



COMPLETE
METALWORKING
SOLUTIONS

(800) 991-4225
www.ahbinc.com
ISO Certified
customerservice@ahbinc.com

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Tool specifications are subject to change without notice.



YG1UCT140129003

YU-CT14

BEST VALUE IN THE WORLD OF CUTTING TOOLS



SPIRAL FLUTE / SPIRAL POINT



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YG-1 CO., LTD.

TEST RESULT AGAINST COMPETITOR'S TAP

Combo tap for Multi Purpose

● TEST I - M8 x 1.25

Test Condition

- Work Material : Carbon Steels
DIN : C45
WR : 1.0503
JIS : S45C
- Tapping Depth : .79"
- Coolant : Water Soluble Oil
- Vc (Tapping Speed) : 33 SFM

YG-1(Total Tapping 204 Holes)	
Surface Roughness of Work Piece	
	204 Hole ▶
COMPETITOR A (Total Tapping 159 Holes)	
Surface Roughness of Work Piece	
	159 Hole ▶
COMPETITOR B (Total Tapping 204 Holes)	
Surface Roughness of Work Piece	
	204 Hole ▶

● TEST II - M10 x 1.5

Test Condition

- Work Material : Carbon Steels
DIN : C45
WR : 1.0503
JIS : S45C
- Tapping Depth : 1"
- Coolant : Water Soluble Oil
- Vc (Tapping Speed) : 33 SFM

YG-1(Total Tapping 216 Holes)	
Surface Roughness of Work Piece	
	216 Hole ▶
COMPETITOR A (Total Tapping 99 Holes)	
Surface Roughness of Work Piece	
	99 Hole ▶
COMPETITOR B (Total Tapping 196 Holes)	
Surface Roughness of Work Piece	
	196 Hole ▶

TEST RESULT AGAINST COMPETITOR'S TAP

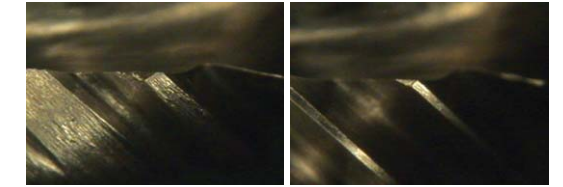
Combo tap for Stainless Steels

● TEST I - M4 x 0.7

Test Condition

- Work Material : Stainless Steels
DIN : X5CrNi18 10
(X 4 CrNi18-10)
WR : 1.4303
JIS : SUS304
- Tapping Depth : .39"
- Coolant : Wet Cut
- Vc (Tapping Speed) : 26 SFM

YG-1(Total Tapping 170 Holes)



YG-1(Total Tapping 170 Holes)



COMPETITOR A(Total Tapping 170 Holes)



COMPETITOR B

Tool broke 83 holes tapping

● TEST II - M6 x 1.0

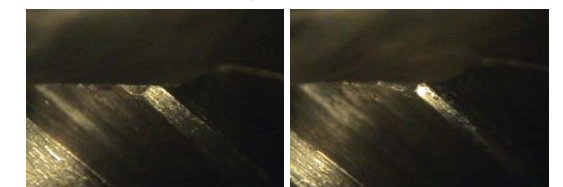
Test Condition

- Work Material : Stainless Steels
DIN : X5CrNi18 10
(X 4 CrNi18-10)
WR : 1.4303
JIS : SUS304
- Tapping Depth : .59"
- Coolant : Wet Cut
- Vc (Tapping Speed) : 26 SFM

YG-1(Total Tapping 230 Holes)



YG-1(Total Tapping 230 Holes)



COMPETITOR A

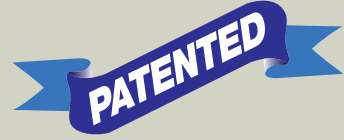
Tool broke 92 holes tapping

COMPETITOR B

Tool broke 98 holes tapping

COMBINATION OF MULTI-APPLICATION

FEATURES OF COMBO TAP



- Thread configuration with a special design. (patented)
* Prevents over-feeding, thin thread, and pitch diameter oversize.
- Flute geometry with special design.
* Better chip evacuation.
* Prevents chip clogging.
* Improves thread quality.
- Excellent performance on various work materials.
* Stainless steels, Carbon Steel, Alloyed Steel, Tool Steel, etc.

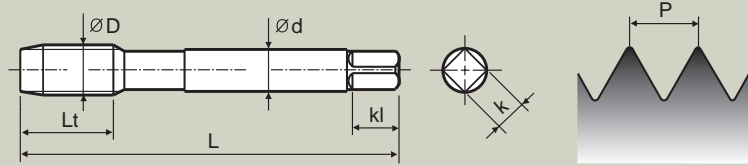
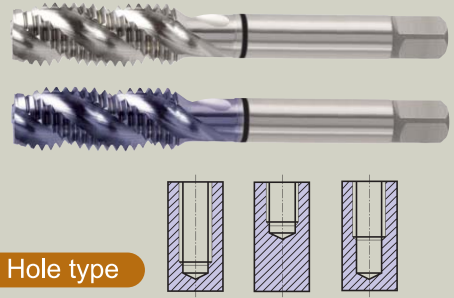
EDP No.	MODEL	Tool Material	Standard	Dimensions	Tolerance	Chamfer	Surface Treatment	Page
T2 T2-C		HSS-EX	UNC/UNF	ANSI	GH	2~3P	Bright TiCN	6
NEW T6 T6-N	with Internal Coolant 	HSS-EX	UNC/UNF	ANSI	GH	2~3P	Bright TiN	7
NEW T7 T7-C	Short Chamfer 	HSS-EX	UNC/UNF	ANSI	GH	1~2P	Bright TiCN	8
NEW T1-S T1-C		HSS-EX	UNC/UNF	ANSI Shank DIN Length	GH	2~3P	Steam Oxide TiCN	9
NEW TCA-S/C TCB-S/C		Super HSS HSS-EX	UNC/UNF	ANSI	GH	2~3P	Steam Oxide TiCN	10
T5 T5-C		HSS-EX	M	ANSI	D	2~3P	Bright TiCN	11
NEW T8 T8-N	with Internal Coolant 	HSS-EX	M	ANSI	D	2~3P	Bright TiN	12
NEW T9 T9-C	Short Chamfer 	HSS-EX	M	ANSI	D	1~2P	Bright TiCN	13
NEW TA-S TA-C		HSS-EX	M	ANSI Shank DIN Length	D	2~3P	Steam Oxide TiCN	14
NEW TCC-S/C TCD-S/C		Super HSS HSS-EX	M	ANSI	D	2~3P	Steam Oxide TiCN	15
T4 T4-C		HSS-EX	UNC/UNF	ANSI	GH	4~5P	Bright TiCN	16
NEW TB TB-N	with Internal Coolant 	HSS-EX	UNC/UNF	ANSI	GH	4~5P	Bright TiN	17
NEW TC-S TC-C		HSS-EX	UNC/UNF	ANSI Shank DIN Length	GH	4~5P	Steam Oxide TiCN	18
NEW TCE-S/C TCF-S/C		Super HSS HSS-EX	UNC/UNF	ANSI	GH	4P	Steam Oxide TiCN	19
T3 T3-C		HSS-EX	M	ANSI	D	4~5P	Bright TiCN	20
NEW TH TH-N	with Internal Coolant 	HSS-EX	M	ANSI	D	4~5P	Bright TiN	21
NEW TK-S TK-C		HSS-EX	M	ANSI Shank DIN Length	D	4~5P	Steam Oxide TiCN	22
NEW TCG-S/C TCH-S/C		Super HSS HSS-EX	M	ANSI	D	4~5P	Steam Oxide TiCN	23

RECOMMENDATION TABLE

Tapping Speed (SFM)	Uncoated	Coated	Steels				Stainless steels			Cast iron		Aluminum		Nickel Alloys		Titanium	Copper, Brass, Bronze			Zinc	Magnesium
			<15	<23	24~<38	38<~<44	<23	24~<38	38<~<44	-	-	-	-	≤38	38<~<44	≤38	-	-	<44	-	-
25-50	50-80	50-80	6-30	6-12	12-35	12-15	12-15	35-50	12-45	50-65	40-65	10-15	10-12	3-15	50-60	30-65	12-20	25-65	-	-	
50-80	50-80	10-35	-	20-50	12-15	-	50-65	25-55	-	45-90	-	-	-	-	65-100	-	35-80	50-80	45-100	-	
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● : RECOMMENDED
○ : SUITABLE

