



Leading Through Innovation

**HSS-PM**

# SYNCHRO TAPS

## SYNCHRO TAPS

- For High Speed Tapping on Rigid CNC Machine
- Für Hochgeschwindigkeits-Gewindebohren auf starren CNC-Maschinen



# HSS-PM SYNCHRO TAPS

For High Speed Tapping on Rigid CNC Machine

Please visit [globalyg1.com/mat](http://globalyg1.com/mat) for material search  
 ◎ : Excellent ○ : Good  
 Recommended cutting conditions : P.69

ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment	HB	HRc	TIN	TIN	TiCN	TIN
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		Ferritic	130				○	
20	Malleable cast iron	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 Rubber, Wood, etc.					
	S	31	Heat Resistant Super Alloys	Fe Based Annealed	200	15			
32		Cured		280	30				
33		Annealed		250	25				
34		Ni or Co Based 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	Hardened Cast Iron	Cast	400	42				
	41		Hardened	550	55				

# SYNCHRO TAPS

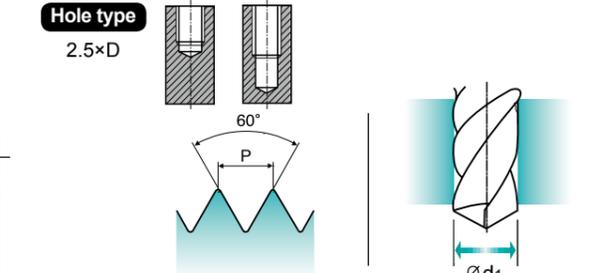
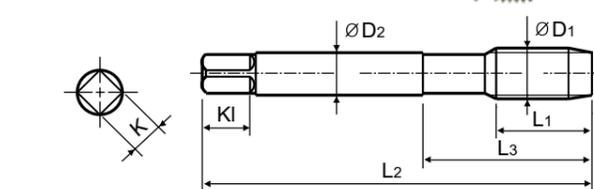
## TTS31 SERIES

### ISO metric coarse threads DIN 13

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

- Coated HSS-PM(Powder Metallurgy) Taps for high-speed tapping on rigid CNC machines or equivalent machines
- Up to 3 times faster in tapping compared to conventional taps
- For high-speed synchro tapping, synchro holder for increasing tool life and thread quality is recommended
- High precision threads

- Beschichtete HSS-PM-Gewindebohrer zum Hochgeschwindigkeitsgewindebohren auf starren CNC-Maschinen oder gleichwertige Maschinen
- Bis zu dreimal schnelleres Gewindeschneiden als bei herkömmlichen Gewindebohrern
- Beim Hochgeschwindigkeits-Gewindebohren wird die Verwendung eines Synchrofutters zur Erhöhung der Werkzeugstandzeit und der Gewindegüte empfohlen
- Hoch präzise Gewinde



Material groups: **GS** HSS-PM DIN 371/376 6H 60° C TiN R45 Machine taps Maschinengewindebohrer

Recommended Cutting Page : P.69 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	TiN	L1	L2	L3	ØD2	K	K1	Z	Ød1
M3 × 0.5		TTS31206	6	56	18	3.5	2.7	6	3	2.5
M4 × 0.7		TTS31246	7	63	21	4.5	3.4	6	3	3.3
M5 × 0.8		TTS31286	8	70	25	6	4.9	8	3	4.2
M6 × 1		TTS31316	10	80	30	6	4.9	8	3	5
M8 × 1.25		TTS31366	13	90	35	8	6.2	9	3	6.8
M10 × 1.5		TTS31426	15	100	39	10	8	11	3	8.5
M12 × 1.75		TTS31506	18	110	44	9	7	10	3	10.2
M14 × 2		TTS31546	20	110	44	11	9	12	3	12
M16 × 2		TTS31606	20	110	44	12	9	12	3	14
M18 × 2.5		TTS31656	25	125	50	14	11	14	4	15.5
M20 × 2.5		TTS31706	25	140	54	16	12	15	4	17.5

- DIN 371(M3~M10) and DIN 376(M11~M20)
- Coating(TiAlN) is available on your request.

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220
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								
	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
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41			
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41			
HRc	60	100	75	90	130	110	90	100			200	280	250	350	320	400Rm	1050Rm	550	630	400	550			
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400Rm	1050Rm	550	630	400	550			
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎			

# Y/G SYNCHRO TAPS

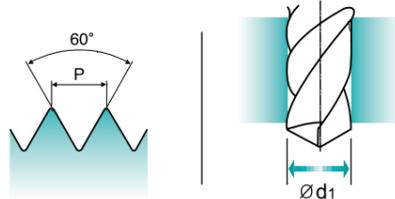
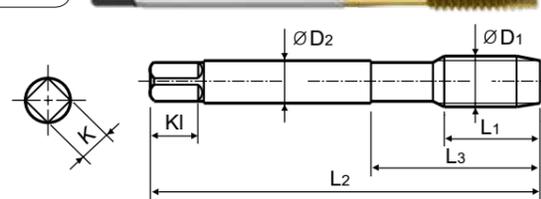
TTS33 SERIES

