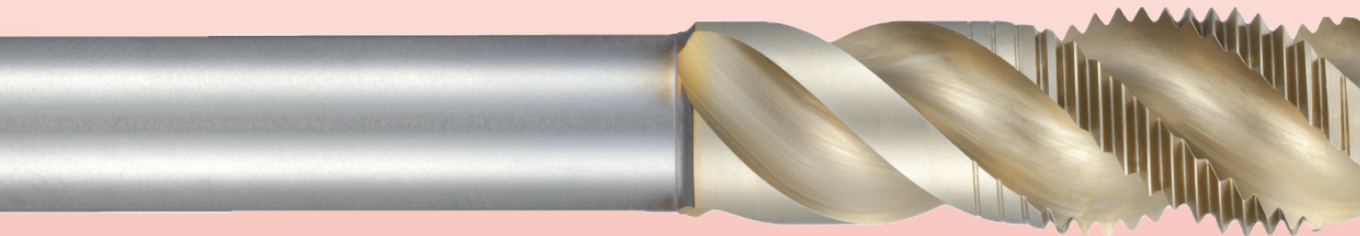
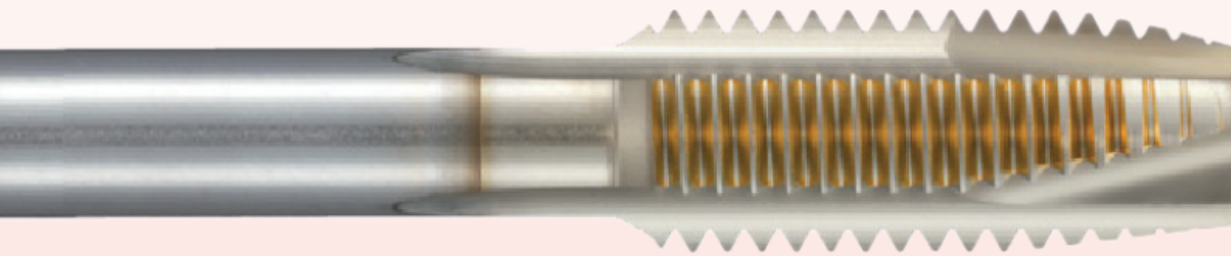


SG TAP SERIES

POWDERED METAL COBALT TAPS



**HIGH PRECISION TAPPING
FOR A WIDE RANGE OF MATERIALS**

Features

- Made from high grade powder HSS and SG coating for longer tool life
- Optimized edge and flute shape allow for stable cutting threads, high rigidity and chip ejection
- High flexibility for superior performance on a variety of materials, machines, and cutting conditions
- Stable cutting threads and long tool life regardless of cutting speed
- Achieves easy flow of chips while cutting on Stainless Steels, Structural Steels and Aluminum Alloys
- ANSI Shank DIN Overall Length

Work Materials

- Covers a wide range of applications -
 - Aluminum
 - Alloy Steel
 - Cast Iron
 - Stainless Steel
 - Carbon Steel



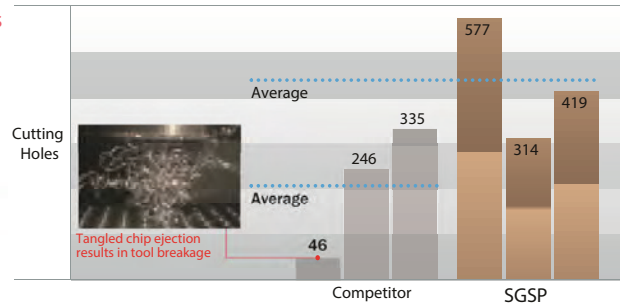
Properties

Properties of NACHI Premium P-HSS
High toughness can be obtained even at high hardness levels



