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YG1YEPT190210002



**YG**

**TAP  
PRIME**

*HSS-PM (Powder Metallurgy) TAPS*

Excellent Performance on Various Work Materials

# HSS-PM(Powder Metallurgy) Premium Taps for Various Materials

## Special Flute Geometry

Special grinding process provides an unique geometry on spiral flute and spiral point taps to help control chip evacuation, preventing nest formation and enough flute space.

### FEATURES & BENEFITS



Spiral Flute      Spiral Point

Additional Chamfer  
Combo Structure  
**PATENTED**

- The next level of performance with outstanding quality and reliability
- **Reduction in torque, wear, and the risk of chipping or breakage** compared to conventional taps

Optimized  
Edge Preparation

- Increased tool life as a result of an optimum combination of material and geometry, which gives excellent performance
- **Thread with very good surface finish quality**
- High process reliability through high stability

Optimized Flutes  
Geometry for  
Excellent Chip Flow

- Fewer tool changes, optimum machine output and increased productivity through long tool life
- **Trust in a high level of process reliability** even under unfavorable conditions

Bright Finish

- **Premium tapping performs the various materials** (high-tensile Steels, Stainless and acid-resistant Steels, Aluminum and Aluminum Alloys, General Steels, Cast materials, as high as HRC45) provide the suitable solution

HSS-PM  
Only

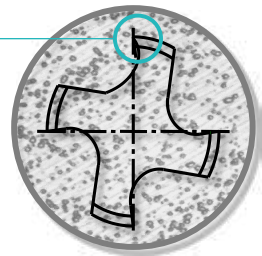
### RANGE

- Sprial Flute      M2 - M30 (#4-1")
- Sprial Point      M2 - M30 (#4-1")

## Premium Cutting Edge Strength



Higher Cutting  
Edge Strength

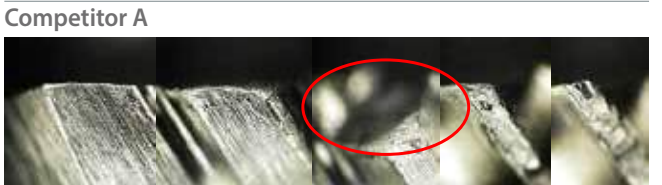
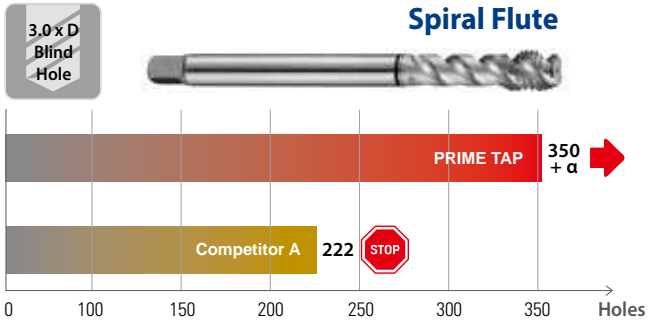


- ▶ More controlled structure with high wear resistance
- ▶ Consistent performance and process stability with chipping resistance
- ▶ High bend strength for the tool life

## CASE STUDY

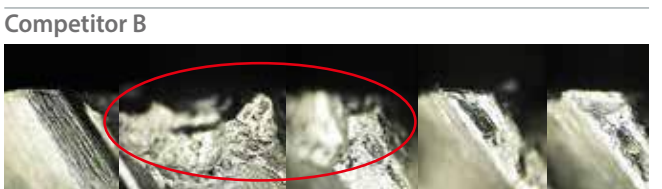
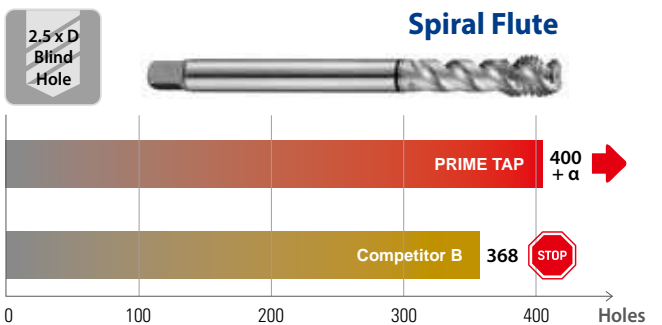
### ▶ M6 x 1.0 Carbon Steel

Tool	YG-1 PRIME TAP	Competitor A
Size	M6 x 1.0	
Work Material	C45 / 1045 / S45C Hardness : HRC20 ( HB 226 )	
Tapping Speed	10 m/min.	
RPM	531 rev./min.	
Tapping Depth	18.0 mm ( 3 x D )	
Tapping Holes	350 + α	222
Coolant	Wet Cut	
Machine	Horizontal Machining Center	



### ▶ M10 x 1.5 Alloy Steel

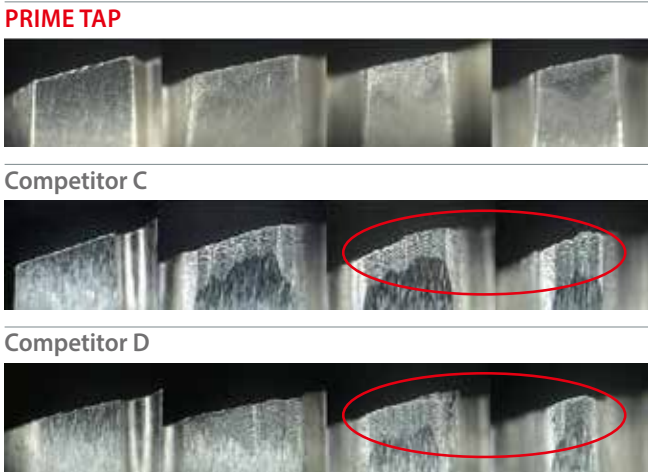
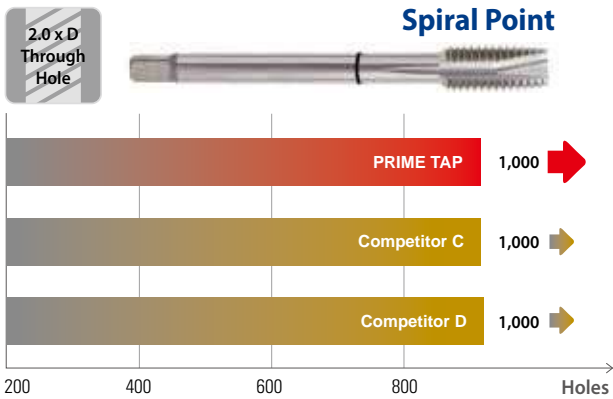
Tool	YG-1 PRIME TAP	Competitor B
Size	M10 x 1.5	
Work Material	4140 / 42CrMo4 / SCM440 Hardness : HRC30 ( HB 286 )	
Tapping Speed	10 m/min.	
RPM	318 rev./min.	
Tapping Depth	25.0 mm ( 2.5 x D )	
Tapping Holes	400 + α	368
Coolant	Wet Cut	
Machine	Horizontal Machining Center	