## M ISO metric coarse threads DIN 13

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

- Coated HSS-PM(Powder Metallurgy) Taps for high-speed tapping on rigid CNC machines or equivalent machines
- Up to 3 times faster in tapping compared to conventional taps
- For high-speed synchro tapping, synchro holder for increasing tool life and thread quality is recommended
- High precision threads

- Beschichtete HSS-PM-Gewindebohrer zum Hochgeschwindigkeitsgewindebohren auf starren CNC-Maschinen oder gleichwertige Maschinen
- Bis zu dreimal schnelleres Gewindeschneiden als bei herkömmlichen Gewindebohrern
- Beim Hochgeschwindigkeits-Gewindebohren wird die Verwendung eines Synchrofutters zur Erhöhung der Werkzeugstandzeit und der Gewindequalität empfohlen
- Hoch präzise Gewinde



Material groups: **GS** HSS-PM DIN 371/376 6HX 60° B TiN

Machine taps Maschinengewindebohrer

Recommended Cutting Page : P.69

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	TiN	L1	L2	L3	ØD2	K	Kl	Z	Ød1
M3	× 0.5	TTS33206	5	56	18	3.5	2.7	6	3	2.5
M4	× 0.7	TTS33246	7	63	21	4.5	3.4	6	3	3.3
M5	× 0.8	TTS33286	8	70	25	6	4.9	8	3	4.2
M6	× 1	TTS33316	10	80	30	6	4.9	8	3	5
M8	× 1.25	TTS33366	13	90	35	8	6.2	9	3	6.8
M10	× 1.5	TTS33426	15	100	39	10	8	11	3	8.5
M12	× 1.75	TTS33506	18	110	44	9	7	10	4	10.2
M14	× 2	TTS33546	20	110	44	11	9	12	4	12
M16	× 2	TTS33606	20	110	44	12	9	12	4	14
M18	× 2.5	TTS33656	25	125	50	14	11	14	4	15.5
M20	× 2.5	TTS33706	25	140	54	16	12	15	4	17.5

- DIN 371(M3~M10) and DIN 376(M11~M20)
- Coating(TiAlN) is available on your request.

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron	Nodular cast iron		Malleable cast iron		
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
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	38	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										
	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						
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400Rm	1050Rm	550	630	400	550
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

# Y/G SYNCHRO TAPS

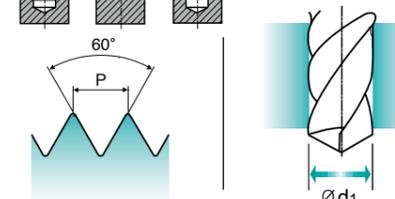
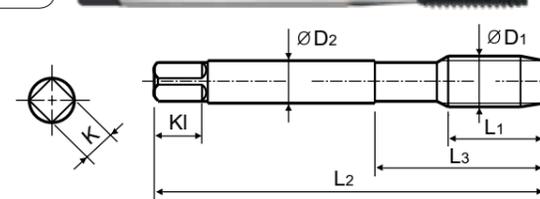
TKS35 SERIES

## M ISO metric coarse threads DIN 13

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- ISO MÉTRIQUE DIN13
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- Beim Hochgeschwindigkeits-Gewindebohren wird die Verwendung eines Synchrofutters zur Erhöhung der Werkzeugstandzeit und der Gewindequalität empfohlen
- Hoch präzise Gewinde



Material groups: **GS** HSS-PM DIN 371/376 6HX 60° C TiCN

Machine taps Maschinengewindebohrer

Recommended Cutting Page : P.69

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	TiCN	L1	L2	L3	ØD2	K	Kl	Z	Ød1
M3	× 0.5	TKS35206	5	56	18	3.5	2.7	6	3	2.5
M4	× 0.7	TKS35246	7	63	21	4.5	3.4	6	3	3.3
M5	× 0.8	TKS35286	8	70	25	6	4.9	8	3	4.2
M6	× 1	TKS35316	10	80	30	6	4.9	8	3	5
M8	× 1.25	TKS35366	13	90	35	8	6.2	9	3	6.8
M10	× 1.5	TKS35426	15	100	39	10	8	11	4	8.5
M12	× 1.75	TKS35506	18	110	44	9	7	10	4	10.2
M14	× 2	TKS35546	20	110	44	11	9	12	4	12
M16	× 2	TKS35606	20	110	44	12	9	12	4	14
M18	× 2.5	TKS35656	25	125	50	14	11	14	4	15.5
M20	× 2.5	TKS35706	25	140	54	16	12	15	4	17.5

- DIN 371(M3~M10) and DIN 376(M11~M20)
- Coating(TiAlN) is available on your request.

