L ₂	L ₃	Ød ₂ h9	a h12	z		A2 ROUGHING	A2 FINISHING	A2 SET
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]			
M 2	0,25	36	7,5	12	2,8	2,1	3	1,75	•	•	•
2,3	0,25	36	8,5	13,5	2,8	2,1	3	2,05	•	•	•
2,5	0,35	40	8,5	14,5	2,8	2,1	3	2,15	•	•	•
2,6	0,35	40	8,5	14,5	2,8	2,1	3	2,25	•	•	•
3	0,35	40	8	18	3,5	2,7	3	2,65	•	•	•
3,5	0,35	45	9	19	4	3	3	3,15	•	•	•
4	0,5	45	10	21	4,5	3,4	3	3,5	•	•	•
4,5	0,5	50	12	23	6	4,9	3	4	•	•	•
5	0,5	50	12	24	6	4,9	3	4,5	•	•	•
6	0,5	56	14	28	6	4,9	3	5,5	•	•	•
6	0,75	56	14	28	6	4,9	3	5,2	•	•	•
7	0,75	56	14	-	6	4,9	3	6,2	•	•	•
8	0,75	56	18	-	6	4,9	3	7,2	•	•	•
8	1	63	22	-	6	4,9	3	7	•	•	•
9	1	63	22	-	7	5,5	3	8	•	•	•
10	0,75	63	20	-	7	5,5	4	9,2	•	•	•
10	1	63	20	-	7	5,5	4	9	•	•	•
10	1,25	70	24	-	7	5,5	3	8,8	•	•	•
11	1	63	20	-	8	6,2	4	10	•	•	•
12	0,75	70	22	-	9	7	4	11,2	•	•	•
12	1	70	22	-	9	7	4	11	•	•	•
12	1,25	70	22	-	9	7	4	10,8	•	•	•
12	1,5	70	22	-	9	7	4	10,5	•	•	•
14	1	70	22	-	11	9	4	13	•	•	•
14	1,25	70	22	-	11	9	4	12,8	•	•	•
14	1,5	70	22	-	11	9	4	12,5	•	•	•

HAND TAPS for blind and through holes
In sets of two pieces

HSS

A2
ROUGHINGA2
FINISHINGA2
SET

DIN 2181



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A2 ROUGHING	A2 FINISHING	A2 SET
P	P.1-4	•	•	•
	P.7	•	•	•
K	K.2	•	•	•
N	N.1-3	•	•	•
	N.5-7	•	•	•



«

Ød ₁	P	L ₁ js 16	L ₂	L ₃	Ød ₂ h9	a h12	Z		A2 ROUGHING	A2 FINISHING	A2 SET
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]			
M 15	1	70	22	-	12	9	4	14	•	•	•
15	1,5	70	22	-	12	9	4	13,5	•	•	•
16	1	70	22	-	12	9	4	15	•	•	•
16	1,25	70	22	-	12	9	4	14,8	•	•	•
16	1,5	70	22	-	12	9	4	14,5	•	•	•
18	1	80	22	-	14	11	4	17	•	•	•
18	1,5	80	22	-	14	11	4	16,5	•	•	•
18	2	80	22	-	14	11	4	16	•	•	•
20	1	80	22	-	16	12	4	19	•	•	•
20	1,5	80	22	-	16	12	4	18,5	•	•	•
20	2	80	22	-	16	12	4	18	•	•	•
22	1	80	22	-	18	14,5	4	21	•	•	•
22	1,5	80	22	-	18	14,5	4	20,5	•	•	•
22	2	80	22	-	18	14,5	4	20	•	•	•
24	1	90	22	-	18	14,5	4	23	•	•	•
24	1,5	90	22	-	18	14,5	4	22,5	•	•	•
24	2	90	22	-	18	14,5	4	22	•	•	•
25	1,5	90	22	-	18	14,5	4	23,5	•	•	•
25	2	90	22	-	18	14,5	4	23	•	•	•
26	1,5	90	22	-	18	14,5	4	24,5	•	•	•
26	2	90	22	-	18	14,5	4	24	•	•	•
27	1,5	90	22	-	20	16	4	25,5	•	•	•
27	2	90	22	-	20	16	4	25	•	•	•
28	1,5	90	22	-	20	16	4	26,5	•	•	•
28	2	90	22	-	20	16	4	26	•	•	•
30	1,5	90	22	-	22	18	4	28,5	•	•	•

»

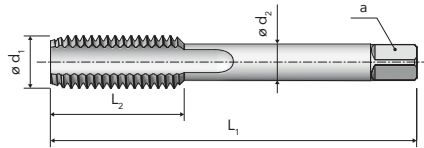


A2
ROUGHING

A2
FINISHING

A2
SET

DIN 2181



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A2 ROUGHING	A2 FINISHING	A2 SET
P	P.1-4	•	•	•
	P.7	•	•	•
K	K.2	•	•	•
N	N.1-3	•	•	•
	N.5-7	•	•	•



ISO2
6H



ISO2
6H



«

Ød ₁	P	L ₁ js 16	L ₂	L ₃	Ød ₂ h9	a h12	z		A2 ROUGHING	A2 FINISHING	A2 SET
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]			
M 30	2	90	22	-	22	18	4	28	•	•	•
32	1,5	90	22	-	22	18	5	30,5	•	•	•
32	2	90	22	-	22	18	4	30	•	•	•
33	2	100	25	-	25	20	4	31	•	•	•
35	1,5	100	25	-	28	22	5	33,5	•	•	•
35	2	125	30	-	28	22	5	33	•	•	•
36	1,5	100	25	-	28	22	5	34,5	•	•	•
36	2	125	30	-	28	22	5	34	•	•	•
36	3	125	40	-	28	22	4	33	•	•	•
38	1,5	100	25	-	28	22	5	36,5	•	•	•
39	2	125	32	-	32	24	5	37	•	•	•
39	3	125	40	-	32	24	4	36	•	•	•
40	1,5	110	25	-	32	24	6	38,5	•	•	•
40	2	125	32	-	32	24	5	38	•	•	•
40	3	125	40	-	32	24	4	37	•	•	•
42	1,5	110	25	-	32	24	6	40,5	•	•	•
42	2	125	32	-	32	24	5	40	•	•	•
42	3	125	40	-	32	24	4	39	•	•	•
45	1,5	110	25	-	36	29	6	43,5	•	•	•
45	2	125	32	-	36	29	5	43	•	•	•
45	3	125	40	-	36	29	5	42	•	•	•
48	1,5	140	25	-	36	29	6	46,5	•	•	•
48	2	140	32	-	36	29	6	46	•	•	•
48	3	140	40	-	36	29	5	45	•	•	•

HAND TAPS for blind and through holes
In sets of two pieces



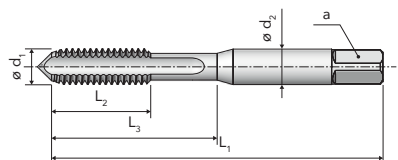
HSS

A2 LH
ROUGHING

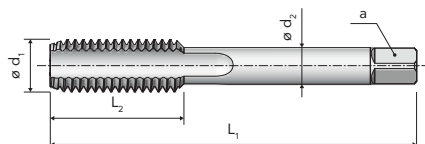
A2 LH FINISHING

A2 LH
SET

DIN 2181
≤ M6



DIN 2181
≥ M8



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A2 LH ROUGHING	A2 LH FINISHING	A2 LH SET	
P	P.1-4	●	●	●	
	P.7	●	●	●	
K	K.2	●	●	●	
N	N.1-3	●	●	●	
	N.5-7	●	●	●	

[illegible]

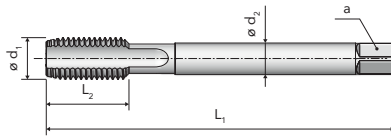


A23 FC
BRIGHT

A23 FC
TiN

A23 FC LH
BRIGHT

DIN 374



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A23 FC BRIGHT	A23 FC TiN	A23 FC LH BRIGHT
P	P.1		• 20-25	
	P.2	• 10-12	• 15-20	• 10-12
	P.3	• 8-10	• 12-15	• 8-10
K	K.2	• 8-10	• 12-15	• 8-10
N	N.1		• 20-25	
	N.5		• 15-20	

ISO2
6H



ISO2
6H



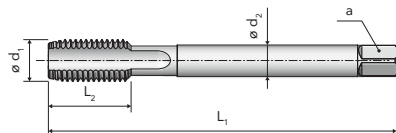
ISO2
6H



Ød1	P	L1 js 16	L2	L3	Ød2 h9	a h12	z	z	z	A23 FC BRIGHT	A23 FC TiN	A23 FC LH BRIGHT
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]	[mm]			
M 3	0,35	56	8	-	2,2	-	3	2,65		•		
3,5	0,35	56	9	-	2,5	2,1	3	3,15		•		
4	0,5	63	12	-	2,8	2,1	3	3,5		•		
5	0,5	70	14	-	3,5	2,7	3	4,5		•		
6	0,5	80	16	-	4,5	3,4	3	5,5		•	•	
6	0,75	80	16	-	4,5	3,4	3	5,2		•	•	•
7	0,75	80	16	-	5,5	4,3	3	6,2		•	•	
8	0,75	80	16	-	6	4,9	3	7,2		•		
8	1	90	16	-	6	4,9	3	7		•	•	•
9	1	90	16	-	7	5,5	3	8		•		
10	0,5	90	18	-	7	5,5	4	9,5		•	•	
10	0,75	90	18	-	7	5,5	3	9,2		•		
10	1	90	18	-	7	5,5	3	9		•	•	•
10	1,25	100	18	-	7	5,5	3	8,8		•	•	•
11	1	90	20	-	8	6,2	3	10		•		
12	0,75	100	22	-	9	7	4	11,2		•	•	
12	1	100	22	-	9	7	4	11		•	•	
12	1,25	100	22	-	9	7	3	10,8		•	•	•
12	1,5	100	22	-	9	7	3	10,5		•	•	•
14	1	100	22	-	11	9	4	13		•	•	
14	1,25	100	22	-	11	9	3	12,8		•	•	
14	1,5	100	22	-	11	9	3	12,5		•	•	•
15	1	100	22	-	12	9	4	14		•		
15	1,5	100	22	-	12	9	3	13,5		•		
16	1	100	22	-	12	9	4	15		•	•	
16	1,25	100	22	-	12	9	4	14,8		•	•	

A23 FC
BRIGHTA23 FC
TiNA23 FC LH
BRIGHT

DIN 374



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A23 FC BRIGHT	A23 FC TiN	A23 FC LH BRIGHT
P	P.1		• 20-25	
	P.2	• 10-12	• 15-20	• 10-12
	P.3	• 8-10	• 12-15	• 8-10
K	K.2	• 8-10	• 12-15	• 8-10
N	N.1		• 20-25	
	N.5		• 15-20	

ISO2
6H

1,5xD

ISO2
6H

1,5xD

ISO2
6H

1,5xD



«

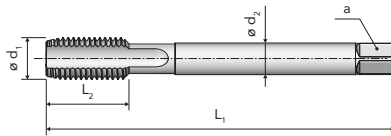
Ød ₁	P	L ₁ js 16	L ₂	L ₃	Ød ₂ h9	a h12	Z		A23 FC BRIGHT	A23 FC TiN	A23 FC LH BRIGHT
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]			
M 16	1,5	100	22	-	12	9	3	14,5	•	•	•
17	1	100	22	-	12	9	4	16	•		
17	1,5	100	22	-	12	9	4	15,5	•		
18	1	110	25	-	14	11	4	17	•		
18	1,5	110	25	-	14	11	4	16,5	•	•	•
18	2	125	28	-	14	11	4	16	•		
20	1	125	25	-	16	12	4	19	•		
20	1,5	125	25	-	16	12	4	18,5	•	•	•
20	2	140	28	-	16	12	4	18	•		
22	1	125	25	-	18	14,5	4	21	•		
22	1,5	125	25	-	18	14,5	4	20,5	•	•	
22	2	140	28	-	18	14,5	4	20	•		
24	1	140	25	-	18	14,5	4	23	•		
24	1,5	140	25	-	18	14,5	4	22,5	•		
24	2	140	28	-	18	14,5	4	22	•		
25	1	140	25	-	18	14,5	4	24	•		
25	1,5	140	25	-	18	14,5	4	23,5	•		
25	2	140	28	-	18	14,5	4	23	•		
26	1	140	25	-	18	14,5	4	25	•		
26	1,5	140	25	-	18	14,5	4	24,5	•		
26	2	140	28	-	18	14,5	4	24	•		
27	1,5	140	28	-	20	16	4	25,5	•		
27	2	140	28	-	20	16	4	25	•		
28	1,5	140	28	-	20	16	4	26,5	•		
28	2	140	28	-	20	16	4	26	•		
30	1	150	25	-	22	18	5	29	•		

»



A23 FC
BRIGHT

DIN 374



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A23 FC BRIGHT			
P	P.2	• 10-12			
	P.3	• 8-10			
K	K.2	• 8-10			

ISO2
6H



A SERIES

«

Ød ₁	P	L ₁ js 16	L ₂	L ₃	Ød ₂ h9	a h12	z		A23 FC BRIGHT			
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]				
M 30	1,5	150	28	-	22	18	4	28,5	•			
30	2	150	28	-	22	18	4	28	•			
32	1,5	150	28	-	22	18	5	30,5	•			
32	2	150	28	-	22	18	4	30	•			
33	1,5	160	30	-	25	20	5	31,5	•			
33	2	160	30	-	25	20	4	31	•			
35	1,5	170	30	-	28	22	5	33,5	•			
35	2	170	30	-	28	22	5	33	•			
36	1,5	170	30	-	28	22	5	34,5	•			
36	2	170	30	-	28	22	5	34	•			
36	3	200	56	-	28	22	4	33	•			
39	3	200	60	-	32	24	5	36	•			
40	1,5	170	30	-	32	24	5	38,5	•			
40	2	170	30	-	32	24	5	38	•			
40	3	200	60	-	32	24	5	37	•			
42	1,5	170	30	-	32	24	6	40,5	•			
42	2	170	30	-	32	24	5	40	•			
42	3	200	60	-	32	24	5	39	•			
45	1,5	180	32	-	36	29	6	43,5	•			
45	2	180	32	-	36	29	5	43	•			
45	3	200	50	-	36	29	5	42	•			
48	1,5	190	32	-	36	29	6	46,5	•			
48	2	190	32	-	36	29	6	46	•			
48	3	225	50	-	36	29	5	45	•			
52	1,5	190	32	-	40	32	6	50,5	•			
52	2	190	32	-	40	32	6	50	•			
52	3	225	50	-	40	32	5	49	•			

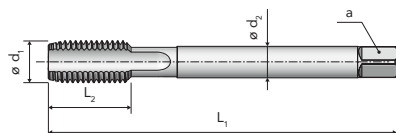


HSSE

A45
 NITRIDED

A45
 TiCN

DIN 374



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A45 NITRIDED	A45 TiCN		
K	K.1	● 15-20	● 40-45		
N	N.4	● 15-20	● 40-45		
	N.7	● 15-20	● 40-45		
	N.9-10	● 20-25	● 45-50		

6HX

6HX



Ød ₁	P	L ₁ js 16	L ₂	L ₃	Ød ₂ h9	a h12	z		A45 NITRIDED	A45 TiCN		
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]				
M 4	0,5	63	10	-	2,8	2,1	3	3,5	●	●		
5	0,5	70	12	-	3,5	2,7	3	4,5	●	●		
6	0,75	80	14	-	4,5	3,4	3	5,2	●	●		
8	1	90	16	-	6	4,9	4	7	●	●		
9	1	90	16	-	7	5,5	4	8	●			
10	1	90	18	-	7	5,5	4	9	●	●		
10	1,25	100	18	-	7	5,5	4	8,8	●	●		
11	1	90	20	-	8	6,2	4	10	●			
12	1	100	22	-	9	7	4	11	●			
12	1,25	100	22	-	9	7	4	10,8	●	●		
12	1,5	100	22	-	9	7	4	10,5	●	●		
14	1	100	22	-	11	9	4	13	●			
14	1,25	100	22	-	11	9	4	12,8	●	●		
14	1,5	100	22	-	11	9	4	12,5	●	●		
16	1	100	22	-	12	9	4	15	●			
16	1,5	100	22	-	12	9	4	14,5	●	●		
18	1,5	110	25	-	14	11	4	16,5	●	●		
20	1,5	125	25	-	16	12	4	18,5	●	●		
22	1,5	125	25	-	18	14,5	4	20,5	●			
24	1,5	140	25	-	18	14,5	5	22,5	●			
24	2	140	28	-	18	14,5	5	22	●			
27	1,5	140	28	-	20	16	5	25,5	●			
27	2	140	28	-	20	16	5	25	●			
30	1,5	150	28	-	22	18	5	28,5	●			
30	2	150	28	-	22	18	5	28	●			



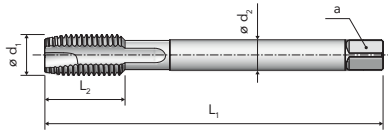
A17 S
BRIGHT

A17 S
VAP

A17 S
TiN

A17 S
TiCN

DIN 374



A
SERIES

APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A17 S BRIGHT	A17 S VAP	A17 S TiN	A17 S TiCN
P	P.2	• 20-25	• 20-25	• 30-35	• 30-35
	P.3	• 15-20	• 15-20	• 25-30	• 25-30
	P.4	• 12-15	• 12-15	• 20-25	• 20-25
	P.5			• 10-15	• 10-15
	P.7			• 10-15	• 10-15
M	M.1			• 10-15	• 10-15
K	K.2	• 15-20	• 15-20	• 25-30	• 25-30
N	N.2-3	• 20-25	• 20-25	• 30-35	• 30-35
	N.6	• 15-18	• 15-18	• 25-30	• 25-30

ISO2
6H



ISO2
6H



ISO2
6H



ISO2
6H

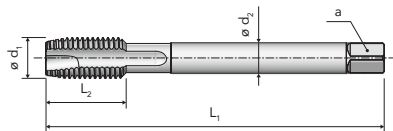


Ød ₁	P	L ₁ js 16	L ₂	L ₃	Ød ₂ h9	a h12	z		A17 S BRIGHT	A17 S VAP	A17 S TiN	A17 S TiCN
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]				
M 4	0,5	63	12	-	2,8	2,1	3	3,5	•			
5	0,5	70	14	-	3,5	2,7	3	4,5	•			
6	0,75	80	16	-	4,5	3,4	3	5,2	•	•	•	•
7	0,75	80	16	-	5,5	4,3	3	6,2	•			
8	0,75	80	16	-	6	4,9	3	7,2	•			
8	1	90	16	-	6	4,9	3	7	•	•	•	•
9	1	90	16	-	7	5,5	3	8	•			
10	0,75	90	18	-	7	5,5	4	9,2	•			
10	1	90	18	-	7	5,5	4	9	•	•	•	•
10	1,25	100	18	-	7	5,5	3	8,8	•	•	•	•
11	1	90	20	-	8	6,2	4	10	•			
12	1	100	22	-	9	7	4	11	•	•	•	•
12	1,25	100	22	-	9	7	4	10,8	•	•	•	•
12	1,5	100	22	-	9	7	3	10,5	•	•	•	•
14	1	100	22	-	11	9	4	13	•			
14	1,25	100	22	-	11	9	4	12,8	•	•	•	•
14	1,5	100	22	-	11	9	4	12,5	•	•	•	•
15	1	100	22	-	12	9	4	14	•			
15	1,5	100	22	-	12	9	4	13,5	•			
16	1	100	22	-	12	9	4	15	•			
16	1,5	100	22	-	12	9	4	14,5	•	•	•	•
18	1	110	25	-	14	11	4	17	•			
18	1,5	110	25	-	14	11	4	16,5	•	•	•	•
20	1	125	25	-	16	12	4	19	•			
20	1,5	125	25	-	16	12	4	18,5	•	•	•	•
22	1	125	25	-	18	14,5	4	21	•			


A17 S
 BRIGHT

A17 S
 TiN

DIN 374



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A17 S BRIGHT	A17 S TiN		
P	P.2	• 20-25	• 30-35		
	P.3	• 15-20	• 25-30		
	P.4	• 12-15	• 20-25		
	P.5		• 10-15		
M	M.1		• 10-15		
K	K.2	• 15-20	• 25-30		
N	N.2-3	• 20-25	• 30-35		
	N.6	• 15-18	• 25-30		

ISO2
6H
ISO2
6H


«

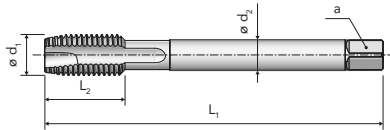
Ød1	P	L1 js 16	L2	L3	Ød2 h9	a h12	Z		A17 S BRIGHT	A17 S TiN		
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]				
M 22	1,5	125	25	-	18	14,5	4	20,5	•	•		
24	1	140	25	-	18	14,5	5	23	•			
24	1,5	140	25	-	18	14,5	4	22,5	•	•		
24	2	140	28	-	18	14,5	4	22	•			
25	1,5	140	25	-	18	14,5	4	23,5	•			
25	2	140	28	-	18	14,5	4	23	•			
26	1,5	140	25	-	18	14,5	4	24,5	•			
26	2	140	28	-	18	14,5	4	24	•			
27	1,5	140	28	-	20	16	4	25,5	•	•		
27	2	140	28	-	20	16	4	25	•			
28	1,5	140	28	-	20	16	4	26,5	•			
28	2	140	28	-	20	16	4	26	•			
30	1,5	150	28	-	22	18	4	28,5	•	•		
30	2	150	28	-	22	18	4	28	•			
32	1,5	150	28	-	22	18	5	30,5	•			
32	2	150	28	-	22	18	4	30	•			
36	1,5	170	30	-	28	22	5	34,5	•			
36	2	170	30	-	28	22	5	34	•			
36	3	200	56	-	28	22	4	33	•			
40	1,5	170	30	-	32	24	5	38,5	•			
40	2	170	30	-	32	24	5	38	•			
40	3	200	60	-	32	24	4	37	•			
42	1,5	170	30	-	32	24	5	40,5	•			
42	2	170	30	-	32	24	5	40	•			
42	3	200	60	-	32	24	5	39	•			
45	1,5	180	32	-	36	29	6	43,5	•			

»



A17 S
BRIGHT

DIN 374



A SERIES

APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A17 S BRIGHT			
P	P.2	● 20-25			
	P.3	● 15-20			
	P.4	● 12-15			
K	K.2	● 15-20			
N	N.2-3	● 20-25			
	N.6	● 15-18			

ISO2
6H



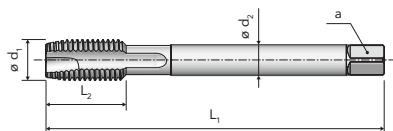
<<

[illegible]



A17 S
TiX₂

DIN 374



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A17 S TIX2			
P	P.7	● 10-15			
M	M.1	● 10-15			

ISO2
6H

B (4-5)

2,5xD

RH

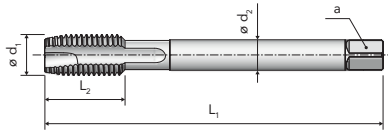
[illegible]



A17 S 6G
BRIGHT

A17 S 6G
TiN

DIN 374



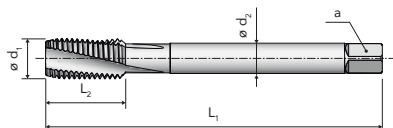
APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A17 S 6G BRIGHT	A17 S 6G TiN		
P	P.2	● 20-25	● 30-35		
	P.3	● 15-20	● 25-30		
	P.4	● 12-15	● 20-25		
	P.5		● 10-15		
	P.7		● 10-15		
M	M.1		● 10-15		
K	K.2	● 15-20	● 25-30		
N	N.2-3	● 20-25	● 30-35		
	N.6	● 15-18	● 25-30		

[illegible]

A30
BRIGHTA30
TiN

DIN 374



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A30 BRIGHT	A30 TiN		
P	P.1	● 18-20	● 30-35		
	P.2	● 15-18	● 25-30		
	P.3	● 12-15	● 20-25		
	P.4	● 10-12	● 15-20		
	P.5		● 5-10		
K	K.2	● 12-15	● 20-25		
N	N.1	● 18-20			
	N.2-3	● 15-18	● 25-30		
	N.5	● 15-18			
	N.6	● 12-15	● 20-25		

ISO2
6HISO2
6H

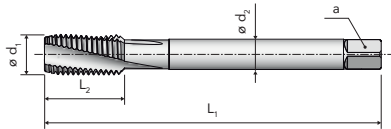
Ød1	P	L1 js 16	L2	L3	Ød2 h9	a h12	z		A30 BRIGHT	A30 TiN		
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]				
M 3	0,35	56	8	-	2,2	-	3	2,65	●			
3,5	0,35	56	9	-	2,5	2,1	3	3,15	●			
4	0,5	63	12	-	2,8	2,1	3	3,5	●			
5	0,5	70	14	-	3,5	2,7	3	4,5	●			
6	0,75	80	16	-	4,5	3,4	3	5,2	●	●		
7	0,75	80	16	-	5,5	4,3	3	6,2	●			
8	0,75	80	16	-	6	4,9	3	7,2	●			
8	1	90	16	-	6	4,9	3	7	●	●		
9	1	90	16	-	7	5,5	3	8	●			
10	0,75	90	18	-	7	5,5	3	9,2	●			
10	1	90	18	-	7	5,5	3	9	●	●		
10	1,25	100	18	-	7	5,5	3	8,8	●	●		
11	1	90	20	-	8	6,2	3	10	●			
12	1	100	22	-	9	7	3	11	●	●		
12	1,25	100	22	-	9	7	3	10,8	●	●		
12	1,5	100	22	-	9	7	3	10,5	●	●		
14	1	100	22	-	11	9	3	13	●			
14	1,25	100	22	-	11	9	3	12,8	●	●		
14	1,5	100	22	-	11	9	3	12,5	●	●		
15	1	100	22	-	12	9	4	14	●			
15	1,5	100	22	-	12	9	3	13,5	●			
16	1	100	22	-	12	9	4	15	●			
16	1,25	100	22	-	12	9	4	14,8	●			
16	1,5	100	22	-	12	9	4	14,5	●	●		
17	1	100	22	-	12	9	4	16	●			
17	1,5	100	22	-	12	9	4	15,5	●			



A30
BRIGHT

A30
TiN

DIN 374



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A30 BRIGHT	A30 TiN		
P	P.1	• 18-20	• 30-35		
	P.2	• 15-18	• 25-30		
	P.3	• 12-15	• 20-25		
	P.4	• 10-12	• 15-20		
	P.5		• 5-10		
K	K.2	• 12-15	• 20-25		
N	N.1	• 18-20			
	N.2-3	• 15-18	• 25-30		
	N.5	• 15-18			
	N.6	• 12-15	• 20-25		

ISO2
6H



ISO2
6H



A
SERIES

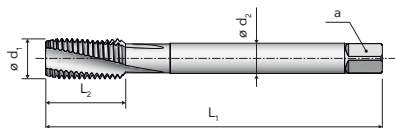
«

Ød ₁	P	L ₁ js 16	L ₂	L ₃	Ød ₂ h9	a h12	z		A30 BRIGHT	A30 TiN		
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]				
M 18	1	110	25	-	14	11	4	17	•			
18	1,5	110	25	-	14	11	4	16,5	•	•		
20	1	125	25	-	16	12	4	19	•			
20	1,5	125	25	-	16	12	4	18,5	•	•		
22	1	125	25	-	18	14,5	4	21	•			
22	1,5	125	25	-	18	14,5	4	20,5	•	•		
24	1	140	25	-	18	14,5	4	23	•			
24	1,5	140	25	-	18	14,5	4	22,5	•	•		
24	2	140	28	-	18	14,5	4	22	•			
25	1	140	25	-	18	14,5	4	24	•			
25	1,5	140	25	-	18	14,5	4	23,5	•			
25	2	140	28	-	18	14,5	4	23	•			
26	1	140	25	-	18	14,5	4	25	•			
26	1,5	140	25	-	18	14,5	4	24,5	•			
26	2	140	28	-	18	14,5	4	24	•			
27	1,5	140	28	-	20	16	4	25,5	•	•		
27	2	140	28	-	20	16	4	25	•			
28	1,5	140	28	-	20	16	4	26,5	•			
28	2	140	28	-	20	16	4	26	•			
30	1	150	25	-	22	18	5	29	•			
30	1,5	150	28	-	22	18	4	28,5	•	•		
30	2	150	28	-	22	18	4	28	•			
32	1,5	150	28	-	22	18	5	30,5	•			
32	2	150	28	-	22	18	4	30	•			
36	1,5	170	30	-	28	22	5	34,5	•			
36	2	170	30	-	28	22	5	34	•			

»


A30
 BRIGHT

DIN 374



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A30 BRIGHT			
P	P.1	• 18-20			
	P.2	• 15-18			
	P.3	• 12-15			
	P.4	• 10-12			
K	K.2	• 12-15			
N	N.1	• 18-20			
	N.2-3	• 15-18			
	N.5	• 15-18			
	N.6	• 12-15			

ISO2
6H


<<

Ød ₁	P	L ₁ js 16	L ₂	L ₃	Ød ₂ h9	a h12	z		A30 BRIGHT			
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]				
M 36	3	200	56	-	28	22	4	33	•			
40	1,5	170	30	-	32	24	5	38,5	•			
40	2	170	30	-	32	24	5	38	•			
40	3	200	60	-	32	24	5	37	•			
42	1,5	170	30	-	32	24	6	40,5	•			
42	2	170	30	-	32	24	5	40	•			
42	3	200	60	-	32	24	5	39	•			
45	1,5	180	32	-	36	29	6	43,5	•			
45	2	180	32	-	36	29	5	43	•			
45	3	200	50	-	36	29	5	42	•			
48	1,5	190	32	-	36	29	6	46,5	•			
48	2	190	32	-	36	29	6	46	•			
48	3	225	50	-	36	29	5	45	•			

MACHINE TAPS for blind holes
40° spiral flutes / back tapered



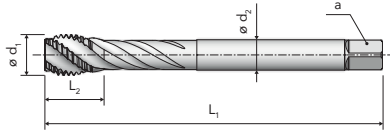
A71 S
BRIGHT

A71 S
VAP

A71 S
TiN

A71 S
TiCN

DIN 374



A SERIES

APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A71 S BRIGHT	A71 S VAP	A71 S TiN	A71 S TiCN
P	P.2	● 15-20	● 15-20	● 25-30	● 25-30
	P.3	● 12-15	● 12-15	● 20-25	● 20-25
	P.4	● 10-12	● 10-12	● 15-20	● 15-20
	P.5			● 5-10	● 5-10
	P.7			● 8-10	● 8-10
M	M.1			● 8-10	● 8-10
K	K.2	● 12-15	● 12-15	● 20-25	● 20-25
N	N.3	● 15-18	● 15-18	● 25-30	● 25-30
	N.6	● 15-18	● 15-18	● 25-30	● 25-30

ISO2
6H



ISO2
6H



ISO2
6H



ISO2
6H

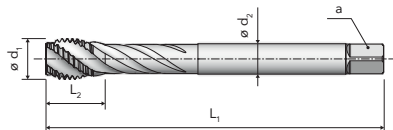


Ød ₁	P	L ₁ js 16	L ₂	L ₃	Ød ₂ h9	a h12	z		A71 S BRIGHT	A71 S VAP	A71 S TiN	A71 S TiCN
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]				
M 6	0,75	80	7,5	-	4,5	3,4	3	5,2	●	●	●	●
8	1	90	10	-	6	4,9	3	7	●	●	●	●
10	1	90	10	-	7	5,5	3	9	●	●	●	●
10	1,25	100	11,5	-	7	5,5	3	8,8	●	●	●	●
12	1	100	13	-	9	7	4	11	●	●	●	●
12	1,25	100	13,5	-	9	7	4	10,8	●	●	●	●
12	1,5	100	14	-	9	7	4	10,5	●	●	●	●
14	1,5	100	15,5	-	11	9	4	12,5	●	●	●	●
16	1,5	100	15,5	-	12	9	4	14,5	●	●	●	●
18	1,5	110	16	-	14	11	4	16,5	●	●	●	●
20	1	125	15	-	16	12	4	19	●	●	●	●
20	1,5	125	17	-	16	12	4	18,5	●	●	●	●
22	1,5	125	19	-	18	14,5	4	20,5	●	●	●	●
24	1,5	140	21	-	18	14,5	4	22,5	●	●	●	●
24	2	140	26	-	18	14,5	4	22	●	●	●	●
26	1,5	140	23	-	18	14,5	4	24,5	●	●	●	●
27	1,5	140	23	-	20	16	4	25,5	●	●	●	●
27	2	140	28	-	20	16	4	25	●	●	●	●
28	1,5	140	23	-	20	16	4	26,5	●	●	●	●
30	1,5	150	25	-	22	18	5	28,5	●	●	●	●
30	2	150	29	-	22	18	5	28	●	●	●	●
36	3	200	46	-	28	22	5	33	●	●	●	●
42	3	200	51	-	32	24	6	39	●	●	●	●



A71 S
TiX2

DIN 374



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A71 S TiX2			
P	P.7	● 8-10			
M	M.1	● 8-10			
	M.2	● 5-7			

ISO2
6H

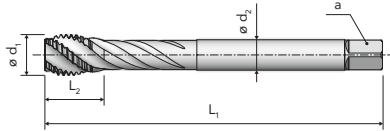
[illegible]



A71 S 6G
BRIGHT

A71 S 6G
TiN

DIN 374



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A71 S 6G BRIGHT	A71 S 6G TiN		
P	P.2	● 15-20	● 25-30		
	P.3	● 12-15	● 20-25		
	P.4	● 10-12	● 15-20		
	P.5		● 5-10		
	P.7		● 8-10		
M	M.1		● 8-10		
K	K.2	● 12-15	● 20-25		
N	N.3	● 15-18	● 25-30		
	N.6	● 15-18	● 25-30		

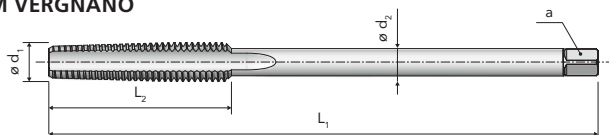
[illegible]



HSSE

A10
BRIGHT

NORM VERGNANO



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A10 BRIGHT			
P	P.1	● 18-20			
	P.2	● 15-18			
	P.3	● 12-15			

ISO2
6H



RH

[illegible]

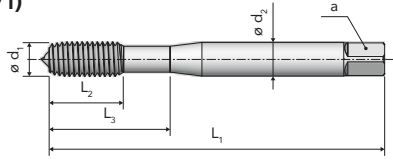


HSSE

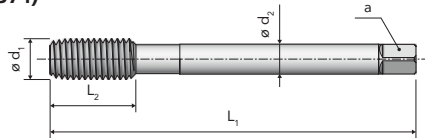
A81
TiN

A81
TiCN

DIN 2174 (371)
≤ M10x1,25



DIN 2174 (374)
≥ M12x1



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A81 TiN	A81 TiCN		
P	P.1-2	● 40-45	● 40-45		
	P.3	● 35-40	● 35-40		
N	N.1-2	● 40-45	● 40-45		
	N.3	● 35-40	● 35-40		
	N.5-6	● 40-45	● 40-45		

6HX

6HX



Ød ₁	P	L ₁ js 16	L ₂	L ₃	Ød ₂ h9	a h12	z		A81 TiN	A81 TiCN		
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]				
M 3	0,35	56	10	18	3,5	2,7	4	2,85	●	●		
4	0,5	63	12	21	4,5	3,4	5	3,8	●	●		
5	0,5	70	14	24,5	6	4,9	5	4,8	●	●		
6	0,75	80	16	29	6	4,9	5	5,65	●	●		
8	1	90	18	33	8	6,2	5	7,55	●	●		
10	1	90	18	34	10	8	6	9,55	●	●		
10	1,25	100	20	36	10	8	6	9,4	●	●		
12	1	100	22	-	9	7	6	11,55	●	●		
12	1,25	100	22	-	9	7	6	11,4	●	●		
12	1,5	100	22	-	9	7	6	11,3	●	●		
14	1,25	100	22	-	11	9	6	13,4	●	●		
14	1,5	100	22	-	11	9	6	13,3	●	●		
16	1,5	100	22	-	12	9	6	15,3	●	●		



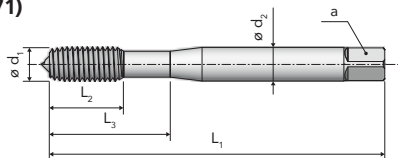
HSSE

A81 6GX
TiN

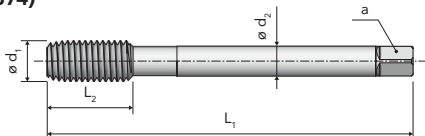
A81 6GX
TiCN

A
SERIES

DIN 2174 (371)
≤ M10x1,25



DIN 2174 (374)
≥ M12x1



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A81 6GX TIN	A81 6GX TICN		
P	P.1-2	● 40-45	● 40-45		
	P.3	● 35-40	● 35-40		
N	N.1-2	● 40-45	● 40-45		
	N.3	● 35-40	● 35-40		
	N.5-6	● 40-45	● 40-45		

6GX

6GX



1,5xD

1,5xD

[illegible]

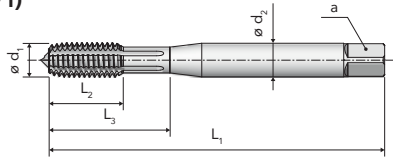


HSSE

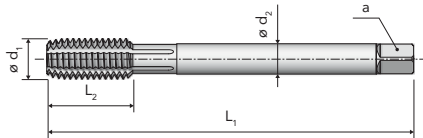
A81 N
TiN

A81 N
TiCN

DIN 2174 (371)
≤ M10x1,25



DIN 2174 (374)
≥ M12x1



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A81 N TiN	A81 N TiCN		
P	P.1-2	● 40-45	● 40-45		
	P.3	● 35-40	● 35-40		
N	N.1-2	● 40-45	● 40-45		
	N.3	● 35-40	● 35-40		
	N.5-6	● 40-45	● 40-45		

6HX

6HX

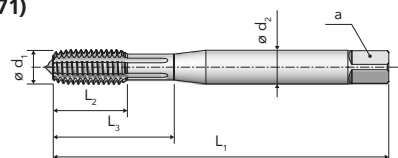
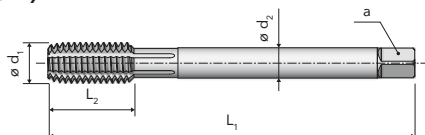


Ød ₁	P	L ₁ js 16	L ₂	L ₃	Ød ₂ h9	a h12	z		A81 N TiN	A81 N TiCN		
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]				
M 3	0,35	56	10	18	3,5	2,7	4	2,85	●	●		
4	0,5	63	12	21	4,5	3,4	5	3,8	●	●		
5	0,5	70	14	24,5	6	4,9	5	4,8	●	●		
6	0,75	80	16	29	6	4,9	5	5,65	●	●		
8	1	90	18	33	8	6,2	5	7,55	●	●		
10	1	90	18	34	10	8	6	9,55	●	●		
10	1,25	100	20	36	10	8	6	9,4	●	●		
12	1	100	22	-	9	7	6	11,55	●	●		
12	1,25	100	22	-	9	7	6	11,4	●	●		
12	1,5	100	22	-	9	7	6	11,3	●	●		
14	1,25	100	22	-	11	9	6	13,4	●	●		
14	1,5	100	22	-	11	9	6	13,3	●	●		
16	1,5	100	22	-	12	9	6	15,3	●	●		
18	1,5	110	22	-	14	11	8	17,3	●	●		
20	1,5	125	25	-	16	12	8	19,3	●	●		