# CASE STUDY

## M10 x 1.5 Carbon Steel

Tool	YG-1 PRIME TAP	Competitor C Competitor D
Size	M10 x 1.5	
Work Material	C45 / 1045 / S45C Hardness : HRc20 ( HB 226 )	
Tapping Speed	10 m/min.	
RPM	318 rev./min.	
Tapping Depth	20.0 mm ( 2.0 x D )	
Tapping Holes	1,000	
Coolant	Wet Cut	
Machine	Horizontal Machining Center	

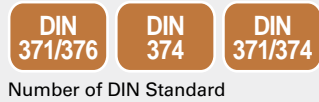


## GUIDE LINE TO ICONS

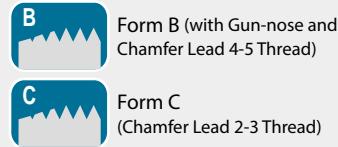
### Working Material



### Standard of Tools



### Chamfer Lead



### Tool Raw Material



### Class of Thread



### Surface Treatment



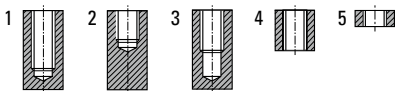
### Helix Angle



### Thread Angle



## MACHINE TAPS RECOMMENDATION TABLE



## PRIME TAP HSS-PM (POWDER METALLURGY) TAPS

USE  
◎ = EXCELLENT  
○ = GOOD

MATERIAL GROUPS			LIST OF MATERIALS			N/mm <sup>2</sup>	HB	m/min.	TENSILE STRENGTH	HARDNESS	CUTTING SPEED		
10. STEELS	11	Steel	Magnetic Soft Steels	< 400	< 120	15-20	◎	◎					
	12	Steel	Structure Steels	< 700	< 200	15-20	◎	◎					
	13	Steel	Plain Carbon Steels	< 850	< 250	12-18	◎	◎					
	14	St. Alloy	Alloy Steels	< 850	< 250	10-15	◎	◎					
	15	St. Alloy	Alloy Steels, Hardened Steels	≤1,200	< 350	6-10	◎	◎					
	16	St. Alloy	Alloy Steels, Hardened Steels	> 1,200	> 350	3-5							
20. STAINLESS STEELS	21	INOX Free	Free Machining	< 850	< 250	7-10	◎	◎					
	22	INOX Aust.	Austenitic	< 850	< 250	5-8	◎	◎					
	23	INOX	Ferritic, Ferritic+Austenitic, Martensitic	< 1,000	< 300	4-6	◎	◎					
30. CAST IRON	31	GG cast	Grey Cast Iron	< 500	< 150	10-15	◎	◎					
	32	GG cast	Grey Cast Iron	< 1,000	< 300	5-8	◎	◎					
	33	GGG cast	Nodular Graphite, Malleable Cast Iron	< 700	< 200	10-15	◎	◎					
	34	GGG cast	Nodular Graphite, Malleable Cast Iron	< 1,000	< 300	5-8	◎	◎					
40. TITANIUM	41	Ti	Titanium, Unalloyed	< 700	< 200	10-15							
	42	Ti Alloy	Titanium, Alloyed	< 900	< 270	8-12							
	43	Ti Alloy	Titanium, Alloyed	≤1,300	< 350	4-6							
50. NICKEL	51	Ni	Nickel, Unalloyed	< 500	< 150	8-12							
	52	Ni Alloy	Nickel, Alloyed	< 900	< 270	10-15							
	53	Ni Alloy	Nickel, Alloyed	≤1,400	< 410	2-4							
60. COPPER, BRASS, BRONZE	61	Cu	Copper, Unalloyed	< 350	< 100	8-12	◎	◎					
	62	Cu Alloy (Short)	Short Chip Brass, Bronze, Copper	< 700	< 200	25-35	◎	◎					
	63	Cu Alloy (Long)	Long Chip Brass, Bronze, Copper	< 700	< 200	15-20	◎	◎					
	64	Cu-Al-Fe	Cu-Al-Fe Alloys	< 1,500	< 470	3-5							
70. ALUMINUM	71	Al / Mg	Aluminum, Magnesium, Unalloyed	< 350	< 100	10-15							
	72	Al Wrought	Aluminum, Alloyed, Si < 1.5%	< 500	< 150	25-35	◎	◎					
	73	Al (Si ≤ 10%)	Aluminum, Alloyed, Si ≤10%	< 400	< 120	15-20	◎	◎					
	74	Al (Si > 10%)	Aluminum, Alloyed, Si > 10%	< 400	< 120	10-15	◎	◎					
80. PLASTICS	81	Thermosoft	Thermoplastics			20-30							
	82	Thermoset	Thermosetting Plastics			8-12							
	83	FRP	Fiber Reinforced Plastics			5-7							



