

HAND AND MACHINE TAPS



Taper Taps have a lead of six to eight threads and are used as a starting tap in difficult or high precision holes. This general purpose tap is designed for use in medium tensile materials and is for hand use.

Intermediate Taps have a lead of four to five threads and are used in most general purpose applications to cut a thread true to a pre-drilled pilot hole. This general purpose tap is designed for use in medium tensile materials and is for hand or general use.

Bottoming Taps have a lead of two threads and are used to ensure minimum thread run-out when tapping to the bottom of a blind hole. Bottoming Taps are typically preceded by the use of a Taper or Intermediate Tap. This general purpose tap is designed for use in medium tensile materials and is for hand or general use.

MACHINE TAPS



Spiral Point Taps are used for machine tapping blind and through holes where there is sufficient clearance to accommodate chips. Manufactured from super tough HSS-Co this modern design tap uses straight flutes supplemented by angular cutting faces at the point to produce a fine finish on the threads. Shallower flutes achieve a stronger cross section allowing the tap to withstand greater cutting forces.

Spiral Flute Taps are used for machine tapping in all blind hole applications, especially in soft metals that produce long stringy swarf such as aluminium, copper and magnesium. Manufactured from super tough HSS-Co this modern design tap uses the shear action provided by the spiral flutes to draw the swarf out of the hole which minimises swarf clogging when tapping deeper holes.

METRIC COARSE (ISO)

DIA.	PITCH	OAL	DRILL
1.00	x 0.25	38.50	0.75
1.20	x 0.25	38.50	0.95
1.40	x 0.30	40.00	1.10
1.60	x 0.35	41.00	1.25
1.80	x 0.35	41.00	1.45
2.00	x 0.40	41.00	1.60
2.50	x 0.45	44.50	2.05
3.00	x 0.50	48.00	2.50
3.50	x 0.60	50.00	2.90
4.00	x 0.70	53.00	3.30
4.50	x 0.75	53.00	3.70
5.00	x 0.80	58.00	4.20
6.00	x 1.00	66.00	5.00
7.00	x 1.00	66.00	6.00
8.00	x 1.25	72.00	6.80
9.00	x 1.25	72.00	7.80
10.00	x 1.50	80.00	8.50
12.00	x 1.75	89.00	10.20
14.00	x 2.00	95.00	12.00
16.00	x 2.00	102.00	14.00
18.00	x 2.50	112.00	15.50
20.00	x 2.50	112.00	17.50
22.00	x 2.50	118.00	19.50
24.00	x 3.00	130.00	21.00
30.00	x 3.50	138.00	26.50
33.00	x 3.50	151.00	29.50
36.00	x 4.00	162.00	32.00
39.00	x 4.00	170.00	35.00
42.00	x 4.50	170.00	37.50
45.00	x 4.50	187.00	40.50
48.00	x 5.00	187.00	43.00
52.00	x 5.00	200.00	47.00
56.00	x 5.50	200.00	50.50

METRIC FINE (ISO)

DIA.	PITCH	OAL	DRILL
2.00	x 0.45	41.00	1.55
3.00	x 0.35	48.00	2.65
4.00	x 0.50	53.00	4.00
4.50	x 0.50	53.00	4.00
6.00	x 0.75	66.00	5.20
7.00	x 0.75	66.00	6.20
8.00	x 0.75	69.00	7.20
8.00	x 1.00	69.00	7.00
9.00	x 1.00	69.00	8.00
10.00	x 0.75	76.00	9.20
10.00	x 1.00	76.00	9.00
10.00	x 1.25	76.00	8.80
12.00	x 1.00	84.00	11.00
12.00	x 1.25	84.00	10.80
12.00	x 1.50	89.00	10.50
14.00	x 1.00	90.00	13.00
14.00	x 1.25	90.00	12.80
14.00	x 1.50	95.00	12.50
16.00	x 1.00	95.00	15.00
16.00	x 1.25	95.00	14.75
16.00	x 1.50	102.00	14.50
18.00	x 1.00	104.00	17.00
18.00	x 1.25	104.00	16.80
18.00	x 1.50	104.00	16.50
20.00	x 1.50	104.00	18.50
20.00	x 2.00	112.00	18.00
22.00	x 1.50	113.00	20.50
22.00	x 2.00	118.00	20.00
24.00	x 1.50	120.00	22.50
24.00	x 2.00	120.00	22.00
25.00	x 1.50	120.00	23.50
27.00	x 2.00	127.00	25.00
30.00	x 2.00	127.00	28.00
32.00	x 1.50	137.00	30.50

