YU-PT23 **AMERICAS**

BEST VALUE IN THE WORLD OF CUTTING TOOLS

SPT SUNCOAST INC. PRECISION TOOLS ESTABLISHED 1963

YG TAP PRIME

HSS-PM(Powder Metallurgy) Premium Taps

- 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

Material groups MU — Multi-Purpose

Helix Angle

R45

Tool Raw Material

HSS PM — YG-1 Premium Powder Metallurgy HSS

Cutting Condition

Tap Limits

H D

Finish

X Coating — YG-1 X-Coating

Thread Angle

60°

Chamfer Type

1P~2P 2P~3P 4P~5P

Thread Designation

UNC UNF M/MF

FEATURES & BENEFITS

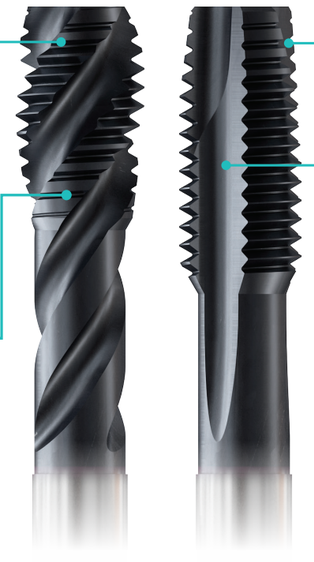
High and Reliable Performance on Various Ductile Materials

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**



Spiral Flute

Spiral Point

Optimized Edge Preparation

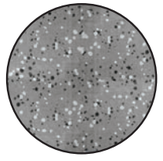
- **Consistent performance and process stability** to Prevent chipping

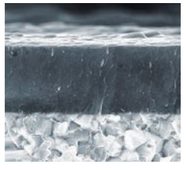
Optimized Flute Geometry for Excellent Chip Flow

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

HSS-PM(Powder Metallurgy) Premium Taps

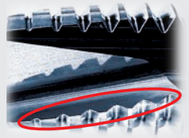
Powdered Metal Technology for a tough-chipping resistant cutting edge for long tool life and reliable thread finish





YG-1's X-Coating

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



Premium Cutting Edge Strength

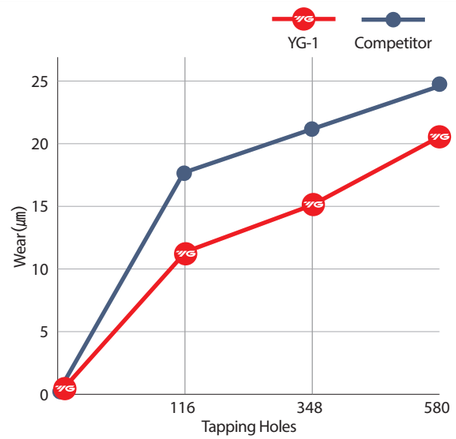
- More controlled structure with high wear resistance
- Consistent performance and process stability with chipping resistance

CASE STUDY

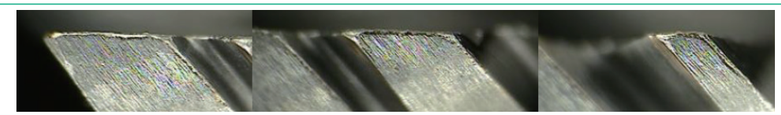
TEST I SPIRAL FLUTE TAP (M4x0.7)

Cutting Condition

Tool	Spiral Flute Tap
Size	M4x0.7
Work Material	JIS: SCM440(HRc30) / DIN : 42CrMo4 / WR : 1.7225
SFM	98
Vc	98ft/min
Feed	0.7 mm/rev.
Tap Drill Size	.1299"
Tapping depth	.3150"
Tapping holes	580
Coolant	Wet Cut



YG-1 (580 Holes)

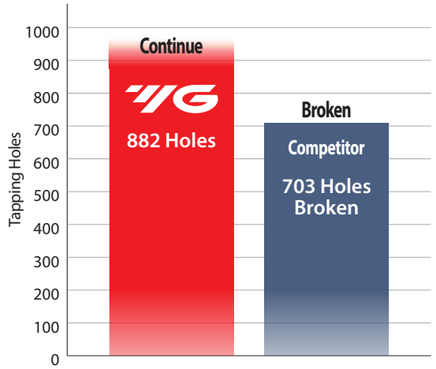


Competitor (580 Holes)

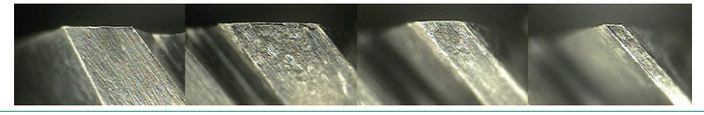
TEST II SPIRAL FLUTE TAP (M6x1.0)

Cutting Condition

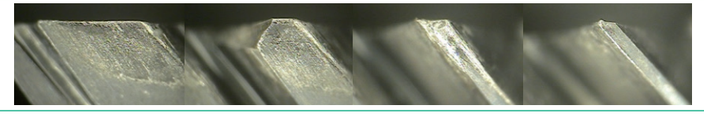
Tool	Spiral Flute Tap
Size	M6x1.0
Work Material	JIS: SUS316Ti / DIN : X6CrNiMoTi17-12-2 / WR : 1.4571
SFM	33
Vc	33ft/min
Feed	1.0mm/rev.
Tap Drill Size	.2008"
Tapping depth	.4724"
Tapping holes	YG-1: 882+α / Competitor : 703
Coolant	Wet Cut



YG-1 (882 Holes)



Competitor (703 Holes, Broken)

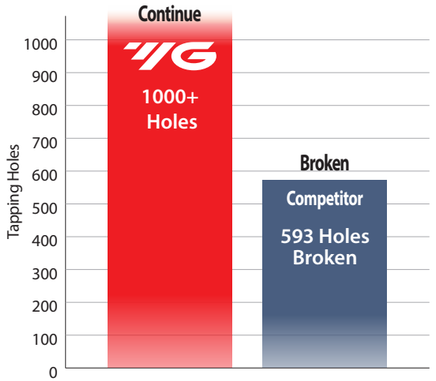


CASE STUDY

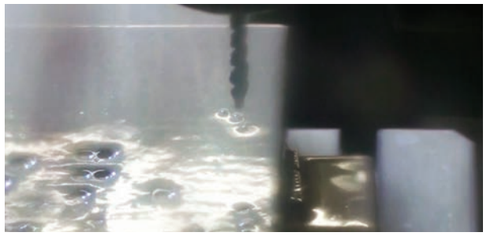
TEST III SPIRAL FLUTE TAP (M6x1.0)

Cutting Condition

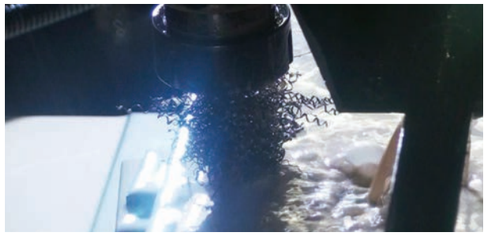
Tool	Sprial Flute Tap
Size	M6x1.0
Work Material	JIS: SUS304 / DIN: X16CrNi1810 / WR: 1.4350
SFM	33
Vc	33ft/min
Feed	1.0mm/rev.
Tap Drill Size	.2008"
Tapping Depth	.4724"
Tapping Holes	YG-1: 1,000+ / Competitor: 593
Coolant	Wet Cut



Prime Taps (1000 Holes+α)



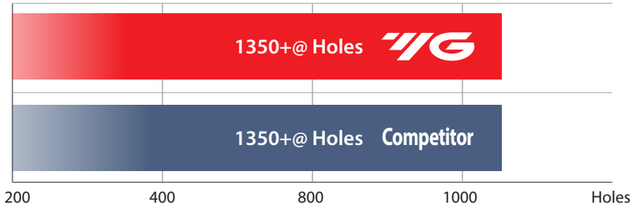
Competitor (593 Holes, Broken)



TEST IV SPIRAL FLUTE TAP (M8x1.25)