HSSE

A81 N 6GX **A81 N 6GX**
 TiN TiCN

DIN 2174 (371)
 $\leq M10 \times 1,25$

DIN 2174 (374)
 $\geq M12 \times 1$


APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A81 N 6GX TiN	A81 N 6GX TiCN		
P	P.1-2	● 40-45	● 40-45		
	P.3	● 35-40	● 35-40		
N	N.1-2	● 40-45	● 40-45		
	N.3	● 35-40	● 35-40		
	N.5-6	● 40-45	● 40-45		

6GX

6GX



Ød1	P	L1 js 16	L2	L3	Ød2 h9	a h12	Z		A81 N 6GX TiN	A81 N 6GX TiCN		
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]				
M 3	0,35	56	10	18	3,5	2,7	4	2,85	●	●		
4	0,5	63	12	21	4,5	3,4	5	3,8	●	●		
5	0,5	70	14	24,5	6	4,9	5	4,8	●	●		
6	0,75	80	16	29	6	4,9	5	5,65	●	●		
8	1	90	18	33	8	6,2	5	7,55	●	●		
10	1	90	18	34	10	8	6	9,55	●	●		
10	1,25	100	20	36	10	8	6	9,4	●	●		
12	1	100	22	-	9	7	6	11,55	●	●		
12	1,25	100	22	-	9	7	6	11,4	●	●		
12	1,5	100	22	-	9	7	6	11,3	●	●		
14	1,25	100	22	-	11	9	6	13,4	●	●		
14	1,5	100	22	-	11	9	6	13,3	●	●		
16	1,5	100	22	-	12	9	6	15,3	●	●		
18	1,5	110	22	-	14	11	8	17,3	●	●		
20	1,5	125	25	-	16	12	8	19,3	●	●		



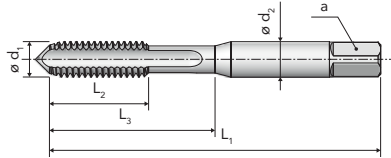
A7
ROUGHING

A7
SECOND

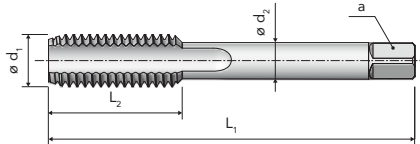
A7
FINISHING

A7
SET

DIN 2184-2
≤ Ø 1/4"



DIN 2184-2
≥ Ø 5/16"



A
SERIES

APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A7 ROUGHING	A7 SECOND	A7 FINISHING	A7 SET
P	P.1-4	•	•	•	•
	P.7	•	•	•	•
K	K.2	•	•	•	•
N	N.1-3	•	•	•	•
	N.5-7	•	•	•	•



UNC	P [TPI]	Ød ₁ [mm]	L ₁ js 16 [mm]	L ₂ [mm]	L ₃ [mm]	Ød ₂ h9 [mm]	a h12 [mm]	z		A7 ROUGHING	A7 SECOND	A7 FINISHING	A7 SET
Nr.1	64	1,854	36	7,5	12	2,8	2,1	3	1,55	•	•	•	•
Nr.2	56	2,184	36	8,5	13,5	2,8	2,1	3	1,85	•	•	•	•
Nr.3	48	2,515	40	8,5	14,5	2,8	2,1	3	2,1	•	•	•	•
Nr.4	40	2,845	40	10	18	3,5	2,7	3	2,35	•	•	•	•
Nr.5	40	3,175	40	10	18	3,5	2,7	3	2,65	•	•	•	•
Nr.6	32	3,505	45	11	20	4	3	3	2,85	•	•	•	•
Nr.8	32	4,166	45	12	21	4,5	3,4	3	3,5	•	•	•	•
Nr.10	24	4,826	50	14	23	6	4,9	3	3,9	•	•	•	•
Nr.12	24	5,486	56	16	28	6	4,9	3	4,5	•	•	•	•
1/4"	20	6,35	56	16	28	6	4,9	3	5,1	•	•	•	•
5/16"	18	7,938	63	22	-	6	4,9	3	6,6	•	•	•	•
3/8"	16	9,525	70	24	-	7	5,5	3	8	•	•	•	•
7/16"	14	11,113	70	24	-	8	6,2	3	9,4	•	•	•	•
1/2"	13	12,7	75	28	-	9	7	3	10,8	•	•	•	•
9/16"	12	14,288	80	28	-	11	9	4	12,2	•	•	•	•
5/8"	11	15,875	80	30	-	12	9	4	13,5	•	•	•	•
3/4"	10	19,05	95	32	-	14	11	4	16,5	•	•	•	•
7/8"	9	22,225	100	32	-	18	14,5	4	19,5	•	•	•	•
1"	8	25,4	110	36	-	18	14,5	4	22,25	•	•	•	•
1 1/8"	7	28,575	125	40	-	22	18	4	25	•	•	•	•
1 1/4"	7	31,75	125	40	-	22	18	4	28	•	•	•	•



HSSE

A27 FC
BRIGHT

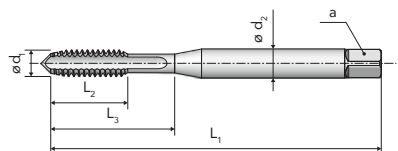
A27 FC
TiN

A27 FP
BRIGHT

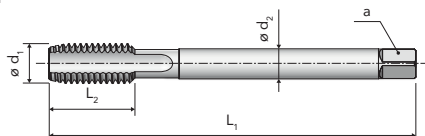
A27 FP
TiN

A
SERIES

DIN 2184-1
≤ Ø 1/4"



DIN 2184-1
 $\geq \varnothing 5/16''$



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A27 FC BRIGHT	A27 FC TIN	A27 FP BRIGHT	A27 FP TiN
P	P.1		● 20-25		● 20-25
	P.2	● 10-12	● 15-20	● 10-12	● 15-20
	P.3	● 8-10	● 12-15	● 8-10	● 12-15
K	K.2	● 8-10	● 12-15	● 8-10	● 12-15
N	N.1		● 20-25		● 20-25
	N.5		● 15-20		● 15-20

2B

2B

2B

2B

[illegible]

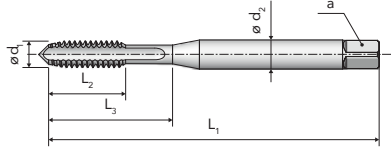


HSSE

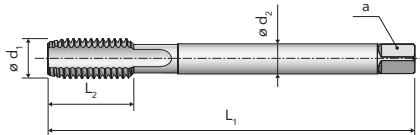
A49
NITRIDED

A49
TiCN

DIN 2184-1
≤ Ø 1/4"



DIN 2184-1
≥ Ø 5/16"



APPLICATION RANGE - CUTTING SPEED m/min

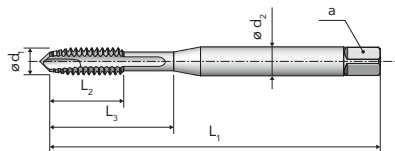
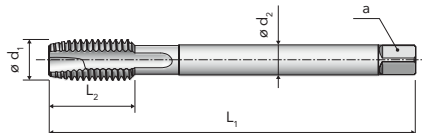
ISO	MG	A49 NITRIDED	A49 TiCN		
K	K.1	● 15-20	● 40-45		
N	N.4	● 15-20	● 40-45		
	N.7	● 15-20	● 40-45		
	N.9-10	● 20-25	● 45-50		

2BX

2BX



UNC	P [TPI]	Ød ₁ [mm]	L ₁ js 16 [mm]	L ₂ [mm]	L ₃ [mm]	Ød ₂ h9 [mm]	a h12 [mm]	z		A49 NITRIDED	A49 TiCN		
Nr.2	56	2,184	45	9	13	2,8	2,1	3	1,85	●	●		
Nr.3	48	2,515	50	9	15	2,8	2,1	3	2,1	●	●		
Nr.4	40	2,845	56	10	18	3,5	2,7	3	2,35	●	●		
Nr.5	40	3,175	56	10	18	3,5	2,7	3	2,65	●	●		
Nr.6	32	3,505	56	11	20	4	3	3	2,85	●	●		
Nr.8	32	4,166	63	13	22	4,5	3,4	3	3,5	●	●		
Nr.10	24	4,826	70	16	26,5	6	4,9	3	3,9	●	●		
Nr.12	24	5,486	80	16	26,5	6	4,9	3	4,5	●	●		
1/4"	20	6,35	80	17	30	7	5,5	3	5,1	●	●		
5/16"	18	7,938	90	18	-	6	4,9	4	6,6	●	●		
3/8"	16	9,525	100	22	-	7	5,5	4	8	●	●		
7/16"	14	11,113	100	24	-	8	6,2	4	9,4	●	●		
1/2"	13	12,7	110	26	-	9	7	4	10,8	●	●		
9/16"	12	14,288	110	28	-	11	9	4	12,2	●	●		
5/8"	11	15,875	110	28	-	12	9	4	13,5	●	●		
3/4"	10	19,05	125	32	-	14	11	4	16,5	●	●		
7/8"	9	22,225	140	32	-	18	14,5	4	19,5	●	●		
1"	8	25,4	160	36	-	18	14,5	5	22,25	●	●		
1 1/8"	7	28,575	180	40	-	22	18	5	25	●			
1 1/4"	7	31,75	180	40	-	22	18	5	28	●			
1 3/8"	6	34,925	200	50	-	28	22	5	30,75	●			
1 1/2"	6	38,1	200	50	-	28	22	5	34	●			

A19 S
BRIGHTA19 S
TiNA19 S
TiCNA19 S 3B
BRIGHTDIN 2184-1
≤ Ø 1/4"DIN 2184-1
≥ Ø 5/16"

APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A19 S BRIGHT	A19 S TiN	A19 S TiCN	A19 S 3B BRIGHT
P	P.2	● 20-25	● 30-35	● 30-35	● 20-25
	P.3	● 15-20	● 25-30	● 25-30	● 15-20
	P.4	● 12-15	● 20-25	● 20-25	● 12-15
	P.5		● 10-15	● 10-15	
M	M.1		● 10-15	● 10-15	
	K.2	● 15-20	● 25-30	● 25-30	● 15-20
N	N.2-3	● 20-25	● 30-35	● 30-35	● 20-25
	N.6	● 15-18	● 25-30	● 25-30	● 15-18

2B

2B

2B

3B



UNC	P	Ød1	L1 js 16	L2	L3	Ød2 h9	a h12	z		A19 S BRIGHT	A19 S TiN	A19 S TiCN	A19 S 3B BRIGHT
	[TPI]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]				
Nr.2	56	2,184	45	8	13	2,8	2,1	2	1,85	●	●	●	
Nr.3	48	2,515	50	9	15	2,8	2,1	3	2,1	●	●	●	
Nr.4	40	2,845	56	10	18	3,5	2,7	3	2,35	●	●	●	
Nr.5	40	3,175	56	10	18	3,5	2,7	3	2,65	●	●	●	
Nr.6	32	3,505	56	11	20	4	3	3	2,85	●	●	●	●
Nr.8	32	4,166	63	13	22	4,5	3,4	3	3,5	●	●	●	●
Nr.10	24	4,826	70	16	26,5	6	4,9	3	3,9	●	●	●	●
Nr.12	24	5,486	80	16	26,5	6	4,9	3	4,5	●	●	●	●
1/4"	20	6,35	80	17	30	7	5,5	3	5,1	●	●	●	●
5/16"	18	7,938	90	18	-	6	4,9	3	6,6	●	●	●	●
3/8"	16	9,525	100	22	-	7	5,5	3	8	●	●	●	●
7/16"	14	11,113	100	24	-	8	6,2	3	9,4	●	●	●	●
1/2"	13	12,7	110	26	-	9	7	3	10,8	●	●	●	●
9/16"	12	14,288	110	28	-	11	9	3	12,2	●	●	●	●
5/8"	11	15,875	110	28	-	12	9	3	13,5	●	●	●	●
3/4"	10	19,05	125	32	-	14	11	4	16,5	●	●	●	●
7/8"	9	22,225	140	32	-	18	14,5	4	19,5	●	●	●	●
1"	8	25,4	160	36	-	18	14,5	4	22,25	●	●	●	
1 1/4"	7	31,75	180	40	-	22	18	4	28	●			
1 1/2"	6	38,1	200	50	-	28	22	4	34	●			





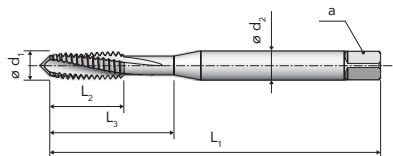
A33
BRIGHT

A33
TiN

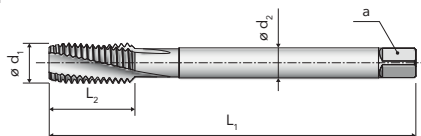
A33 3B
BRIGHT

A
SERIES

DIN 2184-1
≤ Ø 1/4"



DIN 2184-1
≥ Ø 5/16"



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A33 BRIGHT	A33 TiN	A33 3B BRIGHT
P	P.1	● 18-20	● 30-35	● 18-20
	P.2	● 15-18	● 25-30	● 15-18
	P.3	● 12-15	● 20-25	● 12-15
	P.4	● 10-12	● 15-20	● 10-12
	P.5		● 5-10	
K	K.2	● 12-15	● 20-25	● 12-15
N	N.1	● 18-20		● 18-20
	N.2-3	● 15-18	● 25-30	● 15-18
	N.5	● 15-18		● 15-18
	N.6	● 12-15	● 20-25	● 12-15

2B



2B



3B



UNC	P	Ød ₁	L ₁	L ₂	L ₃	Ød ₂	a	z	z	z	A33 BRIGHT	A33 TiN	A33 3B BRIGHT
	[TPI]	[mm]	js 16 [mm]	[mm]	[mm]	h9 [mm]	h12 [mm]	[-]	[mm]	[mm]			
Nr.2	56	2,184	45	8	13	2,8	2,1	3	1,85		●	●	
Nr.3	48	2,515	50	9	15	2,8	2,1	3	2,1		●	●	
Nr.4	40	2,845	56	10	18	3,5	2,7	3	2,35		●	●	
Nr.5	40	3,175	56	10	18	3,5	2,7	3	2,65		●	●	
Nr.6	32	3,505	56	11	20	4	3	3	2,85		●	●	●
Nr.8	32	4,166	63	13	20	4,5	3,4	3	3,5		●	●	●
Nr.10	24	4,826	70	16	26,5	6	4,9	3	3,9		●	●	●
Nr.12	24	5,486	80	16	29	6	4,9	3	4,5		●	●	●
1/4"	20	6,35	80	17	30	7	5,5	3	5,1		●	●	●
5/16"	18	7,938	90	18	-	6	4,9	3	6,6		●	●	●
3/8"	16	9,525	100	22	-	7	5,5	3	8		●	●	●
7/16"	14	11,113	100	24	-	8	6,2	3	9,4		●	●	●
1/2"	13	12,7	110	26	-	9	7	3	10,8		●	●	●
9/16"	12	14,288	110	28	-	11	9	3	12,2		●	●	●
5/8"	11	15,875	110	28	-	12	9	3	13,5		●	●	●
3/4"	10	19,05	125	32	-	14	11	4	16,5		●	●	●
7/8"	9	22,225	140	32	-	18	14,5	4	19,5		●	●	
1"	8	25,4	160	36	-	18	14,5	4	22,25		●	●	
1 1/8"	7	28,575	180	40	-	22	18	4	25		●		
1 1/4"	7	31,75	180	40	-	22	18	4	28		●		
1 3/8"	6	34,925	200	50	-	28	22	4	30,75		●		
1 1/2"	6	38,1	200	50	-	28	22	4	34		●		



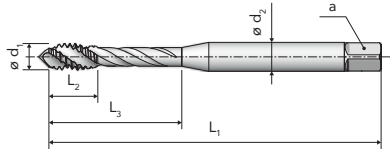
A60 S
BRIGHT

A60 S
TiN

A60 S
TiCN

A60 S
TiX2

DIN 2184-1
≤ Ø 1/4"



DIN 2184-1
≥ Ø 5/16"



A
SERIES

APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A60 S BRIGHT	A60 S TiN	A60 S TiCN	A60 S TiX2
P	P.2	● 15-20	● 25-30	● 25-30	
	P.3	● 12-15	● 20-25	● 20-25	
	P.4	● 10-12	● 15-20	● 15-20	
	P.5		● 5-10	● 5-10	
	P.7		● 8-10	● 8-10	● 8-10
M	M.1		● 8-10	● 8-10	● 8-10
	M.2				● 5-7
K	K.2	● 12-15	● 20-25	● 20-25	
N	N.3	● 15-18	● 25-30	● 25-30	
	N.6	● 15-18	● 25-30	● 25-30	

2B



2B



2B



2B



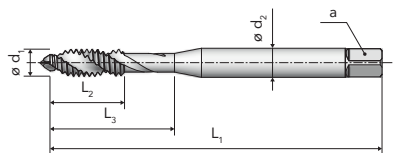
UNC	P	Ød ₁	L ₁	L ₂	L ₃	Ød ₂	a	z	z		A60 S BRIGHT	A60 S TiN	A60 S TiCN	A60 S TiX2
	[TPI]	[mm]	js 16 [mm]	[mm]	[mm]	h9 [mm]	h12 [mm]	[-]	[mm]					
Nr.2	56	2,184	45	6	13	2,8	2,1	3	1,85		●	●	●	●
Nr.3	48	2,515	50	6	15	2,8	2,1	3	2,1		●	●	●	●
Nr.4	40	2,845	56	6,5	21	3,5	2,7	3	2,35		●	●	●	●
Nr.5	40	3,175	56	6,5	21	3,5	2,7	3	2,65		●	●	●	●
Nr.6	32	3,505	56	7,5	22,5	4	3	3	2,85		●	●	●	●
Nr.8	32	4,166	63	7,5	26	4,5	3,4	3	3,5		●	●	●	●
Nr.10	24	4,826	70	10	28,5	6	4,9	3	3,9		●	●	●	●
Nr.12	24	5,486	80	10	28,5	6	4,9	3	4,5		●	●	●	●
1/4"	20	6,35	80	11,5	32	7	5,5	3	5,1		●	●	●	●
5/16"	18	7,938	90	13	-	6	4,9	3	6,6		●	●	●	●
3/8"	16	9,525	100	14	-	7	5,5	3	8		●	●	●	●
7/16"	14	11,113	100	17	-	8	6,2	3	9,4		●	●	●	●
1/2"	13	12,7	110	19	-	9	7	4	10,8		●	●	●	●
9/16"	12	14,288	110	21	-	11	9	4	12,2		●	●	●	●
5/8"	11	15,875	110	22,5	-	12	9	4	13,5		●	●	●	●
3/4"	10	19,05	125	26	-	14	11	4	16,5		●	●	●	●
7/8"	9	22,225	140	30	-	18	14,5	4	19,5		●	●	●	●
1"	8	25,4	160	36,5	-	18	14,5	4	22,25		●	●	●	●
1 1/4"	7	31,75	180	42	-	22	18	5	28		●			
1 1/2"	6	38,1	200	49	-	28	22	5	34		●			



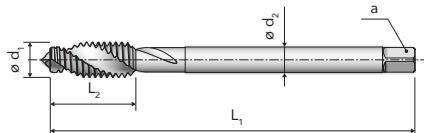
A65
BRIGHT

A
SERIES

DIN 2184-1
≤ Ø 1/4"



DIN 2184-1
 $\geq \varnothing 5/16''$



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A65 BRIGHT			
N	N.1-2	● 12-15			
	N.5-6	● 10-15			
S	S.1	● 6-8			
	S.3	● 6-8			

2B

[illegible]

HAND TAPS for blind and through holes
In sets of two pieces



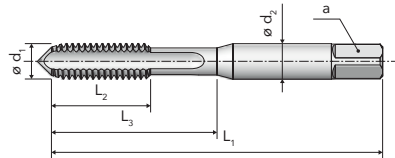
HSS

A8
ROUGHING

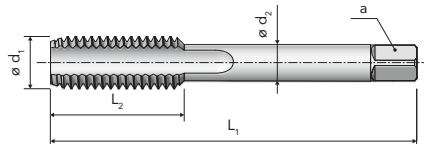
A8
FINISHING

A8
SET

DIN 2184-2
≤ Ø 1/4"



DIN 2184-2
≥ Ø 5/16"

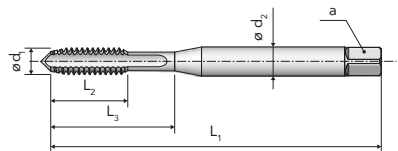
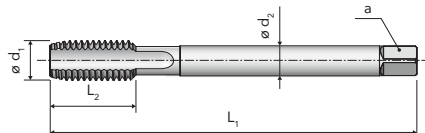


APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A8 ROUGHING	A8 FINISHING	A8 SET
P	P.1-4	•	•	•
	P.7	•	•	•
K	K.2	•	•	•
N	N.1-3	•	•	•
	N.5-7	•	•	•



UNF	P [TPI]	Ød ₁ [mm]	L ₁ js 16 [mm]	L ₂ [mm]	L ₃ [mm]	Ød ₂ h9 [mm]	a h12 [mm]	z	z [mm]	A8 ROUGHING	A8 FINISHING	A8 SET
Nr.2	64	2,184	36	9	15	2,8	2,1	3	1,85	•	•	•
Nr.3	56	2,515	40	9	15	2,8	2,1	3	2,15	•	•	•
Nr.4	48	2,845	40	10	18	3,5	2,7	3	2,4	•	•	•
Nr.5	44	3,175	40	10	18	3,5	2,7	3	2,7	•	•	•
Nr.6	40	3,505	45	11	20	4	3	3	2,95	•	•	•
Nr.8	36	4,166	45	12	21	4,5	3,4	3	3,5	•	•	•
Nr.10	32	4,826	50	14	23	6	4,9	3	4,1	•	•	•
Nr.12	28	5,486	56	16	28	6	4,9	3	4,6	•	•	•
1/4"	28	6,35	56	16	28	6	4,9	3	5,5	•	•	•
5/16"	24	7,938	63	18	-	6	4,9	3	6,9	•	•	•
3/8"	24	9,525	63	18	-	7	5,5	3	8,5	•	•	•
7/16"	20	11,113	70	20	-	8	6,2	3	9,9	•	•	•
1/2"	20	12,7	70	20	-	9	7	4	11,5	•	•	•
9/16"	18	14,288	70	22	-	11	9	4	12,9	•	•	•
5/8"	18	15,875	70	22	-	12	9	4	14,5	•	•	•
3/4"	16	19,05	80	22	-	14	11	4	17,5	•	•	•
7/8"	14	22,225	80	22	-	18	14,5	4	20,4	•	•	•
1"	12	25,4	90	22	-	18	14,5	4	23,25	•	•	•
1 1/8"	12	28,575	90	22	-	22	18	4	26,5	•	•	•
1 1/4"	12	31,75	90	22	-	22	18	4	29,5	•	•	•

A28 FC
BRIGHTA28 FC
TiNA28 FP
BRIGHTA28 FP
TiNDIN 2184-1
≤ Ø 1/4"DIN 2184-1
≥ Ø 5/16"

APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A28 FC BRIGHT	A28 FC TiN	A28 FP BRIGHT	A28 FP TiN
P	P.1		• 20-25		• 20-25
	P.2	• 10-12	• 15-20	• 10-12	• 15-20
	P.3	• 8-10	• 12-15	• 8-10	• 12-15
K	K.2	• 8-10	• 12-15	• 8-10	• 12-15
N	N.1		• 20-25		• 20-25
	N.5		• 15-20		• 15-20

2B

2B

2B

2B



UNF	P	Ød ₁	L ₁ js 16	L ₂	L ₃	Ød ₂ h9	a h12	z		A28 FC BRIGHT	A28 FC TiN	A28 FP BRIGHT	A28 FP TiN
[TPI]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]				
Nr.2	64	2,184	45	9	13	2,8	2,1	3	1,85	•	•	•	•
Nr.3	56	2,515	50	9	15	2,8	2,1	3	2,15	•	•	•	•
Nr.4	48	2,845	56	10	18	3,5	2,7	3	2,4	•	•	•	•
Nr.5	44	3,175	56	10	18	3,5	2,7	3	2,7	•	•	•	•
Nr.6	40	3,505	56	11	20	4	3	3	2,95	•	•	•	•
Nr.8	36	4,166	63	12	21	4,5	3,4	3	3,5	•	•	•	•
Nr.10	32	4,826	70	14	24,5	6	4,9	3	4,1	•	•	•	•
Nr.12	28	5,486	80	16	26,5	6	4,9	3	4,6	•	•	•	•
1/4"	28	6,35	80	16	30	7	5,5	3	5,5	•	•	•	•
5/16"	24	7,938	90	18	-	6	4,9	3	6,9	•	•	•	•
3/8"	24	9,525	90	18	-	7	5,5	3	8,5	•	•	•	•
7/16"	20	11,113	100	20	-	8	6,2	3	9,9	•	•	•	•
1/2"	20	12,7	100	22	-	9	7	3	11,5	•	•	•	•
9/16"	18	14,288	100	22	-	11	9	3	12,9	•	•	•	•
5/8"	18	15,875	100	22	-	12	9	3	14,5	•	•	•	•
3/4"	16	19,05	110	25	-	14	11	4	17,5	•	•	•	•
7/8"	14	22,225	125	25	-	18	14,5	4	20,4	•	•	•	•
1"	12	25,4	140	28	-	18	14,5	4	23,25	•	•	•	•
1 1/8"	12	28,575	150	28	-	22	18	4	26,5	•	•	•	•
1 1/4"	12	31,75	150	28	-	22	18	4	29,5	•	•	•	•
1 3/8"	12	34,925	170	30	-	28	22	4	32,75	•	•	•	•
1 1/2"	12	38,1	170	30	-	28	22	5	36	•	•	•	•

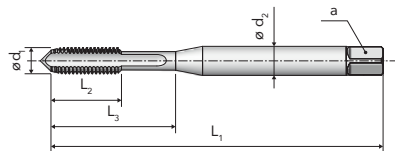
MACHINE TAPS for blind and through holes
Straight flutes / for cast iron



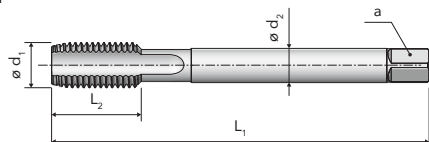
A50
NITRIDED

A50
TiCN

DIN 2184-1
≤ Ø 1/4"



DIN 2184-1
≥ Ø 5/16"



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A50 NITRIDED	A50 TiCN		
K	K.1	● 15-20	● 40-45		
N	N.4	● 15-20	● 40-45		
	N.7	● 15-20	● 40-45		
	N.9-10	● 20-25	● 45-50		

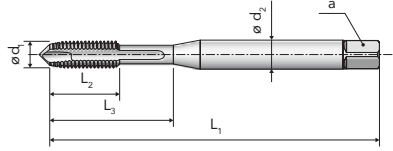
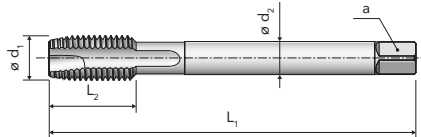
2BX

2BX



UNF	P [TPI]	Ød ₁ [mm]	L ₁ js 16 [mm]	L ₂ [mm]	L ₃ [mm]	Ød ₂ h9 [mm]	a h12 [mm]	z		A50 NITRIDED	A50 TiCN		
Nr.8	36	4,166	63	12	21	4,5	3,4	3	3,5	●	●		
Nr.10	32	4,826	70	14	24,5	6	4,9	3	4,1	●	●		
Nr.12	28	5,486	80	16	26,5	6	4,9	3	4,6	●	●		
1/4"	28	6,35	80	16	30	7	5,5	3	5,5	●	●		
5/16"	24	7,938	90	18	-	6	4,9	4	6,9	●	●		
3/8"	24	9,525	90	18	-	7	5,5	4	8,5	●	●		
7/16"	20	11,113	100	20	-	8	6,2	4	9,9	●	●		
1/2"	20	12,7	100	22	-	9	7	4	11,5	●	●		
9/16"	18	14,288	100	22	-	11	9	4	12,9	●	●		
5/8"	18	15,875	100	22	-	12	9	4	14,5	●	●		
3/4"	16	19,05	110	25	-	14	11	4	17,5	●	●		
7/8"	14	22,225	125	25	-	18	14,5	4	20,4	●	●		
1"	12	25,4	140	28	-	18	14,5	5	23,25	●	●		
1 1/8"	12	28,575	150	28	-	22	18	5	26,5	●			
1 1/4"	12	31,75	150	28	-	22	18	5	29,5	●			
1 3/8"	12	34,925	170	30	-	28	22	5	32,75	●			
1 1/2"	12	38,1	170	30	-	28	22	5	36	●			

A SERIES

A20 S
BRIGHTA20 S
TiNA20 S
TiCNA20 S 3B
BRIGHTA
SERIESDIN 2184-1
≤ Ø 1/4"DIN 2184-1
≥ Ø 5/16"

APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A20 S BRIGHT	A20 S TiN	A20 S TiCN	A20 S 3B BRIGHT
P	P.2	● 20-25	● 30-35	● 30-35	● 20-25
	P.3	● 15-20	● 25-30	● 25-30	● 15-20
	P.4	● 12-15	● 20-25	● 20-25	● 12-15
	P.5		● 10-15	● 10-15	
M	M.1		● 10-15	● 10-15	
	M.2	● 15-20	● 25-30	● 25-30	● 15-20
N	N.2-3	● 20-25	● 30-35	● 30-35	● 20-25
	N.6	● 15-18	● 25-30	● 25-30	● 15-18

2B

2B

2B

3B

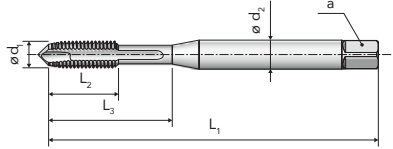


UNF	P	Ød ₁	L ₁	L ₂	L ₃	Ød ₂	a	z	Ød ₂	A20 S	A20 S	A20 S	A20 S 3B
	[TPI]	[mm]	js 16	[mm]	[mm]	h9	h12	[-]	[mm]	BRIGHT	TiN	TiCN	BRIGHT
Nr.2	64	2,184	45	8	13	2,8	2,1	2	1,85	●	●	●	
Nr.3	56	2,515	50	9	15	2,8	2,1	3	2,15	●	●	●	
Nr.4	48	2,845	56	10	18	3,5	2,7	3	2,4	●	●	●	
Nr.5	44	3,175	56	10	18	3,5	2,7	3	2,7	●	●	●	
Nr.6	40	3,505	56	11	20	4	3	3	2,95	●	●	●	●
Nr.8	36	4,166	63	12	21	4,5	3,4	3	3,5	●	●	●	●
Nr.10	32	4,826	70	14	24,5	6	4,9	3	4,1	●	●	●	●
Nr.12	28	5,486	80	16	26,5	6	4,9	3	4,6	●	●	●	●
1/4"	28	6,35	80	16	30	7	5,5	3	5,5	●	●	●	●
5/16"	24	7,938	90	18	-	6	4,9	3	6,9	●	●	●	●
3/8"	24	9,525	90	18	-	7	5,5	3	8,5	●	●	●	●
7/16"	20	11,113	100	20	-	8	6,2	3	9,9	●	●	●	●
1/2"	20	12,7	100	22	-	9	7	4	11,5	●	●	●	●
9/16"	18	14,288	100	22	-	11	9	4	12,9	●	●	●	●
5/8"	18	15,875	100	22	-	12	9	4	14,5	●	●	●	●
3/4"	16	19,05	110	25	-	14	11	4	17,5	●	●	●	●
7/8"	14	22,225	125	25	-	18	14,5	4	20,4	●	●	●	●
1"	12	25,4	140	28	-	18	14,5	4	23,25	●	●	●	
1 1/4"	12	31,75	150	28	-	22	18	4	29,5	●			
1 1/2"	12	38,1	170	30	-	28	22	5	36	●			

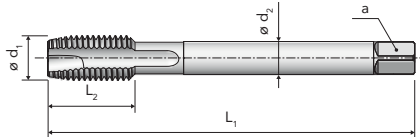


A20 S
TiX2

DIN 2184-1
≤ Ø 1/4"



DIN 2184-1
 $\geq \varnothing 5/16''$



APPLICATION RANGE - CUTTING SPEED m/min

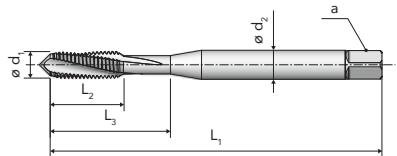
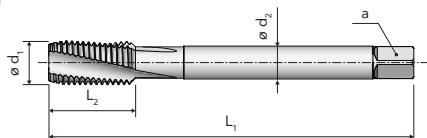
ISO	MG	A20 S TiX2			
P	P.7	● 10-15			
M	M.1	● 10-15			

2B



2,5xD

[illegible]

A34
BRIGHTA34
TiNA34 3B
BRIGHTA
SERIESDIN 2184-1
≤ Ø 1/4"DIN 2184-1
≥ Ø 5/16"

APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A34 BRIGHT	A34 TiN	A34 3B BRIGHT	
P	P.1	● 18-20	● 30-35	● 18-20	
	P.2	● 15-18	● 25-30	● 15-18	
	P.3	● 12-15	● 20-25	● 12-15	
	P.4	● 10-12	● 15-20	● 10-12	
	P.5		● 5-10		
K	K.2	● 12-15	● 20-25	● 12-15	
N	N.1	● 18-20		● 18-20	
	N.2-3	● 15-18	● 25-30	● 15-18	
	N.5	● 15-18		● 15-18	
	N.6	● 12-15	● 20-25	● 12-15	

2B



2B



3B



UNF	P	Ød ₁	L ₁	L ₂	L ₃	Ød ₂	a	z	Ød ₂	A34	A34	A34 3B	
	[TPI]	[mm]	js 16	[mm]	[mm]	h9	h12	[-]	[mm]	BRIGHT	TiN	BRIGHT	
Nr.2	64	2,184	45	8	13	2,8	2,1	3	1,85	●	●		
Nr.3	56	2,515	50	9	15	2,8	2,1	3	2,15	●	●		
Nr.4	48	2,845	56	10	18	3,5	2,7	3	2,4	●	●		
Nr.5	44	3,175	56	10	18	3,5	2,7	3	2,7	●	●		
Nr.6	40	3,505	56	11	20	4	3	3	2,95	●	●	●	
Nr.8	36	4,166	63	12	21	4,5	3,4	3	3,5	●	●	●	
Nr.10	32	4,826	70	14	24,5	6	4,9	3	4,1	●	●	●	
Nr.12	28	5,486	80	16	26,5	6	4,9	3	4,6	●	●	●	
1/4"	28	6,35	80	16	30	7	5,5	3	5,5	●	●	●	
5/16"	24	7,938	90	18	-	6	4,9	3	6,9	●	●	●	
3/8"	24	9,525	90	18	-	7	5,5	3	8,5	●	●	●	
7/16"	20	11,113	100	20	-	8	6,2	3	9,9	●	●	●	
1/2"	20	12,7	100	22	-	9	7	3	11,5	●	●	●	
9/16"	18	14,288	100	22	-	11	9	3	12,9	●	●	●	
5/8"	18	15,875	100	22	-	12	9	3	14,5	●	●	●	
3/4"	16	19,05	110	25	-	14	11	4	17,5	●	●	●	
7/8"	14	22,225	125	25	-	18	14,5	4	20,4	●	●		
1"	12	25,4	140	28	-	18	14,5	4	23,25	●	●		
1 1/8"	12	28,575	150	28	-	22	18	4	26,5	●			
1 1/4"	12	31,75	150	28	-	22	18	4	29,5	●			
1 3/8"	12	34,925	170	30	-	28	22	5	32,75	●			
1 1/2"	12	38,1	170	30	-	28	22	5	36	●			

MACHINE TAPS for blind holes
40° spiral flutes / back tapered



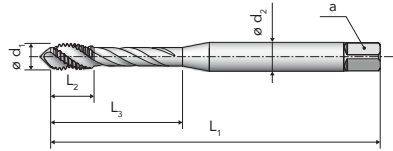
A61 S
BRIGHT

A61 S
TiN

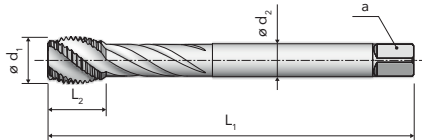
A61 S
TiCN

A61 S
TiX2

DIN 2184-1
≤ Ø 1/4"



DIN 2184-1
≥ Ø 5/16"



A
SERIES

APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A61 S BRIGHT	A61 S TiN	A61 S TiCN	A61 S TiX2
P	P.2	● 15-20	● 25-30	● 25-30	
	P.3	● 12-15	● 20-25	● 20-25	
	P.4	● 10-12	● 15-20	● 15-20	
	P.5		● 5-10	● 5-10	
	P.7		● 8-10	● 8-10	● 8-10
M	M.1		● 8-10	● 8-10	● 8-10
	M.2				● 5-7
K	K.2	● 12-15	● 20-25	● 20-25	
N	N.3	● 15-18	● 25-30	● 25-30	
	N.6	● 15-18	● 25-30	● 25-30	

2B



2B



2B



2B



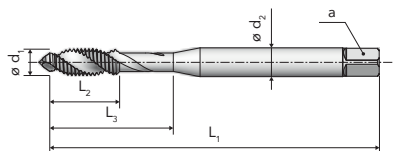
UNF	P	Ød ₁	L ₁	L ₂	L ₃	Ød ₂	a	z	z		A61 S BRIGHT	A61 S TiN	A61 S TiCN	A61 S TiX2
	[TPI]	[mm]	js 16 [mm]	[mm]	[mm]	h9 [mm]	h12 [mm]	[-]	[mm]					
Nr.2	64	2,184	45	5,5	13	2,8	2,1	3	1,85		●	●	●	
Nr.3	56	2,515	50	6	18	2,8	2,1	3	2,15		●	●	●	
Nr.4	48	2,845	56	6	18	3,5	2,7	3	2,4		●	●	●	
Nr.5	44	3,175	56	6	18	3,5	2,7	3	2,7		●	●	●	
Nr.6	40	3,505	56	6,5	22	4	3	3	2,95		●	●	●	●
Nr.8	36	4,166	63	7	26,5	4,5	3,4	3	3,5		●	●	●	●
Nr.10	32	4,826	70	8	29	6	4,9	3	4,1		●	●	●	●
Nr.12	28	5,486	80	9	29,5	6	4,9	3	4,6		●	●	●	●
1/4"	28	6,35	80	10	32	7	5,5	3	5,5		●	●	●	●
5/16"	24	7,938	90	11	-	6	4,9	3	6,9		●	●	●	●
3/8"	24	9,525	90	12	-	7	5,5	3	8,5		●	●	●	●
7/16"	20	11,113	100	13,5	-	8	6,2	3	9,9		●	●	●	●
1/2"	20	12,7	100	14,5	-	9	7	4	11,5		●	●	●	●
9/16"	18	14,288	100	15,5	-	11	9	4	12,9		●	●	●	●
5/8"	18	15,875	100	16	-	12	9	4	14,5		●	●	●	●
3/4"	16	19,05	110	18	-	14	11	4	17,5		●	●	●	●
7/8"	14	22,225	125	23,5	-	18	14,5	4	20,4		●	●	●	●
1"	12	25,4	140	26	-	18	14,5	4	23,25		●	●	●	●
1 1/4"	12	31,75	150	26	-	22	18	5	29,5		●			
1 1/2"	12	38,1	170	29	-	28	22	5	36		●			



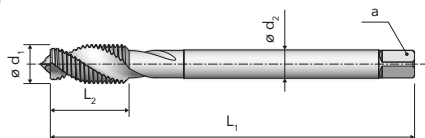
A66
BRIGHT

A
SERIES

DIN 2184-1
≤ Ø 1/4"



