Leading Through Innovation

HSS-PM

YG TAP Ti Ni

YG Gewindebohrer Titan / Superlegierungen

- **For Heat Resistent Super Alloys and Titanium Alloys Applied with Cutting Edge Rake Angles and Thread Relief**
- **Für hitzebeständige Superlegierungen und Titanlegierungen, mit Schneidkanten-Spanwinkeln und Gewindehinterschliff**

SELECTION GUIDE

THREADING TOOLS

HSS-PM
YG TAP
Ti Ni

For Heat Resistent Super Alloys and Titanium Alloys
Applied with Cutting Edge Rake Angles and Thread Relief

Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : p.B234

HOLE TYPE			Max. 2.5xD Blind Hole		Max. 3.0xD Through Hole	
TOOL MATERIAL			HSS-PM			
CHAMFER LEAD ACC. TO DIN2197			C	C	B	B
FLUTE TYPE			Spiral Flute	Spiral Flute	Spiral Point	Spiral Point
SPIRAL FLUTE ANGLE			R25	R25	-	-
SERIES	M	DIN371/376	TM903 (p.B222)	TZ903 (p.B223)	TM293 (p.B224)	TZ293 (p.B225)
		DIN352				
		DIN357/LONG				
	MF	DIN374				
		DIN2181				
	UNC	DIN371/376				
		DIN351				
	UNF	DIN371/374				
		DIN2181				
	BSW	DIN2182/2183				
		DIN351				
	G(BSP)	DIN5156/5157				
	EG-M	DIN371/376				
	EG-UNC	DIN371/376				
	EG-UNF	DIN371/374				
SURFACE TREATMENT			Bright	TiAlN	Bright	TiAlN
MODEL						

ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment		HB	HRc				
P	1	Non-alloy steel	About 0.15% C	Annealed	125					
	2		About 0.45% C	Annealed	190	13				
	3		About 0.45% C	Quenched & Tempered	250	25				
	4		About 0.75% C	Annealed	270	28				
	5		About 0.75% C	Quenched & Tempered	300	32				
	6	Low alloy steel		Annealed	180	10				
	7			Quenched & Tempered	275	29	○	○	○	○
	8			Quenched & Tempered	300	32	○	○	○	○
	9			Quenched & Tempered	350	38	○	○	○	○
	10	High alloyed steel, and tool steel		Annealed	200	15				
	11			Quenched & Tempered	325	35				
M	12	Stainless steel	Ferritic / Martensitic	Annealed	200	15				
	13		Martensitic	Quenched & Tempered	240	23				
	14		Austenitic		180	10				
K	15	Grey cast iron	Pearlitic / ferritic		180	10				
	16		Pearlitic (Martensitic)		260	26				
	17	Nodular cast iron	Ferritic		160	3				
	18		Pearlitic		250	25				
	19	Malleable cast iron	Ferritic		130					
	20		Pearlitic		230	21				
N	21	Aluminum-wrought alloy	Not Curable		60					
	22		Curable	Hardened	100					
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable		75					
	24		≤ 12% Si, Curable	Hardened	90					
	25		> 12% Si, Not Curable		130					
	26	Copper and Copper Alloys (Bronze / Brass)	Cutting Alloys, PB>1%		110					
	27		CuZn, CuSnZn (Brass)		90					
	28		CuSn, lead-free copper and electrolytic copper		100					
	29	Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic							
	30		Rubber, Wood, etc.							
S	31	Heat Resistant Super Alloys	Fe Based	Annealed	200	15	○	○	○	○
	32			Cured	280	30			○	○
	33		Ni or Co Based	Annealed	250	25			○	○
	34			Cured	350	38			○	○
	35			Cast	320	34			○	○
	36	Titanium Alloys	Pure Titanium		400 Rm		○	○	○	○
	37		Alpha + Beta Alloys	Hardened	1050 Rm		◎	◎	◎	◎
H	38	Hardened steel		Hardened	550	55				
	39			Hardened	630	60				
	40	Chilled Cast Iron		Cast	400	42			○	○
	41	Hardened Cast Iron		Hardened	550	55				

	Max. 2.5xD Blind Hole		Max. 3.0xD Through Hole		Max. 2.5xD Blind Hole		Max. 3.0xD Through Hole	
	HSS-PM							
	C	C	B	B	C	C	B	B
	Spiral Flute	Spiral Flute	Spiral Point	Spiral Point	Spiral Flute	Spiral Flute	Spiral Point	Spiral Point
	R40	R40	-	-	R40	R40	-	-
	TM933 (p.B226)	TZ933 (p.B227)	TM923 (p.B228)	TZ923 (p.B229)	TQ833 (p.B230)	TR833 (p.B231)	TQ873 (p.B232)	TR873 (p.B233)
	Bright	TiAlN	Bright	TiAlN	VAP	Bright	VAP	Bright
M								
MF								
UNC								
UNF								
BSW								
G(BSP)								
EG-M								
EG-UNC								
EG-UNF								
1								
2								
3								
4								
5								
6	◎	◎	◎	◎	◎	◎	◎	◎
7	◎	◎	◎	◎	◎	◎	◎	◎
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32	◎	◎	◎	◎	◎	◎	◎	◎
33	◎	◎	◎	◎	◎	◎	◎	◎
34	◎	◎	◎	◎	◎	◎	◎	◎
35	◎	◎	◎	◎	◎	◎	◎	◎
36					○	○	○	○
37	○	○	○	○	◎	◎	◎	◎
38				○				
39								
40			○	○			○	○
41								