# M HSS-PM(Powder Metallurgy) TAPS

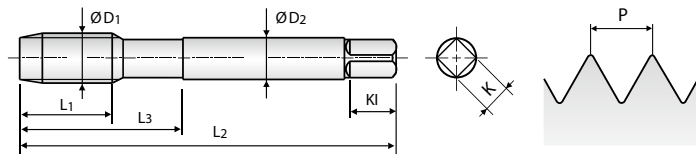
## SPIRAL FLUTE TAPS for Multi-Purpose

### ISO Metric coarse threads DIN 13

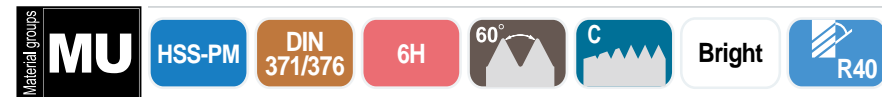
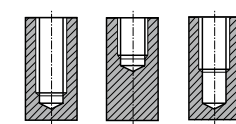
TRE03 SERIES



- ▶ Excellent performance on various work materials.
- ▶ Specially designed to prevent oversized threads and reduce gauging problems.
- ▶ All Prime taps are made of HSS-PM (Powder Metallurgy).



Hole type 2.5xD



Unit : mm

Size	Pitch	EDP No.	Thread Length	Overall Length	Neck Length	Shank Diameter	Square Size	Square Length	No. of Flute	Tapping Drill Diameter
ØD1	P	Bright	L1	L2	L3	ØD2	K	KL	Z	Ød1
M2	x 0.4	TRE03136	8	45	13	2.8	2.1	5	3	1.6
M2.2	x 0.45	TRE03156	8	45	13	2.8	2.1	5	3	1.75
M2.3	x 0.4	TRE03196	8	45	13	2.8	2.1	5	3	1.9
M2.5	x 0.45	TRE03176	9	50	15	2.8	2.1	5	3	2.05
M2.6	x 0.45	TRE03496	9	50	15	2.8	2.1	5	3	2.1
M3	x 0.5	TRE03206	6	56	18	3.5	2.7	6	3	2.5
M3.5	x 0.6	TRE03226	7	56	20	4	3	6	3	2.9
M4	x 0.7	TRE03246	7	63	21	4.5	3.4	6	3	3.3
M4.5	x 0.75	TRE03266	8	70	25	6	4.9	8	3	3.7
M5	x 0.8	TRE03286	8	70	25	6	4.9	8	3	4.2
M6	x 1.0	TRE03316	10	80	30	6	4.9	8	3	5
M7	x 1.0	TRE03346	10	80	30	7	5.5	8	3	6
M8	x 1.25	TRE03366	13	90	35	8	6.2	9	3	6.8
M9	x 1.25	TRE03396	13	90	35	9	7	10	3	7.8
M10	x 1.5	TRE03426	15	100	39	10	8	11	3	8.5
M11	x 1.5	TRE03466	17	100	40	8	6.2	9	3	9.5
M12	x 1.75	TRE03506	18	110	44	9	7	10	3	10.2
M14	x 2.0	TRE03546	20	110	44	11	9	12	3	12
M16	x 2.0	TRE03606	20	110	44	12	9	12	3	14
M18	x 2.5	TRE03656	25	125	50	14	11	14	4	15.5
M20	x 2.5	TRE03706	25	140	54	16	12	15	4	17.5
M22	x 2.5	TRE03746	25	140	54	18	14.5	17	4	19.5
M24	x 3.0	TRE03786	30	160	60	18	14.5	17	4	21
M27	x 3.0	TRE03866	30	160	60	20	16	19	4	24
M30	x 3.5	TRE03946	35	180	70	22	18	21	4	26.5

- ▶ DIN 371 (M2-M10) and DIN 376 (M11-M30)
- ▶ The other coatings (TiN, TiCN, TiAlN), Surface Treatment (Steam Homo) are available on your request.

Unit : N/mm<sup>2</sup> ◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy < 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎	◎	◎	◎		◎	◎	◎	◎	◎	◎	◎		
Ti Alloy < 1300	Ni < 500	Ni Alloy < 900	Ni Alloy < 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si<10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
				◎	◎	◎			◎	◎	◎			

# MF HSS-PM(Powder Metallurgy) TAPS

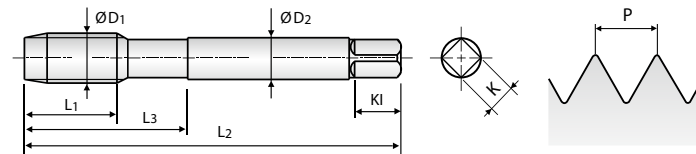
## SPIRAL FLUTE TAPS for Multi-Purpose

### ISO Metric fine threads DIN 13

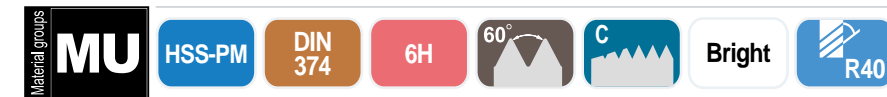
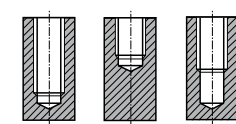
TRE04 SERIES



- ▶ Excellent performance on various work materials.
- ▶ Specially designed to prevent oversized threads and reduce gauging problems.
- ▶ All Prime taps are made of HSS-PM (Powder Metallurgy).