SPIRAL FLUTE TAPS for Multi-Purpose



SPIRAL FLUTE TAPS ♦ T2/T2-C

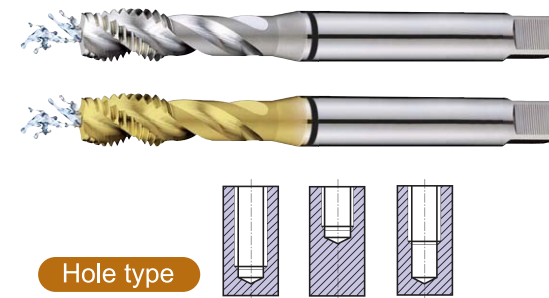


Unit : inch

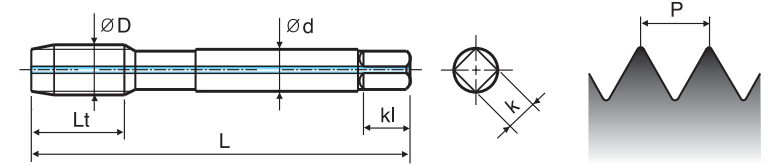
SIZE D	TPI	Limit	EDP No.		Overall Length L	Thread Length Lt	Shank Diameter d	Square Size k	Square Length kl	No. of Flute N
			Bright Finish	TiCN Coated						
#4	- 40 UNC	GH2	T2162	T2162C	1.88	.236	.141	.110	.188	2
#4	- 48 UNF	GH2	T2182	T2182C	1.88	.236	.141	.110	.188	2
#5	- 40 UNC	GH2	T2202	T2202C	1.94	.236	.141	.110	.188	3
#5	- 44 UNF	GH2	T2222	T2222C	1.94	.236	.141	.110	.188	3
#6	- 32 UNC	GH3	T2243	T2243C	2.00	.276	.141	.110	.188	3
#6	- 40 UNF	GH2	T2262	T2262C	2.00	.276	.141	.110	.188	3
#8	- 32 UNC	GH3	T2283	T2283C	2.13	.276	.168	.131	.250	3
#8	- 36 UNF	GH2	T2302	T2302C	2.13	.276	.168	.131	.250	3
#10	- 24 UNC	GH3	T2323	T2323C	2.38	.354	.194	.152	.250	3
#10	- 32 UNF	GH3	T2343	T2343C	2.38	.276	.194	.152	.250	3
#12	- 24 UNC	GH3	T2363	T2363C	2.38	.354	.220	.165	.281	3
#12	- 28 UNF	GH3	T2383	T2383C	2.38	.276	.220	.165	.281	3
1/4	- 20 UNC	GH3	T2403	T2403C	2.50	.433	.255	.191	.312	3
1/4	- 20 UNC	GH5	T2405	T2405C	2.50	.433	.255	.191	.312	3
1/4	- 28 UNF	GH3	T2423	T2423C	2.50	.354	.255	.191	.312	3
1/4	- 28 UNF	GH4	T2424	T2424C	2.50	.354	.255	.191	.312	3
5/16	- 18 UNC	GH3	T2443	T2443C	2.72	.472	.318	.238	.375	3
5/16	- 18 UNC	GH5	T2445	T2445C	2.72	.472	.318	.238	.375	3
5/16	- 24 UNF	GH3	T2463	T2463C	2.72	.394	.318	.238	.375	3
5/16	- 24 UNF	GH5	T2465	T2465C	2.72	.394	.318	.238	.375	3
3/8	- 16 UNC	GH3	T2483	T2483C	2.94	.551	.381	.286	.438	3
3/8	- 16 UNC	GH5	T2485	T2485C	2.94	.551	.381	.286	.438	3
3/8	- 24 UNF	GH3	T2503	T2503C	2.94	.394	.381	.286	.438	3
3/8	- 24 UNF	GH4	T2504	T2504C	2.94	.394	.381	.286	.438	3
7/16	- 14 UNC	GH3	T2523	T2523C	3.16	.591	.323	.242	.406	3
7/16	- 14 UNC	GH5	T2525	T2525C	3.16	.591	.323	.242	.406	3
7/16	- 20 UNF	GH3	T2543	T2543C	3.16	.472	.323	.242	.406	3
7/16	- 20 UNF	GH5	T2545	T2545C	3.16	.472	.323	.242	.406	3
1/2	- 13 UNC	GH5	T2565	T2565C	3.38	.630	.367	.275	.438	3
1/2	- 20 UNF	GH5	T2585	T2585C	3.38	.472	.367	.275	.438	3
9/16	- 12 UNC	GH5	T2605	T2605C	3.59	.709	.429	.322	.500	3
9/16	- 18 UNF	GH5	T2625	T2625C	3.59	.512	.429	.322	.500	3
5/8	- 11 UNC	GH5	T2645	T2645C	3.81	.748	.480	.360	.562	4
5/8	- 18 UNF	GH5	T2665	T2665C	3.81	.512	.480	.360	.562	4
3/4	- 10 UNC	GH5	T2705	T2705C	4.25	.827	.590	.442	.688	4
3/4	- 16 UNF	GH5	T2725	T2725C	4.25	.591	.590	.442	.688	4
7/8	- 9 UNC	GH6	T2746	T2746C	4.69	.827	.697	.523	.750	4
7/8	- 14 UNF	GH6	T2766	T2766C	4.69	.709	.697	.523	.750	4
1"	- 8 UNC	GH6	T2786	T2786C	5.13	.984	.800	.600	.812	4
1"	- 12 UNF	GH6	T2806	T2806C	5.13	.709	.800	.600	.812	4

♦ **Bold H Limits denote most popular limit.** * Coating (TiN, TiAlN or Hardslick) or Surface Treatment (Steam Oxide) is available on your request.
* Coating Codes for Combo Tap
Bright Finish No. + N (TiN), F (TiAlN), H (Hardslick), S (Steam Oxide)

SPIRAL FLUTE TAPS for Multi-Purpose



with Internal Coolant



SPIRAL FLUTE TAPS ♦ T6/T6-N

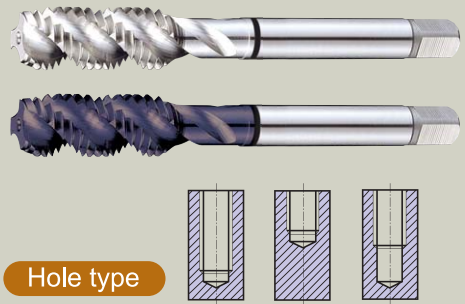


Unit : inch

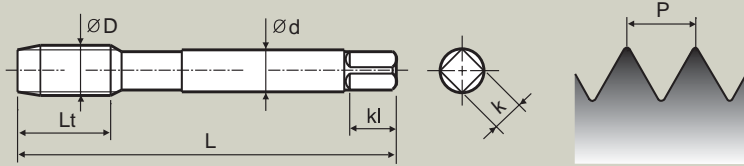
SIZE D	TPI	Limit	EDP No.		Overall Length L	Thread Length Lt	Shank Diameter d	Square Size k	Square Length kl	No. of Flute N
			Bright Finish	TiN Coated						
1/4	- 20 UNC	GH5	T6405	T6405N	2.50	.433	.255	.191	.312	3
1/4	- 28 UNF	GH4	T6424	T6424N	2.50	.354	.255	.191	.312	3
5/16	- 18 UNC	GH5	T6445	T6445N	2.72	.472	.318	.238	.375	3
5/16	- 24 UNF	GH4	T6464	T6464N	2.72	.394	.318	.238	.375	3
3/8	- 16 UNC	GH5	T6485	T6485N	2.94	.551	.381	.286	.438	3
3/8	- 24 UNF	GH4	T6504	T6504N	2.94	.394	.381	.286	.438	3
7/16	- 14 UNC	GH5	T6525	T6525N	3.16	.591	.323	.242	.406	3
7/16	- 20 UNF	GH5	T6545	T6545N	3.16	.472	.323	.242	.406	3
1/2	- 13 UNC	GH5	T6565	T6565N	3.38	.630	.367	.275	.438	3
1/2	- 20 UNF	GH5	T6585	T6585N	3.38	.472	.367	.275	.438	3
9/16	- 12 UNC	GH5	T6605	T6605N	3.59	.709	.429	.322	.500	3
9/16	- 18 UNF	GH5	T6625	T6625N	3.59	.512	.429	.322	.500	3
5/8	- 11 UNC	GH5	T6645	T6645N	3.81	.748	.480	.360	.562	4
5/8	- 18 UNF	GH5	T6665	T6665N	3.81	.512	.480	.360	.562	4
3/4	- 10 UNC	GH5	T6705	T6705N	4.25	.827	.590	.442	.688	4
3/4	- 16 UNF	GH5	T6725	T6725N	4.25	.591	.590	.442	.688	4
7/8	- 9 UNC	GH6	T6746	T6746N	4.69	.827	.697	.523	.750	4
7/8	- 14 UNF	GH6	T6766	T6766N	4.69	.709	.697	.523	.750	4
1"	- 8 UNC	GH6	T6786	T6786N	5.13	.984	.800	.600	.812	4
1"	- 12 UNF	GH6	T6806	T6806N	5.13	.709	.800	.600	.812	4

* Coating (TiCN or TiAlN) or Surface Treatment (Steam Oxide) is available on your request.
* Coating Codes for Combo Tap
Bright Finish No. + C (TiCN), F (TiAlN), H (Hardslick), S (Steam Oxide)

SPIRAL FLUTE TAPS for Multi-Purpose



Short Chamfer



SPIRAL FLUTE TAPS ♦ T7/T7-C

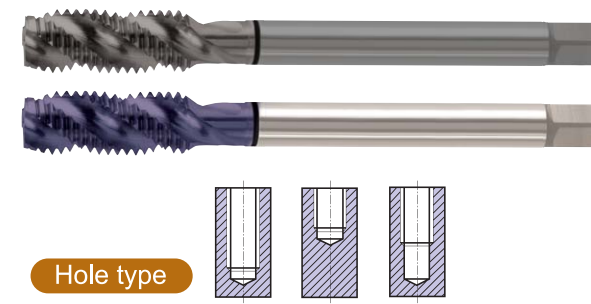


Unit : inch

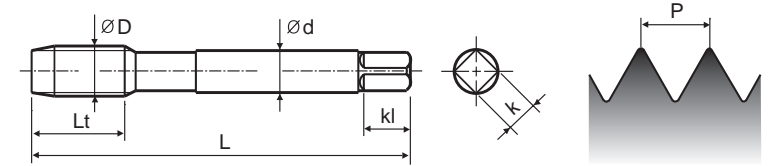
SIZE	TPI	Limit	EDP No.		Overall Length	Thread Length	Shank Diameter	Square Size	Square Length	No. of Flute
			Bright Finish	TiCN Coated						
D					L	Lt	d	k	kl	N
#4 - 40 UNC		GH2	T7162	T7162C	1.88	.236	.141	.110	.188	2
#4 - 48 UNF		GH2	T7182	T7182C	1.88	.236	.141	.110	.188	2
#5 - 40 UNC		GH2	T7202	T7202C	1.94	.236	.141	.110	.188	3
#5 - 44 UNF		GH2	T7222	T7222C	1.94	.236	.141	.110	.188	3
#6 - 32 UNC		GH3	T7243	T7243C	2.00	.276	.141	.110	.188	3
#6 - 40 UNF		GH2	T7262	T7262C	2.00	.276	.141	.110	.188	3
#8 - 32 UNC		GH3	T7283	T7283C	2.13	.276	.168	.131	.250	3
#8 - 36 UNF		GH2	T7302	T7302C	2.13	.276	.168	.131	.250	3
#10 - 24 UNC		GH3	T7323	T7323C	2.38	.354	.194	.152	.250	3
#10 - 32 UNF		GH3	T7343	T7343C	2.38	.276	.194	.152	.250	3
#12 - 24 UNC		GH3	T7363	T7363C	2.38	.354	.220	.165	.281	3
#12 - 28 UNF		GH3	T7383	T7383C	2.38	.276	.220	.165	.281	3
1/4 - 20 UNC		GH5	T7405	T7405C	2.50	.433	.255	.191	.312	3
1/4 - 28 UNF		GH4	T7424	T7424C	2.50	.354	.255	.191	.312	3
5/16 - 18 UNC		GH5	T7445	T7445C	2.72	.472	.318	.238	.375	3
5/16 - 24 UNF		GH4	T7464	T7464C	2.72	.394	.318	.238	.375	3
3/8 - 16 UNC		GH5	T7485	T7485C	2.94	.551	.381	.286	.438	3
3/8 - 24 UNF		GH4	T7504	T7504C	2.94	.394	.381	.286	.438	3
7/16 - 14 UNC		GH5	T7525	T7525C	3.16	.591	.323	.242	.406	3
7/16 - 20 UNF		GH5	T7545	T7545C	3.16	.472	.323	.242	.406	3
1/2 - 13 UNC		GH5	T7565	T7565C	3.38	.630	.367	.275	.438	3
1/2 - 20 UNF		GH5	T7585	T7585C	3.38	.472	.367	.275	.438	3
9/16 - 12 UNC		GH5	T7605	T7605C	3.59	.709	.429	.322	.500	3
9/16 - 18 UNF		GH5	T7625	T7625C	3.59	.512	.429	.322	.500	3
5/8 - 11 UNC		GH5	T7645	T7645C	3.81	.748	.480	.360	.562	4
5/8 - 18 UNF		GH5	T7665	T7665C	3.81	.512	.480	.360	.562	4
3/4 - 10 UNC		GH5	T7705	T7705C	4.25	.827	.590	.442	.688	4
3/4 - 16 UNF		GH5	T7725	T7725C	4.25	.591	.590	.442	.688	4
7/8 - 9 UNC		GH6	T7746	T7746C	4.69	.827	.697	.523	.750	4
7/8 - 14 UNF		GH6	T7766	T7766C	4.69	.709	.697	.523	.750	4
1" - 8 UNC		GH6	T7786	T7786C	5.13	.984	.800	.600	.812	4
1" - 12 UNF		GH6	T7806	T7806C	5.13	.709	.800	.600	.812	4

