

YE-TCB23 EUROPE



YG

YG TAP CHIP BREAKER

"The Trouble-Shooter"

TiN-COATED HSS-E TAP

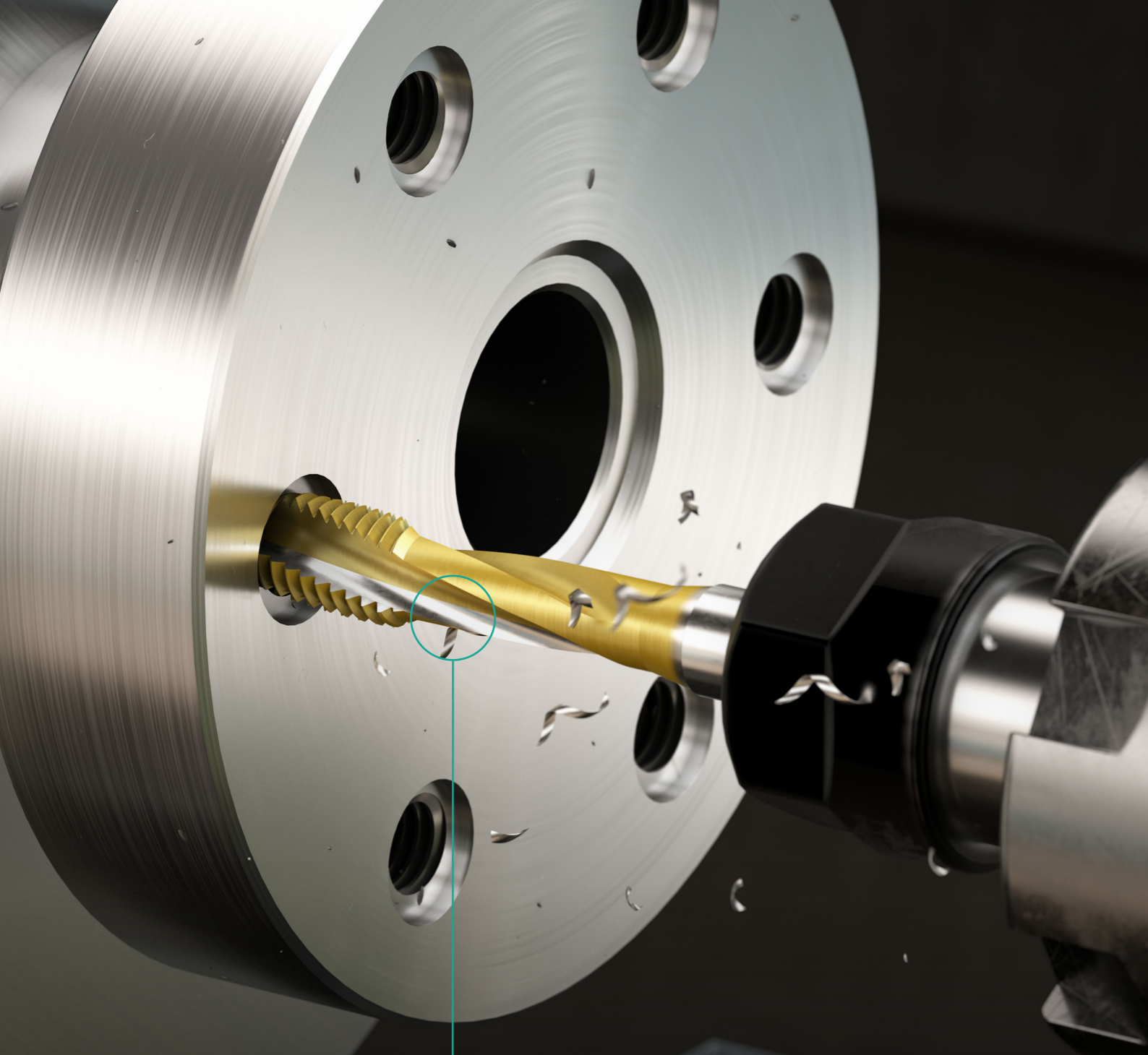
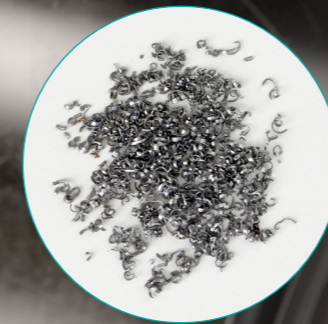
- Chip Breaker Technology**
- 15° Helix Angle**
- YG-1 Special Thread Structure**

YG TAP CHIP BREAKER

"The Trouble-Shooter"

YG Tap Chip Breaker provides a solution to solve the productivity problem caused by long chips, avoiding bird nesting. Particularly suitable for machining non-alloy steel, low alloy steel, high alloy steel, and tool steel.

