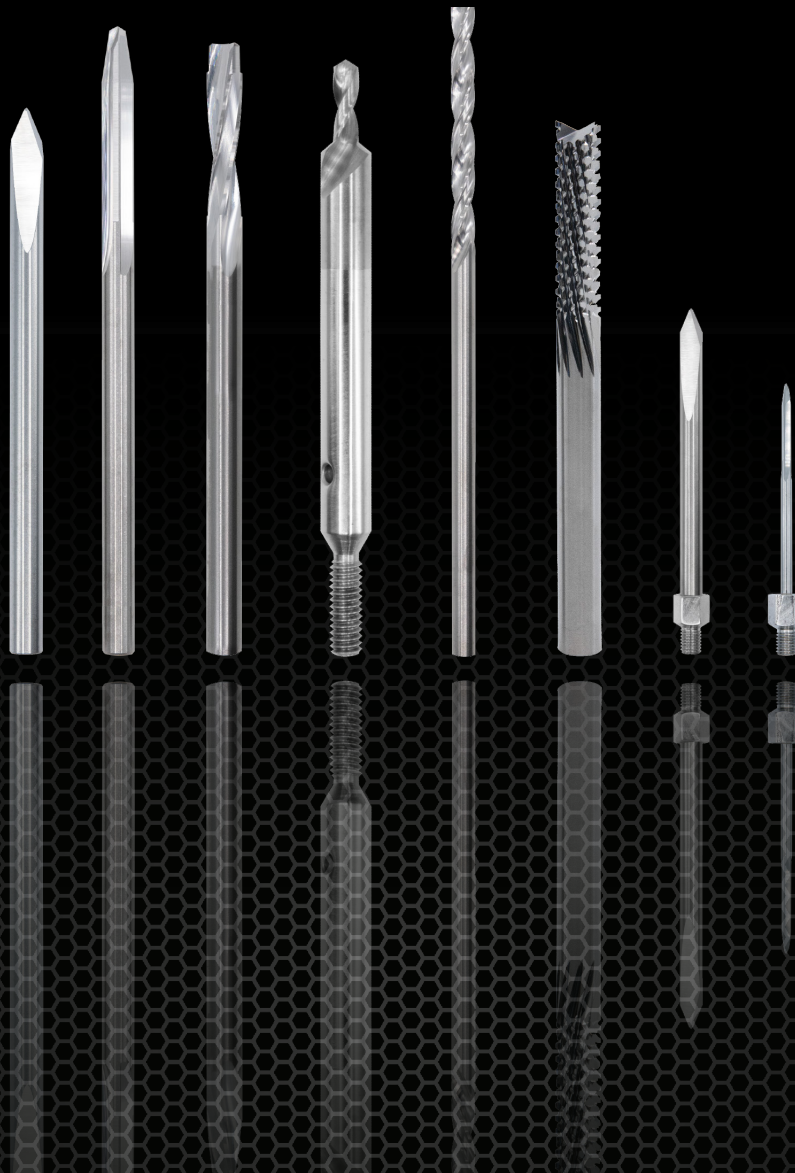


Carbro

SINCE 1968



YOUR AEROSPACE TOOLING SPECIALISTS.

CARBROUSA.COM

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CARBRO was established in 1968, is a market leader manufacturer of high quality, precision tungsten carbide cutting tools with a niche focus on the Aerospace Industry. We have a clear vision - “Be Exceptional”, with a mission statement to be “Flight Ready for the Future”.

CARBRO TEAM



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AEROSPACE TECHNICAL SUPPORT

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CARBRO USA TERMS AND CONDITIONS

SALES POLICY: We support the value-added services of our partners in industrial distribution. Our products are exclusively sold through selected, authorized industrial distributors that meet our high standards of business ethics and customer service capabilities.

PAYMENT TERMS AND PRICES: Our terms are 1% - 10 days - Net 30. Accounts in arrears are subject to both shipments hold and production hold. Freight is F.O.B. shipping point. Prices for special tools are subject to re quoting after 30 days and catalog prices are subject to change without notice.

CANCELLATIONS: Cancellations of orders for "standard catalog product" can be made at no charge, providing the tools have not been shipped and we have not incurred labor expense to finish to a specific size or altered standard markings or packaging. A cancellation fee will be charged in proportion to the amount of the cost accumulated on the order prior to cancellation.

CUSTOMER ALTERATIONS: Carbro USA cannot be responsible for the performance of or compliance to specifications, nor can we accept, for return, any tool that has been altered in any way by our customers. This includes surface treatments, coatings, flats, tangs, markings, or any geometry alterations.

OVER, UNDER AND EXACT SHIPMENTS: Unless your order specifies no over shipments, no under shipments or exact quantities required, Carbro USA policy follows standard industry practice on altered standard and special orders which is to start +10% over the quantity ordered. We will ship and bill the quantity completed which could be as much as 10% over or 10% under the quantity ordered. On quantities from 1 piece to 9 pieces, our standard shipping tolerance is plus or minus 1 piece. Orders for special tooling that specify "no over and no Under shipments" (exact quantities) are subject to a premium charge. Orders for special tooling that specify "no over shipments" can ship as much as 20% below the order quantity and if less than 10 pieces, up to 2 below the order quantity. Orders for special tooling that specify "no under shipments" can ship as much as 20% above the order quantity and if less than 10 pieces, up to 2 above the order quantity.

PRODUCT WARRANTY: We guarantee our products will conform to the specifications listed on customer Blueprints, orders, and quotation requests. Dimensions, specifications, and tolerances not listed will be furnished to the current Carbro USA manufacturing standards. Our warranty is limited to the repair, replacement, or full credit for the tools found not to be within specifications, at our option.

RETURNED GOODS: Always contact our customer service department to obtain a "returned goods authorization number" (RGA) prior to returning any material. When the return is accompanied by a stock replacement order of 1.5 times equal or greater value, we will issue full credit for the returned product. If the returned product is not accompanied by a stock replacement order, a 20% restocking charge will apply. All products returned must be within 1 year of manufacturing date, in clean resalable condition and in original packaging. We cannot accept any product that has been discontinued or in quantities that are unusually large compared to Carbro USA average sales for any particular item, or any decimal sized product.

DRILL REAMERS

HIGH PERFORMANCE TAPERED DRILL/REAMER

This tool can be used for hand drilling, robot or CNC. Originally developed for drilling fiberglass, these drills are also excellent for CFRP, CFRP/Nomex, GFRP/Nomex, CFRP/Al, Al/Al, Carbon/Carbon, and graphite.

- Solid carbide provides rigidity and reduces runout over high speed steel.
- Elongated double-angle geometry eliminates thrust and exit side delamination.
- Bright polished finishes provide superior edge quality and optimum surface chip flow.
- Straight Shanks are used in general purpose applications, Threaded Shanks available on request.
- Optional Diamond and DLC coatings to address the specific demands of your application, as needed.

TOLERANCE:

CUTTER DIAMETER: +.0005" -0"



**SPECIALS
AVAILABLE**

QUOTES@CARBROUSA.COM

3"

8213 SERIES



DIAMETER		OAL	PART NUMBER
#40	.0980	3	DR-0980-3
1/8	.1250	3	DR-1250-3
#30	.1285	3	DR-1285-3
#28	.1406	3	DR-1406-3
5/32	.1562	3	DR-1562-3
#21	.1590	3	DR-1590-3
#20	.1610	3	DR-1610-3
3/16	.1875	3	DR-1875-3
#11	.1910	3	DR-1910-3
#10	.1935	3	DR-1935-3
#8	.1990	3	DR-1990-3
#7	.2010	3	DR-2010-3
13/64	.2031	3	DR-2031-3
7/32	.2188	3	DR-2188-3
1/4	.2500	3	DR-2500-3
	.2510	3	DR-2510-3
5/16	.3125	3	DR-3125-3
3/8	.3750	3	DR-3750-3

4"

8214 SERIES

DIAMETER		OAL	PART NUMBER
#40	.0980	4	DR-0980-4
1/8	.1250	4	DR-1250-4
#30	.1285	4	DR-1285-4
#28	.1406	4	DR-1406-4
5/32	.1562	4	DR-1562-4
#21	.1590	4	DR-1590-4
#20	.1610	4	DR-1610-4
3/16	.1875	4	DR-1875-4
#11	.1910	4	DR-1910-4
#10	.1935	4	DR-1935-4
#8	.1990	4	DR-1990-4
#7	.2010	4	DR-2010-4
13/64	.2031	4	DR-2031-4
7/32	.2188	4	DR-2188-4
1/4	.2500	4	DR-2500-4
	.2510	4	DR-2510-4
5/16	.3125	4	DR-3125-4
3/8	.3750	4	DR-3750-4



6"

8216 SERIES

DIAMETER		OAL	PART NUMBER
#40	.0980	6	DR-0980-6
1/8	.1250	6	DR-1250-6
#30	.1285	6	DR-1285-6
#28	.1406	6	DR-1406-6
5/32	.1562	6	DR-1562-6
#21	.1590	6	DR-1590-6
#20	.1610	6	DR-1610-6
3/16	.1875	6	DR-1875-6
#11	.1910	6	DR-1910-6
#10	.1935	6	DR-1935-6
#8	.1990	6	DR-1990-6
#7	.2010	6	DR-2010-6
13/64	.2031	6	DR-2031-6
7/32	.2188	6	DR-2188-6
1/4	.2500	6	DR-2500-6
	.2510	6	DR-2510-6
5/16	.3125	6	DR-3125-6
3/8	.3750	6	DR-3750-6



DRILL REAMERS



DAGGER DRILLS

AN EXCELLENT TOOL FOR DRILLING GRAPHITE/EPOXY LAMINATES.

Can be used in combination with aluminum.

No back up required. Feeds and speeds recommendations available.

TOLERANCE:

CUTTER DIAMETER: $+0.0005''$ $-0.0005''$



3"

8413 SERIES



DIAMETER		OAL	PART NUMBER
#40	.0980	3	DD-0980-3
1/8	.1250	3	DD-1250-3
#30	.1285	3	DD-1285-3
#28	.1406	3	DD-1406-3
5/32	.1562	3	DD-1562-3
#21	.1590	3	DD-1590-3
#20	.1610	3	DD-1610-3
3/16	.1875	3	DD-1875-3
#11	.1910	3	DD-1910-3
#10	.1935	3	DD-1935-3
#8	.1990	3	DD-1990-3
#7	.2010	3	DD-2010-3
13/64	.2031	3	DD-2031-3
7/32	.2188	3	DD-2188-3
1/4	.2500	3	DD-2500-3
5/16	.3125	3	DD-3125-3
3/8	.3750	3	DD-3750-3

4"

8414 SERIES

DIAMETER		OAL	PART NUMBER
#40	.0980	4	DD-0980-4
1/8	.1250	4	DD-1250-4
#30	.1285	4	DD-1285-4
#28	.1406	4	DD-1406-4
5/32	.1562	4	DD-1562-4
#21	.1590	4	DD-1590-4
#20	.1610	4	DD-1610-4
3/16	.1875	4	DD-1875-4
#11	.1910	4	DD-1910-4
#10	.1935	4	DD-1935-4
#8	.1990	4	DD-1990-4
#7	.2010	4	DD-2010-4
13/64	.2031	4	DD-2031-4
7/32	.2188	4	DD-2188-4
1/4	.2500	4	DD-2500-4
5/16	.3125	4	DD-3125-4
3/8	.3750	4	DD-3750-4



6"

8416 SERIES

DIAMETER		OAL	PART NUMBER
#40	.0980	6	DD-0980-6
1/8	.1250	6	DD-1250-6
#30	.1285	6	DD-1285-6
#28	.1406	6	DD-1406-6
5/32	.1562	6	DD-1562-6
#21	.1590	6	DD-1590-6
#20	.1610	6	DD-1610-6
3/16	.1875	6	DD-1875-6
#11	.1910	6	DD-1910-6
#10	.1935	6	DD-1935-6
#8	.1990	6	DD-1990-6
#7	.2010	6	DD-2010-6
13/64	.2031	6	DD-2031-6
7/32	.2188	6	DD-2188-6
1/4	.2500	6	DD-2500-6
5/16	.3125	6	DD-3125-6
3/8	.3750	6	DD-3750-6