Hole type 2.5xD



Unit : mm

Size	Pitch	EDP No.	Thread Length	Overall Length	Neck Length	Shank Diameter	Square Size	Square Length	No. of Flute	Tapping Drill Diameter
ØD1	P	Bright	L1	L2	L3	ØD2	K	KL	Z	Ød1
M4	x 0.5	TRE04256	5	63	21	2.8	2.1	5	3	3.5
M5	x 0.5	TRE04296	5	70	25	3.5	2.7	6	3	4.5
M6	x 0.75	TRE04326	8	80	30	4.5	3.4	6	3	5.2
M6	x 0.5	TRE04336	5	80	30	4.5	3.4	6	3	5.5
M7	x 0.75	TRE04356	10	80	30	5.5	4.3	7	3	6.2
M8	x 1.0	TRE04376	10	90	36	6	4.9	8	3	7
M8	x 0.75	TRE04386	8	80	30	6	4.9	8	3	7.2
M10	x 1.25	TRE04436	16	100	40	7	5.5	8	3	8.8
M10	x 1.0	TRE04446	10	90	36	7	5.5	8	3	9
M10	x 0.75	TRE04456	10	90	36	7	5.5	8	3	9.2
M12	x 1.5	TRE04516	15	100	40	9	7	10	3	10.5
M12	x 1.25	TRE04526	15	100	40	9	7	10	3	10.8
M12	x 1.0	TRE04536	11	100	40	9	7	10	3	11
M14	x 1.5	TRE04556	15	100	40	11	9	12	3	12.5
M14	x 1.25	TRE04566	15	100	40	11	9	12	3	12.8
M14	x 1.0	TRE04576	11	100	40	11	9	12	3	13
M16	x 1.5	TRE04616	15	100	40	12	9	12	3	14.5
M16	x 1.0	TRE04626	12	100	40	12	9	12	3	15
M18	x 1.5	TRE04676	17	110	44	14	11	14	4	16.5
M18	x 1.0	TRE04686	13	110	44	14	11	14	4	17
M20	x 1.5	TRE04726	17	125	50	16	12	15	4	18.5
M20	x 1.0	TRE04736	14	125	50	16	12	15	4	19
M22	x 1.5	TRE04766	17	125	50	18	14.5	17	4	20.5
M22	x 1.0	TRE04776	14	125	50	18	14.5	17	4	21
M24	x 2.0	TRE04796	20	140	54	18	14.5	17	4	22
M24	x 1.5	TRE04806	20	140	54	18	14.5	17	4	22.5
M26	x 1.5	TRE04856	20	140	54	18	14.5	17	4	24.5
M27	x 2.0	TRE04876	20	140	54	20	16	19	4	25
M27	x 1.5	TRE04886	20	140	54	20	16	19	4	25.5
M28	x 1.5	TRE04916	20	140	54	20	16	19	4	26.5
M30	x 2.0	TRE04966	22	150	57	22	18	21	4	28
M30	x 1.5	TRE04976	22	150	57	22	18	21	4	28.5

- ▶ The other coatings (TiN, TiCN, TiAlN), Surface Treatment (Steam Homo) are available on your request.

Unit : N/mm<sup>2</sup> ◎ : Excellent ○ : Good

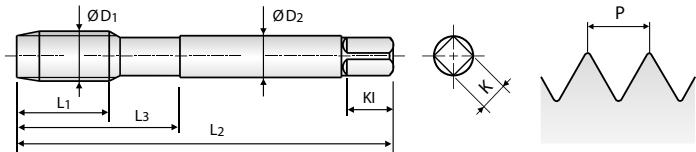
Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy < 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎	◎	◎	◎		◎	◎	◎	◎	◎	◎	◎		
Ti Alloy < 1300	Ni < 500	Ni Alloy < 900	Ni Alloy < 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si<10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
				◎	◎	◎			◎	◎	◎			

# HSS-PM(Powder Metallurgy) TAPS **UNC** SPIRAL FLUTE TAPS for Multi-Purpose Unified coarse threads

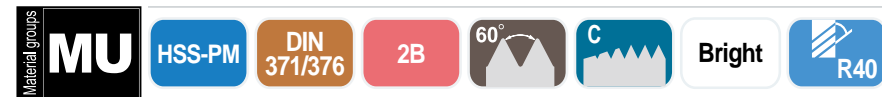
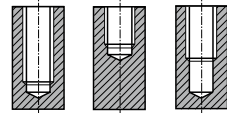
**TRE13** SERIES



- ▶ Excellent performance on various work materials.
- ▶ Specially designed to prevent oversized threads and reduce gauging problems.
- ▶ All Prime taps are made of HSS-PM (Powder Metallurgy).



Hole type 2.5xD



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		Bright	L1	L2	L3	ØD2	K	KL	Z	Ød1
#4 - 40 UNC		<b>TRE13162</b>	6	56	18	3.5	2.7	6	3	2.3
#5 - 40 UNC		<b>TRE13202</b>	7	56	18	3.5	2.7	6	3	2.6
#6 - 32 UNC		<b>TRE13242</b>	7	56	20	4	3	6	3	2.85
#8 - 32 UNC		<b>TRE13282</b>	8	63	21	4.5	3.4	6	3	3.5
#10 - 24 UNC		<b>TRE13322</b>	10	70	25	6	4.9	8	3	3.9
#12 - 24 UNC		<b>TRE13362</b>	10	80	30	6	4.9	8	3	4.5
1/4 - 20 UNC		<b>TRE13402</b>	13	80	30	7	5.5	8	3	5.2
5/16 - 18 UNC		<b>TRE13442</b>	14	90	35	8	6.2	9	3	6.6
3/8 - 16 UNC		<b>TRE13482</b>	16	100	39	9	7	10	3	8
7/16 - 14 UNC		<b>TRE13522</b>	17	100	40	8	6.2	9	3	9.4
1/2 - 13 UNC		<b>TRE13562</b>	20	110	44	9	7	10	3	10.75
9/16 - 12 UNC		<b>TRE13602</b>	20	110	44	11	9	12	3	12.25
5/8 - 11 UNC		<b>TRE13642</b>	22	110	44	12	9	12	3	13.5
3/4 - 10 UNC		<b>TRE13702</b>	25	125	50	14	11	14	4	16.5
7/8 - 9 UNC		<b>TRE13742</b>	27	140	54	18	14.5	17	4	19.5
1 - 8 UNC		<b>TRE13782</b>	30	160	60	20	16	19	4	22.25

- ▶ DIN 371 (#4~3/8) and DIN 376 (7/16~1)
- ▶ The other coatings (TiN, TiCN, TiAlN), Surface Treatment (Steam Homo) are available on your request.