Short Chip Obtained With YG Tap Chip Breaker!!



Chip Breaker

Special flute grinding process provides excellent performance with chip breaking to aid in chip evacuation

15° Helix Angle

Promotes efficient chip evacuation

YG-1 Special Thread Structure

Reduction in torque, wear, and the risk of overfeeding as compared to conventional taps

TiN Coating

Increased wear resistance by minimizing friction between the tap and the workpiece

HSS-E Material

Ideal for applications requiring high wear and heat resistance

GUIDE TO ICONS

Tool Raw Material

HSS-E

Standard of Tools

DIN 371/376 DIN 374

Number of DIN Standard

Chamfer Lead



Form C
(Chamfer Lead 2-3 Thread)

Class of Thread

6H

Thread Angle



Form E
(Chamfer Lead 1.5-2 Thread)

Surface Treatment

TiN

Titanium Nitride Coating

Helix Angle



Cutting Condition

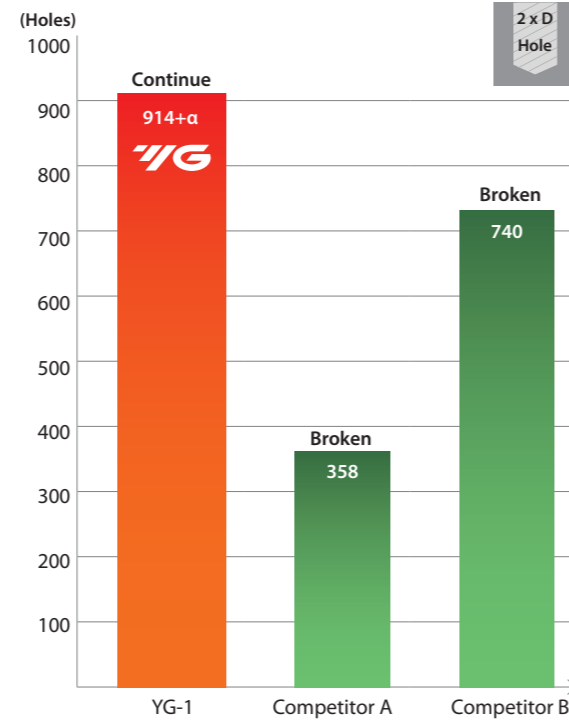


CASE STUDY

TEST I YGTAP CHIP BREAKER (M8x1.25)

Cutting Condition

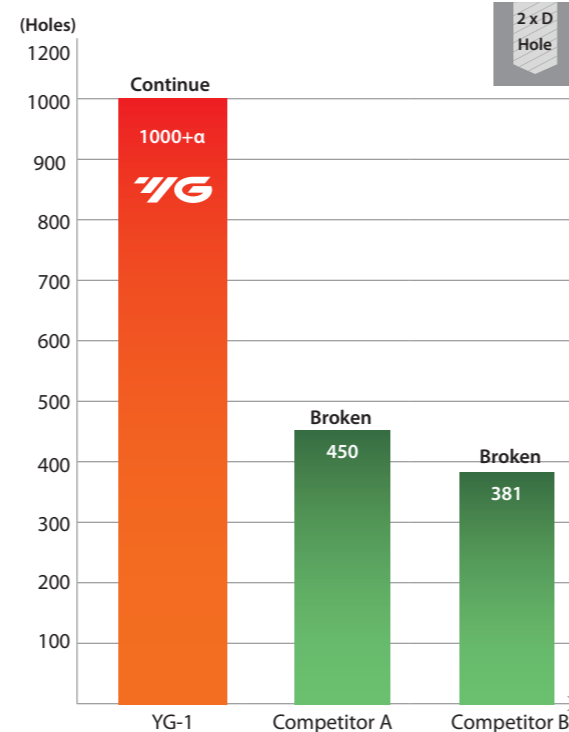
Material	DIN : 42CrMo4 / JIS : SCM440 / AISI : 4140		
Hardness	HRC30		
Machine	Machining Center (Horizontal)		
Cutting Fluid (Coolant)	Water Soluble (9%)		
Tool	YG-1	Competitor A	Competitor B
Dimension	M8 x 1.25 6H		
Description	Spiral Flute		
Surface Treatment	TiN	TiCN	TiN
RPM (rev/min)	318 rev/min		
Vc (m/min)	8 m/min		
Tapping Depth (mm)	16 mm (2xD)		
Tapping Holes	914+α	358	740



