Tap Information and Tap/Drill Size Reference Charts

TAP TYPES

Spiral Point Gun® Taps

An angular point shears and shoots chips out ahead of the tap which eliminates the flutes from clogging. For use in through holes and holes two diameters deeper than the required thread length.

Spiral Flute Taps

Lifting action removes chips from threaded hole. For use in blind hole tapping.

Hand Taps

Have straight flutes and are used for hand and machine threading.

Pipe Taps

Used for internal threading of pipes, pipe fittings, and holes.

MATERIALS AND SURFACE COATINGS/TREATMENTS

Carbon Steel

Ideal for jobs that do not require the accuracy of high speed steel taps or heat and abrasion resistance, such as some hand tapping applications. Not designed to cut new threads.

High Speed Steel

Use for a variety of applications on ferrous and nonferrous materials. Adds abrasion and heat resistance for longer tap life. Better chip removal and coolant flow with closer tolerance pitch diameter size.

Steam Oxide Coated

Steam oxide treatment provides increased lubricity and is applied primarily to prevent galling and loading in steels. Ideal for tapping a variety of ferrous materials.

TiN Coated

Titanium nitride coating improves tap life and may be used for faster cutting speeds. For use with a variety of ferrous and nonferrous materials.

TiCN Coated

Titanium carbonitride coating enables higher tapping speeds, increased tool life, and high wear resistance in abrasive materials. Appropriate for a variety of ferrous materials.

TiAlN Coated

Addition of aluminum reduces friction and increases the coating oxidation temperature, resulting in increased resistance to heat and oxidation wear. Suited for high speed/high heat applications.

Modified TiAlN Coated

Modified coating designed for increased resistance to heat and oxidation wear compared to standard TiAlN.

CrN Coated

Extremely high surface lubricity makes this coating ideal for nonferrous materials. Aluminum and copper alloys tend to adhere to tool when heat is generated; this coating negates the effects of heat by reducing the amount of friction caused when these materials are being machined, while adding increased hardness.

FIREX® Coated

Multi-layer TiN/TiAlN PVD coating designed for drill surface hardness to over 90 Rc. Offers the application versatility of TiN, the heat resistance of TiAlN, and the shock resistance of TiCN.

CHAMFERS

Reduced thread height at the front of tap which guides tap into hole.

Taper

Has 7 to 10 chamfered threads. Commonly used in through holes.

Plug

Has 3 to 5 chamfered threads. For use in through holes and blind holes with adequate space for chips to accumulate.

Bottoming

Has 1 to 2 chamfered threads. For use in threading near the bottom of a blind hole.

Modified Bottom

Has 2.5 to 3 chamfered threads. For use in through holes and blind holes.

THREAD TYPES

NF — American National Fine Thread Series

NC — American National Coarse Thread Series

UNC — Unified Coarse Thread Series

UNF — Unified Fine Thread Series

UNS — Unified Thread Special

PITCH DIAMETER LIMITS

A letter followed by a number which shows the tolerance of pitch diameter over the basic pitch diameter.

H1	+0.0005"
H2	+0.0005" to +0.0010"
H3	+0.0010" to +0.0015"
H4	+0.0015" to +0.0020"
H5	+0.0020" to +0.0025"
H6	+0.0025" to +0.0030"
H7	+0.0030" to +0.0035"

HAND AND GUN® TAPS – INCH

Tap Size & Pitch	Pitch Series	Drill Size	Decimal Equivalent
Machine Screw Threads			
0-80	NF	3/64	0.0469
1-64	NC	53	0.0595
1-72	NF	53	0.0595
2-56	NC	50	0.0700
2-64	NF	50	0.0700
3-48	NC	47	0.0785
3-56	NF	46	0.0810
4-40	NC-UNC	43	0.0890
4-48	NF	42	0.0935
5-40	NC	38	0.1015
5-44	NF	37	0.1040
6-32	NC-UNC	36	0.1065
6-40	NF	33	0.1130
8-32	NC-UNC	29	0.1360
8-36	NF	29	0.1360
10-24	NC-UNC	26	0.1470
10-32	NF-UNF	21	0.1590
12-24	NC	16	0.1770
12-28	NF-UNF	15	0.180