Performance

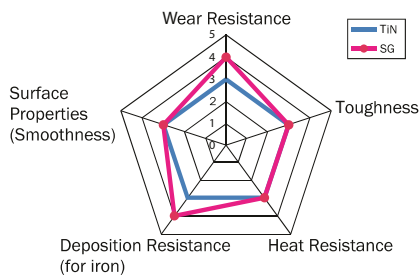
Long tool life with Stainless Steels



Tapping Condition M6 x 1 304 Stainless
 Depth 12 mm Vertical m/c
 25 SFM

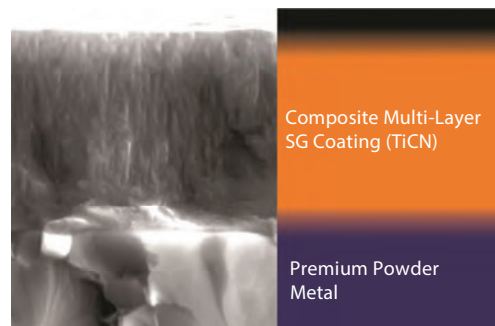
Characteristics

Characteristics of SG Coating



Composite multi-layer film coating method characterized by improved wear resistance as compared to TiN.

SG Coating (Tin + TiCN)



Application

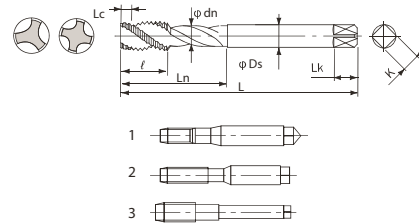
Selection Chart

●: Great ○: Good △: OK

Carbon Steel			Alloy Steel 4140,4340	Die Steel ~20Hrc D2,H13	Aluminum 6061 7075	Stainless Steel			Cast Iron Grey Ductile	Nickel Alloy	Titanium Alloy	Hardened Steel >35Hrc
Low Carbon 1010,1018	Medium Carbon 1035,1045	High Carbon 1065,1095				300 Series	400 Series	17-4PH				
●	●	●	●	○	○	●	○	△	○		△	

SGSP-DIN Spiral Fluted Tap

- Modified Bottoming Style 2.5 Thread Chamfer
- SG Coating
- DIN Overall Length
- Premium Powdered High Speed Steel



List 6801 Machine Screw & Fractional Sizes

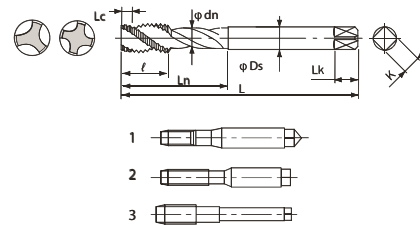
Size	Thread Limit	No. of Flutes	EDP No	Dimensions					
				Overall Length	Length of Thread	Under Neck Length	Shank Dia.	Style	
MACHINE SCREW SIZES				L	ℓ	Ln	Ds		
2-56	H2	3F	1539482	1.772	0.441	0.591	0.141	1	
4-40	H2		1539499	2.205	0.272	0.563			
6-32	H2		1540459		0.374	0.689			
	H3		1486439	0.752		0.168			
8-32	H2		1540465		2.480		0.496		0.874
	H3		1486451						
10-24	H3		1486474	2.756	0.496	0.937	0.220		
10-32	H2		1540471						
	H3		1486480						
12-24	H3	1486497	3.150						
FRACTIONAL SIZES									
1/4 - 20	H3	3F	1486519	3.150	0.606	1.000	0.255	1	
	H5		1540488		0.413				
1/4 - 28	H3		1486525	3.543		0.697	1.126	0.318	2
	H4		1540494		0.480				
5/16 - 18	H3		1486531	3.937		0.783	1.252	0.381	
	H5		1540500						
5/16 - 24	H3		1486548	3.543	0.480	1.236	0.323	3	
	H4		1540516						
3/8 - 16	H3		1486554	4.331	1.024	1.425	0.367		
	H5		1540522						
3/8 - 24	H3		1486560	3.937	0.646	1.748	0.480		
	H4		1540539						
7/16 - 14	H3		1486577	4.331	0.894	1.937	0.590	4F	
	H5		1540545		0.626				
7/16 - 20	H3		1486583	4.921		1.303	1.937		0.590
	H5		1540551						
1/2 - 13	H3		1486590	4.331	1.185	2.323	0.800		
	H5		1540568						
1/2 - 20	H3		1486605	3.937	0.732	2.323	0.800		
	H5		1540574						
5/8 - 11	H4		1514622	4.331	1.185	1.748	0.480		
	H6		1540580						
5/8 - 18	H4		1514639	3.937	0.732	1.937	0.590		
	H6		1540597						
3/4 - 10	H4	1514645	4.921	1.303	1.937	0.590			
	H6	1540602							
3/4 - 16	H4	1514651	4.331	0.827	2.323	0.800			
	H6	1540619							
1 - 8	H4	1514680	6.299	1.626	2.323	0.800			
	H6	1540625							