DAGGER DRILLS



Manufactured Using Female and Male Centers for Improved Concentricity
Male Centers on items up to .1124" (2.86mm)

TOLERANCE:

SHANK DIAMETER: +.0005" -.0005"
 +.013mm -.013mm

CUTTING DIAMETER:

Up to .2500" +.0002" -.0"
Over .2501" +.0003" -.0"
Up to 6.35mm +0.005mm -0.0mm
Over 6.351mm +0.008mm -0.0mm



CUTTING DIAMETER		TOOL LENGTH STYLE	FLUTE LENGTH	OAL	FLUTES	PART NUMBER
60	0.0400	STB	3/8	11/2	4	801
59	0.0410	STB	3/8	11/2	4	802
58	0.0420	STB	3/8	11/2	4	803
57	0.0430	STB	3/8	11/2	4	804
56	0.0465	STB	3/8	11/2	4	805
3/64	0.0469	STB	3/8	11/2	4	806
55	0.0520	STB	3/8	11/2	4	807
54	0.0550	STB	3/8	11/2	4	808
53	0.0595	STB	3/8	11/2	4	809
1/16	0.0625	STB	3/8	11/2	4	810
52	0.0635	STB	3/8	11/2	4	811
51	0.0670	STB	1/2	2	4	812
50	0.0700	STB	1/2	2	4	813
49	0.0730	STB	1/2	2	4	814
48	0.0760	STB	1/2	2	4	815
5/64	0.0781	STB	1/2	2	4	816
47	0.0785	STB	1/2	2	4	817
46	0.0810	STB	1/2	2	4	818
45	0.0820	STB	1/2	2	4	819
44	0.0860	STB	1/2	2	4	820
43	0.0890	STB	1/2	2	4	821
42	0.0935	STB	1/2	2	4	822
3/32	0.0938	STB	1/2	2	4	823
41	0.0960	STB	1/2	2	4	824
40	0.0980	STB	5/8	2 1/4	4	825
39	0.0995	STB	5/8	2 1/4	4	826
38	0.1015	STB	5/8	2 1/4	4	827
37	0.1040	STB	5/8	2 1/4	4	828
36	0.1065	STB	5/8	2 1/4	4	829
7/64	0.1094	STB	5/8	2 1/4	4	830
35	0.1100	STB	5/8	2 1/4	4	831
34	0.1110	STB	5/8	2 1/4	4	832
33	0.1130	STB	5/8	2 1/4	4	833
32	0.1160	STB	5/8	2 1/4	4	834
31	0.1200	STB	5/8	2 1/4	4	835
1/8	0.1250	STB	5/8	2 1/4	4	837
30	0.1285	STB	3/4	2 1/2	4	838
29	0.1360	STB	3/4	2 1/2	4	839
28	0.1405	STB	3/4	2 1/2	4	840
27	0.1440	STB	3/4	2 1/2	4	842
26	0.1470	STB	3/4	2 1/2	4	843

CUTTING DIAMETER		TOOL LENGTH STYLE	FLUTE LENGTH	OAL	FLUTES	PART NUMBER
25	0.1495	STB	3/4	2 1/2	4	844
24	0.1520	STB	3/4	2 1/2	4	845
23	0.1540	STB	3/4	2 1/2	4	846
5/32	0.1562	STB	3/4	2 1/2	4	847
22	0.1570	STB	3/4	2 1/2	4	848
21	0.1590	STB	3/4	2 1/2	4	849
20	0.1610	STB	7/8	2 3/4	4	850
19	0.1660	STB	7/8	2 3/4	4	851
18	0.1695	STB	7/8	2 3/4	4	852
11/64	0.1719	STB	7/8	2 3/4	4	853
17	0.1730	STB	7/8	2 3/4	4	854
16	0.1770	STB	7/8	2 3/4	4	855
15	0.1800	STB	7/8	2 3/4	4	856
14	0.1820	STB	7/8	2 3/4	4	857
13	0.1850	STB	7/8	2 3/4	4	858
3/16	0.1875	STB	7/8	2 3/4	4	859
12	0.1890	STB	7/8	2 3/4	4	860
11	0.1910	STB	7/8	2 3/4	4	861
10	0.1935	STB	1	3	6	862
9	0.1960	STB	1	3	6	863
8	0.1990	STB	1	3	6	864
7	0.2010	STB	1	3	6	865
13/64	0.2031	STB	1	3	6	866
6	0.2040	STB	1	3	6	867
5	0.2055	STB	1	3	6	868
4	0.2090	STB	1	3	6	869
3	0.2130	STB	1	3	6	870
7/32	0.2188	STB	1	3	6	871
2	0.2210	STB	1	3	6	872
1	0.2280	STB	1	3	6	873
A	0.2340	STB	1	3	6	701
15/64	0.2344	STB	1	3	6	874
B	0.2380	STB	1	3	6	702
C	0.2420	STB	1	3	6	703
D	0.2460	STB	1	3	6	704
1/4	0.2500	STB	1	3	6	875
F	0.2570	STB	1 1/8	3 1/4	6	706
G	0.2610	STB	1 1/8	3 1/4	6	707
17/64	0.2656	STB	1 1/8	3 1/4	6	876
H	0.2660	STB	1 1/8	3 1/4	6	708
I	0.2720	STB	1 1/8	3 1/4	6	709
J	0.2770	STB	1 1/8	3 1/4	6	710
K	0.2810	STB	1 1/8	3 1/4	6	711
9/32	0.2812	STB	1 1/8	3 1/4	6	877
L	0.2900	STB	1 1/8	3 1/4	6	712
M	0.2950	STB	1 1/8	3 1/4	6	713
19/64	0.2969	STB	1 1/8	3 1/4	6	878
N	0.3020	STB	1 1/8	3 1/4	6	714
5/16	0.3125	STB	1 1/8	3 1/4	6	879
O	0.3160	STB	1 1/8	3 1/4	6	715
P	0.3230	STB	1 1/4	3 1/2	6	716
21/64	0.3281	STB	1 1/4	3 1/2	6	880
Q	0.3320	STB	1 1/4	3 1/2	6	717
R	0.3390	STB	1 1/4	3 1/2	6	718



Manufactured Using Female and Male Centers for Improved Concentricity
Male Centers on items up to .1124" (2.86mm)

TOLERANCE:

SHANK DIAMETER: +.0005" -.0005"
 +0.013mm -0.013mm

CUTTING DIAMETER:

Up to .2500" +.0002" -.0"
Over .2501" +.0003" -.0"
Up to 6.35mm +0.005mm -0.0mm
Over 6.351mm +0.008mm -0.0mm



CUTTING DIAMETER		TOOL LENGTH STYLE	FLUTE LENGTH	OAL	FLUTES	PART NUMBER
11/32	0.3438	STB	1 1/4	3 1/2	6	881
S	0.3480	STB	1 1/4	3 1/2	6	719
T	0.3580	STB	1 1/4	3 1/2	6	720
23/64	0.3594	STB	1 1/4	3 1/2	6	882
U	0.3680	STB	1 1/4	3 1/2	6	721
3/8	0.3750	STB	1 1/4	3 1/2	6	883
V	0.3770	STB	1 1/4	3 1/2	6	722
W	0.3860	STB	1 1/4	3 1/2	6	723
25/64	0.3906	STB	1 1/4	3 1/2	6	884
X	0.3970	STB	1 1/4	3 1/2	6	724
Y	0.4040	STB	1 1/4	4	6	725
13/32	0.4062	STB	1 1/2	4	6	885
Z	0.4130	STB	1 3/8	3 3/4	6	726
27/64	0.4219	STB	1 1/2	4	6	886
7/16	0.4375	STB	1 1/2	4	6	887
29/64	0.4531	STB	1 1/2	4	6	888
15/32	0.4688	STB	1 1/2	4	6	889
31/64	0.4844	STB	1 1/2	4	6	890
1/2	0.5000	STB	1 1/2	4	6	891

REAMERS / STANDARD LENGTH

4350 SERIES

Manufactured Using Female and Male Centers for Improved Concentricity
Male Centers on items up to .1124" (2.86mm)

- Overall Length Specials Available

TOLERANCE:

SHANK DIAMETER: +.0005" -.0005"
+0.013mm -0.013mm

CUTTING DIAMETER:

Up to .2500" +.0002" -.0"
Over .2501" +.0003" -.0"
Up to 6.35mm +0.005mm -0.0mm
Over 6.351mm +0.008mm -0.0mm



CUTTING DIAMETER		TOOL LENGTH STYLE	FLUTE LENGTH	OAL	FLUTES	STEEL SHANK	PART NUMBER
1/8	.1250	SD	7/8	3 1/2	4		14511
9/64	.1406	SD	7/8	3 1/2	4		14512
5/32	.1562	SD	1	4	4		14513
11/64	.1719	SD	1	4	4		14514
3/16	.1875	SD	1 1/4	4 1/2	4		14515
13/64	.2031	SD	1 1/4	5	6		14516
7/32	.2188	SD	1 1/4	5	6		14517
15/64	.2344	SD	1 1/4	6	6		14518
1/4	.2500	SD	1 1/2	6	6		14519
17/64	.2656	SD	1 1/2	6	6		14520
9/32	.2812	SD	1 1/2	6	6		14521
19/64	.2969	SD	1 5/8	6	6		14522
5/16	.3125	SD	1 5/8	6	6		14523
21/64	.3281	SD	1 5/8	6	6		14524
11/32	.3438	SD	1 5/8	6	6		14525
23/64	.3594	SD	1 3/4	7	6	✓	14526
3/8	.3750	SD	1 3/4	7	6	✓	14527
25/64	.3906	SD	1 3/4	7	6	✓	14528
13/32	.4062	SD	1 3/4	7	6	✓	14529
27/64	.4219	SD	1 3/4	7	6	✓	14530
7/16	.4375	SD	1 3/4	7	6	✓	14531
29/64	.4531	SD	1 3/4	8	6	✓	14532
15/32	.4688	SD	1 3/4	8	6	✓	14533
31/64	.4844	SD	1 3/4	8	6	✓	14534
1/2	.5000	SD	1 3/4	8	6	✓	14535
9/16	.5625	SD	1 7/8	9	6	✓	14536
5/8	.6250	SD	1 7/8	9	6	✓	14537
11/16	.6875	SD	2	9 1/2	6	✓	14538
3/4	.7500	SD	2	9 1/2	6	✓	14539
7/8	.8750	SD	2	10	8	✓	14540
1	1.0000	SD	2	10	8	✓	14541



REAMERS





EXPRESS REAMERS

4350 STRAIGHT FLUTE STANDARD SIZES

AVAILABLE with Coatings at Tolerances as Low as .0001"

STEEL SHANKS on items with Cutting Diameter .3485" & over.

