

GRAPHITE CATALOG

***THE LEADING
EDGE***



Precision Cutting Tools

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POLYCRYSTALLINE DIAMOND (PCD) END MILLS

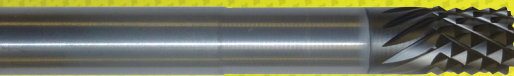


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Solid Carbide Holders - Pg. 3

D² COATED DIAMOND (CVD) END MILLS



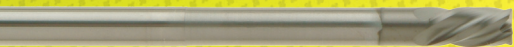
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PCD — Polycrystalline Diamond

PCD is a natural or man-made diamond sintered together with cobalt, manufactured as a flat wafer and brazed to a carbide insert or cutting tool. This form of diamond has excellent abrasion resistance for both high-speed finishing and roughing of electrodes. One major advantage is its ability to be resharpened as an indexable insert. The Leading Edge provides an off-the-shelf exchange service for worn PCD inserts.

D² — Diamond Dense

CVD — Chemical Vapor Deposition

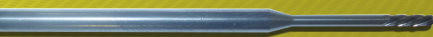
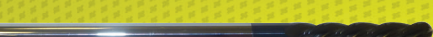
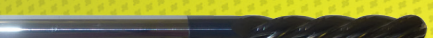
D² is a CVD coating which is grown directly onto a carbide end mill. This produces a diamond coating with the highest degree of hardness and the lowest coefficient of friction. The result is a coating with the longest life available for machining graphite. The low coefficient-of-friction property allows for maximum machining speeds, higher feed rates and less machining time in the manufacture of graphite electrodes.

D² is 10 – 13 times thicker than the amorphous diamond coating (AD-98). It can outlast other diamond coatings 5 – 10 times in some applications.

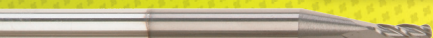
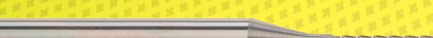
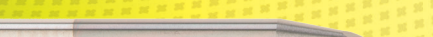
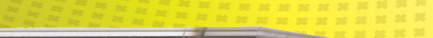
The Leading Edge Metric Clearance Cutters are coated with our Diamond Dense CVD coating. We offer ball nose and radius tools from .5 mm through 10 mm diameter. With relief lengths from 5 mm up to 60 mm, our clearance cutters are made for deep electrodes.

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AD-2000 — Amorphous Diamond Coating for Cutting Graphite Electrodes PVD — Physical Vapor Deposition

AD-2000 amorphous diamond coating has found performance success in machining non-ferrous and carbon composite materials. AD2000's superior abrasion resistance, combined with the 2-3 micron thickness provides longer machining time with finer finishes than our AD-98 coating.

AD-98 — Amorphous Diamond Coating for Cutting Graphite Electrodes PVD — Physical Vapor Deposition

AD-98 is a PVD amorphous diamond coating, the chief characteristic of which is its abrasion resistance. This quality adds many hours to the cutting time achieved when machining graphite, which means machining with this coating is done at a very low cost as compared to other diamond coating products.

AD-98 is a micron thick diamond film that does not change the carbide end mill size, shape or tolerance. It has the added advantage of a “no build-up edge,” which provides a sharp cutting edge, resulting in a better surface finish on electrodes.

PCD INSERTS

PCD — Polycrystalline Diamond

PCD is a natural or man-made diamond sintered together with cobalt, manufactured as a flat wafer and brazed to a carbide insert or cutting tool. This form of diamond has excellent abrasion resistance for both high-speed finishing and roughing of electrodes. One major advantage is its ability to be resharpened as an indexable insert. The Leading Edge provides an off-the-shelf exchange service for worn PCD inserts.



