

## TAPPING SPEED GUIDE

MATERIALS			SPEED FEET PER MINUTE	MATERIALS			SPEED FEET PER MINUTE
Aluminum Alloys			90-100	(Steel, Cont.) Carbon Steel, Plain	Annealed	40-80	
Brass			60-100		Tempered	15-40	
Bronze			40-60	Cast, Carbon	Annealed	40-50	
Copper			40-60		Tempered	30	
High Temperature Alloys			Cobalt Base	Cast, Corrosion Resistant,	Annealed	20-30	
					Iron Base	as Cast	20-25
					Nickel Base	Low Alloy	Annealed
Iron	Ductile	Annealed	60	Precipitation Hardening, Stainless	Tempered	15-25	
		as Cast	30		Treated	10-15	
		Tempered	15-20		Annealed	15-45	
	Gray,	Annealed	80		Tempered	15-25	
		As Cast	35-60		Annealed	45-75	
	Malleable		60		Tool Steels, High Speed	Annealed	15-25
Magnesium Alloys		Heat Treated	25-50	Water Hardening	Annealed	50	
		Annealed	175	Ultra High Strength Steels	Annealed	35	
Manganese			20		Normalized	20	
Molybdenum Alloys		Stress Relieved	50		Tempered	3-7	
Monel		Annealed	20	Maraging Steels	Annealed	20-15	
Nickel Alloys		Annealed	25		Maraged	5-10	
Plastics,	Reinforced		25	Tantalum Alloys, Stress Relieved		3	
	Thermoplastics		50	Titanium Alloys, Commercial Pure,	Annealed	40-60	
	Thermosetting Plastics		50	Alpha & Alpha Beta Alloys,	Annealed	10-25	
Steels,	Alloys, Annealed or Cold Drawn		40-60	Tungsten Alloys, Pressed & Sintered		50	
	Quenched & Tempered		15-35	Zinc Alloys	Die Cast	150	
	Armor Plate		10				

## CONVERSION TABLE, SURFACE FEET PER MINUTE TO REVOLUTIONS PER MINUTE

SPEED FEET PER MINUTE	20	25	30	40	50	60	70	80	90	100	110	120	130	140	150
TAP SIZE	REVOLUTIONS PER MINUTE														
0	1273	1592	1910	2546	3183	3820	4456	5093	5730	6366	7003	7639	8276	8913	9549
1	1047	1308	1570	2093	2617	3140	3663	4186	4710	5233	5756	6279	6808	7326	7849
2	888	1110	1333	1777	2221	2665	3109	3554	3999	4442	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	3667	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	401	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	489	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	262	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

## METRIC STI STRAIGHT FLUTE TAPS

LIST 130M

Plug  
Bottom



TAP SIZE	NO. OF FLUTES	PLUG STI EDP NUMBER				BOTTOM STI EDP NUMBER			
		CLASS 4H 5H FIT		CLASS 5H FIT		CLASS 4H 5H FIT		CLASS 5H FIT	
M2.2X0.45	3	72012	D1	72012	D1	72013	D1	72013	D1
M2.5X0.45	3	72112	D1	72112	D1	72113	D1	72113	D1
M3X0.5	3	72212	D1	72212	D1	72213	D1	72213	D1
M3.5X0.6	3	72312	D1	72322	D2	72313	D1	72323	D2
M4X0.7	3	72412	D1	72422	D2	72413	D1	72423	D2
M5X0.8	3	72512	D1	72522	D2	72513	D1	72523	D2
M6X1.0	3	72622	D2	72632	D3	72623	D2	72633	D3
M8X1.0	4	72722	D2	72732	D3	72723	D2	72733	D3
M8X1.25	4	72822	D2	72832	D3	72823	D2	72833	D3
M10X1.0	4	72922	D2	72932	D3	72923	D2	72933	D3
M10X1.25	4	73022	D2	73032	D3	73023	D2	73033	D3
M10X1.5	4	73132	D3	73142	D4	73133	D3	73143	D4
M12X1.25	4	73232	D3	73242	D4	73233	D3	73243	D4
M12X1.5	4	73332	D3	73352	D5	73333	D3	73353	D5
M12X1.75	4	73432	D3	73452	D5	73433	D3	73453	D5
M14X2.0	4	73542	D4	73552	D5	73543	D4	73553	D5
M14X1.5	4	73632	D3	73652	D5	73633	D3	73653	D5
M16X2.0	4	73742	D4	73752	D5	73743	D4	73753	D5
M16X1.5	4	73832	D3	73852	D5	73833	D3	73853	D5
M18X2.5	4	73942	D4	73962	D6	73943	D4	73963	D6
M18X1.5	4	74032	D3	74052	D5	74033	D3	74053	D5
M20X2.5	4	74142	D4	74162	D6	74143	D4	74163	D6