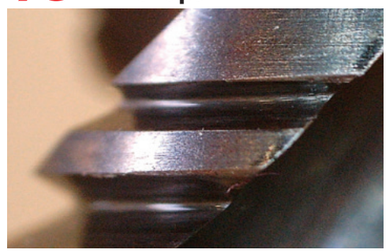
Cutting Condition

Tool	Sprial Flute Tap
Size	M8x1.25
Work Material	JIS: S45C / DIN: CK45 / WR: 1.1191
SFM	66
Vc	66ft/min
Feed	1.25mm/rev.
Tap Drill Size	.2677"
Tapping Depth	.6693"
Tapping Holes	YG-1: 1,350+@ / Competitor: 1,350+@
Coolant	Wet Cut

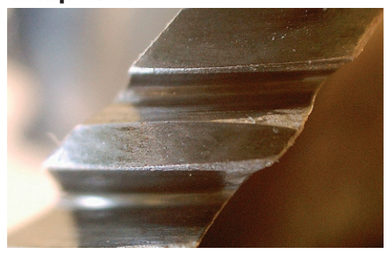


Comparison of Wear Resistance

Prime Taps



Competitor



HSS-PM
PRIME TAP

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

Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

BRAND		PRIME TAP		
HOLE TYPE		Max. 2.5xD Blind Hole		Max. 3.0xD Through Hole
TOOL MATERIAL		HSS-PM		
CHAMFER LEAD ACC. TO DIN2197		2P~3P	1P~2P	4P~5P
FLUTE TYPE		Spiral Flute		Spiral Point
SPIRAL FLUTE ANGLE		R45		-
M	USCTI 302A			
M/MF	USCTI 302A			
	DIN Length-ANSI Shank	TRF04	TRF24	TRK04
UNC	USCTI Long Shank			
UNC/UNF	USCTI 302			
	USCTI 302A			
	DIN Length-ANSI Shank	TRF14	TRF34	TRK14
SURFACE TREATMENT / COATING		X-coating		
MODEL				

ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment		HB	HRC	Examples	Recommended cutting conditions SFM		
P	1	Non-alloy steel	About 0.15% C	Annealed	125		S15C, C15, 1015	○ (16-66)	○ (16-66)	◎ **(49-148)**
	2		About 0.45% C	Annealed	190	13	S45C, C45, 1045	◎ **(33-164)**	◎ **(33-164)**	◎ **(33-180)**
	3		About 0.45% C	Quenched & tempered	250	25		◎ **(33-164)**	◎ **(33-164)**	◎ **(33-180)**
	4		About 0.75% C	Annealed	270	28	SK5, Ck75, 1080	◎ **(49-131)**	◎ **(49-131)**	◎ **(49-164)**
	5		About 0.75% C	Quenched & tempered	300	32		◎ **(49-131)**	◎ **(49-131)**	◎ **(49-164)**
	6	Low alloy steel		Annealed	180	10	SCM440, 42CrMo4, 410	◎ **(26-98)**	◎ **(26-98)**	◎ **(26-98)**
	7			Quenched & tempered	275	29		◎ **(26-98)**	◎ **(26-98)**	◎ **(26-98)**
	8			Quenched & tempered	300	32		◎ **(26-98)**	◎ **(26-98)**	◎ **(26-98)**
	9			Quenched & tempered	350	38		○ (26-98)	○ (26-98)	◎ **(26-98)**
	10	High alloyed steel, and tool steel		Annealed	200	15	SKD, D2	○ (26-98)	○ (26-98)	○ (26-98)
	11			Quenched & Tempered	325	35	SKH, SUH, M42	○ (26-98)	○ (26-98)	○ (26-98)
M	12	Stainless steel	Ferritic / Martensitic	Annealed	200	15	SUS 420, X40Cr13, 420	◎ **(16-49)**	◎ **(16-49)**	◎ **(26-66)**
	13		Martensitic	Quenched & Tempered	240	23		◎ **(16-49)**	◎ **(16-49)**	◎ **(26-66)**
	14			Austenitic	180	10	SUS 316, 316, X5CrNiMo 17 12 2	◎ **(16-49)**	◎ **(16-49)**	◎ **(26-66)**
K	15	Grey cast iron	Pearlitic / ferritic		180	10		○ (49-115)	○ (49-115)	◎ **(49-115)**
	16		Pearlitic (Martensitic)		260	26		○ (49-115)	○ (49-115)	◎ **(49-115)**
	17	Nodular cast iron	Ferritic		160	3	FCD, GGG, EN-GJS-500-7	◎ **(49-115)**	◎ **(49-115)**	◎ **(49-115)**
	18		Pearlitic		250	25		◎ **(49-115)**	◎ **(49-115)**	◎ **(49-115)**
	19	Malleable cast iron	Ferritic		130		FCMW, FCMP, GTS, GJMB350-10			
	20		Pearlitic		230	21				
N	21	Aluminum-wrought alloy	Not Curable		60		SAE 1000, AlMg 1, 3.3315	○ (49-115)	○ (49-115)	○ (49-115)
	22		Curable	Hardened	100		SAE 7050, AlCuMg 1, 3.1325	○ (49-115)	○ (49-115)	○ (49-115)
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable		75		ADC12, G-AlSi12, 3.2581	◎ **(49-115)**	◎ **(49-115)**	◎ **(49-115)**
	24		≤ 12% Si, Curable	Hardened	90		C4BS, G-AlSi10Mg, 3.2381	◎ **(49-115)**	◎ **(49-115)**	◎ **(49-115)**
	25		> 12% Si, Not Curable		130			○ (49-115)	○ (49-115)	○ (49-115)
	26	Copper and Copper Alloys (Bronze / Brass)	Cutting Alloys, PB>1%		110		CuZn36Pb 3, 2.0375	◎ **(49-115)**	◎ **(49-115)**	◎ **(49-115)**
	27		CuZn, CuSnZn (Brass)		90		CuZn 15, 2.0240	◎ **(49-115)**	◎ **(49-115)**	◎ **(49-115)**
	28		CuSn, lead-free copper and electrolytic copper		100		G-CuZn40Fe, 2.0590	◎ **(49-115)**	◎ **(49-115)**	◎ **(49-115)**
	29	Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic				CFRP			
	30		Rubber, Wood, etc.							
S	31	Heat Resistant Super Alloys	Fe Based	Annealed	200	15	X12 NiCrSi 36-16, 1.4864			
	32			Cured	280	30				
	33		Ni or Co Based	Annealed	250	25	Inconel 718, NiCr20TiAl, 2.4631			
	34			Cured	350	38	NiCu30Al, 2.4375			
	35			Cast	320	34	G-X120Mn12, 1.3401			
	36	Titanium Alloys	Pure Titanium		400 Rm					
	37		Alpha + Beta Alloys	Hardened	1050 Rm		TiAl6V4, 3.7165			
H	38	Hardened steel		Hardened	550	55	SK3			
	39			Hardened	630	60				
	40	Chilled Cast Iron		Cast	400	42				
	41	Hardened Cast Iron		Hardened	550	55				

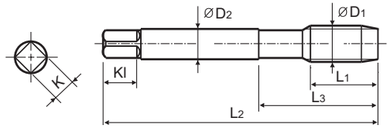
X-Coating, HSS-PM

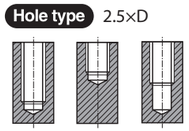
Spiral Flute Taps for Multipurpose

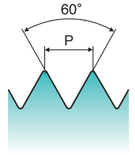
TRF14 SERIES

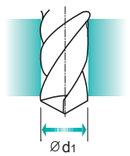
- ▶ High performance on various ductile materials
- ▶ Special design to prevent oversized threads and reduce gauging problems

DIN/ANSI









Material groups **MU** | HSS PM | UNC UNF | H | 60° | 2P~3P | R45 | X Coating | p.21