* Coating(TiN or TiAlN) or Surface Treatment(Steam Oxide) is available on your request.
* Coating Codes for Combo Tap
Bright Finish No. + N(TiN), F(TiAlN), H(Hardslick), S(Steam Oxide)

SPIRAL FLUTE TAPS for Multi-Purpose



ANSI Shank / DIN Length



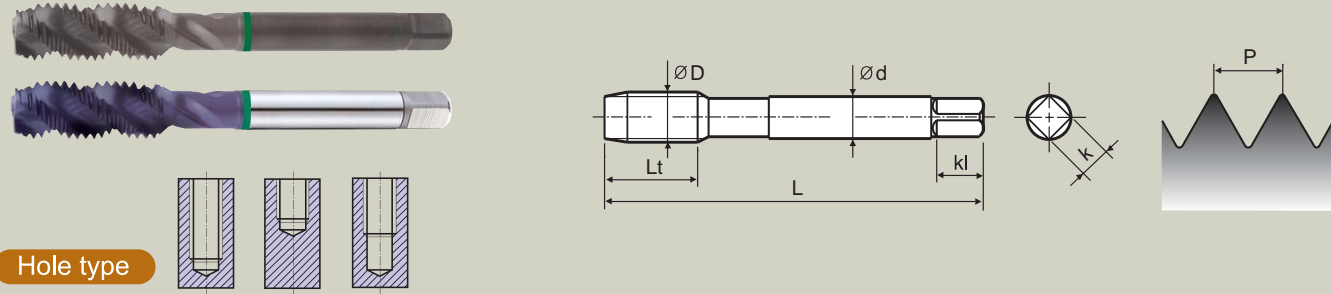
SPIRAL FLUTE TAPS ♦ T1-S/T1-C



Unit : inch

SIZE	TPI	Limit	EDP No.		Overall Length	Thread Length	Shank Diameter	Square Size	Square Length	No. of Flute
			Steam Oxide	TiCN Coated						
D					L	Lt	d	k	kl	N
#4 - 40 UNC		GH2	T1162S	T1162C	2.21	.236	.141	.110	.188	2
#5 - 40 UNC		GH2	T1202S	T1202C	2.21	.236	.141	.110	.188	3
#6 - 32 UNC		GH3	T1243S	T1243C	2.21	.276	.141	.110	.188	3
#8 - 32 UNC		GH3	T1283S	T1283C	2.48	.276	.168	.131	.250	3
#10 - 24 UNC		GH3	T1323S	T1323C	2.76	.354	.194	.152	.250	3
#10 - 32 UNF		GH3	T1343S	T1343C	2.76	.276	.194	.152	.250	3
#12 - 24 UNC		GH3	T1363S	T1363C	3.15	.354	.220	.165	.281	3
#12 - 28 UNF		GH3	T1383S	T1383C	3.15	.276	.220	.165	.281	3
1/4 - 20 UNC		GH5	T1405S	T1405C	3.15	.433	.255	.191	.312	3
1/4 - 28 UNF		GH4	T1424S	T1424C	3.15	.354	.255	.191	.312	3
5/16 - 18 UNC		GH5	T1445S	T1445C	3.54	.472	.318	.238	.375	3
5/16 - 24 UNF		GH4	T1464S	T1464C	3.54	.394	.318	.238	.375	3
3/8 - 16 UNC		GH5	T1485S	T1485C	3.94	.551	.381	.286	.438	3
3/8 - 24 UNF		GH4	T1504S	T1504C	3.94	.394	.381	.286	.438	3
7/16 - 14 UNC		GH5	T1525S	T1525C	3.94	.591	.323	.242	.406	3
7/16 - 20 UNF		GH5	T1545S	T1545C	3.94	.472	.323	.242	.406	3
1/2 - 13 UNC		GH5	T1565S	T1565C	4.33	.630	.367	.275	.438	3
1/2 - 20 UNF		GH5	T1585S	T1585C	3.94	.472	.367	.275	.438	3
9/16 - 12 UNC		GH5	T1605S	T1605C	4.33	.709	.429	.322	.500	3
9/16 - 18 UNF		GH5	T1625S	T1625C	3.94	.512	.429	.322	.500	3
5/8 - 11 UNC		GH5	T1645S	T1645C	4.33	.748	.480	.360	.562	4
5/8 - 18 UNF		GH5	T1665S	T1665C	3.94	.512	.480	.360	.562	4
3/4 - 10 UNC		GH5	T1705S	T1705C	4.92	.827	.590	.442	.688	4
3/4 - 16 UNF		GH5	T1725S	T1725C	4.33	.591	.590	.442	.688	4
7/8 - 9 UNC		GH6	T1746S	T1746C	5.51	.827	.697	.523	.750	4
7/8 - 14 UNF		GH6	T1766S	T1766C	4.92	.709	.697	.523	.750	4
1" - 8 UNC		GH6	T1786S	T1786C	6.30	.984	.800	.600	.812	4
1" - 12 UNF		GH6	T1806S	T1806C	5.51	.709	.800	.600	.812	4

SPIRAL FLUTE TAPS for Stainless Steel



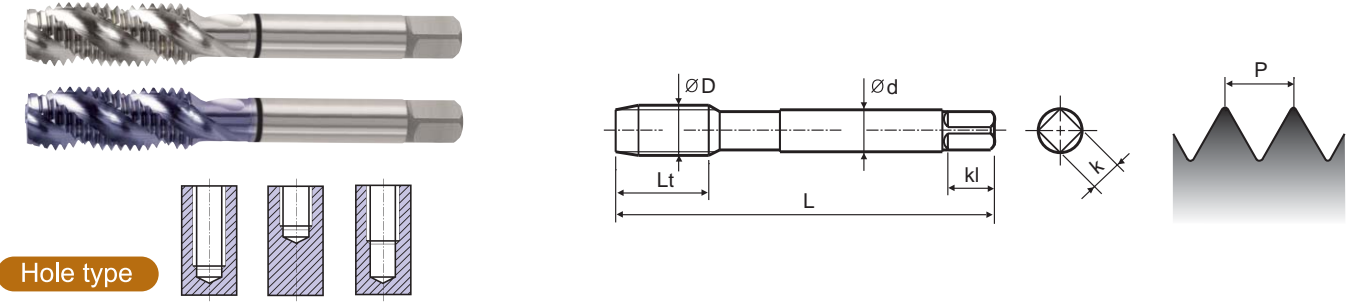
SPIRAL FLUTE TAPS ♦ TCA-S/TCB-S/TCA-C/TCB-C SuperHSS HSS-EX GH 2~3P Steam Oxide TiCN

Unit : inch

SIZE	TPI	Limit	EDP No.		Overall Length	Thread Length	Shank Diameter	Square Size	Square Length	No. of Flute
			Steam Oxide	TiCN Coated						
D			L	Lt	L	Lt	d	k	kl	N
#5	- 40 UNC	GH2	TCA202S	TCA202C	1.94	.236	.141	.110	.188	3
#6	- 32 UNC	GH3	TCA243S	TCA243C	2.00	.276	.141	.110	.188	3
#8	- 32 UNC	GH3	TCA283S	TCA283C	2.13	.276	.141	.131	.250	3
#10	- 24 UNC	GH3	TCA323S	TCA323C	2.38	.354	.141	.152	.250	3
#10	- 32 UNF	GH3	TCA343S	TCA343C	2.38	.276	.141	.152	.250	3
1/4	- 20 UNC	GH3	TCA403S	TCA403C	2.50	.433	.141	.191	.312	3
1/4	- 20 UNC	GH5	TCA405S	TCA405C	2.50	.433	.168	.191	.312	3
1/4	- 28 UNF	GH3	TCA423S	TCA423C	2.50	.354	.168	.191	.312	3
5/16	- 18 UNC	GH3	TCA443S	TCA443C	2.72	.472	.194	.238	.375	3
5/16	- 18 UNC	GH5	TCA445S	TCA445C	2.72	.472	.194	.238	.375	3
5/16	- 24 UNF	GH3	TCA463S	TCA463C	2.72	.394	.220	.238	.375	3
3/8	- 16 UNC	GH3	TCA483S	TCA483C	2.94	.551	.220	.286	.438	3
3/8	- 16 UNC	GH5	TCA485S	TCA485C	2.94	.551	.255	.286	.438	3
3/8	- 24 UNF	GH3	TCA503S	TCA503C	2.94	.394	.255	.286	.438	3
7/16	- 14 UNC	GH3	TCA523S	TCA523C	3.16	.591	.255	.242	.406	3
7/16	- 14 UNC	GH5	TCA525S	TCA525C	3.16	.591	.255	.242	.406	3
7/16	- 20 UNF	GH3	TCA543S	TCA543C	3.16	.472	.318	.242	.406	3
7/16	- 20 UNF	GH5	TCA545S	TCA545C	3.16	.472	.318	.242	.406	3
1/2	- 13 UNC	GH3	TCA563S	TCA563C	3.38	.630	.318	.275	.438	3
1/2	- 13 UNC	GH5	TCA565S	TCA565C	3.38	.630	.318	.275	.438	3
1/2	- 20 UNF	GH3	TCA583S	TCA583C	3.38	.472	.381	.275	.438	3
9/16	- 12 UNC	GH3	TCB603S	TCB603C	3.59	.709	.381	.322	.500	3
9/16	- 18 UNF	GH3	TCB623S	TCB623C	3.59	.512	.381	.322	.500	3
9/16	- 18 UNF	GH5	TCB625S	TCB625C	3.59	.512	.381	.322	.500	3
5/8	- 11 UNC	GH3	TCB643S	TCB643C	3.81	.748	.323	.360	.562	4
5/8	- 11 UNC	GH5	TCB645S	TCB645C	3.81	.748	.323	.360	.562	4
5/8	- 18 UNF	GH3	TCB663S	TCB663C	3.81	.512	.323	.360	.562	4
5/8	- 18 UNF	GH5	TCB665S	TCB665C	3.81	.512	.323	.360	.562	4
3/4	- 10 UNC	GH3	TCB703S	TCB703C	4.25	.827	.367	.442	.688	4
3/4	- 10 UNC	GH5	TCB705S	TCB705C	4.25	.827	.367	.442	.688	4
3/4	- 16 UNF	GH3	TCB723S	TCB723C	4.25	.591	.429	.442	.688	4
3/4	- 16 UNF	GH5	TCB725S	TCB725C	4.25	.591	.429	.442	.688	4
7/8	- 9 UNC	GH4	TCB744S	TCB744C	4.69	.827	.480	.523	.750	4
7/8	- 9 UNC	GH6	TCB746S	TCB746C	4.69	.827	.480	.523	.750	4
7/8	- 14 UNF	GH4	TCB764S	TCB764C	4.69	.709	.590	.523	.750	4
7/8	- 14 UNF	GH6	TCB766S	TCB766C	4.69	.709	.590	.523	.750	4
1"	- 8 UNC	GH4	TCB784S	TCB784C	5.13	.984	.697	.600	.812	4
1"	- 8 UNC	GH6	TCB786S	TCB786C	5.13	.984	.697	.600	.812	4
1"	- 12 UNF	GH4	TCB804S	TCB804C	5.13	.709	.800	.600	.812	4
1"	- 12 UNF	GH6	TCB806S	TCB806C	5.13	.709	.800	.600	.812	4