Unit : N/mm<sup>2</sup> ◎ : Excellent ○ : Good

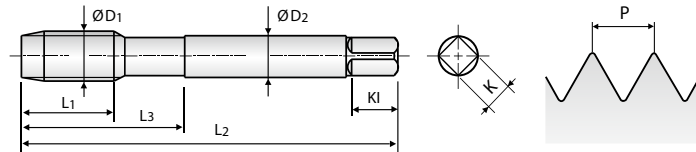
Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎	◎	◎	◎		◎	◎	◎	◎	◎	◎	◎		
Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
				◎	◎	◎			◎	◎	◎			

# HSS-PM(Powder Metallurgy) TAPS **UNF** SPIRAL FLUTE TAPS for Multi-Purpose Unified fine threads

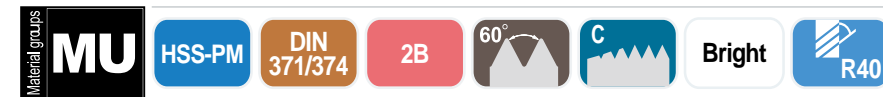
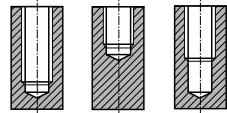
**TRE14** SERIES



- ▶ Excellent performance on various work materials.
- ▶ Specially designed to prevent oversized threads and reduce gauging problems.
- ▶ All Prime taps are made of HSS-PM (Powder Metallurgy).



Hole type 2.5xD



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		Bright	L1	L2	L3	ØD2	K	KL	Z	Ød1
#4 - 48 UNF		<b>TRE14182</b>	6	56	18	3.5	2.7	6	3	2.4
#5 - 44 UNF		<b>TRE14222</b>	7	56	18	3.5	2.7	6	3	2.7
#6 - 40 UNF		<b>TRE14262</b>	7	56	20	4	3	6	3	3
#8 - 36 UNF		<b>TRE14302</b>	8	63	21	4.5	3.4	6	3	3.5
#10 - 32 UNF		<b>TRE14342</b>	10	70	25	6	4.9	8	3	4.1
#12 - 28 UNF		<b>TRE14382</b>	10	80	30	6	4.9	8	3	4.7
1/4 - 28 UNF		<b>TRE14422</b>	10	80	30	7	5.5	8	3	5.5
5/16 - 24 UNF		<b>TRE14462</b>	10	90	35	8	6.2	9	3	6.9
3/8 - 24 UNF		<b>TRE14502</b>	10	100	39	9	7	10	3	8.5
7/16 - 20 UNF		<b>TRE14542</b>	13	100	40	8	6.2	9	3	9.9
1/2 - 20 UNF		<b>TRE14582</b>	13	100	40	9	7	10	3	11.5
9/16 - 18 UNF		<b>TRE14622</b>	15	100	40	11	9	12	3	12.9
5/8 - 18 UNF		<b>TRE14662</b>	15	100	40	12	9	12	3	14.5
3/4 - 16 UNF		<b>TRE14722</b>	17	110	44	14	11	14	4	17.5
7/8 - 14 UNF		<b>TRE14762</b>	17	125	50	18	14.5	17	4	20.5
1 - 12 UNF		<b>TRE14802</b>	20	140	54	20	16	19	4	23.25

- ▶ DIN 371 (#4~3/8) and DIN 374 (7/16~1)
- ▶ The other coatings (TiN, TiCN, TiAlN), Surface Treatment (Steam Homo) are available on your request.

Unit : N/mm<sup>2</sup> ◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎	◎	◎	◎		◎	◎	◎	◎	◎	◎	◎		
Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
				◎	◎	◎			◎	◎	◎			

# M HSS-PM(Powder Metallurgy) TAPS

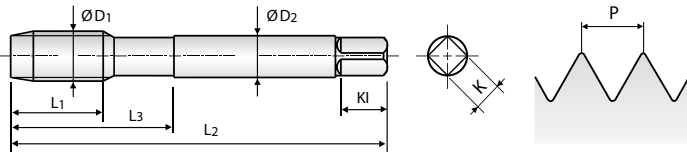
## SPIRAL POINT TAPS for Multi-Purpose

### ISO Metric coarse threads DIN 13

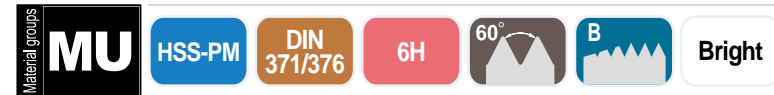
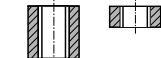
TRJ03 SERIES



- ▶ Excellent performance on various work materials.
- ▶ Specially designed to prevent oversized threads and reduce gauging problems.
- ▶ All Prime taps are made of HSS-PM (Powder Metallurgy).



Hole type 3.0xD



Unit : mm

Size	Pitch	EDP No.	Thread Length	Overall Length	Neck Length	Shank Diameter	Square Size	Square Length	No. of Flute	Tapping Drill Diameter
ØD1	P	Bright	L1	L2	L3	ØD2	K	KI	Z	Ød1
M2	x 0.4	TRJ03136	8	45	13	2.8	2.1	5	2	1.6
M2.2	x 0.45	TRJ03156	8	45	13	2.8	2.1	5	2	1.75
M2.3	x 0.4	TRJ03196	8	45	13	2.8	2.1	5	2	1.9
M2.5	x 0.45	TRJ03176	9	50	15	2.8	2.1	5	2	2.05
M2.6	x 0.45	TRJ03496	9	50	15	2.8	2.1	5	2	2.1
M3	x 0.5	TRJ03206	11	56	18	3.5	2.7	6	3	2.5
M3.5	x 0.6	TRJ03226	12	56	20	4	3	6	3	2.9
M4	x 0.7	TRJ03246	13	63	21	4.5	3.4	6	3	3.3
M4.5	x 0.75	TRJ03266	14	70	25	6	4.9	8	3	3.7
M5	x 0.8	TRJ03286	15	70	25	6	4.9	8	3	4.2
M6	x 1.0	TRJ03316	17	80	30	6	4.9	8	3	5
M7	x 1.0	TRJ03346	17	80	30	7	5.5	8	3	6
M8	x 1.25	TRJ03366	20	90	35	8	6.2	9	3	6.8
M9	x 1.25	TRJ03396	20	90	35	9	7	10	3	7.8
M10	x 1.5	TRJ03426	22	100	39	10	8	11	3	8.5
M11	x 1.5	TRJ03466	22	100	40	8	6.2	9	3	9.5
M12	x 1.75	TRJ03506	24	110	44	9	7	10	3	10.2
M14	x 2.0	TRJ03546	26	110	44	11	9	12	3	12
M16	x 2.0	TRJ03606	27	110	44	12	9	12	3	14
M18	x 2.5	TRJ03656	30	125	50	14	11	14	3	15.5
M20	x 2.5	TRJ03706	32	140	54	16	12	15	3	17.5
M22	x 2.5	TRJ03746	32	140	54	18	14.5	17	3	18.5
M24	x 3.0	TRJ03786	34	160	60	18	14.5	17	3	21
M27	x 3.0	TRJ03866	36	160	60	20	16	19	4	24
M30	x 3.5	TRJ03946	40	180	70	22	18	21	4	26.5

