

YE-PT21 EUROPE



///G

TAP

PRIME

HSS-PM(Powder Metallurgy) Premium Taps

- Premium Spiral Point and Spiral Flute Taps for CNC Machines
- High and Reliable Performance in Various Ductile Materials

New Prime X-Coated Tap for CNC Machining in Various Ductile Materials

Special grinding process provides a unique geometry for spiral flute and spiral point taps with optimal flute space for improved chip evacuation



Spiral Flute



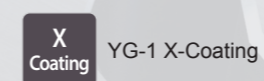
Spiral Point

GUIDE TO ICONS

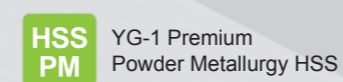
Working Material



Surface Treatment



Tool Raw Material



Helix Angle



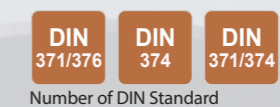
Thread Angle



Cutting Condition



Standard of Tools



Number of DIN Standard

Class of Thread



Chamfer Lead



Form B (with Spiral Point and Chamfer Lead 4-5 Thread)



Form C (Chamfer Lead 2-3 Thread)



Form E (Chamfer Lead 1.5~2 Thread)

FEATURES & BENEFITS

High and Reliable Performance on Various Ductile Materials

YG-1 Special Thread Structure

- Reduction in torque, wear, and the risk of over feeding as compared to conventional taps

Extra Short Threaded Body and Recess

- Minimize bird nesting, reduced chipping, improved thread finish

Optimized Edge Preparation

- Consistent performance and process stability to Prevent chipping

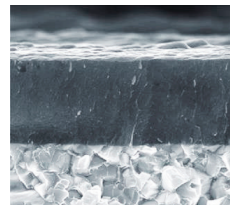
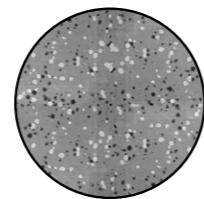
Optimized Flute Geometry for Excellent Chip Flow

- Increased tool life as a result of an optimum combination of material, geometry, and coating which gives Unrestricted chip flow

Spiral Flute Spiral Point

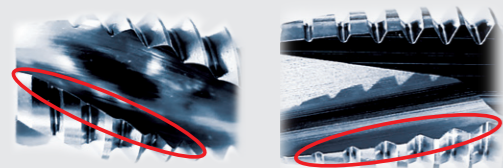
HSS-PM(Powder Metallurgy) Premium Taps

Powdered Metal Technology for a tough-chipping resistant cutting edge for long tool life and reliable thread finish



YG-1's X-Coating

YG-1's High Performance Coating for high heat and wear resistance



Premium Cutting Edge Strength

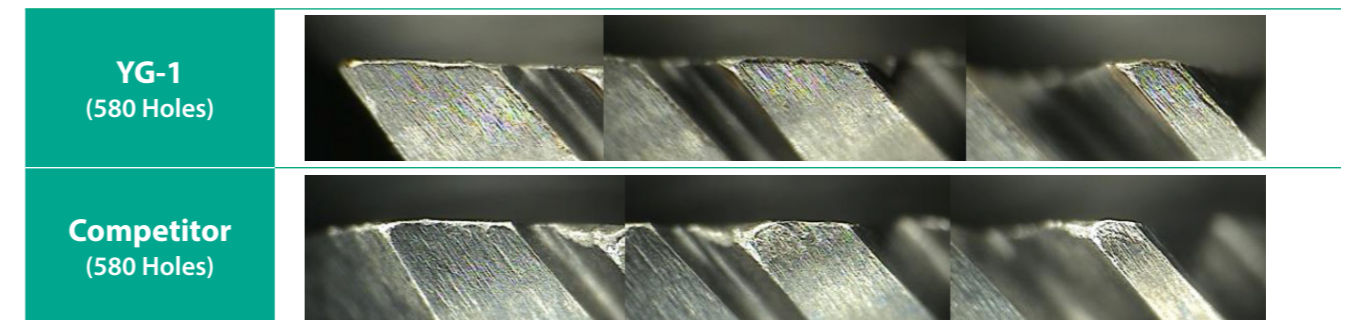
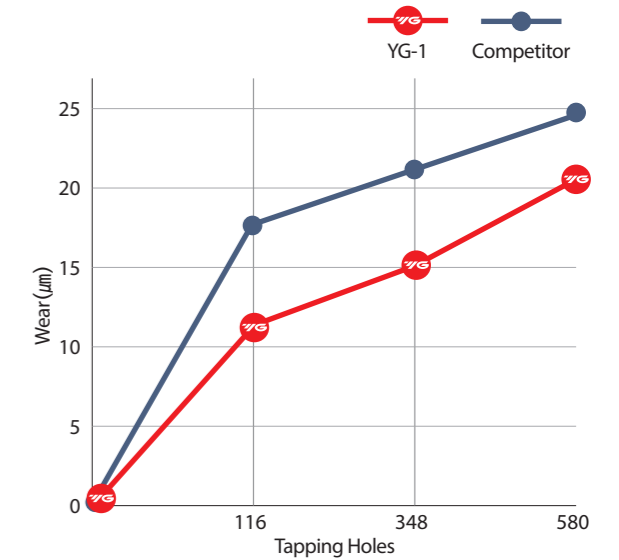
- More controlled structure with high wear resistance
- Consistent performance and process stability with chipping resistance

CASE STUDY

TEST I SPIRAL FLUTE TAP (M4x0.7)

Cutting Condition

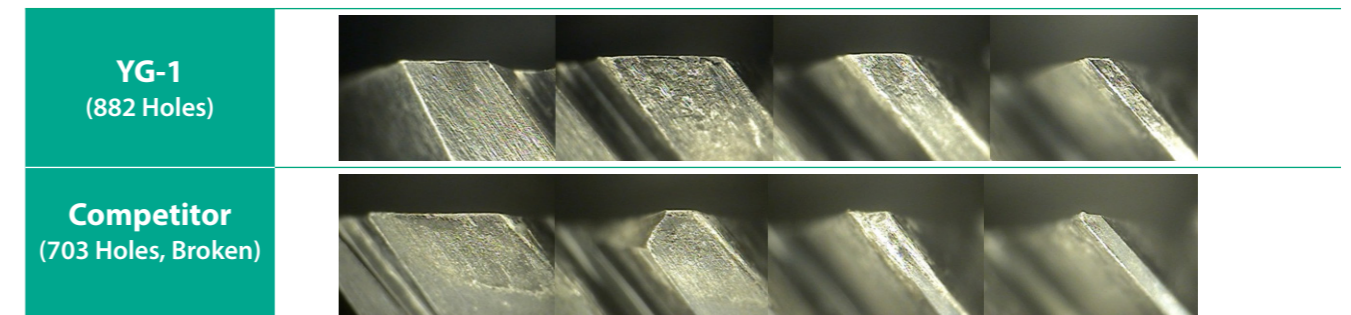
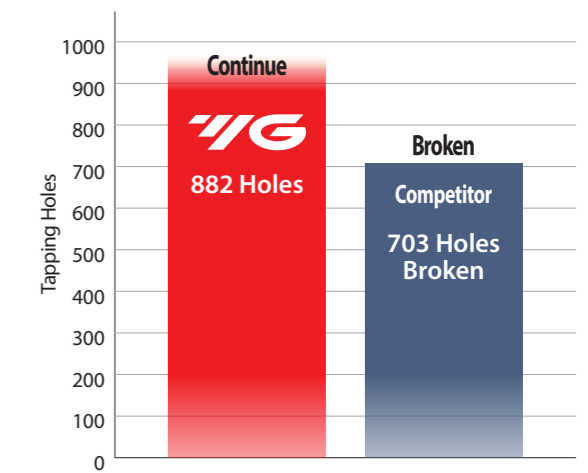
Tool	Spiral Flute Tap
Size	M4x0.7
Work Material	JIS: SCM440(HRc30) / DIN : 42CrMo4 / WR : 1.7225
RPM	2387 rev/min
Vc	30 m/min.
Feed	0.7 mm/rev.
Tap Drill Size	Ø3.3mm
Tapping depth	8mm
Tapping holes	580
Coolant	Wet Cut



TEST II SPIRAL FLUTE TAP (M6x1.0)

Cutting Condition

Tool	Spiral Flute Tap
Size	M6x1.0
Work Material	JIS: SUS316Ti / DIN : X6CrNiMoTi17-12-2 / WR: 1.4571
RPM	531 rev/min
Vc	10 m/min
Feed	1.0mm/rev.
Tap Drill Size	Ø5.1mm
Tapping depth	12.0mm
Tapping holes	YG-1: 882+α / Competitor : 703
Coolant	Wet Cut