DIN 2184-1
 $\geq \varnothing 5/16''$



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A66 BRIGHT			
N	N.1-2	● 12-15			
	N.5-6	● 10-15			
S	S.1	● 6-8			
	S.3	● 6-8			

2B



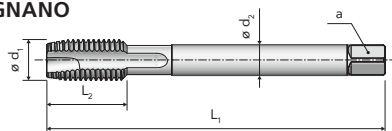
UNF	P	Ød ₁	L ₁ js 16	L ₂	L ₃	Ød ₂ h9	a h12	z		A66 BRIGHT			
	[TPI]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]				
Nr.2	64	2,184	45	8	13	2,8	2,1	2	1,85	●			
Nr.3	56	2,515	50	9	15	2,8	2,1	2	2,15	●			
Nr.4	48	2,845	56	10	18	3,5	2,7	2	2,4	●			
Nr.5	44	3,175	56	10	18	3,5	2,7	2	2,7	●			
Nr.6	40	3,505	56	11	20	4	3	2	2,95	●			
Nr.8	36	4,166	63	12	21	4,5	3,4	2	3,5	●			
Nr.10	32	4,826	70	14	24,5	6	4,9	2	4,1	●			
Nr.12	28	5,486	80	16	26,5	6	4,9	2	4,6	●			
1/4"	28	6,35	80	16	30	7	5,5	2	5,5	●			
5/16"	24	7,938	90	18	-	6	4,9	2	6,9	●			
3/8"	24	9,525	90	18	-	7	5,5	2	8,5	●			



A119
BRIGHT

A119
TiN

NORM VERGNANO



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A119 BRIGHT	A119 TIN		
P	P.2	● 20-25	● 30-35		
	P.3	● 15-20	● 25-30		
	P.4	● 12-15	● 20-25		
	P.5		● 10-15		
	P.7		● 10-15		
M	M.1		● 10-15		
K	K.2	● 15-20	● 25-30		
N	N.2-3	● 20-25	● 30-35		
	N.6	● 15-18	● 25-30		

2B

2B

[illegible]



A160
BRIGHT

A160
TiN

NORM VERGNANO



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A160 BRIGHT	A160 TiN		
P	P.2	● 15-20	● 25-30		
	P.3	● 12-15	● 20-25		
	P.4	● 10-12	● 15-20		
	P.5		● 5-10		
	P.7		● 8-10		
M	M.1		● 8-10		
K	K.2	● 12-15	● 20-25		
N	N.3	● 15-18	● 25-30		
	N.6	● 15-18	● 25-30		

2B

2B

[illegible]



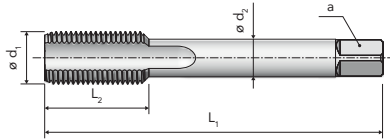
HSS

A5
ROUGHING

A5 FINISHING

A5
SET

DIN 5157



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A5 ROUGHING	A5 FINISHING	A5 SET	
P	P.1-4	●	●	●	
	P.7	●	●	●	
K	K.2	●	●	●	
N	N.1-3	●	●	●	
	N.5-7	●	●	●	

[illegible]

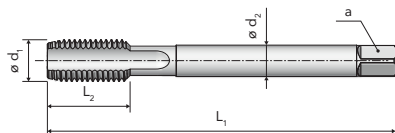


HSSE

A26 FC
BRIGHT

A26 FP
BRIGHT

DIN 5156



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A26 FC BRIGHT	A26 FP BRIGHT		
P	P.2	● 10-12	● 10-12		
	P.3	● 8-10	● 8-10		
K	K.2	● 8-10	● 8-10		

**ISO
5969**

**ISO
5969**

[illegible]

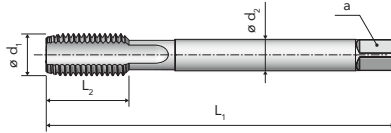


HSSE

A48
NITRIDED

A48
TiCN

DIN 5156



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A48 NITRIDED	A48 TiCN		
K	K.1	• 15-20	• 40-45		
N	N.4	• 15-20	• 40-45		
	N.7	• 15-20	• 40-45		
	N.9-10	• 20-25	• 45-50		

ISO
5969 X

ISO
5969 X

C (2-3)

C (2-3)

2,5xD

2,5xD

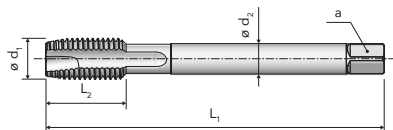
RH

RH

G	P	$\varnothing d_1$	L_1	L_2	L_3	$\varnothing d_2$	a	z		A48 NITRIDED	A48 TiCN		
[TPI]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]				
1/8"	28	9,728	90	18	-	7	5,5	4	8,8	•	•		
1/4"	19	13,157	100	22	-	11	9	4	11,8	•	•		
3/8"	19	16,662	100	22	-	12	9	4	15,25	•	•		
1/2"	14	20,955	125	25	-	16	12	4	19	•	•		
5/8"	14	22,911	125	25	-	18	14,5	4	21	•	•		
3/4"	14	26,441	140	28	-	20	16	5	24,5	•	•		
7/8"	14	30,201	150	28	-	22	18	5	28,25	•	•		
1"	11	33,249	160	30	-	25	20	5	30,75	•	•		
1 1/8"	11	37,897	170	30	-	28	22	6	35,5	•			
1 1/4"	11	41,91	170	30	-	32	24	6	39,5	•			
1 1/2"	11	47,803	190	32	-	36	29	6	45,25	•			

A18 S
BRIGHTA18 S
VAPA18 S
TiCNA18 S
TiX2

DIN 5156



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A18 S BRIGHT	A18 S VAP	A18 S TiCN	A18 S TiX2
P	P.2	● 20-25	● 20-25	● 30-35	
	P.3	● 15-20	● 15-20	● 25-30	
	P.4	● 12-15	● 12-15	● 20-25	
	P.5			● 10-15	
	P.7			● 10-15	● 10-15
M	M.1			● 10-15	● 10-15
K	K.2	● 15-20	● 15-20	● 25-30	
N	N.2-3	● 20-25	● 20-25	● 30-35	
	N.6	● 15-18	● 15-18	● 25-30	

ISO
5969ISO
5969ISO
5969ISO
5969

B (4-5)

B (4-5)

B (4-5)

B (4-5)

2,5xD

2,5xD

2,5xD

2,5xD

RH

RH

RH

RH

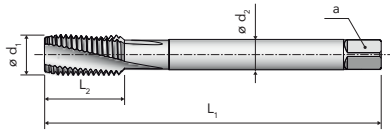
G	P	Ød1	L1 js 16	L2	L3	Ød2 h9	a h12	z		A18 S BRIGHT	A18 S VAP	A18 S TiCN	A18 S TiX2
[TPI]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]				
1/8"	28	9,728	90	18	-	7	5,5	4	8,8	●	●	●	●
1/4"	19	13,157	100	22	-	11	9	4	11,8	●	●	●	●
3/8"	19	16,662	100	22	-	12	9	4	15,25	●	●	●	●
1/2"	14	20,955	125	25	-	16	12	4	19	●	●	●	●
5/8"	14	22,911	125	25	-	18	14,5	4	21	●	●	●	●
3/4"	14	26,441	140	28	-	20	16	4	24,5	●	●	●	●
7/8"	14	30,201	150	28	-	22	18	4	28,25	●	●	●	●
1"	11	33,249	160	30	-	25	20	4	30,75	●	●	●	●
1 1/8"	11	37,897	170	30	-	28	22	5	35,5	●			
1 1/4"	11	41,91	170	30	-	32	24	5	39,5	●			
1 1/2"	11	47,803	190	32	-	36	29	5	45,25	●			



A32
BRIGHT

A32
TiN

DIN 5156



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A32 BRIGHT	A32 TiN		
P	P.1	● 18-20	● 30-35		
	P.2	● 15-18	● 25-30		
	P.3	● 12-15	● 20-25		
	P.4	● 10-12	● 15-20		
	P.5		● 5-10		
K	K.2	● 12-15	● 20-25		
N	N.1	● 18-20			
	N.2-3	● 15-18	● 25-30		
	N.5	● 15-18			
	N.6	● 12-15	● 20-25		

**ISO
5969**

**ISO
5969**

[illegible]



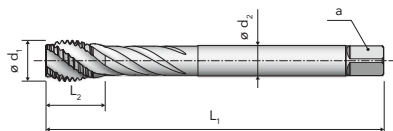
A59 S
BRIGHT

A59 S
VAP

A59 S
TiN

A59 S
TiCN

DIN 5156



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A59 S BRIGHT	A59 S VAP	A59 S TIN	A59 S TICN
P	P.2	● 15-20	● 15-20	● 25-30	● 25-30
	P.3	● 12-15	● 12-15	● 20-25	● 20-25
	P.4	● 10-12	● 10-12	● 15-20	● 15-20
	P.5			● 5-10	● 5-10
	P.7			● 8-10	● 8-10
M	M.1		● 8-10	● 8-10	
K	K.2	● 12-15	● 12-15	● 20-25	● 20-25
N	N.3	● 15-18	● 15-18	● 25-30	● 25-30
	N.6	● 15-18	● 15-18	● 25-30	● 25-30

**ISO
5969**

**ISO
5969**

**ISO
5969**

**ISO
5969**

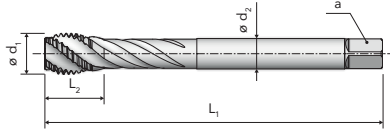


G	P	Ød ₁	L ₁ js 16	L ₂	L ₃	Ød ₂ h9	a h12	z		A59 S BRIGHT	A59 S VAP	A59 S TiN	A59 S TiCN
	[TPI]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]				
1/8"	28	9,728	90	17	-	7	5,5	3	8,8	●	●	●	●
1/4"	19	13,157	100	23	-	11	9	4	11,8	●	●	●	●
3/8"	19	16,662	100	23	-	12	9	4	15,25	●	●	●	●
1/2"	14	20,955	125	29	-	16	12	5	19	●	●	●	●
5/8"	14	22,911	125	29	-	18	14,5	5	21	●	●	●	●
3/4"	14	26,441	140	29	-	20	16	5	24,5	●	●	●	●
7/8"	14	30,201	150	32	-	22	18	5	28,25	●	●	●	●
1"	11	33,249	160	34,5	-	25	20	5	30,75	●	●	●	●
1 1/8"	11	37,897	170	34,5	-	28	22	5	35,5	●	●		
1 1/4"	11	41,91	170	34,5	-	32	24	5	39,5	●	●		
1 1/2"	11	47,803	190	37,5	-	36	29	6	45,25	●	●		



A59 S
TiX2

DIN 5156



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A59 S TiX2			
P	P.7	● 8-10			
M	M.1	● 8-10			
	M.2	● 5-7			

**ISO
5969**

[illegible]

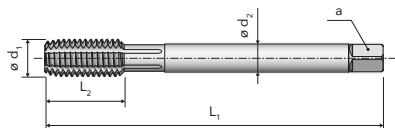


HSSE

A82 N
TiN

A82 N
TiCN

DIN 2189



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A82 N TiN	A82 N TiCN		
P	P.1-2	● 40-45	● 40-45		
	P.3	● 35-40	● 35-40		
N	N.1-2	● 40-45	● 40-45		
	N.3	● 35-40	● 35-40		
	N.5-6	● 40-45	● 40-45		

ISO
5969 X

ISO
5969 X

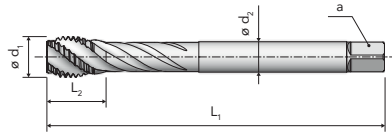
[illegible]



A159 S
BRIGHT

A159 S
TiN

DIN 5156



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A159 S BRIGHT	A159 S TiN		
P	P.2	● 15-20	● 25-30		
	P.3	● 12-15	● 20-25		
	P.4	● 10-12	● 15-20		
	P.5		● 5-10		
	P.7		● 8-10		
M	M.1		● 8-10		
K	K.2	● 12-15	● 20-25		
N	N.3	● 15-18	● 25-30		
	N.6	● 15-18	● 25-30		

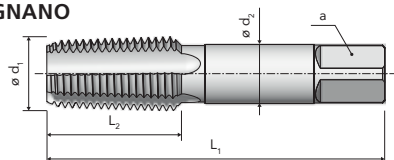
[illegible]



HSSE

A6
BRIGHT

NORM VERGNANO



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A6 BRIGHT			
P	P.2	● 10-15			
	P.3	● 10-12			
	P.4	● 8-10			
K	K 2	● 10-12			

[illegible]

(a) = Cylindrical hole (see page 256)



HSS

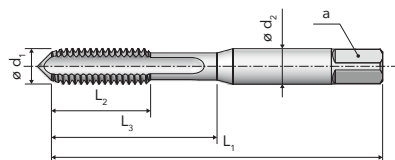
A4
ROUGHING

A4
SECOND

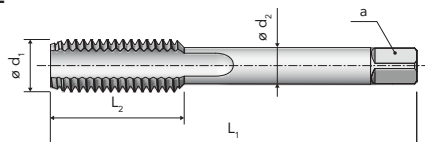
A4
FINISHING

A4
SET

DIN 2184-2
≤ Ø 1/4"



DIN 2184-2
≥ Ø 5/16"



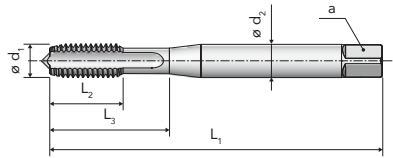
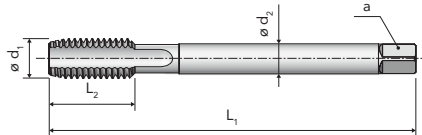
A SERIES

APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A4 ROUGHING	A4 SECOND	A4 FINISHING	A4 SET
P	P.1-4	•	•	•	•
	P.7	•	•	•	•
K	K.2	•	•	•	•
N	N.1-3	•	•	•	•
	N.5-7	•	•	•	•



BSW	P [TPI]	Ød ₁ [mm]	L ₁ js 16 [mm]	L ₂ [mm]	L ₃ [mm]	Ød ₂ h9 [mm]	a h12 [mm]	z		A4 ROUGHING	A4 SECOND	A4 FINISHING	A4 SET
3/32"	48	2,381	40	9	15	2,8	2,1	3	1,9	•	•	•	•
1/8"	40	3,175	40	10	18	3,5	2,7	3	2,55	•	•	•	•
5/32"	32	3,969	45	12	21	4,5	3,4	3	3,2	•	•	•	•
3/16"	24	4,763	50	14	23	6	4,9	3	3,7	•	•	•	•
7/32"	24	5,556	56	16	28	6	4,9	3	4,5	•	•	•	•
1/4"	20	6,35	56	16	28	6	4,9	3	5,1	•	•	•	•
5/16"	18	7,938	63	22	-	6	4,9	3	6,5	•	•	•	•
3/8"	16	9,525	70	24	-	7	5,5	3	7,9	•	•	•	•
7/16"	14	11,113	70	24	-	8	6,2	3	9,25	•	•	•	•
1/2"	12	12,7	75	28	-	9	7	4	10,5	•	•	•	•
9/16"	12	14,288	80	28	-	11	9	4	12	•	•	•	•
5/8"	11	15,875	80	30	-	12	9	4	13,5	•	•	•	•
3/4"	10	19,05	95	32	-	14	11	4	16,4	•	•	•	•
7/8"	9	22,225	100	32	-	18	14,5	4	19,25	•	•	•	•
1"	8	25,4	110	36	-	18	14,5	4	22	•	•	•	•
1 1/8"	7	28,575	125	40	-	22	18	4	24,75	•	•	•	•
1 1/4"	7	31,75	125	40	-	22	18	4	27,75	•	•	•	•

A24 FC
BRIGHTA24 FP
BRIGHTDIN 2184-1
≤ Ø 3/8"DIN 2184-1
≥ Ø 7/16"

APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A24 FC BRIGHT	A24 FP BRIGHT		
P	P.2	• 10-12	• 10-12		
	P.3	• 8-10	• 8-10		
K	K.2	• 8-10	• 8-10		

mc

mc



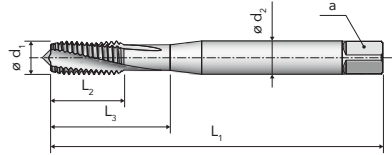
BSW	P [TPI]	Ød1 [mm]	L1 js 16 [mm]	L2 [mm]	L3 [mm]	Ød2 h9 [mm]	a h12 [mm]	z		A24 FC BRIGHT	A24 FP BRIGHT		
3/32"	48	2,381	50	9	15	2,8	2,1	3	1,9	•	•		
1/8"	40	3,175	56	11	17	3,5	2,7	3	2,55	•	•		
5/32"	32	3,969	63	12	21	4,5	3,4	3	3,2	•	•		
3/16"	24	4,763	70	14	24	6	4,9	3	3,7	•	•		
7/32"	24	5,556	80	15	28	6	4,9	3	4,5	•	•		
1/4"	20	6,35	80	16	29	7	5,5	3	5,1	•	•		
5/16"	18	7,938	90	18	33	8	6,2	3	6,5	•	•		
3/8"	16	9,525	100	20	36	10	8	3	7,9	•	•		
7/16"	14	11,113	100	22	-	8	6,2	3	9,25	•	•		
1/2"	12	12,7	110	25	-	9	7	3	10,5	•	•		
9/16"	12	14,288	110	27	-	11	9	3	12	•	•		
5/8"	11	15,875	110	28	-	12	9	3	13,5	•	•		
3/4"	10	19,05	125	32	-	14	11	4	16,4	•	•		
7/8"	9	22,225	140	32	-	18	14,5	4	19,25	•	•		
1"	8	25,4	160	36	-	18	14,5	4	22	•	•		
1 1/8"	7	28,575	180	40	-	22	18	4	24,75	•	•		
1 1/4"	7	31,75	180	40	-	22	18	4	27,75	•	•		



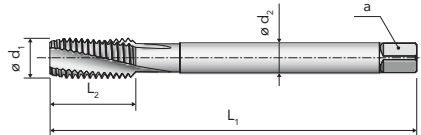
A31
BRIGHT

A31
TiN

DIN 2184-1
≤ Ø 3/8"



DIN 2184-1
≥ Ø 7/16"



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A31 BRIGHT	A31 TiN		
P	P.1	● 18-20	● 30-35		
	P.2	● 15-18	● 25-30		
	P.3	● 12-15	● 20-25		
	P.4	● 10-12	● 15-20		
	P.5		● 5-10		
K	K.2	● 12-15	● 20-25		
N	N.1	● 18-20			
	N.2-3	● 15-18	● 25-30		
	N.5	● 15-18			
	N.6	● 12-15	● 20-25		

mc

mc



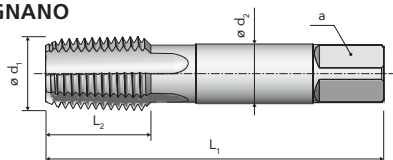
BSW	P	Ød1	L1 js 16	L2	L3	Ød2 h9	a h12	z		A31 BRIGHT	A31 TiN		
[TPI]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]				
3/32"	48	2,381	50	9	15	2,8	2,1	3	1,9	●	●		
1/8"	40	3,175	56	11	17	3,5	2,7	3	2,55	●	●		
5/32"	32	3,969	63	12	21	4,5	3,4	3	3,2	●	●		
3/16"	24	4,763	70	14	24	6	4,9	3	3,7	●	●		
7/32"	24	5,556	80	15	28	6	4,9	3	4,5	●	●		
1/4"	20	6,35	80	16	29	7	5,5	3	5,1	●	●		
5/16"	18	7,938	90	18	33	8	6,2	3	6,5	●	●		
3/8"	16	9,525	100	20	36	10	8	3	7,9	●	●		
7/16"	14	11,113	100	22	-	8	6,2	3	9,25	●	●		
1/2"	12	12,7	110	25	-	9	7	3	10,5	●	●		
9/16"	12	14,288	110	27	-	11	9	3	12	●	●		
5/8"	11	15,875	110	28	-	12	9	3	13,5	●	●		
3/4"	10	19,05	125	32	-	14	11	4	16,4	●	●		
7/8"	9	22,225	140	32	-	18	14,5	4	19,25	●	●		
1"	8	25,4	160	36	-	18	14,5	4	22	●	●		
1 1/8"	7	28,575	180	40	-	22	18	4	24,75	●			
1 1/4"	7	31,75	180	40	-	22	18	4	27,75	●			



HSSE

A6 B
BRIGHT

NORM VERGNANO



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A6 B BRIGHT			
P	P.2	● 10-15			
	P.3	● 10-12			
	P.4	● 8-10			
K	K.2	● 10-12			

[illegible]

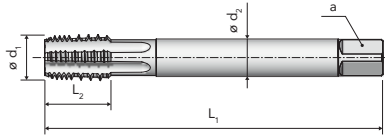
(a) = Cylindrical hole (see page 256)



HSSE

A6 BZ
BRIGHT

DIN 374



A SERIES

APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A6 BZ BRIGHT			
P	P.1	● 12-15			
	P.7	● 2-3			
M	M.1	● 2-3			
N	N.1-2	● 12-15			
	N.5	● 10-12			
	N.6	● 6-8			

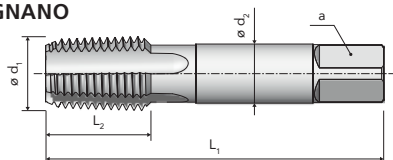
[illegible]

(a) = Cylindrical hole (see page 256)



A6 F
BRIGHT

NORM VERGNANO



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A6 F BRIGHT			
P	P.2	● 10-15			
	P.3	● 10-12			
	P.4	● 8-10			
K	K 2	● 10-12			

[illegible]

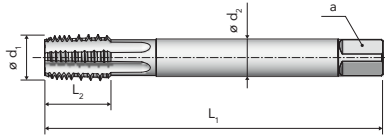
(a) = Cylindrical hole (see page 256)



HSSE

A6 FZ
BRIGHT

DIN 374



A SERIES

APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	A6 FZ BRIGHT			
P	P.1	● 12-15			
	P.7	● 2-3			
M	M.1	● 2-3			
N	N.1-2	● 12-15			
	N.5	● 10-12			
	N.6	● 6-8			

[illegible]

(a) = Cylindrical hole (see page 256)

P SERIES

High Performance Taps



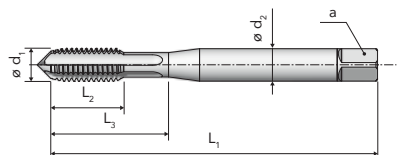
HSSP



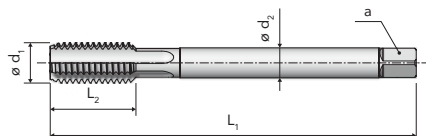
P43
V-MAXX

BP43
V-MAXX

DIN 371
≤ M10



DIN 376
≥ M12



6HX

6HX



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	P43 V-MAXX	BP43 V-MAXX		
K	K.1	● 40-50	● 40-50		
N	N.4	● 40-50	● 40-50		
	N.7	● 40-50	● 40-50		
	N.9-10	● 45-55	● 45-55		

[illegible]

HIGH PERFORMANCE MACHINE TAPS for blind holes



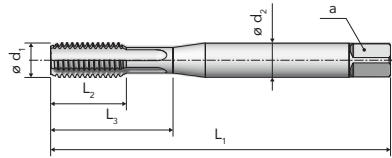
HSSP



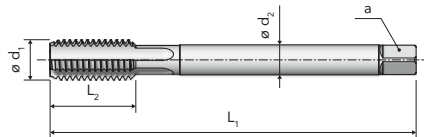
P43 E
V-MAXX

BP43 E
V-MAXX

DIN 371
≤ M10



DIN 376
≥ M12



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	P43 E V-MAXX	BP43 E V-MAXX		
K	K.1	● 40-50	● 40-50		
N	N.4	● 40-50	● 40-50		
	N.7	● 40-50	● 40-50		
	N.9-10	● 45-55	● 45-55		

6HX

6HX

[illegible]



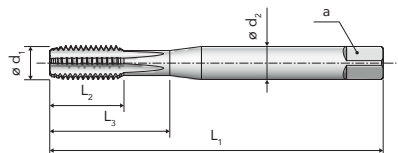
HSSP



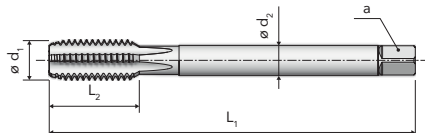
P130
BRIGHT

P130
V-MAXX

DIN 371
≤ M10



DIN 376
≥ M12



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	P130 BRIGHT	P130 V-MAXX		
P	P6	● 2-3	● 5-8		
N	N8	● 3-5	● 8-10		

6HX

6HX

[illegible]

(*) = The hole diameters are oversized

HIGH PERFORMANCE MACHINE TAPS for through holes Straight flutes with spiral point

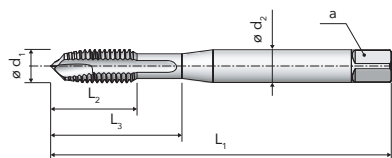
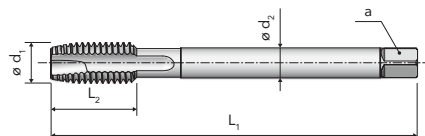
DIN 13


P15
TiN

P15
TiH1

P15 6GX
TiH1

BP15
TiH1

DIN 371
≤ M10

DIN 376
≥ M12


APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	P15 TiN	P15 TiH1	P15 6GX TiH1	BP15 TiH1
P	P.3	• 25-35	• 25-35	• 25-35	• 25-35
	P.4	• 20-30	• 20-30	• 20-30	• 20-30
	P.5	• 10-20	• 10-20	• 10-20	• 10-20
	P.6	• 8-10	• 8-10	• 8-10	• 8-10
	P.7	• 10-20	• 10-20	• 10-20	• 10-20
M	M.1	• 10-20	• 10-20	• 10-20	• 10-20
	M.2	• 6-8	• 6-8	• 6-8	• 6-8
K	K.2	• 25-35	• 25-35	• 25-35	• 25-35
N	N.2-3	• 30-40	• 30-40	• 30-40	• 30-40
	N.6	• 25-35	• 25-35	• 25-35	• 25-35

6HX



6HX



6GX



6HX



P SERIES

Ød1	P	L1 js 16	L2	L3	Ød2 h9	a h12	z		P15 TiN	P15 TiH1	P15 6GX TiH1	BP15 TiH1
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]				
M 1(*)	0,25	40	5,5	7,5	2,5	2,1	2	0,75	•	•		
1,2(*)	0,25	40	5,5	7,5	2,5	2,1	2	0,95	•	•		
1,4(*)	0,3	40	7	10	2,5	2,1	2	1,1	•	•		
1,6	0,35	40	8	11	2,5	2,1	2	1,25	•	•		
1,7	0,35	40	8	11	2,5	2,1	2	1,35	•	•		
1,8	0,35	40	8	11	2,5	2,1	2	1,45	•	•		
2	0,4	45	7	11	2,8	2,1	3	1,6	•	•		
2,5	0,45	50	9	15	2,8	2,1	3	2,05	•	•		
3	0,5	56	10	18	3,5	2,7	3	2,5	•	•		
4	0,7	63	12	21	4,5	3,4	3	3,3	•	•	•	
5	0,8	70	14	24,5	6	4,9	3	4,2	•	•	•	•
6	1	80	16	29	6	4,9	3	5	•	•	•	•
8	1,25	90	18	33	8	6,2	3	6,8	•	•	•	•
10	1,5	100	20	36	10	8	3	8,5	•	•	•	•
12	1,75	110	24	-	9	7	4	10,2	•	•	•	•
14	2	110	25	-	11	9	4	12	•	•	•	•
16	2	110	28	-	12	9	4	14	•	•	•	•
18	2,5	125	32	-	14	11	4	15,5	•	•		
20	2,5	140	32	-	16	12	4	17,5	•	•		
24	3	160	36	-	18	14,5	4	21	•	•		
27	3	160	36	-	20	16	4	24	•	•		
30	3,5	180	40	-	22	18	4	26,5	•	•		
33	3,5	180	40	-	25	20	5	29,5	•	•		
36	4	200	55	-	28	22	5	32	•	•		

(*) = Tolerance 5HX

HIGH PERFORMANCE MACHINE TAPS for blind holes 15° spiral flutes



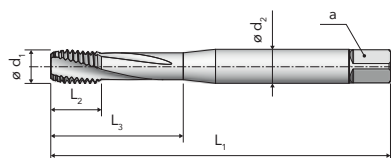
P29
BRIGHT

P29
TiN

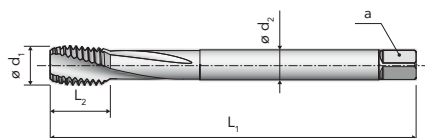
P29
TiH1

BP29
TiH1

DIN 371
≤ M10



DIN 376
≥ M12



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	P29 BRIGHT	P29 TiN	P29 TiH1	BP29 TiH1
P	P.3	● 15-18	● 25-30	● 25-30	● 25-30
	P.4	● 12-15	● 20-25	● 20-25	● 20-25
	P.5	● 8-10	● 10-15	● 10-15	● 10-15
	P.6	● 3-5	● 5-10	● 5-10	● 5-10
	P.7	● 8-10	● 10-15	● 10-15	● 10-15
K	K.2	● 15-18	● 25-30	● 25-30	● 25-30
N	N.3	● 15-18	● 25-30	● 25-30	● 25-30
	N.6	● 15-18	● 25-30	● 25-30	● 25-30
	N.7	● 12-15	● 20-25	● 20-25	● 20-25
S	S.2	● 2-3		● 2-3	● 2-3
	S.4	● 2-3	● 2-3	● 2-3	● 2-3



6HX



6HX



6HX



6HX

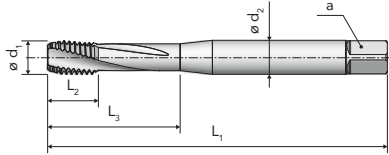


Ød1	P	L1 js 16	L2	L3	Ød2 h9	a h12	Z	mm	P29 BRIGHT	P29 TiN	P29 TiH1	BP29 TiH1
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]				
M 2	0,4	45	5	12	2,8	2,1	3	1,6	● NEW	● NEW	● NEW	
2,5	0,45	50	6	15	2,8	2,1	3	2,05	● NEW	● NEW	● NEW	
3	0,5	56	5	18	3,5	2,7	3	2,5	●	●	●	
4	0,7	63	7	21	4,5	3,4	3	3,3	●	●	●	
5	0,8	70	9	25	6	4,9	3	4,2	●	●	●	●
6	1	80	11	30	6	4,9	3	5	●	●	●	●
8	1,25	90	12	35	8	6,2	3	6,8	●	●	●	●
10	1,5	100	13	39	10	8	3	8,5	●	●	●	●
12	1,75	110	15	-	9	7	3	10,2	●	●	●	●
14	2	110	18	-	11	9	3	12	●	●	●	●
16	2	110	18	-	12	9	3	14	●	●	●	●
18	2,5	125	20	-	14	11	4	15,5	●	●	●	●
20	2,5	140	20	-	16	12	4	17,5	●	●	●	●
24	3	160	25	-	18	14,5	4	21	●	●	●	
27	3	160	25	-	20	16	4	24	●	●	●	
30	3,5	180	29	-	22	18	4	26,5	●	●	●	
36	4	200	34	-	28	22	4	32	●	●	●	

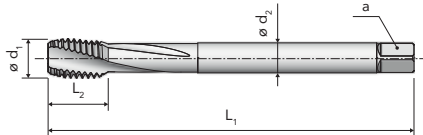


P29 E
TiH1

DIN 371
≤ M10



DIN 376
≥ M12



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	P29 E TiH1			
P	P.3	● 25-30			
	P.4	● 20-25			
	P.5	● 10-15			
	P.6	● 5-10			
	P.7	● 10-15			
K	K.2	● 25-30			
N	N.3	● 25-30			
	N.6	● 25-30			
	N.7	● 20-25			
S	S.2	● 2-3			
	S.4	● 2-3			

6HX

[illegible]

HIGH PERFORMANCE MACHINE TAPS for blind holes 45° spiral flutes / back tapered



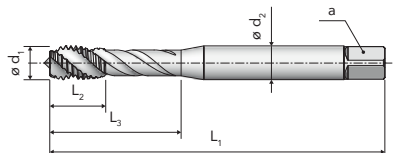
P70
TiN

P70
TiH1

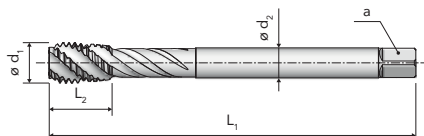
P70 6GX
TiH1

P70 7GX
TiH1

DIN 371
≤ M10



DIN 376
≥ M12



6HX



6HX



6GX



7GX



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	P70 TiN	P70 TiH1	P70 6GX TiH1	P70 7GX TiH1
P	P.3	• 20-30	• 20-30	• 20-30	• 20-30
	P.4	• 15-25	• 15-25	• 15-25	• 15-25
	P.5	• 5-15	• 5-15	• 5-15	• 5-15
	P.7	• 10-15	• 10-15	• 10-15	• 10-15
M	M.1	• 10-15	• 10-15	• 10-15	• 10-15
	M.2	• 5-7	• 5-7	• 5-7	• 5-7
K	K.2	• 20-30	• 20-30	• 20-30	• 20-30
N	N.3	• 25-35	• 25-35	• 25-35	• 25-35
	N.6	• 25-35	• 25-35	• 25-35	• 25-35
S	S.1		• 10-15	• 10-15	• 10-15
	S.3	• 10-15	• 10-15	• 10-15	• 10-15

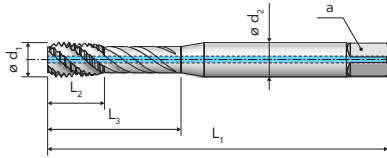
Ød1	P	L1 js 16	L2	L3	Ød2 h9	a h12	z	Ød1 [mm]	P70 TiN	P70 TiH1	P70 6GX TiH1	P70 7GX TiH1
M 2	0,4	45	6	12	2,8	2,1	3	1,6	•	•		
2,5	0,45	50	6,5	15	2,8	2,1	3	2,05	•	•		
3	0,5	56	7	15	3,5	2,7	3	2,5	•	•	•	• NEW
4	0,7	63	8,5	21	4,5	3,4	3	3,3	•	•	•	• NEW
5	0,8	70	10	24,5	6	4,9	3	4,2	•	•	•	• NEW
6	1	80	12	29	6	4,9	3	5	•	•	•	• NEW
8	1,25	90	14	33	8	6,2	3	6,8	•	•	•	• NEW
10	1,5	100	17	39	10	8	3	8,5	•	•	•	• NEW
12	1,75	110	18	-	9	7	4	10,2	•	•	•	• NEW
14	2	110	20,5	-	11	9	4	12	•	•	•	
16	2	110	20,5	-	12	9	4	14	•	•	•	
18	2,5	125	25,5	-	14	11	4	15,5	•	•	•	
20	2,5	140	25,5	-	16	12	4	17,5	•	•	•	
24	3	160	32	-	18	14,5	4	21	•	•		
27	3	160	32	-	20	16	5	24	•	•		
30	3,5	180	37	-	22	18	5	26,5	•	•		
33	3,5	180	37	-	25	20	5	29,5	•	•		
36	4	200	42	-	28	22	5	32	•	•		
42	4,5	200	45	-	32	24	5	37,5	• NEW	• NEW		

HIGH PERFORMANCE MACHINE TAPS for blind holes

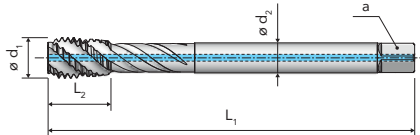


BP70
TiH1

DIN 371
≤ M10



DIN 376
≥ M12



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	BP70 TiH1			
P	P.3	● 20-30			
	P.4	● 15-25			
	P.5	● 5-15			
	P.7	● 10-15			
M	M.1	● 10-15			
	M.2	● 5-7			
K	K.2	● 20-30			
N	N.3	● 25-35			
	N.6	● 25-35			
S	S.1	● 10-15			
	S.3	● 10-15			

6HX



Ød ₁	P	L ₁ js 16	L ₂	L ₃	Ød ₂ h9	a h12	z		BP70 TiH1			
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]				
M 5	0,8	70	10	24,5	6	4,9	3	4,2	●			
6	1	80	12	29	6	4,9	3	5	●			
8	1,25	90	14	33	8	6,2	3	6,8	●			
10	1,5	100	17	39	10	8	3	8,5	●			
12	1,75	110	18	-	9	7	4	10,2	●			
14	2	110	20,5	-	11	9	4	12	●			
16	2	110	20,5	-	12	9	4	14	●			

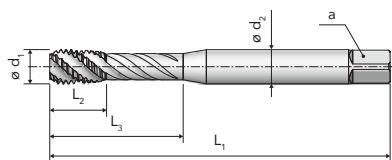


P70 E
TiN

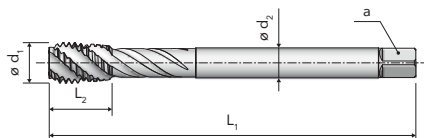
P70 E
TiH1

P70 E 6GX
TiH1

DIN 371
≤ M10



DIN 376
≥ M12



6HX

6HX

6GX



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	P70 E TiN	P70 E TiH1	P70 E 6GX TiH1	
P	P.3	● 20-30	● 20-30	● 20-30	
	P.4	● 15-25	● 15-25	● 15-25	
	P.5	● 5-15	● 5-15	● 5-15	
	P.7	● 10-15	● 10-15	● 10-15	
M	M.1	● 10-15	● 10-15	● 10-15	
	M.2	● 5-7	● 5-7	● 5-7	
K	K.2	● 20-30	● 20-30	● 20-30	
N	N.3	● 25-35	● 25-35	● 25-35	
	N.6	● 25-35	● 25-35	● 25-35	
S	S.1	● 10-15	● 10-15	● 10-15	
	S.3	● 10-15	● 10-15	● 10-15	

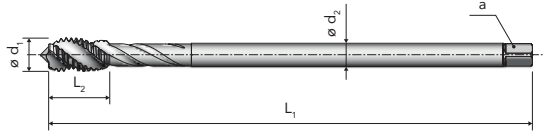
[illegible]

HIGH PERFORMANCE MACHINE TAPS for blind holes



P76 L
TiH1

NORM VERGNANO



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	P76 L TiH1			
P	P.3	● 20-30			
	P.4	● 15-25			
	P.5	● 5-15			
	P.7	● 10-15			
M	M.1	● 10-15			
	M.2	● 5-7			
K	K.2	● 20-30			
N	N.3	● 25-35			
	N.6	● 25-35			
S	S.1	● 10-15			
	S.3	● 10-15			

6HX

[illegible]



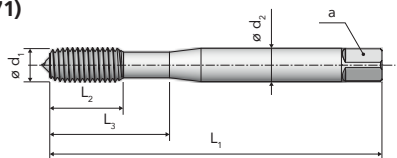
P80
TiN

P80
V-MAXX

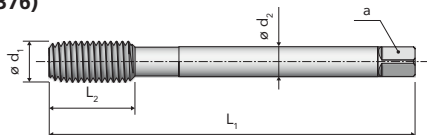
P80 6GX
TiN

P80 7GX
TiN

DIN 2174 (371)
≤ M10



DIN 2174 (376)
≥ M12



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	P80 TiN	P80 V-MAXX	P80 6GX TiN	P80 7GX TiN
P	P.1-2	● 40-45	● 40-45	● 40-45	● 40-45
	P.3	● 35-40	● 35-40	● 35-40	● 35-40
	P.4	● 30-35	● 30-35	● 30-35	● 30-35
	P.5	● 15-20	● 15-20	● 15-20	● 15-20
	P.7	● 15-20	● 15-20	● 15-20	● 15-20
M	M.1	● 15-20	● 15-20	● 15-20	● 15-20
N	N.1-2	● 40-45	● 40-45	● 40-45	● 40-45
	N.3	● 35-40	● 35-40	● 35-40	● 35-40
	N.5-6	● 40-45	● 40-45	● 40-45	● 40-45
S	S.3	● 10-15	● 10-15	● 10-15	● 10-15