* Super HSS(#5~1/2) and HSS-EX(9/16~1")

SPIRAL FLUTE TAPS for Multi-Purpose



SPIRAL FLUTE TAPS ♦ T5/T5-C HSS-EX D 2~3P Bright TiCN

Unit : inch

SIZE	Pitch	Limit	EDP No.		Overall Length	Thread Length	Shank Diameter	Square Size	Square Length	No. of Flute
			Bright Finish	TiCN Coated						
D	P		L	Lt	L	Lt	d	k	kl	N
M3	x 0.5	D3	T5203	T5203C	1.94	.197	.141	.110	.188	3
M3.5	x 0.6	D4	T5224	T5224C	2.00	.276	.141	.110	.188	3
M4	x 0.7	D4	T5244	T5244C	2.13	.276	.168	.131	.250	3
M5	x 0.8	D4	T5284	T5284C	2.38	.354	.194	.152	.250	3
M6	x 1.0	D5	T5315	T5315C	2.50	.433	.255	.191	.312	3
M7	x 1.0	D5	T5345	T5345C	2.72	.433	.318	.238	.375	3
M8	x 1.25	D5	T5365	T5365C	2.72	.472	.318	.238	.375	3
M8	x 1.0	D5	T5375	T5375C	2.72	.433	.318	.238	.375	3
M10	x 1.5	D6	T5426	T5426C	2.94	.512	.381	.286	.438	3
M10	x 1.25	D5	T5435	T5435C	2.94	.472	.381	.286	.438	3
M12	x 1.75	D6	T5506	T5506C	3.38	.591	.367	.275	.438	3
M12	x 1.25	D5	T5525	T5525C	3.38	.551	.367	.275	.438	3
M14	x 2.0	D7	T5547	T5547C	3.59	.709	.429	.322	.500	3
M14	x 1.5	D6	T5556	T5556C	3.59	.551	.429	.322	.500	3
M16	x 2.0	D7	T5607	T5607C	3.81	.709	.480	.360	.562	3
M16	x 1.5	D6	T5616	T5616C	3.81	.551	.480	.360	.562	3
M18	x 2.5	D7	T5657	T5657C	4.03	.787	.542	.406	.625	4
M18	x 1.5	D6	T5676	T5676C	4.03	.551	.542	.406	.625	4
M20	x 2.5	D7	T5707	T5707C	4.47	.787	.652	.489	.688	4
M20	x 1.5	D6	T5726	T5726C	4.47	.551	.652	.489	.688	4
M22	x 2.5	D7	T5747	T5747C	4.69	.787	.697	.523	.750	4
M22	x 1.5	D6	T5766	T5766C	4.69	.551	.697	.523	.750	4
M24	x 3.0	D8	T5788	T5788C	4.91	.945	.760	.570	.750	4

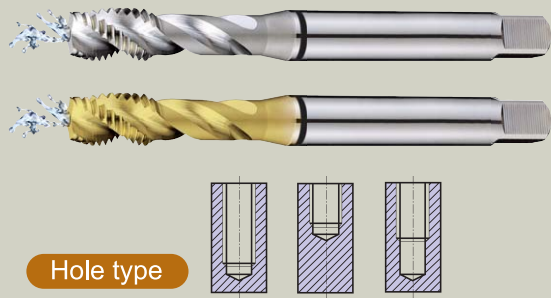
* Coating(TiN, TiAlN or Hardslick) or Surface Treatment(Steam Oxide) is available on your request.
* Coating Codes for Combo Tap
Bright Finish No. + N(TiN), F(TiAlN), H(Hardslick), S(Steam Oxide)

TAP SETS SPIRAL FLUTE COMBO

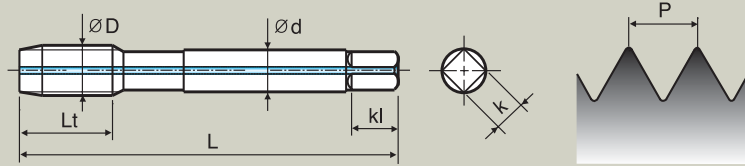
SET No.	Series	Standard	Surface Treatment	Size	Q'ty
T2836SET8	T2	UNC/F	Bright	1/4-20, 1/4-28, 5/16-18, 5-16-24, 3/8-16, 3/8-24, 7/16-14, 7/16-20	8 pcs
TG836SET8	T2-C	UNC/F	TiCN	1/4-20, 1/4-28, 5/16-18, 5-16-24, 3/8-16, 3/8-24, 7/16-14, 7/16-20	8 pcs
T2836SET8-1	T2	UNC/F	Bright	1/4-20, 1/4-28, 5/16-18, 5-16-24, 3/8-16, 3/8-24, 1/2-13, 1/2-20	8 pcs
TG836SET8-1	T2-C	UNC/F	TiCN	1/4-20, 1/4-28, 5/16-18, 5-16-24, 3/8-16, 3/8-24, 1/2-13, 1/2-20	8 pcs
T2805SET7	T5	M	Bright	M3, M4, M5, M6, M8, M10, M12	7 pcs
TG805SET7	T5-C	M	TiCN	M3, M4, M5, M6, M8, M10, M12	7 pcs

* Hardslick Coated Set available upon request

SPIRAL FLUTE TAPS for Multi-Purpose



with Internal Coolant



Hole type

SPIRAL FLUTE TAPS ♦ T8/T8-N

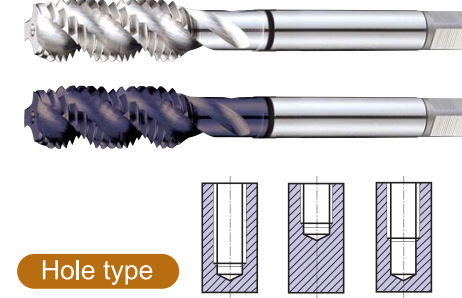


Unit : inch

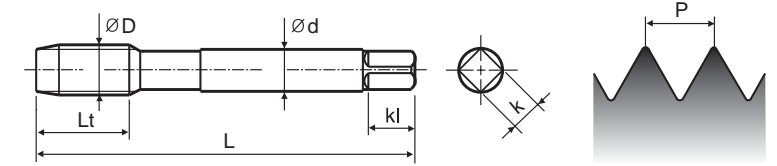
SIZE	Pitch	Limit	EDP No.		Overall Length	Thread Length	Shank Diameter	Square Size	Square Length	No. of Flute
			Bright Finish	TiN Coated						
D	P				L	Lt	d	k	kl	N
M6	x 1.0	D5	T8315	T8315N	2.50	.433	.255	.191	.312	3
M8	x 1.25	D5	T8365	T8365N	2.72	.472	.318	.238	.375	3
M10	x 1.5	D6	T8426	T8426N	2.94	.512	.381	.286	.438	3
M12	x 1.75	D6	T8506	T8506N	3.38	.591	.367	.275	.438	3
M14	x 2.0	D7	T8547	T8547N	3.59	.709	.429	.322	.500	3
M16	x 2.0	D7	T8607	T8607N	3.81	.709	.480	.360	.562	3
M18	x 2.5	D7	T8657	T8657N	4.03	.787	.542	.406	.625	4
M20	x 2.5	D7	T8707	T8707N	4.47	.787	.652	.489	.688	4

* Coating(TiCN or TiAlN) or Surface Treatment(Steam Oxide) is available on your request.
* Coating Codes for Combo Tap
Bright Finish No. + C(TiCN), F(TiAlN), H(Hardslick), S(Steam Oxide)

SPIRAL FLUTE TAPS for Multi-Purpose



Short Chamfer



Hole type

SPIRAL FLUTE TAPS ♦ T9/T9-C

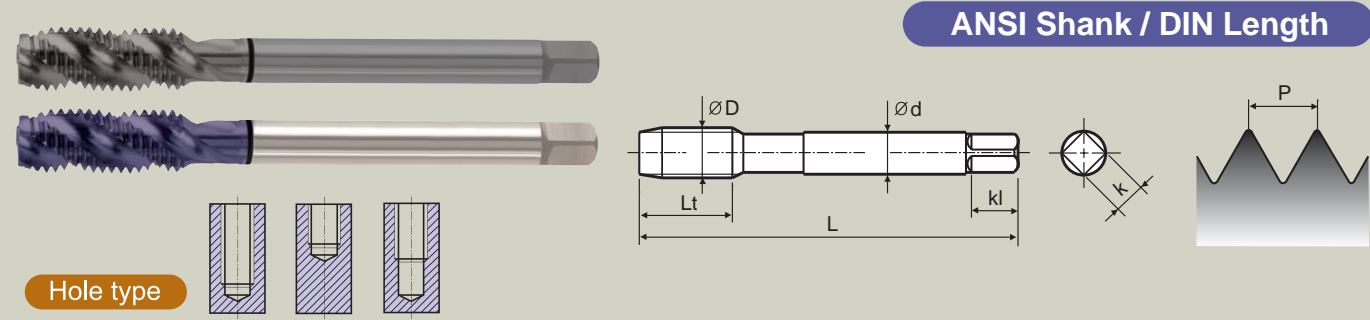


Unit : inch

SIZE	Pitch	Limit	EDP No.		Overall Length	Thread Length	Shank Diameter	Square Size	Square Length	No. of Flute
			Bright Finish	TiCN Coated						
D	P				L	Lt	d	k	kl	N
M3	x 0.5	D3	T9203	T9203C	1.94	.197	.141	.110	.188	3
M3.5	x 0.6	D4	T9224	T9224C	2.00	.276	.141	.110	.188	3
M4	x 0.7	D4	T9244	T9244C	2.13	.276	.168	.131	.250	3
M5	x 0.8	D4	T9284	T9284C	2.38	.354	.194	.152	.250	3
M6	x 1.0	D5	T9315	T9315C	2.50	.433	.255	.191	.312	3
M7	x 1.0	D5	T9345	T9345C	2.72	.433	.318	.238	.375	3
M8	x 1.2	D5	T9365	T9365C	2.72	.472	.318	.238	.375	3
M8	x 1.0	D5	T9375	T9375C	2.72	.433	.318	.238	.375	3
M10	x 1.5	D6	T9426	T9426C	2.94	.512	.381	.286	.438	3
M10	x 1.25	D5	T9435	T9435C	2.94	.472	.381	.286	.438	3
M12	x 1.75	D6	T9506	T9506C	3.38	.591	.367	.275	.438	3
M12	x 1.25	D5	T9525	T9525C	3.38	.551	.367	.275	.438	3
M14	x 2.0	D7	T9547	T9547C	3.59	.709	.429	.322	.500	3
M14	x 1.5	D6	T9556	T9556C	3.59	.551	.429	.322	.500	3
M16	x 2.0	D7	T9607	T9607C	3.81	.709	.480	.360	.562	3
M16	x 1.5	D6	T9616	T9616C	3.81	.551	.480	.360	.562	3
M18	x 2.5	D7	T9657	T9657C	4.03	.787	.542	.406	.625	4
M18	x 1.5	D6	T9676	T9676C	4.03	.551	.542	.406	.625	4
M20	x 2.5	D7	T9707	T9707C	4.47	.787	.652	.489	.688	4
M20	x 1.5	D6	T9726	T9726C	4.47	.551	.652	.489	.688	4
M22	x 2.5	D7	T9747	T9747C	4.69	.787	.697	.523	.750	4
M22	x 1.5	D6	T9766	T9766C	4.69	.551	.697	.523	.750	4
M24	x 3.0	D8	T9788	T9788C	4.91	.945	.760	.570	.750	4