Tap Size & Pitch	Drill Size	Decimal Equivalent
National & Unified Coarse Threads		
1/4-20	7	0.2010
5/16-18	F	0.2570
3/8-16	5/16	0.3125
7/16-14	U	0.3680
1/2-13	27/64	0.4219
9/16-12	31/64	0.4844
5/8-11	17/32	0.5312
3/4-10	21/32	0.6562
7/8-9	49/64	0.7656
1-8	7/8	0.8750
1⅛-7	63/64	0.9844
1¼-7	1 7/64	1.1094
1⅜-6	1 7/32	1.2188
1½-6	1 11/32	1.3438
1¾-5	1 9/16	1.5630
2-4½	1 25/32	1.7810
National & Unified Fine Threads		
1/4-28	3	0.2130
5/16-24	I	0.2720
3/8-24	Q	0.3320
7/16-20	25/64	0.3906
1/2-20	29/64	0.4531
9/16-18	33/64	0.5156
5/8-18	37/64	0.5781
3/4-16	11/16	0.6875
7/8-14	13/16	0.8125
1-12	59/64	0.9219
1⅛-12	1-3/64	1.0469
1¼-12	1-11/64	1.1719
1⅜-12	1-19/64	1.2969
1½-12	1-27/64	1.4219
National Special		
1-14	15/16	0.9380

HAND AND GUN® TAPS – METRIC

Tap Size & Pitch	Drill Size	Decimal Equivalent
M1.6 x 0.35	1.25	0.0492
M1.8 x 0.35	1.45	0.0571
M2 x 0.40	1.6	0.0630
M2.2 x 0.45	1.75	0.0689
M2.5 x 0.45	2.05	0.0807
M3 x 0.50	2.5	0.0984
M3.5 x 0.60	2.9	0.1142
M4 x 0.70	3.3	0.1299
M4.5 x 0.75	3.7	0.1457
M5 x 0.80	4.2	0.1654
M6 x 1.00	5	0.1969
M7 x 1.00	6	0.2362
M8 x 1.25	6.7	0.2638
M8 x 1.00	7	0.2756
M10 x 1.50	8.5	0.3346
M10 x 1.25	8.7	0.3425
M12 x 1.75	10.2	0.4016
M12 x 1.25	10.8	0.4252
M14 x 2.00	12	0.4724
M16 x 2.00	14	0.5512
M16 x 1.50	14.5	0.5709
M18 x 2.50	15.5	0.6102
M18 x 1.50	16.5	0.6496
M20 x 2.50	17.5	0.6890
M20 x 1.50	18.5	0.7283
M22 x 2.50	19.5	0.7677
M22 x 1.50	20.5	0.8071
M24 x 3.00	21	0.8268
M24 x 2.00	22	0.8661
M27 x 3.00	24	0.9449
M27 x 2.00	25	0.9843
M30 x 3.50	26.5	1.0433
M30 x 2.00	28	1.1024
M33 x 3.50	29.5	1.1614
M33 x 2.00	31	1.2205
M36 x 4.00	32	1.2598
M36 x 3.00	33	1.2992
M39 x 4.00	35	1.3780
M39 x 3.00	36	1.4173

PIPE TAPS

Nominal Size	NPT & NPTF Without Reamer	NPT & NPTF With Reamer	NPSM	NPSC	NPSF
1/16–27	C (0.242)	A (0.234)	—	1/4	D (0.246)
1/8–27	Q (0.332)	21/64	T (0.358)	Q (0.332)	R (0.339)
1/4–18	7/16	27/64	15/32	7/16	7/16
3/8–18	9/16	9/16	0.603 (special)	37/64	37/64
1/2–14	45/64	11/16	19.0mm	23/32	0.705 (special)
3/4–14	29/32	57/64	61/64	59/64	59/64
1-11½	1 9/64	1⅛	1 13/64	1 5/32	1 5/32
1¼–11½	1 31/64	1 15/32	1 35/64	1½	—
1½–11½	1 23/32	1 45/64	1 25/32	1 47/64	—
2–11½	2 3/16	2 11/64	2¼	2¼	—