## SCREW THREAD INSERT (STI) TAP DRILL CHART

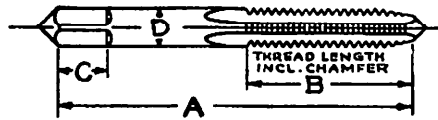
NOMINAL THREAD SIZE (COARSE SERIES)	SUGGESTED DRILL SIZE (INCH)		NOMINAL THREAD SIZE	SUGGESTED DRILL SIZE (INCH)	
	ALUMINUM	STEEL, MAGNESIUM PLASTIC		ALUMINUM	STEEL, MAGNESIUM PLASTIC
M2.2X0.45	#42 (.0935)	#42 (.0935)	2 (.086)-56	3/32 (.0938)	#41 (.0960)
M2.5X0.45	#37 (.1040)	#37 (.1040)	3 (.099)-48	#36 (.1065)	7/64 (.1094)
M3X0.5	1/8 (.1250)	1/8 (.1250)	4 (.112)-40	#31 (.1200)	#31 (.1200)
M3.5X0.6	#27 (.1440)	#26 (.1470)	5 (.125)-40	3.4mm (.1339)	#29 (.1360)
M4X0.7	#19 (.1660)	#19 (.1660)	6 (.138)-32	#26 (.1470)	#25 (.1495)
M5X0.8	#5 (.2055)	#4 (.2090)	8 (.164)-32	#17 (.1730)	#16 (.1770)
M6X1	D (.2460)	1/4 (.2500)	10 (.190)-24	13/64 (.2031)	#5 (.2055)
M7X1	L (.2900)	L (.2900)	12 (.216)-24	#1 (.2280)	#1 (.2280)
M8X1.25	21/64 (.3281)	Q (.3320)	1/4 (.2500)-20	H (.2660)	H (.2660)
M10X1.5	Z (.4130)	Z (.4130)	5/16 (.3125)-18	Q (.3320)	Q (.3320)
M12X1.75	31/64 (.4844)	1/2 (.5000)	3/8 (.3750)-16	X (.3970)	X (.3970)
M14X2	37/64 (.5781)	37/64 (.5781)	7/16 (.4375)-14	29/64 (.4531)	29/64 (.4531)
M16X2	21/32 (.6562)	21/32 (.6562)	1/2 (.5000)-13	33/64 (.5156)	17/32 (.5312)
M18X2.5	47/64 (.7344)	47/64 (.7344)	9/16 (.5625)-12	37/64 (.5781)	19/32 (.5938)
M20X2.5	13/16 (.8125)	13/16 (.8125)	5/8 (.6250)-11	21/32 (.6562)	21/32 (.6562)
M22X2.5	57/64 (.8906)	57/64 (.8906)	3/4 (.7500)-10	25/32 (.7812)	25/32 (.7812)
M24X3	63/64 (.9844)	63/64 (.9844)	7/8 (.8750)-9	29/32 (.9062)	29/32 (.9062)
M27X3	1-3/32 (1.0938)	1-3/32 (1.0938)	1 (1.0000)-8	1-1/32 (1.0312)	1-1/32 (1.0312)
M30X3.5	1-7/32 (1.1288)	1-7/32 (1.1288)	1-1/8 (1.1250)-7	1-11/64 (1.1719)	1-11/64 (1.1719)
M33X3.5	1-11/32 (1.3438)	1-11/32 (1.3438)	1-1/4 (1.2500)-7	1-19/64 (1.2969)	1-19/64 (1.2969)