CARBIDE
HSS
THREAD MILL
SYNCHRO TAP
PRIME TAP
COMBO TAP
YG TAP STEEL
YG TAP CHIP BREAKER
YG TAP INOX
YG TAP CAST IRON
YG TAP HARDENED STEEL
YG TAP Ti Ni
YG TAP ALU
YG TAP FORMING
YG TAP GENERAL
PIPE TAP
STI TAP
NUT TAP

YG TAP Ti Ni

TM903 SERIES

M ISO metric coarse threads DIN 13

Metrisches ISO-Gewinde DIN 13
ISO MÉTRIQUE DIN13
ISO Metrico passo grosso DIN 13

Machine taps
Maschinengewindebohrer

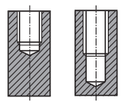
▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

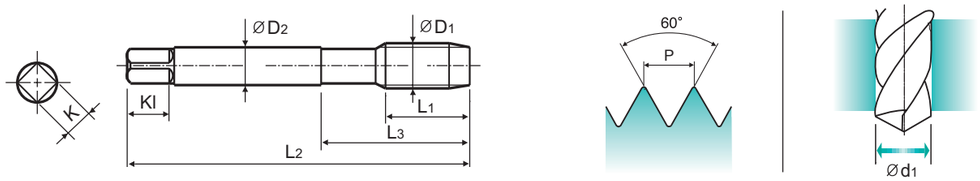
▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

DIN 371

DIN 376

Hole type
2.5×D





Material groups: Ti | HSS PM | DIN 371/376 | 6H | 60° | C | R25 | Bright | p.B234

Unit : mm

SIZE	Pitch	EDP No.	Thread Length	Overall Length	Neck Length	Shank Diameter	Square Size	Square Length	No. of Flute	Tapping Drill Diameter
ØD1	P	Bright	L1	L2	L3	ØD2	K	Kl	Z	Ød1
M2	× 0.4	**TM903136**	8	45	13	2.8	2.1	5	3	1.6
M2.5	× 0.45	**TM903176**	9	50	15	2.8	2.1	5	3	2.05
*M2.6	× 0.45	**TM903496**	9	50	15	2.8	2.1	5	3	2.1
M3	× 0.5	**TM903206**	6	56	18	3.5	2.7	6	3	2.5
M3.5	× 0.6	**TM903226**	7	56	20	4	3	6	3	2.9
M4	× 0.7	**TM903246**	7	63	21	4.5	3.4	6	3	3.3
M5	× 0.8	**TM903286**	8	70	25	6	4.9	8	3	4.2
M6	× 1.0	**TM903316**	10	80	30	6	4.9	8	3	5
M8	× 1.25	**TM903366**	13	90	35	8	6.2	9	3	6.8
M10	× 1.5	**TM903426**	15	100	39	10	8	11	3	8.5
M12	× 1.75	**TM903506**	18	110	44	9	7	10	3	10.2
M16	× 2.0	**TM903606**	20	110	44	12	9	12	3	14

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ * DIN profile not ISO

◎ : Excellent ○ : Good

ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended							○	○	○											

ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400Rm	1050Rm	550	630	400	550
Recommended											○					○	◎				

CARBIDE
HSS
THREAD MILL
SYNCHRO TAP
PRIME TAP
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YG TAP STEEL
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YG TAP Ti Ni
YG TAP ALU
YG TAP FORMING
YG TAP GENERAL
PIPE TAP
STI TAP
NUT TAP
TECHNICAL DATA

YG TAP Ti Ni

TZ903 SERIES

M ISO metric coarse threads DIN 13

Metrisches ISO-Gewinde DIN 13
ISO MÉTRIQUE DIN13
ISO Metrico passo grosso DIN 13

Machine taps
Maschinengewindebohrer

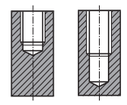
▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

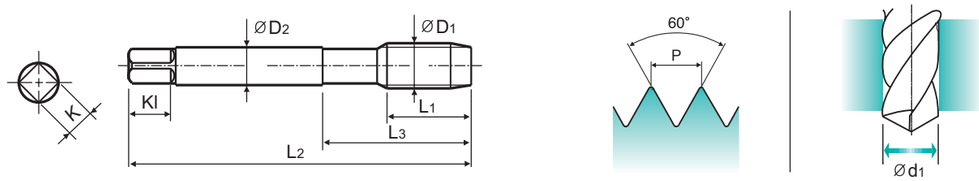
▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

DIN 371

DIN 376

Hole type
2.5×D





Material groups: Ti | HSS PM | DIN 371/376 | 6H | 60° | C | R25 | TiAlN | p.B234

Unit : mm

SIZE	Pitch	EDP No.	Thread Length	Overall Length	Neck Length	Shank Diameter	Square Size	Square Length	No. of Flute	Tapping Drill Diameter
ØD1	P	TiAlN	L1	L2	L3	ØD2	K	Kl	Z	Ød1
M2	× 0.4	**TZ903136**	8	45	13	2.8	2.1	5	3	1.6
M2.5	× 0.45	**TZ903176**	9	50	15	2.8	2.1	5	3	2.05
M3	× 0.5	**TZ903206**	6	56	18	3.5	2.7	6	3	2.5
M3.5	× 0.6	**TZ903226**	7	56	20	4	3	6	3	2.9
M4	× 0.7	**TZ903246**	7	63	21	4.5	3.4	6	3	3.3
M5	× 0.8	**TZ903286**	8	70	25	6	4.9	8	3	4.2
M6	× 1.0	**TZ903316**	10	80	30	6	4.9	8	3	5
M7	× 1.0	**TZ903346**	10	80	30	7	5.5	8	3	6
M8	× 1.25	**TZ903366**	13	90	35	8	6.2	9	3	6.8
M9	× 1.25	**TZ903396**	13	90	35	9	7	10	3	7.8
M12	× 1.75	**TZ903506**	18	110	44	9	7	10	3	10.2
M14	× 2.0	**TZ903546**	20	110	44	11	9	12	3	12
M16	× 2.0	**TZ903606**	20	110	44	12	9	12	3	14
M24	× 3.0	**TZ903786**	30	160	60	18	14.5	17	4	21