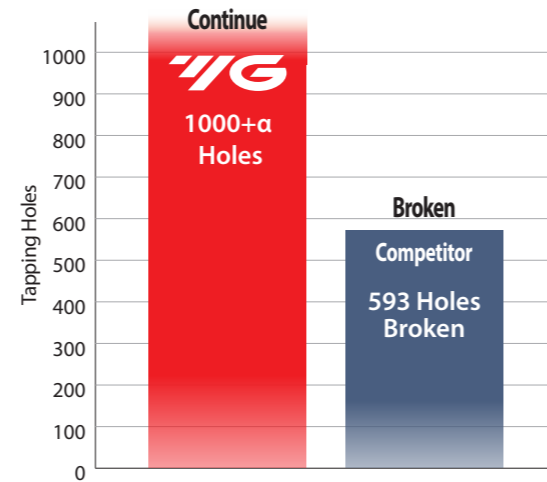


CASE STUDY

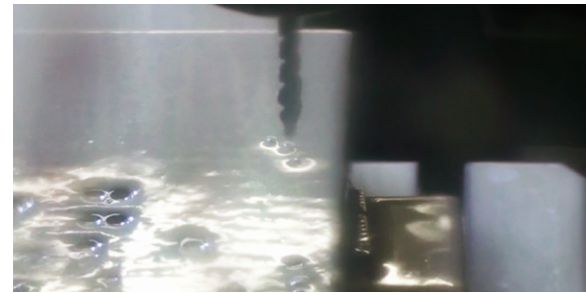
TEST III SPIRAL FLUTE TAP (M6x1.0)

Cutting Condition

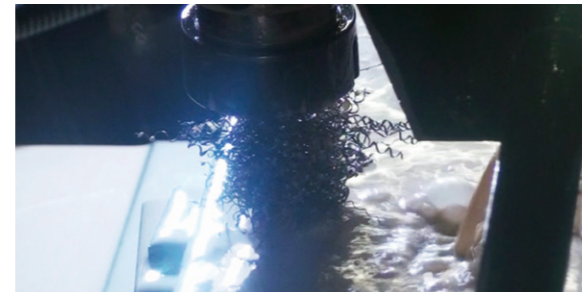
Tool	Spiral Flute Tap
Size	M6x1.0
Work Material	JIS: SUS304 / DIN: X16CrNi1810 / WR: 1.4350
RPM	531 rev/min.
Vc	10 m/min.
Feed	531 mm/min.
Tap Drill Size	5.1mm
Tapping Depth	12 mm
Tapping Holes	YG-1: 1000+α / Competitor: 593
Coolant	Wet Cut



YG Prime Taps (1000 Holes+α)



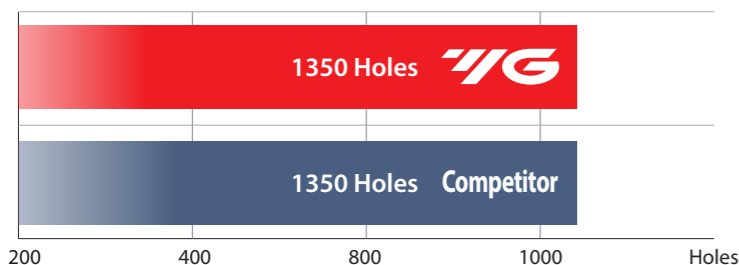
Competitor (593 Holes, Broken)



TEST IV SPIRAL FLUTE TAP (M8x1.25)

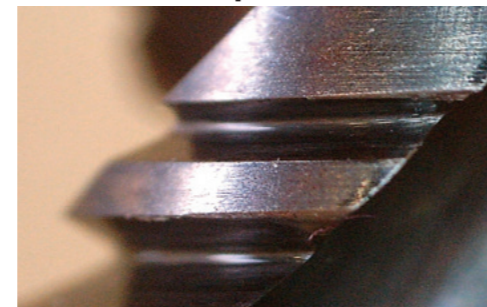
Cutting Condition

Tool	Spiral Flute Tap
Size	M8x1.25
Work Material	JIS: S45C / DIN: CK45 / WR: 1.1191
RPM	796 rev/min
Vc	20 m/min
Feed	995 mm/min
Tap Drill Size	6.8mm
Tapping Depth	17 mm
Tapping Holes	YG-1: 1350+α / Competitor: 1350+α
Coolant	Wet Cut

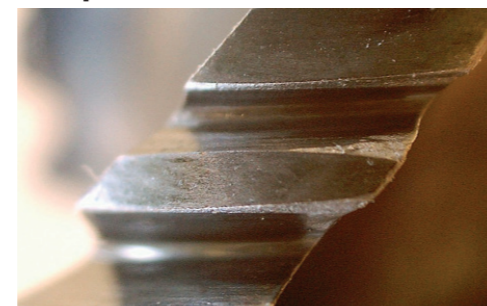


Comparison of Wear Resistance

YG Prime Taps



Competitor



SELECTION GUIDE



HSS-PM PRIME TAPS

Premium Spiral Point and Spiral Flute Taps
High Performance in Various Ductile Materials



Please visit globalyg1.com/mat for material search

◎: Excellent ○: Good

ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment	HB	HRc	Recommended cutting conditions Vc (m/min.)					
P	1	Non-alloy steel	About 0.15% C Annealed	125		○	5-20	○	5-20	◎	15-45
	2		About 0.45% C Annealed	190	13	◎	10-50	◎	10-50	◎	10-55
	3		About 0.45% C Quenched & Tempered	250	25	◎	10-50	◎	10-50	◎	10-55
	4		About 0.75% C Annealed	270	28	◎	15-40	◎	15-40	◎	15-50
	5	About 0.75% C Quenched & Tempered	300	32	◎	15-40	◎	15-40	◎	15-50	
	6	Low alloy steel	Annealed	180	10	◎	8-30	◎	8-30	◎	8-30
	7		Quenched & Tempered	275	29	◎	8-30	◎	8-30	◎	8-30
	8		Quenched & Tempered	300	32	◎	8-30	◎	8-30	◎	8-30
	9		Quenched & Tempered	350	38	○	8-30	○	8-30	◎	8-30
	10		High alloyed steel, and tool steel	Annealed	200	15	○	8-30	○	8-30	○
	11		Quenched & Tempered	325	35	○	8-30	○	8-30	○	8-30
M	12	Stainless steel	Ferritic / Martensitic Annealed	200	15	◎	5-15	◎	5-15	◎	8-20
	13		Martensitic Quenched & Tempered	240	23	◎	5-15	◎	5-15	◎	8-20
	14	Austenitic	180	10	◎	5-15	◎	5-15	◎	8-20	
K	15	Grey cast iron	Pearlitic / ferritic	180	10	○	15-35	○	15-35	◎	15-35
	16		Pearlitic (Martensitic)	260	26	○	15-35	○	15-35	◎	15-35
	17	Nodular cast iron	Ferritic	160	3	◎	15-35	◎	15-35	◎	15-35
	18		Pearlitic	250	25	◎	15-35	◎	15-35	◎	15-35
	19	Malleable cast iron	Ferritic	130							
20	Pearlitic		230	21							
N	21	Aluminum-wrought alloy	Not Curable	60		○	15-35	○	15-35	○	15-35
	22		Curable Hardened	100		○	15-35	○	15-35	○	15-35
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable	75		◎	15-35	◎	15-35	◎	15-35
	24		≤ 12% Si, Curable Hardened	90		◎	15-35	◎	15-35	◎	15-35
	25		> 12% Si, Not Curable	130		○	15-35	○	15-35	○	15-35
	26		Cutting Alloys, PB>1%	110		◎	15-35	◎	15-35	◎	15-35
	27	Copper and Copper Alloys (Bronze / Brass)	CuZn, CuSnZn (Brass)	90		◎	15-35	◎	15-35	◎	15-35
	28		CuSn, lead-free copper and electrolytic copper	100		◎	15-35	◎	15-35	◎	15-35
	29		Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic Rubber, Wood, etc.							
	30										
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	Chilled Cast Iron	Cast	400	42						
	41	Hardened Cast Iron	Hardened	550	55						

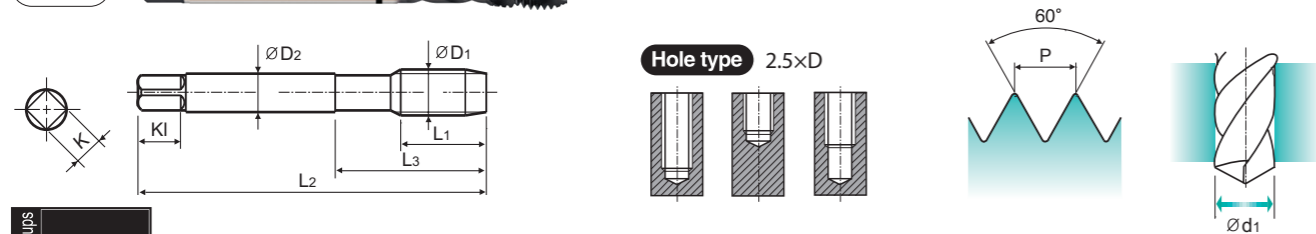
HOLE TYPE	Max. 2.5xD Blind Hole		Max. 3.0xD Through Hole		
	C	E	B		
TOOL MATERIAL	HSS-PM				
CHAMFER LEAD ACC. TO DIN2197					
FLUTE TYPE	Spiral Flute	Spiral Flute	Spiral Point		
SPIRAL FLUTE ANGLE	R45	R45	-		
SERIES	M	DIN371/376	TRE30 (p.8)	TRE34 (p.9)	TRJ15 (p.14)
		DIN352			
		DIN357/LONG			
	MF	DIN374	TRE31 (p.10)		TRJ16 (p.15)
		DIN2181			
	UNC	DIN371/376	TRE32 (p.12)		TRJ17 (p.17)
		DIN351			
	UNF	DIN371/374	TRE33 (p.13)		TRJ18 (p.19)
		DIN2181			
	BSW	DIN2182/2183			
		DIN351			
	G(BSP)	DIN5156/5157			
	EG-M	DIN371/376			
	EG-UNC	DIN371/376			
EG-UNF	DIN371/374				
SURFACE TREATMENT	X-coating				
MODEL					