PCD ILBD BACK DRAFT INSERTS

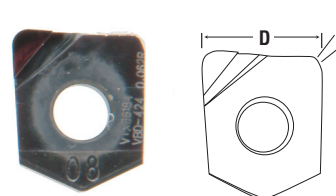
INSERT CATALOG NUMBER	EFFECTIVE CUTTING DIAMETER (D)	INSERT RADIUS (I)	HOLDER CATALOG NUMBER	LIST PRICE
PCD-ILBD-221	.250	.016	CSBMH-250	\$139.00
PCD-ILBD-222	.250	.031	CSBMH-250	139.00
PCD-ILBD-312	.375	.031	CSBMH-375	129.00
PCD-ILBD-314	.375	.062	CSBMH-375	129.00
PCD-ILBD-422	.500	.031	CSFBLH-500	129.00
PCD-ILBD-424	.500	.062	CSFBLH-500	129.00
PCD-ILBD-642	.750	.031	CSFBLH-750	129.00
PCD-ILBD-644	.750	.062	CSFBLH-750	129.00
PCD-ILBD-852	1.000	.031	CSFBLH-1000	129.00
PCD-ILBD-854	1.000	.062	CSFBLH-1000	129.00

PCD ILFB INSERTS — FLAT BOTTOM

INSERT CATALOG NUMBER	EFFECTIVE CUTTING DIAMETER (D)	INSERT RADIUS (I)	HOLDER CATALOG NUMBER	LIST PRICE
PCD-ILFB-422	.500	.031	CSFBLH-500	\$129.00
PCD-ILFB-424	.500	.062	CSFBLH-500	129.00
PCD-ILFB-642	.750	.031	CSFBLH-750	129.00
PCD-ILFB-644	.750	.062	CSFBLH-750	129.00
PCD-ILFB-852	1.000	.031	CSFBLH-1000	129.00
PCD-ILFB-854	1.000	.062	CSFBLH-1000	129.00

PCD MILL BACK DRAFT INSERTS

INSERT CATALOG NUMBER	EFFECTIVE CUTTING DIAMETER (D)	INSERT RADIUS (I)	LIST PRICE
PCD-MILL-422	.500	.031	\$129.00
PCD-MILL-424	.500	.062	129.00
PCD-MILL-642	.750	.031	129.00
PCD-MILL-644	.750	.062	129.00
PCD-MILL-852	1.000	.031	129.00
PCD-MILL-854	1.000	.062	129.00



PCD VBD BACK DRAFT INSERTS

INSERT CATALOG NUMBER	EFFECTIVE CUTTING DIAMETER (D)	INSERT RADIUS (I)	HOLDER CATALOG NUMBER	LIST PRICE
PCD-VBD-422	.500	.031	CSVFH-500	\$129.00
PCD-VBD-424	.500	.062	CSVFH-500	129.00
PCD-VBD-642	.750	.031	CSVFH-750	129.00
PCD-VBD-644	.750	.062	CSVFH-750	129.00
PCD-VBD-852	1.000	.031	CSVFH-1000	129.00
PCD-VBD-854	1.000	.062	CSVFH-1000	129.00



PCD IBM BALL NOSE INSERTS

INSERT CATALOG NUMBER	EFFECTIVE CUTTING DIAMETER (D)	HOLDER CATALOG NUMBER	LIST PRICE
PCD-IBM-250	.250	CSBMH-250	\$139.00
PCD-IBM-375	.375	CSBMH-375	139.00
PCD-IBM-500	.500	CSBMH-500	139.00
Ball-nose inserts cannot be resharpened			

RESHARPEN

EFFECTIVE CUTTING DIAMETER (D)	LIST RESHARPEN
.250	\$115.00
.375	95.00
.500	95.00
.750	95.00
1.000	95.00

Note: All dimensions in inches unless otherwise noted.