Female Centers



DECIMAL SIZE SOLID CARBIDE REAMERS

SIZE RANGE	TOOL STYLE	CUTTING LENGTH	SHANK DIAMETER	OAL	FLUTES	STEEL SHANK	PART NUMBER
.1105 - .1284	SD	7/8	.1094	3 1/2	4		1450S01.XXXX
.1285 - .1444	SD	7/8	.1250	3 1/2	4		1450S02.XXXX
.1445 - .1594	SD	1	.1406	4	4		1450S03.XXXX
.1595 - .1744	SD	1	.1562	4	4		1450S04.XXXX
.1745 - .1914	SD	1 1/8	.1719	4 1/2	4		1450S05.XXXX
.1915 - .2234	SD	1 1/4	.1875	5	6		1450S06.XXXX
.2235 - .2544	SD	1 1/2	.2188	6	6		1450S07.XXXX
.2545 - .2844	SD	1 1/2	.2500	6	6		1450S08.XXXX
.2845 - .3164	SD	1 5/8	.2812	6	6		1450S09.XXXX
.3165 - .3484	SD	1 5/8	.3125	6	6		1450S10.XXXX
.3485 - .3794	SD	1 3/4	.3438	7	6	✓	1450S11.XXXX
.3795 - .4104	SD	1 3/4	.3750	7	6	✓	1450S12.XXXX
.4105 - .4414	SD	1 3/4	.4062	7	6	✓	1450S13.XXXX
.4415 - .4724	SD	1 3/4	.4375	8	6	✓	1450S14.XXXX
.4725 - .5054	SD	1 3/4	.4688	8	6	✓	1450S15.XXXX
.5055 - .5360	SD	1 7/8	.5000	9	6	✓	1450S16.XXXX
.5361 - .5670	SD	1 7/8	.5000	9	6	✓	1450S16B.XXXX
.5671 - .5990	SD	1 7/8	.5625	9	6	✓	1450S17.XXXX
.5991 - .6300	SD	1 7/8	.5625	9	6	✓	1450S17B.XXXX
.6301 - .6630	SD	2	.6250	9 1/2	6	✓	1450S18.XXXX
.6631 - .6930	SD	2	.6250	9 1/2	6	✓	1450S18B.XXXX
.6931 - .7250	SD	2	.6875	9 1/2	6	✓	1450S19.XXXX
.7251 - .7560	SD	2	.6875	9 1/2	6	✓	1450S19B.XXXX
.7561 - .7870	SD	2	.7500	10	8	✓	1450S20.XXXX
.7871 - .8190	SD	2	.7812	10	8	✓	1450S21.XXXX
.8191 - .8500	SD	2	.8125	10	8	✓	1450S22.XXXX
.8501 - .8820	SD	2	.8438	10	8	✓	1450S23.XXXX
.8821 - .9120	SD	2	.8750	10	8	✓	1450S24.XXXX
.9121 - .9440	SD	2	.9062	10	8	✓	1450S25.XXXX
.9441 - .9760	SD	2	.9375	10	8	✓	1450S26.XXXX
.9761 - 1.0100	SD	2	.9688	10	8	✓	1450S27.XXXX

Due to temperatures reached in the coating process, Carbro cannot guarantee concentricity on reamers with Cutting Diameter .3485" and over.

STRAIGHT FLUTES

FOR ALL TYPES OF GENERAL REAMING APPLICATIONS.

TOLERANCE:

SHANK DIAMETER: +.0005" -.0005"
+0.013mm -0.013mm

CUTTING DIAMETER:

Up to .2500" +.0002" -.0"
Over .2501" +.0003" -.0"
Up to 6.35mm +0.005mm -0.0mm
Over 6.351mm +0.008mm -0.0mm
.0001" Tolerances Available (additional cost)

4300 STRAIGHT FLUTE STANDARD SIZES

AVAILABLE with Coatings at Tolerances as Low as .0001"

MALE CENTERS below .1124

FEMALE CENTERS above .1125

DECIMAL SIZE SOLID CARBIDE REAMERS

MALE CENTERS

FEMALE CENTERS

SIZE RANGE	TOOL STYLE	CUTTING LENGTH	SHANK DIAMETER	OAL	FLUTES	PART NUMBER
.0312 - .0394	STB	3/8	.0312	1 1/2	4	1410S01.XXXX
.0395 - .0484	STB	3/8	.0312	1 1/2	4	1410S02.XXXX
.0485 - .0574	STB	3/8	.0469	1 1/2	4	1410S03.XXXX
.0575 - .0654	STB	3/8	.0469	1 1/2	4	1410S04.XXXX
.0655 - .0804	STB	1/2	.0625	2	4	1410S05.XXXX
.0805 - .0964	STB	1/2	.0781	2	4	1410S06.XXXX
.0965 - .1124	STB	5/8	.0938	2 1/4	4	1410S07.XXXX
.1125 - .1284	STB	5/8	.1094	2 1/4	4	1410S08.XXXX
.1285 - .1444	STB	3/4	.1250	2 1/2	4	1410S09.XXXX
.1445 - .1594	STB	3/4	.1406	2 1/2	4	1410S10.XXXX
.1595 - .1744	STB	7/8	.1562	2 3/4	4	1410S11.XXXX
.1745 - .1914	STB	7/8	.1719	2 3/4	4	1410S12.XXXX
.1915 - .2234	STB	1	.1875	3	6	1410S13.XXXX
.2235 - .2544	STB	1	.2188	3	6	1410S14.XXXX
.2545 - .2844	STB	1 1/8	.2500	3 1/4	6	1410S15.XXXX
.2845 - .3164	STB	1 1/8	.2812	3 1/4	6	1410S16.XXXX
.3165 - .3484	STB	1 1/4	.3125	3 1/2	6	1410S17.XXXX
.3485 - .3794	STB	1 1/4	.3438	3 1/2	6	1410S18.XXXX
.3795 - .4104	STB	1 1/2	.3750	4	6	1410S19.XXXX
.4105 - .4414	STB	1 1/2	.4062	4	6	1410S20.XXXX
.4415 - .4724	STB	1 1/2	.4375	4	6	1410S21.XXXX



FOR DRILLING KEVLAR LAMINATES.

Designed to drill reinforced Graphite, Kevlar, and Resin type materials.

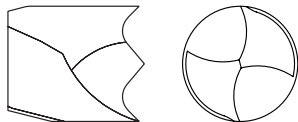
TOLERANCE:

DRILL DIAMETER: +.0" -.0005"



DIAMETER		FLUTE LENGTH	OAL	PART NUMBER
43	0.0890	1	2	BPD-0890
42	0.0935	1	2	BPD-0935
3/32	0.0938	1	2	BPD-0938
41	0.0960	1	2	BPD-0960
40	0.0980	1	2	BPD-0980
39	0.0995	1-1/4	2 1/4	BPD-0995
38	0.1015	1-1/4	2 1/4	BPD-1015
37	0.1040	1-1/4	2 1/4	BPD-1040
36	0.1065	1-1/4	2 1/4	BPD-1065
7/64	0.1094	1-1/4	2 1/4	BPD-1094
35	0.1100	1-1/4	2 1/4	BPD-1100
34	0.1110	1-1/4	2 1/4	BPD-1110
33	0.1130	1-1/4	2 1/4	BPD-1130
32	0.1160	1-1/4	2 1/4	BPD-1160
31	0.1200	1-1/4	2 1/4	BPD-1200
1/8	0.1250	1-1/4	2 1/4	BPD-1250
30	0.1285	1-1/4	2 1/4	BPD-1285
29	0.1360	1-3/8	2 1/2	BPD-1360
28	0.1405	1-3/8	2 1/2	BPD-1405
9/64	0.1406	1-3/8	2 1/2	BPD-1406
27	0.1440	1-3/8	2 1/2	BPD-1440
26	0.1470	1-3/8	2 1/4	BPD-1470
25	0.1495	1-3/8	2 1/2	BPD-1495
24	0.1520	1-3/8	2 1/2	BPD-1520
23	0.1540	1-3/8	2 1/2	BPD-1540
5/32	0.1562	1-3/8	2 1/2	BPD-1562
22	0.1570	1-3/8	2 1/2	BPD-1570
21	0.1590	1-3/8	2 1/2	BPD-1590
20	0.1610	1-3/8	2 1/2	BPD-1610
19	0.1660	1-5/8	2 3/4	BPD-1660
18	0.1695	1-5/8	2 3/4	BPD-1695
11/64	0.1719	1-5/8	2 3/4	BPD-1719
17	0.1730	1-5/8	2 3/4	BPD-1730
16	0.1770	1-5/8	2 3/4	BPD-1770
15	0.1800	1-5/8	2 3/4	BPD-1800
14	0.1820	1-5/8	2 3/4	BPD-1820

BRAD POINT



For drilling pliable materials like plastics and rubber. Works well in wood & other coarse grain materials.

DIAMETER		FLUTE LENGTH	OAL	PART NUMBER
13	0.1850	1-5/8	2 3/4	BPD-1850
3/16	0.1875	1-5/8	2 3/4	BPD-1875
11	0.1910	1-5/8	2 3/4	BPD-1910
10	0.1935	1-5/8	2 3/4	BPD-1935
9	0.1960	1-3/4	3	BPD-1960
8	0.1990	1-3/4	3	BPD-1990
7	0.2010	1-3/4	3	BPD-2010
13/64	0.2031	1-3/4	3	BPD-2031
6	0.2040	1-3/4	3	BPD-2040
5	0.2055	1-3/4	3	BPD-2055
4	0.2090	1-3/4	3	BPD-2090
3	0.2130	1-3/4	3	BPD-2130
7/32	0.2188	1-3/4	3	BPD-2188
2	0.2210	1-3/4	3	BPD-2210
1	0.2280	1-3/4	3	BPD-2280
15/64	0.2344	2	3 1/4	BPD-2344
1/4	0.2500	2	3 1/4	BPD-2500
E	0.2500	2	3 1/4	BPD-2500
F	0.2570	2	3 1/4	BPD-2570
G	0.2610	2-1/8	3 1/2	BPD-2610
17/64	0.2656	2-1/8	3 1/2	BPD-2656
9/32	0.2812	2-1/8	3 1/2	BPD-2812
L	0.2900	2-1/8	3 1/2	BPD-2900
19/64	0.2969	2-3/8	3 3/4	BPD-2969
N	0.3020	2-3/8	3 3/4	BPD-3020
5/16	0.3125	2-3/8	3 3/4	BPD-3125
O	0.3160	2-3/8	3 3/4	BPD-3160
21/64	0.3281	2-1/2	4	BPD-3281
11/32	0.3438	2-1/2	4	BPD-3438
23/64	0.3594	2-1/2	4	BPD-3594
3/8	0.3750	2-3/4	4 1/4	BPD-3750
V	0.3770	2-3/4	4 1/4	BPD-3770
X	0.3970	2-7/8	4 1/2	BPD-3970
7/16	0.4375	2-7/8	4 1/2	BPD-4375
1/2	0.5000	3	4 3/4	BPD-5000



2 FLUTES / 118° POINT

25° Helix, Right Hand Spiral, Right Hand Cut



DIAMETER		FLUTE LENGTH	OAL	PART NUMBER
80	.0135	3/16	1 1/2	1986
79	.0145	3/16	1 1/2	1987
1/64	.0156	3/16	1 1/2	1988
78	.0160	3/16	1 1/2	1989
77	.0180	3/16	1 1/2	1990
76	.0200	3/16	1 1/2	1991
75	.0210	3/16	1 1/2	1992
74	.0225	3/16	1 1/2	1993
73	.0240	3/16	1 1/2	1994
72	.0250	1/4	1 1/2	1995
71	.0260	1/4	1 1/2	1996
70	.0280	1/4	1 1/2	1997
69	.0292	1/4	1 1/2	1998
68	.0310	1/4	1 1/2	1999
1/32	.0313	1/4	1 1/2	19100
67	.0320	1/4	1 1/2	19101
66	.0330	1/4	1 1/2	19102
65	.0350	3/8	1 1/2	19103
64	.0360	3/8	1 1/2	19104
63	.0370	3/8	1 1/2	19105
62	.0380	3/8	1 1/2	19106
61	.0390	3/8	1 1/2	19107
60	.0400	3/8	1 1/2	19108
59	.0410	3/8	1 1/2	19109
58	.0420	3/8	1 1/2	19110
57	.0430	3/8	1 1/2	19111
56	.0465	3/8	1 1/2	19112
3/64	.0465	3/8	1 1/2	19112A
55	.0520	3/8	1 1/2	19113
54	.0550	3/8	1 1/2	19114
53	.0595	3/8	1 1/2	19115
1/16	.0625	3/8	1 1/2	19116
52	.0635	3/8	1 1/2	19117
51	.0670	3/8	1 1/2	19118
50	.0700	3/8	1 1/2	19119
49	.0730	3/8	1 1/2	19120
48	.0760	3/8	1 1/2	19121
5/64	.0781	1/2	1 1/2	19122
47	.0785	1/2	1 1/2	19123
46	.0810	1/2	1 1/2	19124
45	.0820	1/2	1 1/2	19125
44	.0860	1/2	2	19126
43	.0890	1/2	2	19127
42	.0935	1/2	2	19128
3/32	.0937	1/2	2	19129
41	.0960	1/2	2	19130
40	.0980	5/8	2	19131
39	.0995	5/8	2	19132
38	.1015	5/8	2	19133
37	.1040	5/8	2	19134
36	.1065	5/8	2	19135
7/64	.1094	5/8	2	19136
35	.1100	5/8	2	19137
34	.1110	5/8	2	19138
33	.1113	5/8	2	19139
32	.1160	5/8	2	19140
31	.1200	5/8	2	19141
1/8	.1250	5/8	2	19142

TOLERANCE:

SHANK DIAMETER: Intended for use in three jaw chucks and collet holders only.