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron	Nodular cast iron		Malleable cast iron		
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
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	38	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	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

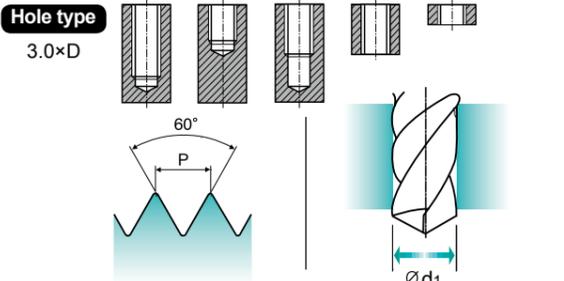
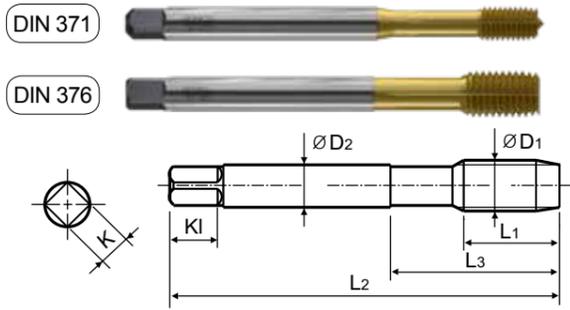
ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
Material Description	21	22	23	24	25	26	27	28	29	30	31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

**M ISO metric coarse threads DIN 13**

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

- Coated HSS-PM(Powder Metallurgy) Taps for high-speed tapping on rigid CNC machines or equivalent machines
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- Hoch präzise Gewinde



**Material groups**  
**GV** HSS-PM DIN 371/376 6HX 60° C TiN

Cold forming taps Gewindeformer

Recommended cutting : P.69

Unit : mm

SIZE	Pitch	EDP No.	Thread Length	Overall Length	Neck Length	Shank Diameter	Square Size	Square Length	Tapping Drill Diameter
ØD1	P	TiN	L1	L2	L3	ØD2	K	Kl	Ød1
M3	× 0.5	TTS37206	5	56	18	3.5	2.7	6	2.8
M4	× 0.7	TTS37246	7	63	21	4.5	3.4	6	3.7
M5	× 0.8	TTS37286	8	70	25	6	4.9	8	4.65
M6	× 1	TTS37316	10	80	30	6	4.9	8	5.55
M8	× 1.25	TTS37366	13	90	35	8	6.2	9	7.4
M10	× 1.5	TTS37426	15	100	39	10	8	11	9.3
M12	× 1.75	TTS37506	18	110	44	9	7	10	11.2

►DIN 371(M3~M10) and DIN 376(M11~M12)

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron	Nodular cast iron		Malleable cast iron		
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
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	30	29	32	38	35	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	240	180	260	160	250	130	230			
Recommended	◎	◎	◎	◎	◎	◎	◎			◎	◎	◎								

ISO	N										S						H				
	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		
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			200	280	250	350	320	400Rm	1050Rm	550	630	400	550
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400Rm	1050Rm	550	630	400	550
Recommended	◎	◎	◎	◎	◎	◎	◎	◎			◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

ISO	VDI 3323	Material Description	HB	HRc	TTS31	TTS33	TKS35	TTS37
					Vc (m/min)			
P	1	Non-alloy steel	125		41-46	41-46	41-46	41-46
	2		190	13	41-46	41-46	41-46	41-46
	3		250	25	35-40	35-40	35-40	35-40
	4		270	28	28-33	28-33	28-33	28-33
	5	300	32					
	6	Low alloy steel	180	10	28-33	28-33	28-33	28-33
	7		275	29	28-33	28-33	28-33	28-33
	8		300	32				
	9		350	38				
	10		High alloyed steel, and tool steel	200	15			
	11	325		35				
M	12	Stainless steel	200	15	18-23	18-23		18-23
	13		240	23	13-18	13-18		13-18
	14		180	10	10-14	10-14		10-14
K	15	Grey cast iron	180	10	28-33	28-33	28-33	
	16		260	26			13-18	
	17	Nodular cast iron	160	3	28-33	28-33	28-33	
	18		250	25			13-18	
	19	Malleable cast iron	130				28-33	
	20		230	21			13-18	
N	21	Aluminum-wrought alloy	60					28-33
	22		100					28-33
	23	Aluminum-cast, alloyed	75		41-46	41-46	41-46	41-46
	24		90		41-46	41-46	41-46	41-46
	25		130		30-35	30-35	30-35	30-35
	26	Copper and Copper Alloys (Bronze / Brass)	110		45-50	45-50		
	27		90					
	28	Non Metallic Materials	100		25-30	25-30		25-30
	29							
	30							
S	31	Heat Resistant Super Alloys	200	15				
	32		280	30				
	33		250	25				
	34		350	38				
	35	320	34					
	36	Titanium Alloys	400 Rm					
	37		1050 Rm					
H	38	Hardened steel	550	55				
	39		630	60				
	40	Chilled Cast Iron	400	42				
	41	Hardened Cast Iron	550	55				