Order by EDP Number
1 piece per package

⚠ WARNING: Cancer - www.P65Warnings.ca.gov

SGSP-DIN Spiral Fluted Tap

- Modified Bottoming Style 2.5 Thread Chamfer
- SG Coating
- DIN Overall Length
- Premium Powdered High Speed Steel



List 6800 Metric Sizes

Size	Thread Limit	EDP No	No. of Flutes	Dimensions				
				Overall Length	Length of Thread	Under Neck Length	Shank Dia.	Style
METRIC SIZES				L	ℓ	Ln	Ds	
M3 X 0.5	D3	1486233	3F	2.205	0.228	0.626	0.141	1
M4 X 0.7	D4	1486256		2.480	0.307	0.689	0.168	
M5 X 0.8	D5	1486262		2.756	0.374	0.874	0.194	
M6 X 1.0		1486279		3.150	0.453	1.000	0.255	
M8 X 1.25		1486307		3.543	0.594	1.126	0.318	2
M10 X 1.25		1486313		3.937	0.740	1.252	0.381	
M10 X 1.5	1486320	0.634				1.425	0.367	
M12 X 1.25	1486336							
M12 X 1.5	1514479				0.882			
M12 X 1.75	1486342	4.331		1.024				1.669
M14 X 2.0	1514491					1.748	0.480	
M16 X 2.0	1514513				1.937			
M18 X 2.5	1514536		1.996	0.652				
M20 X 2.5	1514559	2.323				0.760		
M24 X 3.0	D8				1514594		6.299	1.535

Order by EDP Number
1 piece per package

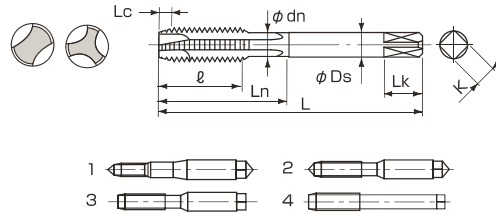
⚠ WARNING: Cancer - www.P65Warnings.ca.gov

SGSP Work Material & Cutting Condition Recommendations

Work Material		Tapping Speed SFM
Low Carbon Steel	1010 1018	80 - 100
Medium Carbon Steel	1035 1045	80 - 100
High Carbon Steel	1065 1095	80 - 100
Alloy Steel	4140 4130	25 - 45
Die Steel	D2 H13 (up to 20 HRC)	20 - 40
Hardened Steel	~ 35 HRC	15 - 35
Stainless Steel	Austentic 303 304 316	10 - 25
	Martenstic 410 430	10 - 25
	17-4PH	10 - 25
Aluminum	6061 7075 Casting	80 - 100
Cast Iron	Grey Nodular	90 - 110

SGPO-DIN Spiral Pointed Tap

- Plug Style 5 Thread Chamfer
- SG Coating
- DIN Overall Length
- Premium Powdered High Speed Steel