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ * DIN profile not ISO

◎ : Excellent ○ : Good

ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended							○	○	○											

ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400Rm	1050Rm	550	630	400	550
Recommended											○					○	◎				

YG TAP Ti Ni

TM293 SERIES

M-Az ISO metric coarse threads DIN 13

Metrisches ISO-Gewinde DIN 13
ISO MÉTRIQUE DIN13
ISO Metrico passo grosso DIN 13

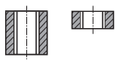
▶ Interrupted tap to reduce contact area and tapping torque, and to give more chip space.

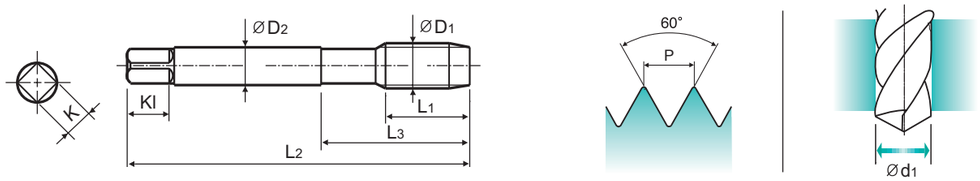
▶ Gewindebohrer mit ausgesetzten Zahnen um die Kontaktzone mit dem Werkstuck und das Drehmoment zu minimieren und dem Span mehr Raum zu geben.

DIN 371

DIN 376

Hole type
3.0×D





Material groups: Ti | HSS PM | DIN 371/376 | 6H | 60° | B | Bright

p.B234

Unit : mm

SIZE	Pitch	EDP No.	Thread Length	Overall Length	Neck Length	Shank Diameter	Square Size	Square Length	No. of Flute	Tapping Drill Diameter
ØD1	P	Bright	L1	L2	L3	ØD2	K	Kl	Z	Ød1
M2	× 0.4	**TM293136**	8	45	13	2.8	2.1	5	3	1.6
*M2.6	× 0.45	**TM293496**	9	50	15	2.8	2.1	5	3	2.1
M3	× 0.5	**TM293206**	11	56	18	3.5	2.7	6	3	2.5
M4.5	× 0.75	**TM293266**	14	70	25	6	4.9	8	3	3.7
M5	× 0.8	**TM293286**	15	70	25	6	4.9	8	3	4.2
M6	× 1.0	**TM293316**	17	80	30	6	4.9	8	3	5
M7	× 1.0	**TM293346**	17	80	30	7	5.5	8	3	6
M8	× 1.25	**TM293366**	20	90	35	8	6.2	9	3	6.8
M10	× 1.5	**TM293426**	22	100	39	10	8	11	3	8.5
M12	× 1.75	**TM293506**	24	110	44	9	7	10	3	10.2
M14	× 2.0	**TM293546**	26	110	44	11	9	12	3	12
M16	× 2.0	**TM293606**	27	110	44	12	9	12	3	14
M18	× 2.5	**TM293656**	30	125	50	14	11	14	4	15.5
M20	× 2.5	**TM293706**	32	140	54	16	12	15	4	17.5
M24	× 3.0	**TM293786**	34	160	60	18	14.5	17	4	21
M27	× 3.0	**TM293866**	36	160	60	20	16	19	4	24

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ * DIN profile not ISO

◎ : Excellent ○ : Good

ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended							○	○	○											

ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400Rm	1050Rm	550	630	400	550
Recommended											○	○	○	○	○	○	◎			○	

YG TAP Ti Ni

TZ293 SERIES

M-Az ISO metric coarse threads DIN 13

Metrisches ISO-Gewinde DIN 13
ISO MÉTRIQUE DIN13
ISO Metrico passo grosso DIN 13

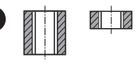
▶ Interrupted tap to reduce contact area and tapping torque, and to give more chip space.

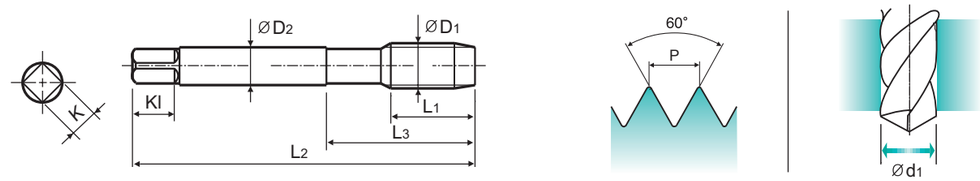
▶ Gewindebohrer mit ausgesetzten Zahnen um die Kontaktzone mit dem Werkstuck und das Drehmoment zu minimieren und dem Span mehr Raum zu geben.