M X-COATED HSS-PM SPIRAL FLUTE TAPS for MULTI-PURPOSE ISO Metric Coarse Threads DIN13

TRE30 SERIES



- ▶ High performance in various ductile materials
- ▶ Specially designed to prevent oversized threads and reduce gauging problems



Material groups **MU** HSS PM DIN 371/376 6HX 60° C R45 X Coating p.7

Machine Taps

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	X-coating	L1	L2	L3	ØD2	K	Kl	Z	Ød1
M2	x 0.4	TRE30136GS	3.2	45.0	13.0	2.8	2.1	5.0	2	1.6
M2.5	x 0.45	TRE30176GS	3.6	50.0	15.0	2.8	2.1	5.0	2	2.1
M3	x 0.5	TRE30206GS	4.0	56.0	18.0	3.5	2.7	6.0	3	2.5
M3.5	x 0.6	TRE30226GS	4.8	56.0	20.0	4.0	3.0	6.0	3	2.9
M4	x 0.7	TRE30246GS	5.6	63.0	21.0	4.5	3.4	6.0	3	3.3
M5	x 0.8	TRE30286GS	6.4	70.0	25.0	6.0	4.9	8.0	3	4.2
M6	x 1.0	TRE30316GS	8.0	80.0	30.0	6.0	4.9	8.0	3	5.0
M7	x 1.0	TRE30346GS	10.0	80.0	30.0	7.0	5.5	8.0	3	6.0
M8	x 1.25	TRE30366GS	13.0	90.0	35.0	8.0	6.2	9.0	3	6.8
M9	x 1.25	TRE30396GS	13.0	90.0	35.0	9.0	7.0	10.0	3	7.8
M10	x 1.5	TRE30426GS	15.0	100.0	39.0	10.0	8.0	11.0	3	8.5
M12	x 1.75	TRE30506GS	18.0	110.0	44.0	9.0	7.0	10.0	3	10.3
M14	x 2.0	TRE30546GS	20.0	110.0	44.0	11.0	9.0	12.0	3	12.0
M16	x 2.0	TRE30606GS	20.0	110.0	44.0	12.0	9.0	12.0	3	14.0
M18	x 2.5	TRE30656GS	25.0	125.0	50.0	14.0	11.0	14.0	4	15.5
M20	x 2.5	TRE30706GS	25.0	140.0	54.0	16.0	12.0	15.0	4	17.5
M22	x 2.5	TRE30746GS	25.0	140.0	54.0	18.0	14.5	17.0	4	19.5
M24	x 3.0	TRE30786GS	30.0	160.0	60.0	18.0	14.5	17.0	4	21.0

▶DIN 371(M2~M10) and DIN 376(M12~M24)

◎ : 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	10	29	32	38	15	35	15	23	10	10	26	3	25	3	25
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	○	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	◎	◎	○	○

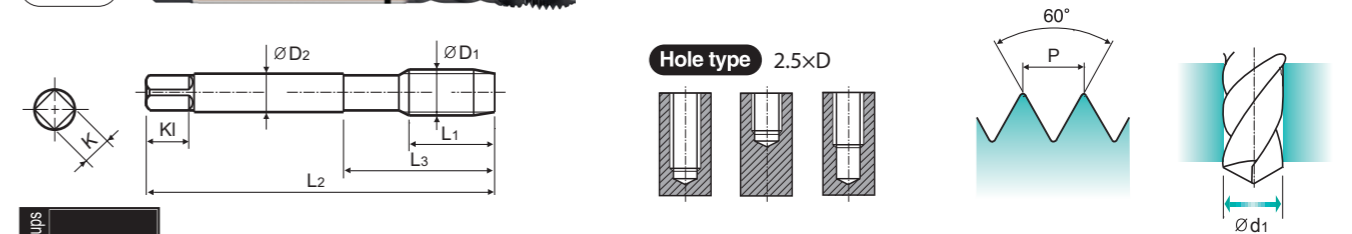
ISO	N				S						H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)				Non Metallic Materials		Heat Resistant Super Alloys				Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
Material Description	21	22	23	24	25	26	27	28	29	30	31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

M X-COATED HSS-PM SPIRAL FLUTE TAPS for MULTI-PURPOSE ISO Metric Coarse Threads DIN13

TRE34 SERIES



- ▶ High performance in various ductile materials
- ▶ Specially designed to prevent oversized threads and reduce gauging problems



Material groups **MU** HSS PM DIN 371/376 6HX 60° E R45 X Coating p.7

Machine Taps

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	X-coating	L1	L2	L3	ØD2	K	Kl	Z	Ød1
M2	x 0.4	TRE34136GS	3.2	45.0	13.0	2.8	2.1	5.0	2	1.6
M3	x 0.5	TRE34206GS	4.0	56.0	18.0	3.5	2.7	6.0	3	2.5
M4	x 0.7	TRE34246GS	5.6	63.0	21.0	4.5	3.4	6.0	3	3.3
M5	x 0.8	TRE34286GS	6.4	70.0	25.0	6.0	4.9	8.0	3	4.2
M6	x 1.0	TRE34316GS	8.0	80.0	30.0	6.0	4.9	8.0	3	5.0
M8	x 1.25	TRE34366GS	13.0	90.0	35.0	8.0	6.2	9.0	3	6.8
M10	x 1.5	TRE34426GS	15.0	100.0	39.0	10.0	8.0	11.0	3	8.5
M12	x 1.75	TRE34506GS	18.0	110.0	44.0	9.0	7.0	10.0	3	10.3
M14	x 2.0	TRE34546GS	20.0	110.0	44.0	11.0	9.0	12.0	3	12.0
M16	x 2.0	TRE34606GS	20.0	110.0	44.0	12.0	9.0	12.0	3	14.0
M20	x 2.5	TRE34706GS	25.0	140.0	54.0	16.0	12.0	15.0	4	17.5

▶DIN 371(M2~M10) and DIN 376(M12~M20)

◎ : Excellent ○ : Good

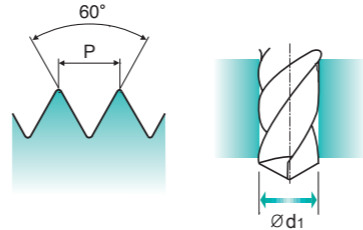
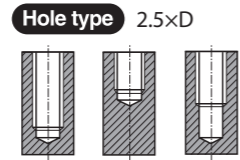
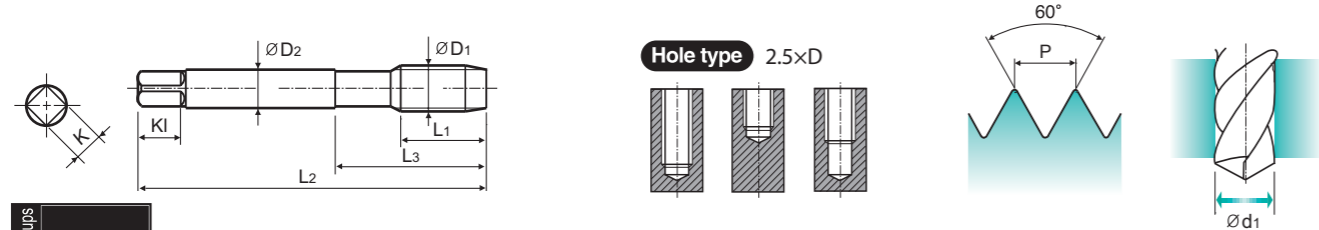
ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	3	25
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	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400Rm	1050Rm	550	630	400	550
Recommended	○	○	◎	◎	○	◎	◎	◎													

MF X-COATED HSS-PM SPIRAL FLUTE TAPS for MULTI-PURPOSE ISO Metric Fine Threads DIN13

TRE31 SERIES

- ▶ High performance in various ductile materials
- ▶ Specially designed to prevent oversized threads and reduce gauging problems



Material groups: **MU** HSS PM DIN 374 6HX 60° C R45 X Coating p.7

Machine Taps

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	X-coating	L1	L2	L3	ØD2	K	Kl	Z	Ød1
M4	x 0.5	TRE31256GS	5.6	63.0	21.0	2.8	2.1	5.0	3	3.5
M4	x 0.35	TRE31696GS	5.6	63.0	21.0	2.8	2.1	5.0	3	3.7
M5	x 0.5	TRE31296GS	6.4	70.0	25.0	3.5	2.7	6.0	3	4.5
M6	x 0.75	TRE31326GS	8.0	80.0	30.0	4.5	3.4	6.0	3	5.3
M6	x 0.5	TRE31336GS	8.0	80.0	30.0	4.5	3.4	6.0	3	5.5
M8	x 1.0	TRE31376GS	10.0	90.0	36.0	6.0	4.9	8.0	3	7.0
M8	x 0.75	TRE31386GS	10.0	80.0	30.0	6.0	4.9	8.0	3	7.3
M9	x 1.0	TRE31406GS	10.0	90.0	36.0	7.0	5.5	8.0	3	8.0
M9	x 0.75	TRE31416GS	10.0	80.0	30.0	7.0	5.5	8.0	3	8.3
M10	x 1.25	TRE31436GS	13.0	100.0	40.0	7.0	5.5	8.0	3	8.8
M10	x 1.0	TRE31446GS	10.0	90.0	36.0	7.0	5.5	8.0	3	9.0
M10	x 0.75	TRE31456GS	10.0	90.0	36.0	7.0	5.5	8.0	3	9.3
M12	x 1.5	TRE31516GS	15.0	100.0	40.0	9.0	7.0	10.0	3	10.5
M12	x 1.25	TRE31526GS	15.0	100.0	40.0	9.0	7.0	10.0	3	10.8
M12	x 1.0	TRE31536GS	15.0	100.0	40.0	9.0	7.0	10.0	3	11.0
M14	x 1.5	TRE31556GS	15.0	100.0	40.0	11.0	9.0	12.0	3	12.5
M14	x 1.25	TRE31566GS	15.0	100.0	40.0	11.0	9.0	12.0	3	12.8
M14	x 1.0	TRE31576GS	15.0	100.0	40.0	11.0	9.0	12.0	3	13.0
M16	x 1.5	TRE31616GS	15.0	100.0	40.0	12.0	9.0	12.0	3	14.5
M16	x 1.0	TRE31626GS	15.0	100.0	40.0	12.0	9.0	12.0	3	15.0