* Coating(TiN or TiAlN) or Surface Treatment(Steam Oxide) is available on your request.
* Coating Codes for Combo Tap
Bright Finish No. + N(TiN), F(TiAlN), H(Hardslick), S(Steam Oxide)

SPIRAL FLUTE TAPS for Multi-Purpose



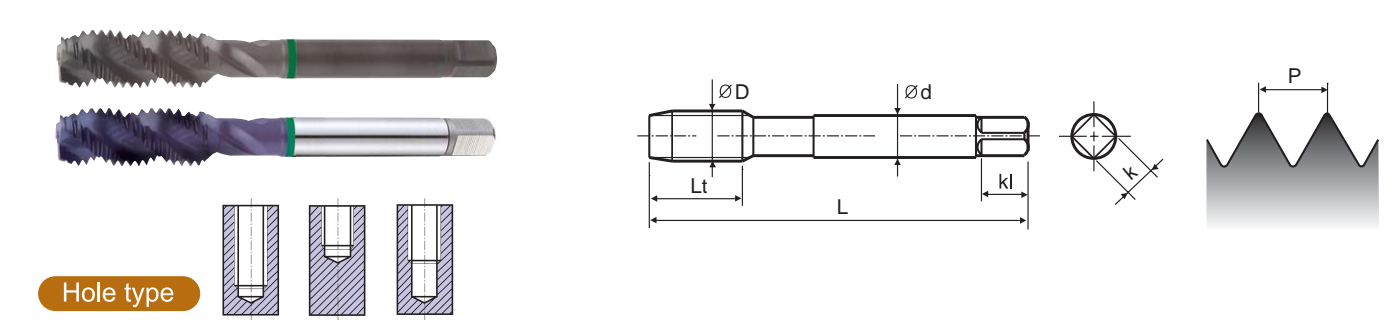
SPIRAL FLUTE TAPS ♦ TA-S/TA-C



Unit : inch

SIZE	Pitch	Limit	EDP No.		Overall Length	Thread Length	Shank Diameter	Square Size	Square Length	No. of Flute
			Steam Oxide	TiCN Coated						
D	P				L	Lt	d	k	kl	N
M3	x 0.5	D3	TA203S	TA203C	2.21	.197	.141	.110	.188	3
M3.5	x 0.6	D4	TA224S	TA224C	2.21	.276	.141	.110	.188	3
M4	x 0.7	D4	TA244S	TA244C	2.48	.276	.168	.131	.250	3
M5	x 0.8	D4	TA284S	TA284C	2.76	.354	.194	.152	.250	3
M6	x 1.0	D5	TA315S	TA315C	3.15	.433	.255	.191	.312	3
M8	x 1.25	D5	TA365S	TA365C	3.54	.472	.318	.238	.375	3
M10	x 1.5	D6	TA426S	TA426C	3.94	.512	.381	.286	.438	3
M10	x 1.25	D5	TA435S	TA435C	3.94	.472	.381	.286	.438	3
M12	x 1.75	D6	TA506S	TA506C	4.33	.591	.367	.275	.438	3
M12	x 1.25	D5	TA525S	TA525C	3.94	.551	.367	.275	.438	3
M14	x 2.0	D7	TA547S	TA547C	4.33	.709	.429	.322	.500	3
M14	x 1.5	D6	TA556S	TA556C	3.94	.551	.429	.322	.500	3
M16	x 2.0	D7	TA607S	TA607C	4.33	.709	.480	.360	.562	3
M16	x 1.5	D6	TA616S	TA616C	3.94	.551	.480	.360	.562	3
M18	x 2.5	D7	TA657S	TA657C	4.92	.787	.542	.406	.625	4
M18	x 1.5	D6	TA676S	TA676C	4.33	.551	.542	.406	.625	4

SPIRAL FLUTE TAPS for Stainless Steel



SPIRAL FLUTE TAPS ♦ TCC-S/TCCD-S/TCC-C/TCD-C

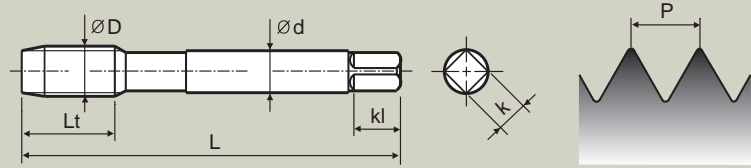


Unit : inch

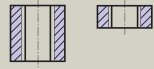
SIZE	Pitch	Limit	EDP No.		Overall Length	Thread Length	Shank Diameter	Square Size	Square Length	No. of Flute
			Steam Oxide	TiCN Coated						
D	P				L	Lt	d	k	kl	N
M3	x 0.5	D3	TCC203S	TCC203C	1.94	.197	.141	.110	.188	3
M3.5	x 0.6	D4	TCC224S	TCC224C	2.00	.276	.141	.110	.188	3
M4	x 0.7	D4	TCC244S	TCC244C	2.13	.276	.168	.131	.250	3
M5	x 0.8	D4	TCC284S	TCC284C	2.38	.354	.194	.152	.250	3
M6	x 1.0	D5	TCC315S	TCC315C	2.50	.433	.255	.191	.312	3
M7	x 1.0	D5	TCC345S	TCC345C	2.72	.433	.318	.238	.375	3
M8	x 1.25	D5	TCC365S	TCC365C	2.72	.472	.318	.238	.375	3
M8	x 1.0	D5	TCC375S	TCC375C	2.72	.433	.318	.238	.375	3
M10	x 1.5	D6	TCC426S	TCC426C	2.94	.512	.381	.286	.438	3
M10	x 1.25	D5	TCC435S	TCC435C	2.94	.472	.381	.286	.438	3
M12	x 1.75	D6	TCC506S	TCC506C	3.38	.591	.367	.275	.438	3
M12	x 1.25	D5	TCC525S	TCC525C	3.38	.551	.367	.275	.438	3
M14	x 2.0	D7	TCD547S	TCD547C	3.59	.709	.429	.322	.500	3
M14	x 1.5	D6	TCD556S	TCD556C	3.59	.551	.429	.322	.500	3
M16	x 2.0	D7	TCD607S	TCD607C	3.81	.709	.480	.360	.562	3
M16	x 1.5	D6	TCD616S	TCD616C	3.81	.551	.480	.360	.562	3
M18	x 2.5	D7	TCD657S	TCD657C	4.03	.787	.542	.406	.625	4
M18	x 1.5	D6	TCD676S	TCD676C	4.03	.551	.542	.406	.625	4

* Super HSS(M3~M12) and HSS-EX(M14~M18)

SPIRAL POINT TAPS for Multi-Purpose



Hole type



SPIRAL POINT TAPS ♦ T4/T4-C



Unit : inch

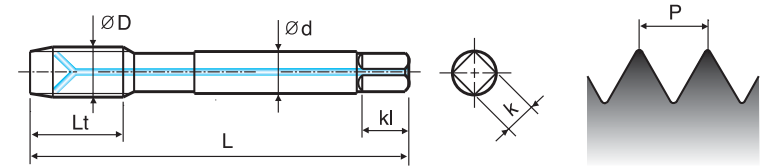
SIZE D	TPI	Limit	EDP No.		Overall Length L	Thread Length Lt	Shank Diameter d	Square Size k	Square Length kl	No. of Flute N
			Bright Finish	TiCN Coated						
#4	- 40 UNC	GH2	T4162	T4162C	1.88	.335	.141	.110	.188	2
#4	- 48 UNF	GH2	T4182	T4182C	1.88	.335	.141	.110	.188	2
#5	- 40 UNC	GH2	T4202	T4202C	1.94	.374	.141	.110	.188	3
#5	- 44 UNF	GH2	T4222	T4222C	1.94	.374	.141	.110	.188	3
#6	- 32 UNC	GH3	T4243	T4243C	2.00	.413	.141	.110	.188	3
#6	- 40 UNF	GH2	T4262	T4262C	2.00	.413	.141	.110	.188	3
#8	- 32 UNC	GH3	T4283	T4283C	2.13	.453	.168	.131	.250	3
#8	- 36 UNF	GH2	T4302	T4302C	2.13	.453	.168	.131	.250	3
#10	- 24 UNC	GH3	T4323	T4323C	2.38	.531	.194	.152	.250	3
#10	- 32 UNF	GH3	T4343	T4343C	2.38	.531	.194	.152	.250	3
#12	- 24 UNC	GH3	T4363	T4363C	2.38	.571	.220	.165	.281	3
#12	- 28 UNF	GH3	T4383	T4383C	2.38	.571	.220	.165	.281	3
1/4	- 20 UNC	GH3	T4403	T4403C	2.50	.591	.255	.191	.312	3
1/4	- 20 UNC	GH5	T4405	T4405C	2.50	.591	.255	.191	.312	3
1/4	- 28 UNF	GH3	T4423	T4423C	2.50	.591	.255	.191	.312	3
1/4	- 28 UNF	GH4	T4424	T4424C	2.50	.591	.255	.191	.312	3
5/16	- 18 UNC	GH3	T4443	T4443C	2.72	.669	.318	.238	.375	3
5/16	- 18 UNC	GH5	T4445	T4445C	2.72	.669	.318	.238	.375	3
5/16	- 24 UNF	GH3	T4463	T4463C	2.72	.669	.318	.238	.375	3
5/16	- 24 UNF	GH5	T4465	T4465C	2.72	.669	.318	.238	.375	3
3/8	- 16 UNC	GH3	T4483	T4483C	2.94	.748	.381	.286	.438	3
3/8	- 16 UNC	GH5	T4485	T4485C	2.94	.748	.381	.286	.438	3
3/8	- 24 UNF	GH3	T4503	T4503C	2.94	.748	.381	.286	.438	3
3/8	- 24 UNF	GH4	T4504	T4504C	2.94	.748	.381	.286	.438	3
7/16	- 14 UNC	GH3	T4523	T4523C	3.16	.866	.323	.242	.406	3
7/16	- 14 UNC	GH5	T4525	T4525C	3.16	.866	.323	.242	.406	3
7/16	- 20 UNF	GH3	T4543	T4543C	3.16	.866	.323	.242	.406	3
7/16	- 20 UNF	GH5	T4545	T4545C	3.16	.866	.323	.242	.406	3
1/2	- 13 UNC	GH5	T4565	T4565C	3.38	.984	.367	.275	.438	3
1/2	- 20 UNF	GH5	T4585	T4585C	3.38	.984	.367	.275	.438	3
9/16	- 12 UNC	GH5	T4605	T4605C	3.59	.984	.429	.322	.500	3
9/16	- 18 UNF	GH5	T4625	T4625C	3.59	.984	.429	.322	.500	3
5/8	- 11 UNC	GH5	T4645	T4645C	3.81	1.083	.480	.360	.562	3
5/8	- 18 UNF	GH5	T4665	T4665C	3.81	1.083	.480	.360	.562	3
3/4	- 10 UNC	GH5	T4705	T4705C	4.25	1.201	.590	.442	.688	3
3/4	- 16 UNF	GH5	T4725	T4725C	4.25	1.201	.590	.442	.688	3
7/8	- 9 UNC	GH6	T4746	T4746C	4.69	1.339	.697	.523	.750	3
7/8	- 14 UNF	GH6	T4766	T4766C	4.69	1.339	.697	.523	.750	3
1"	- 8 UNC	GH6	T4786	T4786C	5.13	1.496	.800	.600	.812	3
1"	- 12 UNF	GH6	T4806	T4806C	5.13	1.496	.800	.600	.812	3