DIN 371

DIN 376

Hole type
3.0×D





Material groups: Ti | HSS PM | DIN 371/376 | 6H | 60° | B | TiAlN

p.B234

Unit : mm

SIZE	Pitch	EDP No.	Thread Length	Overall Length	Neck Length	Shank Diameter	Square Size	Square Length	No. of Flute	Tapping Drill Diameter
ØD1	P	TiAlN	L1	L2	L3	ØD2	K	Kl	Z	Ød1
*M2.6	× 0.45	**TZ293496**	9	50	15	2.8	2.1	5	3	2.1
M3	× 0.5	**TZ293206**	11	56	18	3.5	2.7	6	3	2.5
M4	× 0.7	**TZ293246**	13	63	21	4.5	3.4	6	3	3.3
M5	× 0.8	**TZ293286**	15	70	25	6	4.9	8	3	4.2
M6	× 1.0	**TZ293316**	17	80	30	6	4.9	8	3	5
M7	× 1.0	**TZ293346**	17	80	30	7	5.5	8	3	6
M8	× 1.25	**TZ293366**	20	90	35	8	6.2	9	3	6.8
M10	× 1.5	**TZ293426**	22	100	39	10	8	11	3	8.5
M12	× 1.75	**TZ293506**	24	110	44	9	7	10	3	10.2
M14	× 2.0	**TZ293546**	26	110	44	11	9	12	3	12
M16	× 2.0	**TZ293606**	27	110	44	12	9	12	3	14
M18	× 2.5	**TZ293656**	30	125	50	14	11	14	4	15.5
M20	× 2.5	**TZ293706**	32	140	54	16	12	15	4	17.5
M24	× 3.0	**TZ293786**	34	160	60	18	14.5	17	4	21

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ * DIN profile not ISO

◎ : Excellent ○ : Good

ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended							○	○	○											

ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400Rm	1050Rm	550	630	400	550
Recommended											○	○	○	○	○	○	◎			○	

CARBIDE
HSS
THREAD MILL
SYNCHRO TAP
PRIME TAP
COMBO TAP
YG TAP STEEL
YG TAP CHIP BREAKER
YG TAP INOX
YG TAP CAST IRON
YG TAP HARDENED STEEL
YG TAP Ti Ni
YG TAP ALU
YG TAP FORMING
YG TAP GENERAL
PIPE TAP
STI TAP
NUT TAP
TECHNICAL DATA

YG TAP Ti Ni

TM933 SERIES

M ISO metric coarse threads DIN 13

Metrisches ISO-Gewinde DIN 13
ISO MÉTRIQUE DIN13
ISO Metrico passo grosso DIN 13

Machine taps
Maschinengewindebohrer

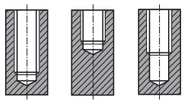
▶ For tapping Nickel alloys and heat resistant alloy steels which are used in aerospace and checmical industries.

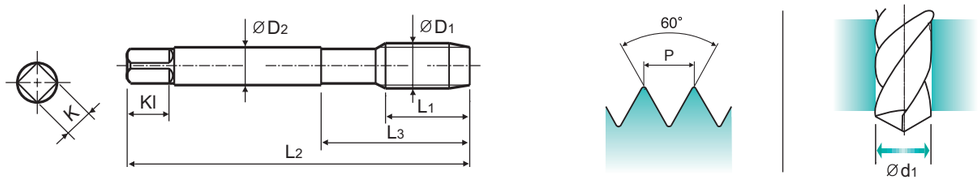
▶ Zum Gewindeschneiden von Nickellegierungen und hitzefesten Legierungsstählen, die in der Luftfahrtindustrie und chemischen Industrie verwendet werden.

DIN 371

DIN 376

Hole type
2.5×D





Material groups: Ni | HSS PM | DIN 371/376 | 6H | 60° | C | R40 | Bright | p.B234

Unit : mm

SIZE	Pitch	EDP No.	Thread Length	Overall Length	Neck Length	Shank Diameter	Square Size	Square Length	No. of Flute	Tapping Drill Diameter
ØD1	P	Bright	L1	L2	L3	ØD2	K	Kl	Z	Ød1
M2	× 0.4	**TM933136**	8	45	13	2.8	2.1	5	3	1.6
M2.5	× 0.45	**TM933176**	9	50	15	2.8	2.1	5	3	2.05
M3	× 0.5	**TM933206**	6	56	18	3.5	2.7	6	3	2.5
M4	× 0.7	**TM933246**	7	63	21	4.5	3.4	6	3	3.3
M5	× 0.8	**TM933286**	8	70	25	6	4.9	8	3	4.2
M6	× 1.0	**TM933316**	10	80	30	6	4.9	8	3	5
M8	× 1.25	**TM933366**	13	90	35	8	6.2	9	3	6.8
M10	× 1.5	**TM933426**	15	100	39	10	8	11	3	8.5
M12	× 1.75	**TM933506**	18	110	44	9	7	10	3	10.2
M14	× 2.0	**TM933546**	20	110	44	11	9	12	3	12
M16	× 2.0	**TM933606**	20	110	44	12	9	12	3	14
M20	× 2.5	**TM933706**	25	140	54	16	12	15	4	17.5

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ * DIN profile not ISO

◎ : Excellent ○ : Good

ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended						◎	◎	◎	◎											

ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400Rm	1050Rm	550	630	400	550
Recommended											◎	◎	◎	◎	◎		○				

YG TAP Ti Ni

TZ933 SERIES

M ISO metric coarse threads DIN 13

Metrisches ISO-Gewinde DIN 13
ISO MÉTRIQUE DIN13
ISO Metrico passo grosso DIN 13

Machine taps
Maschinengewindebohrer

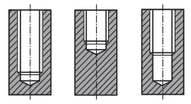
▶ For tapping Nickel alloys and heat resistant alloy steels which are used in aerospace and checmical industries.

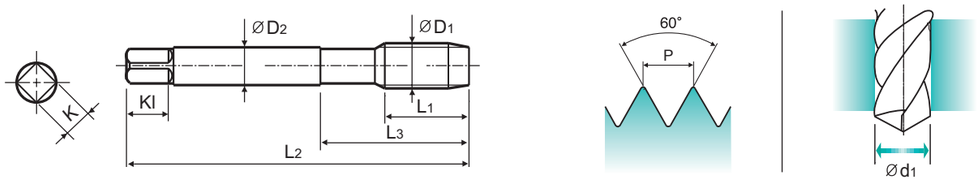
▶ Zum Gewindeschneiden von Nickellegierungen und hitzefesten Legierungsstählen, die in der Luftfahrtindustrie und chemischen Industrie verwendet werden.