▶ NEXT PAGE

◎ : Excellent ○ : Good

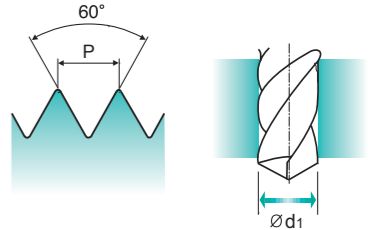
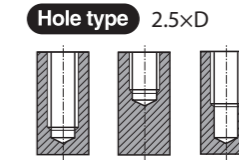
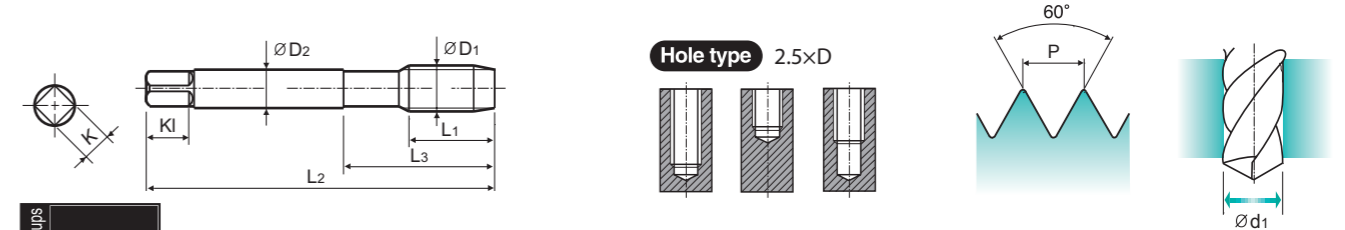
ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	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
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	○	○	◎	◎	○	◎	◎	◎													

MF X-COATED HSS-PM SPIRAL FLUTE TAPS for MULTI-PURPOSE ISO Metric Fine Threads DIN13

TRE31 SERIES

- ▶ High performance in various ductile materials
- ▶ Specially designed to prevent oversized threads and reduce gauging problems



Material groups: **MU** HSS PM DIN 374 6HX 60° C R45 X Coating p.7

Machine Taps

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	X-coating	L1	L2	L3	ØD2	K	Kl	Z	Ød1
M18	x 2.0	TRE31666GS	20.0	125.0	50.0	14.0	11.0	14.0	4	16.0
M18	x 1.5	TRE31676GS	15.0	110.0	44.0	14.0	11.0	14.0	4	16.5
M18	x 1.0	TRE31686GS	15.0	110.0	44.0	14.0	11.0	14.0	4	17.0
M20	x 2.0	TRE31716GS	20.0	140.0	54.0	16.0	12.0	15.0	4	18.0
M20	x 1.5	TRE31726GS	15.0	125.0	50.0	16.0	12.0	15.0	4	18.5
M20	x 1.0	TRE31736GS	15.0	125.0	50.0	16.0	12.0	15.0	4	19.0
M22	x 2.0	TRE31756GS	20.0	140.0	54.0	18.0	14.5	17.0	4	20.0
M22	x 1.5	TRE31766GS	15.0	125.0	50.0	18.0	14.5	17.0	4	20.5
M22	x 1.0	TRE31776GS	15.0	125.0	50.0	18.0	14.5	17.0	4	21.0
M24	x 2.0	TRE31796GS	20.0	140.0	54.0	18.0	14.5	17.0	4	22.0
M24	x 1.5	TRE31806GS	15.0	140.0	54.0	18.0	14.5	17.0	4	22.5
M24	x 1.0	TRE31816GS	15.0	140.0	54.0	18.0	14.5	17.0	4	23.0

◎ : Excellent ○ : Good

ISO Material Description	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
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	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
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	○	○	◎	◎	○	◎	◎	◎													

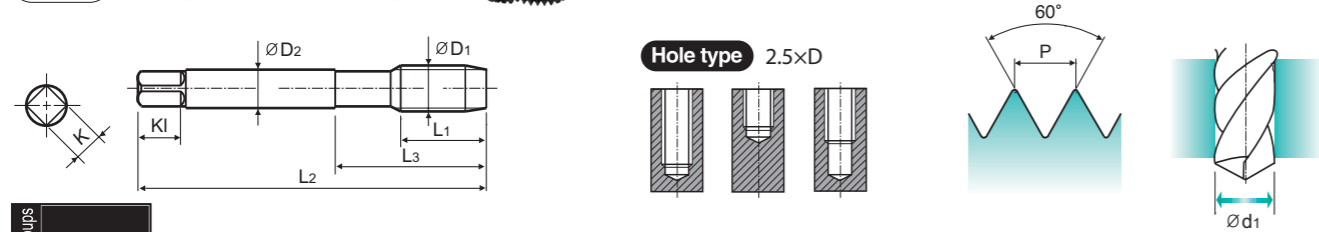
UNC Unified Coarse Threads

X-COATED HSS-PM SPIRAL FLUTE TAPS for MULTI-PURPOSE

TRE32 SERIES



- ▶ High performance in various ductile materials
- ▶ Specially designed to prevent oversized threads and reduce gauging problems



Material groups: **MU** HSS PM DIN 371/376 2BX 60° C R45 X Coating p.7

Machine Taps

Unit : mm

SIZE	TPI	EDP No.	Thread Length	Overall Length	Neck Length	Shank Diameter	Square Size	Square Length	No. of Flute	Tapping Drill Diameter
ØD1		X-coating	L1	L2	L3	ØD2	K	KI	Z	Ød1
#4 - 40 UNC		TRE32162GS	5.1	56.0	18.0	3.5	2.7	6.0	2	2.30
#5 - 40 UNC		TRE32202GS	5.1	56.0	18.0	3.5	2.7	6.0	3	2.60
#6 - 32 UNC		TRE32242GS	6.4	56.0	20.0	4.0	3.0	6.0	3	2.80
#8 - 32 UNC		TRE32282GS	6.4	63.0	21.0	4.5	3.4	6.0	3	3.40
#10 - 24 UNC		TRE32322GS	8.5	70.0	25.0	6.0	4.9	8.0	3	3.90
#12 - 24 UNC		TRE32362GS	8.5	80.0	30.0	6.0	4.9	8.0	3	4.50
1/4 - 20 UNC		TRE32402GS	10.2	80.0	30.0	7.0	5.5	8.0	3	5.10
5/16 - 18 UNC		TRE32442GS	14.2	90.0	35.0	8.0	6.2	9.0	3	6.60
3/8 - 16 UNC		TRE32482GS	15.9	100.0	39.0	9.0	7.0	10.0	3	8.00
7/16 - 14 UNC		TRE32522GS	18.2	100.0	40.0	8.0	6.2	9.0	3	9.40
1/2 - 13 UNC		TRE32562GS	19.6	110.0	44.0	9.0	7.0	10.0	3	10.80
9/16 - 12 UNC		TRE32602GS	21.2	110.0	44.0	11.0	9.0	12.0	3	12.20
5/8 - 11 UNC		TRE32642GS	23.1	110.0	44.0	12.0	9.0	12.0	3	13.60
3/4 - 10 UNC		TRE32702GS	25.4	125.0	50.0	14.0	11.0	14.0	4	16.50
7/8 - 9 UNC		TRE32742GS	28.3	140.0	54.0	18.0	14.5	17.0	4	19.50
1 - 8 UNC		TRE32782GS	31.8	160.0	60.0	20.0	16.0	19.0	4	22.20

▶ DIN 371(#4~3/8) and DIN 376(7/16~1)

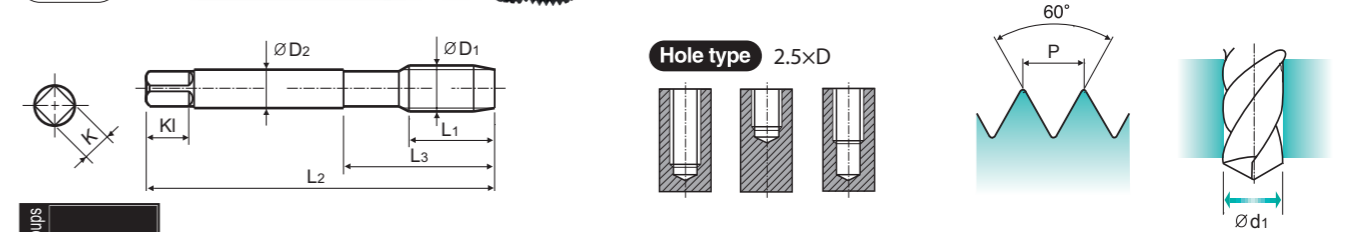
UNF Unified Fine Threads

X-COATED HSS-PM SPIRAL FLUTE TAPS for MULTI-PURPOSE

TRE33 SERIES



- ▶ High performance in various ductile materials
- ▶ Specially designed to prevent oversized threads and reduce gauging problems



