



## Torque Cut High Performance Taps Technical Information

- RedLine Torque Cut High Performance Taps give you greater performance when tapping Steel Alloys, Stainless Steels, Titanium and a variety of other Steels with a maximum Rc of 32.
- Made from High Vanadium Powdered Metal, Torque Cut Taps provide the right combination of strength and abrasion resistance, which gives you increased speeds, while achieving longer tool life and a lower cost per thread.
- High Performance Taps found on pages 192-195.

High Performance Taps Speeds	
Workpiece Material	Speed (SFM)
<b>Non-Ferrous Materials</b>	
Aluminum	75-115
Brass/Bronze	50-70
Copper/Copper Alloys	40-65
Plastics	50-70
<b>Cast Iron</b>	
Malleable	45-70
Ductile	25-50
<b>Steels</b>	
Low Carbon Steels	45-75
Medium Alloy Steels 200, 250, 300	20-35
High Strength Steels	15-35
<b>Stainless Steels</b>	
PH Series	15-30
Austenitic 200,302, 303, 304, 304(L), 316(L)	15-30
Martensitic 403,410,416,420,440	20-35
<b>High Temp Alloys</b>	
Nickel Base Inconel 601,625,718, Waspalloy, Hastelloy	5-20
Cobalt Base Stellite, Haynes 25	15-30
Iron Base Incolloy 800-802, Haynes 556	15-30
<b>Titanium</b>	
Commercially Pure	30-60
6AL4V, 6AL6V Annealed	10-20
6AL4V, 6AL6V Treated	5-10

**NOTES:** Speeds listed are estimated and will vary by application.



## Tap Drill Chart

### Metric Tap Drill Size (Recommended Drill Sizes Suitable for 6H Tolerance)

Tap Size	Cutting Tap Drill Size	Roll Form Tap Drill Size	Tap Size	Cutting Tap Drill Size	Roll Form Tap Drill Size	Tap Size	Cutting Tap Drill Size
M1.6 x 0.35	1.25MM	—	M10 x 1.5	8.5MM	9.20MM	M24 x 3	53/64
M1.8 X 0.35	1.45 MM	—	M10 x 1.25	8.75MM	U	M24 x 2	22MM
M2 x 0.4	1.60MM	—	M12 x 1.75	13/32	7/16	M27 x 3	24MM
M2.2 x 0.45	1.75MM	—	M12 x 1.25	10.75MM	.447*	M27 x 2	63/64
M2.5 x 0.45	2.05MM	—	M14 x 2	12MM	13MM	M30 x 3.5	1-3/64*
M3 x 0.5	2.5MM	7/64	M14 x 1.5	12.5MM	13.20MM	M30 x 2	1-7/64*
M3.5 x .06	2.9MM	3.2MM	M16 x 2	14MM	15MM	M33 x 3.5	1-11/64*
M4 x 0.7	3.3MM	#27	M16 x 1.5	14.5MM	15.25MM	M33 x 2	31MM*
M4.5 x 0.75	3.75MM	4.10MM	M18 x 1.5	15.5MM	16.25MM	M36 x 4	32MM*
M5 x 0.8	#19	4.60MM	M18 x 1.5	16.5MM	17.25MM	M36 x 3	33MM*
M6 x 1	5MM	5.50MM	M20 x 2.5	17.5MM	47/64	M39 x 4	35MM*
M7 x 1	5MM	6.50MM	M20 x 1.5	18.5MM	.757*	M39 x 3	36MM*
M8 x 1.25	H	L	M22 x 2.5	19.5MM	—	—	—
M8 x 1	J	7.50MM	M22 x 1.5	20.5MM	—	—	* Reaming Recommended

### Machine Screw Sizes NC & NF

### Fractional Sizes NC & NF

Nom. Size Tap	Recommended Tap Drill		Probable Hole Size	Actual % Thread	Nom. Size Tap	Recommended Tap Drill		Probable Hole Size	Actual % Thread
	Drill	Decimal				Drill	Decimal		
0-80	3/64	.0469	.0484	71	1/4-28	3	.2130	.2168	72
1-64	53	.0595	.0610	59	5/16-18	F	.2570	.2608	72
1-72	53	.0595	.0610	67	5/16-24	I	.2720	.2761	67
2-56	50	.0700	.0717	62	3/8-16	5/16	.3125	.3169	72
2-64	50	.0700	.0717	70	3/8-24	Q	.3320	.3364	71
3-48	47	.0785	.0804	69	7/16-14	U	.3680	.3726	70
3-56	46	.0810	.0829	69	7/16-20	W	.3860	.3906	72
4-40	43	.0890	.0910	65	1/2-13	27/64	.4219	.4266	73
4-48	42	.0935	.0955	61	1/2-20	29/64	.4531	.4578	65
5-40	39	.0995	.1018	71	9/16-12	31/64	.4844	.4892	68
5-44	38	.1015	.1038	72	9/16-18	33/64	.5156	.5204	58
6-32	36	.1065	.1091	71	5/8-11	17/32	.5313	.53620	75
6-40	33	.1130	.1156	69	5/8-18	37/64	.5781	.5831	58
8-32	29	.1360	.1389	62	3/4-10	21/32	.6562	.6613	68
8-36	29	.1360	.1389	70	3/4-16	11/16	.6875	.69250	71
10-24	25	.1495	.1527	69	7/8-9	49/64	.7656	.7708	72
10-32	21	.1590	.1622	68	7/8-14	13/16	.8125	.8177	62
12-24	17	.1730	.1765	73	1-8	7/8	.8750	.8809	73
12-28	15	.1800	.1835	70	1-12	59/64	.9219	.9279	67
1/4-20	7	.2010	.2048	70	1-14	15/16	.9375	.9435	61