DIN 371

DIN 376

Hole type
2.5×D





Material groups: Ni | HSS PM | DIN 371/376 | 6H | 60° | C | R40 | TiAlN | p.B234

Unit : mm

SIZE	Pitch	EDP No.	Thread Length	Overall Length	Neck Length	Shank Diameter	Square Size	Square Length	No. of Flute	Tapping Drill Diameter
ØD1	P	TiAlN	L1	L2	L3	ØD2	K	Kl	Z	Ød1
M2	× 0.4	**TZ933136**	8	45	13	2.8	2.1	5	3	1.6
M2.5	× 0.45	**TZ933176**	9	50	15	2.8	2.1	5	3	2.05
*M2.6	× 0.45	**TZ933496**	9	50	15	2.8	2.1	5	3	2.1
M3	× 0.5	**TZ933206**	6	56	18	3.5	2.7	6	3	2.5
M4	× 0.7	**TZ933246**	7	63	21	4.5	3.4	6	3	3.3
M5	× 0.8	**TZ933286**	8	70	25	6	4.9	8	3	4.2
M6	× 1.0	**TZ933316**	10	80	30	6	4.9	8	3	5
M8	× 1.25	**TZ933366**	13	90	35	8	6.2	9	3	6.8
M10	× 1.5	**TZ933426**	15	100	39	10	8	11	3	8.5
M12	× 1.75	**TZ933506**	18	110	44	9	7	10	3	10.2
M14	× 2.0	**TZ933546**	20	110	44	11	9	12	3	12
M16	× 2.0	**TZ933606**	20	110	44	12	9	12	3	14
M18	× 2.5	**TZ933656**	25	125	50	14	11	14	4	15.5
M20	× 2.5	**TZ933706**	25	140	54	16	12	15	4	17.5
M22	× 2.5	**TZ933746**	25	140	54	18	14.5	17	4	19.5
M24	× 3.0	**TZ933786**	30	160	60	18	14.5	17	4	21
M27	× 3.0	**TZ933866**	30	160	60	20	16	19	4	24
M30	× 3.5	**TZ933946**	35	180	70	22	18	21	4	26.5

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ * DIN profile not ISO

◎ : Excellent ○ : Good

ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended						◎	◎	◎	◎											

ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400Rm	1050Rm	550	630	400	550
Recommended											◎	◎	◎	◎	◎		○				

CARBIDE
HSS
THREAD MILL
SYNCHRO TAP
PRIME TAP
COMBO TAP
YG TAP STEEL
YG TAP CHIP BREAKER
YG TAP INOX
YG TAP CAST IRON
YG TAP HARDENED STEEL
YG TAP Ti Ni
YG TAP ALU
YG TAP FORMING
YG TAP GENERAL
PIPE TAP
STI TAP
NUT TAP
TECHNICAL DATA

YG TAP Ti Ni

TM923 SERIES

M ISO metric coarse threads DIN 13

Metrisches ISO-Gewinde DIN 13
ISO MÉTRIQUE DIN13
ISO Metrico passo grosso DIN 13

Machine taps
Maschinengewindebohrer

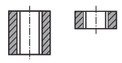
▶ For tapping Nickel alloys and heat resistant alloy steels which are used in aero space and checmical industries.

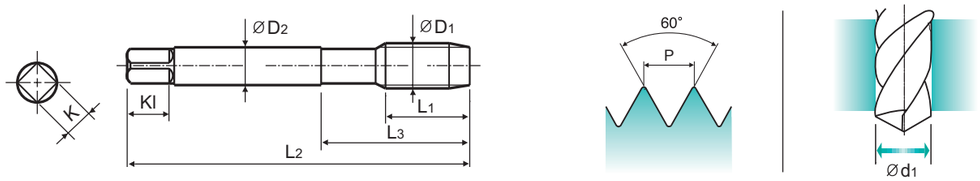
▶ Zum Gewindeschneiden von Nickellegierungen und hitzefesten Legierungsstählen, die in der Luftfahrtindustrie und chemischen Industrie verwendet werden.

DIN 371

DIN 376

Hole type
3.0×D





Material groups: Ni | HSS PM | DIN 371/376 | 6H | 60° | B | Bright p.B234

Unit : mm

SIZE	Pitch	EDP No.	Thread Length	Overall Length	Neck Length	Shank Diameter	Square Size	Square Length	No. of Flute	Tapping Drill Diameter
ØD1	P	Bright	L1	L2	L3	ØD2	K	Kl	Z	Ød1
M2.5	× 0.45	**TM923176**	9	50	15	2.8	2.1	5	3	2.05
M3	× 0.5	**TM923206**	11	56	18	3.5	2.7	6	3	2.5
M4	× 0.7	**TM923246**	13	63	21	4.5	3.4	6	3	3.3
M5	× 0.8	**TM923286**	15	70	25	6	4.9	8	3	4.2
M6	× 1.0	**TM923316**	17	80	30	6	4.9	8	3	5
M8	× 1.25	**TM923366**	20	90	35	8	6.2	9	3	6.8
M10	× 1.5	**TM923426**	22	100	39	10	8	11	3	8.5
M12	× 1.75	**TM923506**	24	110	44	9	7	10	3	10.2
M14	× 2.0	**TM923546**	26	110	44	11	9	12	3	12
M16	× 2.0	**TM923606**	27	110	44	12	9	12	3	14
M18	× 2.5	**TM923656**	30	125	50	14	11	14	4	15.5
M20	× 2.5	**TM923706**	32	140	54	16	12	15	4	17.5
M22	× 2.5	**TM923746**	32	140	54	18	14.5	17	4	19.5
M24	× 3.0	**TM923786**	34	160	60	18	14.5	17	4	21
M27	× 3.0	**TM923866**	36	160	60	20	16	19	4	24
M30	× 3.5	**TM923946**	40	180	70	22	18	21	4	26.5