DRILL DIAMETER: +.0" -.0005"

+0.00mm -0.013mm

DIAMETER		FLUTE LENGTH	OAL	PART NUMBER
30	.1285	5/8	2	19143
29	.1360	5/8	2	19144
28	.1405	5/8	2	19145
9/64	.1406	5/8	2	19146
27	.1440	5/8	2	19147
26	.1470	5/8	2	19148
25	.1495	5/8	2	19149
24	.1520	5/8	2	19150
23	.1540	5/8	2	19151
5/32	.1562	5/8	2	19152
22	.1570	3/4	2 1/2	19153
21	.1590	3/4	2 1/2	19154
20	.1610	3/4	2 1/2	19155
19	.1660	3/4	2 1/2	19156
18	.1695	3/4	2 1/2	19157
11/64	.1719	3/4	2 1/2	19158
17	.1730	3/4	2 1/2	19159
16	.1770	3/4	2 1/2	19160
15	.1800	3/4	2 1/2	19161
14	.1820	3/4	2 1/2	19162
13	.1850	3/4	2 1/2	19163
3/16	.1875	3/4	2 1/2	19164
12	.1890	3/4	2 1/2	19165
11	.1910	3/4	2 1/2	19166
10	.1935	3/4	2 1/2	19167
9	.1960	3/4	2 1/2	19168
8	.1990	3/4	2 1/2	19169
7	.2010	3/4	2 1/2	19170
13/64	.2031	3/4	2 1/2	19171
6	.2040	3/4	2 1/2	19172
5	.2055	3/4	2 1/2	19173
4	.2090	1	2 1/2	19174
3	.2130	1	2 1/2	19175
7/32	.2187	1	2 1/2	19176
2	.2210	1	2 1/2	19177
1	.2280	1	2 1/2	19178
A	.2340	1	2 1/2	19179
15/64	.2344	1	2 1/2	19180
B	.2380	1	2 1/2	19181
C	.2420	1	2 1/2	19182
D	.2460	1	2 1/2	19183
1/4	.2500	1	2 1/2	19184
F	.2570	1	2 1/2	19185
G	.2610	1	2 1/2	19186
17/64	.2656	1	2 1/2	19187
H	.2660	1	2 1/2	19188
I	.2720	1	2 1/2	19189
J	.2770	1	2 1/2	19190
K	.2810	1	2 1/2	19191
9/32	.2812	1	2 1/2	19192
L	.2900	1	2 1/2	19193
M	.2950	1 1/4	2 3/4	19194
1964	.2969	1 1/4	2 3/4	19195
N	.3020	1 1/4	2 3/4	19196
5/16	.3125	1 1/4	2 3/4	19197
O	.3160	1 1/4	2 3/4	19198
P	.3230	1 1/4	2 3/4	19199
21/64	.3281	1 1/4	2 3/4	19200



2 FLUTES / 118° POINT

25° Helix, Right Hand Spiral, Right Hand Cut



DIAMETER		FLUTE LENGTH	OAL	PART NUMBER
Q	.3320	11/4	2 3/4	19201
R	.3390	11/4	3	19202
11/32	.3438	11/4	3	19203
S	.3580	11/4	3	19204
T	.3594	11/4	3	19205
23/64	.3680	11/4	3	19206
U	.3750	11/4	3	19207
3/8	.3770	11/4	3	19208
V	.3860	11/4	3	19209
W	.3906	11/4	3	19210
25/64	.3970	11/4	3	19211
X	.4040	11/4	3	19212
Y	.4062	11/4	3	19213
13/32	.4130	11/4	3	19214
Z	.4219	11/4	3	19215
27/64	.4375	11/4	3	19216
7/16	.4531	11/4	3	19217
29/64	.4688	11/4	3	19218
15/32	.4844	11/4	3	19220
1/2	.5000	11/4	3	19221
17/32	.5312	11/4	3 1/2	16108
9/16	.5625	11/2	3 1/2	15256
19/32	.5938	11/2	3 1/2	16109
5/8	.6250	11/2	3 1/2	15262
21/32	.6562	11/2	3 1/2	16110
11/16	.6875	11/2	4	16111
23/32	.7188	11/2	4	16112
3/4	.7500	11/2	4	15275
7/8	.8750	11/2	4	16113
1	1.0000	11/2	4	16114

2 FLUTES / 118° POINT

25° Helix, Right Hand Spiral, Right Hand Cut

TOLERANCE:

SHANK DIAMETER: Intended for use in three jaw chucks and collet holders only.

DRILL DIAMETER: +.0" -.0005"

+0.00mm -0.013mm

DIAMETER		FLUTE LENGTH	OAL	PART NUMBER
80	.0135	1/4	1 1/2	1086
79	.0145	1/4	1 1/2	1087
1/64	.0156	1/4	1 1/2	1088
78	.0160	1/4	1 1/2	1089
77	.0180	1/4	1 1/2	1090
76	.0200	1/4	1 1/2	1091
75	.0210	1/4	1 1/2	1092
74	.0225	1/4	1 1/2	1093
73	.0240	1/4	1 1/2	1094
72	.0250	5/16	1 1/2	1095
71	.0260	5/16	1 1/2	1096
70	.0280	5/16	1 1/2	1097
69	.0292	5/16	1 1/2	1098
68	.0310	5/16	1 1/2	1099
1/32	.0313	5/16	1 1/2	1100
67	.0320	5/16	1 1/2	1101
66	.0330	5/16	1 1/2	1102
65	.0350	5/8	1 1/2	1103
64	.0360	5/8	1 1/2	1104
63	.0370	5/8	1 1/2	1105
62	.0380	5/8	1 1/2	1106
61	.0390	5/8	1 1/2	1107
60	.0400	3/4	1 1/2	1108
59	.0410	3/4	1 1/2	1109
58	.0420	3/4	1 1/2	1110
57	.0430	3/4	1 1/2	1111
56	.0465	3/4	1 1/2	1112
3/64	.0469	3/4	1 1/2	1112A
55	.0520	3/4	1 1/2	1113
54	.0550	3/4	1 1/2	1114
53	.0595	3/4	1 1/2	1115
1/16	.0625	3/4	1 1/2	1116
52	.0635	3/4	1 1/2	1117
51	.0670	3/4	1 1/2	1118
50	.0700	7/8	1 3/4	1119
49	.0730	7/8	1 3/4	1120
48	.0760	7/8	1 3/4	1121
5/64	.0781	7/8	1 3/4	1122
47	.0785	7/8	1 3/4	1123
46	.0810	7/8	1 3/4	1124
45	.0820	7/8	1 3/4	1125
44	.0860	1	2	1126
43	.0890	1	2	1127
42	.0935	1	2	1128
3/32	.0937	1	2	1129
41	.0960	1	2	1130
40	.0980	1	2	1131
39	.0995	1 1/4	2 1/4	1132



2 FLUTES / 118° POINT

25° Helix, Right Hand Spiral, Right Hand Cut



DIAMETER		FLUTE LENGTH	OAL	PART NUMBER
38	.1015	1 1/4	2 1/4	1133
37	.1040	1 1/4	2 1/4	1134
36	.1065	1 1/4	2 1/4	1135
7/64	.1094	1 1/4	2 1/4	1136
35	.1100	1 1/4	2 1/4	1137
34	.1110	1 1/4	2 1/4	1138
33	.1130	1 1/4	2 1/4	1139
32	.1160	1 1/4	2 1/4	1140
31	.1200	1 1/4	2 1/4	1141
1/8	.1250	1 1/4	2 1/4	1142
30	.1285	1 1/4	2 1/4	1143
29	.1360	1 3/8	2 1/2	1144
28	.1405	1 3/8	2 1/2	1145
9/64	.1406	1 3/8	2 1/2	1146
27	.1440	1 3/8	2 1/2	1147
26	.1470	1 3/8	2 1/2	1148
25	.1495	1 3/8	2 1/2	1149
24	.1520	1 3/8	2 1/2	1150
23	.1540	1 3/8	2 1/2	1151
5/32	.1562	1 3/8	2 1/2	1152
22	.1570	1 3/8	2 1/2	1153
21	.1590	1 3/8	2 1/2	1154
20	.1610	1 3/8	2 1/2	1155
19	.1660	1 5/8	2 1/2	1156
18	.1695	1 5/8	2 1/2	1157
11/64	.1719	1 5/8	2 1/2	1158
17	.1730	1 5/8	2 1/2	1159
16	.1770	1 5/8	2 1/2	1160
15	.1800	1 5/8	2 1/2	1161
14	.1820	1 5/8	2 1/2	1162
13	.1850	1 5/8	2 1/2	1163
3/16	.1875	1 5/8	2 1/2	1164
12	.1890	1 5/8	2 1/2	1165
11	.1910	1 5/8	2 1/2	1166
10	.1935	1 5/8	2 1/2	1167
9	.1960	1 3/4	3	1168
8	.1990	1 3/4	3	1169
7	.2010	1 3/4	3	1170
13/64	.2031	1 3/4	3	1171
6	.2040	1 3/4	3	1172
5	.2055	1 3/4	3	1173
4	.2090	1 3/4	3	1174
3	.2130	1 3/4	3	1175
7/32	.2187	1 3/4	3	1176
2	.2210	1 3/4	3	1177
1	.2280	1 3/4	3	1178
A	.2340	2	3 1/4	1179
15/64	.2344	2	3 1/4	1180
B	.2380	2	3 1/4	1181
C	.2420	2	3 1/4	1182
D	.2460	2	3 1/4	1183

TOLERANCE:

SHANK DIAMETER: Intended for use in three jaw chucks and collet holders only.

DRILL DIAMETER: +.0" -.0005"

+0.00mm -0.013mm

DIAMETER		FLUTE LENGTH	OAL	PART NUMBER
1/4	.2500	2	3 1/4	1184
E	.2500	2	3 1/4	1184
F	.2570	2	3 1/4	1185
G	.2610	2 1/8	3 1/2	1186
17/64	.2656	2 1/8	3 1/2	1187
H	.2660	2 1/8	3 1/2	1188
I	.2720	2 1/8	3 1/2	1189
J	.2770	2 1/8	3 1/2	1190
K	.2810	2 1/8	3 1/2	1191
9/32	.2812	2 1/8	3 1/2	1192
L	.2900	2 1/8	3 1/2	1193
M	.2950	2 3/8	3 3/4	1194
19/64	.2969	2 3/8	3 3/4	1195
N	.3020	2 3/8	3 3/4	1196
5/16	.3125	2 3/8	3 3/4	1197
O	.3160	2 3/8	3 3/4	1198
P	.3230	2 3/8	3 3/4	1199
21/64	.3281	2 1/2	4	11200
Q	.3320	2 1/2	4	11201
R	.3390	2 1/2	4	11202
11/32	.3438	2 1/2	4	11203
S	.3480	2 1/2	4	11204
T	.3580	2 1/2	4	11205
23/64	.3594	2 1/2	4	11206
U	.3680	2 3/4	4 1/4	11207
3/8	.3750	2 3/4	4 1/4	11208
V	.3770	2 3/4	4 1/4	11209
W	.3860	2 7/8	4 1/2	11210
25/64	.3906	2 7/8	4 1/2	11211
X	.3970	2 7/8	4 1/2	11212
Y	.4040	2 7/8	4 1/2	11213
13/32	.4062	2 7/8	4 1/2	11214
Z	.4130	2 7/8	4 1/2	11215
27/64	.4219	2 7/8	4 1/2	11216
7/16	.4375	2 7/8	4 1/2	11217
29/64	.4531	3	4 3/4	11218
15/32	.4688	3	4 3/4	11219
31/64	.4844	3	4 3/4	11220
1/2	.5000	3	4 3/4	11221
17/32	.5312	11/4	3 1/2	16108
9/16	.5625	11/2	3 1/2	15256
19/32	.5938	11/2	3 1/2	16109
5/8	.6250	11/2	3 1/2	15262
21/32	.6562	11/2	3 1/2	16110
11/16	.6875	11/2	4	16111
23/32	.7188	11/2	4	16112
3/4	.7500	11/2	4	15275
7/8	.8750	11/2	4	16113
1	1.0000	11/2	4	16114



