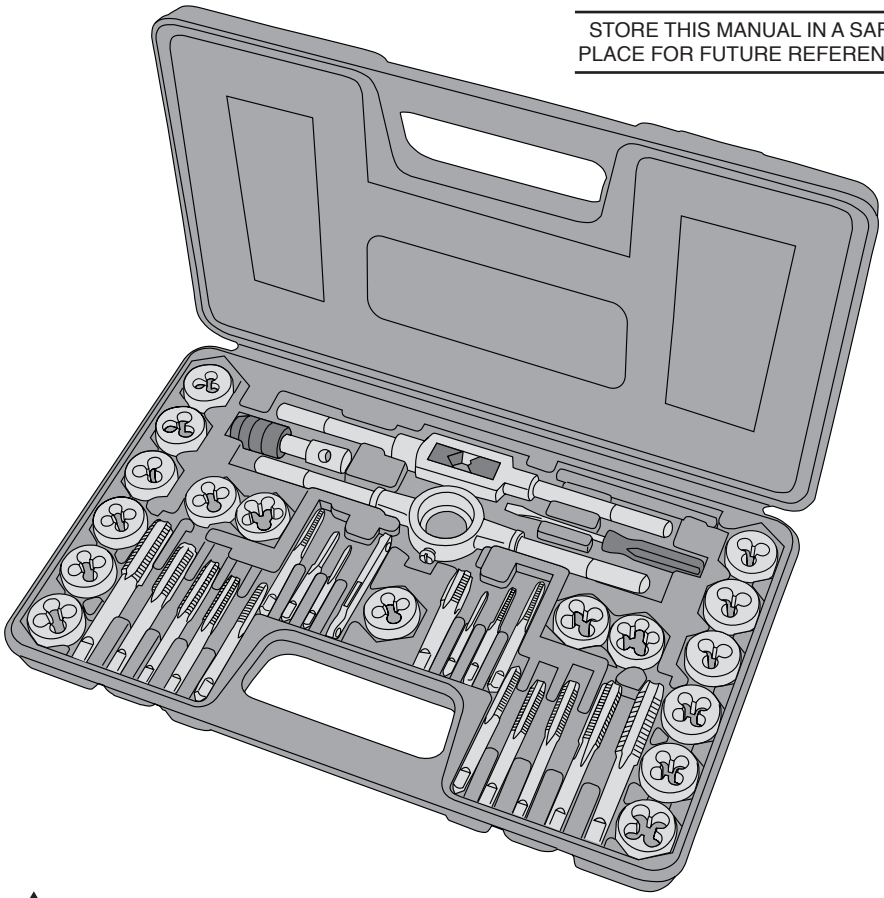
TEKTON®

Model # 7558
7559

39 PC. TAP AND DIE SET

OPERATOR'S MANUAL

STORE THIS MANUAL IN A SAFE PLACE FOR FUTURE REFERENCE



Wear eye protection

Use proper lubrication

WARNING: FOR HAND CUTTING APPLICATIONS ONLY. Do not use for machine cutting. Read operator's manual before use. Cutting threads are sharp. Handle and store with care. Wear impact-resistant protective eyewear in work area at all times. Use proper lubricant for material being cut. Dry cutting of most material will damage cutting threads. Select correct type and size of tap or die for work. Disconnect electric power source before working on or near conductive metal. These tools are not insulated from shock or electrocution.

Questions?
We would like to hear from you.
888-648-8665
support@tektontools.com

Lubrication

Be sure to use the proper lubricant while threading. Lubrication is necessary for accurately formed threads. It also prevents damage to taps and dies, helping to extend tool life. The lubricant should be applied to the cutting edges during the threading operation.

Carbon steel	Petroleum-based or synthetic cutting oil
Alloy steel	Mix of 90% petroleum-based cutting oil and 10% kerosene (or mineral spirits)
Stainless steel	Mix of 90% petroleum-based cutting oil and 10% kerosene (or mineral spirits)
Cast iron	Dry (no lubricant) using air blast to clear chips
Aluminum	Mix of 80% Kerosene (or mineral spirits) and 20% petroleum-based cutting oil
Brass	Kerosene or mineral spirits
Bronze	Mix of 90% Kerosene (or mineral spirits) and 10% petroleum-based cutting oil

Using Taps

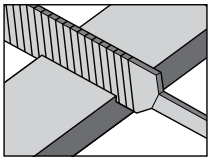
Taps are used to cut threads inside a hole, creating a threaded receiver for a bolt or screw. The taps in this set are called plug taps. They are the most common, general-purpose tap design. They feature a tapered end of 3 to 5 chamfered threads, allowing an easier gradual entry into hole. Bottoming taps (1 to 1-1/2 chamfered threads), used for tapping to the bottom of a blind hole and taper taps (8 to 10 chamfered threads), designed for easiest starting, are both available but not included in this set. These types of taps are generally not needed by the average user.