### Taper Pipe Taps

### Roll Form Taps - App. 65% Thread

Nom. Size	Tap Drill		Tap	Drill	Tap	Drill
	NPT	NPTF				
1/16-27	D	C	0-80	54	12-28	8
1/8-27	Q	Q	1-64	1.65MM	1/4-20	1
1/4-18	7/16	7/16	1-72	1.7MM	1/4-28	A
3/8-18	9/16	9/16	2-56	5/64	5/16-18	7.3MM
1/2-14	45/64	45/64	2-64	2MM	5/16-24	M
3/4-14	29/32	29/32	3-48	43	3/8-16	8.8MM
1 - 11-1/2	1-9/64	1-9/64	3-56	2.3MM	3/8-24	T
1-1/4 - 11-1/2	1-31/64	1-31/64	4-40	39	7/16-14	Y
1-1/2 - 11-1/2	1-47/64	1-23/32	4-48	2.6MM	7/16-20	10.5MM
2 - 1-1/2	2-13/64	2-3/16	5-40	33	1/2-13	11.8MM
2-1/2 - 8	2-5/8	2-39/64	5-44	2.9MM	1/2-20	12.0MM
3-8	3-1/4	3-15/64	6-32	1/8	9/16-12	17/32
—	—	—	6-40	3.2MM	9/16-18	13.5MM
—	—	—	8-32	25	5/8-11	14.75MM
—	—	—	8-36	24	5/8-18	15.25MM
—	—	—	10-24	11/64	3/4-10	45/64
—	—	—	10-32	16	3/4-16	23/32
—	—	—	12-24	5MM	—	—

Taps



General Purpose & Other Taps Speeds	
Workpiece Material	Speed (SFM)
<b>Non-Ferrous Materials</b>	
Aluminum	70-90
Brass/Bronze	60-100
Copper/Copper Alloys	60-80
Plastics	50-70
<b>Cast Iron</b>	
Malleable	30-60
Ductile	15-30
<b>Steels</b>	
Low Carbon Steels	20-40
Medium Alloy Steels 200, 250, 300	20-30
High Strength Steels	15-25
<b>Stainless Steels</b>	
PH Series	10-20
Austenitic 200,302, 303, 304, 304(L), 316(L)	10-20
Martensitic 403,410,416,420,440	10-20
<b>High Temp Alloys</b>	
Nickel Base Inconel 601, 625, 718, Waspalloy, Hastelloy	10-25
Cobalt Base Stellite, Haynes 25	10-25
Iron Base Incolloy 800-802, Haynes 556	10-25
<b>Titanium</b>	5-15

**NOTES:** Speeds listed are estimated and will vary by application.



## Machine Screw Taps (NC & NF) Dimensions

Size	OAL	Thread Length	Square Length	Shk ø	Square
#0 (.060)	1-5/8	5/16	3/16	.141	.110
#1 (.073)	1-11/16	3/8	3/16	.141	.110
#2 (.066)	1-3/4	7/16	3/16	.141	.110
#3 (.099)	1-13/16	1/2	3/16	.141	.110
#4 (.112)	1-7/8	9/16	3/16	.141	.110
#5 (.125)	1-15/16	5/8	3/16	.141	.110
#6 (.138)	2	11/16	3/16	.141	.110
#8 (.164)	2-1/8	3/4	1/4	.168	.131
#10 (.190)	2-3/8	7/8	1/4	.194	.152
#12 (.216)	2-3/8	15/16	9/32	.220	.165

## Fractional Size Taps (NC & NF) Dimensions

Size	OAL	Thread Length	Square Length	Shk ø	Square
1/4	2-1/2	1	5/16	.255	.191
5/16	2-23/32	1-1/8	3/8	.318	.238
3/8	2-15/16	1-1/4	7/16	.381	.286
7/16	3-5/32	1-7/16	13/32	.323	.242
1/2	3-3/8	1-21/32	7/16	.367	.275
9/16	3-19/32	1-21/32	1/2	.429	.322
5/8	3-13/16	1-13/16	9/16	.480	.360
11/16	4-1/32	1-13/16	5/8	.542	.406
3/4	4-1/4	2	11/16	.590	.442
7/8	4-11/16	2-7/32	3/4	.697	.523
1	5-1/8	2-1/2	13/16	.800	.600
1-1/8	5-7/16	2-9/16	7/8	.896	.672
1-1/4	5-3/4	2-9/16	1	1.021	.766
1-3/8	6-1/16	3	1-1/16	1.108	.831
1-1/2	6-3/8	3	1-1/8	1.233	.925