TEST II YGTAP CHIP BREAKER (M12x1.75)

Cutting Condition

Material	DIN : C45 / JIS : S45C / AISI : 1045		
Hardness	Below HRC 20		
Machine	Machining Center (Horizontal)		
Cutting Fluid (Coolant)	Water Soluble (9%)		
Tool	YG-1	Competitor A	Competitor B
Dimension	M12 x 1.75 6H		
Description	Spiral Flute		
Surface Treatment	TiN	TiCN	TiN
RPM (rev/min)	212 rev/min		
Vc (m/min)	8 m/min		
Tapping Depth (mm)	24 mm (2xD)		
Tapping Holes	1000+α	450	381



SELECTION GUIDE



HSS-E YGTAP CHIP BREAKER



Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : p.12

HOLE TYPE					
TOOL MATERIAL		HSS-E			
CHAMFER LEAD ACC. TO DIN2197		C	E	C	
FLUTE TYPE		Spiral Flute			
SPIRAL FLUTE ANGLE		R15			
SERIES	M	DIN371/376	TDE24 (p.6)	TDE26 (p.8)	TDE28 (p.10)
	MF	DIN374	TDE25 (p.7)	TDE27 (p.9)	TDE29 (p.11)
SURFACE TREATMENT		TiN			



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		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			

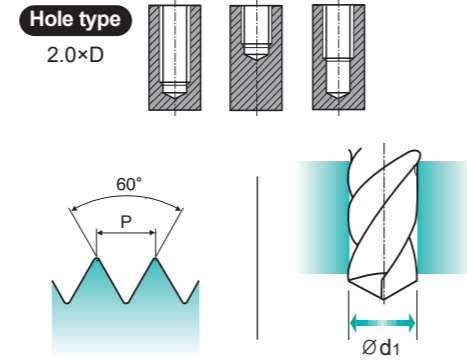
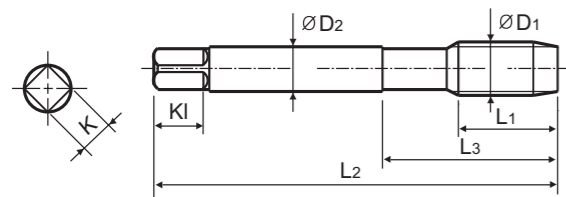
M TiN-COATED HSS-E SPIRAL FLUTE TAPS with CHIP BREAKER

ISO Metric Coarse Threads DIN13

TDE24 SERIES



▶ YG Tap Chip Breaker provides a solution to solve the productivity problem caused by long chips.
 ▶ Particularly suitable for machining non-alloy steel, low alloy steel, high alloy steel, and tool steel.



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	KI	Z	Ød1
M4 × 0.7		TDE24246R	7	63	21	4.5	3.4	6	3	3.3
M5 × 0.8		TDE24286R	8	70	25	6	4.9	8	3	4.2
M6 × 1.0		TDE24316R	10	80	30	6	4.9	8	3	5.0
M8 × 1.25		TDE24366R	13	90	35	8	6.2	9	3	6.8
M10 × 1.5		TDE24426R	15	100	39	10	8.0	11	3	8.5
M12 × 1.75		TDE24506R	18	110	44	9	7.0	10	3	10.3
M14 × 2.0		TDE24546R	20	110	44	11	9.0	12	3	12.0
M16 × 2.0		TDE24606R	20	110	44	12	9.0	12	3	14.0
M18 × 2.5		TDE24656R	25	125	50	14	11.0	14	4	15.5
M20 × 2.5		TDE24706R	25	140	54	16	12.0	15	4	17.5

▶ DIN 371(M4-M10) and DIN 376(M12-M20)

◎ : Excellent ○ : Good

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloy 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	30	10	29	32	38	15	35	15	23	10	10	26	3	25	130	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	○	◎	◎	○	○	○	◎	◎	○	○	○	○	○	○	○	○	○	○	○	○

ISO Material Description	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
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			15	30	25	38	34	55	60	42	55	40	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400Rm	1050Rm	550	630	400	550	
Recommended	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	