To properly cut internal threads you will need:

- Tap of correct size
- Tap wrench
- Drill bit of correct size
- Lubricating (cutting) oil
- Material

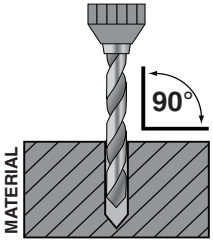
1.) Check Hardness

Do not try to thread hardened metals. Use a file to test the hardness of material. If it cannot be cut by a file, the material is too hard for use with the taps and dies in this set.



2.) Drill

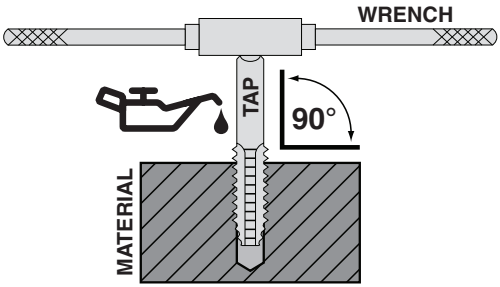
Starting with the proper hole size is very important. An oversized hole will produce poorly formed threads with reduced thread depth. A hole that is too small will make turning tap very difficult and may break tap. Refer to the included Tap Drill Charts for the recommended drill size for each tap size. If possible, drill using a drill press (recommended) or similar machine. Drilling hole by hand may result in wobble that will distort the hole, and affect the performance of tap.

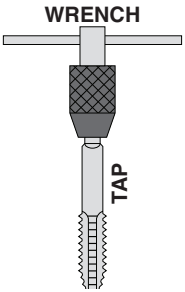


3.) Tap

Insert square end of tap into tap wrench and secure in place. Lubricate cutting edges. Great care must be used when starting the tap into hole. Tap must be held exactly square (90˚) to work piece. Begin by turning tap slowly clockwise. Do not force tap forward into hole. As the tap is turned, it bites into the material, pulling itself forward into hole. For this reason, the only forward pressure needed is naturally generated as a part of turning the tap wrench. Once the tap begins to cut, chips of material are formed between the flutes of tap. These chips must be broken off to relieve pressure against the tap. This is accomplished by momentarily reversing tap direction every 1/4 to 1/2 revolution, depending on the resistance encountered. Continue this alternating pattern of forward and reverse rotation until tap passes through work piece or to desired depth.

Blind hole (does not pass completely through work piece): The starter threads (first 3 to 5 chamfered threads) on these plug taps do not cut full threads. Therefore, when drilling a blind hole, it is necessary to make hole deep enough to allow extra room for falling chips and the starter thread to fully clear threaded section.





TAP DRILL CHART (UNC, UNF)			
COARSE (UNC)		FINE (UNF)	
TAP SIZE	DRILL SIZE (in.)	TAP SIZE	DRILL SIZE (in.)
#0-80	3/64	#1-72	#53
#1-64	#53	#2-64	#50
#2-56	#51	#3-56	#46
#3-48	5/64	#4-48	#42
#4-40	#43	#5-44	#37
#5-40	#39	#6-40	#33
#6-32	#36	#8-36	#29
#8-32	#29	#10-32	#21
#10-24	#25	#12-28	#15
#12-24	#17	1/4-28	#3
1/4-20	#7	5/16-24	I
5/16-18	F	3/8-24	Q
3/8-16	5/16	7/16-20	W
7/16-14	U	1/2-20	29/64
1/2-13	27/64	9/16-18	33/64
9/16-12	31/64	5/8-18	37/64
5/8-11	17/32	3/4-16	11/16
3/4-10	21/32	7/8-14	13/16
7/8-9	49/64	1”-14	15/16
1”-8	7/8	1-1/8-12	1-3/64
1-1/8-7	63/64	1-1/4-12	1-11/64
1-1/4-7	1-7/64	1-1/2-12	1-27/64
1-1/2-6	1-11/32	1-3/4-12	1-43/64
1-3/4-5	1-35/64	2”-12	1-59/64
2”-4-1/2	1-25/32		