Machine Taps

Unit: Inch

Size ØD1	TPI	EDP No.	Limits	Thread Length L1	Overall Length L2	Neck Length L3	Shank Diameter ØD2	Square Size K	Square Length Kl	No. of Flute Z	Tapping Drill Diameter Ød1	
#4	- 40	TRF14162GS	H2	.200	2.21	.708	.141	.110	.19	2	-	2.3
#4	- 48	TRF14182GS	H2	.200	2.21	.708	.141	.110	.19	2	3/32	-
#5	- 40	TRF14202GS	H2	.200	2.21	.708	.141	.110	.19	3	-	2.6
#6	- 32	TRF14242GS	H2	.248	2.21	.783	.141	.110	.19	3	-	2.8
#6	- 32	TRF14243GS	H3	.248	2.21	.783	.141	.110	.19	3	-	2.8
#6	- 40	TRF14262GS	H2	.248	2.21	.783	.141	.110	.19	3	-	2.9
#8	- 32	TRF14282GS	H2	.251	2.48	.826	.168	.131	.25	3	-	3.4
#8	- 32	TRF14283GS	H3	.251	2.48	.826	.168	.131	.25	3	-	3.4
#8	- 36	TRF14302GS	H2	.251	2.48	.826	.168	.131	.25	3	-	3.5
#10	- 24	TRF14323GS	H3	.326	2.75	.976	.194	.152	.25	3	-	3.9
#10	- 32	TRF14342GS	H2	.326	2.75	.976	.194	.152	.25	3	-	4.1
#10	- 32	TRF14343GS	H3	.326	2.75	.976	.194	.152	.25	3	-	4.1
#12	- 24	TRF14363GS	H3	.330	3.15	1.177	.220	.165	.28	3	-	4.5
#12	- 28	TRF14383GS	H3	.330	3.15	1.177	.220	.165	.28	3	-	4.7
1/4	- 20	TRF14403GS	H3	.397	3.15	1.177	.255	.191	.31	3	-	5.2
1/4	- 20	TRF14405GS	H5	.397	3.15	1.177	.255	.191	.31	3	-	5.2
1/4	- 28	TRF14423GS	H3	.397	3.15	1.177	.255	.191	.31	3	-	5.5
1/4	- 28	TRF14424GS	H4	.397	3.15	1.177	.255	.191	.31	3	-	5.5
5/16	- 18	TRF14443GS	H3	.556	3.54	1.377	.318	.238	.38	3	-	6.7
5/16	- 18	TRF14445GS	H5	.556	3.54	1.377	.318	.238	.38	3	-	6.7
5/16	- 24	TRF14463GS	H3	.417	3.54	1.377	.318	.238	.38	3	-	7.0
5/16	- 24	TRF14464GS	H4	.417	3.54	1.377	.318	.238	.38	3	-	7.0

▶ NEXT PAGE

◎ : Excellent ○ : Good

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

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

X-Coating, HSS-PM

Spiral Flute Taps for Multipurpose

TRF14 SERIES

▶ High performance on various ductile materials
▶ Special design to prevent oversized threads and reduce gauging problems

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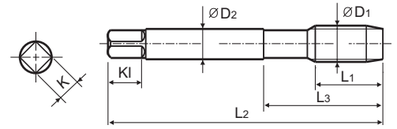
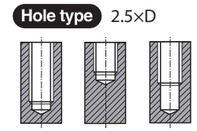
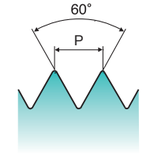
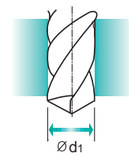








Material groups MU | HSS PM | UNC UNF | H | 60° | 2P~3P | R45 | X Coating | p.21

Machine Taps

Unit: Inch

Size ØD1	TPI	EDP No.	Limits	Thread Length L1	Overall Length L2	Neck Length L3	Shank Diameter ØD2	Square Size K	Square Length Kl	No. of Flute Z	Tapping Drill Diameter Ød1	
3/8	- 16	TRF14483GS	H3	.625	3.94	1.535	.381	.286	.44	3	-	8.1
3/8	- 16	TRF14485GS	H5	.625	3.94	1.535	.381	.286	.44	3	-	8.1
3/8	- 24	TRF14503GS	H3	.417	3.94	1.377	.381	.286	.44	3	-	8.6
3/8	- 24	TRF14504GS	H4	.417	3.94	1.377	.381	.286	.44	3	-	8.6
7/16	- 14	TRF14523GS	H3	.714	3.94	1.712	.323	.242	.41	3	-	9.5
7/16	- 14	TRF14525GS	H5	.714	3.94	1.712	.323	.242	.41	3	-	9.5
7/16	- 20	TRF14543GS	H3	.500	3.94	1.712	.323	.242	.41	3	-	10.0
7/16	- 20	TRF14545GS	H5	.500	3.94	1.712	.323	.242	.41	3	-	10.0
1/2	- 13	TRF14563GS	H3	.769	4.33	1.933	.367	.275	.44	3	-	11.0
1/2	- 13	TRF14565GS	H5	.769	4.33	1.933	.367	.275	.44	3	-	11.0
1/2	- 20	TRF14583GS	H3	.500	3.94	1.933	.367	.275	.44	3	-	11.6
1/2	- 20	TRF14585GS	H5	.500	3.94	1.933	.367	.275	.44	3	-	11.6
9/16	- 12	TRF14603GS	H3	.833	4.33	1.972	.429	.322	.50	3	-	12.5
9/16	- 12	TRF14605GS	H5	.833	4.33	1.972	.429	.322	.50	3	-	12.5
9/16	- 18	TRF14623GS	H3	.556	3.94	1.972	.429	.322	.50	3	-	13.0
9/16	- 18	TRF14625GS	H5	.556	3.94	1.972	.429	.322	.50	3	-	13.0
5/8	- 11	TRF14643GS	H3	.909	4.33	2.125	.480	.360	.56	3	-	13.9
5/8	- 11	TRF14645GS	H5	.909	4.33	2.125	.480	.360	.56	3	-	13.9
5/8	- 18	TRF14663GS	H3	.556	3.94	2.125	.480	.360	.56	3	-	14.6
5/8	- 18	TRF14665GS	H5	.556	3.94	2.125	.480	.360	.56	3	-	14.6
3/4	- 10	TRF14703GS	H3	1.000	4.92	2.433	.590	.442	.69	4	-	16.9
3/4	- 10	TRF14705GS	H5	1.000	4.92	2.433	.590	.442	.69	4	-	16.9

▶ NEXT PAGE

◎ : Excellent ○ : Good

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

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

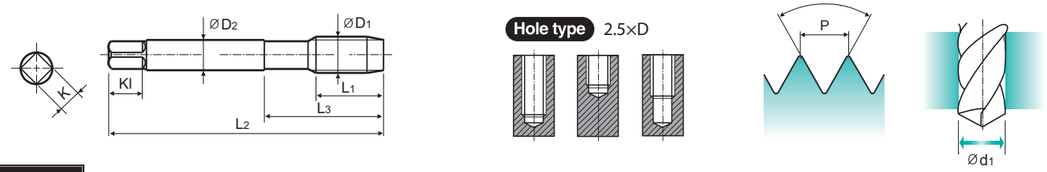
X-Coating, HSS-PM

Spiral Flute Taps for Multipurpose

TRF14 SERIES

- ▶ High performance on various ductile materials
- ▶ Special design to prevent oversized threads and reduce gauging problems