- ▶ DIN 371 (M2-M10) and DIN 376 (M11-M30)
- ▶ The other coatings (TiN, TiCN, TiAlN), Surface Treatment (Steam Homo) are available on your request.

Unit : N/mm<sup>2</sup> ◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy < 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎	◎	◎	◎		◎	◎	◎	◎	◎	◎	◎		
Ti Alloy < 1300	Ni < 500	Ni Alloy < 900	Ni Alloy < 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si<10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP

# MF HSS-PM(Powder Metallurgy) TAPS

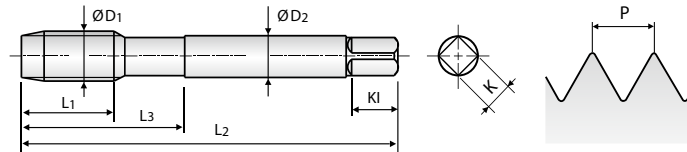
## SPIRAL POINT TAPS for Multi-Purpose

### ISO Metric fine threads DIN 13

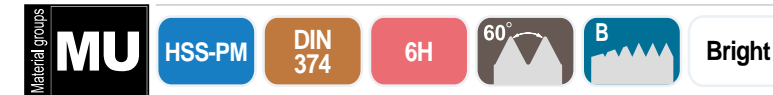
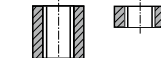
TRJ04 SERIES



- ▶ Excellent performance on various work materials.
- ▶ Specially designed to prevent oversized threads and reduce gauging problems.
- ▶ All Prime taps are made of HSS-PM (Powder Metallurgy).



Hole type 3.0xD



Unit : mm

Size	Pitch	EDP No.	Thread Length	Overall Length	Neck Length	Shank Diameter	Square Size	Square Length	No. of Flute	Tapping Drill Diameter
ØD1	P	Bright	L1	L2	L3	ØD2	K	KI	Z	Ød1
M4	x 0.5	TRJ04256	10	63	21	2.8	2.1	5	3	3.5
M5	x 0.5	TRJ04296	11	70	25	3.5	2.7	6	3	4.5
M6	x 0.75	TRJ04326	13	80	30	4.5	3.4	6	3	5.2
M6	x 0.5	TRJ04336	13	80	30	4.5	3.4	6	3	5.5
M7	x 0.75	TRJ04356	14	80	30	5.5	4.3	7	3	6.2
M8	x 1.0	TRJ04376	17	90	36	6	4.9	8	3	7
M8	x 0.75	TRJ04386	14	80	30	6	4.9	8	3	7.2
M10	x 1.25	TRJ04436	22	100	40	7	5.5	8	3	8.8
M10	x 1.0	TRJ04446	18	90	36	7	5.5	8	3	9
M10	x 0.75	TRJ04456	18	90	36	7	5.5	8	3	9.2
M12	x 1.5	TRJ04516	22	100	40	9	7	10	3	10.5
M12	x 1.25	TRJ04526	22	100	40	9	7	10	3	10.8
M12	x 1.0	TRJ04536	18	100	40	9	7	10	3	11
M14	x 1.5	TRJ04556	22	100	40	11	9	12	3	12.5
M14	x 1.25	TRJ04566	22	100	40	11	9	12	3	12.8
M14	x 1.0	TRJ04576	18	100	40	11	9	12	3	13
M16	x 1.5	TRJ04616	22	100	40	12	9	12	3	14.5
M16	x 1.0	TRJ04626	18	100	40	12	9	12	3	15
M18	x 1.5	TRJ04676	25	110	44	14	11	14	3	16.5
M18	x 1.0	TRJ04686	20	110	44	14	11	14	3	17
M20	x 1.5	TRJ04726	25	125	50	16	12	15	3	18.5
M20	x 1.0	TRJ04736	20	125	50	16	12	15	3	19
M22	x 1.5	TRJ04766	25	125	50	18	14.5	17	3	20.5
M22	x 1.0	TRJ04776	20	125	50	18	14.5	17	3	21
M24	x 2.0	TRJ04796	27	140	54	18	14.5	17	3	22
M24	x 1.5	TRJ04806	27	140	54	18	14.5	17	3	22.5
M26	x 1.5	TRJ04856	28	140	54	18	14.5	17	4	24.5
M27	x 2.0	TRJ04876	28	140	54	20	16	19	4	25
M27	x 1.5	TRJ04886	28	140	54	20	16	19	4	25.5
M28	x 1.5	TRJ04916	28	140	54	20	16	19	4	26.5
M30	x 2.0	TRJ04966	30	150	57	22	18	21	4	28
M30	x 1.5	TRJ04976	30	150	57	22	18	21	4	28.5

- ▶ The other coatings (TiN, TiCN, TiAlN), Surface Treatment (Steam Homo) are available on your request.