PIPE TAPS			
TAP SIZE	DRILL SIZE	DECIMAL EQUIVALENT	THREAD OD MAX.
1/16-27	C	.242	.3125
1/8-27	Q	.332	.405
1/4-18	7/16	.438	.540
3/8-18	9/16	.562	.675
1/2-14	45/64	.703	.840
3/4-14	29/32	.906	1.050
1 - 11-1/2	1-9/64	1.141	1.315

TAP DRILL CHART (Metric)			
COARSE		FINE	
TAP SIZE	DRILL SIZE (mm)	TAP SIZE	DRILL SIZE (mm)
1 x .25	.75	4 x .35	3.6
1.1 x .25	.85	4 x .5	3.5
1.2 x .25	.95	5 x .5	4.5
1.4 x .3	1.1	6 x .5	5.5
1.6 x .35	1.25	6 x .75	5.25
1.7 x .35	1.35	7 x .75	6.25
1.8 x .35	1.45	8 x .5	7.5
2 x .4	1.6	8 x .75	7.25
2.2 x .45	1.75	8 x 1	7
2.5 x .45	2.05	9 x 1	8
3 x .5	2.5	10 x .75	9.25
3.5 x .6	2.9	10 x 1	9
4 x .7	3.3	10 x 1.25	8.75
4.5 x .75	3.75	11 x 1	10
5 x .8	4.2	12 x .75	11.25
6 x 1	5	12 x 1	11
7 x 1	6	12 x 1.5	10.5
8 x 1.25	6.8	14 x 1	13
9 x 1.25	7.8	14 x 1.25	12.8
10 x 1.5	8.5	14 x 1.5	12.5
11 x 1.5	9.5	16 x 1	15
12 x 1.75	10.25	16 x 1.5	14.5
14 x 2	12	18 x 1	17
16 x 2	14	18 x 2	16
18 x 2.5	15.5	20 x 1	19
20 x 2.5	17.5	20 x 1.5	18.5
22 x 2.5	19.5	20 x 2	18
24 x 3	21	22 x 1	21
27 x 3	24	22 x 1.5	20.5
		22 x 2	20
		24 x 1.5	22.5
		24 x 2	22
		26 x 1.5	24.5
		27 x 1.5	25.5
		27 x 2	25

Using Dies

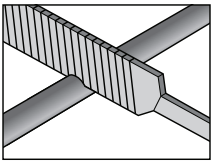
Dies are used to cut threads on the outside of a rod, creating a threaded bolt. The diameter of rod is of great importance. It cannot be larger diameter than die (thread) and preferably .005 - .010" undersized. Oversized rod may damage the die and will make turning the die very difficult. Slightly undersized stock is easier to thread and still furnishes enough thread depth for normal applications.

To properly cut external threads you will need:

- Die of correct size
- Die stock
- Rod of correct diameter
- Lubricating (cutting) oil

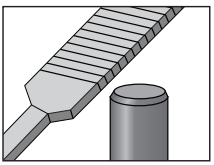
1.) Check Hardness

Do not try to thread hardened metals. Use a file to test the hardness of material. If it cannot be cut by a file, the material is too hard for use with the taps and dies in this set.



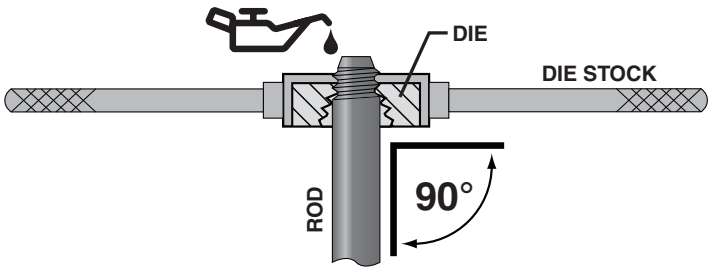
2.) Chamfer

To enable die to start easier and straighter, bevel end of rod. The chamfer can be created by filing or grinding.