M36X4	1-29/64 (1.4531)	1-15/32 (1.4688)	1-3/8 (1.3750)-6	1-27/64 (1.4219)	1-27/64 (1.4219)
M39X4	1-37/64 (1.5781)	1-37/64 (1.5781)	1-1/2 (1.5000)-6	1-35/64 (1.5469)	1-35/64 (1.5469)
<b>(FINE SERIES)</b>					
M8X1	21/64 (.3281)	21/64 (.3281)	3 (.099)-56	#37 (.1040)	#36 (.1065)
M10X1	Y (.4040)	13/32 (.4062)	4 (.112)-48	3mm (.1181)	#31 (.1200)
M10X1.25	Y (.4040)	13/32 (.4062)	6 (.138)-40	#26 (.1470)	#25 (.1495)
M12X1.25	31/64 (.4844)	31/64 (.4844)	8 (.164)-36	#17 (.1730)	#16 (.1770)
M12X1.5	31/64 (.4844)	1/2 (.5000)	10 (.190)-32	#7 (.2010)	13/64 (.2031)
M14X1.5	9/16 (.5625)	37/64 (.5781)	1/4 (.2500)-28	G (.2610)	6.7mm (.2638)
M16X1.5	41/64 (.6406)	21/32 (.6562)	5/16 (.3125)-24	21/64 (.3281)	21/64 (.3281)
M18X1.5	23/32 (.7188)	47/64 (.7344)	3/8 (.3750)-24	25/64 (.3906)	25/64 (.3906)
M20X1.5	51/64 (.7969)	13/16 (.8125)	7/16 (.4375)-20	29/64 (.4531)	29/64 (.4531)
M22X1.5	7/8 (.8750)	57/64 (.8906)	1/2 (.5000)-20	33/64 (.5156)	33/64 (.5156)
M18X2	47/64 (.7344)	47/64 (.7344)	9/16 (.5625)-18	37/64 (.5781)	37/64 (.5781)
M20X2	13/16 (.8125)	13/16 (.8125)	5/8 (.6250)-18	41/64 (.6406)	41/64 (.6406)
M22X2	57/64 (.8906)	57/64 (.8906)	3/4 (.7500)-16	49/64 (.7656)	49/64 (.7656)
M24X2	31/32 (.9688)	31/32 (.9688)	7/8 (.8750)-14	57/64 (.8906)	57/64 (.8906)
M27X2	1-5/64 (1.0781)	1-3/32 (1.0938)	1 (1.0000)-14	1-1/64 (1.0156)	1-1/32 (1.0312)
M30X2	1-13/64 (1.2031)	1-13/64 (1.2031)	1 (1.0000)-12	1-1/64 (1.0156)	1-1/32 (1.0312)
M33X2	1-5/16 (1.3125)	1-21/64 (1.3281)	1-1/8 (1.1250)-12	1-9/64 (1.1406)	1-5/32 (1.1562)
M36X2	1-7/16 (1.4375)	1-7/16 (1.4375)	1-1/4 (1.2500)-12	1-17/64 (1.2656)	1-9/32 (1.2812)
M39X2	1-35/64 (1.5469)	1-9/16 (1.5625)	1-3/8 (1.3750)-12	1-25/64 (1.3906)	1-13/32 (1.4062)
M36X3	1-29/64 (1.4531)	1-29/64 (1.4531)	1-1/2 (1.5000)-12	1-33/64 (1.5156)	1-17/32 (1.5312)
M39X3	1-9/16 (1.5625)	1-9/16 (1.5625)			