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ * DIN profile not ISO

◎ : Excellent ○ : Good

ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended						◎	◎	◎	◎											

ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400Rm	1050Rm	550	630	400	550
Recommended											◎	◎	◎	◎	◎		○			○	

YG TAP Ti Ni

TZ923 SERIES

M ISO metric coarse threads DIN 13

Metrisches ISO-Gewinde DIN 13
ISO MÉTRIQUE DIN13
ISO Metrico passo grosso DIN 13

Machine taps
Maschinengewindebohrer

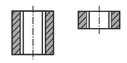
▶ For tapping Nickel alloys and heat resistant alloy steels which are used in aero space and checmical industries.

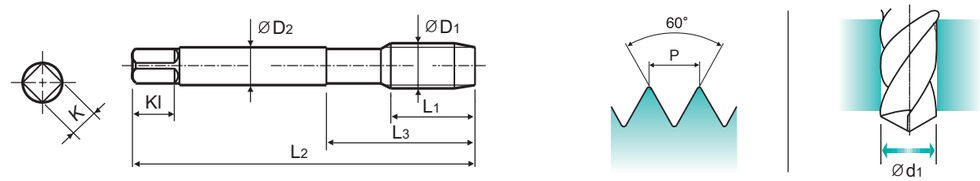
▶ Zum Gewindeschneiden von Nickellegierungen und hitzefesten Legierungsstählen, die in der Luftfahrtindustrie und chemischen Industrie verwendet werden.

DIN 371

DIN 376

Hole type
3.0×D





Material groups: Ni | HSS PM | DIN 371/376 | 6H | 60° | B | TiAlN p.B234

Unit : mm

SIZE	Pitch	EDP No.	Thread Length	Overall Length	Neck Length	Shank Diameter	Square Size	Square Length	No. of Flute	Tapping Drill Diameter
ØD1	P	TiAlN	L1	L2	L3	ØD2	K	Kl	Z	Ød1
M2	× 0.4	**TZ923136**	8	45	13	2.8	2.1	5	3	1.6
M2.5	× 0.45	**TZ923176**	9	50	15	2.8	2.1	5	3	2.05
M3	× 0.5	**TZ923206**	11	56	18	3.5	2.7	6	3	2.5
M3.5	× 0.6	**TZ923226**	12	56	20	4	3	6	3	2.9
M4	× 0.7	**TZ923246**	13	63	21	4.5	3.4	6	3	3.3
M5	× 0.8	**TZ923286**	15	70	25	6	4.9	8	3	4.2
M6	× 1.0	**TZ923316**	17	80	30	6	4.9	8	3	5
M8	× 1.25	**TZ923366**	20	90	35	8	6.2	9	3	6.8
M10	× 1.5	**TZ923426**	22	100	39	10	8	11	3	8.5
M12	× 1.75	**TZ923506**	24	110	44	9	7	10	3	10.2
M14	× 2.0	**TZ923546**	26	110	44	11	9	12	3	12
M16	× 2.0	**TZ923606**	27	110	44	12	9	12	3	14
M18	× 2.5	**TZ923656**	30	125	50	14	11	14	4	15.5
M20	× 2.5	**TZ923706**	32	140	54	16	12	15	4	17.5
M24	× 3.0	**TZ923786**	34	160	60	18	14.5	17	4	21

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ * DIN profile not ISO

◎ : Excellent ○ : Good

ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended						◎	◎	◎	◎											

ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400Rm	1050Rm	550	630	400	550
Recommended											◎	◎	◎	◎	◎		○	○		○	

CARBIDE
HSS
THREAD MILL
SYNCHRO TAP
PRIME TAP
COMBO TAP
YG TAP STEEL
YG TAP CHIP BREAKER
YG TAP INOX
YG TAP CAST IRON
YG TAP HARDENED STEEL
YG TAP Ti Ni
YG TAP ALU
YG TAP FORMING
YG TAP GENERAL
PIPE TAP
STI TAP
NUT TAP
TECHNICAL DATA

YG TAP Ti Ni

TQ833 SERIES

M ISO metric coarse threads DIN 13

Metrisches ISO-Gewinde DIN 13
ISO MÉTRIQUE DIN13
ISO Metrico passo grosso DIN 13

Machine taps
Maschinengewindebohrer

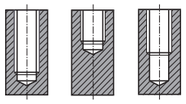
▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

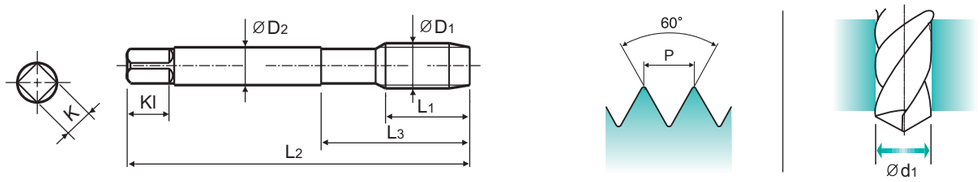
▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

DIN 371

DIN 376

Hole type
2.5×D





Material groups: Ti Ni | HSS PM | DIN 371/376 | 6H | 60° | C | R40 | Vap | p.B234