♦ **Bold H Limits denote most popular limit.** * Coating (TiN, TiAlN or Hardslick) or Surface Treatment (Steam Oxide) is available on your request.
* Coating Codes for Combo Tap
Bright Finish No. + N (TiN), F (TiAlN), H (Hardslick), S (Steam Oxide)

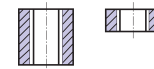
SPIRAL POINT TAPS for Multi-Purpose



with Internal Coolant



Hole type



SPIRAL POINT TAPS ♦ TB/TB-N

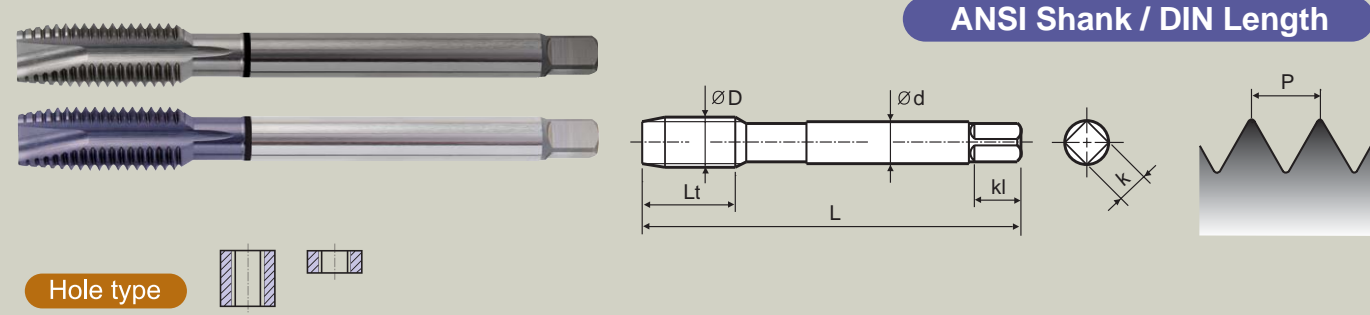


Unit : inch

SIZE D	TPI	Limit	EDP No.		Overall Length L	Thread Length Lt	Shank Diameter d	Square Size k	Square Length kl	No. of Flute N
			Bright Finish	TiN Coated						
1/4	- 20 UNC	GH5	TB405	TB405N	2.50	.591	.255	.191	.312	3
1/4	- 28 UNF	GH4	TB424	TB424N	2.50	.591	.255	.191	.312	3
5/16	- 18 UNC	GH5	TB445	TB445N	2.72	.669	.318	.238	.375	3
5/16	- 24 UNF	GH4	TB464	TB464N	2.72	.669	.318	.238	.375	3
3/8	- 16 UNC	GH5	TB485	TB485N	2.94	.748	.381	.286	.438	3
3/8	- 24 UNF	GH4	TB504	TB504N	2.94	.748	.381	.286	.438	3
7/16	- 14 UNC	GH5	TB525	TB525N	3.16	.866	.323	.242	.406	3
7/16	- 20 UNF	GH5	TB545	TB545N	3.16	.866	.323	.242	.406	3
1/2	- 13 UNC	GH5	TB565	TB565N	3.38	.984	.367	.275	.438	3
1/2	- 20 UNF	GH5	TB585	TB585N	3.38	.984	.367	.275	.438	3
9/16	- 12 UNC	GH5	TB605	TB605N	3.59	.984	.429	.322	.500	3
9/16	- 18 UNF	GH5	TB625	TB625N	3.59	.984	.429	.322	.500	3
5/8	- 11 UNC	GH5	TB645	TB645N	3.81	1.083	.480	.360	.562	3
5/8	- 18 UNF	GH5	TB665	TB665N	3.81	1.083	.480	.360	.562	3
3/4	- 10 UNC	GH5	TB705	TB705N	4.25	1.201	.590	.442	.688	3
3/4	- 16 UNF	GH5	TB725	TB725N	4.25	1.201	.590	.442	.688	3
7/8	- 9 UNC	GH6	TB746	TB746N	4.69	1.339	.697	.523	.750	3
7/8	- 14 UNF	GH6	TB766	TB766N	4.69	1.339	.697	.523	.750	3
1"	- 8 UNC	GH6	TB786	TB786N	5.13	1.496	.800	.600	.812	3
1"	- 12 UNF	GH6	TB806	TB806N	5.13	1.496	.800	.600	.812	3

* Coating (TiCN or TiAlN) or Surface Treatment (Steam Oxide) is available on your request.
* Coating Codes for Combo Tap
Bright Finish No. + C (TiCN), F (TiAlN), H (Hardslick), S (Steam Oxide)

SPIRAL POINT TAPS for Multi-Purpose



ANSI Shank / DIN Length

Hole type

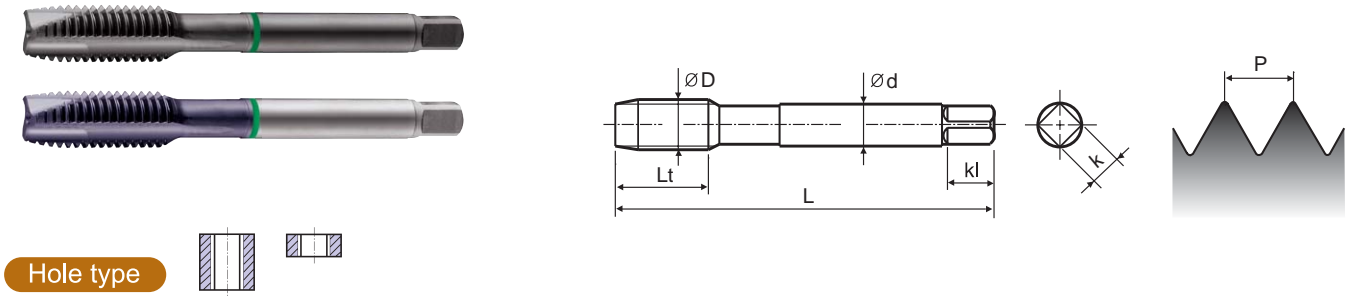
SPIRAL POINT TAPS ♦ TC-S/TC-C



Unit : inch

SIZE	TPI	Limit	EDP No.		Overall Length	Thread Length	Shank Diameter	Square Size	Square Length	No. of Flute
			Steam Oxide	TiCN Coated						
D			L	Lt	L	Lt	d	k	kl	N
#4 - 40 UNC		GH2	TC162S	TC162C	2.21	.335	.141	.110	.188	2
#5 - 40 UNC		GH2	TC202S	TC202C	2.21	.374	.141	.110	.188	3
#6 - 32 UNC		GH3	TC243S	TC243C	2.21	.413	.141	.110	.188	3
#8 - 32 UNC		GH3	TC283S	TC283C	2.48	.453	.168	.131	.250	3
#10 - 24 UNC		GH3	TC323S	TC323C	2.76	.531	.194	.152	.250	3
#10 - 32 UNF		GH3	TC343S	TC343C	2.76	.531	.194	.152	.250	3
#12 - 24 UNC		GH3	TC363S	TC363C	3.15	.571	.220	.165	.281	3
#12 - 28 UNF		GH3	TC383S	TC383C	3.15	.571	.220	.165	.281	3
1/4 - 20 UNC		GH5	TC405S	TC405C	3.15	.591	.255	.191	.312	3
1/4 - 28 UNF		GH4	TC424S	TC424C	3.15	.591	.255	.191	.312	3
5/16 - 18 UNC		GH5	TC445S	TC445C	3.54	.669	.318	.238	.375	3
5/16 - 24 UNF		GH4	TC464S	TC464C	3.54	.669	.318	.238	.375	3
3/8 - 16 UNC		GH5	TC485S	TC485C	3.94	.748	.381	.286	.438	3
3/8 - 24 UNF		GH4	TC504S	TC504C	3.94	.748	.381	.286	.438	3
7/16 - 14 UNC		GH5	TC525S	TC525C	3.94	.866	.323	.242	.406	3
7/16 - 20 UNF		GH5	TC545S	TC545C	3.94	.866	.323	.242	.406	3
1/2 - 13 UNC		GH5	TC565S	TC565C	4.33	.984	.367	.275	.438	3
1/2 - 20 UNF		GH5	TC585S	TC585C	3.94	.984	.367	.275	.438	3
9/16 - 12 UNC		GH5	TC605S	TC605C	4.33	.984	.429	.322	.500	3
9/16 - 18 UNF		GH5	TC625S	TC625C	3.94	.984	.429	.322	.500	3
5/8 - 11 UNC		GH5	TC645S	TC645C	4.33	1.083	.480	.360	.562	3
5/8 - 18 UNF		GH5	TC665S	TC665C	3.94	1.083	.480	.360	.562	3
3/4 - 10 UNC		GH5	TC705S	TC705C	4.92	1.201	.590	.442	.688	3
3/4 - 16 UNF		GH5	TC725S	TC725C	4.33	1.201	.590	.442	.688	3
7/8 - 9 UNC		GH6	TC746S	TC746C	5.51	1.339	.697	.523	.750	3
7/8 - 14 UNF		GH6	TC766S	TC766C	4.92	1.339	.697	.523	.750	3
1" - 8 UNC		GH6	TC786S	TC786C	6.30	1.496	.800	.600	.812	3
1" - 12 UNF		GH6	TC806S	TC806C	5.51	1.496	.800	.600	.812	3