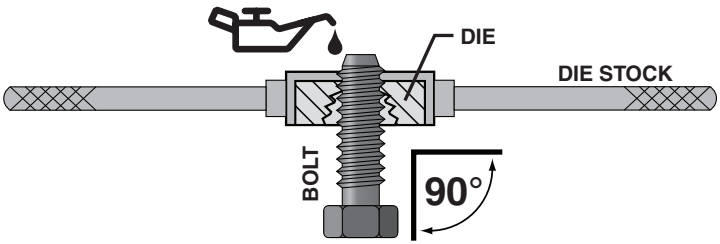
3.) Thread

Secure rod in vise or clamp capable of holding rod and preventing it from spinning. Insert the die into die stock, blank side down. When positioned correctly, the side of die with size markings should be facing you. This is the chamfered side of the die and is used to start threading. Align recess in die with screw in die stock. Tighten screw to secure. Lubricate die threads. Place the die over end of rod, exactly square (90˚) to rod. Start slowly turning clockwise to start threading. Do not force die forward. As die is turned, it bites into material, pulling itself along rod. For this reason, the only forward pressure needed is naturally generated as a part of turning the die stock. Once the die begins to cut, chips of material are formed between the flutes of die. These chips must be broken off to relieve pressure against the die. This is accomplished by momentarily reversing die direction every 1/4 to 1/2 revolution, depending on the resistance encountered. Continue this alternating pattern of forward and reverse rotation until desired thread length is completed.



Chasing Threads

Most threads that have become lightly damaged or rusted can be repaired. Use included thread gauge to measure thread size. Choose correct tap or die size. Follow original instructions for threading using either tap or die. Work slowly, make sure that the tap/die is following existing threads, and is not wandering. Threads will be ruined if tap/die begins to cut new material or becomes cross threaded.



UNIFIED SCREW THREADS							
EXTERNAL (CLASS 2A)					INTERNAL (CLASS 2B)		
THREAD SIZE	ALLOWANCE	MAJOR DIAMETER MAX.	MAJOR DIAMETER MIN	MINOR DIAMETER	MINOR DIAMETER MAX	MINOR DIAMETER MIN	MAJOR DIAMETER MIN
4-40 UNC	0.0008	0.1112	0.1061	0.0805	0.0849	0.0939	0.1120
6-32 UNC	0.0008	0.1372	0.1312	0.0989	0.104	0.114	0.1380
8-32 UNC	0.0009	0.1631	0.1571	0.1248	0.130	0.139	0.1640
10-24 UNC	0.0010	0.1890	0.1818	0.1379	0.145	0.156	0.1900
10-32 UNF	0.0009	0.1891	0.1831	0.1508	0.156	0.164	0.1900
12-24 UNC	0.0010	0.2150	0.2078	0.1639	0.171	0.181	0.2160
1/4-20 UNC	0.0011	0.2489	0.2408	0.1876	0.196	0.207	0.2500
1/4-28 UNF	0.0010	0.2490	0.2425	0.2052	0.211	0.220	0.2500
5/16-18 UNC	0.0012	0.3113	0.3026	0.2431	0.252	0.265	0.3125
5/16-24-UNF	0.0011	0.3114	0.3042	0.2603	0.267	0.277	0.3125
3/8-16 UNC	0.0013	0.3737	0.3643	0.2970	0.307	0.321	0.3750
3/8-24 UNF	0.0011	0.3739	0.3667	0.3228	0.330	0.340	0.3750
7/16-14 UNC	0.0014	0.4361	0.4258	0.3485	0.360	0.376	0.4375
7/16-20 UNF	0.0013	0.4362	0.4281	0.3749	0.383	0.395	0.4375
1/2-13 UNC	0.0015	0.4985	0.4876	0.4041	0.417	0.434	0.5000
1/2-20 UNF	0.0013	0.4987	0.4906	0.4374	0.446	0.457	0.5000
9/16-12 UNC	0.0016	0.5609	0.5495	0.4587	0.472	0.490	0.5625
9/16-18 UNF	0.0014	0.5611	0.5524	0.4929	0.502	0.515	0.5625
5/8-11 UNC	0.0016	0.6234	0.6113	0.5119	0.527	0.546	0.6250
5/8-18 UNF	0.0014	0.6236	0.6105	0.5554	0.565	0.578	0.6250
3/4-10 UNC	0.0018	0.7482	0.7353	0.6255	0.642	0.663	0.7500
3/4-16 UNF	0.0015	0.7485	0.7391	0.6718	0.682	0.696	0.7500