METRIC SPARK PLUG (ISO)

DIA.	PITCH	OAL	DRILL
10.00	x 1.00	76.00	9.00
12.00	x 1.25	84.00	10.80
14.00	x 1.25	90.00	12.80
18.00	x 0.50	104.00	16.50

CONDUIT (ISO)

DIA.	PITCH	OAL	DRILL
16.00	x 1.50	102.00	14.50
20.00	x 1.50	104.00	18.50

OVERSIZE / GALVANISING (ISO)

DIA.	PITCH	OAL	DRILL
10.00	x 1.50 +0.4	80.00	8.90
12.00	x 1.75 +0.4	89.00	10.60
16.00	x 2.00 +0.4	102.00	14.40
20.00	x 2.50 +0.4	112.00	17.90
24.00	x 3.00 +0.4	130.00	21.40

BSF (BRITISH STANDARD FINE)

DIA.	PITCH	OAL	DRILL
3/16	x 32	58.00	4.00
1/4	x 26	66.00	5.30
5/16	x 22	72.00	6.80
3/8	x 20	80.00	8.30
7/16	x 18	85.00	9.70
1/2	x 16	89.00	11.10
5/8	x 14	102.00	14.00
3/4	x 12	112.00	16.75
7/8	x 11	118.00	19.75
1	x 10	130.00	22.75

BSW (BRITISH STANDARD WHITWORTH)

DIA.	PITCH	OAL	DRILL
1/16	x 60	41.00	1.20
3/32	x 48 Whit	44.50	1.85
1/8	x 40	48.00	2.55
5/32	x 32 Whit	53.00	3.20
3/16	x 24	58.00	3.70
7/32	x 24 Whit	62.00	4.50
1/4	x 20	66.00	5.10
5/16	x 18	72.00	6.50
3/8	x 16	80.00	7.90
7/16	x 14	85.00	9.30
1/2	x 12	89.00	10.50
9/16	x 12	95.00	12.10
5/8	x 11	102.00	13.50
3/4	x 10	112.00	16.25
7/8	x 9	118.00	19.25
1	x 8	130.00	22.00
1-1/8	x 7	138.00	24.75
1-1/4	x 7	151.00	28.00
1-3/8	x 6	162.00	30.25
1-1/2	x 6	170.00	33.50
1-3/4	x 5	187.00	39.00
2	x 4.5	200.00	44.50

UNEF (UNIFIED NATIONAL EXTRA FINE)

DIA.	PITCH	OAL	DRILL
1/4	x 32	66.00	5.60
5/16	x 32	69.00	7.20
3/8	x 32	76.00	8.80
1/2	x 28	84.00	11.80
5/8	x 24	95.00	14.75
3/4	x 20	104.00	18.00
1	x 20	120.00	24.20

BSPF (BRITISH STANDARD PIPE G-SERIES)

DIA.	PITCH	OAL	DRILL
1/8	x 28	59.00	8.80
1/4	x 19	67.00	11.80
3/8	x 19	75.00	15.25
1/2	x 14	87.00	19.00
5/8	x 14	91.00	21.00
3/4	x 14	96.00	24.50
7/8	x 14	102.00	28.25
1	x 11	109.00	30.75
1-1/4	x 11	119.00	39.50
1-1/2	x 11	125.00	45.50
1-3/4	x 11	132.00	51.00
2	x 11	140.00	57.00
2-1/4	x 11	142.00	62.70
2-1/2	x 11	153.00	72.10
3	x 11	164.00	84.80