DIN/ANSI



Material groups **MU** | HSS PM | UNC UNF | H | 60° | 2P~3P | R45 | X Coating

p.21

Machine Taps

Unit: Inch

Size ØD1	TPI	EDP No.	Limits	Thread Length L1	Overall Length L2	Neck Length L3	Shank Diameter ØD2	Square Size K	Square Length Kl	No. of Flute Z	Tapping Drill Diameter Ød1
3/4	16	TRF14723GS	H3	.625	4.33	2.433	.590	.442	.69	4	17.7
3/4	16	TRF14725GS	H5	.625	4.33	2.433	.590	.442	.69	4	17.7
7/8	9	TRF14744GS	H4	1.111	5.51	2.653	697	.523	.75	4	19.8
7/8	9	TRF14746GS	H6	1.111	5.51	2.653	697	.523	.75	4	19.8
7/8	14	TRF14764GS	H4	.714	4.92	2.653	697	.523	.75	4	20.5
7/8	14	TRF14766GS	H6	.714	4.92	2.653	697	.523	.75	4	20.5
1"	8	TRF14786GS	H6	1.251	6.30	3.012	.800	.600	.81	4	22.7
1"	8	TRF14784GS	H4	1.251	6.30	3.012	.800	.600	.81	4	22.7
1"	12	TRF14804GS	H4	.833	5.51	3.012	.800	.600	.81	4	23.5
1"	12	TRF14806GS	H6	.833	5.51	3.012	.800	.600	.81	4	23.5
1"	14	TRF14816GS	H6	.714	5.51	3.012	.800	.600	.81	4	23.7
1-1/8	7	TRF14829GS	H9	1.429	7.08	3.818	.896	.672	.88	4	25.5
1-1/8	8	TRF14839GS	H9	1.250	7.08	3.818	.896	.672	.88	4	25.7
1-1/8	12	TRF14848GS	H8	.833	5.90	3.070	.896	.672	.88	4	1-3/64
1-1/4	7	TRF14860GS	H10	1.429	7.08	3.937	1.021	.766	1.00	4	28.5
1-1/4	8	TRF14879GS	H9	1.250	7.08	3.937	1.021	.766	1.00	4	29.0
1-1/4	12	TRF14888GS	H8	.833	5.90	3.070	1.021	.766	1.00	4	1-11/64
1-3/8	6	TRF14900GS	H10	1.667	7.87	4.527	1.108	.831	1.06	4	31.0
1-3/8	8	TRF14919GS	H9	1.250	7.87	4.527	1.108	.831	1.06	4	32.0
1-3/8	12	TRF14928GS	H8	.833	6.69	3.582	1.108	.831	1.06	4	33.0
1-1/2	6	TRF14940GS	H10	1.667	7.87	4.527	1.233	.925	1.13	4	1-11/32
1-1/2	8	TRF14959GS	H9	1.250	7.87	4.527	1.233	.925	1.13	4	35.0
1-1/2	12	TRF14968GS	H8	.833	6.69	3.582	1.233	.925	1.13	4	36.0

◎ : Excellent ○ : Good

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

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

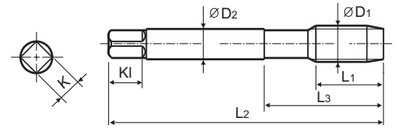
X-Coating, HSS-PM

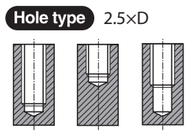
Spiral Flute Taps for Multipurpose

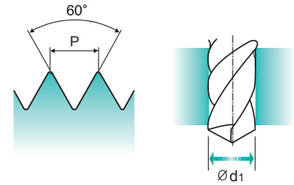
TRF04 SERIES

- ▶ High performance on various ductile materials
- ▶ Special design to prevent oversized threads and reduce gauging problems

DIN/ANSI







Material groups **MU** | HSS PM | M/MF | D | 60° | 2P~3P | R45 | X Coating

p.21

Machine Taps

Unit: Inch

Size ØD1	Pitch P	EDP No.	Limits	Thread Length L1	Overall Length L2	Neck Length L3	Shank Diameter ØD2	Square Size K	Square Length Kl	No. of Flute Z	Tapping Drill Diameter Ød1
M2	0.4	TRF04132GS	D2	.126	1.77	.393	.141	.110	.19	2	1.6
M2.5	0.45	TRF04173GS	D3	.126	1.97	.511	.141	.110	.19	2	2.1
M3	0.5	TRF04203GS	D3	.158	2.21	.708	.141	.110	.19	3	2.5
M3.5	0.6	TRF04224GS	D4	.189	2.21	.787	.141	.110	.19	3	2.9
M4	0.7	TRF04244GS	D4	.221	2.48	.823	.168	.131	.25	3	3.4
M5	0.8	TRF04284GS	D4	.252	2.75	.988	.194	.152	.25	3	4.3
M6	1.0	TRF04315GS	D5	.315	3.15	1.177	.255	.191	.31	3	5.3
M6	0.75	TRF04324GS	D4	.315	3.15	1.177	.255	.191	.31	3	5.1
M7	1.0	TRF04345GS	D5	.394	3.15	1.181	.318	.238	.38	3	6.1
M8	1.25	TRF04365GS	D5	.492	3.54	1.378	.318	.238	.38	3	7.1
M8	1.0	TRF04375GS	D5	.394	3.54	1.378	.318	.238	.38	3	6.9
M9	1.25	TRF04395GS	D5	.492	3.54	1.378	.381	.286	.44	3	8.1
M9	1.0	TRF04405GS	D5	.394	3.54	1.378	.381	.286	.44	3	7.9
M10	1.5	TRF04426GS	D6	.591	3.94	1.535	.381	.286	.44	3	9.1
M10	1.25	TRF04435GS	D5	.492	3.94	1.535	.381	.286	.44	3	8.9
M10	1.0	TRF04445GS	D5	.394	3.54	1.378	.381	.286	.44	3	8.7
M12	1.75	TRF04506GS	D6	.689	4.33	1.933	.367	.275	.44	3	10.9
M12	1.5	TRF04516GS	D6	.591	3.94	1.933	.367	.275	.44	3	10.7
M12	1.25	TRF04525GS	D5	.492	3.94	1.933	.367	.275	.44	3	10.5

▶ NEXT PAGE

◎ : Excellent ○ : Good

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

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

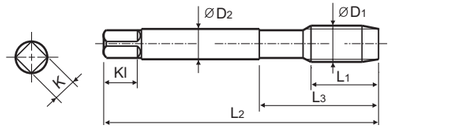
X-Coating, HSS-PM

Spiral Flute Taps for Multipurpose

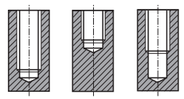
TRF04 SERIES

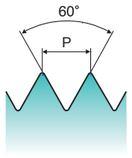
- ▶ High performance on various ductile materials
- ▶ Special design to prevent oversized threads and reduce gauging problems

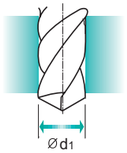
DIN/ANSI



Hole type 2.5×D







Material groups **MU** | HSS PM | M/MF | D | 60° | 2P~3P | R45 | X Coating | p.21

Machine Taps

Unit: Inch

Size ØD1	Pitch P	EDP No.	Limits	Thread Length L1	Overall Length L2	Neck Length L3	Shank Diameter ØD2	Square Size K	Square Length Kl	No. of Flute Z	Tapping Drill Diameter Ød1	
M14	x 2.0	TRF04547GS	D7	.787	4.33	1.972	.429	.322	.50	3	-	12.9
M14	x 1.5	TRF04556GS	D6	.591	3.94	1.972	.429	.322	.50	3	-	12.7
M14	x 1.25	TRF04566GS	D6	.492	3.94	1.972	.429	.322	.50	3	-	12.3
M16	x 2.0	TRF04607GS	D7	.787	4.33	2.126	.480	.360	.56	3	-	14.7
M16	x 1.5	TRF04616GS	D6	.591	3.94	2.126	.480	.360	.56	3	-	14.3
M18	x 2.5	TRF04657GS	D7	.984	4.92	2.165	.542	.406	.63	4	-	16.7
M18	x 1.5	TRF04676GS	D6	.591	4.33	2.165	.542	.406	.63	4	-	15.8
M20	x 2.5	TRF04708GS	D8	.984	5.51	2.433	.652	.489	.69	4	-	18.7
M20	x 1.5	TRF04726GS	D6	.591	4.92	2.433	.652	.489	.69	4	-	17.8
M22	x 2.5	TRF04748GS	D8	.984	5.51	2.653	.697	.523	.75	4	-	20.7
M22	x 1.5	TRF04766GS	D6	.591	4.92	2.653	.697	.523	.75	4	-	19.8
M24	x 3.0	TRF04788GS	D8	1.181	6.30	2.693	.760	.570	.75	4	-	22.7
M24	x 1.5	TRF04806GS	D6	.591	5.51	2.693	.760	.570	.75	4	27/32	-
M27	x 3.0	TRF04868GS	D8	1.181	6.30	3.150	.896	.672	.88	4	-	25.7
M27	x 1.5	TRF04886GS	D6	.591	5.51	2.362	.896	.672	.88	4	-	24.4
M30	x 3.5	TRF04949GS	D9	1.378	7.08	3.937	1.021	.766	1.00	4	61/64	-
M30	x 1.5	TRF04976GS	D6	.591	5.90	2.756	1.021	.766	1.00	4	-	27.0