90° POINT, 3 PARABOLIC FLUTES

- Burr Teeth
- Right Hand Spiral
- Right Hand Cut

poly drill

TOLERANCE:

SHANK DIAMETER:

+0.0" -0.0005"
+0.0mm -0.013mm

DRILL DIAMETER:

+0.0000" -0.001"
+0.00mm -0.025mm



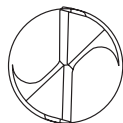
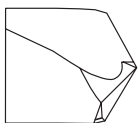
DIAMETER		FLUTE LENGTH	SHANK DIAMETER	OAL	PART NUMBER	CC-13 COATED
11	.1910	1	.2500	4	25319	25300
1/4	.2500	1 1/2	.2500	4	25322	25303
	.2520	1 1/2	.2520	4	25323	25304
17/64	.2656	1 1/2	.2656	4	25338	25339
9/32	.2812	1 1/2	.2812	4	25340	25341
5/16	.3125	1 1/2	.3125	4 1/2	25327	25308
3/8	.3750	1 1/2	.3750	5	25342	25343
25/64	.3906	1 1/2	.3906	5	25344	25345
7/16	.4375	1 1/2	.4375	6	25346	25347
1/2	.5000	1 1/2	.5000	6	25337	25318
33/64	.5156	1 1/2	.5156	6	25348	25349

FOR DRILLING GRAPHITE / ALUMINUM LAMINATES

Designed to drill Composite & Aluminum stack material

TOLERANCE:**DRILL DIAMETER:** +.0000" -.0005"

DIAMETER		FLUTE LENGTH	OAL	PART NUMBER
40	0.0980	1	2	8FD-0980
1/8	0.1250	1-1/4	2-1/4	8FD-1250
30	0.1285	1-1/4	2-1/4	8FD-1285
9/64	0.1406	1-3/8	2-1/2	8FD-1406
5/32	0.1562	1-3/8	2-1/2	8FD-1562
21	0.1590	1-3/8	2-1/2	8FD-1590
20	0.1610	1-3/8	2-1/2	8FD-1610
11/64	0.1719	1-5/8	2-3/4	8FD-1719
3/16	0.1875	1-5/8	2-3/4	8FD-1875
11	0.1910	1-5/8	2-3/4	8FD-1910
10	0.1935	1-5/8	2-3/4	8FD-1935
8	0.1990	1-3/4	3	8FD-1990
7	0.2010	1-3/4	3	8FD-2010
13/64	0.2031	1-3/4	3	8FD-2031
7/32	0.2188	1-3/4	3	8FD-2188
1	0.2280	1-3/4	3	8FD-2280
A	0.2340	2	3-1/4	8FD-2340
B	0.2380	2	3-1/4	8FD-2380
1/4	0.2500	2	3-1/2	8FD-2500
F	0.2570	2	3-1/2	8FD-2570
9/32	0.2812	2-1/8	3-1/2	8FD-2812
O	0.3160	2-3/8	3-3/4	8FD-3160
11/32	0.3438	2-1/2	4	8FD-3438
3/8	0.3750	2-3/4	4	8FD-3750

**8 FACET**

SELF CENTERING - Produces less burr on exit side of hole.
Helps the corner from breaking down.

DESIGNED FOR DRILLING THE MOST HARDENED AND TREATED MATERIAL.

We shorten the OAL and flute for more strength.

- Modifications can be made for step drills.
- Wire, Fractional letter sizes;



DIAMETER		FLUTE LENGTH	OAL	PART NUMBER
60	.0400	1/4	1 1/2	1508
59	.0410	1/4	1 1/2	1509
58	.0420	1/4	1 1/2	1510
57	.0430	1/4	1 1/2	1511
56	.0465	1/4	1 1/2	1512
3/64	.0469	1/4	1 1/2	1512A
55	.0520	3/8	1 1/2	1513
54	.0550	3/8	1 1/2	1514
53	.0595	3/8	1 1/2	1515
1/16	.0625	3/8	1 1/2	1516
52	.0635	3/8	1 1/2	1517
51	.0670	3/8	1 1/2	1518
50	.0700	3/8	1 1/2	1519
49	.0730	3/8	1 1/2	1520
48	.0760	3/8	1 1/2	1521
5/64	.0781	3/8	1 1/2	1522
47	.0785	1/2	1 1/2	1523
46	.0810	1/2	1 1/2	1524
45	.0820	1/2	1 1/2	1525
44	.0860	1/2	1 1/2	1526
43	.0890	1/2	1 1/2	1527
42	.0935	1/2	1 1/2	1528
3/32	.0937	1/2	1 1/2	1529
41	.0960	5/8	1 3/4	1530
40	.0980	5/8	1 3/4	1531
39	.0995	5/8	1 3/4	1532
38	.1015	5/8	1 3/4	1533
37	.1040	5/8	1 3/4	1534
36	.1065	5/8	1 3/4	1535
7/64	.1094	5/8	1 3/4	1536
35	.1100	5/8	1 3/4	1537
34	.1110	5/8	1 3/4	1538
33	.1130	5/8	1 3/4	1539
32	.1160	5/8	1 3/4	1540
31	.1200	5/8	1 3/4	1541
1/8	.1250	5/8	1 3/4	1542
30	.1285	5/8	1 3/4	1543
29	.1360	5/8	1 3/4	1544
28	.1405	5/8	1 3/4	1545
9/64	.1406	5/8	1 3/4	1546
27	.1440	3/4	2	1547
26	.1470	3/4	2	1548
25	.1495	3/4	2	1549
24	.1520	3/4	2	1550
23	.1540	3/4	2	1551
5/32	.1562	3/4	2	1552
22	.1570	3/4	2	1553
21	.1590	3/4	2	1554
20	.1610	3/4	2	1555
19	.1660	3/4	2	1556
18	.1695	3/4	2	1557
11/64	.1719	3/4	2	1558
17	.1730	3/4	2	1559
16	.1770	3/4	2	1560
15	.1800	3/4	2	1561
14	.1820	3/4	2	1562
13	.1850	3/4	2	1563
3/16	.1875	3/4	2	1564

TOLERANCE:
DRILL DIAMETER ± 0.0005



DIAMETER		FLUTE LENGTH	OAL	PART NUMBER
12	.1890	3/4	2	1565
11	.1910	3/4	2	1566
10	.1935	3/4	2	1567
9	.1960	3/4	2	1568
8	.1990	3/4	2	1569
7	.2010	3/4	2	1570
13/64	.2031	7/8	2 1/4	1571
6	.2040	7/8	2 1/4	1572
5	.2055	7/8	2 1/4	1573
4	.2090	7/8	2 1/4	1574
3	.2130	7/8	2 1/4	1575
7/32	.2188	7/8	2 1/4	1576
2	.2210	7/8	2 1/4	1577
1	.2280	7/8	2 1/4	1578
A	.2340	7/8	2 1/4	1579
15/64	.2344	7/8	2 1/4	1580
B	.2380	7/8	2 1/4	1581
C	.2420	7/8	2 1/4	1582
D	.2460	7/8	2 1/4	1583
1/4	.2500	7/8	2 1/4	1584
E	.2500	7/8	2 1/4	1585
F	.2570	7/8	2 1/4	1586
G	.2610	7/8	2 1/4	1587
17/64	.2656	1	2 1/2	1588
H	.2660	1	2 1/2	1589
I	.2720	1	2 1/2	1590
J	.2770	1	2 1/2	1591
K	.2810	1	2 1/2	1592
9/32	.2812	1	2 1/2	1593
L	.2900	1	2 1/2	1594
M	.2950	1	2 1/2	1595
19/64	.2969	1	2 1/2	1596
N	.3020	1	2 1/2	1597
5/16	.3125	1	2 1/2	1598
O	.3160	1	2 1/2	1599
P	.3230	1	2 1/2	15200
21/64	.3281	1	2 1/2	15201
Q	.3320	1	2 1/2	15202
R	.3390	1	2 1/2	15203
11/32	.3438	1	2 1/2	15204
S	.3480	1	2 1/2	15205
T	.3580	1	2 1/2	15206
23/64	.3594	1	2 1/2	15207
U	.3680	1	2 1/2	15208
3/8	.3750	1	2 1/2	15209
V	.3770	1	2 1/2	15210
W	.3860	1	2 1/2	15211
25/64	.3906	1 1/4	3	15212
X	.3970	1 1/4	3	15213
Y	.4040	1 1/4	3	15214
13/32	.4062	1 1/4	3	15215
Z	.4130	1 1/4	3	15216
27/64	.4219	1 1/4	3	15217
7/16	.4375	1 1/2	3 1/2	15218
29/64	.4531	1 1/2	3 1/2	15219
15/32	.4688	1 1/2	3 1/2	15220
31/64	.4844	1 1/2	3 1/2	15221
1/2	.5000	1 1/2	3 1/2	15222



FOR DRILLING HARD TO REACH LOCATIONS.

For drilling holes where reach is normally not accessible with jobbers or taper length drills.

- Feeds should be light to medium range.
- Not recommended for deep hole applications

TOLERANCE:

DRILL DIAMETER ± 0.0005

P3 = 135° SPLIT POINT



6"



DIAMETER		FLUTE LENGTH	OAL	PART NUMBER
#40	.0980	1-3/8	6	AED-0980-6
1/8	.1250	1-5/8	6	AED-1250-6
#30	.1285	1-5/8	6	AED-1285-6
#28	.1406	1-3/4	6	AED-1406-6
5/32	.1562	2	6	AED-1562-6
#21	.1590	2-1/8	6	AED-1590-6
#20	.1610	2-1/8	6	AED-1610-6
#19	.1660	2-1/8	6	AED-1660-6
3/16	.1875	2-5/16	6	AED-1875-6
#11	.1910	2-5/16	6	AED-1910-6
#10	.1935	2-7/16	6	AED-1935-6
#8	.1990	2-7/16	6	AED-1990-6
#7	.2010	2-7/16	6	AED-2010-6
13/64	.2031	2-7/16	6	AED-2031-6
7/32	.2188	2-1/2	6	AED-2188-6
1/4	.2500	2-3/4	6	AED-2500-6
5/16	.3125	3-3/16	6	AED-3125-6
3/8	.3750	3-5/8	6	AED-3750-6

DOUBLE MARGIN DRILLS

8500 SERIES

FOR DRILLING GRAPHITE / ALUMINUM LAMINATES

Designed with a second margin that burnishes the cavity, making a true hole and smoother finish while providing a more accurate, rounder drilled hole.

TOLERANCE:
DRILL DIAMETER $+0 -0.0005$



CORE DRILLS

8650 SERIES

Core drills are used to enlarge previous drilled holes in composites, fiberglass and stacked materials.



DRILLS

CENTERS AND CHAMFERS IN ONE SINGLE OPERATION.

Can be used in titanium, hardened steels, stainless steels, steels, cast iron, graphite, brass & copper, aluminum, composites, and wood.

- 82°, and 90° angle points, special lengths & OALs available upon request.

TOLERANCE:

SHANK DIAMETER: h6

PILOT DIAMETER: +.0030" -0"
+0.08mm -0.0mm



TOOL NUMBER	PILOT DIAMETER	BODY DIAMETER	OAL	UNCOATED	COATED
				60°	TiAlN
000	.0200	.1250	1 1/2	23000	23109
00	.0250	.1250	1 1/2	23001	23110
0	1/32	.1250	1 1/2	23100	23111
1	3/64	.1250	1 1/2	23101	23112
2	5/64	.1875	2	23102	23113
3	7/64	.2500	2	23103	23114
4	1/8	.3125	2 1/8	23104	23115
5	3/16	.4375	2 3/4	23105	23116
6	7/32	.5000	3	23106	23117
7	1/4	.6250	3 1/4	23107	23118
8	5/16	.7500	3 1/2	23108	23119

USED IN COMBINATION WITH A NUT PLATE DRILL MOTOR.