METRIC SCREW THREADS									
EXTERNAL (CLASS 6G)						INTERNAL (CLASS 6H)			
THREAD SIZE	OD (in inches)	MAJOR DIAMETER MAX	MAJOR DIAMETER MIN	MINOR DIAMETER MAX	MINOR DIAMETER MIN	MINOR DIAMETER MIN	MINOR DIAMETER MAX	MAJOR DIAMETER MIN	MAJOR DIAMETER MAX
M1.6 x 0.35	0.0629	1.581	1.496	1.202	1.075	1.221	1.321	1.600	1.736
M2 x 0.4	0.0787	1.981	1.886	1.548	1.408	1.567	1.679	2.000	2.148
M2.5 x 0.45	0.0984	2.480	2.380	1.993	1.840	2.013	2.138	2.500	2.66
M3 x 0.5	0.1181	2.980	2.874	2.439	2.272	2.459	2.599	3.000	3.172
M3.5x 0.6	0.1378	3.479	3.354	2.829	2.635	2.850	3.010	3.500	3.699
M4 x 0.7	0.1575	3.978	3.838	3.220	3.002	3.242	3.422	4.000	4.219
M5 x 0.8	0.1968	4.976	4.826	4.110	3.869	4.134	4.334	5.000	5.24
M6 x 1	0.2362	5.974	5.794	4.891	4.596	4.917	5.153	6.000	6.294
M8 x 1.25	0.3149	7.972	7.760	6.619	6.272	6.647	6.912	8.000	8.34
M8 x 1	0.3149	7.974	7.794	6.891	6.596	6.917	7.153	8.000	8.294
M10 x 1.5	0.3937	9.968	9.732	8.344	7.938	8.376	8.676	10.000	10.396
M10 x 1.25	0.3937	9.972	9.760	8.619	8.272	8.647	8.912	10.000	10.34
M10 x 0.75	0.3937	9.978	9.838	9.166	8.929	9.188	9.378	10.000	10.24
M12 x 1.75	0.4724	11.966	11.701	10.072	9.601	10.106	10.441	12.000	12.453
M12 x 1.5	0.4724	11.968	11.732	10.344	9.930	10.376	10.676	12.000	12.406
M12 x 1.25	0.4724	11.972	11.760	10.619	10.258	10.647	10.912	12.000	12.36
M12 x 1	0.4724	11.974	11.794	10.891	10.590	10.917	11.153	12.000	12.304
M14 x 2	0.5511	13.962	13.682	11.797	11.271	11.835	12.210	14.000	14.501
M14 x 1.5	0.5511	13.968	13.732	12.344	11.930	12.376	12.676	14.000	14.406
M15 x 1	0.5905	14.974	14.794	13.891	13.590	13.917	14.153	15.000	15.304
M16 x 2	0.6299	15.962	15.682	13.797	13.271	13.835	14.210	16.000	16.501
M16 x 1.5	0.6299	15.968	15.732	14.344	13.930	14.376	14.676	16.000	16.406
M17 x 1	0.6693	16.974	16.794	15.891	15.590	15.917	16.153	17.000	17.304
M18 x 1.5	0.7087	17.968	17.732	16.344	15.930	16.376	16.676	18.000	18.406
M20 x 2.5	0.7874	19.958	19.623	17.252	16.624	17.294	17.744	20.000	20.585

DRILL SIZE CHART

DRILL SIZE	DIA. (INCH)	DIA. (METRIC)
2.5 mm	0.0984	2.5000
#39	0.0995	2.5273
#38	0.1015	2.5781
2.6 mm	0.1024	2.6000
#37	0.1040	2.6416
2.7 mm	0.1063	2.7000
#36	0.1065	2.7051
7/64 in	0.1094	2.7781
#35	0.1100	2.7940
2.8 mm	0.1102	2.8000
#34	0.1110	2.8194
#33	0.1130	2.8702
2.9 mm	0.1142	2.9000
#32	0.1160	2.9464
3 mm	0.1181	3.0000
#31	0.1200	3.0480
3.1 mm	0.1221	3.1000
1/8 in	0.1250	3.1750
3.2 mm	0.1260	3.2000
#30	0.1285	3.2639
3.3 mm	0.1299	3.3000
3.4 mm	0.1339	3.4000
#29	0.1360	3.4544
3.5 mm	0.1378	3.5000
#28	0.1405	3.5687
9/64 in	0.1406	3.5719
3.6 mm	0.1417	3.6000
#27	0.1440	3.6576
3.7 mm	0.1457	3.7000
#26	0.1470	3.7338
#25	0.1495	3.7973
3.8 mm	0.1496	3.8000
#24	0.1520	3.8608
3.9 mm	0.1535	3.9000
#23	0.1540	3.9116
5/32 in	0.1563	3.9688
#22	0.1570	3.9878
4 mm	0.1575	4.0000
#21	0.1590	4.0386
#20	0.1610	4.0894