6HX



6HX



6GX



7GX

[illegible]



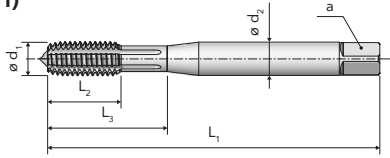
P80 N
TiN

P80 N
V-MAXX

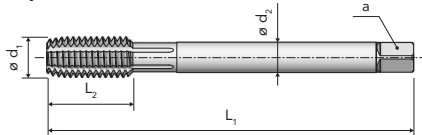
P80 N 6GX
TiN

P80 N 7GX
TiN

DIN 2174 (371)
≤ M10



DIN 2174 (376)
≥ M12



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	P80 N TIN	P80 N V-MAXX	P80 N 6GX TIN	P80 N 7GX TIN
P	P.1-2	● 40-45	● 40-45	● 40-45	● 40-45
	P.3	● 35-40	● 35-40	● 35-40	● 35-40
	P.4	● 30-35	● 30-35	● 30-35	● 30-35
	P.5	● 15-20	● 15-20	● 15-20	● 15-20
	P.7	● 15-20	● 15-20	● 15-20	● 15-20
M	M.1	● 15-20	● 15-20	● 15-20	● 15-20
N	N.1-2	● 40-45	● 40-45	● 40-45	● 40-45
	N.3	● 35-40	● 35-40	● 35-40	● 35-40
	N.5-6	● 40-45	● 40-45	● 40-45	● 40-45
S	S.3	● 10-15	● 10-15	● 10-15	● 10-15

6HX

6HX

6GX

7GX



P SERIES

[illegible]



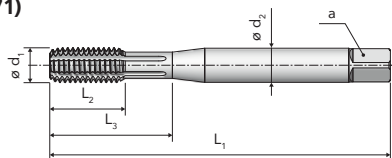
P80 E
TiN

P80 N E
TiN

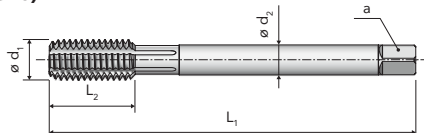
P80 N E
V-MAXX

P80 N E 6GX
TiN

DIN 2174 (371)
≤ M10



DIN 2174 (376)
≥ M12



6HX

6HX

6HX

6GX



APPLICATION RANGE - CUTTING SPEED m/min					
ISO	MG	P80 E TIN	P80 N E TIN	P80 N E V-MAXX	P80 N E 6GX TIN
P	P.1-2	● 40-45	● 40-45	● 40-45	● 40-45
	P.3	● 35-40	● 35-40	● 35-40	● 35-40
	P.4	● 30-35	● 30-35	● 30-35	● 30-35
	P.5	● 15-20	● 15-20	● 15-20	● 15-20
	P.7	● 15-20	● 15-20	● 15-20	● 15-20
M	M.1	● 15-20	● 15-20	● 15-20	● 15-20
N	N.1-2	● 40-45	● 40-45	● 40-45	● 40-45
	N.3	● 35-40	● 35-40	● 35-40	● 35-40
	N.5-6	● 40-45	● 40-45	● 40-45	● 40-45
S	S.3	● 10-15	● 10-15	● 10-15	● 10-15

[illegible]



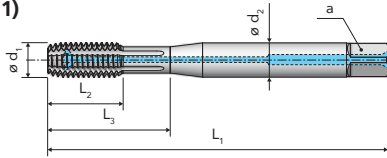
BP80 N
TiN

BP80 N R
TiN

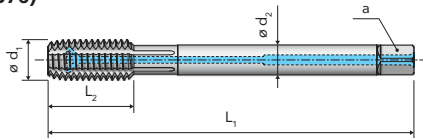
BP80 N R
V-MAXX

BP80 N E
V-MAXX

DIN 2174 (371)
≤ M10



DIN 2174 (376)
≥ M12



P SERIES

APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	BP80 N TIN	BP80 N R TIN	BP80 N R V-MAXX	BP80 N E V-MAXX
P	P.1-2	● 40-45	● 40-45	● 40-45	● 40-45
	P.3	● 35-40	● 35-40	● 35-40	● 35-40
	P.4	● 30-35	● 30-35	● 30-35	● 30-35
	P.5	● 15-20	● 15-20	● 15-20	● 15-20
	P.7	● 15-20	● 15-20	● 15-20	● 15-20
M	M.1	● 15-20	● 15-20	● 15-20	● 15-20
N	N.1-2	● 40-45	● 40-45	● 40-45	● 40-45
	N.3	● 35-40	● 35-40	● 35-40	● 35-40
	N.5-6	● 40-45	● 40-45	● 40-45	● 40-45
S	S.3	● 10-15	● 10-15	● 10-15	● 10-15

6HX



6H



6HX



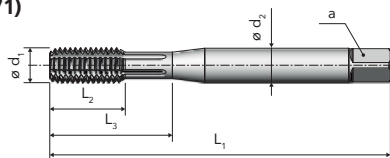
6HX

[illegible]

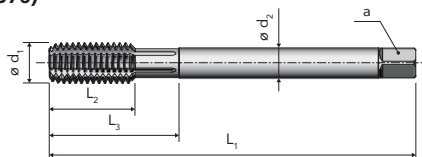


P80 N LH
TiN

DIN 2174 (371)
≤ M10



DIN 2174 (376)
≥ M12



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	P80 N LH TiN			
P	P.1-2	● 40-45			
	P.3	● 35-40			
	P.4	● 30-35			
	P.5	● 15-20			
	P.7	● 15-20			
M	M.1	● 15-20			
N	N.1-2	● 40-45			
	N.3	● 35-40			
	N.5-6	● 40-45			
S	S.3	● 10-15			

6HX

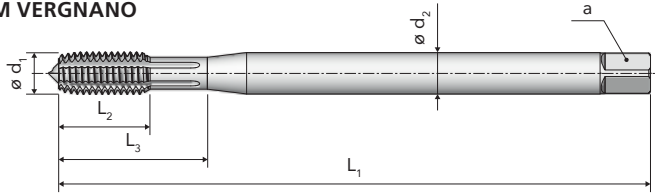
[illegible]

HIGH PERFORMANCE COLD FORMING TAPS for blind and through holes
With oil grooves / long and reinforced shank



P80 N L
TiN

NORM VERGNANO



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	P80 N L TiN			
P	P.1-2	● 40-45			
	P.3	● 35-40			
	P.4	● 30-35			
	P.5	● 15-20			
	P.7	● 15-20			
M	M.1	● 15-20			
N	N.1-2	● 40-45			
	N.3	● 35-40			
	N.5-6	● 40-45			
S	S.3	● 10-15			

6HX



3xD



RH

[illegible]



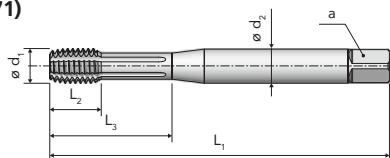
HSSZ



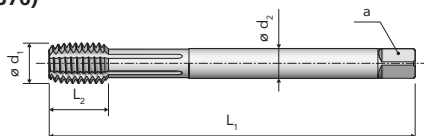
P180 N
TiN

P180 N
V-MAXX

DIN 2174 (371)
≤ M10



DIN 2174 (376)
≥ M12



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	P180 N TiN	P180 N V-MAXX		
P	P.7	● 15-20	● 15-20		
M	M.1	● 10-15	● 10-15		
	M.2	● 8-10	● 8-10		

6HX

6HX

[illegible]

HIGH PERFORMANCE MACHINE TAPS for blind and through holes Straight flutes / for cast iron



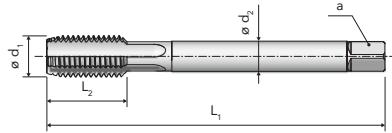
P45
V-MAXX

BP45
V-MAXX

P45 E
V-MAXX

BP45 E
V-MAXX

DIN 374



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	P45 V-MAXX	BP45 V-MAXX	P45 E V-MAXX	BP45 E V-MAXX
K	K.1	• 40-50	• 40-50	• 40-50	• 40-50
N	N.4	• 40-50	• 40-50	• 40-50	• 40-50
	N.7	• 40-50	• 40-50	• 40-50	• 40-50
	N.9-10	• 45-55	• 45-55	• 45-55	• 45-55

6HX



6HX



6HX



6HX



P SERIES

Ød ₁ [mm]	P [mm]	L ₁ js 16 [mm]	L ₂ [mm]	L ₃ [mm]	Ød ₂ h9 [mm]	a h12 [mm]	z	z [mm]	P45 V-MAXX	BP45 V-MAXX	P45 E V-MAXX	BP45 E V-MAXX
M 8	1	90	16	-	6	4,9	4	7	•	•	•	•
10	1	90	18	-	7	5,5	4	9	•	•	•	•
10	1,25	100	18	-	7	5,5	4	8,8	•	•	•	•
12	1,25	100	22	-	9	7	4	10,8	•	•	•	•
12	1,5	100	22	-	9	7	4	10,5	•	•	•	•
14	1,25	100	22	-	11	9	4	12,8	•	•	•	•
14	1,5	100	22	-	11	9	4	12,5	•	•	•	•
16	1,5	100	22	-	12	9	4	14,5	•	•	•	•
20	1,5	125	25	-	16	12	4	18,5	•	•	•	•



HSSP



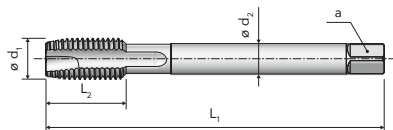
P17
TiN

P17
TiH1

P17 6GX
TiH1

BP17
TiH1

DIN 374



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	P17 TiN	P17 TiH1	P17 6GX TiH1	BP17 TiH1
P	P.3	● 25-35	● 25-35	● 25-35	● 25-35
	P.4	● 20-30	● 20-30	● 20-30	● 20-30
	P.5	● 10-20	● 10-20	● 10-20	● 10-20
	P.6	● 8-10	● 8-10	● 8-10	● 8-10
	P.7	● 10-20	● 10-20	● 10-20	● 10-20
M	M.1	● 10-20	● 10-20	● 10-20	● 10-20
	M.2	● 6-8	● 6-8	● 6-8	● 6-8
K	K.2	● 25-35	● 25-35	● 25-35	● 25-35
N	N.2-3	● 30-40	● 30-40	● 30-40	● 30-40
	N.6	● 25-35	● 25-35	● 25-35	● 25-35

6HX

6HX

6GX

6HX

[illegible]



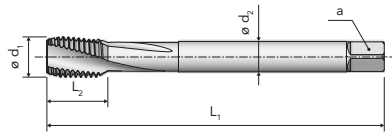
P30
BRIGHT

P30
TiN

P30
TiH1

BP30
TiH1

DIN 374



P SERIES

APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	P30 BRIGHT	P30 TIN	P30 TIH1	BP30 TIH1
P	P.3	● 15-18	● 25-30	● 25-30	● 25-30
	P.4	● 12-15	● 20-25	● 20-25	● 20-25
	P.5	● 8-10	● 10-15	● 10-15	● 10-15
	P.6	● 3-5	● 5-10	● 5-10	● 5-10
	P.7	● 8-10	● 10-15	● 10-15	● 10-15
K	K.2	● 15-18	● 25-30	● 25-30	● 25-30
N	N.3	● 15-18	● 25-30	● 25-30	● 25-30
	N.6	● 15-18	● 25-30	● 25-30	● 25-30
	N.7	● 12-15	● 20-25	● 20-25	● 20-25
S	S.2	● 2-3		● 2-3	● 2-3
	S.4	● 2-3	● 2-3	● 2-3	● 2-3

6HX



6HX



6HX



6HX



Ød ₁	P	L ₁ js 16	L ₂	L ₃	Ød ₂ h9	a h12	z		P30 BRIGHT	P30 TiN	P30 TiH1	BP30 TiH1
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]				
M 8	1	90	10	-	6	4,9	3	7	●	●	●	
10	1	90	11	-	7	5,5	3	9	●	●	●	
10	1,25	100	12	-	7	5,5	3	8,8	●	●	●	●
12	1,25	100	14	-	9	7	3	10,8	●	●	●	●
12	1,5	100	15	-	9	7	3	10,5	●	●	●	●
14	1,5	100	16	-	11	9	3	12,5	●	●	●	●
16	1,5	100	16	-	12	9	3	14,5	●	●	●	●
18	1,5	110	18	-	14	11	4	16,5	●	●	●	●
20	1,5	125	18	-	16	12	4	18,5	●	●	●	●



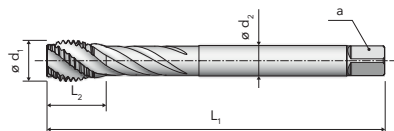
P71
TiN

P71
TiH1

P71 6GX
TiH1

BP71
TiH1

DIN 374



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	P71 TiN	P71 TiH1	P71 6GX TiH1	BP71 TiH1
P	P.3	● 20-30	● 20-30	● 20-30	● 20-30
	P.4	● 15-25	● 15-25	● 15-25	● 15-25
	P.5	● 5-15	● 5-15	● 5-15	● 5-15
	P.7	● 10-15	● 10-15	● 10-15	● 10-15
M	M.1	● 10-15	● 10-15	● 10-15	● 10-15
	M.2	● 5-7	● 5-7	● 5-7	● 5-7
K	K.2	● 20-30	● 20-30	● 20-30	● 20-30
N	N.3	● 25-35	● 25-35	● 25-35	● 25-35
	N.6	● 25-35	● 25-35	● 25-35	● 25-35
S	S.1		● 10-15	● 10-15	● 10-15
	S.3	● 10-15	● 10-15	● 10-15	● 10-15

6HX



6HX



6GX



6HX

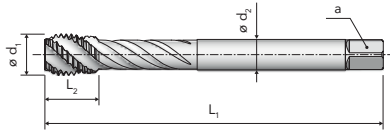
[illegible]

HIGH PERFORMANCE MACHINE TAPS for blind holes



P71 E
TiH1

DIN 374



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	P71 E TiH1			
P	P.3	● 20-30			
	P.4	● 15-25			
	P.5	● 5-15			
	P.7	● 10-15			
M	M.1	● 10-15			
	M.2	● 5-7			
K	K.2	● 20-30			
N	N.3	● 25-35			
	N.6	● 25-35			
S	S.1	● 10-15			
	S.3	● 10-15			

6HX

[illegible]

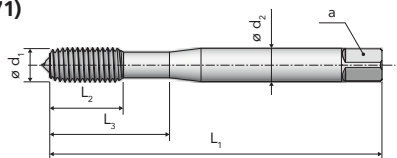


P81
TiN

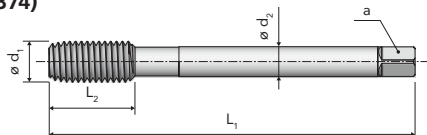
P81
V-MAXX

P81 6GX
TiN

DIN 2174 (371)
≤ M10x1,25



DIN 2174 (374)
≥ M12x1



6HX

6HX

6GX

C (2-3)

C (2-3)

C (2-3)

1,5xD

1,5xD

1,5xD



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	P81 TiN	P81 V-MAXX	P81 6GX TiN	
P	P.1-2	● 40-45	● 40-45	● 40-45	
	P.3	● 35-40	● 35-40	● 35-40	
	P.4	● 30-35	● 30-35	● 30-35	
	P.5	● 15-20	● 15-20	● 15-20	
	P.7	● 15-20	● 15-20	● 15-20	
M	P.1	● 15-20	● 15-20	● 15-20	
N	N.1-2	● 40-45	● 40-45	● 40-45	
	N.3	● 35-40	● 35-40	● 35-40	
	N.5-6	● 40-45	● 40-45	● 40-45	
S	S.3	● 10-15	● 10-15	● 10-15	

[illegible]

HIGH PERFORMANCE COLD FORMING TAPS for blind and through holes

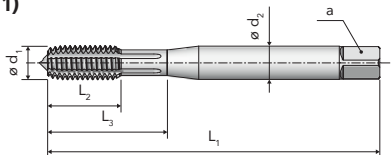


P81 N
TiN

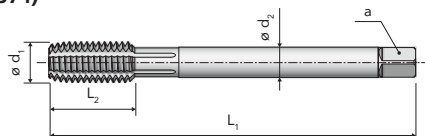
P81 N
V-MAXX

P81 N 6GX
TiN

DIN 2174 (371)
≤ M10x1,25



DIN 2174 (374)
≥ M12x1



P SERIES

APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	P81 N TIN	P81 N V-MAXX	P81 N 6GX TIN	
P	P.1-2	● 40-45	● 40-45	● 40-45	
	P.3	● 35-40	● 35-40	● 35-40	
	P.4	● 30-35	● 30-35	● 30-35	
	P.5	● 15-20	● 15-20	● 15-20	
	P.7	● 15-20	● 15-20	● 15-20	
M	P.1	● 15-20	● 15-20	● 15-20	
N	N.1-2	● 40-45	● 40-45	● 40-45	
	N.3	● 35-40	● 35-40	● 35-40	
	N.5-6	● 40-45	● 40-45	● 40-45	
S	S.3	● 10-15	● 10-15	● 10-15	

6HX

6HX

6GX

[illegible]



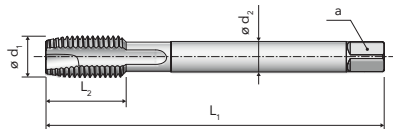
HSSP



P18
TiN

P18
TiH1

DIN 5156



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	P18 TiN	P18 TiH1		
P	P.3	● 25-35	● 25-35		
	P.4	● 20-30	● 20-30		
	P.5	● 10-20	● 10-20		
	P.6	● 8-10	● 8-10		
	P.7	● 10-20	● 10-20		
M	M.1	● 10-20	● 10-20		
	M.2	● 6-8	● 6-8		
K	K.2	● 25-35	● 25-35		
N	N.2-3	● 30-40	● 30-40		
	N.6	● 25-35	● 25-35		

ISO
5969 X

ISO
5969 X

[illegible]

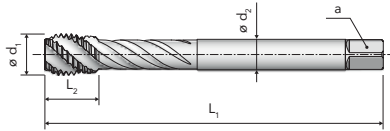


P59
TiN

P59
TiH1

P59 E
TiH1

DIN 5156



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	P59 TiN	P59 TiH1	P59 E TiH1	
P	P.3	● 20-30	● 20-30	● 20-30	
	P.4	● 15-25	● 15-25	● 15-25	
	P.5	● 5-15	● 5-15	● 5-15	
	P.7	● 10-15	● 10-15	● 10-15	
M	M.1	● 10-15	● 10-15	● 10-15	
	M.2	● 5-7	● 5-7	● 5-7	
K	K.2	● 20-30	● 20-30	● 20-30	
N	N.3	● 25-35	● 25-35	● 25-35	
	N.6	● 25-35	● 25-35	● 25-35	
S	S.1		● 10-15	● 10-15	
	S.3	● 10-15	● 10-15	● 10-15	

ISO
5969 X



ISO
5969 X



ISO
5969 X



P SERIES

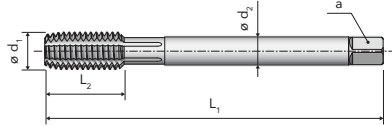
[illegible]



P82 N
TiN

P82 N
V-MAXX

DIN 2189



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	P82 N TiN	P82 N V-MAXX		
P	P.1-2	● 40-45	● 40-45		
	P.3	● 35-40	● 35-40		
	P.4	● 30-35	● 30-35		
	P.5	● 15-20	● 15-20		
	P.7	● 15-20	● 15-20		
M	M.1	● 15-20	● 15-20		
N	N.1-2	● 40-45	● 40-45		
	N.3	● 35-40	● 35-40		
	N.5-6	● 40-45	● 40-45		
S	S.3	● 10-15	● 10-15		

ISO
5969 X

ISO
5969 X

[illegible]

S SERIES

Synchronous Taps

MACHINE TAPS FOR SYNCHRONOUS TAPPING for blind and through holes
Straight flutes / for cast iron



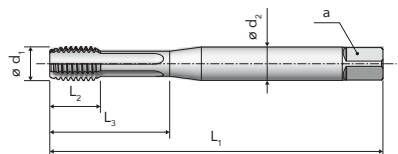
S43
V-MAXX

BS43
V-MAXX

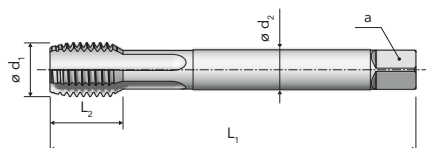
S43 E
V-MAXX

BS43 E
V-MAXX

~DIN 371
≤ M12 (*)



~DIN 376
≥ M16 (*)



6HX

6HX

6HX

6HX



APPLICATION RANGE - CUTTING SPEED m/min					
ISO	MG	S43 V-MAXX	BS43 V-MAXX	S43 E V-MAXX	BS43 E V-MAXX
K	K.1	● 55-65	● 55-65	● 55-65	● 55-65
N	N.4	● 55-65	● 55-65	● 55-65	● 55-65
	N.7	● 55-65	● 55-65	● 55-65	● 55-65
	N 9-10	● 55-65	● 55-65	● 55-65	● 55-65

Ød ₁	P	L ₁ js 16	L ₂	L ₃	Ød ₂ h6	a h12	z		S43 V-MAXX	BS43 V-MAXX	S43 E V-MAXX	BS43 E V-MAXX
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]				
M 3	0,5	70	5	15	6	4,9	3	2,5	●			
4	0,7	70	7	18	6	4,9	3	3,3	●			
5	0,8	70	8	23	6	4,9	3	4,2	●	●	●	●
6	1	80	10	29	6	4,9	4	5	●	●	●	●
8	1,25	90	11	33	8	6,2	4	6,8	●	●	●	●
10	1,5	100	13	36	10	8	4	8,5	●	●	●	●
12	1,75	110	16	42	12	9	4	10,2	●	●	●	●
16	2	110	18	-	12	9	4	14	●	●	●	●
20	2,5	140	23	-	16	12	4	17,5	●	●	●	●

(*) = DIN 1835-B on request

MACHINE TAPS FOR SYNCHRONOUS TAPPING for through holes
Straight flutes with spiral point

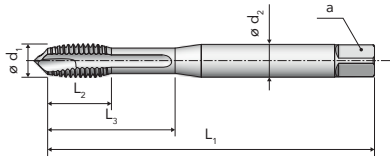


S15
TiN

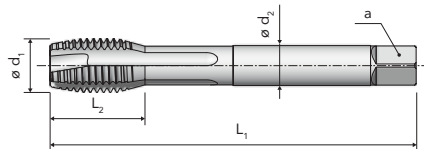
S15
TiH1

BS15
TiH1

~DIN 371
≤ M12 (*)

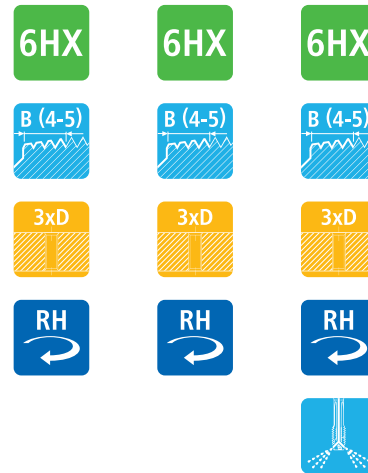


~DIN 376
≥ M14 (*)



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	S15 TiN	S15 TiH1	BS15 TiH1	
P	P.1-2	● 50-60	● 50-60	● 50-60	
	P.3	● 45-55	● 45-55	● 45-55	
	P.4	● 40-50	● 40-50	● 40-50	
	P.5	● 15-25	● 15-25	● 15-25	
	P.7	● 15-25	● 15-25	● 15-25	
M	M.1	● 15-25	● 15-25	● 15-25	
	M.2	● 10-20	● 10-20	● 10-20	
K	K.2	● 45-55	● 45-55	● 45-55	
N	N.1	● 50-60	● 50-60	● 50-60	
	N.2-3	● 45-55	● 45-55	● 45-55	
	N.5	● 40-50	● 40-50	● 40-50	
	N.6	● 35-45	● 35-45	● 35-45	
S	S.1		● 15-25	● 15-25	
	S.3	● 15-25	● 15-25	● 15-25	



SERIES

Ød ₁	P	L ₁ js 16	L ₂	L ₃	Ød ₂ h6	a h12	z		S15 TiN	S15 TiH1	BS15 TiH1	
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]				
M 3	0,5	70	5	15	6	4,9	3	2,5	●	●		
4	0,7	70	7	18	6	4,9	3	3,3	●	●		
5	0,8	70	8	25	6	4,9	3	4,2	●	●	●	
6	1	80	10	30	6	4,9	3	5	●	●	●	
8	1,25	90	12,5	35	8	6,2	3	6,8	●	●	●	
10	1,5	100	15	39	10	8	3	8,5	●	●	●	
12	1,75	110	17,5	42	12	9	3	10,2	●	●	●	
14	2	110	20	-	12	9	3	12	●	●		
16	2	110	20	-	12	9	4	14	●	●	●	

(*) = DIN 1835-B on request

MACHINE TAPS FOR SYNCHRONOUS TAPPING for blind holes
40° spiral flutes / back tapered

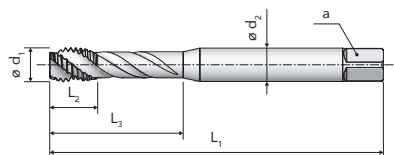


S70
TiN

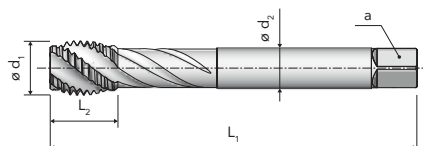
S70
TiH1

BS70
TiH1

~DIN 371
≤ M12 (*)



~DIN 376
≥ M14 (*)



6HX

6HX

6HX



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	S70 TIN	S70 TIH1	BS70 TIH1	
P	P.1-2	● 45-55	● 45-55	● 45-55	
	P.3	● 40-50	● 40-50	● 40-50	
	P.4	● 35-45	● 35-45	● 35-45	
	P.5	● 15-20	● 15-20	● 15-20	
	P.7	● 15-20	● 15-20	● 15-20	
M	M.1	● 15-20	● 15-20	● 15-20	
K	K.2	● 40-50	● 40-50	● 40-50	
N	N.1	● 45-55	● 45-55	● 45-55	
	N.2-3	● 40-50	● 40-50	● 40-50	
	N.5	● 35-45	● 35-45	● 35-45	
	N.6	● 30-40	● 30-40	● 30-40	
S	S.1		● 15-20	● 15-20	
	S.3	● 15-20	● 15-20	● 15-20	

[illegible]

(*) = DIN 1835-B on request

COLD FORMING TAPS FOR SYNCHRONOUS TAPPING for blind and through holes



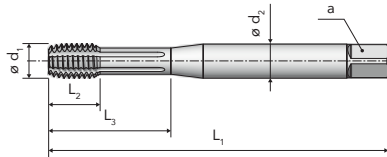
S80 N
TiN

S80 N
V-MAXX

S80 N 6GX
TiN

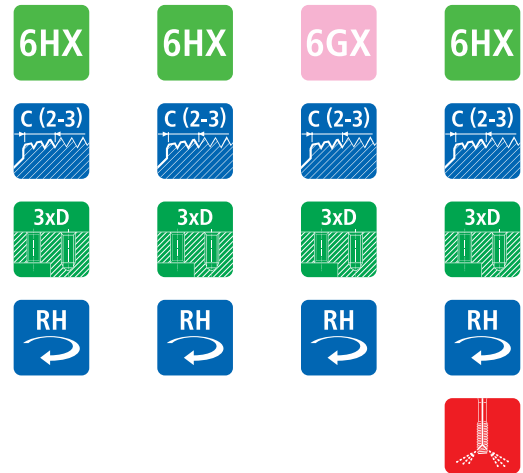
BS80 N R
TiN

~DIN 371 (*)



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	S80 N TiN	S80 N V-MAXX	S80 N 6GX TiN	BS80 N R TiN
P	P.1-2	● 50-60	● 50-60	● 50-60	● 50-60
	P.3	● 45-55	● 45-55	● 45-55	● 45-55
	P.4	● 40-50	● 40-50	● 40-50	● 40-50
	P.5	● 20-30	● 20-30	● 20-30	● 20-30
M	P.7	● 25-35	● 25-35	● 25-35	● 25-35
	M.1	● 25-35	● 25-35	● 25-35	● 25-35
N	M.2	● 15-25	● 15-25	● 15-25	● 15-25
	N.1-2	● 50-60	● 50-60	● 50-60	● 50-60
	N.3	● 45-55	● 45-55	● 45-55	● 45-55
	N.5-6	● 50-60	● 50-60	● 50-60	● 50-60
S	S.3	● 10-20	● 10-20	● 10-20	● 10-20



SERIES

[illegible]

(*) = DIN 1835-B on request

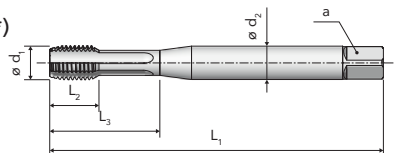
MACHINE TAPS FOR SYNCHRONOUS TAPPING for blind and through holes
Straight flutes / for cast iron



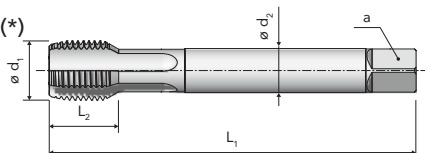
S45
V-MAXX

BS45
V-MAXX

~DIN 371
≤ M12x1,5 (*)



~DIN 376
≥ M14x1,5 (*)



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	S45 V-MAXX	B545 V-MAXX		
K	K.1	● 55-65	● 55-65		
N	N.4	● 55-65	● 55-65		
	N.7	● 55-65	● 55-65		
	N.9-10	● 55-65	● 55-65		

6HX

6HX

[illegible]

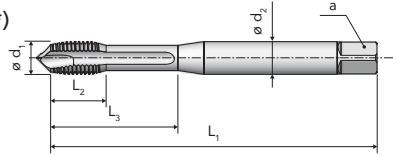
(*) = DIN 1835-B on request

MACHINE TAPS FOR SYNCHRONOUS TAPPING for through holes
Straight flutes with spiral point

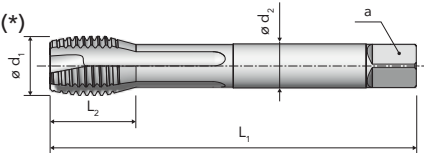


S17
TiN

~DIN 371
≤ M12x1,5 (*)



~DIN 376
≥ M14x1,5 (*)



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	S17 TiN			
P	P.1-2	● 50-60			
	P.3	● 45-55			
	P.4	● 40-50			
	P.5	● 15-25			
	P.7	● 15-25			
M	M.1	● 15-25			
	M.2	● 10-20			
K	K.2	● 45-55			
N	N.1	● 50-60			
	N.2-3	● 45-55			
	N.5	● 40-50			
	N.6	● 35-45			
	S.3	● 15-25			

6HX

B (4-5)

3xD



SERIES

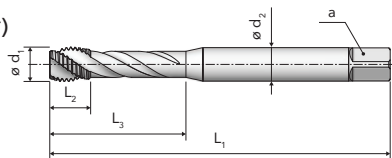
[illegible]

(*) = DIN 1835-B on request

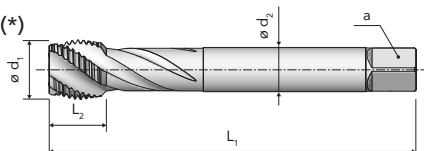


S71
TiN

~DIN 371
≤ M12x1,5 (*)



~DIN 376
≥ M14x1,5 (*)



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	S71 TiN			
P	P.1-2	● 45-55			
	P.3	● 40-50			
	P.4	● 35-45			
	P.5	● 15-20			
	P.7	● 15-20			
M	M.1	● 15-20			
K	K.2	● 40-50			
N	N.1	● 45-55			
	N.2-3	● 40-50			
	N.5	● 35-45			
	N.6	● 30-40			
S	S.3	● 15-20			

6HX

[illegible]

(*) = DIN 1835-B on request

H SERIES

Solid Carbide Taps



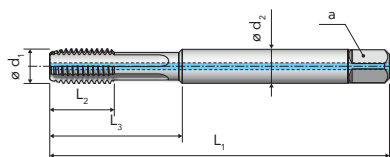
HM

HB43
BRIGHT

HB43
V-MAXX

HB43 E
V-MAXX

DIN 371



6HX

6HX

6HX



2,5xD



2,5xD



APPLICATION RANGE - CUTTING SPEED m/min					
ISO	MG	HB43 BRIGHT	HB43 V-MAXX	HB43 E V-MAXX	
K	K.1	● 40-50	● 55-65	● 55-65	
N	N.4	● 40-50	● 55-65	● 55-65	
	N.7	● 40-50	● 55-65	● 55-65	
	N 9-10	● 45-55	● 55-65	● 55-65	

APPLICATION RANGE - CUTTING SPEED m/min

[illegible]

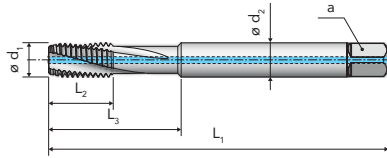
(*) = Taps without through coolant



HB29
BRIGHT

HB29
V-MAXX

DIN 371



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	HB29 BRIGHT	HB29 V-MAXX		
N	N.1-2	● 15-30	● 25-50		
	N.3	● 20-30	● 30-50		
	N.4	● 15-20	● 25-40		
	N.7	● 20-25	● 30-40		

6HX

6HX

[illegible]

(*) = Taps without through coolant

SOLID CARBIDE MACHINE TAPS for blind and through holes
Straight flutes / for high strength materials

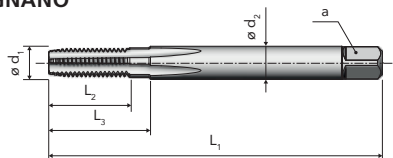


HM

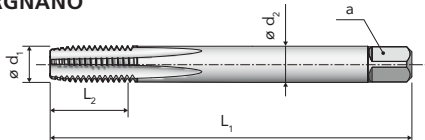
H130
BRIGHT

H130
V-MAXX

NORM VERGNANO
≤ M5



NORM VERGNANO
≥ M6



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	H130 BRIGHT	H130 V-MAXX		
H	H.1	● 2-3	● 3-6		
	H.2	● 1-2	● 2-4		

ISO2
6H

ISO2
6H

[illegible]

(*) = The hole diameters are oversized

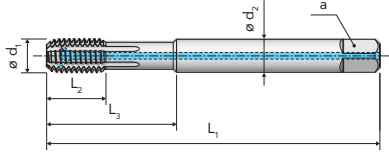
SOLID CARBIDE COLD FORMING TAPS for blind and through holes
With oil grooves / internal coolant



HM

HB80 N R
V-MAXX

DIN 371



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	HB80 N R			
V-MAXX					
P	P.1-2	● 40-50			
	P.3	● 35-45			
	P.4	● 30-40			
	P.5	● 15-25			
	P.7	● 15-25			
M	M.1	● 15-25			
N	N.1-2	● 40-50			
	N.3	● 35-45			
	N.5-6	● 40-50			
S	S.3	● 10-20			

6HX

[illegible]

(*) = Taps without through coolant

SOLID CARBIDE MACHINE TAPS for blind holes
Straight flutes / internal coolant / for cast iron



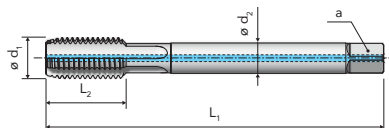
HM

HB45
BRIGHT

HB45
V-MAXX

HB45 E
V-MAXX

DIN 374



6HX

6HX

6HX

C (2-3)

C (2-3)

E (1,5-2)

2,5xD

2,5xD

2,5xD

RH

RH

RH



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	HB45 BRIGHT	HB45 V-MAXX	HB45 E V-MAXX	
K	K.1	● 40-50	● 55-65	● 55-65	
N	N.4	● 40-50	● 55-65	● 55-65	
	N.7	● 40-50	● 55-65	● 55-65	
	N.9-10	● 45-55	● 55-65	● 55-65	

H SERIES

[illegible]

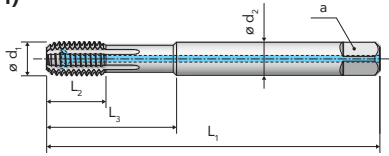
SOLID CARBIDE COLD FORMING TAPS for blind and through holes
With oil grooves / internal coolant / chamfer form E



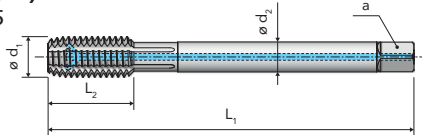
HM

HB81 N R E
V-MAXX

DIN 2174 (371)
≤ M10x1,25



DIN 2174 (374)
≥ M12x1,25



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	HB81 N R E V-MAXX			
P	P.1-2	● 40-50			
	P.3	● 35-45			
	P.4	● 30-40			
	P.5	● 15-25			
	P.7	● 15-25			
M	M.1	● 15-25			
N	N.1-2	● 40-50			
	N.3	● 35-45			
	N.5-6	● 40-50			
S	S.3	● 10-20			

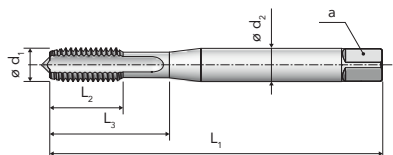
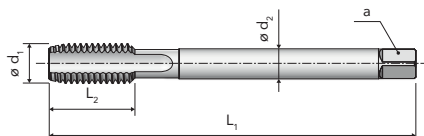
6HX

[illegible]

E

Discontinued Taps


A21 FC LH
 BRIGHT

DIN 371
 $\leq M10$

DIN 376
 $\geq M12$


ARTICLE SUBSTITUTED WITH

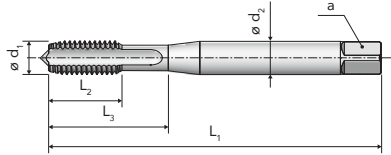
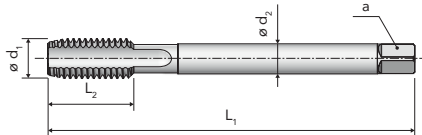
A70S LH
 (pp. 66)

ISO2
6H


Ød ₁	P	L ₁ js 16	L ₂	L ₃	Ød ₂ h9	a h12	Z		A21 FC LH BRIGHT			
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]				
M 3	0,5	56	10	18	3,5	2,7	3	2,5	•			
4	0,7	63	12	21	4,5	3,4	3	3,3	•			
5	0,8	70	14	24,5	6	4,9	3	4,2	•			
6	1	80	16	29	6	4,9	3	5	•			
8	1,25	90	18	33	8	6,2	3	6,8	•			
10	1,5	100	20	36	10	8	3	8,5	•			
12	1,75	110	24	-	9	7	3	10,2	•			
14	2	110	25	-	11	9	3	12	•			
16	2	110	28	-	12	9	3	14	•			
18	2,5	125	32	-	14	11	3	15,5	•			
20	2,5	140	32	-	16	12	4	17,5	•			
22	2,5	140	32	-	18	14,5	4	19,5	•			
24	3	160	36	-	18	14,5	4	21	•			
27	3	160	36	-	20	16	4	24	•			
30	3,5	180	40	-	22	18	4	26,5	•			