Material groups: **MU** HSS PM DIN 371/374 2BX 60° C R45 X Coating p.7

Machine Taps

Unit : mm

SIZE	TPI	EDP No.	Thread Length	Overall Length	Neck Length	Shank Diameter	Square Size	Square Length	No. of Flute	Tapping Drill Diameter
ØD1		X-coating	L1	L2	L3	ØD2	K	KI	Z	Ød1
#4 - 48 UNF		TRE33182GS	5.1	56.0	18.0	3.5	2.7	6.0	2	2.40
#5 - 44 UNF		TRE33222GS	5.1	56.0	18.0	3.5	2.7	6.0	3	2.70
#6 - 40 UNF		TRE33262GS	6.4	56.0	20.0	4.0	3.0	6.0	3	2.90
#8 - 36 UNF		TRE33302GS	6.4	63.0	21.0	4.5	3.4	6.0	3	3.50
#10 - 32 UNF		TRE33342GS	8.5	70.0	25.0	6.0	4.9	8.0	3	4.10
#12 - 28 UNF		TRE33382GS	8.5	80.0	30.0	6.0	4.9	8.0	3	4.60
1/4 - 28 UNF		TRE33422GS	10.2	80.0	30.0	7.0	5.5	8.0	3	5.50
5/16 - 24 UNF		TRE33462GS	10.6	90.0	35.0	8.0	6.2	9.0	3	6.90
3/8 - 24 UNF		TRE33502GS	10.6	100.0	39.0	9.0	7.0	10.0	3	8.50
7/16 - 20 UNF		TRE33542GS	12.7	100.0	40.0	8.0	6.2	9.0	3	9.90
1/2 - 20 UNF		TRE33582GS	12.7	100.0	40.0	9.0	7.0	10.0	3	11.50
9/16 - 18 UNF		TRE33622GS	14.2	100.0	40.0	11.0	9.0	12.0	3	12.90
5/8 - 18 UNF		TRE33662GS	14.2	100.0	40.0	12.0	9.0	12.0	3	14.50
3/4 - 16 UNF		TRE33722GS	15.9	110.0	44.0	14.0	11.0	14.0	4	17.50
7/8 - 14 UNF		TRE33762GS	18.2	125.0	50.0	18.0	14.5	17.0	4	20.50
1 - 12 UNF		TRE33802GS	21.2	140.0	54.0	20.0	16.0	19.0	4	23.20

▶ DIN 371(#4~3/8) and DIN 374(7/16~1)

◎ : 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
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								
	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	○	○	◎	◎	○	◎	◎	◎													

◎ : 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
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	○	◎	◎	◎	◎	◎	◎	◎	○	○	◎	◎	◎	◎	○	○	◎	◎	○	◎	

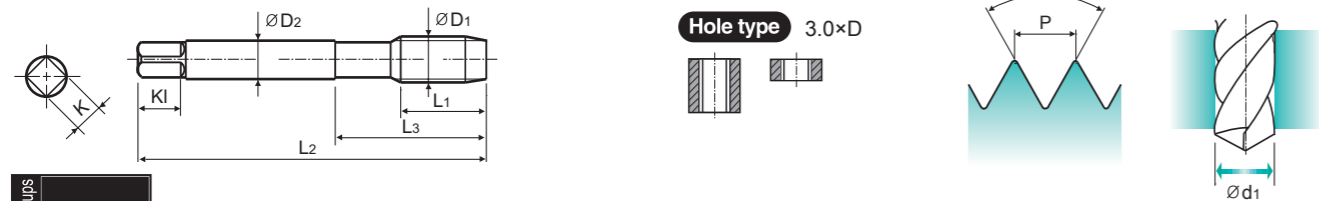
ISO	N					S							H								
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys				Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron		
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	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	○	○	◎	◎	○	◎	◎	◎													

M X-COATED HSS-PM SPIRAL POINT TAPS for MULTI-PURPOSE ISO Metric Coarse Threads DIN 13

TRJ15 SERIES



- ▶ High performance in various ductile materials
- ▶ Specially designed to prevent oversized threads and reduce gauging problems



Hole type 3.0×D

Material groups **MU** **HSS PM** **DIN 371/376** **6HX** **60°** **B** **X Coating** p.7

Machine Taps

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	X-coating	L1	L2	L3	ØD2	K	Kl	Z	Ød1
M2	x 0.4	TRJ15136GS	8.0	45.0	13.0	2.8	2.1	5.0	2	1.6
M2.5	x 0.45	TRJ15176GS	9.0	50.0	15.0	2.8	2.1	5.0	2	2.1
M3	x 0.5	TRJ15206GS	11.0	56.0	18.0	3.5	2.7	6.0	3	2.5
M3.5	x 0.6	TRJ15226GS	12.0	56.0	20.0	4.0	3.0	6.0	3	2.9
M4	x 0.7	TRJ15246GS	13.0	63.0	21.0	4.5	3.4	6.0	3	3.3
M5	x 0.8	TRJ15286GS	15.0	70.0	25.0	6.0	4.9	8.0	3	4.2
M6	x 1.0	TRJ15316GS	17.0	80.0	30.0	6.0	4.9	8.0	3	5.0
M7	x 1.0	TRJ15346GS	17.0	80.0	30.0	7.0	5.5	8.0	3	6.0
M8	x 1.25	TRJ15366GS	20.0	90.0	35.0	8.0	6.2	9.0	3	6.8
M9	x 1.25	TRJ15396GS	20.0	90.0	35.0	9.0	7.0	10.0	3	7.8
M10	x 1.5	TRJ15426GS	22.0	100.0	39.0	10.0	8.0	11.0	3	8.5
M12	x 1.75	TRJ15506GS	24.0	110.0	44.0	9.0	7.0	10.0	3	10.3
M14	x 2.0	TRJ15546GS	26.0	110.0	44.0	11.0	9.0	12.0	3	12.0
M16	x 2.0	TRJ15606GS	27.0	110.0	44.0	12.0	9.0	12.0	3	14.0
M18	x 2.5	TRJ15656GS	30.0	125.0	50.0	14.0	11.0	14.0	3	15.5
M20	x 2.5	TRJ15706GS	32.0	140.0	54.0	16.0	12.0	15.0	3	17.5
M22	x 2.5	TRJ15746GS	32.0	140.0	54.0	18.0	14.5	17.0	3	19.5
M24	x 3.0	TRJ15786GS	34.0	160.0	60.0	18.0	14.5	17.0	3	21.0

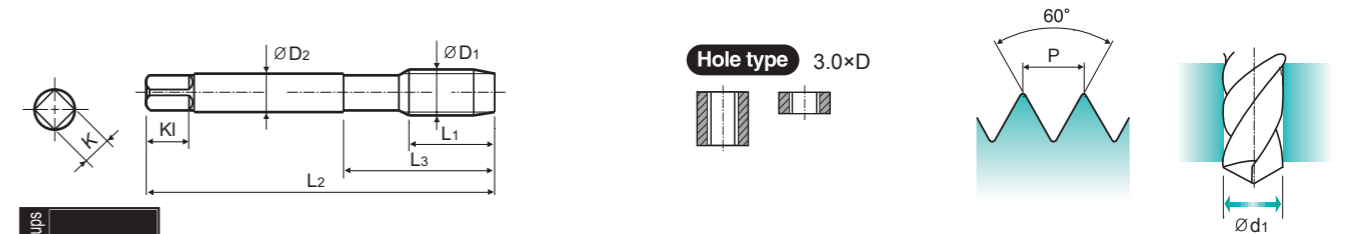
▶DIN 371(M2~M10) and DIN 376(M12~M24)

MF X-COATED HSS-PM SPIRAL POINT TAPS for MULTI-PURPOSE ISO Metric Fine Threads DIN 13

TRJ16 SERIES



- ▶ High performance in various ductile materials
- ▶ Specially designed to prevent oversized threads and reduce gauging problems



Hole type 3.0×D

Material groups **MU** **HSS PM** **DIN 374** **6HX** **60°** **B** **X Coating** p.7