SPIRAL POINT TAPS for Stainless Steel



Hole type

SPIRAL POINT TAPS ♦ TCE-S/TCF-S/TCE-C/TCF-C

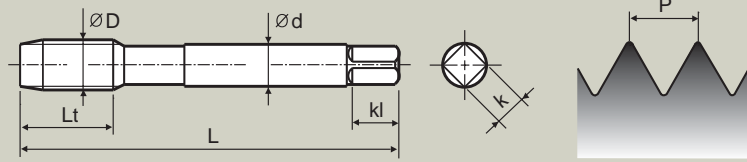


Unit : inch

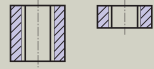
SIZE	TPI	Limit	EDP No.		Overall Length	Thread Length	Shank Diameter	Square Size	Square Length	No. of Flute
			Steam Oxide	TiCN Coated						
D			L	Lt	L	Lt	d	k	kl	N
#5 - 40 UNC		GH2	TCE202S	TCE202C	1.94	.374	.141	.110	.188	3
#5 - 40 UNC		GH3	TCE203S	TCE203C	1.94	.374	.141	.110	.188	3
#6 - 32 UNC		GH3	TCE243S	TCE243C	2.00	.413	.141	.110	.188	3
#8 - 32 UNC		GH3	TCE283S	TCE283C	2.13	.453	.168	.131	.250	3
#10 - 24 UNC		GH3	TCE323S	TCE323C	2.38	.531	.194	.152	.250	3
#10 - 32 UNF		GH3	TCE343S	TCE343C	2.38	.531	.194	.152	.250	3
1/4 - 20 UNC		GH3	TCE403S	TCE403C	2.50	.591	.255	.191	.312	3
1/4 - 28 UNF		GH5	TCE405S	TCE405C	2.50	.591	.255	.191	.312	3
1/4 - 28 UNF		GH3	TCE423S	TCE423C	2.50	.591	.255	.191	.312	3
5/16 - 18 UNC		GH3	TCE443S	TCE443C	2.72	.669	.318	.238	.375	3
5/16 - 18 UNC		GH5	TCE445S	TCE445C	2.72	.669	.318	.238	.375	3
5/16 - 24 UNF		GH3	TCE463S	TCE463C	2.72	.669	.318	.238	.375	3
3/8 - 16 UNC		GH3	TCE483S	TCE483C	2.94	.748	.381	.286	.438	3
3/8 - 16 UNC		GH5	TCE485S	TCE485C	2.94	.748	.381	.286	.438	3
3/8 - 24 UNF		GH3	TCE503S	TCE503C	2.94	.748	.381	.286	.438	3
7/16 - 14 UNC		GH3	TCE523S	TCE523C	3.16	.866	.323	.242	.406	3
7/16 - 14 UNC		GH5	TCE525S	TCE525C	3.16	.866	.323	.242	.406	3
7/16 - 20 UNF		GH3	TCE543S	TCE543C	3.16	.866	.323	.242	.406	3
7/16 - 20 UNF		GH5	TCE545S	TCE545C	3.16	.866	.323	.242	.406	3
1/2 - 13 UNC		GH3	TCE563S	TCE563C	3.38	.984	.367	.275	.438	3
1/2 - 13 UNC		GH5	TCE565S	TCE565C	3.38	.984	.367	.275	.438	3
1/2 - 20 UNF		GH3	TCE583S	TCE583C	3.38	.984	.367	.275	.438	3
9/16 - 12 UNC		GH3	TCF603S	TCF603C	3.59	.984	.429	.322	.500	3
9/16 - 18 UNF		GH3	TCF623S	TCF623C	3.59	.984	.429	.322	.500	3
5/8 - 11 UNC		GH3	TCF643S	TCF643C	3.81	1.083	.480	.360	.562	3
5/8 - 11 UNC		GH5	TCF645S	TCF645C	3.81	1.083	.480	.360	.562	3
5/8 - 18 UNF		GH5	TCF665S	TCF665C	3.81	1.083	.480	.360	.562	3
3/4 - 10 UNC		GH3	TCF703S	TCF703C	4.25	1.201	.590	.442	.688	3
3/4 - 10 UNC		GH5	TCF705S	TCF705C	4.25	1.201	.590	.442	.688	3
7/8 - 9 UNC		GH4	TCF744S	TCF744C	4.69	1.339	.697	.523	.750	3
7/8 - 9 UNC		GH6	TCF746S	TCF746C	4.69	1.339	.697	.523	.750	3
7/8 - 14 UNF		GH6	TCF766S	TCF766C	4.69	1.339	.697	.523	.750	3
1" - 8 UNC		GH4	TCF784S	TCF784C	5.13	1.496	.800	.600	.812	3
1" - 8 UNC		GH6	TCF786S	TCF786C	5.13	1.496	.800	.600	.812	3
1" - 12 UNF		GH6	TCF806S	TCF806C	5.13	1.496	.800	.600	.812	3

* Super HSS(#5~1/2) and HSS-EX(9/16~1")

SPIRAL POINT TAPS for Multi-Purpose



Hole type



SPIRAL POINT TAPS ♦ T3/T3-C



Unit : inch

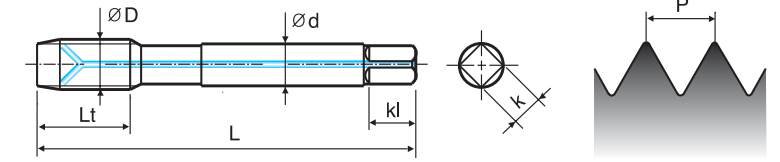
SIZE	Pitch		Limit	EDP No.		Overall Length L	Thread Length Lt	Shank Diameter d	Square Size k	Square Length kl	No. of Flute N
	D	P		Bright Finish	TiCN Coated						
M3	x	0.5	D3	T3203	T3203C	1.94	.374	.141	.110	.188	3
M3.5	x	0.6	D4	T3224	T3224C	2.00	.413	.141	.110	.188	3
M4	x	0.7	D4	T3244	T3244C	2.13	.453	.168	.131	.250	3
M5	x	0.8	D4	T3284	T3284C	2.38	.531	.194	.152	.250	3
M6	x	1.0	D5	T3315	T3315C	2.50	.591	.255	.191	.312	3
M7	x	1.0	D5	T3345	T3345C	2.72	.669	.318	.238	.375	3
M8	x	1.25	D5	T3365	T3365C	2.72	.669	.318	.238	.375	3
M8	x	1.0	D5	T3375	T3375C	2.72	.669	.318	.238	.375	3
M10	x	1.5	D6	T3426	T3426C	2.94	.748	.381	.286	.438	3
M10	x	1.25	D5	T3435	T3435C	2.94	.748	.381	.286	.438	3
M12	x	1.75	D6	T3506	T3506C	3.38	.984	.367	.275	.438	3
M12	x	1.25	D5	T3525	T3525C	3.38	.984	.367	.275	.438	3
M14	x	2.0	D7	T3547	T3547C	3.59	.984	.429	.322	.500	3
M14	x	1.5	D6	T3556	T3556C	3.59	.984	.429	.322	.500	3
M16	x	2.0	D7	T3607	T3607C	3.81	1.083	.480	.360	.562	3
M16	x	1.5	D6	T3616	T3616C	3.81	1.083	.480	.360	.562	3
M18	x	2.5	D7	T3657	T3657C	4.03	1.083	.542	.406	.625	3
M18	x	1.5	D6	T3676	T3676C	4.03	1.083	.542	.406	.625	3
M20	x	2.5	D7	T3707	T3707C	4.47	1.201	.652	.489	.688	3
M20	x	1.5	D6	T3726	T3726C	4.47	1.201	.652	.489	.688	3
M22	x	2.5	D7	T3747	T3747C	4.69	1.339	.697	.523	.750	3
M22	x	1.5	D6	T3766	T3766C	4.69	1.339	.697	.523	.750	3
M24	x	3.0	D8	T3788	T3788C	4.91	1.339	.760	.570	.750	3

* Coating (TiN, TiAlN or Hardslick) or Surface Treatment (Steam Oxide) is available on your request.
* Coating Codes for Combo Tap
Bright Finish No. + N (TiN), F (TiAlN), H (Hardslick), S (Steam Oxide)

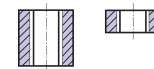
SPIRAL POINT TAPS for Multi-Purpose



with Internal Coolant



Hole type



SPIRAL POINT TAPS ♦ TH/TH-N

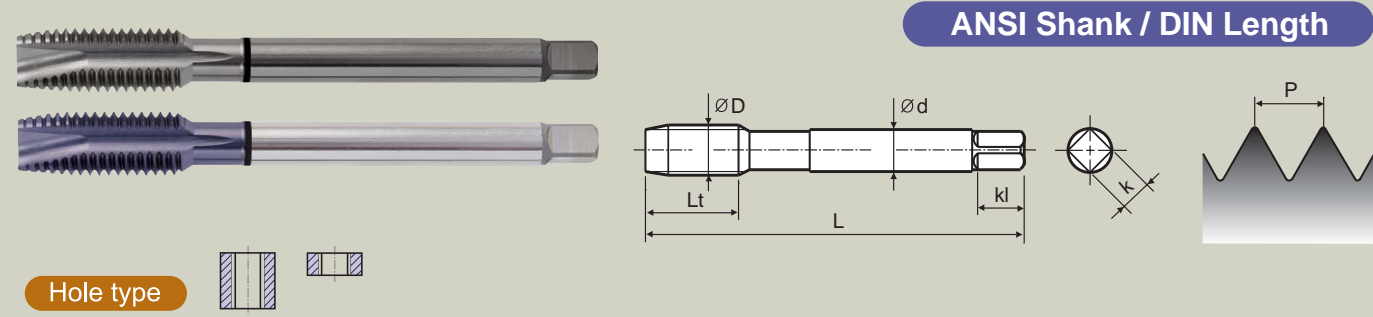


Unit : inch

SIZE	Pitch		Limit	EDP No.		Overall Length L	Thread Length Lt	Shank Diameter d	Square Size k	Square Length kl	No. of Flute N
	D	P		Bright Finish	TiN Coated						
M6	x	1.0	D5	TH315	TH315N	2.50	.591	.255	.191	.312	3
M8	x	1.25	D5	TH365	TH365N	2.72	.669	.318	.238	.375	3
M10	x	1.5	D6	TH426	TH426N	2.94	.748	.381	.286	.438	3
M12	x	1.75	D6	TH506	TH506N	3.38	.984	.367	.275	.438	3
M14	x	2.0	D7	TH547	TH547N	3.59	.984	.429	.322	.500	3
M16	x	2.0	D7	TH607	TH607N	3.81	1.083	.480	.360	.562	3
M18	x	2.5	D7	TH657	TH657N	4.03	1.083	.542	.406	.625	3
M20	x	2.5	D7	TH707	TH707N	4.47	1.201	.652	.489	.688	3

* Coating (TiCN or TiAlN) or Surface Treatment (Steam Oxide) is available on your request.
* Coating Codes for Combo Tap
Bright Finish No. + C (TiCN), F (TiAlN), H (Hardslick), S (Steam Oxide)