Unit : N/mm<sup>2</sup> ◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy < 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎	◎	◎	◎		◎	◎	◎	◎	◎	◎	◎		
Ti Alloy < 1300	Ni < 500	Ni Alloy < 900	Ni Alloy < 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si<10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP

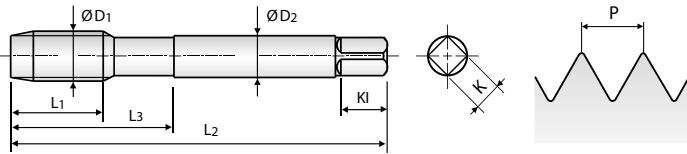
# UNC SPIRAL POINT TAPS for Multi-Purpose

## Unified coarse threads

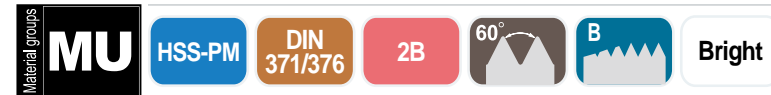
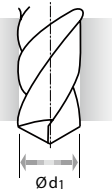
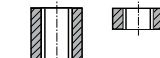
TRJ13 SERIES



- ▶ Excellent performance on various work materials.
- ▶ Specially designed to prevent oversized threads and reduce gauging problems.
- ▶ All Prime taps are made of HSS-PM (Powder Metallurgy).



Hole type 3.0xD



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		Bright	L1	L2	L3	ØD2	K	KI	Z	Ød1
#4 - 40 UNC		TRJ13162	11	56	18	3.5	2.7	6	2	2.3
#5 - 40 UNC		TRJ13202	11	56	18	3.5	2.7	6	3	2.6
#6 - 32 UNC		TRJ13242	12	56	20	4	3	6	3	2.85
#8 - 32 UNC		TRJ13282	13	63	21	4.5	3.4	6	3	3.5
#10 - 24 UNC		TRJ13322	15	70	25	6	4.9	8	3	3.9
#12 - 24 UNC		TRJ13362	16	80	30	6	4.9	8	3	4.5
1/4 - 20 UNC		TRJ13402	17	80	30	7	5.5	8	3	5.2
5/16 - 18 UNC		TRJ13442	20	90	35	8	6.2	9	3	6.6
3/8 - 16 UNC		TRJ13482	22	100	39	9	7	10	3	8
7/16 - 14 UNC		TRJ13522	22	100	40	8	6.2	9	3	9.4
1/2 - 13 UNC		TRJ13562	25	110	44	9	7	10	3	10.75
9/16 - 12 UNC		TRJ13602	26	110	44	11	9	12	3	12.25
5/8 - 11 UNC		TRJ13642	27	110	44	12	9	12	3	13.5
3/4 - 10 UNC		TRJ13702	30	125	50	14	11	14	3	16.5
7/8 - 9 UNC		TRJ13742	32	140	54	18	14.5	17	3	19.5
1 - 8 UNC		TRJ13782	36	160	60	20	16	19	3	22.25

- ▶ DIN 371 (#4~3/8) and DIN 376 (7/16~1)
- ▶ The other coatings (TiN, TiCN, TiAlN), Surface Treatment (Steam Homo) are available on your request.

Unit : N/mm<sup>2</sup> ◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy < 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎	◎	◎	◎		◎	◎	◎	◎	◎	◎	◎		
Ti Alloy < 1300	Ni < 500	Ni Alloy < 900	Ni Alloy < 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si<10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
				◎	◎	◎			◎	◎	◎			

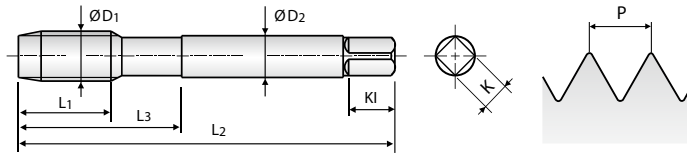
# UNF SPIRAL POINT TAPS for Multi-Purpose

## Unified fine threads

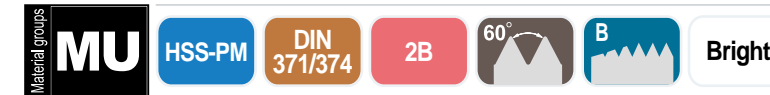
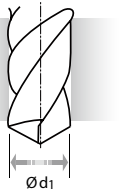
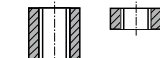
TRJ14 SERIES



- ▶ Excellent performance on various work materials.
- ▶ Specially designed to prevent oversized threads and reduce gauging problems.
- ▶ All Prime taps are made of HSS-PM (Powder Metallurgy).



Hole type 3.0xD



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		Bright	L1	L2	L3	ØD2	K	KI	Z	Ød1
#4 - 48 UNF		TRJ14182	11	56	18	3.5	2.7	6	2	2.4
#5 - 44 UNF		TRJ14222	11	56	18	3.5	2.7	6	3	2.7
#6 - 40 UNF		TRJ14262	12	56	20	4	3	6	3	3
#8 - 36 UNF		TRJ14302	13	63	21	4.5	3.4	6	3	3.5
#10 - 32 UNF		TRJ14342	15	70	25	6	4.9	8	3	4.1
#12 - 28 UNF		TRJ14382	16	80	30	6	4.9	8	3	4.7
1/4 - 28 UNF		TRJ14422	17	80	30	7	5.5	8	3	5.5
5/16 - 24 UNF		TRJ14462	17	90	35	8	6.2	9	3	6.9
3/8 - 24 UNF		TRJ14502	18	100	39	9	7	10	3	8.5
7/16 - 20 UNF		TRJ14542	22	100	40	8	6.2	9	3	9.9
1/2 - 20 UNF		TRJ14582	22	100	40	9	7	10	3	11.5
9/16 - 18 UNF		TRJ14622	22	100	40	11	9	12	3	12.9
5/8 - 18 UNF		TRJ14662	22	100	40	12	9	12	3	14.5
3/4 - 16 UNF		TRJ14722	25	110	44	14	11	14	3	17.5
7/8 - 14 UNF		TRJ14762	26	125	50	18	14.5	17	3	20.5
1 - 12 UNF		TRJ14802	28	140	54	20	16	19	3	23.25

- ▶ DIN 371 (#4~3/8) and DIN 374 (7/16~1)
- ▶ The other coatings (TiN, TiCN, TiAlN), Surface Treatment (Steam Homo) are available on your request.