List 6803 Machine Screw & Fractional Sizes

Nominal Size	Thread/Inch		No. of Flutes	EDP No					Dimensions					Style
	NC/UNC	NF/UNF		H2	H3	H4	H5	H6	Overall Length	Length of Thread	Under Neck Length	Shank Dia.		
MACHINE SCREW SIZES									L	ℓ	Ln	Ds		
2	56		2F	1543378					1.772	0.441	0.591	0.141	1	
4	40		2F	1543384					2.205	0.469	0.602			
6	32		3F	1542519	1542525					0.555	0.768			
8	32		3F	1542531	1542548			2.480						0.168
10	24		3F		1542554				2.756	0.709	0.984	0.194		2
		32	3F	1542560	1542577					0.555				
12	24		3F		1542583				3.150	0.709			0.220	
FRACTIONAL SIZES														
1/4	20		3F		1542590		1542605		3.150	0.850	1.181	0.255		
		28	3F		1542611	1542628				0.618				
5/16	18		3F		1542634		1542640		3.543	0.945	1.299	0.318		3
		24	3F		1542657	1542663				0.709				
3/8	16		3F		1542670		1542686		3.937	1.063	1.457	0.381		
		24	3F		1542692	1542708			3.543	0.709				
7/16	14		3F		1542714		1542720		3.937	1.142	-	0.323		
		20	3F		1542737		1542743			0.902				-
1/2	13		3F		1542750		1542766		4.331	1.232	-	0.367		
		20	3F		1542772		1542789		3.937	0.902				
5/8	11		3F			1542795		1542800	4.331	1.181	-	0.480		
		18	3F			1542817		1542823	3.937	0.835	-			
3/4	10		3F			1542830		1542846	4.921	1.299	-	0.590		
		16	3F			1542852		1542869	4.331	0.937	-			
1	8		3F			1542875		1542881	6.299	1.626	-	0.800		

Order by EDP Number
1 piece per package

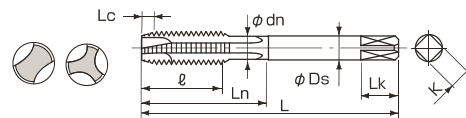
⚠ WARNING: Cancer - www.P65Warnings.ca.gov

SGPO Work Material & Cutting Condition Recommendations

Work Material		Tapping Speed SFM
Low Carbon Steel	1010 1018	70 - 90
Medium Carbon Steel	1035 1045	90 - 110
High Carbon Steel	1065 1095	90 - 110
Alloy Steel	4140 4130	45 - 65
Die Steel	D2 H13 (up to 20 HRC)	25 - 45
Hardened Steel	~ 35 HRC	15 - 35
Stainless Steel	Austenitic 303 304 316	10 - 30
	Martensitic 410 430	10 - 30
	17-4PH	10 - 30
Aluminum	6061 7075 Casting	100 - 120
Cast Iron	Grey Nodular	110 - 130

SGPO-DIN Spiral Pointed Tap

- Plug Style 5 Thread Chamfer
- SG Coating
- DIN Overall Length
- Premium Powdered High Speed Steel



List 6802

Metric Sizes

Nominal Size			EDP No						Dimensions				
	Pitch	No. of Flutes	D3	D4	D5	D6	D7	D8	Overall Length	Length of Thread	Under Neck Length	Shank Dia.	Style
METRIC SIZES									L	ℓ	Ln	Ds	2
M3	0.5	3F	1542451						2.205	0.394	0.630	0.141	
M4	0.7	3F		1542829					2.480	0.492	0.752	0.168	
M5	0.8	3F		1542903					2.756	0.571	0.882	0.194	
M6	1.0	3F			1542910				3.150	0.669	1.000	0.255	
M8	1.25	3F			1542926				3.543	0.866	1.181	0.318	
M10	1.25	3F			1542932				3.937		1.437	0.381	3
M10	1.5	3F				1542949				1.063			
M12	1.25	3F			1542955					0.906	-	0.367	4
M12	1.5	3F				1542978				1.102	-		
M12	1.75	3F				1542961			4.331	1.260	-		
M14	2.0	3F					1542468				-		
M16	2.0	3F					1542474		4.921	1.476	-	0.480	
M18	2.5	3F					1542480				-	0.542	
M20	2.5	3F					1542497		5.512	-	0.652		
M24	3.0	3F						1542502	6.299	1.772	-	0.760	