A21 FP
BRIGHT

A21 FP
TiN

DIN 371
≤ M10

DIN 376
≥ M11


ARTICLE SUBSTITUTED WITH

A15 S
(pp. 45)

ISO2
6H

ISO2
6H

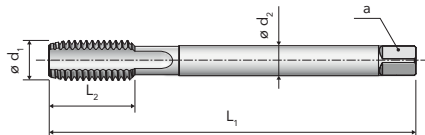

Ød ₁ [mm]	P [mm]	L ₁ js 16 [mm]	L ₂ [mm]	L ₃ [mm]	Ød ₂ h9 [mm]	a h12 [mm]	z		A21 FP BRIGHT	A21 FP TiN		
M 2	0,4	45	7	11	2,8	2,1	3	1,6	•	•		
2,2	0,45	45	8	13	2,8	2,1	3	1,75	•	•		
2,3	0,4	45	8	13	2,8	2,1	3	1,9	•	•		
2,5	0,45	50	9	15	2,8	2,1	3	2,05	•	•		
2,6	0,45	50	9	15	2,8	2,1	3	2,1	•	•		
3	0,5	56	10	18	3,5	2,7	3	2,5	•	•		
3,5	0,6	56	11	20	4	3	3	2,9	•	•		
4	0,7	63	12	21	4,5	3,4	3	3,3	•	•		
5	0,8	70	14	24,5	6	4,9	3	4,2	•	•		
6	1	80	16	29	6	4,9	3	5	•	•		
7	1	80	16	29	7	5,5	3	6	•	•		
8	1,25	90	18	33	8	6,2	3	6,8	•	•		
9	1,25	90	18	33	9	7	3	7,8	•	•		
10	1,5	100	20	36	10	8	3	8,5	•	•		
11	1,5	100	22	-	8	6,2	3	9,5	•	•		
12	1,75	110	24	-	9	7	3	10,2	•	•		
14	2	110	25	-	11	9	3	12	•	•		
16	2	110	28	-	12	9	3	14	•	•		
18	2,5	125	32	-	14	11	3	15,5	•	•		
20	2,5	140	32	-	16	12	4	17,5	•	•		
22	2,5	140	32	-	18	14,5	4	19,5	•	•		
24	3	160	36	-	18	14,5	4	21	•	•		
27	3	160	36	-	20	16	4	24	•	•		
30	3,5	180	40	-	22	18	4	26,5	•	•		
33	3,5	180	40	-	25	20	4	29,5	•	•		
36	4	200	55	-	28	22	4	32	•	•		



HSSE

A21 FP
BRIGHT

DIN 376



ARTICLE SUBSTITUTED WITH

A15 S
(pp. 45)

ISO2
6H



1,5xD



RH



«

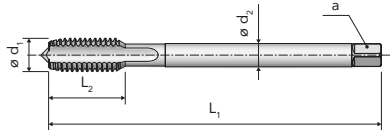
[illegible]



A22 FP
BRIGHT

A22 FP
TiN

DIN 376



ARTICLE SUBSTITUTED WITH

A16 S
(pp. 51)

ISO2
6H

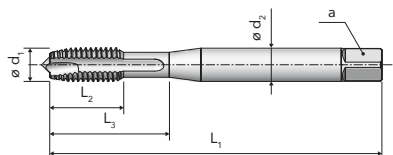
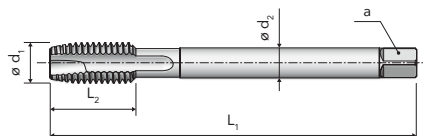
ISO2
6H

[illegible]


A15
 BRIGHT

A15
 VAP

A15
 TiN

DIN 371
 $\leq M10$

DIN 376
 $\geq M12$


ARTICLE SUBSTITUTED WITH

A15 S
 (pp. 45)

ISO2
6H
ISO2
6H
ISO2
6H


Ød ₁ [mm]	P [mm]	L ₁ js 16 [mm]	L ₂ [mm]	L ₃ [mm]	Ød ₂ h9 [mm]	a h12 [mm]	Z [-]	 [mm]	A15 BRIGHT	A15 VAP	A15 TiN
M 2	0,4	45	7	11	2,8	2,1	2	1,6	•	•	•
2,5	0,45	50	9	15	2,8	2,1	3	2,05	•	•	•
3	0,5	56	10	18	3,5	2,7	3	2,5	•	•	•
3,5	0,6	56	11	20	4	3	3	2,9	•	•	•
4	0,7	63	12	21	4,5	3,4	3	3,3	•	•	•
5	0,8	70	14	24,5	6	4,9	3	4,2	•	•	•
6	1	80	16	29	6	4,9	3	5	•	•	•
8	1,25	90	18	33	8	6,2	3	6,8	•	•	•
10	1,5	100	20	36	10	8	3	8,5	•	•	•
12	1,75	110	24	-	9	7	3	10,2	•	•	•
14	2	110	25	-	11	9	3	12	•	•	•
16	2	110	28	-	12	9	3	14	•	•	•
18	2,5	125	32	-	14	11	4	15,5	•	•	•
20	2,5	140	32	-	16	12	4	17,5	•	•	•
22	2,5	140	32	-	18	14,5	4	19,5	•	•	•
24	3	160	36	-	18	14,5	4	21	•	•	•
27	3	160	36	-	20	16	4	24	•	•	•
30	3,5	180	40	-	22	18	4	26,5	•	•	•

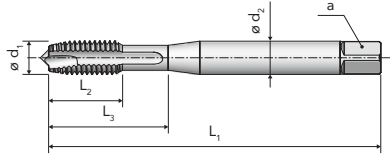


HSSE

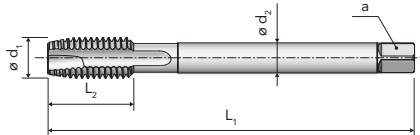
A15 6G
BRIGHT

A15 6G
TiN

DIN 371
≤ M10



DIN 376
≥ M12



ARTICLE SUBSTITUTED WITH

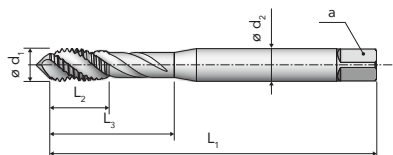
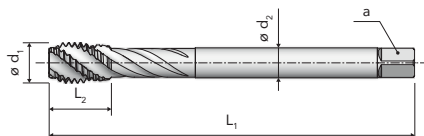
A15 S 6G
(pp. 48)

[illegible]


A70
 BRIGHT

A70
 VAP

A70
 TiN

DIN 371
 $\leq M10$

DIN 376
 $\geq M12$


ARTICLE SUBSTITUTED WITH

A70 S
 (pp. 60)

ISO2
6H
ISO2
6H
ISO2
6H


$\varnothing d_1$ [mm]	P [mm]	L_1 js 16 [mm]	L_2 [mm]	L_3 [mm]	$\varnothing d_2$ h9 [mm]	a h12 [mm]	z	 [mm]	A70 BRIGHT	A70 VAP	A70 TiN
M 2	0,4	45	6	12	2,8	2,1	3	1,6	•	•	•
2,5	0,45	50	6,5	15	2,8	2,1	3	2,05	•	•	•
3	0,5	56	7	15	3,5	2,7	3	2,5	•	•	•
4	0,7	63	8,5	21	4,5	3,4	3	3,3	•	•	•
5	0,8	70	10	24,5	6	4,9	3	4,2	•	•	•
6	1	80	12	29	6	4,9	3	5	•	•	•
8	1,25	90	15	33	8	6,2	3	6,8	•	•	•
10	1,5	100	17,5	38	10	8	3	8,5	•	•	•
12	1,75	110	18	-	9	7	4	10,2	•	•	•
14	2	110	20,5	-	11	9	4	12	•	•	•
16	2	110	20,5	-	12	9	4	14	•	•	•
18	2,5	125	25,5	-	14	11	4	15,5	•	•	•
20	2,5	140	29,5	-	16	12	4	17,5	•	•	•
22	2,5	140	29,5	-	18	14,5	4	19,5	•	•	•
24	3	160	35,5	-	18	14,5	4	21	•	•	•
27	3	160	37,5	-	20	16	4	24	•	•	•
30	3,5	180	42	-	22	18	4	26,5	•	•	•
33	3,5	180	43,5	-	25	20	4	29,5	•	•	•
36	4	200	47	-	28	22	4	32	•	•	•

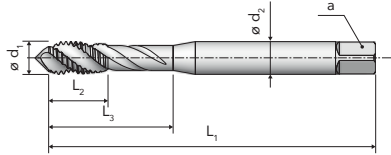


A70 6G
BRIGHT

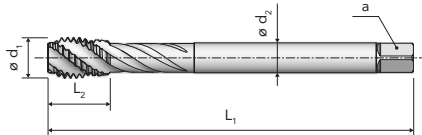
A70 6G
VAP

A70 6G
TiN

DIN 371
≤ M10



DIN 376
≥ M12



ARTICLE SUBSTITUTED WITH

A70 S 6G
(pp. 62)

**ISO3
6G**

**ISO3
6G**

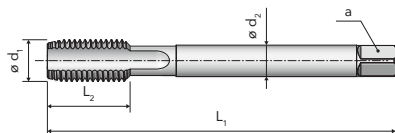
[illegible]


A23 FP
 BRIGHT

A23 FP
 TiN

A23 FP LH
 BRIGHT

DIN 374


A23 FP
 BRIGHT

A23 FP
 TiN

A23 FP LH
 BRIGHT

ARTICLE SUBSTITUTED WITH

A17 S
 (pp. 87)

A17 S
 (pp. 87)

A23 FC LH
 (pp. 83)

ISO2
6H
ISO2
6H
ISO2
6H


Ød ₁ [mm]	P [mm]	L ₁ js 16 [mm]	L ₂ [mm]	L ₃ [mm]	Ød ₂ h9 [mm]	a h12 [mm]	Z [-]	 [mm]	A23 FP BRIGHT	A23 FP TiN	A23 FP LH BRIGHT
M 3	0,35	56	8	-	2,2	-	3	2,65	•		
3,5	0,35	56	9	-	2,5	2,1	3	3,15	•		
4	0,5	63	10	-	2,8	2,1	3	3,5	•		
5	0,5	70	12	-	3,5	2,7	3	4,5	•		
6	0,5	80	14	-	4,5	3,4	3	5,5	•	•	
6	0,75	80	14	-	4,5	3,4	3	5,2	•	•	•
7	0,75	80	14	-	5,5	4,3	3	6,2	•	•	
8	0,75	80	16	-	6	4,9	3	7,2	•		
8	1	90	16	-	6	4,9	3	7	•	•	•
9	1	90	16	-	7	5,5	3	8	•		
10	0,5	90	18	-	7	5,5	4	9,5	•	•	
10	0,75	90	18	-	7	5,5	3	9,2	•		
10	1	90	18	-	7	5,5	3	9	•	•	•
10	1,25	100	18	-	7	5,5	3	8,8	•	•	•
11	1	90	20	-	8	6,2	3	10	•		
12	0,75	100	22	-	9	7	4	11,2	•	•	
12	1	100	22	-	9	7	4	11	•	•	
12	1,25	100	22	-	9	7	3	10,8	•	•	•
12	1,5	100	22	-	9	7	3	10,5	•	•	•
14	1	100	22	-	11	9	4	13	•	•	
14	1,25	100	22	-	11	9	3	12,8	•	•	
14	1,5	100	22	-	11	9	3	12,5	•	•	•
15	1	100	22	-	12	9	4	14	•		
15	1,5	100	22	-	12	9	3	13,5	•		
16	1	100	22	-	12	9	4	15	•	•	
16	1,25	100	22	-	12	9	4	14,8	•	•	

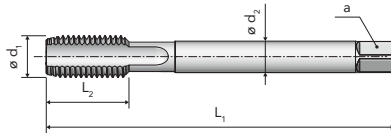


A23 FP
BRIGHT

A23 FP
TiN

A23 FP LH
BRIGHT

DIN 374



A23 FP
BRIGHT

A23 FP
TiN

A23 FP LH
BRIGHT

ARTICLE SUBSTITUTED WITH

A17 S
(pp. 87)

A17 S
(pp. 87)

A23 FC LH
(pp. 84)

ISO2
6H

ISO2
6H

ISO2
6H



E

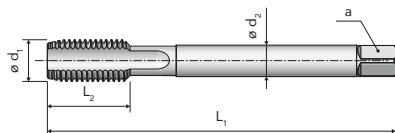
«

Ød ₁ [mm]	P [mm]	L ₁ js 16 [mm]	L ₂ [mm]	L ₃ [mm]	Ød ₂ h9 [mm]	a h12 [mm]	Z		A23 FP BRIGHT	A23 FP TiN	A23 FP LH BRIGHT
M 16	1,5	100	22	-	12	9	3	14,5	•	•	•
17	1	100	22	-	12	9	4	16	•		
17	1,5	100	22	-	12	9	4	15,5	•		
18	1	110	25	-	14	11	4	17	•		
18	1,5	110	25	-	14	11	4	16,5	•	•	•
18	2	125	28	-	14	11	4	16	•		
20	1	125	25	-	16	12	4	19	•		
20	1,5	125	25	-	16	12	4	18,5	•	•	•
20	2	140	28	-	16	12	4	18	•		
22	1	125	25	-	18	14,5	4	21	•		
22	1,5	125	25	-	18	14,5	4	20,5	•	•	
22	2	140	28	-	18	14,5	4	20	•		
24	1	140	25	-	18	14,5	4	23	•		
24	1,5	140	25	-	18	14,5	4	22,5	•		
24	2	140	28	-	18	14,5	4	22	•		
25	1	140	25	-	18	14,5	4	24	•		
25	1,5	140	25	-	18	14,5	4	23,5	•		
25	2	140	28	-	18	14,5	4	23	•		
26	1	140	25	-	18	14,5	4	25	•		
26	1,5	140	25	-	18	14,5	4	24,5	•		
26	2	140	28	-	18	14,5	4	24	•		
27	1,5	140	28	-	20	16	4	25,5	•		
27	2	140	28	-	20	16	4	25	•		
28	1,5	140	28	-	20	16	4	26,5	•		
28	2	140	28	-	20	16	4	26	•		
30	1	150	25	-	22	18	5	29	•		

»


A23 FP
 BRIGHT

DIN 374



ARTICLE SUBSTITUTED WITH

A17 S
 (pp. 88-89)

ISO2
6H


«

Ød ₁ [mm]	P [mm]	L ₁ js 16 [mm]	L ₂ [mm]	L ₃ [mm]	Ød ₂ h9 [mm]	a h12 [mm]	Z [-]	 [mm]	A23 FP BRIGHT			
M 30	1,5	150	28	-	22	18	4	28,5	•			
30	2	150	28	-	22	18	4	28	•			
32	1,5	150	28	-	22	18	5	30,5	•			
32	2	150	28	-	22	18	4	30	•			
33	1,5	160	30	-	25	20	5	31,5	•			
33	2	160	30	-	25	20	4	31	•			
35	1,5	170	30	-	28	22	5	33,5	•			
35	2	170	30	-	28	22	5	33	•			
36	1,5	170	30	-	28	22	5	34,5	•			
36	2	170	30	-	28	22	5	34	•			
36	3	200	56	-	28	22	4	33	•			
39	3	200	60	-	32	24	5	36	•			
40	1,5	170	30	-	32	24	5	38,5	•			
40	2	170	30	-	32	24	5	38	•			
40	3	200	60	-	32	24	5	37	•			
42	1,5	170	30	-	32	24	6	40,5	•			
42	2	170	30	-	32	24	5	40	•			
42	3	200	60	-	32	24	5	39	•			
45	1,5	180	32	-	36	29	6	43,5	•			
45	2	180	32	-	36	29	5	43	•			
45	3	200	50	-	36	29	5	42	•			
48	1,5	190	32	-	36	29	6	46,5	•			
48	2	190	32	-	36	29	6	46	•			
48	3	225	50	-	36	29	5	45	•			
52	1,5	190	32	-	40	32	6	50,5	•			
52	2	190	32	-	40	32	6	50	•			
52	3	225	50	-	40	32	5	49	•			

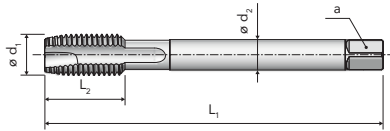


A17
BRIGHT

A17
VAP

A17
TiN

DIN 374



ARTICLE SUBSTITUTED WITH

A17 S
(pp. 87)

ISO2
6H

ISO2
6H

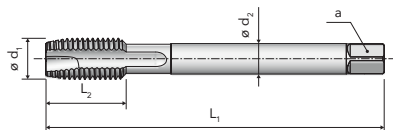
ISO2
6H



Ød ₁ [mm]	P [mm]	L ₁ js 16 [mm]	L ₂ [mm]	L ₃ [mm]	Ød ₂ h9 [mm]	a h12 [mm]	z		A17 BRIGHT	A17 VAP	A17 TiN
M 4	0,5	63	10	-	2,8	2,1	3	3,5	•		
5	0,5	70	12	-	3,5	2,7	3	4,5	•		
6	0,75	80	14	-	4,5	3,4	3	5,2	•	•	•
7	0,75	80	14	-	5,5	4,3	3	6,2	•		
8	0,75	80	16	-	6	4,9	3	7,2	•		
8	1	90	16	-	6	4,9	3	7	•	•	•
9	1	90	16	-	7	5,5	3	8	•		
10	0,75	90	18	-	7	5,5	4	9,2	•		
10	1	90	18	-	7	5,5	4	9	•	•	•
10	1,25	100	18	-	7	5,5	3	8,8	•	•	•
11	1	90	20	-	8	6,2	4	10	•		
12	1	100	22	-	9	7	4	11	•	•	•
12	1,25	100	22	-	9	7	4	10,8	•	•	•
12	1,5	100	22	-	9	7	3	10,5	•	•	•
14	1	100	22	-	11	9	4	13	•		
14	1,25	100	22	-	11	9	4	12,8	•	•	•
14	1,5	100	22	-	11	9	4	12,5	•	•	•
15	1	100	22	-	12	9	4	14	•		
15	1,5	100	22	-	12	9	4	13,5	•		
16	1	100	22	-	12	9	4	15	•		
16	1,5	100	22	-	12	9	4	14,5	•	•	•
18	1	110	25	-	14	11	4	17	•		
18	1,5	110	25	-	14	11	4	16,5	•	•	•
20	1	125	25	-	16	12	4	19	•		
20	1,5	125	25	-	16	12	4	18,5	•	•	•
22	1	125	25	-	18	14,5	4	21	•		


A17
 BRIGHT

DIN 374



ARTICLE SUBSTITUTED WITH

A17 S
 (pp. 88)

ISO2
6H


«

Ød ₁	P	L ₁ js 16	L ₂	L ₃	Ød ₂ h9	a h12	Z		A17 BRIGHT			
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[-]	[mm]				
M 22	1,5	125	25	-	18	14,5	4	20,5	•			
24	1	140	25	-	18	14,5	5	23	•			
24	1,5	140	25	-	18	14,5	4	22,5	•			
24	2	140	28	-	18	14,5	4	22	•			
25	1,5	140	25	-	18	14,5	4	23,5	•			
25	2	140	28	-	18	14,5	4	23	•			
26	1,5	140	25	-	18	14,5	4	24,5	•			
26	2	140	28	-	18	14,5	4	24	•			
27	1,5	140	28	-	20	16	4	25,5	•			
27	2	140	28	-	20	16	4	25	•			
28	1,5	140	28	-	20	16	4	26,5	•			
28	2	140	28	-	20	16	4	26	•			
30	1,5	150	28	-	22	18	4	28,5	•			
30	2	150	28	-	22	18	4	28	•			
32	1,5	150	28	-	22	18	5	30,5	•			
32	2	150	28	-	22	18	4	30	•			
36	1,5	170	30	-	28	22	5	34,5	•			
36	2	170	30	-	28	22	5	34	•			
36	3	200	56	-	28	22	4	33	•			
40	1,5	170	30	-	32	24	5	38,5	•			
40	2	170	30	-	32	24	5	38	•			
40	3	200	60	-	32	24	4	37	•			
42	1,5	170	30	-	32	24	5	40,5	•			
42	2	170	30	-	32	24	5	40	•			
42	3	200	60	-	32	24	5	39	•			
45	1,5	180	32	-	36	29	6	43,5	•			

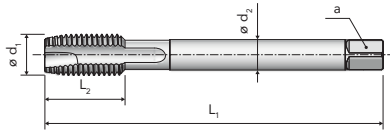
»



HSSE

A17
BRIGHT

DIN 374



ARTICLE SUBSTITUTED WITH

A17 S
(pp. 89)

ISO2
6H



<<

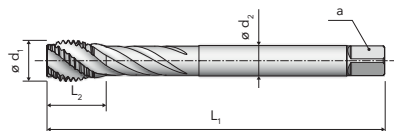
[illegible]



A71
BRIGHT

A71
TiN

DIN 374



ARTICLE SUBSTITUTED WITH

A71 S
(pp. 95)

ISO2
6H

ISO2
6H



Ød ₁ [mm]	P [mm]	L ₁ js 16 [mm]	L ₂ [mm]	L ₃ [mm]	Ød ₂ h9 [mm]	a h12 [mm]	Z [-]	 [mm]	A71 BRIGHT	A71 TiN		
M 6	0,75	80	7,5	-	4,5	3,4	3	5,2	•	•		
8	1	90	10	-	6	4,9	3	7	•	•		
10	1	90	10	-	7	5,5	3	9	•	•		
10	1,25	100	11,5	-	7	5,5	3	8,8	•	•		
12	1	100	13	-	9	7	4	11	•	•		
12	1,25	100	13,5	-	9	7	4	10,8	•	•		
12	1,5	100	14	-	9	7	4	10,5	•	•		
14	1,5	100	15,5	-	11	9	4	12,5	•	•		
16	1,5	100	15,5	-	12	9	4	14,5	•	•		
18	1,5	110	16	-	14	11	4	16,5	•	•		
20	1	125	15	-	16	12	4	19	•			
20	1,5	125	17	-	16	12	4	18,5	•	•		
22	1,5	125	19	-	18	14,5	4	20,5	•			
24	1,5	140	21	-	18	14,5	4	22,5	•			
24	2	140	26	-	18	14,5	4	22	•			
26	1,5	140	23	-	18	14,5	4	24,5	•			
27	1,5	140	23	-	20	16	4	25,5	•			
27	2	140	28	-	20	16	4	25	•			
28	1,5	140	23	-	20	16	4	26,5	•			
30	1,5	150	25	-	22	18	5	28,5	•			
30	2	150	29	-	22	18	4	28	•			
36	3	200	46	-	28	22	4	33	•			
42	3	200	51	-	32	24	5	39	•			

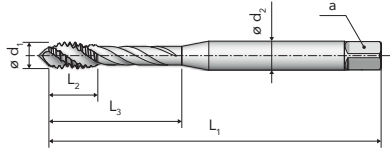
MACHINE TAPS for blind holes
40° spiral flutes / back tapered



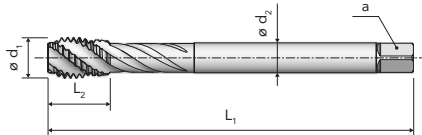
A60
BRIGHT

A60
TiN

DIN 2184-1
≤ Ø 1/4"



DIN 2184-1
≥ Ø 5/16"



ARTICLE SUBSTITUTED WITH

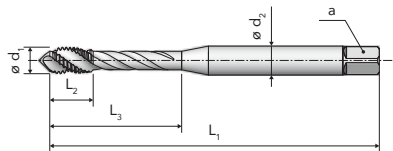
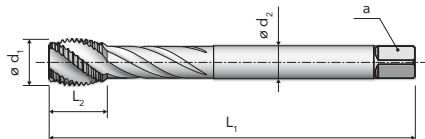
A60 S
(pp. 109)

2B

2B



UNC	P [TPI]	Ød ₁ [mm]	L ₁ js 16 [mm]	L ₂ [mm]	L ₃ [mm]	Ød ₂ h9 [mm]	a h12 [mm]	z		A60 BRIGHT	A60 TiN		
Nr.2	56	2,184	45	6	13	2,8	2,1	3	1,85	•	•		
Nr.3	48	2,515	50	6	15	2,8	2,1	3	2,1	•	•		
Nr.4	40	2,845	56	6,5	21	3,5	2,7	3	2,35	•	•		
Nr.5	40	3,175	56	6,5	21	3,5	2,7	3	2,65	•	•		
Nr.6	32	3,505	56	7,5	22,5	4	3	3	2,85	•	•		
Nr.8	32	4,166	63	7,5	26	4,5	3,4	3	3,5	•	•		
Nr.10	24	4,826	70	10	28,5	6	4,9	3	3,9	•	•		
Nr.12	24	5,486	80	10	28,5	6	4,9	3	4,5	•	•		
1/4"	20	6,35	80	11,5	32	7	5,5	3	5,1	•	•		
5/16"	18	7,938	90	13	-	6	4,9	3	6,6	•	•		
3/8"	16	9,525	100	14	-	7	5,5	3	8	•	•		
7/16"	14	11,113	100	17	-	8	6,2	3	9,4	•	•		
1/2"	13	12,7	110	19	-	9	7	4	10,8	•	•		
9/16"	12	14,288	110	21	-	11	9	4	12,2	•	•		
5/8"	11	15,875	110	22,5	-	12	9	4	13,5	•	•		
3/4"	10	19,05	125	26	-	14	11	4	16,5	•	•		
7/8"	9	22,225	140	30	-	18	14,5	4	19,5	•	•		
1"	8	25,4	160	36,5	-	18	14,5	4	22,25	•	•		

A61
BRIGHTA61
TiNDIN 2184-1
≤ Ø 1/4"DIN 2184-1
≥ Ø 5/16"

ARTICLE SUBSTITUTED WITH

A61 S
(pp. 117)

2B

2B



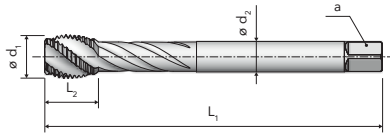
UNF	P [TPI]	Ød ₁ [mm]	L ₁ js 16 [mm]	L ₂ [mm]	L ₃ [mm]	Ød ₂ h9 [mm]	a h12 [mm]	z		A61 BRIGHT	A61 TiN		
Nr.2	64	2,184	45	5,5	13	2,8	2,1	3	1,85	•	•		
Nr.3	56	2,515	50	6	18	2,8	2,1	3	2,15	•	•		
Nr.4	48	2,845	56	6	18	3,5	2,7	3	2,4	•	•		
Nr.5	44	3,175	56	6	18	3,5	2,7	3	2,7	•	•		
Nr.6	40	3,505	56	6,5	22	4	3	3	2,95	•	•		
Nr.8	36	4,166	63	7	26,5	4,5	3,4	3	3,5	•	•		
Nr.10	32	4,826	70	8	29	6	4,9	3	4,1	•	•		
Nr.12	28	5,486	80	9	29,5	6	4,9	3	4,6	•	•		
1/4"	28	6,35	80	10	32	7	5,5	3	5,5	•	•		
5/16"	24	7,938	90	11	-	6	4,9	3	6,9	•	•		
3/8"	24	9,525	90	12	-	7	5,5	3	8,5	•	•		
7/16"	20	11,113	100	13,5	-	8	6,2	3	9,9	•	•		
1/2"	20	12,7	100	14,5	-	9	7	4	11,5	•	•		
9/16"	18	14,288	100	15,5	-	11	9	4	12,9	•	•		
5/8"	18	15,875	100	16	-	12	9	4	14,5	•	•		
3/4"	16	19,05	110	18	-	14	11	4	17,5	•	•		
7/8"	14	22,225	125	23,5	-	18	14,5	4	20,4	•	•		
1"	12	25,4	140	26	-	18	14,5	4	23,25	•	•		



A59
BRIGHT

A59
TiN

DIN 5156



ARTICLE SUBSTITUTED WITH

A59 S
(pp. 126)

**ISO
5969**

**ISO
5969**

[illegible]

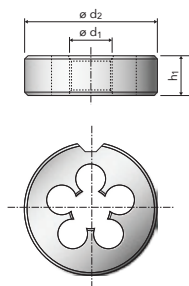
F SERIES

Dies


X200
 BRIGHT

X200 LH
 BRIGHT

DIN EN 22568



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	X200 BRIGHT	X200 LH BRIGHT		
P	P.1-4	•	•		
	P.7	•	•		
M	M.1	•	•		
K	K.2	•	•		
N	N.1-3	•	•		
	N.5-7	•	•		



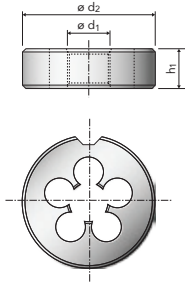
Ød ₁	P	Ød ₂	h ₁	X200 BRIGHT	X200 LH BRIGHT
[mm]	[mm]	[mm]	[mm]		
M 2	0,4	16	5	•	
2,2	0,45	16	5	•	
2,5	0,45	16	5	•	
3	0,5	20	5	•	•
3,5	0,6	20	5	•	
4	0,7	20	5	•	•
5	0,8	20	7	•	•
6	1	20	7	•	•
7	1	25	9	•	
8	1,25	25	9	•	•
9	1,25	25	9	•	
10	1,5	30	11	•	•
11	1,5	30	11	•	
12	1,75	38	14	•	•
14	2	38	14	•	•
16	2	45	18	•	
18	2,5	45	18	•	
20	2,5	45	18	•	
22	2,5	55	22	•	
24	3	55	22	•	
27	3	65	25	•	
30	3,5	65	25	•	
33	3,5	65	25	•	
36	4	65	25	•	
39	4	75	30	•	

DIES
With spiral point



X201
BRIGHT

DIN EN 22568



APPLICATION RANGE - CUTTING SPEED m/min

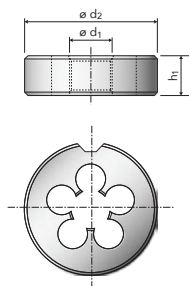
ISO	MG	X201 BRIGHT			
P	P.1-4	•			
	P.7	•			
M	M.1	•			
K	K.2	•			
N	N.1-3	•			
	N.5-7	•			



Ød ₁	P	Ød ₂	h ₁	X201 BRIGHT	
[mm]	[mm]	[mm]	[mm]		
M 2	0,25	16	5	•	
2,2	0,25	16	5	•	
2,5	0,35	16	5	•	
3	0,35	20	5	•	
4	0,5	20	5	•	
5	0,5	20	5	•	
6	0,75	20	7	•	
7	0,75	25	9	•	
8	0,75	25	9	•	
8	1	25	9	•	
9	1	25	9	•	
10	0,75	30	11	•	
10	1	30	11	•	
10	1,25	30	11	•	
11	1	30	11	•	
12	1	38	10	•	
12	1,25	38	10	•	
12	1,5	38	10	•	
14	1	38	10	•	
14	1,25	38	10	•	
14	1,5	38	10	•	
15	1	38	10	•	
15	1,5	38	10	•	
16	1	45	14	•	
16	1,5	45	14	•	
18	1	45	14	•	


X201
 BRIGHT

DIN EN 22568



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	X201 BRIGHT			
P	P.1-4	•			
	P.7	•			
M	M.1	•			
K	K.2	•			
N	N.1-3	•			
	N.5-7	•			



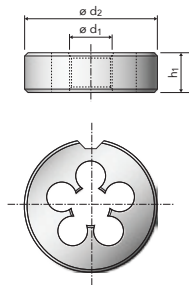
«

$\varnothing d_1$	P	$\varnothing d_2$	h1	X201 BRIGHT	
[mm]	[mm]	[mm]	[mm]		
M 18	1,5	45	14	•	
18	2	45	14	•	
20	1	45	14	•	
20	1,5	45	14	•	
20	2	45	14	•	
22	1	55	16	•	
22	1,5	55	16	•	
22	2	55	16	•	
24	1	55	16	•	
24	1,5	55	16	•	
24	2	55	16	•	
25	1	55	16	•	
25	1,5	55	16	•	
25	2	55	16	•	
26	1,5	55	16	•	
27	1,5	65	18	•	
27	2	65	18	•	
28	1,5	65	18	•	
28	2	65	18	•	
30	1	65	18	•	
30	1,5	65	18	•	
30	2	65	18	•	
32	1,5	65	18	•	
32	2	65	18	•	
33	2	65	18	•	
35	1,5	65	18	•	

»

X204
BRIGHT

DIN EN 22568



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	X204 BRIGHT			
P	P.1-4	•			
	P.7	•			
M	M.1	•			
K	K.2	•			
N	N.1-3	•			
	N.5-7	•			

2A



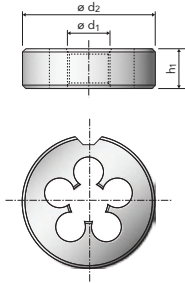
UNC	P	Ød ₁	Ød ₂	h ₁	X204 BRIGHT	
	[TPI]	[mm]	[mm]	[mm]		
Nr. 2	56	2,184	16	5	•	
Nr. 4	40	2,845	20	5	•	
Nr. 5	40	3,175	20	5	•	
Nr. 6	32	3,505	20	7	•	
Nr. 8	32	4,166	20	7	•	
Nr. 10	24	4,826	20	7	•	
Nr. 12	24	5,486	20	7	•	
1/4"	20	6,35	20	7	•	
5/16"	18	7,938	25	9	•	
3/8"	16	9,525	30	11	•	
7/16"	14	11,113	30	11	•	
1/2"	13	12,7	38	14	•	
9/16"	12	14,288	38	14	•	
5/8"	11	15,875	45	18	•	
3/4"	10	19,05	45	18	•	
7/8"	9	22,225	55	22	•	
1"	8	25,4	55	22	•	

DIES
With spiral point



X205
BRIGHT

DIN EN 22568



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	X205 BRIGHT			
P	P.1-4	•			
	P.7	•			
M	M.1	•			
K	K.2	•			
N	N.1-3	•			
	N.5-7	•			

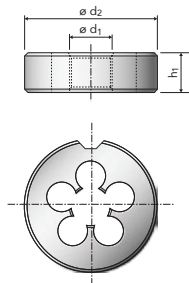
2A



UNF	P	Ød ₁	Ød ₂	h ₁	X205 BRIGHT	
	[TPI]	[mm]	[mm]	[mm]		
Nr. 3	56	2,515	16	5	•	
Nr. 4	48	2,845	20	5	•	
Nr. 5	44	3,175	20	5	•	
Nr. 6	40	3,505	20	5	•	
Nr. 8	36	4,166	20	7	•	
Nr. 10	32	4,826	20	7	•	
Nr. 12	28	5,486	20	7	•	
1/4"	28	6,35	20	7	•	
5/16"	24	7,938	25	9	•	
3/8"	24	9,525	30	11	•	
7/16"	20	11,113	30	11	•	
1/2"	20	12,7	38	10	•	
9/16"	18	14,288	38	10	•	
5/8"	18	15,875	45	14	•	
3/4"	16	19,05	45	14	•	
7/8"	14	22,225	55	16	•	
1"	12	25,4	55	16	•	

X203
BRIGHT

DIN EN 24231



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	X203 BRIGHT			
P	P.1-4	•			
	P.7	•			
M	M.1	•			
K	K.2	•			
N	N.1-3	•			
	N.5-7	•			

A



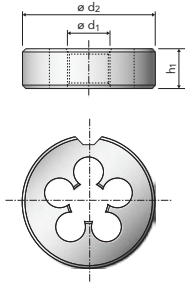
G	P	$\varnothing d_1$	$\varnothing d_2$	h1	X203 BRIGHT	
	[TPI]	[mm]	[mm]	[mm]		
1/8"	28	9,728	30	11	•	
1/4"	19	13,157	38	10	•	
3/8"	19	16,662	45	14	•	
1/2"	14	20,955	45	14	•	
5/8"	14	22,911	55	16	•	
3/4"	14	26,441	55	16	•	
7/8"	14	30,201	65	18	•	
1"	11	33,249	65	18	•	
1 1/4"	11	41,91	75	20	•	
1 1/2"	11	47,803	90	22	•	
2"	11	59,614	105	22	•	



HSS

X202
BRIGHT

DIN EN 22568



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	X202 BRIGHT			
P	P.1-4	●			
	P.7	●			
M	M.1	●			
K	K.2	●			
N	N.1-3	●			
	N.5-7	●			

mc

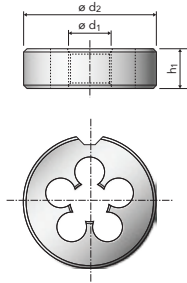
[illegible]



HSS

X206
BRIGHT

DIN EN 22568



APPLICATION RANGE - CUTTING SPEED m/min

ISO	MG	X206 BRIGHT			
P	P.1-4	●			
	P.7	●			
M	M.1	●			
K	K.2	●			
N	N.1-3	●			
	N.5-7	●			

[illegible]

VR SERIES

Thread Mills

APPLICATION AND CUTTING SPEED TABLE

VR10 - VR20 - VR30															
ISO 513	Material	Group	Application	N/mm²	Vc m/min	Feed (mm/tooth)									
						Ø2	Ø3	Ø4	Ø6	Ø8	Ø10	Ø12	Ø14	Ø16	Ø20
P	Steel	P.1	Mild / magnetic steel	200 - 400	100-250	0,03	0,04	0,04	0,06	0,07	0,08	0,09	0,11	0,12	0,15
		P.2	Construction steel, case hardening steel	350 - 700	100-250	0,03	0,04	0,04	0,06	0,07	0,08	0,09	0,11	0,12	0,15
		P.3	Carbon steel	350 - 850	100-250	0,03	0,04	0,04	0,06	0,07	0,08	0,09	0,11	0,12	0,15
		P.4	Alloyed steel, tempered steel	500 - 850	110-180	0,02	0,03	0,03	0,05	0,06	0,07	0,08	0,09	0,1	0,12
		P.5	Alloyed steel, tempered steel	850 - 1200	90-160	0,02	0,02	0,03	0,03	0,04	0,05	0,05	0,06	0,07	0,08
		P.6	Alloyed steel / high strength steel	1200 - 1600	90-140	0,02	0,02	0,02	0,02	0,03	0,04	0,04	0,05	0,06	0,07
		P.7	Ferritic / martensitic stainless steel	< 1000	110-180	0,02	0,03	0,03	0,05	0,06	0,07	0,08	0,09	0,1	0,12
M	Stainless steel	M.1	Austenitic	< 850	60-120	0,02	0,02	0,03	0,03	0,04	0,05	0,05	0,06	0,07	0,08
		M.2	Ferritic-austenitic (Duplex)	< 1000	50-100	0,02	0,02	0,03	0,03	0,04	0,05	0,05	0,06	0,07	0,08
K	Cast iron	K.1	Grey cast iron	< 1000	70-150	0,03	0,04	0,04	0,06	0,07	0,08	0,09	0,11	0,12	0,15
		K.2	Nodular cast iron	< 1000	100-250	0,03	0,04	0,04	0,06	0,07	0,08	0,09	0,11	0,12	0,15
		K.3	Austempered ductile iron (ADI)	< 1400	70-120	0,03	0,03	0,03	0,04	0,05	0,06	0,07	0,08	0,09	0,1
N	Aluminium alloys	N.1	Pure aluminium	< 300	150-350	0,03	0,04	0,04	0,06	0,07	0,08	0,09	0,11	0,12	0,15
		N.2	Aluminium alloys Si < 0,5% (long chipping)	< 500	150-350	0,03	0,04	0,04	0,06	0,07	0,08	0,09	0,11	0,12	0,15
		N.3	Aluminium alloys Si < 10% (medium chipping)	< 500	150-350	0,03	0,04	0,04	0,06	0,07	0,08	0,09	0,11	0,12	0,15
		N.4	Aluminium alloys Si > 10% (short chipping)	< 600	100-250	0,02	0,02	0,03	0,03	0,04	0,05	0,05	0,06	0,07	0,08
	Copper alloys	N.5	Pure copper	250 - 350	150-350	0,03	0,04	0,04	0,06	0,07	0,08	0,09	0,11	0,12	0,15
		N.6	Copper alloys, Brass (long chipping)	< 700	150-350	0,03	0,04	0,04	0,06	0,07	0,08	0,09	0,11	0,12	0,15
		N.7	Copper alloys, Brass (short chipping)	< 700	100-250	0,02	0,02	0,03	0,03	0,04	0,05	0,05	0,06	0,07	0,08
		N.8	High strength bronze	700 - 1500	90-140	0,02	0,02	0,02	0,02	0,03	0,04	0,04	0,05	0,06	0,07
	Magnesium alloys	N.9	Pure Magnesium / Magnesium alloys	120 - 300	150-350	0,03	0,04	0,04	0,06	0,07	0,08	0,09	0,11	0,12	0,15
		N.10	High strength Magnesium alloys	240 - 400	150-350	0,03	0,04	0,04	0,06	0,07	0,08	0,09	0,11	0,12	0,15
S	Titanium alloys	S.1	Pure titanium	400 - 600	20-90	0,02	0,02	0,02	0,03	0,04	0,04	0,04	0,05	0,05	0,05
		S.2	Titanium alloys	600 - 1000	20-80	0,02	0,02	0,02	0,03	0,03	0,03	0,03	0,04	0,04	0,04
	Nickel alloys	S.3	Pure nickel	400 - 600	20-90	0,02	0,02	0,02	0,03	0,04	0,04	0,04	0,05	0,05	0,05
		S.4	Nickel alloys	600 - 1000	20-80	0,02	0,02	0,02	0,03	0,03	0,03	0,03	0,04	0,04	0,04