Available drill sizes are No. 30 & No. 40 with either 3/16 or 1/4 body diameters and external threaded shanks.

- P3 135° Split Point available upon request.

TOLERANCE:

DRILL DIAMETER +.0 -.0003



135° 4 FACET POINT

DIAMETER	DRILL LENGTH	BODY DIAMETER	THREAD SIZE	POINT TYPE	PART NUMBER
0.0980	.420	3/16"	8-32	P3 or 135° Split	WD40-100-35C
0.1285	.420	1/4"	8-32	P3 or 135° Split	WD30-100-35C



PILOTED COUNTERSINK

9100 SERIES

PERFECT FOR KEEPING SCREW FLUSH WITH THE DRILLED MATERIAL.

- Designed to enlarge and bevel already drilled holes.
- Angles available: **130°**, **82°**, **90°**

PART NUMBER EXPLANATION



3/8

COUNTERSINK	BODY SIZE	PILOT	ANGLE	FLUTES
CS	375	1562	100	3

CS-375-XXXX-100-3 XXXX= PILOT DIAMETER

1/2

COUNTERSINK	BODY SIZE	PILOT	ANGLE	FLUTES
CS	500	0980	100	3

CS-500-XXXX-100-3 XXXX= PILOT DIAMETER

5/8

COUNTERSINK	BODY SIZE	PILOT	ANGLE	FLUTES
CS	625	3750	100	3

CS-625-XXXX-100-3 XXXX= PILOT DIAMETER

3/4

COUNTERSINK	BODY SIZE	PILOT	ANGLE	FLUTES
CS	750	3750	100	3

CS-750-XXXX-100-3 XXXX= PILOT DIAMETER

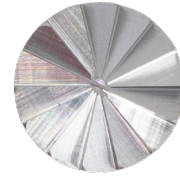


Kevlar
COUNTERSINKS AVAILABLE

DESIGNED TO TRIM EXCESS MATERIAL FROM FLUSH-HEAD RIVETS.

- Multi-flute
- 1/4, 3/8, 1/2 Stocked, others available upon request.

DIAMETER	FLUTES	OAL	THREAD	PART NUMBER	
1/4*	8	.800	1/4-28	CC8801-1	IN STOCK
5/16	8	.800	1/4-28	CC8801-2	
3/8*	10	.925	1/4-28	CC8801-3	IN STOCK
1/2*	14	.925	1/4-28	CC8801-4	IN STOCK
5/8	18	.925	1/4-28	CC8801-5	
3/4	22	.950	1/4-28	CC8801-6	
1	28	1.10	3/8-24	CC8801-7	



EXCELLENT IN STEELS, HEAT TREATED MATERIALS, STELLITE & TITANIUM.

Solid Tungsten Carbide, brilliant finish to minimize chip build-up and impart the finest workpiece finish. For single-end and double-end internal grinding burrs: 45° lead angle standard. Also available without lead angle. Right hand medium diamond cut standard.

TOLERANCE:

CUTTER TOLERANCE: +.0 - .002

**ARBOR STYLE AVAILABLE****SINGLE END - SOLID CARBIDE**

HEAD DIA.	NECK DIA.	HEAD LENGTH	SHANK DIA.	OAL	PART NUMBER
1/16	.048	3/32	1/8	1-1/2	1300
3/32	.079	1/8	1/8	1-1/2	1301
1/8	.110	1/8	1/8	1-1/2	1302
5/32	.141	3/16	3/16	2	1303
3/16	.172	3/16	3/16	2	1304
7/32	.203	7/32	1/4	2	1305
1/4	.235	1/4	1/4	2	1306

**SINGLE END - STEEL SHANK**

HEAD DIA.	NECK DIA.	HEAD LENGTH	SHANK DIA.	OAL	PART NUMBER
5/16	.300	5/16	1/4	2-1/4	1307
3/8	.360	5/16	1/4	2-1/4	1308
7/16	.423	5/16	1/4	2-1/4	1309
1/2	.485	5/16	1/4	2-1/4	1310
9/16	.547	5/16	3/8	2-1/2	1311
5/8	.605	3/8	3/8	2-1/2	1312
3/4	.735	3/8	3/8	2-1/2	1313
1	.985	3/8	3/8	2-1/2	1314

ENGRAVING BLANKS

7000 SERIES

SINGLE END & DOUBLE END

TOLERANCE ± 0.0005

DIAMETER	FLAT LENGTH	OAL	SINGLE END	DOUBLE END
1/16	1/4	1-1/2	EB4SE	EB4DE
3/32	1/4	1-1/2	EB10SE	EB10DE
1/8	1/4	1-1/2	EB12SE	EB12DE
3/16	3/8	2	EB14SE	EB14DE
1/4	3/8	2	EB16SE	EB16DE
5/16	1/2	2-1/2	EB20SE	EB20DE
3/8	1/2	2-1/2	EB22SE	EB22DE
7/16	1/2	2-1/2	EB23SE	EB23DE
1/2	1/2	3	EB24SE	EB24DE



DOUBLE END ENGRAVERS

7025 SERIES

ALL-IN-ONE ENGRAVING TOOL

- 1 Flute
- 60° Included Angle
- .021 Radius
- Right Hand Cut

TOLERANCE:

SHANK DIAMETER: h6

Jo Engraver

CUTTING DIAMETER	TOOL LENGTH	CUTTING LENGTH	SHANK DIAMETER	OAL	PART NUMBER	
					UNCOATED	TIALN
1/8	SD	1/8	1/8	2	12113	12109

OTHER INCLUDED ANGLES & SPECIAL RADIUS AVAILABLE



ENGRAVERS



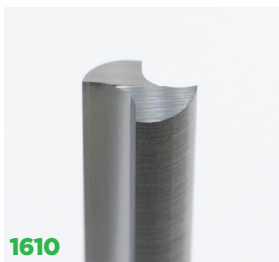
TOLERANCE:

CUTTER TOLERANCE: +.0 - .002



1600

CUTTING DIAMETER	FLUTE LENGTH	OAL	SPIRAL	CUT	FLUTES	SERIES	PART NUMBER
1/8	1/2	1-1/2	ST	ST	1	1600	1600-1250
3/16	1/2	2	ST	ST	1	1600	1600-1875
1/4	3/4	2-1/2	ST	ST	1	1600	1600-2500
3/8	3/4	2-1/2	ST	ST	1	1600	1600-3750
1/2	1	3	ST	ST	1	1600	1600-5000



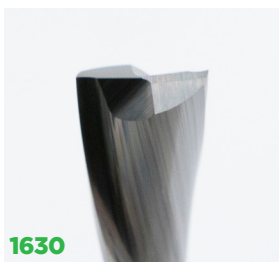
1610

CUTTING DIAMETER	FLUTE LENGTH	OAL	SPIRAL	CUT	FLUTES	SERIES	PART NUMBER
1/8	1/2	1-1/2	ST	ST	2	1610	1610-1250
3/16	1/2	2	ST	ST	2	1610	1610-1875
1/4	3/4	2-1/2	ST	ST	2	1610	1610-2500
3/8	3/4	2-1/2	ST	ST	2	1610	1610-3750
1/2	1	3	ST	ST	2	1610	1610-5000



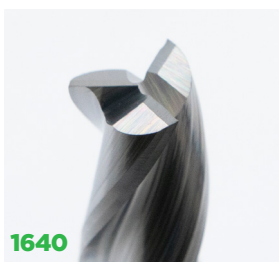
1620

CUTTING DIAMETER	FLUTE LENGTH	OAL	SPIRAL	CUT	FLUTES	SERIES	PART NUMBER
1/8	1/2	1-1/2	RH	RHC	2	1620	1620-1250
3/16	1/2	2	RH	RHC	2	1620	1620-1875
1/4	3/4	2-1/2	RH	RHC	2	1620	1620-2500
3/8	3/4	2-1/2	RH	RHC	2	1620	1620-3750
1/2	1	3	RH	RHC	2	1620	1620-5000



1630

CUTTING DIAMETER	FLUTE LENGTH	OAL	SPIRAL	CUT	FLUTES	SERIES	PART NUMBER
1/8	1/2	1-1/2	LH	RHC	2	1630	1630-1250
3/16	1/2	2	LH	RHC	2	1630	1630-1875
1/4	3/4	2-1/2	LH	RHC	2	1630	1630-2500
3/8	3/4	2-1/2	LH	RHC	2	1630	1630-3750
1/2	1	3	LH	RHC	2	1630	1630-5000



1640

CUTTING DIAMETER	FLUTE LENGTH	OAL	SPIRAL	CUT	FLUTES	SERIES	PART NUMBER
1/8	1/2	1-1/2	RH	RHC	3	1640	1640-1250
3/16	1/2	2	RH	RHC	3	1640	1640-1875
1/4	3/4	2-1/2	RH	RHC	3	1640	1640-2500
3/8	3/4	2-1/2	RH	RHC	3	1640	1640-3750
1/2	1	3	RH	RHC	3	1640	1640-5000



1650

CUTTING DIAMETER	FLUTE LENGTH	OAL	SPIRAL	CUT	FLUTES	SERIES	PART NUMBER
1/8	1/2	1-1/2	LH	RHC	3	1650	1650-1250
3/16	1/2	2	LH	RHC	3	1650	1650-1875
1/4	3/4	2-1/2	LH	RHC	3	1650	1650-2500
3/8	3/4	2-1/2	LH	RHC	3	1650	1650-3750
1/2	1	3	LH	RHC	3	1650	1650-5000

SOLID CARBIDE ROUTERS SPECIALLY DESIGNED

for use in high speed portable or stationary routing machines on highly abrasive materials as fiberglass and phenolic-epoxy glass, graphite, kevlar etc.

SPECIAL, SUPERFINISHED CUTTING EDGES

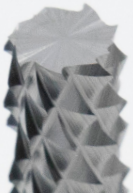
are sharper to start with than conventional fiberglass Routers and they stay sharper longer. Depending on your specific operation and material to be routed, there are five end configurations. Special diameters, flute lengths and OALs available upon request.

TOLERANCE:

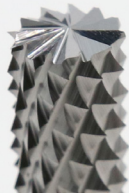
CUTTER TOLERANCE: +.0 - .005



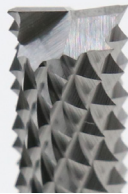
A TYPE:
No End Cut



B TYPE:
Burr Style End Cut



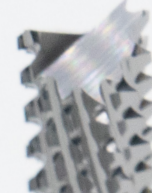
C TYPE:
End Mill End Cut



D TYPE:
135° Drill Point



E TYPE:
Fishtale End Cut



CUTTING DIAMETER	DECIMAL SIZE	FLUTE LENGTH	OAL	SERIES	END TYPE A	END TYPE B	END TYPE C	END TYPE D	END TYPE E
1/32	0.0312	1/8	1-1/2	1250	1250-0312-A	1250-0312-B	1250-0312-C	1250-0312-D	1250-0312-E
1/16	0.0625	3/16	1-1/2	1250	1250-0625-A	1250-0625-B	1250-0625-C	1250-0625-D	1250-0625-E
3/32	0.0938	3/8	1-1/2	1250	1250-0938-A	1250-0938-B	1250-0938-C	1250-0938-D	1250-0938-E
1/8	0.1250	1/2	1-1/2	1250	1250-1250-A	1250-1250-B	1250-1250-C	1250-1250-D	1250-1250-E
3/16	0.1875	1/2	2	1250	1250-1875-A	1250-1875-B	1250-1875-C	1250-1875-D	1250-1875-E
1/4	0.2500	3/4	2	1250	1250-2500-2-A	1250-2500-2-B	1250-2500-2-C	1250-2500-2-D	1250-2500-2-E
1/4	0.2500	3/4	2-1/2	1250	1250-2500-25-A	1250-2500-25-B	1250-2500-25-C	1250-2500-25-D	1250-2500-25-E
1/4	0.2500	1	3	1250	1250-2500-3-A	1250-2500-3-B	1250-2500-3-C	1250-2500-3-D	1250-2500-3-E
5/16	0.3125	1	2-1/2	1250	1250-3125-A	1250-3125-B	1250-3125-C	1250-3125-D	1250-3125-E
3/8	0.3750	1	2-1/2	1250	1250-3750-A	1250-3750-B	1250-3750-C	1250-3750-D	1250-3750-E
1/2	0.5000	1	3	1250	1250-5000-A	1250-5000-B	1250-5000-C	1250-5000-D	1250-5000-E

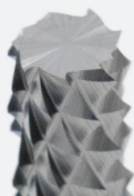
SPECIALLY DESIGNED.