Machine Taps

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	X-coating	L1	L2	L3	ØD2	K	Kl	Z	Ød1
M4	x 0.5	TRJ16256GS	10.0	63.0	21.0	2.8	2.1	5.0	3	3.5
M4	x 0.35	TRJ16696GS	10.0	63.0	21.0	2.8	2.1	5.0	3	3.7
M5	x 0.5	TRJ16296GS	11.0	70.0	25.0	3.5	2.7	6.0	3	4.5
M6	x 0.75	TRJ16326GS	13.0	80.0	30.0	4.5	3.4	6.0	3	5.3
M6	x 0.5	TRJ16336GS	13.0	80.0	30.0	4.5	3.4	6.0	3	5.5
M8	x 1.0	TRJ16376GS	17.0	90.0	36.0	6.0	4.9	8.0	3	7.0
M8	x 0.75	TRJ16386GS	14.0	80.0	30.0	6.0	4.9	8.0	3	7.3
M9	x 1.0	TRJ16406GS	20.0	90.0	36.0	7.0	5.5	8.0	3	8.0
M9	x 0.75	TRJ16416GS	17.0	80.0	36.0	7.0	5.5	8.0	3	8.3
M10	x 1.25	TRJ16436GS	22.0	100.0	40.0	7.0	5.5	8.0	3	8.8
M10	x 1.0	TRJ16446GS	18.0	90.0	36.0	7.0	5.5	8.0	3	9.0
M10	x 0.75	TRJ16456GS	18.0	90.0	36.0	7.0	5.5	8.0	3	9.3
M12	x 1.5	TRJ16516GS	22.0	100.0	40.0	9.0	7.0	10.0	3	10.5
M12	x 1.25	TRJ16526GS	22.0	100.0	40.0	9.0	7.0	10.0	3	10.8
M12	x 1.0	TRJ16536GS	18.0	100.0	40.0	9.0	7.0	10.0	3	11.0
M14	x 1.5	TRJ16556GS	22.0	100.0	40.0	11.0	9.0	12.0	3	12.5
M14	x 1.25	TRJ16566GS	22.0	100.0	40.0	11.0	9.0	12.0	3	12.8
M14	x 1.0	TRJ16576GS	18.0	100.0	40.0	11.0	9.0	12.0	3	13.0
M16	x 1.5	TRJ16616GS	22.0	100.0	40.0	12.0	9.0	12.0	3	14.5
M16	x 1.0	TRJ16626GS	18.0	100.0	40.0	12.0	9.0	12.0	3	15.0

▶ NEXT PAGE

◎ : 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
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										
	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	○	○	◎	◎	○	◎	◎	◎													

◎ : 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
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										
	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	○	○	◎	◎	○	◎	◎	◎													

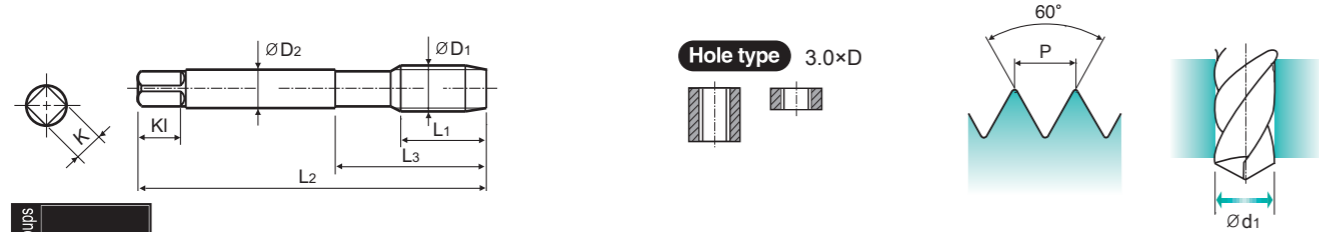
MF X-COATED HSS-PM SPIRAL POINT TAPS for MULTI-PURPOSE

ISO Metric Fine Threads DIN 13

TRJ16 SERIES



- ▶ High performance in various ductile materials
- ▶ Specially designed to prevent oversized threads and reduce gauging problems



Material groups **MU** HSS PM DIN 374 6HX 60° B X Coating p.7

Machine Taps

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	X-coating	L1	L2	L3	ØD2	K	Kl	Z	Ød1
M18	x 2.0	TRJ16666GS	26.0	125.0	50.0	14.0	11.0	14.0	3	16.0
M18	x 1.5	TRJ16676GS	25.0	110.0	44.0	14.0	11.0	14.0	3	16.5
M18	x 1.0	TRJ16686GS	20.0	110.0	44.0	14.0	11.0	14.0	3	17.0
M20	x 2.0	TRJ16716GS	27.0	140.0	54.0	16.0	12.0	15.0	3	18.0
M20	x 1.5	TRJ16726GS	25.0	125.0	50.0	16.0	12.0	15.0	3	18.5
M20	x 1.0	TRJ16736GS	20.0	125.0	50.0	16.0	12.0	15.0	3	19.0
M22	x 2.0	TRJ16756GS	27.0	140.0	54.0	18.0	14.5	17.0	3	20.0
M22	x 1.5	TRJ16766GS	25.0	125.0	50.0	18.0	14.5	17.0	3	20.5
M22	x 1.0	TRJ16776GS	20.0	125.0	50.0	18.0	14.5	17.0	3	21.0
M24	x 2.0	TRJ16796GS	27.0	140.0	54.0	18.0	14.5	17.0	3	22.0
M24	x 1.5	TRJ16806GS	27.0	140.0	54.0	18.0	14.5	17.0	3	22.5
M24	x 1.0	TRJ16816GS	20.0	140.0	54.0	18.0	14.5	17.0	3	23.0

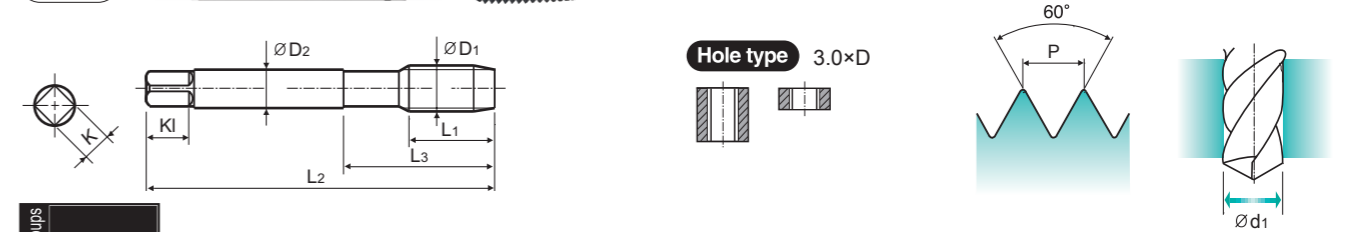
UNC X-COATED HSS-PM SPIRAL POINT TAPS for MULTI-PURPOSE

Unified Coarse Threads

TRJ17 SERIES



- ▶ High performance in various ductile materials
- ▶ Specially designed to prevent oversized threads and reduce gauging problems



Material groups **MU** HSS PM DIN 371/376 2BX 60° B X Coating p.7

Machine Taps

Unit : mm

SIZE	TPI	EDP No.	Thread Length	Overall Length	Neck Length	Shank Diameter	Square Size	Square Length	No. of Flute	Tapping Drill Diameter
ØD1		X-coating	L1	L2	L3	ØD2	K	Kl	Z	Ød1
#4	- 40 UNC	TRJ17162GS	11.0	56.0	18.0	3.5	2.7	6.0	2	2.30
#5	- 40 UNC	TRJ17202GS	11.0	56.0	18.0	3.5	2.7	6.0	3	2.60
#6	- 32 UNC	TRJ17242GS	12.0	56.0	20.0	4.0	3.0	6.0	3	2.80
#8	- 32 UNC	TRJ17282GS	13.0	63.0	21.0	4.5	3.4	6.0	3	3.40
#10	- 24 UNC	TRJ17322GS	15.0	70.0	25.0	6.0	4.9	8.0	3	3.90
#12	- 24 UNC	TRJ17362GS	16.0	80.0	30.0	6.0	4.9	8.0	3	4.50
1/4	- 20 UNC	TRJ17402GS	17.0	80.0	30.0	7.0	5.5	8.0	3	5.10
5/16	- 18 UNC	TRJ17442GS	20.0	90.0	35.0	8.0	6.2	9.0	3	6.60
3/8	- 16 UNC	TRJ17482GS	22.0	100.0	39.0	9.0	7.0	10.0	3	8.00
7/16	- 14 UNC	TRJ17522GS	22.0	100.0	40.0	8.0	6.2	9.0	3	9.40
1/2	- 13 UNC	TRJ17562GS	25.0	110.0	44.0	9.0	7.0	10.0	3	10.80
9/16	- 12 UNC	TRJ17602GS	26.0	110.0	44.0	11.0	9.0	12.0	3	12.20
5/8	- 11 UNC	TRJ17642GS	27.0	110.0	44.0	12.0	9.0	12.0	3	13.60
3/4	- 10 UNC	TRJ17702GS	30.0	125.0	50.0	14.0	11.0	14.0	3	16.50
7/8	- 9 UNC	TRJ17742GS	32.0	140.0	54.0	18.0	14.5	17.0	3	19.50
1	- 8 UNC	TRJ17782GS	36.0	160.0	60.0	20.0	16.0	19.0	3	22.20

▶DIN371 (#4~3/8) and DIN376 (7/16~1)

◎ : 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
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									
	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	○	○	◎	◎	○	◎	◎	◎													

◎ : 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
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									
	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	○	○	◎	◎	○	◎	◎	◎													

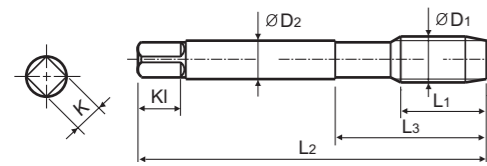
UNF Unified Fine Threads

X-COATED HSS-PM SPIRAL POINT TAPS for MULTI-PURPOSE

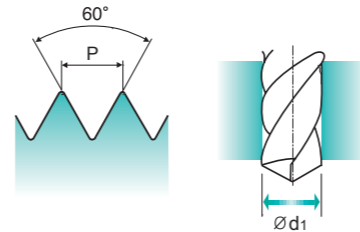
TRJ18 SERIES



► High performance in various ductile materials
 ► Specially designed to prevent oversized threads and reduce gauging problems