◎ : Excellent ○ : Good

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

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

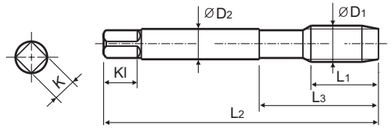
X-Coating, HSS-PM

Spiral Flute Taps for Multipurpose

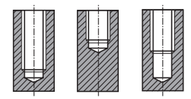
TRF34 SERIES

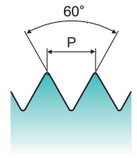
- ▶ High performance on various ductile materials
- ▶ Special design to prevent oversized threads and reduce gauging problems

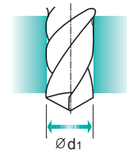
DIN/ANSI



Hole type 2.5×D







Material groups **MU** | HSS PM | UNC UNF | H | 60° | 1P~2P | R45 | X Coating | p.21

Machine Taps

Unit: Inch

Size ØD1	TPI	EDP No.	Limits	Thread Length L1	Overall Length L2	Neck Length L3	Shank Diameter ØD2	Square Size K	Square Length Kl	No. of Flute Z	Tapping Drill Diameter Ød1	
#4	- 40	TRF34162GS	H2	.200	2.21	.708	.141	.110	.19	2	-	2.3
#4	- 48	TRF34182GS	H2	.200	2.21	.708	.141	.110	.19	2	3/32	-
#5	- 40	TRF34202GS	H2	.200	2.21	.708	.141	.110	.19	3	-	2.6
#6	- 32	TRF34242GS	H2	.248	2.21	.783	.141	.110	.19	3	-	2.8
#6	- 32	TRF34243GS	H3	.248	2.21	.783	.141	.110	.19	3	-	2.8
#6	- 40	TRF34262GS	H2	.248	2.21	.783	.141	.110	.19	3	-	2.9
#8	- 32	TRF34282GS	H2	.251	2.48	.826	.168	.131	.25	3	-	3.4
#8	- 32	TRF34283GS	H3	.251	2.48	.826	.168	.131	.25	3	-	3.4
#8	- 36	TRF34302GS	H2	.251	2.48	.826	.168	.131	.25	3	-	3.5
#10	- 24	TRF34323GS	H3	.326	2.75	.976	.194	.152	.25	3	-	3.9
#10	- 32	TRF34342GS	H2	.326	2.75	.976	.194	.152	.25	3	-	4.1
#10	- 32	TRF34343GS	H3	.326	2.75	.976	.194	.152	.25	3	-	4.1
#12	- 24	TRF34363GS	H3	.330	3.15	1.177	.220	.165	.28	3	-	4.5
#12	- 28	TRF34383GS	H3	.330	3.15	1.177	.220	.165	.28	3	-	4.7
1/4	- 20	TRF34403GS	H3	.397	3.15	1.177	.255	.191	.31	3	-	5.2
1/4	- 20	TRF34405GS	H5	.397	3.15	1.177	.255	.191	.31	3	-	5.2
1/4	- 28	TRF34423GS	H3	.397	3.15	1.177	.255	.191	.31	3	-	5.5
1/4	- 28	TRF34424GS	H4	.397	3.15	1.177	.255	.191	.31	3	-	5.5
5/16	- 18	TRF34443GS	H3	.556	3.54	1.377	.318	.238	.38	3	-	6.7
5/16	- 18	TRF34445GS	H5	.556	3.54	1.377	.318	.238	.38	3	-	6.7
5/16	- 24	TRF34463GS	H3	.417	3.54	1.377	.318	.238	.38	3	-	7.0
5/16	- 24	TRF34464GS	H4	.417	3.54	1.377	.318	.238	.38	3	-	7.0

▶ NEXT PAGE

◎ : Excellent ○ : Good

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

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

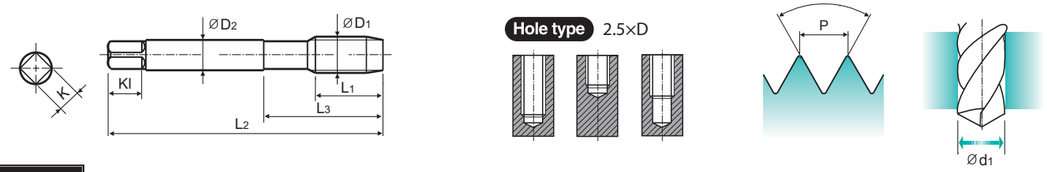
X-Coating, HSS-PM

Spiral Flute Taps for Multipurpose

TRF34 SERIES

- ▶ High performance on various ductile materials
- ▶ Special design to prevent oversized threads and reduce gauging problems

DIN/ANSI



Material groups **MU** | HSS PM | UNC UNF | H | 60° | 1P~2P | R45 | X Coating | p.21

Machine Taps

Unit: Inch

Size ØD1		TPI	EDP No.	Limits	Thread Length L1	Overall Length L2	Neck Length L3	Shank Diameter ØD2	Square Size K	Square Length Kl	No. of Flute Z	Tapping Drill Diameter Ød1	
3/8	-	16	TRF34483GS	H3	.625	3.94	1.535	.381	.286	.44	3	-	8.1
3/8	-	16	TRF34485GS	H5	.625	3.94	1.535	.381	.286	.44	3	-	8.1
3/8	-	24	TRF34503GS	H3	.417	3.94	1.377	.381	.286	.44	3	-	8.6
3/8	-	24	TRF34504GS	H4	.417	3.94	1.377	.381	.286	.44	3	-	8.6
7/16	-	14	TRF34523GS	H3	.714	3.94	1.712	.323	.242	.41	3	-	9.5
7/16	-	14	TRF34525GS	H5	.714	3.94	1.712	.323	.242	.41	3	-	9.5
7/16	-	20	TRF34543GS	H3	.500	3.94	1.712	.323	.242	.41	3	-	10.0
7/16	-	20	TRF34545GS	H5	.500	3.94	1.712	.323	.242	.41	3	-	10.0
1/2	-	13	TRF34563GS	H3	.769	4.33	1.933	.367	.275	.44	3	-	11.0
1/2	-	13	TRF34565GS	H5	.769	4.33	1.933	.367	.275	.44	3	-	11.0
1/2	-	20	TRF34583GS	H3	.500	3.94	1.933	.367	.275	.44	3	-	11.6
1/2	-	20	TRF34585GS	H5	.500	3.94	1.933	.367	.275	.44	3	-	11.6
9/16	-	12	TRF34603GS	H3	.833	4.33	1.972	.429	.322	.50	3	-	12.5
9/16	-	12	TRF34605GS	H5	.833	4.33	1.972	.429	.322	.50	3	-	12.5
9/16	-	18	TRF34623GS	H3	.556	3.94	1.972	.429	.322	.50	3	-	13.0
9/16	-	18	TRF34625GS	H5	.556	3.94	1.972	.429	.322	.50	3	-	13.0
5/8	-	11	TRF34643GS	H3	.909	4.33	2.125	.480	.360	.56	3	-	13.9
5/8	-	11	TRF34645GS	H5	.909	4.33	2.125	.480	.360	.56	3	-	13.9
5/8	-	18	TRF34663GS	H3	.556	3.94	2.125	.480	.360	.56	3	-	14.6
5/8	-	18	TRF34665GS	H5	.556	3.94	2.125	.480	.360	.56	3	-	14.6