## Table 60

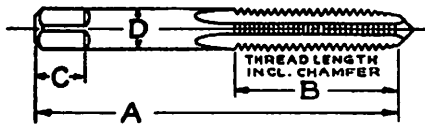
# MACHINE SCREW AND HAND TAPS

**For Helical Coil Wire Screw Thread Insert (STI)  
High Speed Steel, Ground Thread**

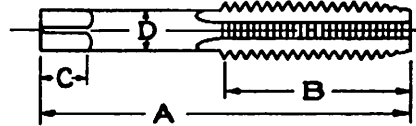
\* These taps are oversize to the extent that the internal thread which they produce will accommodate a helical coil wire screw thread insert, which at final assembly will accept a screw thread of the nominal size and pitch.



STYLE 1



STYLE 2



STYLE 3

### GENERAL DIMENSIONS

* Nominal Size (STI)	Style	THREADS PER INCH		DIMENSIONS — INCHES				
		NC UNC	NF UNF	Length Overall A	Length of Thread B	Length of Square C	Diam. of Shank D	Size of Square E
4	1	40	....	2	1 <sup>1</sup> / <sub>6</sub>	3 <sup>1</sup> / <sub>6</sub>	.141	.110
5	1	40	....	2 <sup>1</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>4</sub>	.168	.131
6	1	32	....	2 <sup>3</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>4</sub>	.194	.152
6	1	....	40	2 <sup>1</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>4</sub>	.168	.131
8	1	32	....	2 <sup>3</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>6</sub>	3 <sup>1</sup> / <sub>2</sub>	.220	.165
10	2	24	32	2 <sup>1</sup> / <sub>2</sub>	1	3 <sup>1</sup> / <sub>6</sub>	.255	.191
12	2	24	....	2 <sup>1</sup> / <sub>2</sub>	1	3 <sup>1</sup> / <sub>6</sub>	.286	.214
1/4	2	20	28	2 <sup>3</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>6</sub>	3 <sup>1</sup> / <sub>6</sub>	.318	.238
5/16	2	18	24	2 <sup>1</sup> / <sub>6</sub>	1 <sup>1</sup> / <sub>4</sub>	3 <sup>1</sup> / <sub>6</sub>	.381	.286
3/8	3	16	....	3 <sup>3</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>2</sub>	3 <sup>1</sup> / <sub>6</sub>	.367	.275
3/8	3	....	24	3 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>6</sub>	1 <sup>1</sup> / <sub>2</sub>	.323	.242
7/16	3	14	....	3 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>2</sub>	1/2	.429	.322
7/16	3	....	20	3 <sup>3</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>2</sub>	3 <sup>1</sup> / <sub>6</sub>	.367	.275
1/2	3	13	....	3 <sup>1</sup> / <sub>6</sub>	1 <sup>1</sup> / <sub>6</sub>	3 <sup>1</sup> / <sub>6</sub>	.480	.360
1/2	3	....	20	3 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>2</sub>	1/2	.429	.322

(concluded on following page)

# Table 60

## MACHINE SCREW AND HAND TAPS

For Helical Coil Wire Screw Thread Insert (STI)  
High Speed Steel, Ground Thread (continued)

### GENERAL DIMENSIONS

* Nominal Size (STI)	Style	THREADS PER INCH		DIMENSIONS — INCHES				
		NC UNC	NF UNF	Length Overall A	Length of Thread B	Length of Square C	Diam. of Shank D	Size of Square E
$\frac{1}{8}$	3	12	....	$4\frac{1}{32}$	$1\frac{1}{16}$	$\frac{5}{8}$	.542	.406
$\frac{1}{8}$	3	....	18	$3\frac{1}{16}$	$1\frac{1}{16}$	$\frac{5}{8}$	.480	.360
$\frac{5}{16}$	3	11	....	$4\frac{1}{4}$	2	$\frac{1}{16}$	.590	.442
$\frac{5}{16}$	3	....	18	$4\frac{1}{32}$	$1\frac{1}{16}$	$\frac{5}{8}$	.542	.406
$\frac{3}{4}$	3	10	....	$4\frac{1}{16}$	$2\frac{1}{32}$	$\frac{3}{4}$	.697	.523
$\frac{3}{4}$	3	....	16	$4\frac{1}{32}$	2	$\frac{1}{16}$	.652	.489
$\frac{7}{8}$	3	9	....	$5\frac{1}{8}$	$2\frac{1}{2}$	$\frac{1}{16}$	.800	.600
$\frac{7}{8}$	3	....	14	$5\frac{1}{8}$	$2\frac{1}{2}$	$\frac{1}{16}$	.800	.600
1	3	8	....	$5\frac{1}{4}$	$2\frac{1}{16}$	1	1.021	.766
1	3	....	12	$5\frac{1}{8}$	$2\frac{1}{16}$	$\frac{7}{8}$	.896	.672
1	3	....	14†	$5\frac{1}{8}$	$2\frac{1}{16}$	$\frac{7}{8}$	.896	.672
$1\frac{1}{8}$	3	7	....	$6\frac{1}{8}$	3	$1\frac{1}{8}$	1.108	.831
$1\frac{1}{8}$	3	....	12	$5\frac{1}{4}$	$2\frac{1}{16}$	1	1.021	.766
$1\frac{1}{4}$	3	7	....	$6\frac{3}{8}$	3	$1\frac{1}{8}$	1.233	.925
$1\frac{1}{4}$	3	....	12	$6\frac{1}{8}$	3	$1\frac{1}{8}$	1.108	.831
$1\frac{3}{8}$	3	6	....	$6\frac{1}{16}$	$3\frac{1}{8}$	$1\frac{1}{8}$	1.305	.979
$1\frac{3}{8}$	3	....	12	$6\frac{3}{8}$	3	$1\frac{1}{8}$	1.233	.925
$1\frac{1}{2}$	3	6	....	7	$3\frac{1}{8}$	$1\frac{1}{4}$	1.430	1.072
$1\frac{1}{2}$	3	....	12	$6\frac{1}{16}$	$3\frac{1}{8}$	$1\frac{1}{8}$	1.305	.979

†NS-UNS