DRILL SIZE	DIA. (INCH)	DIA. (METRIC)
4.1 mm	0.1614	4.1000
4.2 mm	0.1654	4.2000
#19	0.1660	4.2164
4.3 mm	0.1693	4.3000
#18	0.1695	4.3053
11/64 in	0.1719	4.3656
#17	0.1730	4.3942
4.4 mm	0.1732	4.4000
#16	0.1770	4.4958
4.5 mm	0.1772	4.5000
#15	0.1800	4.5720
4.6 mm	0.1811	4.6000
#14	0.1820	4.6228
#13	0.1850	4.6990
4.7 mm	0.1850	4.7000
3/16 in	0.1875	4.7625
4.8 mm	0.1890	4.8000
#12	0.1890	4.8006
#11	0.1910	4.8514
4.9 mm	0.1929	4.9000
#10	0.1935	4.9149
#9	0.1960	4.9784
5 mm	0.1969	5.0000
#8	0.1990	5.0546
5.1 mm	0.2008	5.1000
#7	0.2010	5.1054
13/64 in	0.2031	5.1594
#6	0.2040	5.1816
5.2 mm	0.2047	5.2000
#5	0.2055	5.2197
5.3 mm	0.2087	5.3000
#4	0.2090	5.3086
5.4 mm	0.2126	5.4000
#3	0.2130	5.4102
5.5 mm	0.2165	5.5000
7/32 in	0.2188	5.5563
5.6 mm	0.2205	5.6000
#2	0.2210	5.6134
5.7 mm	0.2244	5.7000
#1	0.2280	5.7912

DRILL SIZE	DIA. (INCH)	DIA. (METRIC)
5.8 mm	0.2284	5.8000
5.9 mm	0.2323	5.9000
A	0.2340	5.9436
15/64 in	0.2344	5.9531
6 mm	0.2362	6.0000
B	0.2380	6.0452
6.1 mm	0.2402	6.1000
C	0.2420	6.1468
6.2 mm	0.2441	6.2000
D	0.2460	6.2484
6.3 mm	0.2480	6.3000
1/4 in	0.2500	6.3500
E	0.2500	6.3500
6.4 mm	0.2520	6.4000
6.5 mm	0.2559	6.5000
F	0.2570	6.5278
6.6 mm	0.2598	6.6000
G	0.2610	6.6294
6.7 mm	0.2638	6.7000
17/64 in	0.2656	6.7469
H	0.2660	6.7564
6.8 mm	0.2677	6.8000
6.9 mm	0.2717	6.9000
I	0.2720	6.9088
7 mm	0.2756	7.0000
J	0.2770	7.0358
7.1 mm	0.2795	7.1000
K	0.2810	7.1374
9/32 in	0.2813	7.1438
7.2 mm	0.2835	7.2000
7.3 mm	0.2874	7.3000
L	0.2900	7.3660
7.4 mm	0.2913	7.4000
M	0.2950	7.4930
7.5 mm	0.2953	7.5000
19/64 in	0.2969	7.5406
7.6 mm	0.2992	7.6000
N	0.3020	7.6708
7.7 mm	0.3032	7.7000
7.8 mm	0.3071	7.8000