APPLICATION AND CUTTING SPEED TABLE

VR40 - VR45

ISO 513	Material	Group	Application	N/mm ²	Vc, m/min	Feed (mm/tooth)													
						Ø1	Ø1,5	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8	Ø9	Ø10	Ø12	Ø14	Ø16
P	Steel	P.1	Mild / magnetic steel	200 - 400	60-120	0,04	0,05	0,05	0,07	0,09	0,11	0,13	0,14	0,15	0,16	0,16	0,17	0,18	0,18
		P.2	Construction steel, case hardening steel	350 - 700	60-120	0,04	0,05	0,05	0,07	0,09	0,11	0,13	0,14	0,15	0,16	0,16	0,17	0,18	0,18
		P.3	Carbon steel	350 - 850	60-120	0,04	0,05	0,05	0,07	0,09	0,11	0,13	0,14	0,15	0,16	0,16	0,17	0,18	0,18
		P.4	Alloyed steel, tempered steel	500 - 850	60-90	0,03	0,04	0,05	0,06	0,08	0,09	0,1	0,12	0,13	0,14	0,14	0,16	0,17	0,18
		P.5	Alloyed steel, tempered steel	850 - 1200	50-80	0,03	0,04	0,04	0,05	0,05	0,06	0,07	0,07	0,08	0,09	0,1	0,12	0,13	0,14
		P.6	Alloyed steel / high strength steel	1200 - 1600	50-70	0,02	0,02	0,02	0,03	0,04	0,05	0,06	0,06	0,07	0,08	0,09	0,1	0,12	0,13
		P.7	Ferritic / martensitic stainless steel	< 1000	60-90	0,03	0,04	0,05	0,06	0,08	0,09	0,1	0,12	0,13	0,14	0,14	0,16	0,17	0,18
M	Stainless steel	M.1	Austenitic	< 850	60-90	0,02	0,03	0,03	0,04	0,05	0,06	0,06	0,07	0,08	0,09	0,1	0,11	0,12	0,13
		M.2	Ferritic-austenitic (Duplex)	< 1000	50-80	0,02	0,03	0,03	0,04	0,05	0,06	0,06	0,07	0,08	0,09	0,1	0,11	0,12	0,13
K	Cast iron	K.1	Grey cast iron	< 1000	40-80	0,04	0,05	0,05	0,07	0,09	0,11	0,13	0,14	0,15	0,16	0,16	0,17	0,18	0,18
		K.2	Nodular cast iron	< 1000	60-120	0,04	0,05	0,05	0,07	0,09	0,11	0,13	0,14	0,15	0,16	0,16	0,17	0,18	0,18
		K.3	Austempered ductile iron (ADI)	< 1400	40-70	0,04	0,04	0,04	0,05	0,05	0,06	0,07	0,08	0,09	0,1	0,11	0,12	0,12	0,12
N	Aluminium alloys	N.1	Pure aluminium	< 300	100-200	0,04	0,05	0,05	0,07	0,09	0,11	0,13	0,14	0,15	0,16	0,16	0,17	0,18	0,18
		N.2	Aluminium alloys Si < 0,5% (long chipping)	< 500	100-200	0,04	0,05	0,05	0,07	0,09	0,11	0,13	0,14	0,15	0,16	0,16	0,17	0,18	0,18
		N.3	Aluminium alloys Si < 10% (medium chipping)	< 500	100-200	0,04	0,05	0,05	0,07	0,09	0,11	0,13	0,14	0,15	0,16	0,16	0,17	0,18	0,18
		N.4	Aluminium alloys Si > 10% (short chipping)	< 600	60-140	0,03	0,03	0,03	0,04	0,05	0,06	0,06	0,07	0,08	0,09	0,1	0,11	0,13	0,14
	Copper alloys	N.5	Pure copper	250 - 350	100-200	0,04	0,05	0,05	0,07	0,09	0,11	0,13	0,14	0,15	0,16	0,16	0,17	0,18	0,18
		N.6	Copper alloys, Brass (long chipping)	< 700	100-200	0,04	0,05	0,05	0,07	0,09	0,11	0,13	0,14	0,15	0,16	0,16	0,17	0,18	0,18
		N.7	Copper alloys, Brass (short chipping)	< 700	60-140	0,03	0,03	0,03	0,04	0,05	0,06	0,06	0,07	0,08	0,09	0,1	0,11	0,13	0,14
		N.8	High strength bronze	700 - 1500	60-100	0,03	0,03	0,03	0,03	0,04	0,04	0,05	0,05	0,06	0,08	0,08	0,09	0,09	0,1
	Magnesium alloys	N.9	Pure Magnesium / Magnesium alloys	120 - 300	100-200	0,04	0,05	0,05	0,07	0,09	0,11	0,13	0,14	0,15	0,16	0,16	0,17	0,18	0,18
		N.10	High strength Magnesium alloys	240 - 400	100-200	0,04	0,05	0,05	0,07	0,09	0,11	0,13	0,14	0,15	0,16	0,16	0,17	0,18	0,18
S	Titanium alloys	S.1	Pure titanium	400 - 600	20-50	0,03	0,03	0,03	0,04	0,05	0,06	0,06	0,06	0,07	0,07	0,08	0,08	0,08	0,08
		S.2	Titanium alloys	600 - 1000	20-40	0,03	0,03	0,03	0,04	0,04	0,05	0,06	0,06	0,06	0,07	0,07	0,07	0,08	0,08
	Nickel alloys	S.3	Pure nickel	400 - 600	20-50	0,03	0,03	0,03	0,04	0,05	0,06	0,06	0,06	0,07	0,07	0,08	0,08	0,08	0,08
		S.4	Nickel alloys	600 - 1000	20-40	0,03	0,03	0,03	0,04	0,04	0,05	0,06	0,06	0,06	0,07	0,07	0,07	0,08	0,08

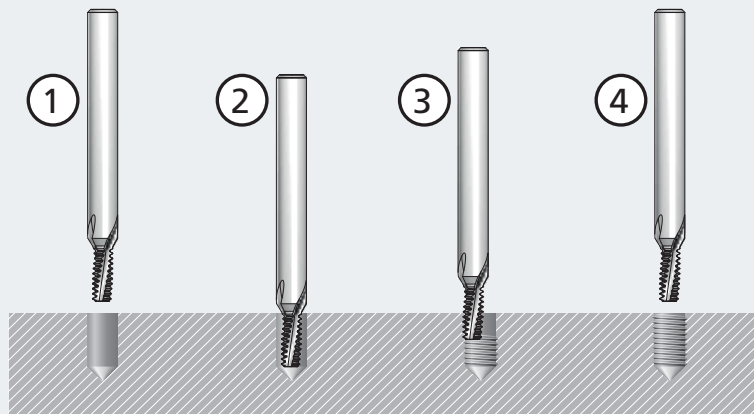
APPLICATION AND CUTTING SPEED TABLE

VR50 - VR55

ISO 513	Material	Group	Application	N/mm ²	Vc m/min	Feed (mm/tooth)													
						Ø1	Ø1,5	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8	Ø9	Ø10	Ø12	Ø14	Ø16
S	Titanium alloys	S.2	Titanium alloys	600 - 1000	20-40	0,03	0,03	0,03	0,04	0,04	0,05	0,06	0,06	0,06	0,07	0,07	0,07	0,08	0,08
	Nickel alloys	S.4	Nickel alloys	600 - 1000	20-40	0,03	0,03	0,03	0,04	0,04	0,05	0,06	0,06	0,06	0,07	0,07	0,07	0,08	0,08
H	Hardened materials	H.1	Alloyed steel, hardness HRC 44-55	-	50-60	0,02	0,03	0,03	0,04	0,04	0,05	0,05	0,06	0,06	0,07	0,07	0,08	0,09	0,1
		H.2	Alloyed steel, hardness HRC 56-62	-	40-50	0,01	0,02	0,02	0,03	0,03	0,04	0,05	0,05	0,06	0,06	0,06	0,07	0,08	0,09

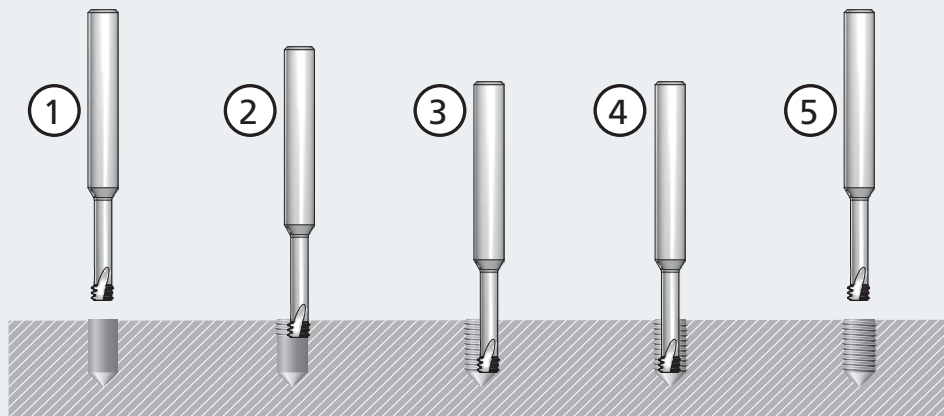
PROCESS DESCRIPTION

VR10 - VR20 - VR30



- 1 Start point - center position
- 2 Axial movement down to required thread depth, then 45° arc entrance
- 3 Thread milling (360°)
- 4 45° arc exit, then axial movement to start point

VR40 - VR45 - VR50 - VR55



- 1 Start point - center position
- 2 45° arc entrance
- 3 Thread milling to required thread depth
- 4 45° arc exit
- 5 Axial movement to start point

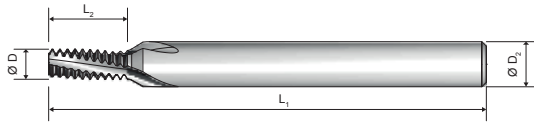
INT

HM

VR10
TiAlN

VR20
TiAlN

VR30
TiAlN



APPLICATION RANGE

ISO	VR10 TiAlN	VR20 TiAlN	VR30 TiAlN
P	•	•	•
M	•	•	•
K	•	•	•
N	•	•	•
S	•	•	•

For cutting data see page 214



INT

INT

INT



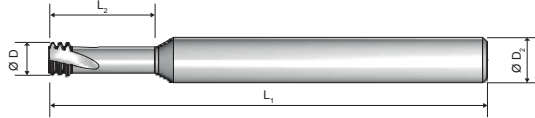
P	M	MF	ØD ₂ h6	ØD	z	L ₂	L ₁	VR10 TiAlN	VR20 TiAlN	VR30 TiAlN
[mm]			[mm]	[mm]	[-]	[mm]	[mm]			
0,5		M5x0,5	6	3,8	3	10,3	58	VR10038I0501000		
0,7	M4		6	3,1	3	7,4	58	VR10031I0700700	VR20031I0700700	
0,75		M6x0,75	6	4,5	3	10,1	58		VR20045I0751000	
0,8	M5		6	3,6	3	9,2	58	VR10036I0800900	VR20038I0800900	
1	M6		6	4	3	10,5	58	VR10040I1001000		
1	M6		6	4	3	14,5	58	VR10040I1001400		
1	M6		6	4,8	3	10,5	58			VR30048I1001000
1	M6	M7x1	6	4,6	3	14,5	58		VR20046I1001400	
1		M10x1	8	8	4	16,5	64	VR10080I1001600	VR20080I1001600	VR30080I1001600
1		M12x1	10	10	4	24,5	73		VR20100I1002400	
1,25	M8	M10x1,25	6	5	3	14,4	58	VR10050I1251400		
1,25	M8	M10x1,25	6	6	3	14,4	58		VR20060I1251400	
1,25	M8	M10x1,25	6	5	3	19,4	58	VR10050I1251900		
1,25	M8	M10x1,25	6	6	3	19,4	58		VR20060I1251900	VR30060I1251900
1,5	M10	M12x1,5	8	7	3	17,3	64	VR10070I1501700		
1,5	M10	M12x1,5	8	7	3	24,8	76	VR10070I1502400		
1,5	M10	M12x1,5	8	7,8	3	17	64		VR20078I1501700	VR30078I1501700
1,5		M14x1,5	10	10	4	21,8	73	VR10100I1502100		VR30100I1502100
1,5		M16x1,5	12	12	4	26,3	84		VR20120I1502600	VR30120I1502600
1,75	M12		8	8	3	20,1	64	VR10080I1752000		
1,75	M12		10	9	3	20,1	73		VR20090I1752000	
2	M16		12	11,8	4	27	84		VR20118I2002700	
2,5	M20		16	15	5	48,8	105		VR20150I2504800	
3	M24		20	18	4	58,5	120		VR20180I3005800	

INT

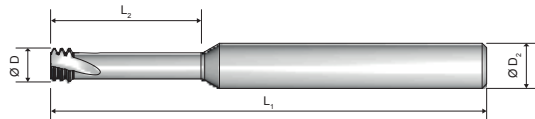
HM

VR40
TiAlNVR45
TiAlN

VR40



VR45



INT

INT



APPLICATION RANGE

ISO	VR40 TiAlN	VR45 TiAlN	
P	•	•	
M	•	•	
K	•	•	
N	•	•	
S	•	•	

For cutting data see page 215

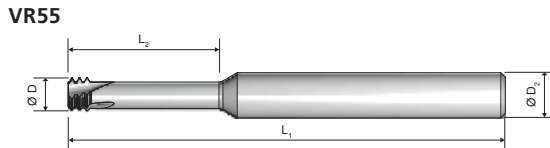
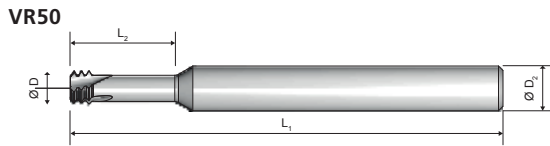
P	M	ØD ₂ h6	ØD	z	L ₂	L ₁	VR40 TiAlN	VR45 TiAlN
[mm]		[mm]	[mm]	[-]	[mm]	[mm]		
0,3	M1,4	3	1,05	3	4	39		VR45010I0300400
0,35	M1,6	3	1,2	3	4,8	39		VR45012I0350400
0,4	M2	6	1,53	3	4,5	58	VR40015I0400400	
0,4	M2	3	1,53	3	6	39		VR45015I0400600
0,5	M3	6	2,37	3	6,5	58	VR40023I0500600	
0,5	M3	6	2,37	3	9,5	58		VR45023I0500900
0,5	M3	6	2,37	3	9,5	105		VR45023I050090L
0,7	M4	6	3,1	3	9	58	VR40031I0700900	
0,7	M4	6	3,1	3	12,5	58		VR45031I0701200
0,7	M4	6	3,1	3	12,5	105		VR45031I070120L
0,8	M5	6	3,8	3	12,5	58	VR40038I0801200	
0,8	M5	6	3,8	3	16	58		VR45038I0801600
0,8	M5	6	3,8	3	16	105		VR45038I080160L
1	M6	6	4,65	3	14	58	VR40046I1001400	
1	M6	6	4,65	3	20	58		VR45046I1002000
1	M6	6	4,65	3	20	105		VR45046I100200L
1,25	M8	6	5,95	3	18	58	VR40059I1251800	
1,25	M8	6	6	3	24	58		VR45060I1252400
1,5	M10	8	7,8	3	23	64	VR40078I1502300	
1,75	M12	10	9	3	26	73	VR40090I1752600	
2	M16	12	11,8	4	35	84	VR40118I2003500	

INT

HM

VR50
TiAlN

VR55
TiAlN



APPLICATION RANGE

ISO	VR50 TiAlN	VR55 TiAlN	
S	●	●	
H	●	●	

For cutting data see page 216

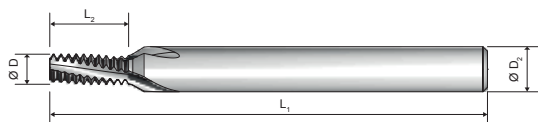
INT

INT

[illegible]

INT

HM

VR10
TiAlNVR20
TiAlN

INT

INT



APPLICATION RANGE

ISO	VR10 TiAlN	VR20 TiAlN	
P	•	•	
M	•	•	
K	•	•	
N	•	•	
S	•	•	

For cutting data see page 214

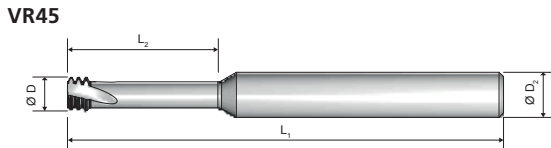
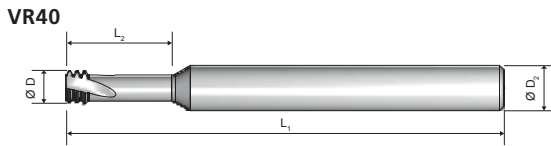
P (TPI)	UNC	UNF	ØD ₂ h6 [mm]	ØD [mm]	z	L ₂ [mm]	L ₁ [mm]	VR10 TiAlN	VR20 TiAlN	
28		1/4"	6	4	3	11,3	58	VR10040U28T1100		
28		1/4"	6	5	3	11,3	58		VR20050U28T1100	
24		5/16"	6	5	3	14,3	58	VR10050U24T1400		
24		3/8"	8	7	3	20,6	64	VR10070U24T2000		
24		5/16"	8	6,6	3	14,3	64		VR20066U24T1400	
24		3/8"	8	8	4	20,6	64		VR20080U24T2000	
20	1/4"		6	4,5	3	12,1	58	VR10045U20T1200		
20		7/16"-1/2"	8	7	3	21	64	VR10070U20T2100		
20	1/4"		6	4,7	3	12,1	58		VR20047U20T1200	
20		7/16"	8	8	3	21	64		VR20080U20T2100	
20		1/2"	10	10	4	22,3	73		VR20100U20T2200	
18	5/16"		6	5	3	14,8	58	VR10050U18T1400		
18	5/16"		6	5,6	3	14,8	58		VR20056U18T1400	
16	3/8"		6	6	3	16,7	58	VR10060U16T1600		
16	3/8"		8	6,7	3	16,7	64		VR20067U16T1600	
14	7/16"		8	7	3	20,9	64	VR10070U14T2000		
14	7/16"		8	7,7	3	20,9	64		VR20077U14T2000	
13	1/2"		8	8	3	22,5	64	VR10080U13T2200		
13	1/2"		10	9,2	3	22,5	73		VR20092U13T2200	
11	5/8"		10	10	3	28,9	73	VR10100U11T2800		
11	5/8"		12	11,4	3	28,9	84		VR20114U11T2800	

INT

HM

VR40
TiAlN

VR45
TiAlN



APPLICATION RANGE

ISO	VR40 TiAlN	VR45 TiAlN	
P	●	●	
M	●	●	
K	●	●	
N	●	●	
S	●	●	

For cutting data see page 215

INT

INT



RH

RH

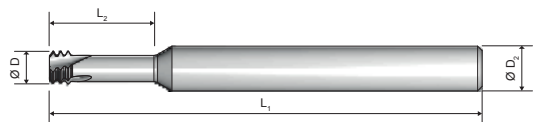
[illegible]

INT

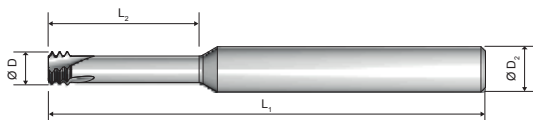
HM

VR50
TiAlN

VR55
TiAlN

VR50

VR55



INT

INT

2xD

3xD

LH

LH

APPLICATION RANGE

ISO	VR50 TiAlN	VR55 TiAlN	
S	●	●	
H	●	●	

For cutting data see page 216

[illegible]

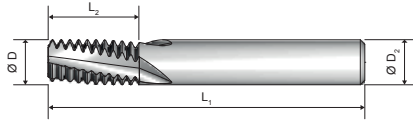
INT

EXT

HM

VR10
TiAlN

VR20
TiAlN



APPLICATION RANGE

ISO	VR10 TiAlN	VR20 TiAlN	
P	●	●	
M	●	●	
K	●	●	
N	●	●	
S	●	●	

For cutting data see page 214

INT

EXT

INT

EXT

[illegible]

VA SERIES

Synchronous Tapping Attachments

Vergnano Sincro synchronous tapping attachments are specifically designed to enhance the performance of the Vergnano S-Series taps for synchronous tapping processes.

SYNCHRONOUS TAPPING ATTACHMENTS

In modern CNC machine tools with synchronous spindles, the rotational and axial movements of the spindle are coordinated by the numeric control of the machine. On these modern machine tools standard compensated tapping attachments are not recommended since the large compensation in extension can negatively influence the performance of the tool. Vergnano Sincro synchronous tapping attachments are specifically designed for synchronous tapping: micro-compensation reduces the axial and radial forces generated during the tapping process and enhances tool life. Since machine, tapping attachment and tool are synchronised it is possible to reach high machining speeds. This advantage, together with increased tool life, leads to improved productivity.

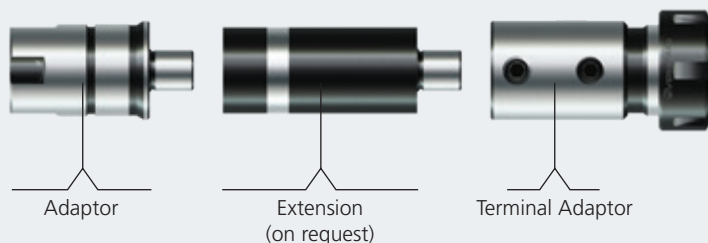
Quick-Change System

Vergnano offers a new system consisting in tapping attachment and quick-change adaptor which allows worn tools to be substituted without changing the entire tapping attachment thereby saving precious machining time.

It is recommended to have a second quick-change adaptor (in addition to that delivered with the tapping attachment) sold separately to exploit this advantage.

Also available are extended quick-change adaptors which permit extension of the tapping attachment in order to reach threads in difficult positions.

This versatile and cost-saving system covers a wide range of applications with just one tapping attachment.



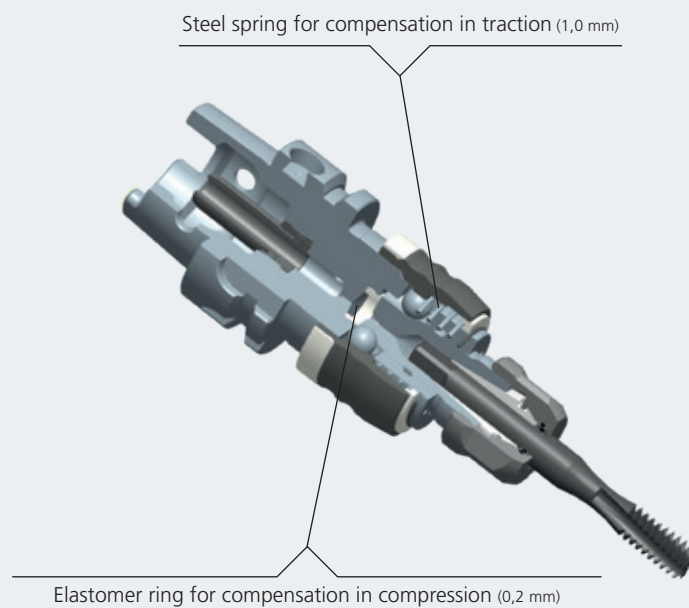
The extended adaptor is sold assembled and consists of two parts (adaptor and terminal adaptor). Further extensions are available on request.



Micro-Compensation

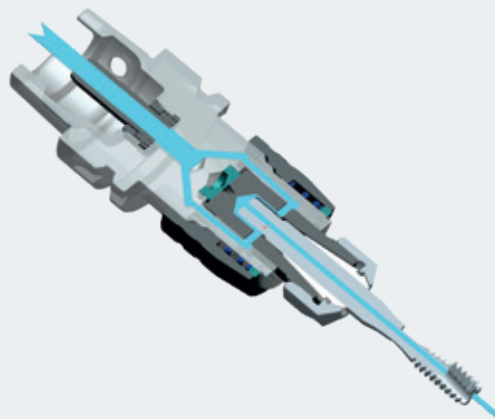
During tap reversal high axial forces are generated on the tap which cause mechanical stresses and micro-wear. This in turn leads to reduced tool life and tool precision. For this reason Vergnano synchronous tapping attachments are designed with differential micro-compensation in traction and compression which compensates the stresses on the tap.

Compensation in traction (1 mm) is obtained by steel springs which guarantee greater reliability while compensation in compression (0,2 mm) is obtained by elastomer rings.



Through Coolant Capability

All Vergnano synchronous tapping attachments are designed for use with internal lubrication up to 50 bars. For higher values a special pressure-tight nut screw is available on request. The special attachment design forces the through coolant to enter the tap adaptor from the sides without interfering with the compensation length.

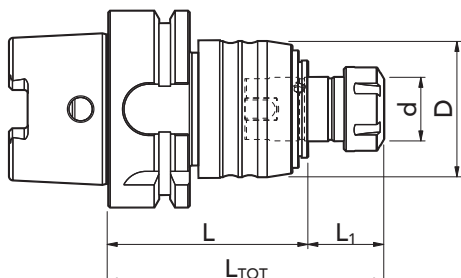


SYNCHRONOUS ER TAPPING ATTACHMENT with QUICK-CHANGE TAP ADAPTOR

With internal through coolant capability ⁽¹⁾



DIN 69893 HSK A



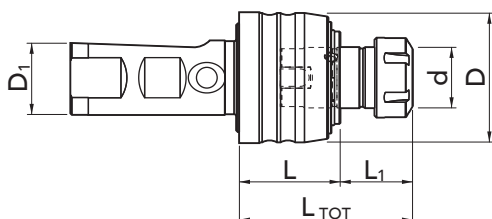
Article Code	Attachment	Tap Size	L	ø D	ø d	ER collet	L ₁	L _{TOT}
			[mm]	[mm]	[mm]		[mm]	[mm]
VA01A06302CH160	HSK-A63	M3 - M8	64	43	20	ER 16	20,5	84,5
VA01A06302CH250	HSK-A63	M6 - M20	97	60	32	ER 25	23,5	120,5
VA01A10002CH400	HSK-A100	M14 - M33	115	87	50	ER 40	28,5	143,5

SYNCHRONOUS ER TAPPING ATTACHMENT with QUICK-CHANGE TAP ADAPTOR

With internal through coolant capability ⁽¹⁾



DIN 1835 B+E



Article Code	Attachment	Tap Size	L	ø D	ø d	ER collet	L ₁	L _{TOT}
	ø D ₁ [mm]		[mm]	[mm]	[mm]		[mm]	[mm]
VA01C02502CH160	25	M3 - M8	34	43	20	ER 16	20,5	54,5
VA01C02502CH250	25	M6 - M20	56	60	32	ER 25	23,5	79,5
VA01C04002CH400	40	M14 - M33	80	87	50	ER 40	28,5	108,5

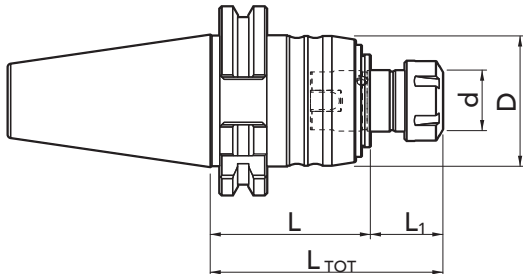
⁽¹⁾ For coolant pressure above 50 bars a special nut screw is available on request

SYNCHRONOUS ER TAPPING ATTACHMENT with QUICK-CHANGE TAP ADAPTOR

With internal through coolant capability ⁽¹⁾



SK DIN 69871 AD



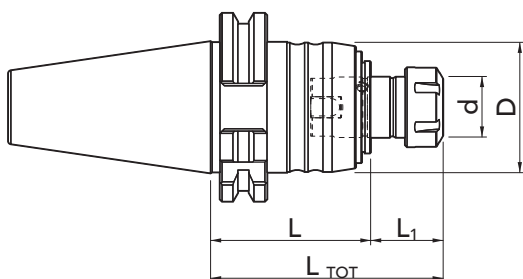
Article Code	Attachment	Tap Size	L [mm]	ø D [mm]	ø d [mm]	ER collet	L ₁ [mm]	L _{TOT} [mm]
VA01B04002CH160	SK 40 AD	M3 - M8	53	43	20	ER 16	20,5	73,5
VA01B05002CH160	SK 50 AD	M3 - M8	53	43	20	ER 16	20,5	73,5
VA01B04002CH250	SK 40 AD	M6 - M20	90	60	32	ER 25	23,5	113,5
VA01B05002CH250	SK 50 AD	M6 - M20	74	60	32	ER 25	23,5	97,5

SYNCHRONOUS ER TAPPING ATTACHMENT with QUICK-CHANGE TAP ADAPTOR

With internal through coolant capability ⁽¹⁾



SK DIN 69871 AD+B



Article Code	Attachment	Tap Size	L [mm]	ø D [mm]	ø d [mm]	ER collet	L ₁ [mm]	L _{TOT} [mm]
VA01B05002CH400	SK 50 B	M14 - M33	115	87	50	ER 40	28,5	143,5

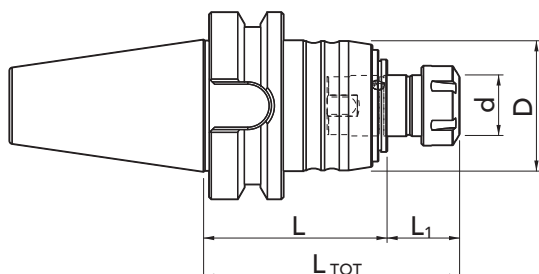
⁽¹⁾ For coolant pressure above 50 bars a special nut screw is available on request

SYNCHRONOUS ER TAPPING ATTACHMENT with QUICK-CHANGE TAP ADAPTOR

With internal through coolant capability ⁽¹⁾



MAS 403 BT



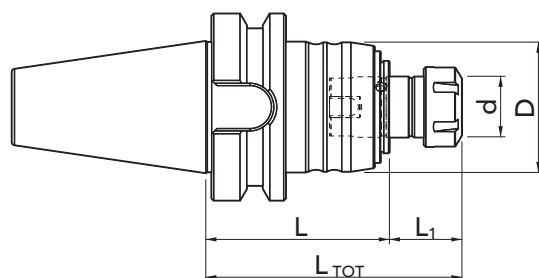
Article Code	Attachment	Tap Size	L [mm]	ø D [mm]	ø d [mm]	ER collet	L ₁ [mm]	L _{TOT} [mm]
VA01M04002CH160	BT 40	M3 - M8	61	43	20	ER 16	20,5	81,5
VA01M05002CH160	BT 50	M3 - M8	72	43	20	ER 16	20,5	92,5
VA01M04002CH250	BT 40	M6 - M20	82	60	32	ER 25	23,5	105,5
VA01M05002CH250	BT 50	M6 - M20	93	60	32	ER 25	23,5	116,5

SYNCHRONOUS ER TAPPING ATTACHMENT with QUICK-CHANGE TAP ADAPTOR

With internal through coolant capability ⁽¹⁾



MAS 403 BT - B



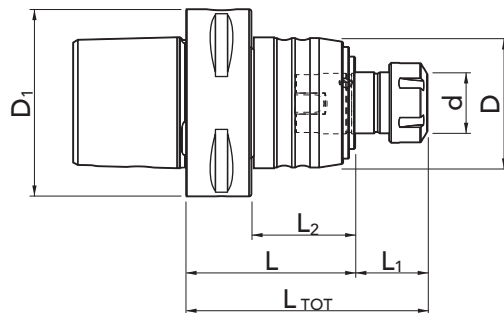
Article Code	Attachment	Tap Size	L [mm]	ø D [mm]	ø d [mm]	ER collet	L ₁ [mm]	L _{TOT} [mm]
VA01M05002CH400	BT 50 B	M14 - M33	124	87	50	ER 40	28,5	152,5

⁽¹⁾ For coolant pressure above 50 bars a special nut screw is available on request

SYNCHRONOUS ER TAPPING ATTACHMENT with QUICK-CHANGE TAP ADAPTOR With internal through coolant capability ⁽¹⁾



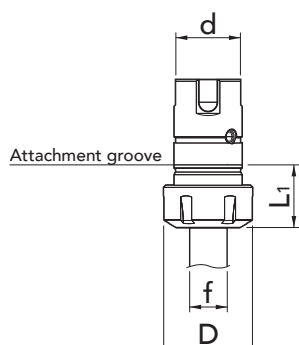
POLIGONAL Attachment ISO 26623-1



Article Code	Attachment	Tap Size	L	L ₂	ø D	ø d	ER collet	L ₁	L _{TOT}
	ø D ₁ [mm]		[mm]	[mm]	[mm]	[mm]		[mm]	[mm]
VA01P04002CH160	C40	M3 - M8	55	35	43	20	ER 16	20,5	75,5
VA01P05002CH160	C50	M3 - M8	55	35	43	20	ER 16	20,5	75,5
VA01P06302CH160	C63	M3 - M8	57	35	43	20	ER 16	20,5	77,5
VA01P08002CH160	C80	M3 - M8	66	36	43	20	ER 16	20,5	86,5
VA01P04002CH250	C40	M6 - M20	75	55	60	32	ER 25	23,5	98,5
VA01P05002CH250	C50	M6 - M20	75	55	60	32	ER 25	23,5	98,5
VA01P06302CH250	C63	M6 - M20	77	55	60	32	ER 25	23,5	100,5
VA01P08002CH250	C80	M6 - M20	86	56	60	32	ER 25	23,5	109,5
VA01P08002CH400	C80	M14 - M33	116	86	87	50	ER 40	28,5	144,5

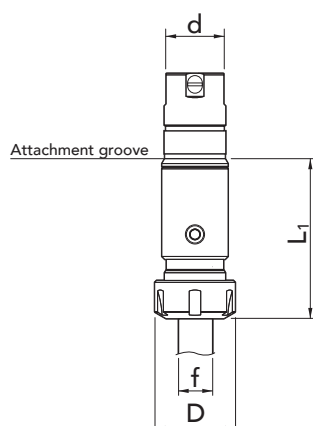
⁽¹⁾ For coolant pressure above 50 bars a special nut screw is available on request

QUICK-CHANGE TAP ADAPTOR



Article Code	Tap Size	Shaft $\varnothing$ f [mm]	$\varnothing$ d [mm]	$\varnothing$ D [mm]	L ₁ [mm]	ER collet
*CHADAP160310000	M3 - M8	3 - 8	20	28	20,5	ER 16
CHADAP250316000	M6 - M20	3 - 16	32	42	23,5	ER 25
CHADAP400626000	M14 - M33	6 - 25	50	63	28,5	ER 40

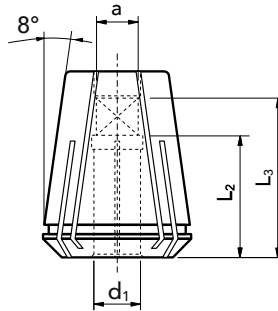
EXTENDED QUICK-CHANGE TAP ADAPTOR



Article Code	Tap Size	Shaft $\varnothing$ f [mm]	$\varnothing$ d [mm]	$\varnothing$ D [mm]	L ₁ [mm]	ER collet
*CHEXAD160310000	M3 - M8	3 - 8	20	28	51,5	ER 16
CHEXAD250316000	M6 - M20	3 - 16	32	42	80,5	ER 25
CHEXAD400626000	M14 - M33	6 - 25	50	63	90,5	ER 40

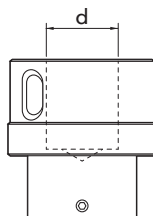
* Hexagonal nut screw

DIN 6499



Article Code	ER collet	ø d ₁ [mm]	a [mm]	L ₂ [mm]	L ₃ [mm]
SLERGB160103500	ER 16	3,5	2,7	18	24
SLERGB160104500	ER 16	4,5	3,4	18	24
SLERGB160105500	ER 16	5,5	4,3	18	25
SLERGB160106000	ER 16	6	4,9	18	26
SLERGB160107000	ER 16	7	5,5	18	26
SLERGB160108000	ER 16	8	6,2	22	31
SLERGB250103500	ER 25	3,5	2,7	18	24
SLERGB250104500	ER 25	4,5	3,4	18	24
SLERGB250105500	ER 25	5,5	4,3	18	25
SLERGB250106000	ER 25	6	4,9	18	26
SLERGB250107000	ER 25	7	5,5	18	26
SLERGB250108000	ER 25	8	6,2	22	31
SLERGB250109000	ER 25	9	7	22	32
SLERGB250110000	ER 25	10	8	25	36
SLERGB250111000	ER 25	11	9	25	37
SLERGB250112000	ER 25	12	9	25	37
SLERGB250114000	ER 25	14	11	25	39
SLERGB250116000	ER 25	16	12	25	40
SLERGB400106000	ER 40	6	4,9	18	26
SLERGB400107000	ER 40	7	5,5	18	26
SLERGB400108000	ER 40	8	6,2	22	31
SLERGB400109000	ER 40	9	7	22	32
SLERGB400110000	ER 40	10	8	25	36
SLERGB400111000	ER 40	11	9	25	37
SLERGB400112000	ER 40	12	9	25	37
SLERGB400114000	ER 40	14	11	25	39
SLERGB400116000	ER 40	16	12	25	40
SLERGB400118000	ER 40	18	14,5	25	42
SLERGB400120000	ER 40	20	16	28	47
SLERGB400122000	ER 40	22	18	28	49
SLERGB400125000	ER 40	25	20	33	56