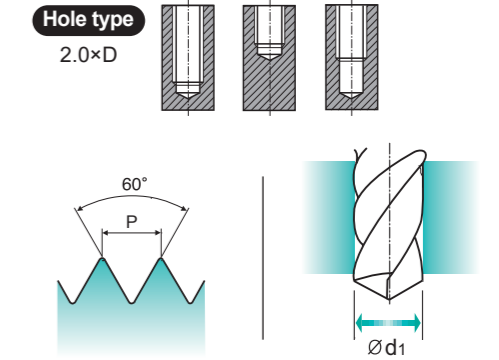
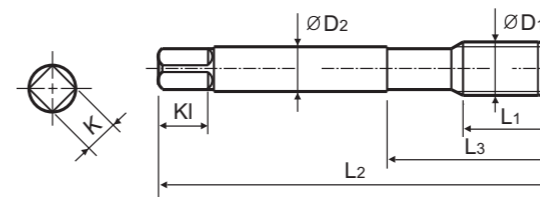
MF TiN-COATED HSS-E SPIRAL FLUTE TAPS with CHIP BREAKER

ISO Metric Fine Threads DIN13

TDE25 SERIES



▶ YG Tap Chip Breaker provides a solution to solve the productivity problem caused by long chips.
 ▶ Particularly suitable for machining non-alloy steel, low alloy steel, high alloy steel, and tool steel.



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	KI	Z	Ød1
M8 × 1.0		TDE25376R	10	90	36	6	4.9	8	3	7.0
M10 × 1.25		TDE25436R	16	100	40	7	5.5	8	3	8.8
M10 × 1.0		TDE25446R	10	90	36	7	5.5	8	3	9.0
M12 × 1.5		TDE25516R	15	100	40	9	7.0	10	3	10.5
M12 × 1.25		TDE25526R	15	100	40	9	7.0	10	3	10.8
M14 × 1.5		TDE25556R	15	100	40	11	9.0	12	3	12.5
M16 × 1.5		TDE25616R	15	100	40	12	9.0	12	3	14.5
M18 × 1.5		TDE25676R	17	110	44	14	11.0	14	4	16.5
M20 × 1.5		TDE25726R	17	125	50	16	12.0	15	4	18.5

◎ : Excellent ○ : Good

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloy 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	30	10	29	32	38	15	35	15	23	10	10	26	3	25	130	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	○	◎	◎	○	○	○	◎	◎	○	○	○	○	○	○	○	○	○	○	○	○

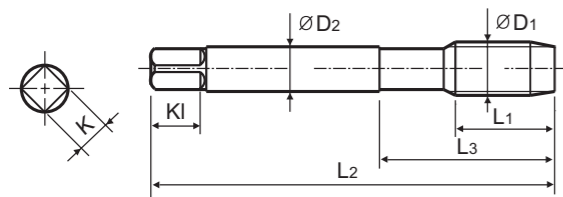
ISO Material Description	N										S					H						
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)					Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel		Chilled Cast Iron		Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27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

M TiN-COATED HSS-E SPIRAL FLUTE TAPS with CHIP BREAKER
ISO Metric Coarse Threads DIN13

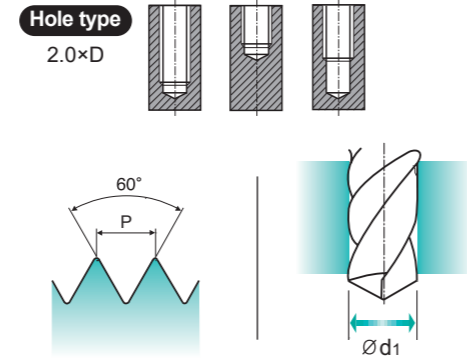
TDE26 SERIES



▶ YG Tap Chip Breaker provides a solution to solve the productivity problem caused by long chips.
▶ Particularly suitable for machining non-alloy steel, low alloy steel, high alloy steel, and tool steel.



Short Chamfer



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	KI	Z	Ød1
M4 × 0.7		TDE26246R	7	63	21	4.5	3.4	6	3	3.3
M5 × 0.8		TDE26286R	8	70	25	6	4.9	8	3	4.2
M6 × 1.0		TDE26316R	10	80	30	6	4.9	8	3	5.0
M8 × 1.25		TDE26366R	13	90	35	8	6.2	9	3	6.8
M10 × 1.5		TDE26426R	15	100	39	10	8.0	11	3	8.5
M12 × 1.75		TDE26506R	18	110	44	9	7.0	10	3	10.3
M14 × 2.0		TDE26546R	20	110	44	11	9.0	12	3	12.0
M16 × 2.0		TDE26606R	20	110	44	12	9.0	12	3	14.0
M18 × 2.5		TDE26656R	25	125	50	14	11.0	14	4	15.5
M20 × 2.5		TDE26706R	25	140	54	16	12.0	15	4	17.5