Order by EDP Number
1 piece per package

⚠ WARNING: Cancer - www.P65Warnings.ca.gov

SGPO Work Material & Cutting Condition Recommendations

Work Material		Tapping Speed SFM
Low Carbon Steel	1010 1018	70 - 90
Medium Carbon Steel	1035 1045	90 - 110
High Carbon Steel	1065 1095	90 - 110
Alloy Steel	4140 4130	45 - 65
Die Steel	D2 H13 (up to 20 HRC)	25 - 45
Hardened Steel	~ 35 HRC	15 - 35
Stainless Steel	Austentic 303 304 316	10 - 30
	Martenstic 410 430	10 - 30
	17-4PH	10 - 30
Aluminum	6061 7075 Casting	100 - 120
Cast Iron	Grey Nodular	110 - 130

SGSP/SGPO Tap Drill Size Recommendations

*Recommend using SG-ESS, AQRVDS, or AQRVD0H3D as Tap Drill

Tap Size	Theoretical Hole Size % Thread (Inch)					Class 2B Fit (Inch)			Class 3B Fit (Inch)		
	80%	75%	70%	65%	60%	Minor Dia. Min.	Minor Dia. Max.	Recommended Drill	Minor Dia. Min.	Minor Dia. Max.	Recommended Drill
2-56	0.0674	0.0686	0.0698	0.0709	0.0721	0.0667	0.0737	#50 (0.070)	0.0667	0.0737	#50 (0.070)
4-40	0.0860	0.0876	0.0893	0.0909	0.0925	0.0849	0.0939	#43 (0.089)	0.0849	0.0939	#43 (0.089)
6-32	0.1055	0.1076	0.1096	0.1116	0.1136	0.1040	0.1140	#35 (0.110)	0.1040	0.1140	#35 (0.110)
8-32	0.1315	0.1336	0.1356	0.1376	0.1396	0.1300	0.1390	#29 (0.136)	0.1300	0.1389	#29 (0.136)
10-24	0.1467	0.1494	0.1521	0.1548	0.1575	0.1450	0.1560	#24 (0.152)	0.1450	0.1560	#24 (0.152)
10-32	0.1575	0.1596	0.1616	0.1636	0.1656	0.1560	0.1640	#20 (0.161)	0.1560	0.1641	#20 (0.161)
12-24	0.1727	0.1754	0.1781	0.1808	0.1835	0.1710	0.1810	#16 (0.177)	0.1710	0.1810	#16 (0.177)
1/4 - 20	0.1980	0.2013	0.2045	0.2078	0.2110	0.1960	0.2070	13/64 (0.2031)	0.1960	0.2067	13/64 (0.2031)
1/4 - 28	0.2129	0.2152	0.2175	0.2198	0.2222	0.2110	0.2200	5.5mm (0.2165)	0.2110	0.2190	5.5mm (0.2165)
5/16 - 18	0.2548	0.2584	0.2620	0.2656	0.2692	0.2520	0.2650	G (0.261)	0.2520	0.2630	F (0.257)
5/16 - 24	0.2692	0.2719	0.2746	0.2773	0.2800	0.2670	0.2770	I (0.272)	0.2670	0.2754	I (0.272)
3/8 - 16	0.3101	0.3141	0.3182	0.3222	0.3263	0.3070	0.3210	O (0.316)	0.3070	0.3182	5/16 (0.3125)
3/8 - 24	0.3317	0.3344	0.3371	0.3398	0.3425	0.3300	0.3400	Q (0.332)	0.3300	0.3372	Q (0.332)