◎ : Excellent ○ : Good

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

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

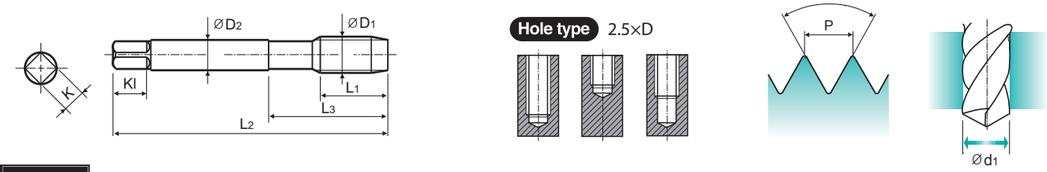
X-Coating, HSS-PM

Spiral Point Taps for Multipurpose

TRF24 SERIES

- ▶ High performance on various ductile materials
- ▶ Special design to prevent oversized threads and reduce gauging problems

DIN/ANSI



Material groups **MU** | HSS PM | M/MF | D | 60° | 1P~2P | R45 | X Coating | p.21

Machine Taps

Unit: Inch

Size ØD1		Pitch P		EDP No.	Limits	Thread Length L1	Overall Length L2	Neck Length L3	Shank Diameter ØD2	Square Size K	Square Length Kl	No. of Flute Z	Tapping Drill Diameter Ød1	
M3	x	0.5		TRF24203GS	D3	.158	2.21	.708	.141	.110	.19	3	-	2.5
M3.5	x	0.6		TRF24224GS	D4	.189	2.21	.787	.141	.110	.19	3	-	2.9
M4	x	0.7		TRF24244GS	D4	.221	2.48	.823	.168	.131	.25	3	-	3.4
M5	x	0.8		TRF24284GS	D4	.252	2.75	.988	.194	.152	.25	3	-	4.3
M6	x	1.0		TRF24315GS	D5	.315	3.15	1.177	.255	.191	.31	3	-	5.1
M8	x	1.25		TRF24365GS	D5	.492	3.54	1.378	.318	.238	.38	3	-	6.9
M9	x	1.25		TRF24395GS	D5	.492	3.54	1.378	.381	.286	.44	3	-	7.9
M10	x	1.5		TRF24426GS	D6	.591	3.94	1.535	.381	.286	.44	3	-	9.1
M10	x	1.25		TRF24435GS	D5	.492	3.94	1.535	.381	.286	.44	3	-	8.9
M10	x	1.0		TRF24445GS	D5	.394	3.54	1.378	.381	.286	.44	3	-	8.7
M12	x	1.75		TRF24506GS	D6	.689	4.33	1.933	.367	.275	.44	3	-	10.9
M12	x	1.5		TRF24516GS	D6	.591	3.94	1.933	.367	.275	.44	3	-	10.7
M12	x	1.25		TRF24525GS	D5	.492	3.94	1.933	.367	.275	.44	3	-	10.5
M14	x	2.0		TRF24547GS	D7	.787	4.33	1.972	.429	.322	.50	3	-	12.9
M14	x	1.5		TRF24556GS	D6	.591	3.94	1.972	.429	.322	.50	3	-	12.7
M14	x	1.25		TRF24566GS	D6	.492	3.94	1.972	.429	.322	.50	3	-	12.3
M16	x	2.0		TRF24607GS	D7	.787	4.33	2.126	.480	.360	.56	3	-	14.7
M16	x	1.5		TRF24616GS	D6	.591	3.94	2.126	.480	.360	.56	3	-	14.3
M18	x	1.5		TRF24676GS	D6	.591	4.33	2.165	.542	.406	.63	4	-	16.7

◎ : Excellent ○ : Good

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

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

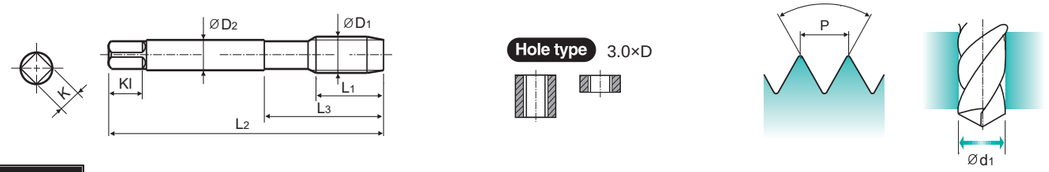
X-Coating, HSS-PM

Spiral Point Taps for Multipurpose

TRK14 SERIES

- ▶ High performance on various ductile materials
- ▶ Special design to prevent oversized threads and reduce gauging problems

DIN/ANSI



Material groups **MU** | HSS PM | UNC UNF | H | 60° | 4P~5P | X Coating

p.21

Machine Taps

Unit: Inch

Size ØD1	TPI	EDP No.	Limits	Thread Length L1	Overall Length L2	Neck Length L3	Shank Diameter ØD2	Square Size K	Square Length Kl	No. of Flute Z	Tapping Drill Diameter Ød1
#2	- 56	TRK14082GS	H2	.437	1.77	.476	.141	.110	.19	2	- 1.8
#2	- 64	TRK14102GS	H2	.437	1.77	.476	.141	.110	.19	2	- 1.8
#3	- 48	TRK14122GS	H2	.500	1.97	.539	.141	.110	.19	2	- 2
#3	- 56	TRK14142GS	H2	.500	1.97	.539	.141	.110	.19	2	- 2.1
#4	- 40	TRK14162GS	H2	.335	2.21	.708	.141	.110	.19	2	- 2.3
#4	- 48	TRK14182GS	H2	.335	2.21	.708	.141	.110	.19	2	3/32 -
#5	- 40	TRK14202GS	H2	.374	2.21	.708	.141	.110	.19	3	- 2.6
#5	- 44	TRK14222GS	H2	.374	2.21	.708	.141	.110	.19	3	- 2.6
#6	- 32	TRK14242GS	H2	.413	2.21	.787	.141	.110	.19	3	- 2.8
#6	- 32	TRK14243GS	H3	.413	2.21	.787	.141	.110	.19	3	- 2.8
#6	- 40	TRK14262GS	H2	.413	2.21	.787	.141	.110	.19	3	- 2.9
#8	- 32	TRK14282GS	H2	.453	2.48	.826	.168	.131	.25	3	- 3.4
#8	- 32	TRK14283GS	H3	.453	2.48	.826	.168	.131	.25	3	- 3.4
#8	- 36	TRK14302GS	H2	.453	2.48	.826	.168	.131	.25	3	- 3.5
#10	- 24	TRK14323GS	H3	.531	2.75	.984	.194	.152	.25	3	- 3.9
#10	- 32	TRK14342GS	H2	.531	2.75	.984	.194	.152	.25	3	- 4.1
#10	- 32	TRK14343GS	H3	.531	2.75	.984	.194	.152	.25	3	- 4.1
#12	- 24	TRK14363GS	H3	.571	3.15	1.181	.220	.165	.28	3	- 4.5
#12	- 28	TRK14383GS	H3	.571	3.15	1.181	.220	.165	.28	3	- 4.7

▶ NEXT PAGE

◎ : Excellent ○ : Good

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

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

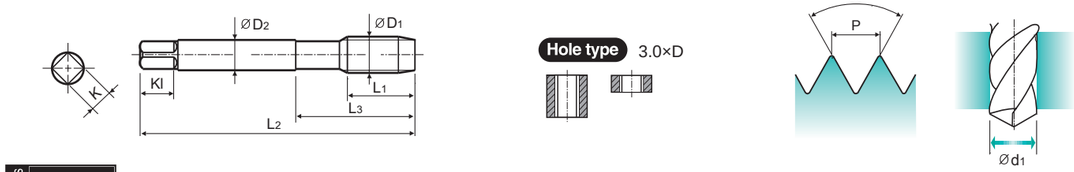
X-Coating, HSS-PM

Spiral Point Taps for Multipurpose

TRK14 SERIES

▶ High performance on various ductile materials
▶ Special design to prevent oversized threads and reduce gauging problems