Unit : mm

SIZE	Pitch	EDP No.	Thread Length	Overall Length	Neck Length	Shank Diameter	Square Size	Square Length	No. of Flute	Tapping Drill Diameter
ØD1	P	Vap	L1	L2	L3	ØD2	K	Kl	Z	Ød1
M2	× 0.4	**TQ833136**	8	45	13	2.8	2.1	5	3	1.6
M2.5	× 0.45	**TQ833176**	9	50	15	2.8	2.1	5	3	2.05
M3	× 0.5	**TQ833206**	6	56	18	3.5	2.7	6	3	2.5
M4	× 0.7	**TQ833246**	7	63	21	4.5	3.4	6	3	3.3
M4.5	× 0.75	**TQ833266**	8	70	25	6	4.9	8	3	3.7
M5	× 0.8	**TQ833286**	8	70	25	6	4.9	8	3	4.2
M6	× 1.0	**TQ833316**	10	80	30	6	4.9	8	3	5
M8	× 1.25	**TQ833366**	13	90	35	8	6.2	9	3	6.8
M10	× 1.5	**TQ833426**	15	100	39	10	8	11	3	8.5
M12	× 1.75	**TQ833506**	18	110	44	9	7	10	3	10.2

▶ DIN 371(M2~M10) and DIN 376(M12)

◎ : Excellent ○ : Good

ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended						◎	◎	◎	◎											

ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400Rm	1050Rm	550	630	400	550
Recommended											◎	◎	◎	◎	◎	○	◎				

CARBIDE
HSS
THREAD MILL
SYNCHRO TAP
PRIME TAP
COMBO TAP
YG TAP STEEL
YG TAP CHIP BREAKER
YG TAP INOX
YG TAP CAST IRON
YG TAP HARDENED STEEL
YG TAP Ti Ni
YG TAP ALU
YG TAP FORMING
YG TAP GENERAL
PIPE TAP
STI TAP
NUT TAP
TECHNICAL DATA

YG TAP Ti Ni

TR833 SERIES

M ISO metric coarse threads DIN 13

Metrisches ISO-Gewinde DIN 13
ISO MÉTRIQUE DIN13
ISO Metrico passo grosso DIN 13

Machine taps
Maschinengewindebohrer

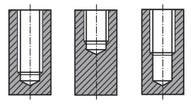
▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

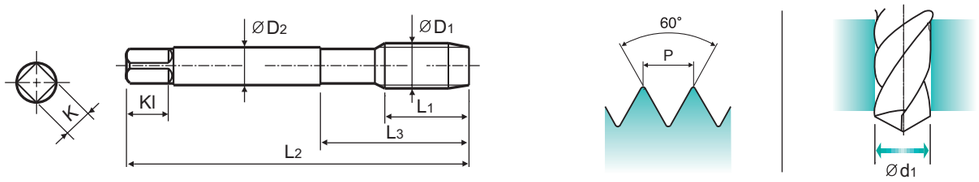
▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

DIN 371

DIN 376

Hole type
2.5×D





Material groups: Ti Ni | HSS PM | DIN 371/376 | 6H | 60° | C | R40 | Bright | p.B234

Unit : mm

SIZE	Pitch	EDP No.	Thread Length	Overall Length	Neck Length	Shank Diameter	Square Size	Square Length	No. of Flute	Tapping Drill Diameter
ØD1	P	Bright	L1	L2	L3	ØD2	K	Kl	Z	Ød1
M2	× 0.4	**TR833136**	8	45	13	2.8	2.1	5	3	1.6
M4	× 0.7	**TR833246**	7	63	21	4.5	3.4	6	3	3.3
M5	× 0.8	**TR833286**	8	70	25	6	4.9	8	3	4.2
M6	× 1.0	**TR833316**	10	80	30	6	4.9	8	3	5
M8	× 1.25	**TR833366**	13	90	35	8	6.2	9	3	6.8
M10	× 1.5	**TR833426**	15	100	39	10	8	11	3	8.5

▶ DIN 371(M2~M10) and DIN 376(M12)

◎ : Excellent ○ : Good

ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended						◎	◎	◎	◎											

ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400Rm	1050Rm	550	630	400	550
Recommended											◎	◎	◎	◎	◎	○	◎				

YG TAP Ti Ni

TQ873 SERIES

M ISO metric coarse threads DIN 13

Metrisches ISO-Gewinde DIN 13
ISO MÉTRIQUE DIN13
ISO Metrico passo grosso DIN 13

Machine taps
Maschinengewindebohrer

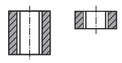
▶ Suitable for through hole in more cutting speed than other taps due to thick web and the best substrate.

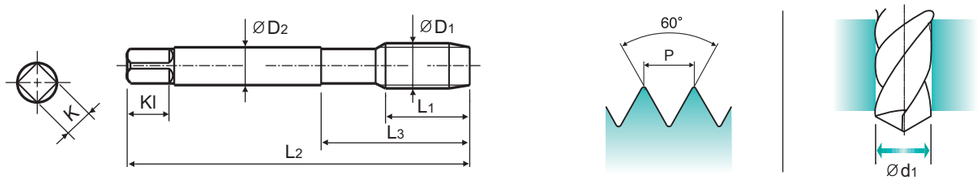
▶ Geeignet für Durchgangslöcher in höherer Schnittgeschwindigkeit als bei anderen Gewindebohrern dank größerer Kerndicke und bestem Werkstoff.