7/16 - 14	0.3633	0.3679	0.3726	0.3772	0.3818	0.3600	0.3760	U (0.368)	0.3600	0.3717	U (0.368)
7/16 - 20	0.3855	0.3888	0.3920	0.3953	0.3985	0.3830	0.3950	25/64 (0.3906)	0.3830	0.3916	W (0.386)
1/2 - 13	0.4201	0.4251	0.4301	0.4351	0.4400	0.4170	0.4340	27/64 (0.4219)	0.4170	0.4284	27/64 (0.4219)
1/2 - 20	0.4480	0.4513	0.4545	0.4578	0.4610	0.4460	0.4570	29/64 (0.4531)	0.4460	0.4537	11.4mm (0.4488)
5/8 - 11	0.5305	0.5364	0.5423	0.5482	0.5541	0.5270	0.5460	17/32 (0.5312)	0.5270	0.5391	17/32 (0.5312)
5/8 - 18	0.5673	0.5709	0.5745	0.5781	0.5817	0.5650	0.5780	14.5mm (0.5709)	0.5650	0.5730	14.5mm (0.5709)
3/4 - 10	0.6461	0.6526	0.6591	0.6656	0.6721	0.6420	0.6630	21/32 (0.6562)	0.6420	0.6545	16.5mm (0.6496)
3/4 - 16	0.6851	0.6891	0.6932	0.6972	0.7013	0.6820	0.6960	11/16 (0.6875)	0.6820	0.6908	11/16 (0.6875)
1 - 8	0.8701	0.8782	0.8863	0.8945	0.9026	0.8650	0.8900	7/8 (0.875)	0.8650	0.8797	7/8 (0.875)
Tap Size	Theoretical Hole Size % Thread (Inch)					Class 6H Fit (Inch)					
	80%	75%	70%	65%	60%	Minor Dia. Min.	Minor Dia. Max.	Recommended Drill			
M3 X 0.5	0.0976	0.0988	0.1004	0.1016	0.1028	0.0968	0.1023	#39 (0.0995)			
M4 X 0.7	0.1287	0.1307	0.1323	0.1343	0.1358	0.1276	0.1347	3.3mm (0.1299)			
M5 X 0.8	0.1642	0.1661	0.1681	0.1701	0.1724	0.1628	0.1706	#19 (0.1660)			
M6 X 1.0	0.1953	0.1980	0.2004	0.2031	0.2055	0.1936	0.2029	5.0mm (0.1969)			
M8 X 1.25	0.2638	0.2669	0.2701	0.2732	0.2768	0.2617	0.2721	H (0.2660)			
M10 X 1.25	0.3425	0.3457	0.3488	0.3520	0.3555	0.3404	0.3509	8.8mm (0.3465)			
M10 X 1.5	0.3323	0.3362	0.3402	0.3437	0.3476	0.3298	0.3416	8.5mm (0.3346)			
M12 X 1.25	0.4213	0.4244	0.4276	0.4307	0.4343	0.4192	0.4296	10.8mm (0.4252)			
M12 X 1.5	0.4110	0.4150	0.4189	0.4224	0.4264	0.4085	0.4203	10.6mm (0.4173)			
M12 X 1.75	0.4008	0.4055	0.4098	0.4142	0.4189	0.3979	0.4111	13/32 (0.4063)			
M14 X 2.0	0.4693	0.4744	0.4795	0.4846	0.4898	0.4659	0.4807	12.2mm (0.4803)			
M16 X 2.0	0.5480	0.5531	0.5583	0.5634	0.5685	0.5447	0.5594	14.2mm (0.5591)			
M20 X 2.5	0.6850	0.6913	0.6980	0.7043	0.7106	0.6809	0.6986	17.7mm (0.6969)			
M24 X 3.0	0.8220	0.8299	0.8374	0.8453	0.8528	0.8170	0.8367	21.2mm (0.8346)			