DIN/ANSI



Material groups MU | HSS PM | UNC UNF | H | 60° | 4P~5P | X Coating p.21

Machine Taps

Unit: Inch

Size ØD1	TPI	EDP No.	Limits	Thread Length L1	Overall Length L2	Neck Length L3	Shank Diameter ØD2	Square Size K	Square Length Kl	No. of Flute Z	Tapping Drill Diameter Ød1
1/4	- 20	TRK14403GS	H3	.591	3.15	1.177	.255	.191	.31	3	- 5.2
1/4	- 20	TRK14405GS	H5	.591	3.15	1.177	.255	.191	.31	3	- 5.2
1/4	- 28	TRK14423GS	H3	.591	3.15	1.177	.255	.191	.31	3	- 5.5
1/4	- 28	TRK14424GS	H4	.591	3.15	1.177	.255	.191	.31	3	- 5.5
5/16	- 18	TRK14443GS	H3	.669	3.54	1.377	.318	.238	.38	3	- 6.7
5/16	- 18	TRK14445GS	H5	.669	3.54	1.377	.318	.238	.38	3	- 6.7
5/16	- 24	TRK14463GS	H3	.669	3.54	1.377	.318	.238	.38	3	- 7.0
5/16	- 24	TRK14464GS	H4	.669	3.54	1.377	.318	.238	.38	3	- 7.0
3/8	- 16	TRK14483GS	H3	.748	3.94	1.535	.381	.286	.44	3	- 8.1
3/8	- 16	TRK14485GS	H5	.748	3.94	1.535	.381	.286	.44	3	- 8.1
3/8	- 24	TRK14503GS	H3	.748	3.94	1.377	.381	.286	.44	3	- 8.6
3/8	- 24	TRK14504GS	H4	.748	3.94	1.377	.381	.286	.44	3	- 8.6
7/16	- 14	TRK14523GS	H3	.866	3.94	1.437	.323	.242	.41	3	- 9.5
7/16	- 14	TRK14525GS	H5	.866	3.94	1.437	.323	.242	.41	3	- 9.5
7/16	- 20	TRK14543GS	H3	.866	3.94	1.437	.323	.242	.41	3	- 10.0
7/16	- 20	TRK14545GS	H5	.866	3.94	1.437	.323	.242	.41	3	- 10.0
1/2	- 13	TRK14563GS	H3	.984	4.33	1.657	.367	.275	.44	3	- 11.0
1/2	- 13	TRK14565GS	H5	.984	4.33	1.657	.367	.275	.44	3	- 11.0
1/2	- 20	TRK14583GS	H3	.984	3.94	1.657	.367	.275	.44	3	- 11.6

▶ NEXT PAGE

◎ : Excellent ○ : Good

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

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

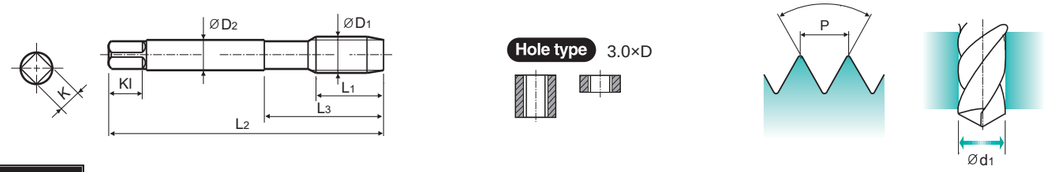
X-Coating, HSS-PM

Spiral Point Taps for Multipurpose

TRK14 SERIES

- ▶ High performance on various ductile materials
- ▶ Special design to prevent oversized threads and reduce gauging problems

DIN/ANSI



Material groups **MU** | HSS PM | UNC UNF | H | 60° | 4P~5P | X Coating p.21

Machine Taps

Unit: Inch

Size ØD1	TPI	EDP No.	Limits	Thread Length L1	Overall Length L2	Neck Length L3	Shank Diameter ØD2	Square Size K	Square Length Kl	No. of Flute Z	Tapping Drill Diameter Ød1
1/2	- 20	TRK14585GS	H5	.984	3.94	1.657	.367	.275	.44	3	- 11.6
9/16	- 12	TRK14603GS	H3	.984	4.33	1.657	.429	.322	.50	3	- 12.5
9/16	- 12	TRK14605GS	H5	.984	4.33	1.657	.429	.322	.50	3	- 12.5
9/16	- 18	TRK14623GS	H3	.984	3.94	1.657	.429	.322	.50	3	- 13.0
9/16	- 18	TRK14625GS	H5	.984	3.94	1.657	.429	.322	.50	3	- 13.0
5/8	- 11	TRK14643GS	H3	1.083	4.33	1.811	.480	.360	.56	3	- 13.9
5/8	- 11	TRK14645GS	H5	1.083	4.33	1.811	.480	.360	.56	3	- 13.9
5/8	- 18	TRK14663GS	H3	1.083	3.94	1.811	.480	.360	.56	3	- 14.6
5/8	- 18	TRK14665GS	H5	1.083	3.94	1.811	.480	.360	.56	3	- 14.6
3/4	- 10	TRK14703GS	H3	1.201	4.92	2.000	.590	.442	.69	3	- 16.9
3/4	- 10	TRK14705GS	H5	1.201	4.92	2.000	.590	.442	.69	3	- 16.9
3/4	- 16	TRK14723GS	H3	1.201	4.33	2.000	.590	.442	.69	3	- 17.7
3/4	- 16	TRK14725GS	H5	1.201	4.33	2.000	.590	.442	.69	3	- 17.7
7/8	- 9	TRK14744GS	H4	1.339	5.51	2.224	697	.523	.75	3	- 19.8
7/8	- 9	TRK14746GS	H6	1.339	5.51	2.224	697	.523	.75	3	- 19.8
7/8	- 14	TRK14764GS	H4	1.339	4.92	2.224	697	.523	.75	3	- 20.5
7/8	- 14	TRK14766GS	H6	1.339	4.92	2.224	697	.523	.75	3	- 20.5
1"	- 8	TRK14786GS	H6	1.496	6.30	2.500	.800	.600	.81	3	- 22.7
1"	- 12	TRK14806GS	H6	1.496	5.51	2.500	.800	.600	.81	3	- 23.5
1"	- 14	TRK14816GS	H6	1.496	5.51	2.500	.800	.600	.81	3	- 23.7

◎ : Excellent ○ : Good

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

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

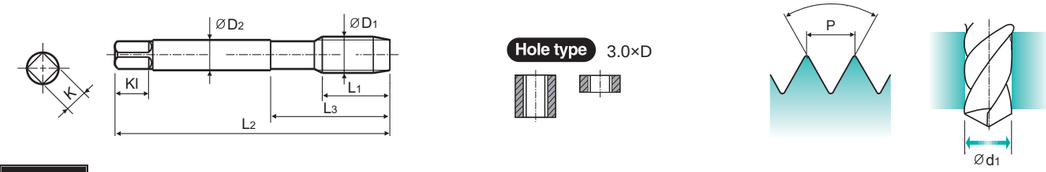
X-Coating, HSS-PM

Spiral Point Taps for Multipurpose

TRK04 SERIES

- ▶ High performance on various ductile materials
- ▶ Special design to prevent oversized threads and reduce gauging problems