SPIRAL POINT TAPS for Multi-Purpose



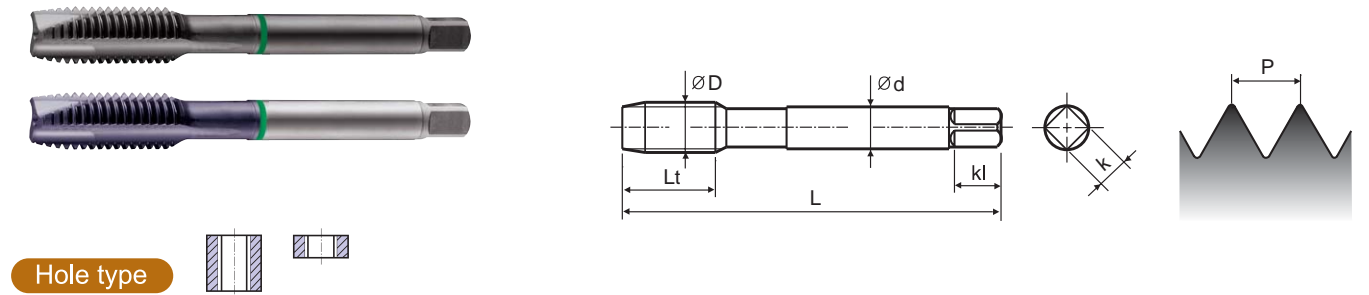
SPIRAL POINT TAPS ♦ TK-S/TK-C



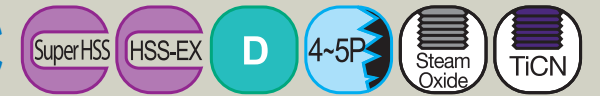
Unit : inch

SIZE	Pitch	Limit	EDP No.		Overall Length	Thread Length	Shank Diameter	Square Size	Square Length	No. of Flute
			Steam Oxide	TiCN Coated						
D	P				L	Lt	d	k	kl	N
M3	x 0.5	D3	TK203S	TK203C	2.21	.374	.141	.110	.188	3
M3.5	x 0.6	D4	TK224S	TK224C	2.21	.413	.141	.110	.188	3
M4	x 0.7	D4	TK244S	TK244C	2.48	.453	.168	.131	.250	3
M5	x 0.8	D4	TK284S	TK284C	2.76	.531	.194	.152	.250	3
M6	x 1.0	D5	TK315S	TK315C	3.15	.591	.255	.191	.312	3
M8	x 1.25	D5	TK365S	TK365C	3.54	.669	.318	.238	.375	3
M10	x 1.5	D6	TK426S	TK426C	3.94	.748	.381	.286	.438	3
M10	x 1.25	D5	TK435S	TK435C	3.94	.748	.381	.286	.438	3
M12	x 1.75	D6	TK506S	TK506C	4.33	.984	.367	.275	.438	3
M12	x 1.25	D5	TK525S	TK525C	3.94	.984	.367	.275	.438	3
M14	x 2.0	D7	TK547S	TK547C	4.33	.984	.429	.322	.500	3
M14	x 1.5	D6	TK556S	TK556C	3.94	.984	.429	.322	.500	3
M16	x 2.0	D7	TK607S	TK607C	4.33	1.083	.480	.360	.562	3
M16	x 1.5	D6	TK616S	TK616C	3.94	1.083	.480	.360	.562	3
M18	x 2.5	D7	TK657S	TK657C	4.92	1.083	.542	.406	.625	3
M18	x 1.5	D6	TK676S	TK676C	4.33	1.083	.542	.406	.625	3

SPIRAL POINT TAPS for Stainless Steel



SPIRAL POINT TAPS ♦ TCG-S/TCH-S/TCG-C/TCH-C



Unit : inch

SIZE	Pitch	Limit	EDP No.		Overall Length	Thread Length	Shank Diameter	Square Size	Square Length	No. of Flute
			Steam Oxide	TiCN Coated						
D	P				L	Lt	d	k	kl	N
M3	x 0.5	D3	TCG203S	TCG203C	1.94	.374	.141	.110	.188	3
M3.5	x 0.6	D4	TCG224S	TCG224C	2.00	.413	.141	.110	.188	3
M4	x 0.7	D4	TCG244S	TCG244C	2.13	.453	.168	.131	.250	3
M5	x 0.8	D4	TCG284S	TCG284C	2.38	.531	.194	.152	.250	3
M6	x 1.0	D5	TCG315S	TCG315C	2.50	.591	.255	.191	.312	3
M7	x 1.0	D5	TCG345S	TCG345C	2.72	.669	.318	.238	.375	3
M8	x 1.25	D5	TCG365S	TCG365C	2.72	.669	.318	.238	.375	3
M8	x 1.0	D5	TCG375S	TCG375C	2.72	.669	.318	.238	.375	3
M10	x 1.5	D6	TCG426S	TCG426C	2.94	.748	.381	.286	.438	3
M10	x 1.25	D5	TCG435S	TCG435C	2.94	.748	.381	.286	.438	3
M12	x 1.75	D6	TCG506S	TCG506C	3.38	.984	.367	.275	.438	3
M12	x 1.25	D5	TCG525S	TCG525C	3.38	.984	.367	.275	.438	3
M14	x 2.0	D7	TCH547S	TCH547C	3.59	.984	.429	.322	.500	3
M14	x 1.5	D6	TCH556S	TCH556C	3.59	.984	.429	.322	.500	3
M16	x 2.0	D7	TCH607S	TCH607C	3.81	1.083	.480	.360	.562	3
M16	x 1.5	D6	TCH616S	TCH616C	3.81	1.083	.480	.360	.562	3
M18	x 2.5	D7	TCH657S	TCH657C	4.03	1.083	.542	.406	.625	3
M18	x 1.5	D6	TCH676S	TCH676C	4.03	1.083	.542	.406	.625	3

* Super HSS(M3-M12) and HSS-EX(M14-M18)

RECOMMENDED TAP DRILL SIZE - UNIFIED THREAD

Size	Threads Per Inch		Tap Drill Sizes			
	UNC	UNF	Tap Drill	Inch Equiv.	Probable Hole Size (Inch)	Probable Percent of Thread
0		80	3/64	.0469	.0484	71
1	64		53	.0595	.0610	59
		72	53	.0595	.0610	67
2	56		50	.0700	.0717	62
		64	50	.0700	.0717	70
3	48		47	.0785	.0804	69
		56	45	.0820	.0839	65
4	40		43	.0890	.0910	65
		48	42	.0935	.0955	61
5	40		38	.1015	.1038	65
		44	37	.1040	.1063	63
6	32		36	.1065	.1088	72
		40	33	.1130	.1156	69
8	32		29	.1360	.1389	62
		36	29	.1360	.1389	70
10	24		25	.1495	.1527	69
		32	21	.1590	.1622	68
12	24		16	.1770	.1805	66
		28	14	.1820	.1855	66
1/4	20		7	.2010	.2048	70
		28	3	.2130	.2168	72
5/16	18		F	.2570	.2608	72
		24	1	.2720	.2761	67
3/8	16		5/16	.3125	.3169	72
		24	Q	.3320	.3364	71
7/16	14		U	.3680	.3726	70
		20	25/64	.3906	.3952	65
1/2	13		27/64	.4219	.4266	73
		20	29/64	.4531	.4578	65
9/16	12		31/64	.4844	.4892	68
		18	33/64	.5156	.5204	58
5/8	11		17/32	.5312	.5362	75
		18	37/64	.5781	.5831	58
3/4	10		21/32	.6562	.6613	68
		16	11/16	.6875	.6925	71
7/8	9		49/64	.7656	.7708	72
		14	13/16	.8125	.8177	62
1	8		7/8	.8750	.8809	73
		12	59/64	.9219	.9279	67
1*1/8	7		63/64	.9844	.9911	72
		12	1*3/64	1.0469	1.0541	65
1*1/4	7		1*7/64	1.1094	—	—
		12	1*11/64	1.1719	—	—
1*3/8	6		1*7/32	1.2187	—	—
		16	1*19/64	1.2969	—	—
1*1/2	6		1*11/32	1.3437	—	—
		12	1*27/64	1.4219	—	—

RECOMMENDED TAP DRILL SIZE - METRIC THREAD

Size	Pitch	Recommended Metric Drill				Closest Recommended Inch Drill			
		Tap Drill (mm)	Inch Equiv.	Probable Hole Size (Inch)	Probable Percent of Thread	Tap Drill	Inch Equiv.	Probable Hole Size (Inch)	Probable Percent of Thread
M1.6	0.35	1.25	.0492	.0507	69	—	—	—	—
M1.8	0.35	1.45	.0571	.0586	69	—	—	—	—
M2	0.40	1.6	.0630	.0647	69	52	.0635	.0652	66
M2.2	0.45	1.75	.0689	.0706	70	—	—	—	—
M2.5	0.45	2.05	.0807	.0826	69	46	.0810	.0829	67
M3	0.50	2.5	.0984	.1007	68	40	.0980	.1003	70
M3.5	0.60	2.9	.1142	.1168	68	33	.1130	.1156	72
M4	0.70	3.3	.1299	.1328	69	30	.1285	.1314	73
M4.5	0.75	3.7	.1457	.1486	74	26	.1470	.1502	70
M5	0.80	4.2	.1654	.1686	69	19	.1660	.1692	68
M6	1.00	5.0	.1968	.2006	70	9	.1960	.1998	71
M7	1.00	6.0	.2362	.2400	70	15/64	.2344	.2382	73
M8	1.25	6.7	.2638	.2679	74	17/64	.2656	.2697	71
	1.00	7.0	.2756	.2797	69	J	.2770	.2811	66
M10	1.50	8.5	.3346	.3390	71	Q	.3320	.3364	75
M12	1.25	8.7	.3425	.3471	73	11/32	.3438	.3483	71
	1.75	10.2	.4016	.4063	74	Y	.4040	.4087	71
M14	1.25	10.8	.4252	.4299	67	27/64	.4219	.4266	72
	2.00	12.0	.4724	.4772	72	15/32	.4688	.4736	76
M16	1.50	12.5	.4921	.4969	71	—	—	—	—
	2.00	14.0	.5512	.5561	72	35/64	.5469	.5518	76
M18	1.50	14.5	.5709	.5758	71	—	—	—	—
	2.50	15.5	.6102	.6152	73	39/64	.6094	.6144	74
M20	1.50	16.5	.6496	.6546	70	—	—	—	—
	2.50	17.5	.6890	.6942	73	11/16	.6875	.6925	74
M22	1.50	18.5	.7283	.7335	70	—	—	—	—
	2.50	19.5	.7677	.7729	73	49/64	.7656	.7708	75
M24	1.50	20.5	.8071	.8123	70	—	—	—	—
	3.00	21.0	.8268	.8327	73	53/64	.8281	.8340	72
M27	2.00	22.0	.8661	.8720	71	—	—	—	—
	3.00	24.0	.9449	.9511	73	15/16	.9375	.9435	78
M30	2.00	25.0	.9843	.9913	70	63/64	.9844	.9914	70
	3.00	26.5	1.0433	—	—	—	—	—	—
M33	2.00	28.0	1.1024	—	—	—	—	—	—
	3.50	29.5	1.1614	—	—	—	—	—	—
M36	2.00	31.0	1.2205	—	—	—	—	—	—
	4.00	32.0	1.2598	—	—	—	—	—	—
M39	3.00	33.0	1.2992	—	—	—	—	—	—
	4.00	35.0	1.3780	—	—	—	—	—	—
	3.00	36.0	1.4173	—	—	—	—	—	—

Reaming Recommended to the Drill Size Shown

TROUBLE SHOOTING GUIDE

Specific Problem	Cause	Solution
Dimensional Accuracy		
Oversize Pitch Diameter	Incorrect Tap	<ol style="list-style-type: none"> 1. Use proper GH limits of taps 2. Use longer chamfered taps
	Chip Packing	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 1. Use minimum hole size 2. Avoid tapered hole 3. Use proper chamfered taps
	Galling	<ol style="list-style-type: none"> 1. Galling solutions 1 through 4 above can be applied to this specific problem
Undersize Pitch Diameter	Incorrect Tap	<ol style="list-style-type: none"> 1. Use oversize taps 2. Apply proper chamfer angle 3. Increase cutting angle
	Damaged Thread	<ol style="list-style-type: none"> 1. Use proper reversing speed to avoid damaging tapped thread on the way out of the hole
	Left-over Chips	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 1. Use maximum drill size
Breakage	Incorrect Tap Selection	<ol style="list-style-type: none"> 1. Avoid chip packing in the flutes or 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	<ol style="list-style-type: none"> 1. Use larger drill size 2. Try to shorten thread length 3. Increase cutting angle 4. Apply a tap with more thread relief and reduced land width 5. Apply correct surface treatment such as Hardslick

TROUBLE SHOOTING GUIDE

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