ASSEMBLY SUPPORT



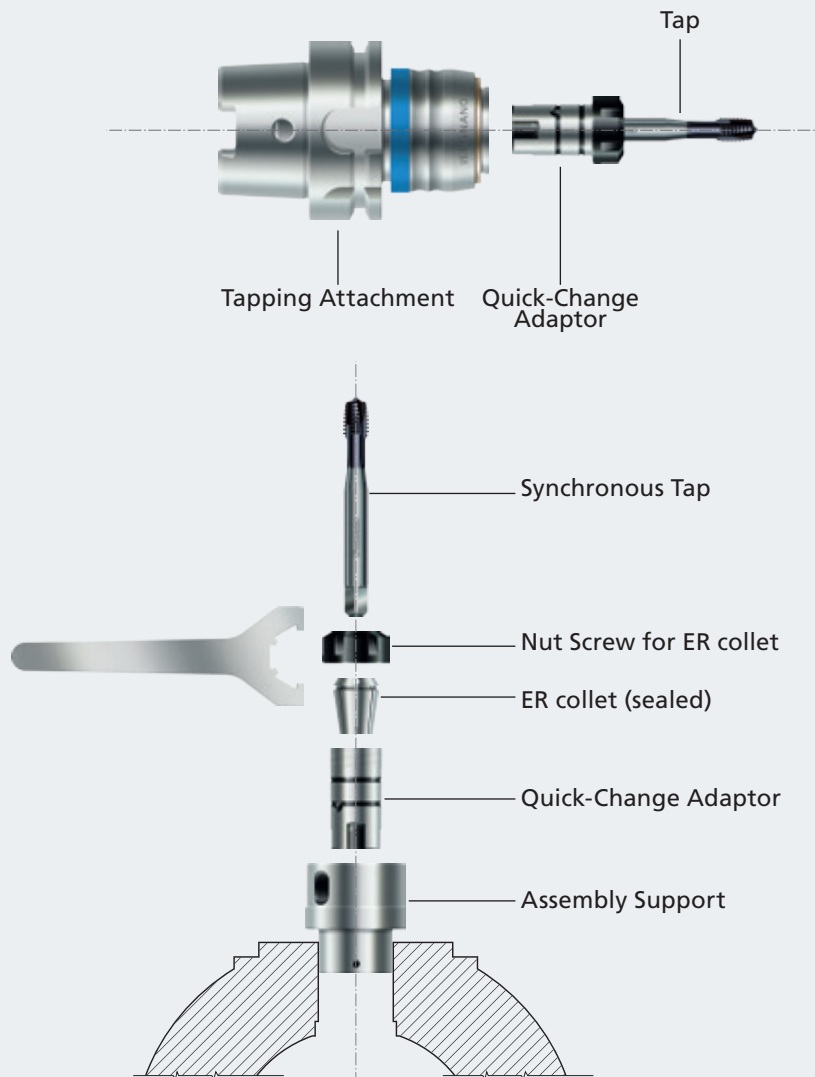
Article Code	ER collet	ø d [mm]				
ASCHADAP1620000	ER 16	20				
ASCHADAP2532000	ER 25	32				
ASCHADAP4050000	ER 40	50				

WRENCH for nut screw



Article Code	Nut Screw	ER collet				
KE02ER160200000	Hexagonal	ER 16				
KE04ER250200000	Standard	ER 25				
KE04ER400200000	Standard	ER 40				

TAPPING ATTACHMENTS: TERMINOLOGY AND ASSEMBLY INSTRUCTIONS

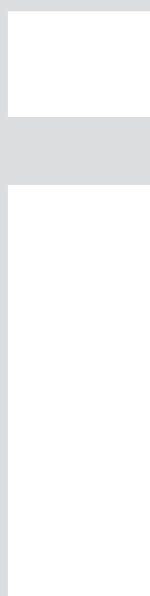


- 1 Place the quick-change adaptor in the assembly support
- 2 Insert the ER collet in the nut screw
- 3 Partially tighten the nut screw on the quick-change adaptor
- 4 Insert the tap in the quick-change adaptor until it stops
- 5 Securely tighten the nut screw with a wrench
- 6 Insert the quick-change adaptor into the tapping attachment by pulling back the sleeve

TIGHTENING TORQUE TABLE

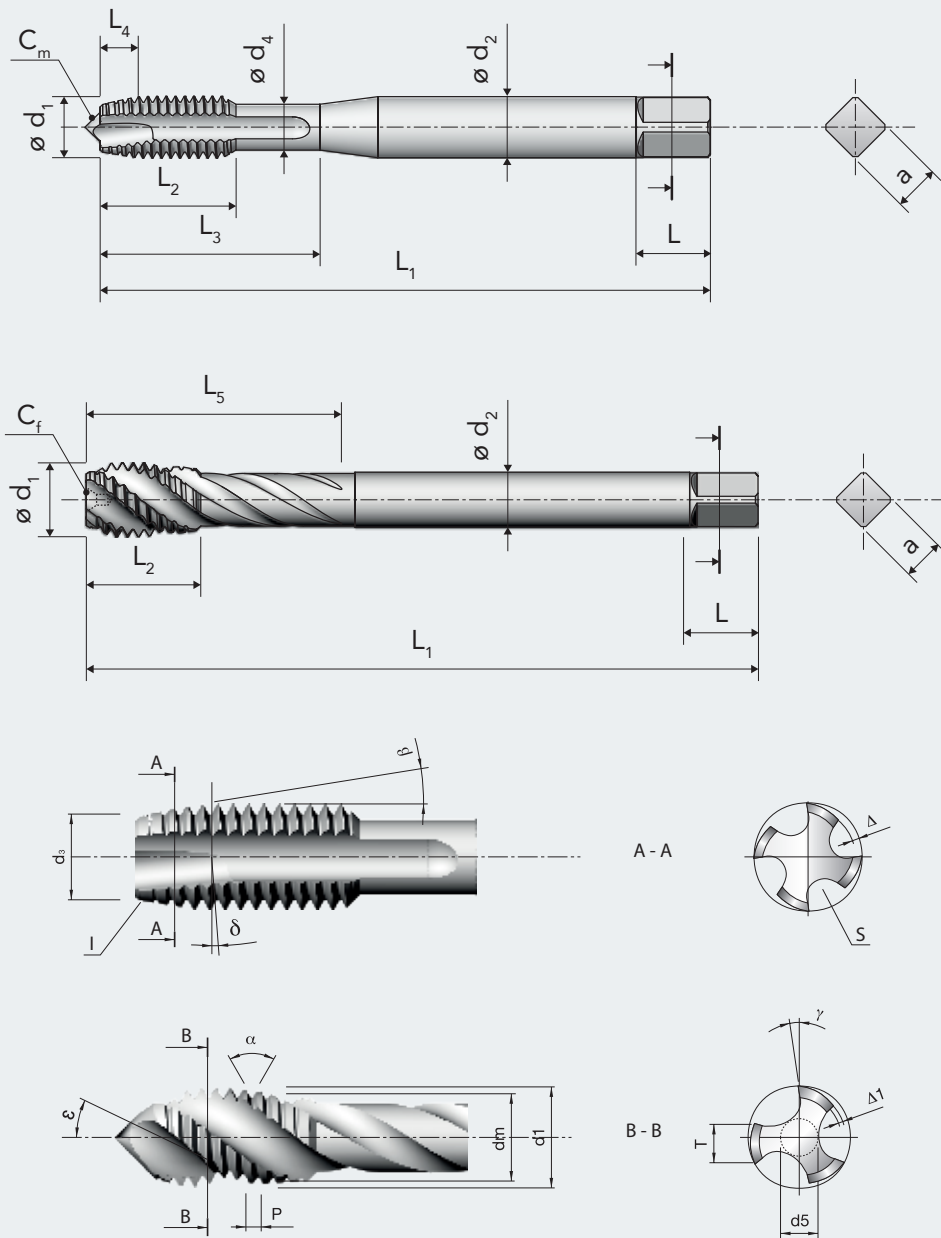
It is recommended to tighten the nut screws with the torque values shown in the table below.

ER Collet	Torque [Nm]
ER 16	45
ER 25	70
ER 40	150



TECHNICAL INFORMATION

TAP TERMINOLOGY



d_1

Nominal diameter

the diameter used for the purpose of general identification.

d_m

Pitch diameter

the diameter measured where the width of the thread is equal to half the pitch.

d_2

Shank diameter

the diameter of the shank, important for the tapping attachment.

d_3

Chamfer diameter

the diameter at the leading end of the chamfer.

d_4

Neck diameter

the diameter of the reduced section between the thread and shank of the tap.

d_5

Core diameter

the diameter of a circle tangent to the bottom of the flutes.

l

Chamfer

the taper on the threads at the front end of the tap made by grinding and relieving the crests of the first few teeth.

a

Square

the square with rounded corners formed by four flats parallel to the tap axis. The square serves to drive the tap.

TAP TERMINOLOGY

L

Square length

the length of the flats that form the square.

L₁

Total length

the complete length of the tap from end to end, excluding external centres.

L₂

Thread length

the length of the threaded section of the tap.

L₃

Usable length

the length measured from the front end of the tap to the end of the neck section. This length determines the maximum threadable depth on taps with reinforced shank.

L₄

Chamfer length

the length of the chamfer measured parallel to the tap axis, excluding the chamfer bevel.

L₅

Flute length

the axial length of the flute including the cutter sweep.

C_m

External centre

the pointed end of the tap.

C_f

Internal centre

the countersink in one or both ends of the tap.

P

Pitch

the distance, measured parallel to the tap axis, between two corresponding and successive points on the thread profile.

α

Angle of thread

the angle between the flanks of the thread (measured in an axial plane).

δ

Thread lead angle

the angle made by the spiral of the thread and a plane perpendicular to the tap axis, measured on the pitch diameter line.

β

Chamfer angle

the angle between the chamfer and the tap axis, measured in an axial plane.

γ

Rake angle

the angle between the cutting face of the tap and a radial line passing through the crest of the tooth at the cutting edge.

T

Land width

the chordal width of material between two successive flutes.

S

Flute

the longitudinal channels in a tap which create cutting edges. The flutes provide space for chips and passage for coolant/lubricant.

Δ1

Pitch diameter relief

the radial reduction of the pitch and/or major diameter behind the cutting edge of the tap. The relief confers cutting properties and provides clearance between the part being threaded and the tap threads.

Δ

Chamfer relief

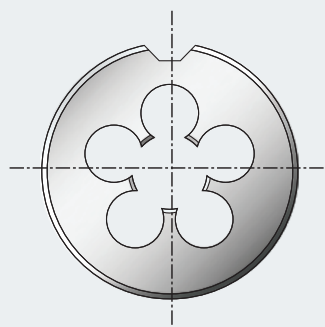
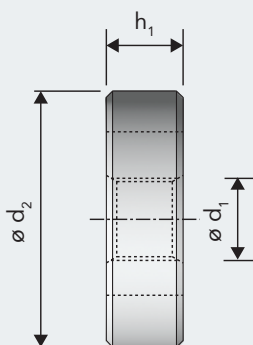
the radial reduction of the major diameter on the tap chamfer behind the cutting edge. The chamfer relief confers cutting properties to the tap.

ε

Spiral flute angle

the angle formed by the flutes and the tap axis.

DIE TERMINOLOGY



d₁

nominal diameter

d₂

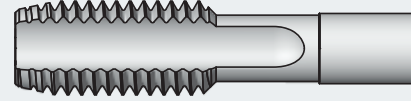
outside diameter

h₁

thickness

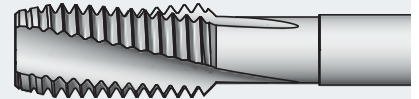
STRAIGHT FLUTES

These taps are used on steels with normal strength and toughness ($R=750 \text{ N/mm}^2$) as well as on short-chipping abrasive materials (grey cast iron, bronze, etc.).



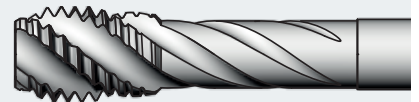
SPIRAL FLUTES, 15° RIGHTHAND SPIRAL

These taps improve chip evacuation and are well suited when tapping blind holes of medium depth on tough materials.



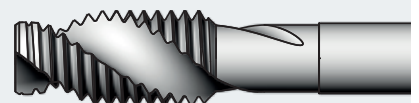
SPIRAL FLUTES, 40° RIGHTHAND SPIRAL

The high helix angle ensures the evacuation of chips from deep blind holes.



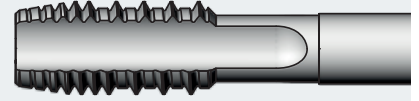
SPIRAL FLUTES, 40° RIGHTHAND SPIRAL, FOR LIGHT ALLOYS

The large flutes and high helix angle ensure efficient chip removal on long-chipping light alloys such as aluminium.



STRAIGHT FLUTES WITH INTERRUPTED THREADS

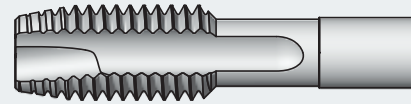
For tapping soft and mild materials such as iron, aluminium etc. The interrupted threads avoid chips sticking to the thread flanks and consequent damage of the tap.



SPIRAL POINT

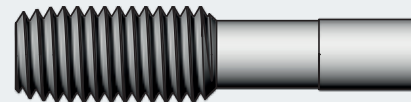
The spiral point or gun nose is produced by a high helix angle combined with an increased rake angle in the front area of the tap. This design ensures spontaneous chip evacuation in the feed direction.

This geometry is suitable when tapping through holes on materials which produce continuous chips.



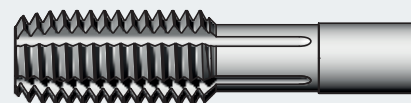
FORMING TAPS WITHOUT OIL GROOVES

These tools produce threads through plastic deformation of the workpiece material. No chips are produced during the tapping process.



FORMING TAPS WITH OIL GROOVES

The oil grooves improve lubrication in the chamfer area making these taps suitable for threading deep holes.



TYPES OF CHAMFER FORMS

The types of chamfer are defined in standards DIN 2175 and DIN 2197 for forming taps and cutting taps, respectively.

	Form A	Form B	Form C			Form D	Form E			Form F
Chamfer form and length										
Flute type										 
										

TYPES OF CENTRES

The tap manufacturer, according to the diameter and the application, defines the types of centres. Types of centre and chamfer are generally combined together as in the following table, but for specific applications exceptions are possible.

		Form A	Form B	Form C	Form D	Form E
Male centre 	M	$M2 \leq \emptyset \leq M8$	$M2 \leq \emptyset \leq M8$	$M2 \leq \emptyset \leq M8$	$M2 \leq \emptyset \leq M8$	-
	MF	$M2 \leq \emptyset \leq M6$	$M4 \leq \emptyset \leq M6$	$M2 \leq \emptyset \leq M6$	$M5 \leq \emptyset \leq M6$	-
	UNC	$Nr.2-56 \leq \emptyset \leq 1/4"-18$	$Nr.2-56 \leq \emptyset \leq 1/4"-18$	$Nr.2-56 \leq \emptyset \leq 1/4"-18$	$Nr.2-56 \leq \emptyset \leq 1/4"-18$	-
	UNF	$Nr.2-64 \leq \emptyset \leq 1/4"-28$	$Nr.2-64 \leq \emptyset \leq 1/4"-28$	$Nr.2-64 \leq \emptyset \leq 1/4"-28$	-	-
	G	-	-	-	-	-
Half centre 	M	$M8 < \emptyset \leq M10$	$M8 < \emptyset \leq M10$	$M8 < \emptyset \leq M10$	$M8 < \emptyset \leq M10$	-
	MF	$M6 < \emptyset \leq M10$	$M6 < \emptyset \leq M10$	$M6 < \emptyset \leq M10$	$M6 < \emptyset \leq M10$	-
	UNC	$5/16"-18 \leq \emptyset \leq 3/8"-16$	$5/16"-18 \leq \emptyset \leq 3/8"-16$	$5/16"-18 \leq \emptyset \leq 3/8"-16$	-	-
	UNF	$5/16"-24 \leq \emptyset \leq 3/8"-24$	$5/16"-24 \leq \emptyset \leq 3/8"-24$	$5/16"-24 \leq \emptyset \leq 3/8"-24$	-	-
	G	$\emptyset = 1/8"-28$	$\emptyset = 1/8"-28$	$\emptyset = 1/8"-28$	-	-
Female centre 	M	$\emptyset > M10$	$\emptyset > M10$	$\emptyset > M10$	$\emptyset > M10$	ALL SIZES
	MF	$\emptyset > M10$	$\emptyset > M10$	$\emptyset > M10$	$\emptyset > M10$	ALL SIZES
	UNC	$\emptyset \geq 7/16"-14$	$\emptyset \geq 7/16"-14$	$\emptyset \geq 7/16"-14$	$\emptyset \geq 5/16"-18$	-
	UNF	$\emptyset \geq 7/16"-20$	$\emptyset \geq 7/16"-20$	$\emptyset \geq 7/16"-20$	-	-
	G	$\emptyset \geq 1/4"-19$	$\emptyset \geq 1/4"-19$	$\emptyset \geq 1/4"-19$	-	-

F O R M U L A E

Parameter	Formula	Unit of Measurement
Cutting speed	$V_c = \frac{N \cdot \pi \cdot d_1}{1000}$	$\frac{m}{min}$
Rotational speed	$N = \frac{1000 \cdot V_c}{\pi \cdot d_1}$	rpm
Torque (*)	$M_t = \frac{K_c \cdot p^2 \cdot z^{0.6} \cdot d_1}{10^4}$	N · m
Spindle power	$P = \frac{M_t \cdot 2 \cdot \pi \cdot N}{60}$	W
Nominal diameter	d ₁	mm
Feed	p · N	$\frac{mm}{min}$
p	Thread pitch	mm
z	Number of flutes	-
K _c	Cutting force coefficient (function of the material and of tap wear)	$\frac{N}{mm^2}$

(*) The torque value is valid for a new cutting tap.
For worn-out taps, the value can increase up to 2-3 times.
For forming taps, the value must be multiplied by 1,5-2 times.

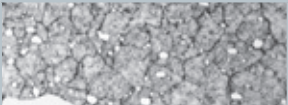
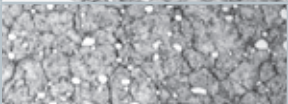
M.G.	Kc [N/mm²]
P.1	1300
P.2	1400
P.3	1400
P.4	1600
P.5	1700
P.6	2000
P.7	1400
M.1	1600
M.2	1800
K.1	1100
K.2	1500
K.3	1600
N.1	600
N.2	800
N.3	900
N.4	1000
N.5	700
N.6	850
N.7	900
N.8	2500
N.9	400
N.10	500
S.1	1200
S.2	1900
S.3	1300
S.4	2400

C O N V E R S I O N T A B L E H A R D N E S S V S T E N S I L E S T R E N G T H

Tensile Strength	Hardness		
	R [N/mm²]	HB Brinell	HRC Rockwell C
3400	700	68	1008
3120	688	67	955
2960	676	66	920
2890	670	65	885
2770	659	64	850
2240	650	63	826
2190	635	62	797
2140	627	61	772
2100	613	60	746
2050	600	59	720
2010	587	58	693
1970	574	57	666
1930	561	56	646
1890	548	55	623
1850	536	54	604
1810	524	53	585
1780	512	52	567
1730	500	51	549
1680	488	50	528
1630	476	49	513
1590	464	48	497
1560	453	47	482
1520	442	46	468
1480	430	45	453
1440	419	44	440

Tensile Strength	Hardness		
	R [N/mm²]	HB Brinell	HRC Rockwell C
1400	408	43	427
1360	398	42	416
1320	389	41	404
1300	377	40	391
1260	367	39	381
1230	357	38	371
1190	347	37	357
1150	337	36	345
1120	327	35	332
1100	319	34	323
1060	309	33	314
1040	301	32	304
1010	294	31	296
980	286	30	288
960	279	29	280
940	272	28	273
910	265	27	266
890	259	26	259
870	253	25	253
850	247	24	247
830	241	23	241
810	235	22	235
790	230	21	230
770	225	20	225

HIGH SPEED STEEL AND SOLID CARBIDE FOR TAPS

Vergnano Designation	Designation according to ISO 11054	Hardness	Toughness	Applications	Structure (500x)
HSS	HSS	•	•	Used exclusively for hand taps (except A100).	
HSSE	HSS-E	•	••	For general applications.	
HSSK	HSS-E-PM	••	•••	Used in applications where a compromise between high hardness and high toughness is needed.	
HSSZ	HSS-E-PM	••	•••	For applications where extremely high performance and productivity are requested.	
HSSP	HSS-E-PM	•••	••	For tough materials and extreme applications.	
HM	-	•••	-	For heat-treated steels and abrasive materials.	

COATINGS AND SURFACE TREATMENTS - PROPERTIES

Type of coating / treatment	Structure	Hardness	Friction Coefficient	Oxidation Temperature	Features
TiN	Mono-layer	• •	• •	•	Wear resistance
TiCN	Mono-layer	• •	• •	•	Wear resistance
TiX2	Multi-layer	• • •	• • •	• •	Oxidation and wear resistance, chip evacuation
TiH1	Multi-layer	• • •	• • •	• •	Oxidation and wear resistance, chip evacuation
CrN	Mono-layer	•	• •	• •	Oxidation and wear resistance
V-MAXX	Mono-layer	• • •	• •	• • •	Wear resistance, chip evacuation
VAP	Surface oxidation	-	• •	•	Chip evacuation
NiTR	Surface hardening	•	•	•	Wear resistance

Excellent • • •
 Very good • •
 Good •

COATINGS - APPLICATIONS FOR CUTTINGS TAPS

COATINGS RECOMMENDED FOR CUTTINGS TAPS				TiN	TiCN	TiX2	TiH1	CrN	V-MAXX	VAP	NiTR
ISO	Material	Group	Application	Coating							
P	Steel	P.1	Mild / magnetic steel	○			○			●	
		P.2	Construction steel, case hardening steel	●			○			○	
		P.3	Carbon steel	●			○				
		P.4	Alloyed steel / tempered steel	○	○		●				
		P.5	Alloyed steel / tempered steel	○	○		●				
		P.6	Alloyed steel / high strength steel	○	○		●				
		P.7	Ferritic stainless steel, martensitic stainless steel, precipitation hardening	○		●				○	
M	Stainless Steel	M.1	Austenitic stainless steel			●	○			○	
		M.2	Ferritic+austenitic (Duplex)			●	○			○	
K	Cast iron	K.1	Grey cast iron		○				●		○
		K.2	Nodular cast iron, malleable cast iron, tempered cast iron	●			○				
		K.3	Austempered ductile iron (ADI)						●		
N	Aluminium Aluminium alloys	N.1	Pure aluminium				●			○	
		N.2	Aluminium wrought and die cast alloys with Si < 0,5% (long chipping)	○			●			○	
		N.3	Aluminium wrought and die cast alloys with Si > 10% (medium chipping)	○			●			○	
		N.4	Aluminium die cast alloys with Si > 10% (short chipping)		○				●		○
	Copper Copper alloys Brass Bronze	N.5	Pure copper				●			○	
		N.6	Copper alloys (long chipping), soft brass	○			●			○	
		N.7	Copper alloys (short chipping), hard brass		●						○
		N.8	High strength bronze		○				●		○
	Magnesium Magnesium alloys	N.9	Pure magnesium, magnesium alloys		○						●
		N.10	High strength magnesium alloys		○						●
S	Titanium Titanium alloys	S.1	Pure titanium				○	●			
		S.2	Titanium alloys				○	●			
	Nickel Nickel alloys	S.3	Pure nickel	○			●				
		S.4	Nickel alloys	○			●				
H	Hardened materials	H.1	Alloyed steel, hardness HRC 44-55						○		
		H.2	Alloyed steel, hardness HRC 56-63						○		

COATINGS - APPLICATIONS FOR COLD FORMING TAPS

COATINGS RECOMMENDED FOR COLD FORMING TAPS				TiN	TiCN	V-MAXX	VAP
ISO	Material	Group	Application	Coating			
P	Steel	P.1	Mild / magnetic steel	○			●
		P.2	Construction steel, case hardening steel	●			○
		P.3	Carbon steel	●	○	○	
		P.4	Alloyed steel / tempered steel	●	○	●	
		P.5	Alloyed steel / tempered steel	●	○	●	
		P.7	Ferritic stainless steel, martensitic stainless steel, precipitation hardening	○		●	
M	Stainless Steel	M.1	Austenitic stainless steel	○		●	
		M.2	Ferritic+austenitic (Duplex)	○		●	
N	Aluminium Aluminium alloys	N.1	Pure aluminium	○			●
		N.2	Aluminium wrought and die cast alloys with Si < 0,5% (long chipping)	●	○	○	○
		N.3	Aluminium wrought and die cast alloys with Si < 10 % (medium chipping)	●	○	○	○
	Copper Copper alloys Brass/Bronze	N.5	Pure copper	○		●	
		N.6	Copper alloys (long chipping), soft brass	●	○		○
		N.8	High strength bronze		○		
S	Titanium Titanium alloys	S.1	Pure titanium			●	
		S.2	Titanium alloys			●	
	Nickel Nickel alloys	S.3	Pure nickel	○		●	
		S.4	Nickel alloys	○		●	

- Ideal
- Suitable

TROUBLESHOOTING

Tapping is a complex process and often the last machining operation performed on the workpiece. Therefore, incorrect or faulty tapping can compromise the quality of the entire workpiece. Numerous factors influence the process: cutting parameters, drilling parameters, lubrication, machine conditions. The choice of the correct tool is paramount in order to obtain high quality threads.

The following table summarises the most common problems encountered during tapping and their possible solutions.

Problem	Solution
Chipped teeth on tap	• Choose correct tap, with lower rake angle or longer chamfer. • Reduce cutting speed. • Check drilled hole size is not too small. • Check tap alignment and run-out of tap on tapping attachment. • For deep blind holes ($\geq 2,5 \times D$) use taps with back-tapering.
Excessive tap wear	• Improve quality (richer emulsion, neat oil) and quantity (higher pressure) of lubrication. • Use correct tap, with more relief or longer chamfer if possible. • Choose coating suitable for specific application. • Use recommended cutting parameters for specific application.
Chips clogging flutes	• Use tap with lower spiral flute angle. • Choose correct tap with suitable rake angle and relief for specific application. • Use tap with sharp cutting edge (bright tap or vapourised tap).
Poor finish on threaded workpiece	• Check wear on tap. If necessary, sharpen or change tap. • Improve quality and quantity of lubrication. • Choose correct tap with suitable rake angle and relief for specific application. • Use recommended cutting parameters for specific application.
Built-up-edge	• Choose correct tap with lower rake angle and/or higher relief. • Choose coating suitable for specific application. • Increase cutting speed. • Improve quality and quantity of lubrication.

TROUBLESHOOTING

Problem	Solution
Tap sticking	• Choose correct tap with lower rake angle and/or higher relief. • Choose coating suitable for specific application. • Increase cutting speed. • Improve quality and quantity of lubrication.
Crater wear	• Choose suitable tap, with base material in HSSE-PM. • Use coated tap. • Improve quality and quantity of lubrication.
Tap breakage	• Check drilled hole size. • Check alignment between tap and drilled hole. • Reduce cutting speed. • On blind holes, check that tapping depth is less than hole depth. • Use tapping attachment with slip clutch. • Use compensated tapping attachment.
Oversized thread	• Check tap tolerance is compatible with requested workpiece (nut) tolerance. • Choose correct tap with suitable rake angle and relief for specific application. • Reduce feed rate (revs x pitch) or use rigid / synchronous tapping attachment. • Reduce cutting speed. • Check tap alignment and that workpiece is fastened steadily. • Remove clogged chips from flutes.
Undersized thread	• Check drilled hole size is not too small. • Check tap tolerance is compatible with requested workpiece (nut) tolerance. • Use coated tap to avoid tap sticking. • On forming taps, use slightly larger drilled hole size. • Check wear on tap. If necessary, sharpen or change tap. • Choose correct tap with higher rake angle and relief. • Use rigid / synchronous tapping attachment. • Improve quality and quantity of lubrication.
Excessive power requirement	• On high strength materials, increase drilled hole size. • Check wear on tap. If necessary, sharpen or change tap. • Choose correct tap with higher rake angle and relief. • Improve quality and quantity of lubrication.

MATERIAL EXAMPLES

			Germany	Italy	France	United States
ISO 513	Application	W.Nr.	DIN	UNI	AFNOR	AISI/SAE/ASTM
P STEEL	Mild/magnetic	1.1015	RFe60			
		1.1014	RFe80			
		1.1013	RFe100			
	Structural	1.0037	St 37-2	Fe360B	E 24-2	1013
		1.0044	St 44-2	Fe430B	E 28-2	1021
		1.0050	St 50-2	Fe490	A 50-2	A 570 (50)
		1.0060	St 60-2	Fe590	A 60-2	A 572 (65)
		1.0570	St 52-3	Fe510B	E 36-3	1024
		1.0301	C10	C10	C10	1010
	Case hardening	1.0401	C15	C15	C18	1015
		1.7131	16MnCr5	16MnCr5	16 MC 5	5115
		1.7147	20MnCr5	20MnCr5	20 MC 5	5120
		1.7243	18CrMo4	18CrMo4		
		1.5919	15CrNi6	16CrNi4	16 NC 6	4320
		1.6523	21NiCrMo2	20NiCrMo2	20 NCD 2	8620
		1.6587	17CrNiMo1106	18NiCrMo5-7	18 NCD6/18 NCD7	4320
	Nitriding	1.8515	31CrMo12	31CrMo12	30 CD 12	A/B
		1.8519	31CrMoV9	31CrMoV10		
		1.8507	34CrAlMo5	34CrAlMo7	30 CAD 6.12	A355Cl.D
		1.8509	41CrAlMo7	41CrAlMo7	40 CAD 6.12	E7140
	Free cutting	1.0711	9S20	9S20		1212
		1.0715	9SMn28	9SMn28	S 250	1213
		1.0718	9SMnPb28	9SMnPb28	S 250 Pb	12 L 13
		1.0726	35S20	35S20	35 MF 4	1140
		1.0736	9SMn36	9SMn36	S 300	1215
		1.0737	9SMnPb36	9SMnPb36	S 300 Pb	12 L 14
	Heat-treatable	1.0406	C25	C25	AF 50 C 30	1025
		1.0528	C30	C30		1030
		1.0501	C35	C35	AF 55 C 35	1035
		1.0511	C40	C40	AF 60 C 40	1040
		1.0503	C45	C45	AF 65 C 45	1045
		1.0540	C50	C50		1050
		1.0535	C55	C55	C54	1055
		1.0601	C60	C60	C60	1060
		1.7035	41Cr4	41Cr4	41Cr4	5140
		1.8159	51CrV4	51CrV4	50 CV 4	6150
		1.7218	25CrMo4	25CrMo4	25 CD 4	4130
		1.7220	34CrMo4	34CrMo4	35 CD 4	4137
		1.7225	42CrMo4	42CrMo4	42 CD 4	4140
		1.7228	50CrMo4	50CrMo4	50CrMo4	4150
		1.6580	30CrNiMo8	30CrNiMo8	30 NCD 8	
		1.6582	34CrNiMo6	34CrNiMo6	35 NCD 6	4337
		1.6511	36CrNiMo4	36CrNiMo4	40 NCD 3	9840
		1.6773	36NiCrMo16	36NiCrMo16		
	Ball bearing	1.3505	100Cr6	100Cr6	100C6	52100
		1.3536	100CrMo7-3	100CrMo7		
	Spring	1.1231	Ck67	C67	XC 68	1070
		1.1248	Ck75	C75		1074
		1.1269	Ck85	C85	C90	1086
		1.1274	Ck101	C100	C100	1095
		1.5021		48Si7		
		1.5026	55Si7	55Si7	56SC7	9255
		1.5027		60Si7	60Si7	9260
		1.7108	60SiCr7	60SiCr8		9262
		1.8159	51CrV4	51CrV4	50 CV 4	6150
		1.7176	55Cr3	55Cr3	55 C 3	5155
		1.7701	51CrMoV4	51CrMoV4		
	Superficial hardening	1.1183	Cf 35	C36	XC 68 H1TS	
		1.1193	Cf 45	C43	XC 42 H1TS	
		1.1213	Cf 53	C53	XC 48 H1TS	1050
		1.7005	45Cr2	45Cr2		
		1.7043	38Cr4	38Cr4		
		1.7034	37Cr4	36CrMn4	38 C 4	5135
		1.7223	41CrMo4	41CrMo4	42 CD 4 TS	4142

Russia	Japan	China	India				
GOST	JIS	GB	IS	MG Vergnano	Application	ISO 513	
20860				P.1	Mild/magnetic	P STEEL	
20880				P.1			
20895				P.1			
St3kp/St3ps	STKM12C	Q235A		P.2	Structural		
St4ps/St4sp	STK400	Q275B	Fe440	P.2			
St5ps/St5sp	SS490	Q275	Fe490	P.2			
St6ps/St6sp	S45C	45	Fe570	P.2			
17G1S	STK490	16Mn	Fe540	P.2			
10	S10C	10		P.2	Case hardening		
15	S15C	15	14C6	P.2			
18ChG	SCR415	20CrMn	16Mn5Cr4	P.2			
18 ChG	SMnC420H	20CrMn	20Mn5Cr5	P.2			
				P.2			
15ChGN2T	SNCM415M		15Cr6Ni6	P.2			
20ChGNM	SNCM220M	20CrNiMo		P.2			
20ChN2M			16Ni6Cr7Mo3	P.2			
	SBV1A/SBV1B			P.4	Nitriding		
				P.5			
				P.4			
38Ch2MJuA	SACM645	38CrMoAl	40Cr7Al10Mo2	P.5			
A11	SUM21	Y12		P.1	Free cutting		
	SUM22	Y15		P.1			
	SUM22L	Y15Pb		P.1			
A35		Y35		P.2			
	SUM25			P.1			
	SUM24L			P.1			
25	S25C	25	25C4	P.3	Heat-treatable		
30	S30C	30	30C8	P.3			
35	S35C	35	35C8	P.3			
40	S40C	40	40C8	P.3			
45	S45C	45	45C8	P.3			
50	S50C	50	50C8	P.3			
55	S55C	55	55C8	P.3			
60	S58C	60	C604	P.3			
40Ch	SCr440(H)	40Cr	40Cr4	P.4 (norm.) / P.5 (Q+T)			
50Ch	SUP10	50CrVA	50Cr4V2	P.4 (norm.) / P.5 (Q+T)			
30ChM	SCCrM1	30CrMo	21Cr4Mo2	P.4 (norm.) / P.5 (Q+T)			
35ChML	SCM435	35CrMo		P.4 (norm.) / P.5 (Q+T)			
38ChA	SCM440	42CrMo	40CrMoH	P.4 (norm.) / P.5 (Q+T)			
50Ch	SCM445(H)	ZG50Cr1Mo		P.4 (norm.) / P.5 (Q+T)			
	SNCM431			P.5 (norm.) / P.6 (Q+T)			
38Ch2N2MA	SNCM439			P.5 (norm.) / P.6 (Q+T)			
40ChGMN		40CrNiMoA		P.4 (norm.) / P.5 (Q+T)			
				P.5 (norm.) / P.6 (Q+T)			
SChCh15	SUJ2/SUJ4	GCr15		P.4 (norm.)			Ball bearing
				P.4 (norm.)			
65	S70C-CSP	65	70C6	P.3	Spring		
75A	S75CM	75		P.3			
85A	SK85	85		P.3			
	SK4-CSP	T10A	98C6	P.3			
				P.4 (norm.) / P.5 (Q+T)			
55S2/55S2A		55Si2Mn	55Si7	P.4 (norm.) / P.5 (Q+T)			
60S2	SUP6	60Si2Mn	60Si7	P.4 (norm.) / P.5 (Q+T)			
60S2G		60Si2CrA		P.4 (norm.) / P.5 (Q+T)			
50Ch	SUP10	50CrVA	50Cr4V2	P.4 (norm.) / P.6 (Q+T)			
50ChGA	SUP9(A)	55CrMnA	55Cr3	P.4 (norm.) / P.6 (Q+T)			
				P.4 (norm.) / P.6 (Q+T)			
				P.3	Superficial hardening		
				P.3			
50	S50C			P.3			
				P.4			
		38CrA		P.5			
35Ch	SCr435H	35Cr		P.5			
40ChFA	SNB22	42CrMo	40Cr4Mo3	P.5			

MATERIAL EXAMPLES

ISO 513	Application	W.Nr.	Germany DIN	Italy UNI	France AFNOR	United States AISI/SAE/ASTM
P STEEL	Hot-work	1.2767	45NiCrMo16	40NiCrMoV16 KU	Y35NCD16	
		1.2713	55NiCrMoV7	55NiCrMoV7 KU	55NiCrMoV7	L6
		1.2311		35CrMo8 KU		
		1.2365	32CrMoV12-28	30CrMoV12-27 KU	32CDV12-28	H10
		1.2343	X38CrMoV5-1	X37CrMoV5-1 KU	Z38CDV5	H11
		1.2344	X40CrMoV5-1	X40CrMoV5-1-1 KU	Z40CDV5	H13
		1.2567	X30WCrV5-3	X30WCrV5-3 KU	Z32WCV5	H14
		1.2581	X30WCrV9-3	X30WCrV9-3 KU	Z30WCV9	H21
	Ferritic stainless steel	1.4002	X6CrAl13	X6CrAl13	Z 8 CA 12	405
		1.4512	X2CrTi12	X6CrTi12	Z 3 CT 12	409
		1.4016	X6Cr17	X8Cr17	Z 8 C 17	430
		1.4104	X14CrMoS17	X10CrS17	Z 13 CF 17	430F
	Martensitic stainless steel	1.4006	X12Cr13	X12Cr13	Z 10 C 13	410
		1.4005	X12CrS13	X12CrS13	Z 11 CF 13	416
		1.4021	X20Cr13	X20Cr13	Z 20 C 13	420
		1.4028	X30Cr13	X30Cr13	Z 30 C 13	420
		1.4057	X17CrNi16-2	X16CrNi16	Z 15 CN 16-02	431
		1.4125	X105CrMo17		Z 100 CD 17	440C
	Precipitation hardening	1.4542	X5CrNiCuNb16-4		Z 7 CNU 15-05	630
M STAINLESS STEEL	Austenitic	1.4319	X3CrNi17-8	X10CrNi1809		302
		1.4305	X8CrNiS18-9	X10CrNiS1809	Z 8 CNF 18-09	303
		1.4301	X5CrNi18-10	X5CrNi1810	Z 4 CN 19-10 FF	304
		1.4306	X2CrNi19-11	X2CrNi1811	Z 1 CN 18-12	304L
		1.4303	X4CrNi18-12	X8CrNi1812	Z 5 CN 18-11 FF	305
		1.4828	X15CrNiSi20-12	X16CrNi2314	Z 9 CN 24-13	309
		1.4841	X15CrNiSi25-20	X22CrNiSi2520	Z 15 CNS 25-20	310
		1.4401	X5CrNiMo17-12-2	X5CrNiMo1712	Z 3 CND 17-11-01	316
		1.4404	X2CrNiMo17-12-2	X2CrNiMo1712	Z 2 CND 17-12	316L
		1.4541	X6CrNiTi18-10	X6CrNiTi1811	Z 6 CNT 18-10	321
		1.4550	X6CrNiNb18-10	X6CrNiNb1811	Z 6 CNNb 18-10	347
	Duplex	1.4462	X2CrNiMoN22-5-3	X2CrNiMoN22-5-3	Z 3 CND 22-05 Az	S31803
		1.4501	X2CrNiMoCuWN25-7-4	X2CrNiMoCuWN25-7-4		S32760
K CAST IRON	Grey cast iron	0.6010	GG10	G10	Ft10D	A48-20B
		0.6015	GG15	G15	Ft15D	A48-25B
		0.6020	GG20	G20	Ft20D	A48-30B
		0.6025	GG25	G25	Ft25D	A48-40B
		0.6030	GG30	G30	Ft30D	A48-45B
		0.6035	GG35	G35	Ft35D	A48-50B
		0.6040	GG40	G40	Ft40D	A48-60B
	Nodular cast iron / tempered	0.7040	GGG40	GS400-12	FGS400-12	60-40-18
		0.7050	GGG50	GS500-7	FGS500-7	65-45-12
		0.7060	GGG60	GS600-3	FGS600-3	80-55-06
		0.7070	GGG70	GS700-2	FGS700-2	100-70-03
	Malleable cast iron	0.8035	GTW35-04			
		0.8055	GTW55			
	Austempered ductile iron		EN-GJS-800-8			
			EN-GJS-1000-5			
			EN-GJS-1200-2			
			EN-GJS-1400-1			
N NON-FERROUS METALS	Pure aluminium	3.0205	Al99	9001/1	1200 (A4)	1200
		3.0305	Al99.9			
	Al wrought alloys	3.0505	AlMn0.5Mg0.5		3105	
		3.0915	AlFeSi	8011	8011	
		3.3315	AlMg1	9005/1	5005 (AlMg1)	5005
		3.3525	AlMg2Mn0.3		5251	5251
		3.3527	AlMg2Mn0.8		5049	5049
		3.3545	AlMg4Mn	9005/4	5086 (AG4MC)	5086
		3.3555	AlMg5			
		3.0615	AlMgSiPb		6012	