Suggested Percentage of Full Thread in Tapped Holes

Material		Deep Hole Tapping	Average Commercial Work	Thin Sheet Stock or Stamping
Free Cutting	Aluminum, Brass, Bronze, Cast Iron, Copper, Mild Steel, Tool Steel	60%-70%	65%-70%	75%-85%
Hard or Tough Cutting	Cast Steel, Drop Forging, Monel Metal, Nickel Steel, Stainless Steel	55%-65%	60%-70%	

Classes and Tap Recommendations

Tap Size	Basic Pitch Diameter	Class 2B		Class 3B	
	All Classes Min.	Pitch Diameter Limits Max	Recommended Tap	Pitch Diameter Limits Max	Recommended Tap
2-56	0.0744	0.0772	H2	0.0765	H2
4-40	0.0958	0.0991	H2	0.0982	H2
6-32	0.1177	0.1214	H3	0.1204	H2
8-32	0.1437	0.1475	H3	0.1465	H2
10-24	0.1629	0.1672	H3	0.1661	H3
10-32	0.1697	0.1736	H3	0.1726	H2
12-24	0.1889	0.1933	H3	0.1922	H3
1/4 - 20	0.2175	0.2224	H5	0.2211	H3
1/4 - 28	0.2268	0.2311	H4	0.2300	H3
5/16 - 18	0.2764	0.2817	H5	0.2803	H3
5/16 - 24	0.2854	0.2902	H4	0.2890	H3
3/8 - 16	0.3344	0.3401	H5	0.3387	H3
3/8 - 24	0.3479	0.3528	H4	0.3516	H3
7/16 - 14	0.3911	0.3972	H5	0.3957	H3
7/16 - 20	0.4050	0.4104	H5	0.4091	H3
1/2 - 13	0.4500	0.4565	H5	0.4548	H3
1/2 - 20	0.4675	0.4731	H5	0.4717	H3
5/8 - 11	0.5660	0.5732	H6	0.5714	H4
5/8 - 18	0.5889	0.5949	H6	0.5934	H4
3/4 - 10	0.6850	0.6927	H6	0.6907	H4
3/4 - 16	0.7094	0.7159	H6	0.7143	H4
1 - 8	0.9188	0.9276	H6	0.9254	H4

Tap Size	Pitch Diameter Limits - Class 6H		Class 6H
	Maximum	Minimum	Recommended Tap
M3 x 0.5	0.1054	0.1092	D3
M4 x 0.7	0.1396	0.1442	D4
M5 x 0.8	0.1764	0.1812	D4
M6 x 1.0	0.2107	0.2165	D5
M8 x 1.25	0.2830	0.2892	D5
M10 x 1.25	0.3617	0.3680	D5
M10 x 1.5	0.3554	0.3624	D6
M12 x 1.25	0.4405	0.4476	D6
M12 x 1.5	0.4341	0.4416	D6
M12 x 1.75	0.4277	0.4355	D6
M14 x 2.0	0.5001	0.5083	D7
M16 x 2.0	0.5788	0.5871	D7
M20 x 2.5	0.7235	0.7322	D7
M24 x 3.0	0.8682	0.8785	D8

H2 = Basic P.D. + .0005" to Basic P.D. + .0010"
H3 = Basic P.D. + .0010" to Basic P.D. + .0015"
H4 = Basic P.D. + .0015" to Basic P.D. + .0020"
H5 = Basic P.D. + .0020" to Basic P.D. + .0025"
H6 = Basic P.D. + .0025" to Basic P.D. + .0030"

D3 = Basic P.D. + .0009" to Basic P.D. + .0015"
D4 = Basic P.D. + .0012" to Basic P.D. + .0020"
D5 = Basic P.D. + .0015" to Basic P.D. + .0025"
D6 = Basic P.D. + .0018" to Basic P.D. + .0030"
D7 = Basic P.D. + .0019" to Basic P.D. + .0035"
D8 = Basic P.D. + .0024" to Basic P.D. + .0040"

The above recommended taps normally produce the class of thread indicated in average materials when used with reasonable care. However, if the tap specified does not give a satisfactory gage fit in the work, a choice of some other limit tap may be necessary.

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