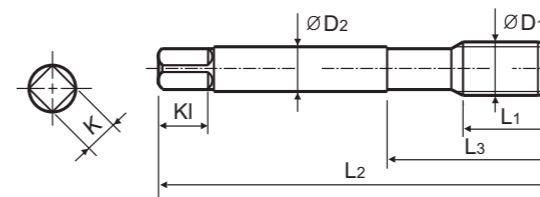
▶ DIN 371(M4-M10) and DIN 376(M12-M20)

MF TiN-COATED HSS-E SPIRAL FLUTE TAPS with CHIP BREAKER
ISO Metric Fine Threads DIN13

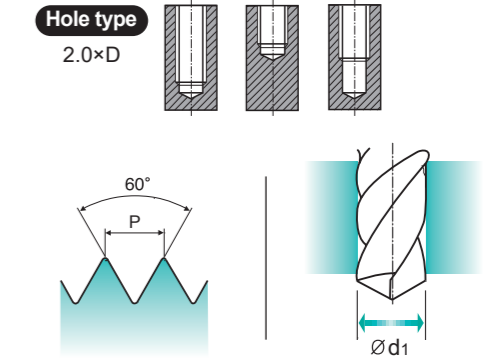
TDE27 SERIES



▶ YG Tap Chip Breaker provides a solution to solve the productivity problem caused by long chips.
▶ Particularly suitable for machining non-alloy steel, low alloy steel, high alloy steel, and tool steel.



Short Chamfer



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	KI	Z	Ød1
M8 × 1.0		TDE27376R	10	90	36	6	4.9	8	3	7.0
M10 × 1.25		TDE27436R	16	100	40	7	5.5	8	3	8.8
M10 × 1.0		TDE27446R	10	90	36	7	5.5	8	3	9.0
M12 × 1.5		TDE27516R	15	100	40	9	7.0	10	3	10.5
M12 × 1.25		TDE27526R	15	100	40	9	7.0	10	3	10.8
M14 × 1.5		TDE27556R	15	100	40	11	9.0	12	3	12.5
M16 × 1.5		TDE27616R	15	100	40	12	9.0	12	3	14.5
M18 × 1.5		TDE27676R	17	110	44	14	11.0	14	4	16.5
M20 × 1.5		TDE27726R	17	125	50	16	12.0	15	4	18.5

◎ : Excellent ○ : Good

ISO	P											M				K				
	Non-alloy steel					Low alloy steel						High alloy 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	32	10	29	32	38	15	35	15	23	10	10	26	3	25	13	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	60	100	75	90	130	110	90	100			15	30	25	38	34	55	60	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	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

◎ : Excellent ○ : Good

ISO	P											M				K				
	Non-alloy steel					Low alloy steel						High alloy 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	32	10	29	32	38	15	35	15	23	10	10	26	3	25	13	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	60	100	75	90	130	110	90	100			15	30	25	38	34	55	60	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	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

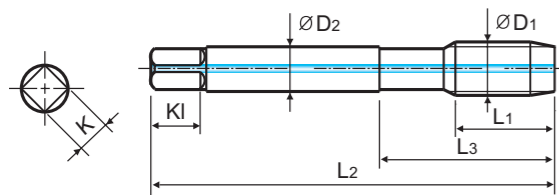
M TiN-COATED HSS-E SPIRAL FLUTE TAPS with CHIP BREAKER

ISO Metric Coarse Threads DIN13

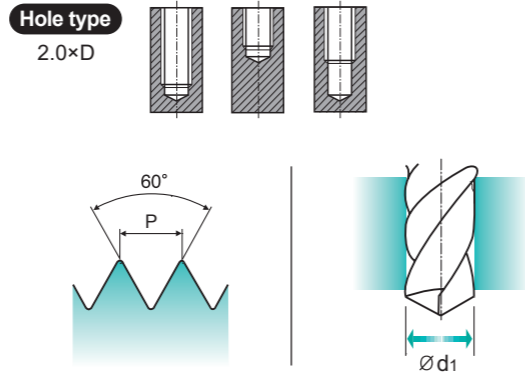
TDE28 SERIES



▶ YG Tap Chip Breaker provides a solution to solve the productivity problem caused by long chips.
▶ Particularly suitable for machining non-alloy steel, low alloy steel, high alloy steel, and tool steel.