BSPT (BRITISH STANDARD PIPE TAPER)

DIA.	PITCH	OAL	DRILL
1/8	x 28	59.00	8.40
1/4	x 19	67.00	11.20
3/8	x 19	75.00	14.75
1/2	x 14	87.00	18.25
3/4	x 14	96.00	23.75
1	x 11	109.00	30.00
1-1/4	x 11	119.00	38.50
1-1/2	x 11	125.00	44.50
2	x 11	140.00	56.00

NPT (NATIONAL PIPE THREAD TAPERED)

DIA.	PITCH	OAL	DRILL
1/8	x 27	59.00	8.70
1/4	x 18	67.00	11.10
3/8	x 18	75.00	14.50
1/2	x 14	87.00	18.00
3/4	x 14	96.00	23.25
1	x 11.5	109.00	29.00
1-1/4	x 11.5	119.00	38.00
1-1/2	x 11.5	125.00	44.00
2	x 11.5	140.00	56.00

NPSF (DRYSEAL)

DIA.	PITCH	OAL	DRILL
1/8	x 27	59.00	8.70
1/4	x 18	67.00	11.10
3/8	x 18	75.00	14.50
1/2	x 14	87.00	18.00

NPTF (DRYSEAL TAPER)

DIA.	PITCH	OAL	DRILL
1/8	x 27	59.00	8.40
1/4	x 18	67.00	11.10
3/8	x 18	75.00	14.50
1/2	x 14	87.00	18.00

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METRIC Coarse and Fine

Angle of thread is 60°. The crest is flat and the thread has clearance at the root allowing external thread and internal thread to engage well. Larger root radius and lower thread height enable easy screw thread processing and increase thread screw strength. The major diameter of external thread and pitch are specified by a simple numerical value (most commonly measured in millimetres).

BSW British Standard Whitworth

This thread form was developed by Sir Joseph Whitworth in 1841. The thread form has rounded roots and crests and is specified in BS84:1956. The thread angle for BSW is 55° as opposed to 60° in Metric and Unified threads.

BSF British Standard Fine

This thread form was based upon the British Standard Whitworth (BSW) but has a finer thread (more threads per inch for a given diameter). The thread form was first introduced in 1908 and is specified in BS84:1956. When used on external threads this series has greater tensile stress area than coarse threads of the same size. Fine series threads will resist stripping out better than coarse threads in areas where the external and mating internal threads are subjected to loads equal to or greater than the capacity of the screw or bolt. Fine threads are also used where the length of engagement is limited or where wall thickness demands a fine pitch.

UNC Unified National Coarse

This thread form was introduced in 1948 as an attempt to standardise thread forms in the USA, Canada and the UK. The thread profile of UNC is the same as for metric threads and is described in the JIS B0206 standard. The thread is described by its major diameter and the number of threads per inch of length (TPI). This thread series is commonly used in the mass production of bolts, screws and nuts. It is used for threading into lower tensile strength materials (bronze, brass, aluminium and plastics) to obtain the best resistance stripping of the internal thread. It is also used on quick assembly or disassembly or if corrosion or slight damage is possible.

UNF Unified National Fine

This thread form was introduced in 1948 as an attempt to standardise thread forms in the USA, Canada and the UK. The thread profile of UNF is the same as for metric threads and is described in the JIS B0206 standard. The thread is described by its major diameter and the number of threads per inch of length (TPI). When used on external threads this series has greater tensile stress area than coarse threads of the same size. Fine series threads will resist stripping out better than coarse threads in areas where the external and mating internal threads

are subjected to loads equal to or greater than the capacity of the screw or bolt. Fine threads are also used where the length of engagement is limited or where wall thickness demands a fine pitch.