DIN/ANSI



Material groups **MU** | HSS PM | M/MF | D | 60° | 4P~5P | X Coating p.21

Machine Taps

Unit: Inch

Size ØD1	Pitch P	EDP No.	Limits	Thread Length L1	Overall Length L2	Neck Length L3	Shank Diameter ØD2	Square Size K	Square Length Kl	No. of Flute Z	Tapping Drill Diameter Ød1
M2	x 0.4	TRK04132GS	D2	.433	1.77	.472	.141	.110	.19	2	- 1.6
M2.5	x 0.45	TRK04173GS	D3	.472	1.97	.539	.141	.110	.19	2	- 2.1
M3	x 0.5	TRK04203GS	D3	.374	2.21	.705	.141	.110	.19	3	- 2.5
M3.5	x 0.6	TRK04224GS	D4	.413	2.21	.780	.141	.110	.19	3	- 2.9
M4	x 0.7	TRK04244GS	D4	.453	2.48	.819	.168	.131	.25	3	- 3.4
M5	x 0.8	TRK04284GS	D4	.531	2.75	.976	.194	.152	.25	3	- 4.3
M6	x 1.0	TRK04315GS	D5	.591	3.15	1.169	.255	.191	.31	3	- 5.3
M6	x 0.75	TRK04324GS	D4	.591	3.15	1.169	.255	.191	.31	3	- 5.1
M7	x 1.0	TRK04345GS	D5	.669	3.15	1.169	.318	.238	.38	3	- 6.1
M8	x 1.25	TRK04365GS	D5	.669	3.54	1.366	.318	.238	.38	3	- 7.1
M8	x 1.0	TRK04375GS	D5	.669	3.54	1.366	.318	.238	.38	3	- 6.9
M9	x 1.25	TRK04395GS	D5	.669	3.54	1.370	.381	.286	.44	3	- 8.1
M9	x 1.0	TRK04405GS	D5	.669	3.54	1.370	.381	.286	.44	3	- 7.9
M10	x 1.5	TRK04426GS	D6	.748	3.94	1.531	.381	.286	.44	3	- 9.1
M10	x 1.25	TRK04435GS	D5	.748	3.94	1.531	.381	.286	.44	3	- 8.9
M10	x 1.0	TRK04445GS	D5	.748	3.54	1.370	.381	.286	.44	3	- 8.7
M12	x 1.75	TRK04506GS	D6	.984	4.33	1.657	.367	.275	.44	3	- 10.9
M12	x 1.5	TRK04516GS	D6	.984	3.94	1.657	.367	.275	.44	3	- 10.7
M12	x 1.25	TRK04525GS	D5	.984	3.94	1.657	.367	.275	.44	3	- 10.5

▶ NEXT PAGE

◎ : Excellent ○ : Good

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

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

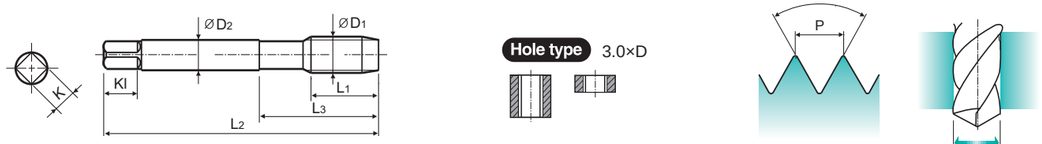
X-Coating, HSS-PM

Spiral Point Taps for Multipurpose

TRK04 SERIES

- ▶ High performance on various ductile materials
- ▶ Special design to prevent oversized threads and reduce gauging problems

DIN/ANSI



Hole type 3.0×D

Material groups **MU** | HSS PM | M/MF | D | 60° | 4P~5P | X Coating p.21

Machine Taps

Unit: Inch

Size ØD1		Pitch P		EDP No.	Limits	Thread Length L1	Overall Length L2	Neck Length L3	Shank Diameter ØD2	Square Size K	Square Length Kl	No. of Flute Z	Tapping Drill Diameter Ød1	
M14	x	2.0		TRK04547GS	D7	.984	4.33	1.657	.429	.322	.50	3	-	12.9
M14	x	1.5		TRK04556GS	D6	.984	3.94	1.657	.429	.322	.50	3	-	12.7
M14	x	1.25		TRK04566GS	D6	.984	3.94	1.657	.429	.322	.50	3	-	12.3
M16	x	2.0		TRK04607GS	D7	1.083	4.33	1.811	.480	.360	.56	3	-	14.7
M16	x	1.5		TRK04616GS	D6	1.083	3.94	1.811	.480	.360	.56	3	-	14.3
M18	x	2.5		TRK04657GS	D7	1.083	4.92	1.811	.542	.406	.63	3	-	16.7
M18	x	1.5		TRK04676GS	D6	1.083	4.33	1.811	.542	.406	.63	3	-	15.8
M20	x	2.5		TRK04708GS	D8	1.201	5.51	2.126	.652	.489	.69	3	-	18.7
M20	x	1.5		TRK04726GS	D6	1.201	4.92	2.000	.652	.489	.69	3	-	17.8
M22	x	2.5		TRK04748GS	D8	1.339	5.51	2.126	.697	.523	.75	3	-	20.7
M22	x	1.5		TRK04766GS	D6	1.339	4.92	2.000	.697	.523	.75	3	-	19.8
M24	x	3.0		TRK04788GS	D8	1.339	6.30	2.362	.760	.570	.75	3	-	22.7
M24	x	1.5		TRK04806GS	D6	1.339	5.51	2.126	.760	.570	.75	3	27/32	-

◎ : Excellent ○ : Good

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

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

Leading Through Innovation

PRIME TAP
TECHNICAL DATA

- CUTTING SPEED TABLE
- TROUBLE SHOOTING GUIDE

CUTTING SPEED TABLE - INCH

Cutting Speeds SFM into revolutions per minute

TOOL RPM (rev./min.)															
SFM	20	25	30	40	50	60	70	80	90	100	110	120	130	140	150
Tap Size	Revolutions Per Minute														
#0	1273	1592	1910	2546	3183	3820	4456	5093	5730	6366	7003	7639	8276	8913	9549
#1	1047	1308	1570	2093	2617	3140	3663	4186	4710	5233	5756	6279	6808	7326	7849
#2	888	1110	1333	1777	2221	2665	3109	3554	3999	4222	4886	5330	5774	6218	6662
#3	772	964	1157	1543	1929	2315	2701	3086	3472	3858	4244	4629	5015	5401	5787
#4	682	853	1023	1364	1705	2046	2387	2728	3069	3411	3751	4092	4434	4775	5116
#5	611	764	917	1222	1528	1833	2139	2445	2750	3056	3361	3367	3973	4278	4584
#6	553	691	829	1106	1382	1658	1934	2211	2487	2764	3040	3316	3592	3869	4145
#8	466	583	699	932	1165	1398	1631	1864	2097	2330	2563	2796	3029	3262	3495
#10	402	502	603	804	1005	1205	1406	1607	1808	2009	2210	2411	2612	2813	3014
#12	354	442	531	707	884	1061	1238	1415	1592	1769	1945	2122	2300	2476	2653
1/4	306	382	458	611	764	917	1070	1222	1375	1528	1681	1833	1986	2139	2292
5/16	245	306	367	486	611	733	856	978	1100	1222	1345	1467	1589	1711	1833
3/8	204	255	306	407	509	611	713	815	917	1019	1120	1222	1324	1426	1528
7/16	175	219	262	349	437	524	611	698	786	873	960	1048	1135	1222	1310
1/2	153	191	229	306	382	458	535	611	688	764	840	917	993	1070	1146
9/16	137	172	206	275	344	412	481	550	619	687	756	825	893	963	1031
5/8	122	153	183	244	306	367	428	489	550	611	672	733	794	856	917
3/4	102	128	153	203	255	306	357	407	458	509	560	611	662	713	764
7/8	87	109	131	175	218	252	306	350	392	437	480	524	568	611	655
1	76	96	115	153	191	230	268	306	344	382	420	458	497	535	573

SFM (Surface Feet Per Minute)
RPM (Ratation Per Minute)
D = Dia. (Inch)

$$SFM = \frac{D \times RPM}{3.82}$$

$$RPM = \frac{3.82 \times SFM}{D}$$

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	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	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	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	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	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	1. Reduce tapping speed 2. Apply proper cutting lubricants 3. Avoid work hardened hole 4. Use larger hole size
	Tool Condition	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	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	1. Use spiral pointed or spiral fluted taps 2. Use larger drill size
Chattering on Tapped Thread	Tool Free Cutting	1. Reduce cutting angle 2. Reduce amount of thread relief
	Tool Condition	1. Avoid too narrow land width 2. Do not grind the bottom of the flute

MEMO

MEMO

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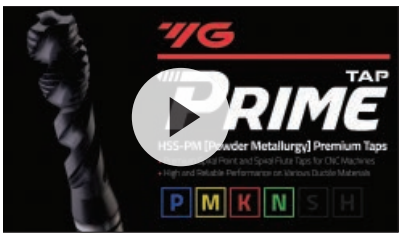

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