with Internal Coolant



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	KI	Z	Ød1
M6 × 1.0		TDE28316R	10	80	30	6	4.9	8	3	5.0
M8 × 1.25		TDE28366R	13	90	35	8	6.2	9	3	6.8
M10 × 1.5		TDE28426R	15	100	39	10	8.0	11	3	8.5
M12 × 1.75		TDE28506R	18	110	44	9	7.0	10	3	10.3
M14 × 2.0		TDE28546R	20	110	44	11	9.0	12	3	12.0
M16 × 2.0		TDE28606R	20	110	44	12	9.0	12	3	14.0
M18 × 2.5		TDE28656R	25	125	50	14	11.0	14	4	15.5
M20 × 2.5		TDE28706R	25	140	54	16	12.0	15	4	17.5

▶ DIN 371(M6-M10) and DIN 376(M12-M20)

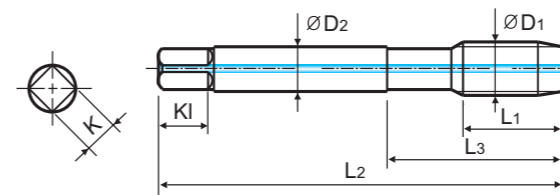
MF TiN-COATED HSS-E SPIRAL FLUTE TAPS with CHIP BREAKER

ISO Metric Fine Threads DIN13

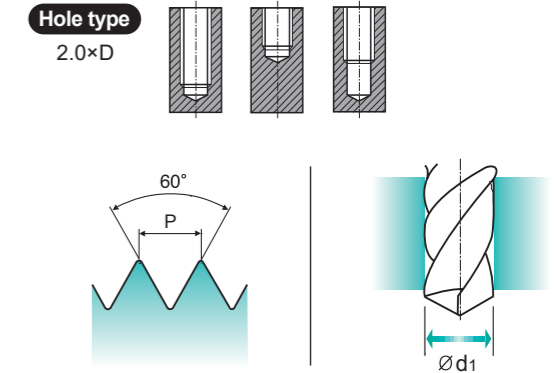
TDE29 SERIES



▶ YG Tap Chip Breaker provides a solution to solve the productivity problem caused by long chips.
▶ Particularly suitable for machining non-alloy steel, low alloy steel, high alloy steel, and tool steel.



with Internal Coolant



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	KI	Z	Ød1
M8 × 1.0		TDE29376R	10	90	36	6	4.9	8	3	7.0
M10 × 1.25		TDE29436R	16	100	40	7	5.5	8	3	8.8
M10 × 1.0		TDE29446R	10	90	36	7	5.5	8	3	9.0
M12 × 1.5		TDE29516R	15	100	40	9	7.0	10	3	10.5
M12 × 1.25		TDE29526R	15	100	40	9	7.0	10	3	10.8
M14 × 1.5		TDE29556R	15	100	40	11	9.0	12	3	12.5
M16 × 1.5		TDE29616R	15	100	40	12	9.0	12	3	14.5
M18 × 1.5		TDE29676R	17	110	44	14	11.0	14	4	16.5
M20 × 1.5		TDE29726R	17	125	50	16	12.0	15	4	18.5

◎ : Excellent ○ : Good

ISO	P											M				K				
	Non-alloy steel					Low alloy steel						High alloy 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	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						
	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			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																					

◎ : Excellent ○ : Good

ISO	P											M				K				
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Recommended	○	◎	◎	◎	◎	○	◎	◎	○	○	○									

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HRc	60	100	75	90	130	110	90	100			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																					

RECOMMENDED CUTTING CONDITIONS

ISO	VDI 3323	Material Description	HB	HRc	TDE24	TDE25	TDE26	TDE27	TDE28	TDE29
					Vc (m/min)					
P	1	Non-alloy steel	125		7-12	7-12	7-12	7-12	7-12	7-12
	2		190	13	7-12	7-12	7-12	7-12	7-12	7-12
	3		250	25	4-8	4-8	4-8	4-8	4-8	4-8
	4		270	28						
	5		300	32						
	6	Low alloy steel	180	10	7-12	7-12	7-12	7-12	7-12	7-12
	7		275	29	7-12	7-12	7-12	7-12	7-12	7-12
	8		300	32	4-8	4-8	4-8	4-8	4-8	4-8
	9		350	38	4-8	4-8	4-8	4-8	4-8	4-8
	10	High alloyed steel, and tool steel	200	15	6-9	6-9	6-9	6-9	6-9	6-9
	11		325	35	4-8	4-8	4-8	4-8	4-8	4-8