Hole type 3.0×D



Material groups: **MU** HSS PM DIN 371/374 2BX 60° B X Coating p.7

Machine Taps

Unit : mm

SIZE	TPI	EDP No.	Thread Length	Overall Length	Neck Length	Shank Diameter	Square Size	Square Length	No. of Flute	Tapping Drill Diameter
ØD1		X-coating	L1	L2	L3	ØD2	K	K1	Z	Ød1
#4	- 48 UNF	TRJ18182GS	11.0	56.0	18.0	3.5	2.7	6.0	2	2.40
#5	- 44 UNF	TRJ18222GS	11.0	56.0	18.0	3.5	2.7	6.0	3	2.70
#6	- 40 UNF	TRJ18262GS	12.0	56.0	20.0	4.0	3.0	6.0	3	2.90
#8	- 36 UNF	TRJ18302GS	13.0	63.0	21.0	4.5	3.4	6.0	3	3.50
#10	- 32 UNF	TRJ18342GS	15.0	70.0	25.0	6.0	4.9	8.0	3	4.10
#12	- 28 UNF	TRJ18382GS	16.0	80.0	30.0	6.0	4.9	8.0	3	4.60
1/4	- 28 UNF	TRJ18422GS	17.0	80.0	30.0	7.0	5.5	8.0	3	5.50
5/16	- 24 UNF	TRJ18462GS	17.0	90.0	35.0	8.0	6.2	9.0	3	6.90
3/8	- 24 UNF	TRJ18502GS	18.0	100.0	39.0	9.0	7.0	10.0	3	8.50
7/16	- 20 UNF	TRJ18542GS	22.0	100.0	40.0	8.0	6.2	9.0	3	9.90
1/2	- 20 UNF	TRJ18582GS	22.0	100.0	40.0	9.0	7.0	10.0	3	11.50
9/16	- 18 UNF	TRJ18622GS	22.0	100.0	40.0	11.0	9.0	12.0	3	12.90
5/8	- 18 UNF	TRJ18662GS	22.0	100.0	40.0	12.0	9.0	12.0	3	14.50
3/4	- 16 UNF	TRJ18722GS	25.0	110.0	44.0	14.0	11.0	14.0	3	17.50
7/8	- 14 UNF	TRJ18762GS	26.0	125.0	50.0	18.0	14.5	17.0	3	20.50
1"	- 12 UNF	TRJ18802GS	28.0	140.0	54.0	20.0	16.0	19.0	3	23.20

►DIN371 (#4~3/8) and DIN374 (7/16~1)



PRIME TAPS TECHNICAL DATA

◎ : 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	
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										
	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	○	○	◎	◎	○	◎	◎	◎													

- CUTTING SPEED TABLE
- RECOMMENDED TAP DRILL SIZE
- TAP TOLERANCES
- TROUBLE SHOOTING GUIDE

CUTTING SPEED TABLE - METRIC

Cutting Speeds m/min. into revolutions per minute

TOOL RPM (rev./min.)																
Tool Dia.	Cutting Speed (m/min.)															
	1	2	3	4	5	6	8	10	12	15	20	25	30	40	50	60
1	318	637	955	1274	1592	1910	2548	3185	3822	4777	6366	7962	9554	12739	15924	19108
2	159	318	478	637	796	955	1274	1592	1911	2388	3185	3981	4777	6369	7962	9554
3	106	212	318	425	531	637	849	1062	1274	1592	2123	2654	3185	4246	5308	6369
4	80	159	239	318	398	478	637	796	955	1194	1592	1990	2389	3185	3981	4777
5	64	127	191	255	318	382	510	637	764	955	1274	1592	1911	2548	3185	3822
6	53	106	159	212	265	318	425	531	637	796	1062	1327	1592	2123	2653	3185
8	40	80	119	159	199	239	318	398	478	597	796	955	1194	1592	1990	2388
10	31	64	96	127	159	191	255	318	382	478	637	796	955	1274	1592	1911
12	26	53	80	106	133	159	212	265	318	398	531	663	796	1062	1327	1592
14	23	45	68	91	114	136	182	227	273	341	455	569	682	910	1137	1365
16	20	40	60	80	100	119	159	199	239	299	398	498	597	796	995	1194
18	18	35	53	71	88	106	142	177	212	265	354	442	531	708	885	1062
20	16	32	48	64	80	96	127	159	191	239	318	398	478	637	796	955
25	13	25	38	51	64	76	102	127	153	191	255	318	382	510	637	764
30	11	21	32	42	53	64	85	106	127	159	212	265	318	425	531	637
35	9	18	27	36	45	55	73	91	109	136	182	227	273	364	455	546
40	8	16	24	32	40	48	64	80	96	119	159	199	239	318	398	478

RPM = rev./min.
V = m/min.
D = Dia.(mm)

$$V = \frac{RPM \cdot \pi \cdot D}{1000}$$

$$RPM = \frac{1000 \cdot V}{\pi \cdot D}$$

CUTTING SPEED TABLE - INCH

Cutting Speeds m/min. into revolutions per minute

TOOL RPM (rev./min.)																
Tool Dia.	Cutting Speed (m/min.)															
	1	2	3	4	5	6	8	10	12	15	20	25	30	40	50	60
#0	209	418	627	835	1044	1253	1671	2089	2506	3133	4177	5222	6266	8355	10443	12532
#1	172	343	515	687	858	1030	1373	1717	2060	2575	3433	4292	5150	6867	8583	10300
#2	146	291	437	583	729	874	1166	1457	1749	2186	2914	3643	4372	5829	7286	8743
#3	127	253	380	506	633	760	1013	1266	1519	1899	2532	3165	3798	5063	6329	7595
#4	112	224	336	448	559	671	895	1119	1343	1678	2238	2797	3357	4476	5595	6714
#5	100	201	301	401	501	602	802	1003	1203	1504	2005	2506	3008	4010	5013	6015
#6	91	182	272	363	454	545	726	908	1090	1362	1816	2270	2724	3632	4541	5449
#8	76	153	229	306	382	458	611	764	917	1146	1528	1910	2292	3057	3821	4585
#10	66	132	198	264	330	396	528	660	791	989	1319	1649	1979	2638	3298	3957
#12	58	116	174	232	290	348	464	580	696	870	1160	1450	1741	2321	2901	3481
1/4	50	100	150	201	251	301	401	501	602	752	1003	1253	1504	2005	2506	3008
5/16	40	80	120	160	201	241	321	401	481	602	802	1003	1203	1604	2005	2406
3/8	33	67	100	134	167	201	267	334	401	501	668	835	1003	1337	1671	2005
7/16	29	57	86	115	143	172	229	286	344	430	573	716	859	1146	1432	1719
1/2	25	50	75	100	125	150	201	251	301	376	501	627	752	1003	1253	1504
9/16	22	45	67	89	111	134	178	223	267	334	446	557	668	891	1114	1337
5/8	20	40	60	80	100	120	160	201	241	301	401	501	602	802	1003	1203
3/4	17	33	50	67	84	100	134	167	201	251	334	418	501	668	835	1003
7/8	14	29	43	57	72	86	115	143	172	215	286	358	430	573	716	859
1"	13	25	38	50	63	75	100	125	150	188	251	313	376	501	627	752

RPM = rev./min.
V = m/min.
D = Dia.(mm)

$$V = \frac{RPM \cdot \pi \cdot D}{1000}$$

$$RPM = \frac{1000 \cdot V}{\pi \cdot D}$$

RECOMMENDED TAP DRILL SIZE (M / MF)