DRILL SIZE CHART

DRILL SIZE	DIA. (INCH)	DIA. (METRIC)
7.9 mm	0.3110	7.9000
5/16 in	0.3125	7.9375
8 mm	0.3150	8.0000
O	0.3160	8.0264
8.1 mm	0.3189	8.1000
8.2 mm	0.3228	8.2000
P	0.3230	8.2042
8.3 mm	0.3268	8.3000
21/64 in	0.3281	8.3344
8.4 mm	0.3307	8.4000
Q	0.3320	8.4328
8.5 mm	0.3347	8.5000
8.6 mm	0.3386	8.6000
R	0.3390	8.6106
8.7 mm	0.3425	8.7000
11/32 in	0.3438	8.7313
8.8 mm	0.3465	8.8000
S	0.3480	8.8392
8.9 mm	0.3504	8.9000
9 mm	0.3543	9.0000
T	0.3580	9.0932
9.1 mm	0.3583	9.1000
23/64 in	0.3594	9.1281
9.2 mm	0.3622	9.2000
9.3 mm	0.3661	9.3000
U	0.3680	9.3472
9.4 mm	0.3701	9.4000
9.5 mm	0.3740	9.5000
3/8 in	0.3750	9.5250
V	0.3770	9.5758
9.6 mm	0.3780	9.6000
9.7 mm	0.3819	9.7000
9.8 mm	0.3858	9.8000
W	0.3860	9.8044
9.9 mm	0.3898	9.9000
25/64 in	0.3906	9.9219
10 mm	0.3937	10.0000
X	0.3970	10.0838
Y	0.4040	10.2616
13/32 in	0.4063	10.3188

DRILL SIZE	DIA. (INCH)	DIA. (METRIC)
Z	0.4130	10.4902
10.5 mm	0.4134	10.5000
27/64 in	0.4219	10.7156
11 mm	0.4331	11.0000
7/16 in	0.4375	11.1125
11.5 mm	0.4528	11.5000
29/64 in	0.4531	11.5094
15/32 in	0.4688	11.9063
12 mm	0.4724	12.0000
31/64 in	0.4844	12.3031
12.5 mm	0.4921	12.5000
1/2 in	0.5000	12.7000
13 mm	0.5118	13.0000
33/64 in	0.5156	13.0969
17/32 in	0.5313	13.4938
13.5 mm	0.5315	13.5000
35/64 in	0.5469	13.8906
14 mm	0.5512	14.0000
9/16 in	0.5625	14.2875
14.5 mm	0.5709	14.5000
37/64 in	0.5781	14.6844
15 mm	0.5906	15.0000
19/32 in	0.5938	15.0813
39/64 in	0.6094	15.4781
15.5 mm	0.6102	15.5000
5/8 in	0.6250	15.8750
16 mm	0.6299	16.0000
41/64 in	0.6406	16.2719
16.5 mm	0.6496	16.5000
17 mm	0.6693	17.0000
43/64 in	0.6719	17.0656
11/16 in	0.6875	17.4625
17.5 mm	0.6890	17.5000
45/64 in	0.7031	17.8594
18 mm	0.7087	18.0000
23/32 in	0.7188	18.2563
18.5 mm	0.7284	18.5000
47/64 in	0.7344	18.6531
19 mm	0.7480	19.0000
3/4 in	0.7500	19.0500

DRILL SIZE	DIA. (INCH)	DIA. (METRIC)
49/64 in	0.7656	19.4469
19.5 mm	0.7677	19.5000
25/32 in	0.7813	19.8438
20 mm	0.7874	20.0000
51/64 in	0.7969	20.2406
20.5 mm	0.8071	20.5000
13/16 in	0.8125	20.6375
21 mm	0.8268	21.0000
53/64 in	0.8281	21.0344
27/32 in	0.8438	21.4313
21.5 mm	0.8465	21.5000
55/64 in	0.8594	21.8281
22 mm	0.8661	22.0000
7/8 in	0.8750	22.2250
22.5 mm	0.8858	22.5000
57/64 in	0.8906	22.6219
23 mm	0.9055	23.0000
29/32 in	0.9063	23.0188
21/23 in	0.9130	23.1913
59/64 in	0.9219	23.4156
23.5 mm	0.9252	23.5000
15/16 in	0.9375	23.8125
24 mm	0.9449	24.0000
61/64 in	0.9531	24.2094
24.5 mm	0.9646	24.5000
31/32 in	0.9688	24.6063
25 mm	0.9843	25.0000
63/64 in	0.9844	25.0031
1 in	1.0000	25.4000

LIFETIME REPLACEMENT GUARANTEE

If this product does not meet your expectations, we will replace it or provide replacement parts free of charge. To arrange for shipping of your replacement product or parts, or if you have any other questions, email us at **support@tektontools.com** or call us at **1-888-648-8665.**

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