BSPF British Standard Pipe

BSPF (G Series) This series is a pipe thread which is used mainly for mechanical coupling. The angle of thread is mainly 55° however for the US method some threads have a 60° angle. It is specified according to JIS and ISO R228.

BSPT British Standard Pipe Taper

This is based on the Whitworth thread form - a symmetrical V-thread with an angle of 55°. BSPT has been widely adopted internationally for sealing and interconnecting pipe ends by mating an external (male) with an internal (female) thread. The thread diameter increases along the length of the thread allowing the coupled pipes to form a seal when torqued as the flanks of the threads compress against each other. The taper is 1:16, meaning that for each 16 mm increase in the distance from the end, the diameter increases by 1 mm.

NPTF (Dryseal Taper) National Pipe Taper Fuel

NPTF is a semi-compatible variant of NPT, designed to provide a more leak free seal without the use of teflon tape or other sealant compound. NPTF threads are

the same basic shape but with crest and root heights adjusted for an interference fit, eliminating the spiral leakage path.

NPT National Pipe Thread Tapered

NPT is a US standard for tapered threads used to join pipes and fittings. ANSI/ASME standard B1.20.1 covers threads of 60-degree form with flat crests and roots. The taper on NPT threads allows them to form a seal when torqued as the flanks of the threads compress against each other. However a clearance remains between the crests and roots of the threads, resulting in a leakage around this free. This means that NPT fittings must be made leak free with the aid of thread seal tape or a thread sealant compound. For each 12" increase in distance from the end, the diameter increases by 3/4".

NPSF (Dryseal) National Pipe Straight Fuel

Another variation of the Dryseal thread is the NPSF. It is used for internal threads and an NPTF external thread can be screwed into it to provide both a satisfactory mechanical connection and hydraulic seal. A combination of a parallel and tapered thread would not appear to be ideal but it is widely used. Many quick disconnect couplers for example have the NPSF thread and are recommended by the manufacturer for use with NPT and NPTF.

UNC (UNIFIED NATIONAL COARSE)

DIA.	PITCH	OAL	DRILL
5G	x 40	48.00	2.65
6G	x 32	50.00	2.85
8G	x 32	53.00	3.50
10G	x 24	58.00	3.90
12G	x 24	62.00	4.50
3/16	x 24 UNS	58.00	3.70
1/4	x 20	66.00	5.10
5/16	x 18	72.00	6.60
3/8	x 16	80.00	8.00
7/16	x 14	85.00	9.40
1/2	x 13	89.00	10.80
9/16	x 12	95.00	12.20
5/8	x 11	102.00	13.50
3/4	x 10	112.00	16.50
7/8	x 9	118.00	19.50
1	x 8	130.00	22.25
1-1/8	x 7	138.00	25.00
1-1/4	x 7	151.00	28.00
1-1/2	x 6	170.00	34.00
1-3/4	x 5	187.00	39.50
2	x 4.5	200.00	45.00

UNF (UNIFIED NATIONAL FINE)

DIA.		PITCH	OAL	DRILL
4G	x	48	48.00	2.40
5G	x	44	48.00	2.70
6G	x	40	50.00	2.95
8G	x	36	53.00	3.50
10G	x	32	58.00	4.10
12G	x	28	62.00	4.70
3/16	x	32 UNS	58.00	4.00
1/4	x	28	66.00	5.50
5/16	x	24	69.00	6.90
3/8	x	24	76.00	8.50
7/16	x	20	82.00	9.90
1/2	x	20	84.00	11.50
9/16	x	18	90.00	12.90
5/8	x	18	95.00	14.50
3/4	x	16	104.00	17.50
7/8	x	14	113.00	20.40
1	x	12	120.00	23.25
1	x	14 UNS	120.00	23.25
1-1/8	x	12	127.00	26.50
1-1/4	x	12	137.00	29.50
1-1/2	x	12	149.00	36.00