TECHNICAL DATA

TROUBLE SHOOTING GUIDE

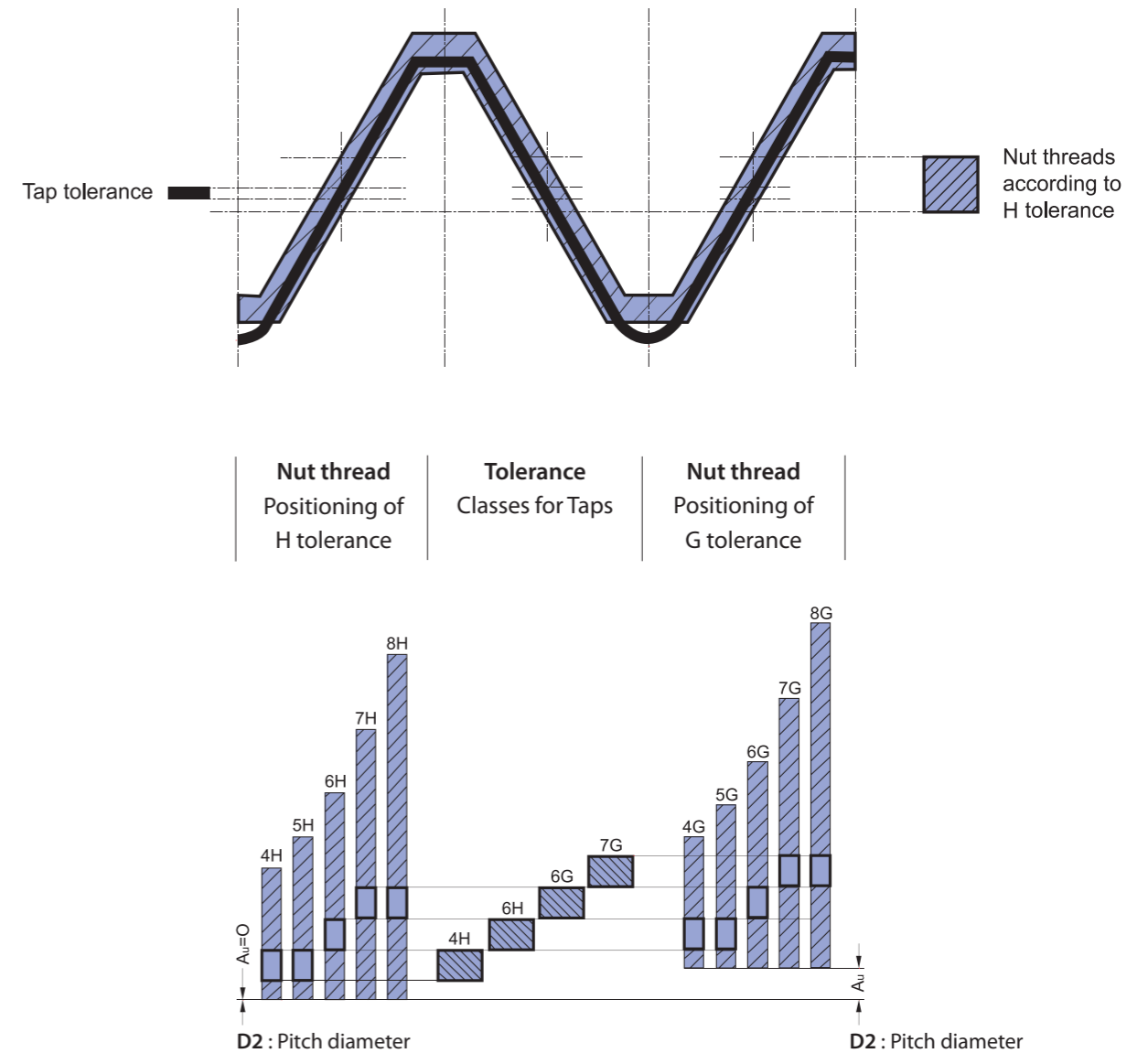
Specific Problem	Cause	Solution
Dimensional Accuracy		
Oversize Pitch Diameter	Incorrect Tap	1. Use proper limits of taps 2. Use longer chamfered taps
	Chip Packing	1. Use spiral point or spiral fluted taps 2. Reduce number of flutes to provide extra chip room 3. Use larger hole size 4. If tapping a hole, allow deeper hole where applicable or shorten the thread length of the parts 5. Use proper lubricant
	Galling	1. Apply proper surface treatment such as Hardslick or chrome 2. Use proper cutting lubricant 3. Reduce tapping speed 4. Use proper cutting angle in accordance with material being tapped 5. Use large hole size
	Operating Conditions	1. Apply proper tapping speed 2. Correct alignment of tap and drill hole 3. Free cutting either tap or workpiece 4. Use proper tapping speed to avoid torn or rough threads 5. Use lead screw tapper 6. Use proper tapping machine with suitable power 7. Avoid misalignment of the tap and drill hole from loose spindle or worn holder
	Tool Condition	1. Obtain proper indexing angle for the flutes at the cutting edge 2. Grind proper cutting angle and chamfer angle 3. Avoid too narrow a land width 4. Remove burrs from regrinding
Oversize Internal Diameter	Hole Size	1. Use minimum hole size 2. Avoid tapered hole 3. Use proper chamfered taps
	Galling	1. Galling solutions 1 through 4 above can be applied to this specific problem
Undersize Pitch Diameter	Incorrect Tap	1. Use oversize taps 2. Apply proper chamfer angle 3. Increase cutting angle
	Damaged Thread	1. Use proper reversing speed to avoid damaging tapped thread on the way out of the hole
	Left-over Chips	1. Increase cutting performance to avoid any left over chips in the hole 2. Remove left over chips from the hole for gage checking
Undersize Internal Diameter	Hole Size	1. Use maximum drill size
Breakage	Incorrect Tap Selection	1. Avoid chip packing in the flutes or on the bottom of the hole Use spiral pointed or spiral fluted taps or fluteless taps 2. Apply correct surface treatment such as Hardslick or bright
	Excessive Tapping Torque	1. Use larger drill size 2. Try to shorten thread length 3. Increase cutting angle 4. Apply a tap with more thread relief and reduced land width 5. Apply correct surface treatment such as Hardslick