- For hand and machine routing of Kevlar materials.
- Available only in 1/4" diameter, 1" LOC, 3" OAL.
- Available in both medium and coarse cut.
- Use coarse when roughing out major portions of material to shape thicker material.
- Use medium when roughing thinner material or trimming parts to final shape.

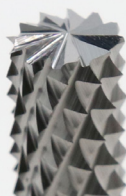


TOLERANCE
SHANK TOLERANCE: h6
CUTTER TOLERANCE: +.0 -.002

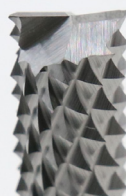
A TYPE:
No End Cut



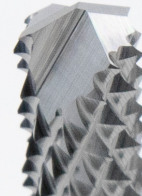
B TYPE:
Burr Style End Cut



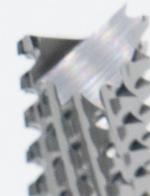
C TYPE:
End Mill End Cut



D TYPE:
135° Drill Point



E TYPE:
Fishtale End Cut



CUTTING DIAMETER	DECIMAL SIZE	FLUTE LENGTH	OAL	SERIES	CUT	END TYPE A	END TYPE B	END TYPE C	END TYPE D	END TYPE E
1/4	.2500	1	3	1200	MEDIUM	1605KM-3A	1605KM-3B	1605KM-3C	1605KM-3D	1605KM-3E
1/4	.2500	1	4	1200	COARSE	1605KC-3A	1605KC-3B	1605KC-3C	1605KC-3D	1605KC-3E

COMPRESSION ROUTERS

1300 SERIES

Solid carbide compression routers are designed for precision applications requiring high feed rates and optimum finishes. Unique right and left engineered helix's, right hand cutting, end cutting to center for plunge cutting applications. Suitable for CFRP and double-sided laminated materials.

TOLERANCE:

SHANK TOLERANCE: h6

CUTTER TOLERANCE: +.0 -.002



**SPECIALS
AVAILABLE**

QUOTES@CARBROUSA.COM



DIAMETER	DECIMAL	UPCUT FLUTE	FLUTE LENGTH	OAL	UNCOATED	CC-1 COATING	CC-2 COATING
1/8	0.1250	.225	1/2	2	CR-1250	CR-1250-CC1	CR-1250-CC2
1/4	0.2500	3/16	3/4	2-1/2	CR-2500	CR-2500-CC1	CR-2500-CC2
3/8	0.3750	1/4	1	2-1/2	CR-3750	CR-3750-CC1	CR-3750-CC2
1/2	0.5000	1/4	1-1/8	3	CR-5000	CR-5000-CC1	CR-5000-CC2

HONEYCOMB ROUTERS

1350 SERIES

For hand and machine routing of sandwiched honeycomb materials.

- **COATED WITH CC-6**

DIAMETER	FLUTE LENGTH	OAL	FLUTES	CC-6 COATING
1/4	1-1/8"	3	4	1350-2500
3/8	1-1/8"	3	8	1350-3750



ROUTERS



SOLID CARBIDE BORING TOOLS

2100 SERIES

Single, straight flute with tapered clearance neck improving rigidity with less deflection. Stocked uncoated.

TOLERANCE:
SHANK DIAMETER: h6
CUTTER DIAMETER: +.0" -.004"



TOOL NUMBER	HOLE DIAMETER	DEPTH OF HOLE	SHANK DIAMETER	OAL	PART NUMBER
F-002	.0600	3/16	.1250	1 1/2	24012
F-00	.0800	3/8	.1250	1 1/2	24010
F-0	.0900	1/2	.1250	1 1/2	24000
F-1	.1200	5/8	.1250	1 1/2	24001
F-2	.1500	3/4	.1875	2	24002
F-3	.1800	1	.1875	2	24003
F-4	.2100	1 1/4	.2500	2 1/2	24004
F-5	.2400	1 1/4	.2500	2 1/2	24005
F-6	.2700	1 1/4	.3125	2 1/2	24006
F-7	.3000	1 1/4	.3125	2 1/2	24007
F-8	.3300	1 1/2	.3750	2 1/2	24008
F-9	.3600	1 1/2	.3750	2 1/2	24009

STEEL SHANK BORING BARS

2200 SERIES

CARBIDE HEAD, STEEL SHANK BORING TOOLS

Solid tungsten carbide head only.

TOLERANCE:
SHANK DIAMETER: +.0" -.0005"
CUTTER DIAMETER: +.0" -.004"



HOLE DIAMETER	DEPTH OF HOLE	SHANK DIAMETER	OAL	PART NUMBER
3/32	3/8	3/8	4	1275
1/8	1/2	3/8	4	1276
5/32	3/4	3/8	4	1277
3/16	3/4	3/8	4	1278
7/32	1	3/8	4	1279
1/4	1	3/8	4	1280
9/32	1 1/4	3/8	4	1281
5/16	1 1/4	3/8	4	1282
11/32	1 1/2	1/2	4	1283
3/8	1 1/2	1/2	4	1284

MATRIX END MILLS

5000 SERIES

THE MATRIX IS A 5-FLUTE, high performance end mill that allows for ultimate material removal rates in carbon composites, fiberglass, fiber reinforced materials, plastics, and green ceramics. Its high shear and low cutting forces provide a clean edge with minimal material delamination or tearing of fibers. The MATRIX is available uncoated or with CC1 coating.

TOLERANCE:

SHANK DIAMETER: h6

CUTTER DIAMETER: $+.0''$ $-.003''$
 $+0.0\text{mm}$ -0.0762mm

MATRIX



DIAMETER	CUTTING LENGTH	SHANK DIAMETER	OAL	CORNER RADIUS	PART NUMBER	
					UC	CC-1
1/8	1/2	1/8	1 1/2	.0100	25000	25025
	1	1/8	3	.0100	25001	25026
1/4	3/4	1/4	2 1/2	.0200	25002	25027
	1-1/2	1/4	4	.0200	25003	25028
3/8	1	3/8	2 1/2	.0300	25004	25029
	2	3/8	4	.0300	25005	25030
1/2	1-1/4	1/2	3 1/2	.0300	25006	25031
	2-3/8	1/2	5	.0300	25007	25032

MULTI-MILLS

1150 SERIES

DESIGNED TO WORK WITH HARD METALS

The Multimill is designed to work hard metals (40HRC - 65HRC) with greater efficiency than conventional mills.

- Multimills have also been used with good effect on Titanium, stainless steels, and high temperature alloys.
- Square end & ball end are standard

TOLERANCE

SHANK TOLERANCE: h6

CUTTER TOLERANCE: $+.0$ $-.002$



DIAMETER	FLUTE LENGTH	SHANK DIAMETER	OAL	PART NUMBER SQUARE	PART NUMBER BALL	CC-13 COATED
1/8	1/2	1/8	1 1/2	602M	602MB	602M-CC13
5/32	1/2	3/16	2	603M	603MB	603M-CC13
3/16	1/2	3/16	2	604M	604MB	604M-CC13
7/32	5/8	1/4	2 1/2	604AM	604AMB	604AM-CC13
1/4	3/4	1/4	2 1/2	605M	605MB	605M-CC13
5/16	3/4	5/16	2 1/2	606M	606MB	606M-CC13
3/8	7/8	3/8	2 1/2	607M	607MB	607M-CC13



MATRIX END MILLS

MULTI-MILLS

STRAIGHT FLUTES

1/2" Diameter Steel Shank

1 1/8" - 1 1/2" Cutter Diameter are Solid Carbide

TOLERANCE:1/2" DIAMETER SHANK: +.0" -.0005"
+0.0mm -0.013mm**CUTTING HEAD DIAMETER:**

3/8" - 3/4" DIA +.010" +.015"

7/8" - 1 1/2" DIA +.012" +.017"

FACE WIDTH: +.0" -.0005"

NECK LENGTH: 1/4"

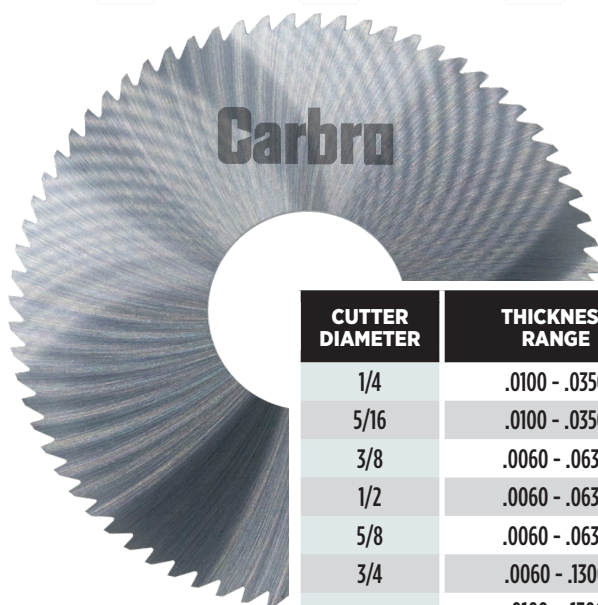
DIAMETER	AMERICAN STANDARDS NUMBER	FACE WIDTH	NECK DIA.	SHANK DIA.	OAL	FLUTES	SOLID CARBIDE SHANK	PART NUMBER
3/8		1/32	.2030	1/2	2 1/32	8		43900
		3/64	.2030	1/2	2 3/64	8		43901
	203	1/16	.2030	1/2	2 1/16	8		43302
	303	3/32	.2030	1/2	2 3/32	8		43303
	403	1/8	.2030	1/2	2 1/8	8		43403
1/2		1/32	.2500	1/2	2 1/32	10		43902
		3/64	.2500	1/2	2 3/64	10		43903
	204	1/16	.2500	1/2	2 1/16	10		43240
		5/64	.2500	1/2	2 5/64	10		43904
	304	3/32	.2500	1/2	2 3/32	10		43304
	404	7/64	.2500	1/2	2 7/64	10		43905
5/8		1/8	.2500	1/2	2 1/8	10		43404
		1/32	.2810	1/2	2 1/32	10		43906
		3/64	.2810	1/2	2 3/64	10		43907
		1/16	.2810	1/2	2 1/16	10		43908
		5/64	.2810	1/2	2 5/64	10		43909
	305	3/32	.2810	1/2	2 3/32	10		43305
		7/64	.2810	1/2	2 7/64	10		43910
	405	1/8	.2810	1/2	2 1/8	10		43405
		9/64	.2810	1/2	2 9/64	10		43911
	505	5/32	.2810	1/2	2 5/32	10		43505
3/4	605	3/16	.2810	1/2	2 3/16	10		43605
		1/32	.2810	1/2	2 1/32	10		43912
		3/64	.2810	1/2	2 3/64	10		43913
		1/16	.2810	1/2	2 1/16	10		43914
		5/64	.2810	1/2	2 5/64	10		43915
		3/32	.2810	1/2	2 3/32	10		43916
		7/64	.2810	1/2	2 7/64	10		43917
	406	1/8	.2810	1/2	2 1/8	10		43406
		9/64	.2810	1/2	2 9/64	10		43918
	506	5/32	.2810	1/2	2 5/32	10		43506
	606	3/16	.2810	1/2	2 3/16	10		43606
		13/64	.2810	1/2	2 13/64	10		43919
		7/32	.2810	1/2	2 7/32	10		43920
		15/64	.2810	1/2	2 15/64	10		43921
	806	1/4	.2810	1/2	2 1/4	10		43806