## Small Shank Extension Taps Dimensions

Size	NC/NF	Thread Length	Square Length	Shk ø	Square
6 - 32	NC	11/16	3/16	.097	.073
8 - 32	NC	3/4	1/4	.123	.092
10 - 24	NC	7/8	1/4	.136	.102
10 - 32	NF	7/8	1/4	.136	.102
1/4 - 20	NC	1	5/16	.185	.139
1/4 - 28	NF	1	5/16	.185	.139
5/16 - 18	NC	1-1/8	3/8	.240	.180
5/16 - 24	NF	1-1/8	3/8	.240	.180
3/8 - 16	NC	1-1/4	7/16	.275	.206
3/8 - 24	NF	1-1/4	7/16	.275	.206
7/16 - 14	NC	1-7/16	13/32	.323	.242
7/16 - 20	NF	1-7/16	13/32	.323	.242
1/2 - 13	NC	1-21/32	7/16	.367	.275
1/2 - 20	NF	1-21/32	7/16	.367	.275
5/8 - 11	NC	1-13/16	9/16	.480	.360
5/8 - 18	NF	1-13/16	9/16	.480	.360
3/4 - 10	NC	2	11/16	.590	.442
3/4 - 16	NF	2	11/16	.590	.442

## Pulley Taps Dimensions

Size	Thread Length	Square Length	Shk ø	Square	Neck Length	Ground Length
1/4	1	5/16	.255	.191	3/8	1-1/2
5/16	1-1/8	3/8	.318	.238	3/8	1-9/16
3/8	1-1/4	7/16	.381	.286	3/8	1-5/8
7/16	1-7/16	1/2	.444	.333	7/16	1-11/16
1/2	1-21/32	9/16	.507	.380	1/2	1-11/16
5/8	1-13/16	11/16	.633	.475	5/8	2
3/4	2	3/4	.759	.569	3/4	2-1/4

See page 205 for overall lengths available.

## Pipe Taps, Straight & Taper (NC & NF) Dimensions

Size	OAL	Thread Length	Square Length	Shk ø	Square
1/16 - 27	2-1/8	11/16	3/8	.3125	.234
1/8 - 27	2-1/8	3/4	3/8	.3125(SS)	.234
1/8 - 27	2-1/8	3/4	3/8	.4375(LS)	.328
1/4 - 18	2-7/16	1-1/16	7/16	.5625	.421
3/8 - 18	2-9/16	1-1/16	1/2	.7000	.531
1/2 - 14	3-1/8	1-3/8	5/8	.6875	.515
3/4 - 14	3-1/4	1-3/8	11/16	.9063	.679
1 - 11-1/2	3-3/4	1-3/4	13/16	1.1250	.843
1-1/4 - 11-1/2	4	1-3/4	15/16	1.3125	.984
1-1/2 - 11-1/2	4-1/4	1-3/4	1	1.5000	1.125
2 - 11-1/2	4-1/2	1-3/4	1-1/8	1.8750	1.406

## Metric Taps Dimensions

Size	OAL	Thread Length	Square Length	Shk ø	Square	Inch Blank
M1.6 x .35	1-5/8	5/16	3/16	.141	.110	#0
M2 x .40	1-3/4	7/16	3/16	.141	.110	#2
M2.5 x .45	1-13/16	1/2	3/16	.141	.110	#3
M3 x .50	1-15/16	5/8	3/16	.141	.110	#5
M3.5 x .60	2	11/16	3/16	.141	.110	#6
M4 x .70	2-1/8	3/4	1/4	.168	.131	#8
M4.5 x .75	2-3/8	7/8	1/4	.194	.152	#10
M5 x .80	2-3/8	7/8	1/4	.194	.152	#10
M6 x 1	2-1/2	1	5/16	.255	.191	1/4
M6.3 x 1	2-1/2	1	5/16	.255	.191	1/4
M7 x 1	2-23/32	1-1/8	3/8	.318	.238	5/16
M8 x 1.25	2-23/32	1-1/8	3/8	.318	.238	5/16
M10 x 1.50	2-15/16	1-1/4	7/16	.381	.286	3/8
M12 x 1.75	3-3/8	1-21/32	7/16	.367	.275	1/2
M14 x 2	3-19/32	1-21/32	1/2	.429	.322	9/16
M16 x 2	3-13/16	1-13/16	9/16	.480	.360	5/8
M18 x 2.50	4-1/32	1-13/16	5/8	.542	.406	11/16
M20 x 2.50	4-15/32	2	11/16	.652	.489	13/16
M24 x 3	4-29/32	2-7/32	3/4	.760	.570	15/16
M30 x 3.50	5-7/16	2-9/16	1	1.021	.766	1-3/16
M36 x 4	6-1/16	3	1-1/8	1.233	.925	1-7/16



Taps