TROUBLE SHOOTING GUIDE

Specific Problem	Cause	Solution
Dimensional Accuracy		
Breakage	Operating Conditions	<ol style="list-style-type: none"> 1. Reduce tapping speed 2. Avoid misalignment between tap and the hole and tapered hole 3. Use floating type of tapping holder 4. Use tapping holder with torque adjustment 5. Avoid hitting bottom of the hole with tap
	Tool Condition	<ol style="list-style-type: none"> 1. Do not grind the bottom of the flute 2. Avoid too narrow a land width 3. Remove all worn sections when regrinding the flutes 4. Regrind tool more frequently
Chipping	Incorrect Tap Selection	<ol style="list-style-type: none"> 1. Reduce cutting angle 2. Use a different kind of high-speed steel tap 3. Reduce hardness of the tap 4. Increase chamfer length 5. Avoid chip packing in the flutes or in the bottom of the hole by using spiral fluted or spiral pointed taps
	Operating Conditions	<ol style="list-style-type: none"> 1. Reduce tapping speed 2. Avoid misalignment between tap and hole 3. Avoid sudden return of reverse in blind hole tapping 4. Avoid galling 5. Use larger hole size
Wear	Incorrect Tap Selection	<ol style="list-style-type: none"> 1. Apply specially designed tap for tapping heat treated material 2. Change to a type of high-speed steel tap that contains vanadium 3. Apply special surface treatment such as TiCN, TiAlN or Hardslick 4. Increase chamfer length
	Operating Conditions	<ol style="list-style-type: none"> 1. Reduce tapping speed 2. Apply proper cutting lubricants 3. Avoid work hardened hole 4. Use larger hole size
	Tool Condition	<ol style="list-style-type: none"> 1. Grind proper cutting angle 2. Avoid hardness reduction from grinding process
Torn or Rough Thread	Chamfer Too Short	1. Increase chamfer length
	Wrong Cutting Angle	1. Apply proper cutting angle
	Galling	<ol style="list-style-type: none"> 1. Use thread relieved taps 2. Reduce land width 3. Apply surface treatment such as Hardslick or chrome 4. Use proper cutting lubricant 5. Reduce tapping speed 6. Use larger hole size 7. Obtain proper alignment between tap and work
	Chip Packing	<ol style="list-style-type: none"> 1. Use spiral pointed or spiral fluted taps 2. Use larger drill size
Chattering on Tapped Thread	Tool Free Cutting	<ol style="list-style-type: none"> 1. Reduce cutting angle 2. Reduce amount of thread relief
	Tool Condition	<ol style="list-style-type: none"> 1. Avoid too narrow land width 2. Do not grind the bottom of the flute

TAP TOLERANCES

► Tolerance classes of taps and tolerance positions for screw threads as per Metric ISO Standard.



► Taps tolerances and recommended classes

Tap tolerance ISO	Tap tolerance DIN	Correct class to obtain Nut thread with tolerance			
ISO 1	4H	4H	5H		
ISO 2	6H	4G	5G	6H	
ISO 3	6G			6G	7H 8H
	7G				7G 8G

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