DIN 371

DIN 376

Hole type
3.0×D





Material groups: Ti Ni | HSS PM | DIN 371/376 | 6H | 60° | B | Vap

p.B234

Unit : mm

SIZE	Pitch	EDP No.	Thread Length	Overall Length	Neck Length	Shank Diameter	Square Size	Square Length	No. of Flute	Tapping Drill Diameter
ØD1	P	Vap	L1	L2	L3	ØD2	K	Kl	Z	Ød1
M2	× 0.4	**TQ873136**	8	45	13	2.8	2.1	5	3	1.6
M2.5	× 0.45	**TQ873176**	9	50	15	2.8	2.1	5	3	2.05
M4	× 0.7	**TQ873246**	13	63	21	4.5	3.4	6	3	3.3
M5	× 0.8	**TQ873286**	15	70	25	6	4.9	8	3	4.2
M6	× 1.0	**TQ873316**	17	80	30	6	4.9	8	3	5
M8	× 1.25	**TQ873366**	20	90	35	8	6.2	9	3	6.8
M12	× 1.75	**TQ873506**	24	110	44	9	7	10	3	10.2

▶ DIN 371(M2~M10) and DIN 376(M12)

◎ : Excellent ○ : Good

ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended						◎	◎	◎	◎											

ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400Rm	1050Rm	550	630	400	550
Recommended											◎	◎	◎	◎	◎	○	◎			○	

YG TAP Ti Ni

TR873 SERIES

M ISO metric coarse threads DIN 13

Metrisches ISO-Gewinde DIN 13
ISO MÉTRIQUE DIN13
ISO Metrico passo grosso DIN 13

Machine taps
Maschinengewindebohrer

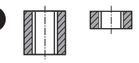
▶ Suitable for through hole in more cutting speed than other taps due to thick web and the best substrate.

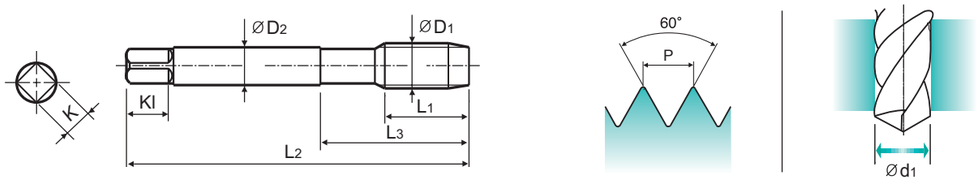
▶ Geeignet für Durchgangslöcher in höherer Schnittgeschwindigkeit als bei anderen Gewindebohrern dank größerer Kerndicke und bestem Werkstoff.

DIN 371

DIN 376

Hole type
3.0×D





Material groups: Ti Ni | HSS PM | DIN 371/376 | 6H | 60° | B | Bright

p.B234

Unit : mm

SIZE	Pitch	EDP No.	Thread Length	Overall Length	Neck Length	Shank Diameter	Square Size	Square Length	No. of Flute	Tapping Drill Diameter
ØD1	P	Bright	L1	L2	L3	ØD2	K	Kl	Z	Ød1
M2	× 0.4	**TR873136**	8	45	13	2.8	2.1	5	3	1.6
M2.5	× 0.45	**TR873176**	9	50	15	2.8	2.1	5	3	2.05
M3	× 0.5	**TR873206**	11	56	18	3.5	2.7	6	3	2.5
M4	× 0.7	**TR873246**	13	63	21	4.5	3.4	6	3	3.3
M5	× 0.8	**TR873286**	15	70	25	6	4.9	8	3	4.2
M6	× 1.0	**TR873316**	17	80	30	6	4.9	8	3	5
M8	× 1.25	**TR873366**	20	90	35	8	6.2	9	3	6.8
M10	× 1.5	**TR873426**	22	100	39	10	8	11	3	8.5
M12	× 1.75	**TR873506**	24	110	44	9	7	10	3	10.2

▶ DIN 371(M2~M10) and DIN 376(M12)

◎ : Excellent ○ : Good

ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended						◎	◎	◎	◎											

ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400Rm	1050Rm	550	630	400	550
Recommended											◎	◎	◎	◎	◎	○	◎			○	

CARBIDE
HSS
THREAD MILL
SYNCHRO TAP
PRIME TAP
COMBO TAP
YG TAP STEEL
YG TAP CHIP BREAKER
YG TAP INOX
YG TAP CAST IRON
YG TAP HARDENED STEEL
YG TAP Ti Ni
YG TAP ALU
YG TAP FORMING
YG TAP GENERAL
PIPE TAP
STI TAP
NUT TAP
TECHNICAL DATA

YG TAP Ti Ni

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

ISO	VDI 3323	Material Description	HB	HRc	TM903	TZ903	TM293	TZ293	TM933	TZ933	TM923	TZ923	TQ833	TR833	TQ873	TR873
					Vc (m/min.)											
P	6	Low alloy steel	180	10					10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15
	7		275	29	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15
	8		300	32	6-10	6-10	6-10	6-10	6-10	6-10	6-10	6-10	6-10	6-10	6-10	6-10
	9		350	38	3-5	3-5	3-5	3-5	3-5	3-5	3-5	3-5	3-5	3-5	3-5	3-5
S	31	Heat Resistant Super Alloys	200	15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15
	32		280	30			10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15
	33		250	25			2-4	2-4	2-4	2-4	2-4	2-4	2-4	2-4	2-4	2-4
	34		350	38			2-4	2-4	2-4	2-4	2-4	2-4	2-4	2-4	2-4	2-4
	35		320	34			2-4	2-4	2-4	2-4	2-4	2-4	2-4	2-4	2-4	2-4
	36	Titanium Alloys	400 Rm		10-15	10-15	10-15	10-15					10-15	10-15	10-15	10-15
	37		1050 Rm		4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6
H	38	Hardened steel	550	55								3-5				
	40	Chilled Cast Iron	400	42			3-5	3-5			3-5	3-5			3-5	3-5