Unit : mm

Metric-ISO threads coarse pitch				Metric-ISO threads fine pitch				Metric-ISO threads fine pitch			
M	Pitch	Maximum Core Dia.	Drill Size	MF	Pitch	Maximum Core Dia.	Drill Size	MF	Pitch	Maximum Core Dia.	Drill Size
1	0.25	0.785	0.75	2.5	0.35	2.221	2.15	25	2.00	23.210	23.00
1.1	0.25	0.885	0.85	3	0.35	2.271	2.65	26	1.50	24.676	24.50
1.2	0.25	0.985	0.95	3.5	0.35	3.221	3.15	27	1.00	26.153	26.00
1.4	0.30	1.160	1.10	4	0.50	3.599	3.50	27	1.50	25.676	25.50
1.6	0.35	1.321	1.25	4.5	0.50	4.099	4.00	27	2.00	25.210	25.00
1.7	0.35	1.346	1.30	5	0.50	4.599	4.50	28	1.00	27.153	27.00
1.8	0.35	1.521	1.45	5.5	0.50	5.099	5.00	28	1.50	26.676	26.50
2	0.40	1.679	1.60	6	0.75	5.378	5.20	28	2.00	26.210	26.00
2.2	0.45	1.838	1.75	7	0.75	6.378	6.20	30	1.00	29.153	29.00
2.3	0.40	1.920	1.90	8	0.75	7.378	7.20	30	1.50	28.676	28.50
2.5	0.45	2.138	2.05	8	1.00	7.153	7.00	30	2.00	28.210	28.00
2.6	0.45	2.176	2.10	9	0.75	8.378	8.20	30	3.00	27.252	27.00
3	0.50	2.599	2.50	9	1.00	8.153	8.00	32	1.50	30.675	30.50
3.5	0.60	3.010	2.90	10	0.75	9.378	9.20	32	2.00	30.210	30.00
4	0.70	3.422	3.30	10	1.00	9.153	9.00	33	1.50	31.676	31.50
4.5	0.75	3.878	3.70	10	1.25	8.912	8.80	33	2.00	31.210	31.00
5	0.80	4.334	4.20	11	0.75	10.378	10.20	33	3.00	30.252	30.00
6	1.00	5.153	5.00	11	1.00	10.153	10.00	35	1.50	33.676	33.50
7	1.00	6.153	6.00	12	1.00	11.153	11.00	36	1.50	34.676	34.50
8	1.25	6.912	6.80	12	1.25	10.912	10.80	36	2.00	34.210	34.00
9	1.25	7.912	7.80	12	1.50	10.676	10.50	36	3.00	33.252	33.00
10	1.50	8.676	8.50	14	1.00	13.153	13.00	38	1.50	36.676	36.50
11	1.50	9.676	9.50	14	1.25	12.912	12.80	39	1.50	37.676	37.50
12	1.75	10.441	10.20	14	1.50	12.676	12.50	39	2.00	37.210	37.00
14	2.00	12.210	12.00	15	1.00	14.153	14.00	39	3.00	36.252	36.00
16	2.00	14.210	14.00	15	1.50	13.676	13.50	40	1.50	38.676	38.50
18	2.50	15.744	15.50	16	1.00	15.153	15.00	40	2.00	38.210	38.00
20	2.50	17.744	17.50	16	1.50	14.676	14.50	40	3.00	37.252	37.00
22	2.50	19.744	19.50	17	1.00	16.153	16.00	42	1.50	40.676	40.50
24	3.00	21.252	21.00	17	1.50	15.676	15.50	42	2.00	40.210	40.00
27	3.00	24.252	24.00	18	1.00	17.153	17.00	42	3.00	39.252	39.00
30	3.50	26.771	26.50	18	1.50	16.676	16.50	45	1.50	43.676	43.50
33	3.50	29.771	29.50	18	2.00	16.210	16.00	45	2.00	43.210	43.00
36	4.00	32.270	32.00	20	1.00	19.153	19.00	45	3.00	42.252	42.00
39	4.00	35.270	35.00	20	1.50	18.676	18.50	48	1.50	46.676	46.50
42	4.50	37.799	37.50	20	2.00	18.210	18.00	48	2.00	46.210	46.00
45	4.50	40.799	40.50	22	1.00	21.153	21.00	48	3.00	45.252	45.00
48	5.00	43.297	43.00	22	1.50	20.676	20.50	50	1.50	48.676	48.50
52	5.00	47.297	47.00	22	2.00	20.210	20.00	50	2.00	48.210	48.00
56	5.50	50.796	50.50	24	1.00	23.153	23.00	50	3.00	47.252	47.00
60	5.50	54.796	54.50	24	1.50	22.676	22.50	52	1.50	50.676	50.50
64	6.00	58.305	58.00	24	2.00	22.210	22.00	52	2.00	50.210	50.00
68	6.00	62.305	62.00	25	1.00	24.153	24.00	52	3.00	49.252	49.00
				25	1.50	23.676	23.50				

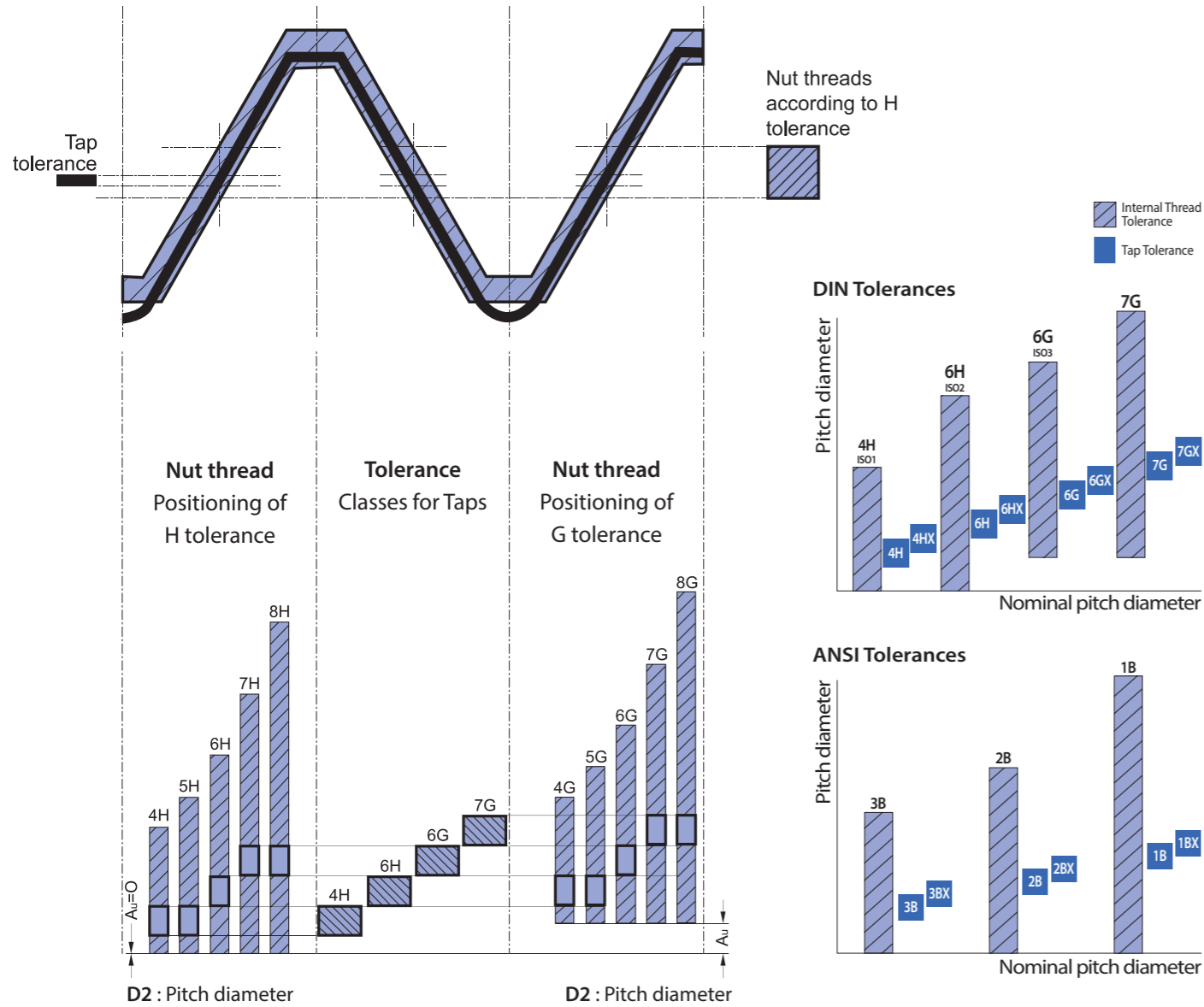
RECOMMENDED TAP DRILL SIZE (UNC / UNF)

Unit : mm

American Unified coarse threads				American Unified fine threads			
UNC	TPI	Maximum Core Dia.	Drill Size	UNF	TPI	Maximum Core Dia.	Drill Size
#1	64	1.585	1.50	#0	80	1.306	1.30
#2	56	1.872	1.80	#1	72	1.613	1.60
#3	48	2.146	2.10	#2	64	1.913	1.90
#4	40	2.385	2.30	#3	56	2.197	2.10
#5	40	2.697	2.60	#4	48	2.459	2.40
#6	32	2.896	2.85	#5	44	2.741	2.70
#8	32	3.528	3.50	#6	40	3.012	3.00
#10	24	3.950	3.90	#8	36	3.597	3.50
#12	24	4.590	4.50	#10	32	4.168	4.10
1/4	20	5.250	5.20	#12	28	4.717	4.70
5/16	18	6.680	6.60	1/4	28	5.563	5.50
3/8	16	8.082	8.00	5/16	24	6.995	6.90
7/16	14	9.441	9.40	3/8	24	8.565	8.50
1/2	13	10.881	10.75	7/16	20	9.947	9.90
9/16	12	12.301	12.25	1/2	20	11.524	11.50
5/8	11	13.693	13.50	9/16	18	12.969	12.90
3/4	10	16.624	16.50	5/8	18	14.554	14.50
7/8	9	19.520	19.50	3/4	16	17.546	17.50
1	8	22.344	22.25	7/8	14	20.493	20.50
1-1/8	7	25.082	25.00	1	12	23.363	23.25
1-1/4	7	28.258	28.25	1-1/8	12	26.538	26.50
1-3/8	6	30.851	30.75	1-1/4	12	29.713	29.50
1-1/2	6	34.026	34.00	1-3/8	12	32.888	32.70
1-3/4	5	39.560	39.50	1-1/2	12	36.063	36.00
2	4.5	45.367	45.25				

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

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 2. Use spiral pointed or spiral fluted taps or fluteless taps 3. 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	<ol style="list-style-type: none"> 1. Increase chamfer length
	Wrong Cutting Angle	<ol style="list-style-type: none"> 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

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