DIAMETER	AMERICAN STANDARDS NUMBER	FACE WIDTH	NECK DIA.	SHANK DIA.	OAL	FLUTES	SOLID CARBIDE SHANK	PART NUMBER
7/8		1/16	.2810	1/2	2 1/16	12		43922
		1/8	.2810	1/2	2 1/8	12		43923
	507	5/32	.2810	1/2	2 5/32	12		43507
	607	3/16	.2810	1/2	2 3/16	12		43607
	707	7/32	.2810	1/2	2 7/32	12		43707
	807	1/4	.2810	1/2	2 1/4	12		43807
1		1/32	.2810	1/2	2 1/32	12		43924
		3/64	.2810	1/2	2 3/64	12		43925
		1/16	.2810	1/2	2 1/16	12		43926
		5/64	.2810	1/2	2 5/64	12		43927
		3/32	.2810	1/2	2 3/32	12		43928
		1/8	.2810	1/2	2 1/8	12		43929
		5/32	.2810	1/2	2 5/32	12		43930
	608	3/16	.2810	1/2	2 3/16	12		43608
	708	7/32	.2810	1/2	2 7/32	12		43708
	808	1/4	.2810	1/2	2 1/4	12		43808
1 1/8		1/8	.2810	1/2	2 1/8	14	✓	43931
	609	3/16	.2810	1/2	2 3/16	14	✓	43609
	709	7/32	.2810	1/2	2 7/32	14	✓	43709
	809	1/4	.2810	1/2	2 1/4	14	✓	43809
1 1/4		1/32	.2810	1/2	2 1/32	14	✓	43932
		1/16	.2810	1/2	2 1/16	14	✓	43933
		3/32	.2810	1/2	2 3/32	14	✓	43934
		1/8	.2810	1/2	2 1/8	14	✓	43935
		5/32	.2810	1/2	2 5/32	14	✓	43936
	610	3/16	.2810	1/2	2 3/16	14	✓	43610
	710	7/32	.2810	1/2	2 7/32	14	✓	43710
	810	1/4	.2810	1/2	2 1/4	14	✓	43810
1 1/2		1/32	.3750	1/2	2 1/32	16	✓	43937
		1/16	.3750	1/2	2 1/16	16	✓	43938
		3/32	.3750	1/2	2 3/32	16	✓	43939
		1/8	.3750	1/2	2 1/8	16	✓	43940
		3/16	.3750	1/2	2 3/16	16	✓	43941
	812	1/4	.3750	1/2	2 1/4	16	✓	43812
	1012	5/16	.3750	1/2	2 5/16	16	✓	43000
	1212	3/8	.3750	1/2	2 3/8	16	✓	43212

**48
HOUR**

EXPRESS SAWS



6000 SERIES

TOLERANCE:
CUTTING DIAMETER: +.005" - .0"
HOLE DIAMETER: +.0005" +.0001"
THICKNESS: +.00025" -.00025"

XXXX = SAW THICKNESS

CUTTER DIAMETER	THICKNESS RANGE	ARBOR HOLE DIAMETER	TEETH	PART NUMBER
1/4	.0100 - .0350	1/8	12	2450001.XXXX
5/16	.0100 - .0350	1/8	12	2450002.XXXX
3/8	.0060 - .0630	1/8	14	2450003.XXXX
1/2	.0060 - .0630	3/16	14	2450005.XXXX
5/8	.0060 - .0630	1/4	16	2450007.XXXX
3/4	.0060 - .1300	1/4	18	2450010.XXXX
	.0100 - .1300	1/4	20	2450015.XXXX
1	.0100 - .1300	5/16	20	2450016.XXXX
	.0100 - .1300	3/8	20	2450017.XXXX
	.0100 - .1300	5/16	24	2450031.XXXX
1-1/4	.0100 - .1300	3/8	24	2450030.XXXX
	.0100 - .1300	1/2	24	2450032.XXXX
1-1/2	.0100 - .1300	1/2	36	2450045.XXXX
1-3/4	.0100 - .1300	1/2	38	2450050.XXXX
	.0100 - .1300	1/2	40	2450055.XXXX
2	.0100 - .1300	1	40	2450055.XXXX
	.0100 - .1300	5/8	44	2450065.XXXX
2-1/4	.0100 - .1300	1	44	2450066.XXXX
2-1/2	.0100 - .1300	1	48	2450075.XXXX
3	.0100 - .0949	1	72	2450085.XXXX
	.0950 - .2500	1	72	2450092.XXXX
3-1/2	.0200 - .1300	1	76	2450095.XXXX
4	.0200 - .2500	1	80	2450096.XXXX
5	.0450 - .1300	1	100	2450102.XXXX
6	.0450 - .1300	1	120	2450106.XXXX

EXCELS IN

CAST IRON
 STEEL
 STAINLESS STEEL
 ALLOYS
 HARDENED STEEL
 COMPOSITES

Carbro

EXPRESS SAWS 48-HOUR DELIVERY.

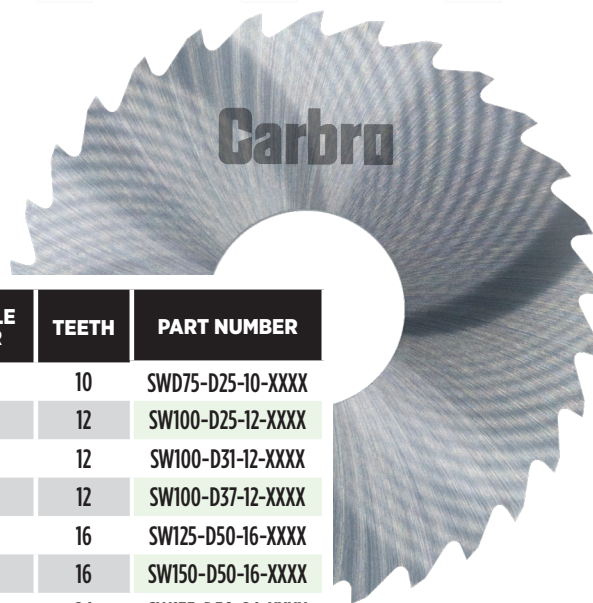
- Saws sized to exact size requirements.
- Comes in various arbor diameters in relation to their outer cutting diameter.

6100 SERIES

TOLERANCE:
CUTTING DIAMETER: +.005" - .0"
HOLE DIAMETER: +.0005" +.0001"
THICKNESS: +.00025" -.00025"

XXXX = SAW THICKNESS

CUTTER DIAMETER	THICKNESS RANGE	ARBOR HOLE DIAMETER	TEETH	PART NUMBER
3/4	.0060 - .1300	1/4	10	SWD75-D25-10-XXXX
1	.0100 - .1300	1/4	12	SW100-D25-12-XXXX
	.0100 - .1300	5/16	12	SW100-D31-12-XXXX
	.0100 - .1300	3/8	12	SW100-D37-12-XXXX
1-1/4	.0100 - .1300	1/2	16	SW125-D50-16-XXXX
1-1/2	.0100 - .1300	1/2	16	SW150-D50-16-XXXX
1-3/4	.0100 - .1300	1/2	24	SW175-D50-24-XXXX
	.0100 - .1300	5/8	24	SW175-D62-24-XXXX
	.0100 - .1300	7/8	24	SW175-D87-24-XXXX
2	.0100 - .1300	1/2	24	SW200-D50-24-XXXX
	.0100 - .1300	1	24	SW200-100-24-XXXX
2-1/4	.0100 - .1300	5/8	28	SW225-D62-28-XXXX
	.0100 - .1300	1	28	SW225-100-28-XXXX
2-1/2	.0100 - .1300	1	28	SW250-100-28-XXXX
2-3/4	.0100 - .1300	1	30	SW275-100-30-XXXX
3	.0100 - .1300	1	30	SW300-100-30-XXXX
4	.0100 - .1300	1	36	SW400-100-36-XXXX



EXCELS IN

ALUMINUM MAGNESIUM BRASS COPPER COMPOSITES PLASTICS WOOD



Carbros's tools are available with a variety of standard coatings. Listed below are some of our most popular coatings.

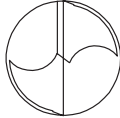
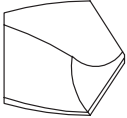
POPULAR COATINGS

COATING	RECOMMENDED USAGE
TiN	A good general purpose coating that is excellent for iron-based materials and low and medium strength steels. It has excellent wear resistance, thermal stability, and a low coefficient of friction that improves thermal transfer of heat away from the cutting edge.
TiCN	This coating has a higher hardness and is recommended for cast irons, high silicon aluminum alloys, copper, and other abrasive materials. Coolant must be applied to control temperature at the cutting edge.
TiAlN	Excellent for high strength steels, hard die steels, high temperature alloys, and titanium alloys. Possible for dry machining, which eliminates thermal shocks created by flood coolants.
Tetrabond	Excellent performance in machining aluminum, graphite, copper, FR4 PCB board and composite materials as well as wood, plastics, epoxies and certain grades of titanium.
CC-1	Thin film CVD Diamond is ideal in graphite, green ceramic, carbon fiber reinforced plastics (CFRP), (HiSilicon) fiberglass, metal matrix composites, and cast aluminum alloys. Possible dry machine capabilities.
CC-2	Advance wear with increased lubricity. Diamond Like Carbon (DLC) works well in machining of non-ferrous metals (especially aluminum with <9% Si), composite material, and plastics.
CC-6	High Performance Coating for High Speed Machining of Cast Iron, Tool Steel, High-Nickel based Super Alloys, Titanium, Inconel, and Aerospace Alloys. (AlTiN, 60% > Aluminum)
CC-13	Nanocomposite: Nanocrystalline grains embedded into Si ₃ N ₄ matrix binder. Extremely high hardness, toughness and heat resistance. Applicable: Steels, Hardened Steels and Alloyed Steels (Superalloys)

NEED A DIFFERENT COATING?

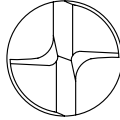
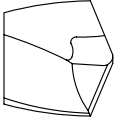
Our Customer Service department can help.

FOUR FACET



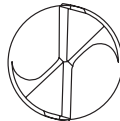
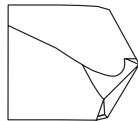
SELF CENTERING - General Purpose.
Best in lower grade steel or softer materials.

FOUR FACET WITH GASH



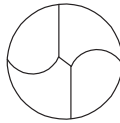
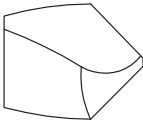
Primary & secondary relief for easier regrinding. Notched point helps in breaking the chip. Works well in ductile iron and materials that require a positive cutting action.

8 FACET



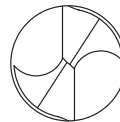
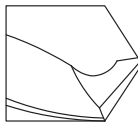
SELF CENTERING - Produces less burr on exit side of hole.
Helps the corner from breaking down.

90° POINT



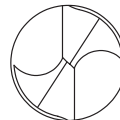
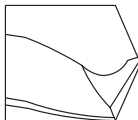
Used for spot drilling & chamfering on rough, angled or spherical surfaces.

118° SPLIT



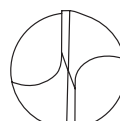
Split point allows for easier penetration & helps break up the chip. Will cut harder to cut materials.

135° SPLIT



Split point allows for easier penetration & helps break up the chip. Will cut harder to cut materials.

165° POINT



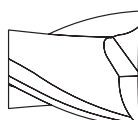
Drill points are used on circuit board drills.

STAR DRILL



SELF CENTERING
Best in high Rockwell steels and abrasive materials.
Produces close tolerance holes.

FLAT BOTTOM



Used to create a flat bottom in a hole or drilling into a curved or angled surface. Can also be used as a counter bore or spot facing tool.

BRAD POINT



For drilling pliable materials like plastics and rubber. Works well in wood & other coarse grain materials.



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