Unit : N/mm<sup>2</sup> ◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy < 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎	◎	◎	◎		◎	◎	◎	◎	◎	◎	◎		
Ti Alloy < 1300	Ni < 500	Ni Alloy < 900	Ni Alloy < 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si<10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
				◎	◎	◎			◎	◎	◎			



## TROUBLE SHOOTING GUIDE

Specific Problem	Cause	Solution
<b>Dimensional Accuracy</b>		
<b>Oversize Pitch Diameter</b>	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
<b>Oversize Internal Diameter</b>	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
<b>Undersize Pitch Diameter</b>	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
<b>Undersize Internal Diameter</b>	Hole Size	1. Use maximum drill size
<b>Breakage</b>	Incorrect Tap Selection	1. Avoid chip packing in the flutes or on the bottom of the hole Use spiral pointed or spiral fluted taps or fluteless taps 2. Apply correct surface treatment such as Hardslick or bright
	Excessive Tapping Torque	1. Use larger drill size 2. Try to shorten thread length 3. Increase cutting angle 4. Apply a tap with more thread relief and reduced land width 5. Apply correct surface treatment such as Hardslick

## TROUBLE SHOOTING GUIDE

Specific Problem	Cause	Solution
<b>Dimensional Accuracy</b>		
<b>Breakage</b>	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
<b>Chipping</b>	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
<b>Wear</b>	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
<b>Torn or Rough Thread</b>	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
	Tool Free Cutting	1. Reduce cutting angle 2. Reduce amount of thread relief
<b>Chattering on Tapped Thread</b>	Tool Condition	1. Avoid too narrow land width 2. Do not grind the bottom of the flute



## 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 (SFM) into revolutions per minute

TOOL RPM (rev./min.)															
Tool Dia.	Cutting Speed (SFM)														
	20	25	30	40	50	60	70	80	90	100	110	120	130	140	150
#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

RPM = rev./min.  
SFM = ft/min.  
D = Dia.(inch)

$$RPM = \frac{SFM \cdot 12}{\pi \cdot D}$$

$$SFM = \frac{RPM \cdot \pi \cdot D}{12}$$

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				

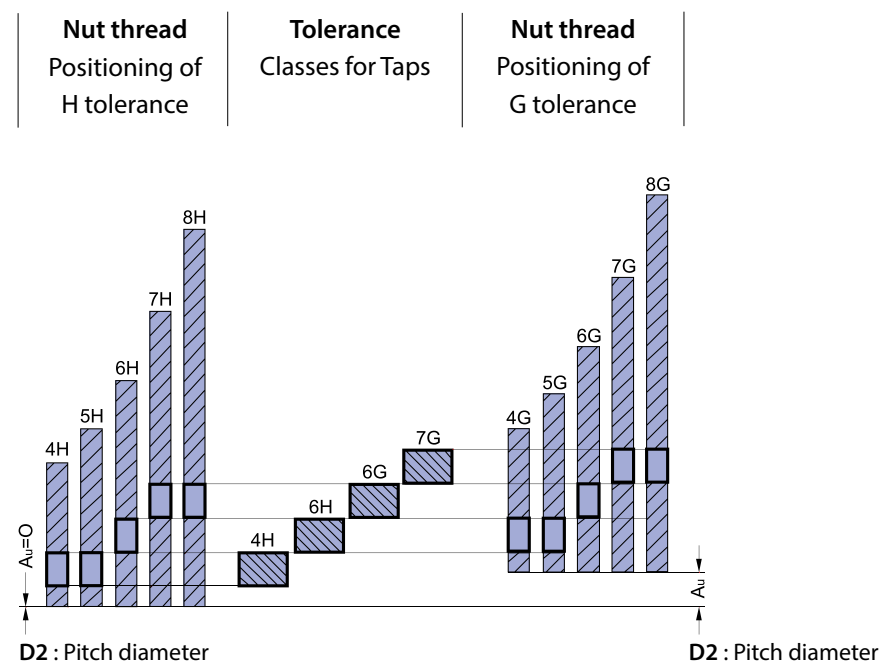
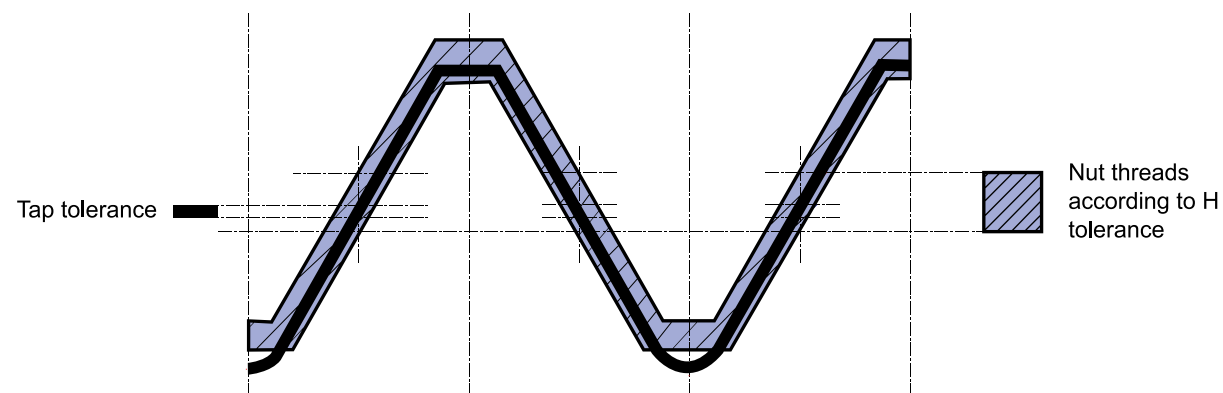
RECOMMENDED TAP DRILL SIZE (UNC / UNF)

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

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