Russia	Japan	China	India			
GOST	JIS	GB	IS	MG Vergnano	Application	ISO 513
				P.5 (annealed)	Hot-work	P STEEL
5ChNM	SKT4	5CrNiMo	T55Ni7Cr3Mo3V1	P.4 (annealed)		
				P.4 (annealed)		
3Ch3M3F	SKD7	4Cr3Mo3SiV		P.4 (annealed)		
4Ch5MFS	SKD6	4Cr5MoSiV	XT35Cr5Mo1V3	P.4 (annealed)		
4Ch5MF1S	SKD61	4Cr5MoSiV1	XT35Cr5Mo1V1	P.4 (annealed)		
4Ch2W5MF	SKD4	30W4Cr2VA		P.4 (annealed)		
3Ch3W8F	SKD5	3Cr2W8V	XT33W9Cr3V4	P.4 (annealed)	Ferritic stainless steel	
	SUS405	0Cr13Al	X04Cr13	P.7		
	SUS409TB	022Cr11NbTi		P.7		
	SUS430	1Cr17	X07Cr17	P.7		
	SUS430F	Y1Cr17		P.7	Martensitic stainless steel	
	SUS410	1Cr13	X12Cr12	P.7		
	SUS416	Y1Cr13		P.7		
20Ch13	SUS420J1	2Cr13	X20Cr13	P.7		
30Ch13	SUS420J2	3Cr13	X30Cr13	P.7		
14Ch17N2	SUS431	1Cr17Ni2	X15Cr16Ni2	P.7		
95Ch18	SUS440C	108Cr17	X108Cr17Mo	P.7	Precipitation hardening	
	SUS630/SCS24	0Cr17Ni4Cu4Nb		M.2		
	SUS302			M.1	Austenitic	M STAINLESS STEEL
	SUS303			M.1		
08Ch18N10	SUS304	0Cr18Ni9	X04Cr18Ni10	M.1		
03Ch18N11	SUS304L/SCS19	00Cr19Ni10	X02Cr19Ni10	M.1		
12Ch18N12T	SUS305J1	1Cr18Ni12		M.1		
	SUH309	1Cr20Ni14Si2	X15Cr24Ni13	M.1		
20Ch25N20S2	SUH310	1Cr25Ni20Si2	X20Cr25Ni20	M.1		
08Ch16N11M3	SUS316	0Cr17Ni12Mo2	X04Cr17Ni12Mo2	M.1		
	SUS316L	00Cr17Ni14Mo2	X02Cr17Ni12Mo2	M.1		
08Ch18N10T	SUS321	0Cr18Ni10Ti	X04Cr18Ni10Ti	M.1		
08Ch18N12B	SUS347	0Cr18Ni11Nb	X04Cr18Ni10Nb	M.1	Duplex	
	SUS329J3L	022Cr22Ni5Mo3N		M.2		
		022Cr25Ni7Mo3WCuN		M.2		
Sc10	FC10			K.1	Grey cast iron	K CAST IRON
Sc15	FC15	HT150	FG150	K.1		
Sc20	FC20	HT200	FG200	K.1		
Sc25	FC25	HT250	FG260	K.1		
Sc30	FC30	HT300	FG300	K.1		
Sc35	FC35			K.1		
Sc40				K.1	Nodular cast iron / tempered	
VC 42-12	FCD40	QT400-15		K.2		
VC 50-2	FCD50	QT500-7	SG500/7	K.2		
VC 60-2	FCD60	QT600-3	SG600/3	K.2		
VC 70-2	FCD70	QT700-2	SG700/2	K.2	Malleable cast iron	
				K.2		
				K.2	Austempered ductile iron	
				K.3		
				K.3		
				K.3		
				K.3	Pure aluminium	
	A1200			N.1		
				N.1		
	A3105			N.2		
				N.2		
	A5005			N.2		
				N.2		
				N.2		
	A5086			N.2		
	A5056			N.2		
				N.2		

						N NON-FERROUS METALS

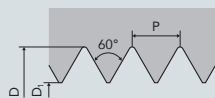
MATERIAL EXAMPLES

			Germany	Italy	France	United States
ISO 513	Application	W.Nr.	DIN	UNI	AFNOR	AISI/SAE/ASTM
N	Al wrought alloys	3.1255	AlCuSiMn	9002/3	2014	2014
		3.1325	AlCuMg1	9002/2	2017 A (AU4G)	2017A
		3.1355	AlCuMg2	9002/4	2024 (AU4G1)	2024
		3.1645	AlCuMgPb	9002/8	2030 (AU4PB)	2030
		3.4335	AlZn4.5Mg1	9007/1	7020 (AZ5G)	7020
	Al casting alloys	3.1371	G-AlCu4TiMg			
		3.2134	G-AlSi5Cu1Mg			
		3.3241	G-AlMg3Si			
		3.3261	G-AlMg5Si			
		3.3541	G-AlMg3			
		3.2373	G-AlSi9Mg			
		3.2381	G-AlSi10Mg			
		3.2383	G-AlSi10Mg(Cu)			
		3.2581	G-AlSi12			
		3.2583	G-AlSi12(Cu)			
	Pure copper	2.0060	E-Cu57			C11000
		2.0065	E-Cu58	5649	CuA1	C11000
	Cu wrought alloys	2.1525	CuSi3Mn	CuSi3Mn1		C65500
		2.0855	CuNi2Si	CuNi2Si		C64700
		2.1247	CuBe2	Classe IV		C17200
		2.1285	CuCo2Be	Classe III		C17510
	Brass	2.0240	CuZn15			
		2.0250	CuZn20			
		2.0265	CuZn30			C26000
		2.0280	CuZn33			
		2.0321	CuZn37			C27450
		2.0360	CuZn40			C28000
		2.0410	CuZn44Pb2	CuZn43Pb2Al		C38000
		2.0550	CuZn40Al2	CuZn37Mn3Al2PbSi		C67410
	Bronze	2.1016	CuSn4			
		2.1020	CuSn6			
		2.1030	CuSn8			
		2.1086	G-CuSn10Zn	7013	U-E12P7U-E8Z2	C90500
		2.0978	CuAl11Ni6Fe6	CuAl11Fe6Ni6		
		2.0940	CuAl10Fe	5274		C95400
		2.0882	CuNi30Mn1Fe			
		3.5312	MgAl3Zn			
		3.5632	MgAl6Zn3			
		3.5912	MgAl9Zn1			
S	Pure titanium	3.7024	Ti99.5			
		3.7034	Ti99.7			
	Titanium alloys	3.7165	TiAl6V4		T-A6V	
		3.7174	TiAl6V4Sn2			
	Pure Nickel	1.3911	RNi24			
		1.3926	RNi12			
	Nickel alloys	2.4858	NiCr21Mo (Incoloy 825)			
		2.4668	NiCr19Fe19NbMo (Inconel 718)		INCONEL 718	
		2.4630	Ni-Cr20Ti (Nimonic 75)		NIMONIC 75	
H	Ball bearing	2.4665	NiCr22Fe18Mo (Hastelloy X)			
		1.3505	100Cr6	100Cr6	100C6	52100
	Hot-work	1.3536	100CrMo6	100CrMo7	100CD7	3
		1.2767	45NiCrMo16	40NiCrMoV16 KU	Y35NCD16	
		1.2713	55NiCrMoV7	55NiCrMoV7 KU	55NiCrMoV7	L6
		1.2311		35CrMo8 KU		
		1.2365	32CrMoV12-28	30CrMoV12-27 KU	32CDV12-28	H10
		1.2343	X38CrMoV5-1	X37CrMoV5-1 KU	Z38CDV5	H11
		1.2344	X40CrMoV5-1	X40CrMoV5-1-1 KU	Z40CDV5	H13
		1.2567	X30WCrV5-3	X30WCrV5-3 KU	Z32WCV5	H14
		1.2581	X30WCrV9-3	X30WCrV9-3 KU	Z30WCV9	H21

Russia	Japan	China	India			
GOST	JIS	GB	IS	MG Vergnano	Application	ISO 513
	A2014			N.2	Al wrought alloys	NON-FERROUS METALS
	A2017			N.2		
	A2024			N.2		
				N.2		
	A7N01			N.2	Al casting alloys	
	AC1B			N.2		
	AC4D			N.3		
				N.2		
				N.2		
				N.2		
	AC4A			N.3		
				N.4		
	ADC3			N.4		
	AC3A			N.4		
	ADC1			N.4		
	C1100			N.5	Pure copper	
	C1100			N.5	Cu wrought alloys	
				N.6		
				N.6		
				N.6		
				N.6	Brass	
				N.6		
	C2600			N.6		
				N.6		
	C2700			N.6		
	C2800			N.7		
				N.7		
				N.7	Bronze	
				N.6		
				N.6		
				N.6		
	CAC403C (BC3)			N.7		
				N.8		
	CAC702C			N.8		
				N.8		
				N.9		
				N.9		
				N.9		
				N.10	Pure titanium	
				S.1		
				S.1	Titanium alloys	
				S.2		
				S.2	Pure Nickel	
				S.3		
				S.3	Nickel alloys	
	NCF825			S.4		
				S.4		
				S.4		
				S.4		
5ChCh15	SUJ2/SUJ4	GCr15		H.2 (Q+T)	Ball bearing	HARDENED MATERIALS
				H.2 (Q+T)		
	SKT6			H.1 (Q+T)	Hot-work	
5ChNM	SKT4	5CrNiMo	T55Ni7Cr3Mo3V1	H.1 (Q+T)		
				H.1 (Q+T)		
3Ch3M3F	SKD7	4Cr3Mo3SiV		H.1 (Q+T)		
4Ch5MFS	SKD6	4Cr5MoSiV	XT35Cr5Mo1V3	H.1 (Q+T)		
4Ch5MF1S	SKD61	4Cr5MoSiV1	XT35Cr5Mo1V1	H.1 (Q+T)		
4Ch2W5MF	SKD4	30W4Cr2VA		H.1 (Q+T)		
3Ch3W8F	SKD5	3Cr2W8V	XT33W9Cr3V4	H.1 (Q+T)		

DRILL SIZE CUTTING TAPS

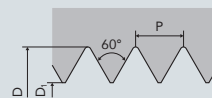
M



ISO Metric coarse thread DIN 13

M	Pitch [mm]	Maximum core diam. (tol. 6H) [mm] D ₁	Drill size* [mm]
M 1	0,25	0,785 ⁽¹⁾	0,75
1,1	0,25	0,885 ⁽¹⁾	0,85
1,2	0,25	0,985 ⁽¹⁾	0,95
1,4	0,3	1,142 ⁽¹⁾	1,1
1,6	0,35	1,321	1,25
1,7 ⁽³⁾	0,35	1,421	1,35
1,8	0,35	1,521	1,45
2	0,4	1,679	1,6
2,2	0,45	1,838	1,75
2,3 ⁽³⁾	0,4	1,938	1,9
2,5	0,45	2,138	2,05
2,6 ⁽³⁾	0,45	2,238	2,1
3	0,5	2,599	2,5
3,5	0,6	3,010	2,9
4	0,7	3,422	3,3
4,5	0,75	3,878	3,7
5	0,8	4,334	4,2
6	1	5,153	5
7	1	6,153	6
8	1,25	6,912	6,8
9	1,25	7,912	7,8
10	1,5	8,676	8,5
11	1,5	9,676	9,5
12	1,75	10,441	10,2
14	2	12,210	12
16	2	14,210	14
18	2,5	15,744	15,5
20	2,5	17,744	17,5
22	2,5	19,744	19,5
24	3	21,252	21
27	3	24,252	24
30	3,5	26,771	26,5
33	3,5	29,771	29,5
36	4	32,270	32
39	4	35,270	35
42	4,5	37,799	37,5
45	4,5	40,799	40,5
48	5	43,297	43
52	5	47,297	47
56	5,5	50,796	50,5
60 ⁽³⁾	5,5	54,796	54,5
64 ⁽³⁾	6	58,305	58
68 ⁽³⁾	6	62,305	62

MF



ISO Metric fine thread DIN 13

M	Pitch [mm]	Maximum core diam. (tol. 6H) [mm] D ₁	Drill size* [mm]	M	Pitch [mm]	Maximum core diam. (tol. 6H) [mm] D ₁	Drill size* [mm]
M 2 ⁽³⁾	0,25	1,774 ⁽²⁾	1,75	M 25	1	24,153	24
2,3 ⁽³⁾	0,25	2,085	2,05	25	1,5	23,676	23,5
2,5	0,35	2,221	2,15	25	2	23,210	23
3	0,35	2,721	2,65	26	1,5	24,676	24,5
3,5	0,35	3,221	3,15	27	1	26,153	26
4	0,5	3,599	3,5	27	1,5	25,676	25,5
4,5	0,5	4,099	4	27	2	25,210	25
5	0,5	4,599	4,5	28	1	27,153	27
5,5	0,5	5,099	5	28	1,5	26,676	26,5
6	0,75	5,378	5,2	28	2	26,210	26
7	0,75	6,378	6,2	30	1	29,153	29
8	0,75	7,378	7,2	30	1,5	28,676	28,5
8	1	7,153	7	30	2	28,210	28
9	0,75	8,378	8,2	30	3	27,252	27
9	1	8,153	8	32	1,5	30,676	30,5
10	0,75	9,378	9,2	32	2	30,210	30
10	1	9,153	9	33	1,5	31,676	31,5
10	1,25	8,912	8,8	33	2	31,210	31
11	0,75	10,378	10,2	33	3	30,252	30
11	1	10,153	10	35	1,5	33,676	33,5
12 ⁽³⁾	0,75	11,378	11,2	36	1,5	34,676	34,5
12	1	11,153	11	36	2	34,210	34
12	1,25	10,912	10,8	36	3	33,252	33
12	1,5	10,676	10,5	38	1,5	36,676	36,5
14	1	13,153	13	39	1,5	37,676	37,5
14	1,25	12,912	12,8	39	2	37,210	37
14	1,5	12,676	12,5	39	3	36,252	36
15	1	14,153	14	40	1,5	38,676	38,5
15	1,5	13,676	13,5	40	2	38,210	38
16	1	15,153	15	40	3	37,252	37
16	1,5	14,676	14,5	42	1,5	40,676	40,5
17	1	16,153	16	42	2	40,210	40
17	1,5	15,676	15,5	42	3	39,252	39
18	1	17,153	17	45	1,5	43,676	43,5
18	1,5	16,676	16,5	45	2	43,210	43
18	2	16,210	16	45	3	42,252	42
20	1	19,153	19	48	1,5	46,676	46,5
20	1,5	18,676	18,5	48	2	46,210	46
20	2	18,210	18	48	3	45,252	45
22	1	21,153	21	50	1,5	48,676	48,5
22	1,5	20,676	20,5	50	2	48,210	48
22	2	20,210	20	50	3	47,252	47
24	1	23,153	23	52	1,5	50,676	50,5
24	1,5	22,676	22,5	52	2	50,210	50
24	2	22,210	22	52	3	49,252	49

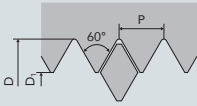
(*) Drill size according to DIN 336

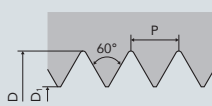
(¹) Tolerance 5H

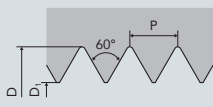
(²) Tolerance 4H

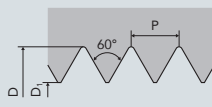
(³) Size not included in DIN 336

DRILL SIZE CUTTING TAPS

EG-M 	
ISO Metric coarse thread DIN 8140 Part 2	
EG-M	Drill size* [mm]
EG-M 3	3,15
4	4,2
5	5,25
6	6,3
8	8,4
10	10,5
12	12,5
14	14,5
16	16,5

8-UN 			
8-UN thread ASME B1.1			
8-UN	Pitch [TPI]	Maximum core diam. (tol. 3B) [mm] D ₁	Drill size* [mm]
1 1/8"	8	25,519	25,4
1 1/4"	8	28,694	28,6
1 3/8"	8	31,869	31,8
1 1/2"	8	35,044	35,0
1 5/8"	8	38,219	38,1
1 3/4"	8	41,394	41,3
1 7/8"	8	44,569	44,5
2"	8	47,744	47,7

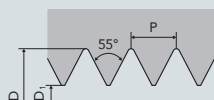
UNC 			
Unified coarse thread UNC ASME - B1.1			
UNC	Pitch [TPI]	Maximum core diam. (tol. 3B) [mm] D ₁	Drill size* [mm]
Nr. 1	64	1,582	1,55
Nr. 2	56	1,872	1,85
Nr. 3	48	2,146	2,1
Nr. 4	40	2,385	2,35
Nr. 5	40	2,697	2,65
Nr. 6	32	2,896	2,85
Nr. 8	32	3,528	3,5
Nr. 10	24	3,950	3,9
Nr. 12	24	4,590	4,5
1/4"	20	5,250	5,1
5/16"	18	6,680	6,6
3/8"	16	8,082	8
7/16"	14	9,441	9,4
1/2"	13	10,881	10,8
9/16"	12	12,301	12,2
5/8"	11	13,693	13,5
3/4"	10	16,624	16,5
7/8"	9	19,520	19,5
1"	8	22,344	22,25
1 1/8"	7	25,082	25
1 1/4"	7	28,258	28
1 3/8"	6	30,851	30,75
1 1/2"	6	34,026	34
1 3/4"	5	39,560	39,5
2"	4,5	45,367	45

UNF 			
Unified fine thread UNF ASME - B1.1			
UNF	Pitch [TPI]	Maximum core diam. (tol. 3B) [mm] D ₁	Drill size* [mm]
Nr. 0	80	1,306	1,25
Nr. 1	72	1,613	1,55
Nr. 2	64	1,913	1,85
Nr. 3	56	2,197	2,15
Nr. 4	48	2,459	2,4
Nr. 5	44	2,741	2,7
Nr. 6	40	3,012	2,95
Nr. 8	36	3,597	3,5
Nr. 10	32	4,168	4,1
Nr. 12	28	4,717	4,6
1/4"	28	5,563	5,5
5/16"	24	6,995	6,9
3/8"	24	8,565	8,5
7/16"	20	9,947	9,9
1/2"	20	11,524	11,5
9/16"	18	12,969	12,9
5/8"	18	14,554	14,5
3/4"	16	17,546	17,5
7/8"	14	20,493	20,4
1"	12	23,363	23,25
1 1/8"	12	26,538	26,5
1 1/4"	12	29,713	29,5
1 3/8"	12	32,888	32,75
1 1/2"	12	36,063	36

(*) Drill size according to DIN 336

DRILL SIZE CUTTING TAPS

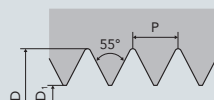
BSW



**Whitworth thread
BSW - BS 84**

BSW	Pitch [TPI]	Maximum core diam. [mm] D_1	Drill size [mm]
3/32"	48	1,912	1,9
1/8"	40	2,591	2,55
5/32"	32	3,214	3,2
3/16"	24	3,744	3,7
7/32"	24	4,539	4,5
1/4"	20	5,156	5,1
5/16"	18	6,589	6,5
3/8"	16	7,988	7,9
7/16"	14	9,332	9,25
1/2"	12	10,589	10,5
9/16"	12	12,177	12
5/8"	11	13,559	13,5
3/4"	10	16,485	16,4
7/8"	9	19,355	19,25
1"	8	22,149	22
1 1/8"	7	24,831	24,75
1 1/4"	7	28,006	27,75
1 3/8"	6	30,528	30,3
1 1/2"	6	33,703	33,5
1 5/8"	5	35,961	35,5
1 3/4"	5	39,136	39
1 7/8"	4,5	41,702	41,5
2"	4,5	44,877	44,5
2 1/4"	4	50,465	50
2 1/2"	4	56,815	56,3
2 3/4"	3,5	62,182	61,5
3"	3,5	68,532	68

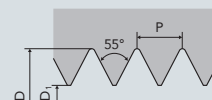
G



**Whitworth pipe thread
EN - ISO 228**

G	Pitch [TPI]	Maximum core diam. [mm] D_1	Drill size* [mm]
G 1/8"	28	8,848	8,8
1/4"	19	11,890	11,8
3/8"	19	15,395	15,25
1/2"	14	19,172	19
5/8"	14	21,128	21
3/4"	14	24,658	24,5
7/8"	14	28,418	28,25
1"	11	30,931	30,75
1 1/8"	11	35,579	35,5
1 1/4"	11	39,592	39,5
1 3/8"	11	42,005	41,9
1 1/2"	11	45,485	45,25
1 3/4"	11	51,428	51
2"	11	57,296	57
2 1/4"	11	63,392	63,3
2 3/8"	11	67,080	67
2 1/2"	11	72,866	72,8
2 3/4"	11	79,216	79,1
3"	11	85,566	85,5
3 1/4"	11	91,662	91,5
3 1/2"	11	98,012	98
3 3/4"	11	104,362	104
4"	11	110,712	110,5

**Rp
(BSPP)**

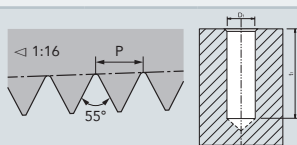


**Rp thread (BSPP)
DIN EN 10226-1**

Rp	Pitch [TPI]	Maximum core diam. [mm] D_1	Drill size* [mm]
1/8"	28	8,637	8,6
1/4"	19	11,549	11,5
3/8"	19	15,054	15,0
1/2"	14	18,773	18,5
3/4"	14	24,259	24,0

(*) Drill size according to DIN 336

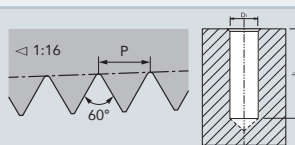
**Rc
(BSPT)**



**Conical gas thread Rc
(BSPT) - DIN EN 10226-2**

Rc	Pitch [TPI]	Drill size** [mm] D_1	t1 [mm]
1/16"	28	6,2	11,9
1/8"	28	8,2	11,9
1/4"	19	11	17,7
3/8"	19	14,5	18,1
1/2"	14	18	24
3/4"	14	23,5	25,3
1"	11	29,5	30,6
1 1/4"	11	38	32,9
1 1/2"	11	44	32,9
2"	11	55,5	37,2

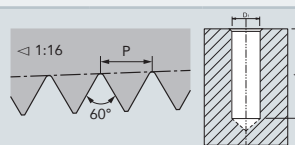
NPT



**National pipe thread
NPT - ANSI B1.20.1**

NPT	Pitch [TPI]	Drill size** [mm] D_1	t1 [mm]
1/16"	27	6,15	12
1/8"	27	8,5	12
1/4"	18	11	17,5
3/8"	18	14,5	17,6
1/2"	14	17,85	22,9
3/4"	14	23,2	23
1"	11,5	29	27,4
1 1/4"	11,5	37,8	28,1
1 1/2"	11,5	44	28,4
2"	11,5	56	28,4

NPTF



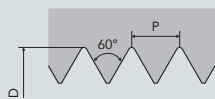
**Dryseal national pipe thread
NPTF - ANSI B1.20.3**

NPTF	Pitch [TPI]	Drill size** [mm] D_1	t1 [mm]
1/16"	27	6,15	12
1/8"	27	8,5	12
1/4"	18	11	17,5
3/8"	18	14,5	17,6
1/2"	14	17,8	22,9
3/4"	14	23	23
1"	11,5	29	27,4
1 1/4"	11,5	37,8	28,1
1 1/2"	11,5	43,8	28,4
2"	11,5	56	28,4

** For conical threads tapered drill holes are preferable.
Please request specific tables.

DRILL SIZE FORMING TAPS

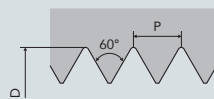
M



**ISO Metric coarse thread
DIN 13**

M	Pitch [mm]	Drill size [mm]
M 2	0,4	1,85 ± 0,03
2,5	0,45	2,30 ± 0,03
3	0,5	2,80 ± 0,03
3,5	0,6	3,25 ± 0,03
4	0,7	3,70 ± 0,03
5	0,8	4,65 ± 0,03
6	1	5,55 ± 0,05
8	1,25	7,40 ± 0,05
10	1,5	9,30 ± 0,05
12	1,75	11,20 ± 0,05
14	2	13,10 ± 0,05
16	2	15,10 ± 0,05
18	2,5	16,90 ± 0,05
20	2,5	18,90 ± 0,05
24	3	22,70 ± 0,05
27	3	25,70 ± 0,05
30	3,5	28,45 ± 0,05

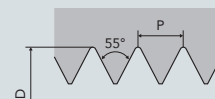
MF



**ISO Metric fine thread
DIN 13**

MF	Pitch [mm]	Drill size [mm]
M 3	0,35	2,85 ± 0,03
4	0,5	3,80 ± 0,03
5	0,5	4,80 ± 0,03
6	0,75	5,65 ± 0,03
8	1	7,55 ± 0,05
10	1	9,55 ± 0,05
10	1,25	9,40 ± 0,05
12	1	11,55 ± 0,05
12	1,25	11,40 ± 0,05
12	1,5	11,30 ± 0,05
14	1,25	13,40 ± 0,05
14	1,5	13,30 ± 0,05
16	1,5	15,30 ± 0,05
18	1,5	17,30 ± 0,05
20	1,5	19,30 ± 0,05

G



**Whitworth pipe thread
EN - ISO 228**

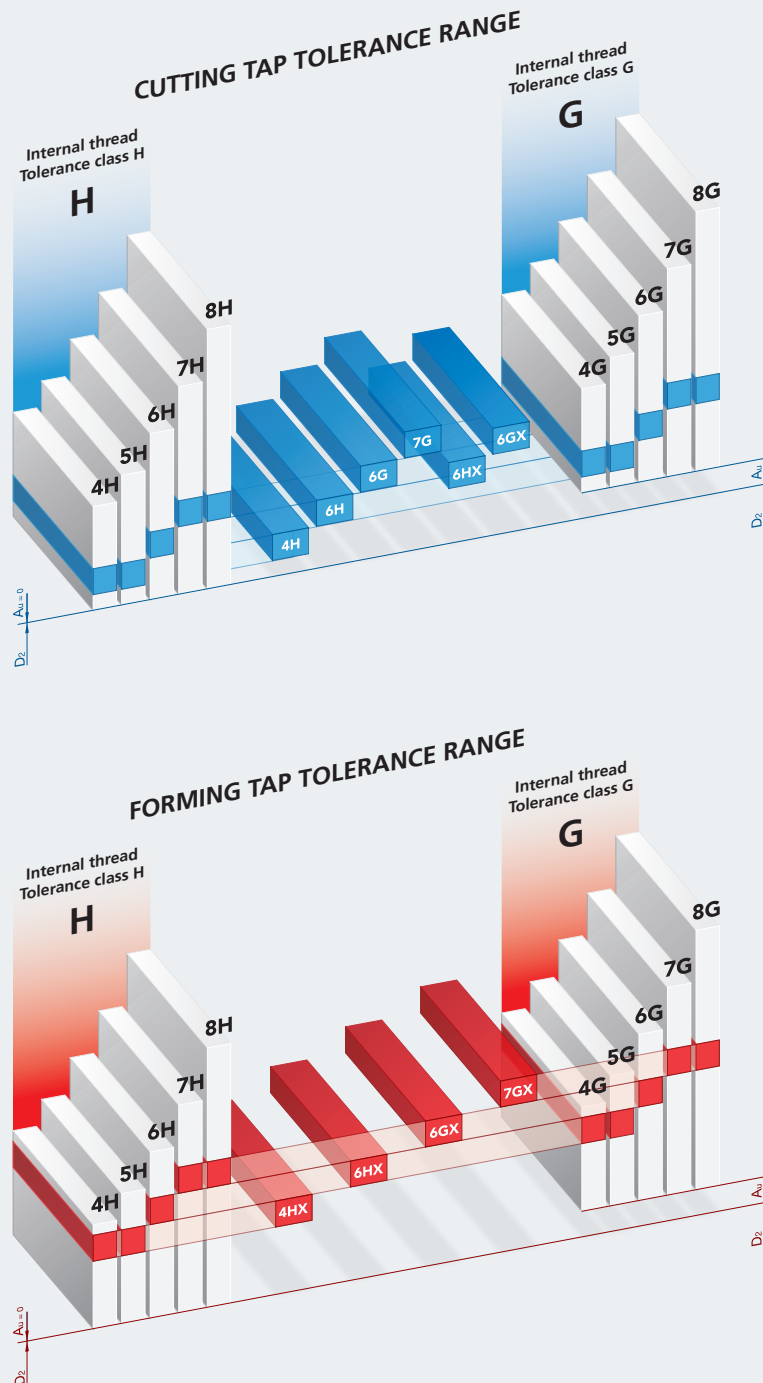
G	Pitch [TPI]	Drill size [mm]
G 1/8 "	28	9,25 ± 0,05
1/4 "	19	12,50 ± 0,05
3/8 "	19	16,00 ± 0,05
1/2 "	14	20,00 ± 0,05
3/4 "	14	25,50 ± 0,05
1 "	11	32,00 ± 0,05

Other drill sizes = theoretical flank diameter + pitch/5

In order to obtain the requested tolerance, the formation of a complete internal thread and guarantee the tap tool life, it is important to respect the drill hole diameters and their tight tolerances.

The core diameter of the internal thread obtained by forming is not only a function of the drill hole diameter but also depends on the workpiece material properties. For this reason the tolerance on the core diameter is 7H compared to 6H for cutting taps. For more detailed information see the DIN 13-50 standard.

TAP TOLERANCE



Standard fit for a thread corresponds to tolerance class ISO 2/6H. For more precise fits, without allowance on thread flank, tolerance class ISO 1/4H must be chosen. ISO 3/6G is used in case of loose fits, with large allowance, which is often required for subsequent coatings.

Between classes 6H and 6G, as well as between classes 6G and 7G, tap manufacturers produce taps with tolerance 6HX and 6GX. These taps are used for tapping abrasive materials, such as cast iron or Al-Si alloys, in order to increase their tool life. Another important application is on forming taps, which create the thread by plastic deformation and not by cutting. In this case, due to the elastic return of the material, in order to obtain a thread 6H tolerance, a 6HX tap must be used.

The tolerances described above are collected in the European standard EN 22857.

TOLERANCE TABLE

Nominal diameter (mm)		Pitch (mm)	Limits on pitch diameter (µm)*					
			Class					
>	≤		4H (ISO1)	6H (ISO2)	6G (ISO3)	7G		
0,99	1,4	0,2	+ 15	-	-	-		
			+ 5	-	-	-		
		0,25	+ 17	-	-	-		
			+ 6	-	-	-		
		0,3	+ 18	+ 30	-	-		
			+ 6	+ 18	-	-		
1,4	2,8	0,2	+ 16	-	-	-		
			+ 5	-	-	-		
		0,25	+ 18	-	-	-		
			+ 6	-	-	-		
		0,35	+ 20	+ 34	-	-		
			+ 7	+ 20	-	-		
		0,4	+ 21	+ 36	-	-		
			+ 7	+ 21	-	-		
		0,45	+ 23	+ 38	-	-		
			+ 8	+ 23	-	-		
2,8	5,6	0,35	+ 21	+ 36	-	-		
			+ 7	+ 21	-	-		
		0,5	+ 24	+ 40	+ 56	+ 70		
			+ 8	+ 24	+ 40	+ 55		
		0,6	+ 27	+ 45	+ 63	+ 81		
			+ 9	+ 27	+ 45	+ 63		
		0,7	+ 29	+ 48	+ 67	+ 86		
			+ 10	+ 29	+ 48	+ 67		
		0,75	+ 29	+ 48	+ 67	+ 86		
			+ 10	+ 29	+ 48	+ 67		
		0,8	+ 30	+ 50	+ 70	+ 90		
			+ 10	+ 30	+ 50	+ 70		
		5,6	11,2	0,75	+ 32	+ 53	+ 74	-
					+ 11	+ 32	+ 53	-
1	+ 35			+ 59	+ 83	+ 107		
	+ 12			+ 35	+ 59	+ 83		
1,25	+ 38			+ 63	+ 88	+ 113		
	+ 13			+ 38	+ 63	+ 88		
1,5	+ 42			+ 70	+ 98	+ 126		
	+ 14			+ 42	+ 70	+ 98		
11,2	22,4	1	+ 38	+ 63	+ 88	+ 113		
			+ 13	+ 38	+ 63	+ 88		
		1,25	+ 42	+ 70	+ 98	+ 126		
			+ 14	+ 42	+ 70	+ 98		
		1,5	+ 45	+ 75	+ 105	+ 135		
			+ 15	+ 45	+ 75	+ 105		
		1,75	+ 48	+ 80	+ 112	+ 144		
			+ 16	+ 48	+ 80	+ 112		
		2	+ 51	+ 85	+ 119	+ 153		
			+ 17	+ 51	+ 85	+ 119		
		2,5	+ 54	+ 90	+ 126	+ 162		
			+ 18	+ 54	+ 90	+ 126		
22,4	45	1	+ 40	+ 66	+ 92	+ 118		
			+ 13	+ 40	+ 66	+ 92		
		1,5	+ 48	+ 80	+ 112	+ 144		
			+ 16	+ 48	+ 80	+ 112		
		2	+ 54	+ 90	+ 126	+ 162		
			+ 18	+ 54	+ 90	+ 126		
		3	+ 64	+ 106	+ 148	+ 190		
			+ 21	+ 64	+ 106	+ 148		
		3,5	+ 67	+ 112	+ 157	+ 202		
			+ 22	+ 67	+ 112	+ 157		
		4	+ 71	+ 118	+ 165	+ 212		
			+ 24	+ 71	+ 118	+ 165		
		4,5	+ 75	+ 125	+ 175	+ 225		
			+ 25	+ 75	+ 125	+ 125		
45	90	1,5	+ 51	+ 85	+ 119	+ 153		
			+ 17	+ 51	+ 85	+ 119		
		2	+ 57	+ 95	+ 133	+ 171		
			+ 19	+ 57	+ 95	+ 133		
		3	+ 67	+ 112	+ 157	+ 202		
			+ 22	+ 67	+ 112	+ 157		
		4	+ 75	+ 125	+ 175	+ 225		
			+ 25	+ 75	+ 125	+ 175		
		5	+ 80	+ 133	+ 186	+ 239		
			+ 27	+ 80	+ 133	+ 186		
		5,5	+ 84	+ 140	+ 196	+ 252		
			+ 28	+ 84	+ 140	+ 196		
		6	+ 90	+ 150	+ 210	+ 270		
			+ 30	+ 90	+ 150	+ 210		

(*) According to EN 22857

ICON DESCRIPTION

TAP AND DIE GEOMETRY



Hand tap



Tap with straight flutes



Tap with straight flutes and spiral point



Tap with straight flutes with interrupted thread



Tap with straight flutes and spiral point with interrupted thread



Tap with 15° right hand spiral



Tap with 15° left hand spiral



Tap with 40° right hand spiral and 2 flutes



Tap with 40° right hand spiral



Tap with 40° right hand spiral
Left hand cut



Tap with 45° right hand spiral



Forming tap without oil grooves



Forming tap with oil grooves



Through coolant tap with internal axial hole,
for blind holes



Through coolant tap with internal axial and
radial holes, for through holes



Through coolant tap with internal axial hole,
for blind holes



Through coolant forming tap with internal
axial hole, for blind holes



Through coolant forming tap with internal
axial and radial holes, for through holes



Thread Mills with internal axial coolant



Thread Mills with internal radial coolant



Die



Back tapering



Tap with through shank



Tap with long shank

HOLE TYPE AND DEPTH



Through



Through, up to $1 \times d_1$



Through, up to $1,5 \times d_1$



Through, up to $2,5 \times d_1$



Through, up to $3 \times d_1$



Blind



Blind, up to $1,5 \times d_1$



Blind, up to $2 \times d_1$



Blind, up to $2,5 \times d_1$



Blind, up to $3 \times d_1$



Blind and through



Blind and through, up to $1,5 \times d_1$



Blind and through, up to $2 \times d_1$



Blind and through, up to $2,5 \times d_1$



Blind and through, up to $3 \times d_1$



Tapered hole

ICON DESCRIPTION



Nut

DIRECTION OF CUT



Right hand cut



Left hand cut

TYPE OF CHIP



Short chipping



Medium chipping



Medium to long chipping



Long chipping



Plastic deformation without chip formation

COLOURED RING



Orange ring - Taps for tough materials



Red ring - Hand taps A100 series

TAP AND DIE TOLERANCE



Tolerance 4H / ISO1



Tolerance 6H / ISO2



Tolerance 6G / ISO3



Tolerance 7G



Tolerance 6HX



Tolerance 6GX



Tolerance 7GX



Tolerance 6H + 0,1 mm



Modified 6H Tolerance



Tolerance 3B



Tolerance 2B



Tolerance 2BX



Tolerance ISO 5969



Tolerance ISO 5969X



Medium Tolerance



Tolerance ISO 6g



Tolerance 2A



Tolerance Class A

MATERIAL



Material: solid carbide



Material: conventional high speed steel



Material: conventional high speed steel



Material: powder metallurgy high speed steel



Material: high performance powder metallurgy high speed steel



Material: high performance powder metallurgy high speed steel

THREAD TYPE



ISO Metric coarse thread



ISO Metric fine thread

ICON DESCRIPTION

UNC Unified coarse thread - UNC ASME B1.1

UNF Unified fine thread - UNF ASME B1.1

8-UN 8-UN thread - ASME B1.1

G Whitworth pipe thread - EN ISO 228

Rp (BSPP) Rp thread (BSPP) - DIN EN 10226-1

Rc (BSPT) Conical gas thread Rc (BSPT) taper 1:16 - BS 21 and DIN EN 10226-2

BSW Whitworth thread - BS 84

NPT National pipe thread, taper 1:16 - ASME/ANSI B1.20.1

NPTF Dryseal National pipe thread, taper 1:16 - ASME/ANSI B1.20.3

EG-M ISO Metric coarse thread - DIN 8140-2

ISO ISO thread DIN 13

UN American Unified Thread ASME B1.1

GAS GAS thread EN ISO 228

APPLICATION INFORMATION



Tap only for rigid tapping attachment (synchronous)



High recommended cutting speed



High tool life

THREAD MILLS



For internal threads



For external threads

CHAMFER FORM



Chamfer form A: 5 - 6 threads for through holes



Chamfer form B: 4 - 5 threads for through holes



Chamfer form C: 2 - 3 threads for blind and through holes



Chamfer form D: 4 - 5 threads for through holes



Chamfer form E: 1,5 - 2 threads for blind holes



Die chamfer form: 1,75 x P

Graphic design by:
StudioAlmayern
Chieri - Torino - Italy

Printed by:
IlTipografo
Riva presso Chieri - Torino - Italy
Printed 08/2019



Printed on Certified Ecological Paper



F.LLI VERGNANO S.r.l.

Corso Egidio Olia, 2

10023 Chieri - TO - Italy

Tel. +39 0119423523

Fax. +39 0119425426

info@vergnano.com