Phone: 1-248-814-9290

SOLID CARBIDE HOLDERS

CSBMH-250-TSS40



SOLID CARBIDE SHANKS FOR BACKDRAFT AND BALL INSERTS

HOLDER CATALOG NUMBER	EFFECTIVE CUTTING DIAMETER	EFFECTIVE REACH	SHANK DIAMETER	OVERALL LENGTH	INSERT CATALOG NUMBER	LIST PRICE
CSBMH-6MM-SS40	.250	1.57	6mm	3.94	PCD-IBM-250 PCD-ILBD-221 PCD-ILBD-222	\$444.00
CSBMH-6MM-SS60	.250	2.77	6mm	5.93		428.00
CSBMH-250-SS40	.250	1.57	.250	3.94		405.00
CSBMH-250-SS60	.250	2.77	.250	5.93		493.00
CSBMH-250-TRS40	.250	1.57 TAPERED	.375	3.94		399.00
CSBMH-375-SS50	.375	1.38	.375	4.73	PCD-IBM-375 PCD-ILBD-312 PCD-ILBD-314	435.00
CSBMH-375-SS60	.375	1.97	.375	5.91		482.00

CSFBLH-500-SS60



CSFBLH STYLE SOLID CARBIDE SHANKS — FLAT BOTTOM AND BACK DRAFT

HOLDER CATALOG NUMBER	EFFECTIVE CUTTING DIAMETER	EFFECTIVE REACH	SHANK DIAMETER	OVERALL LENGTH	INSERT CATALOG NUMBER	LIST PRICE
CSFBLH-500-SS45R3	.500	3.00	.500	4.73	PCD-ILBD-422 PCD-ILBD-424 PCD-ILFB-422 PCD-ILFB-424	\$555.00
CSFBLH-500-SS50	.500	1.38	.500	4.73		535.00
CSFBLH-500-SS60	.500	1.97	.500	6.30		548.00
CSFBLH-500-SS60R4	.500	4.50	.500	6.30		568.00
CSFBLH-750-SS55	.750	1.58	.750	5.52	PCD-ILBD-642 PCD-ILBD-644 PCD-ILFB-642 PCD-ILFB-644	636.00
CSFBLH-750-SS75	.750	2.96	.750	7.48		793.00
CSFBLH-1000-SS60	1.000	2.50	1.000	6.00		949.00
CSFBLH-1000-SS80	1.000	3.50	1.000	8.00	PCD-ILBD-852 PCD-ILBD-854 PCD-ILFB-852 PCD-ILFB-854	1,501.00

CSVFH-500-SS70



CSVFH STYLE SOLID CARBIDE SHANKS — FLAT BOTTOM AND BACK DRAFT

HOLDER CATALOG NUMBER	EFFECTIVE CUTTING DIAMETER	EFFECTIVE REACH	SHANK DIAMETER	OVERALL LENGTH	INSERT CATALOG NUMBER	LIST PRICE
CSVFH-500-SS70	.500	1.750	.500	7.000	PCD-VBD-422 PCD-VBD-424 PCD-VBD-428	\$495.00
CSVFH-750-SS10	.750	3.000	.750	10.000	PCD-VBD-642 PCD-VBD-644 PCD-VBD-648	762.00
CSVFH-1000-SS12	1.000	3.500	1.000	12.000	PCD-VBD-852 PCD-VBD-854 PCD-VBD-858	1074.00

Note: All dimensions in inches unless otherwise noted.

Fax: 1-866-900-9853

D2 DIAMOND DENSE BARRACUDA ROUGHER

DDBR — Diamond Dense Solid Carbide Barracuda Rougher CVD — Chemical Vapor Deposition

DDBR Diamond dense solid carbide Barracuda Rougher is an ideal tool for maximizing the reduction in cycle-time while roughing graphite electrodes for E.D.M.

Real-World Milling Feeds and Speeds:

Graphite Grade: Poco 200

Vertical Machining Center: Makino SNC64 / HSK63A (20,000 RPM Spindle)

Graphite chuck system: 3R

18,000 RPM at 200 IPM, .125" Axial Depth of Cut, .375" Radial Depth of Cut.



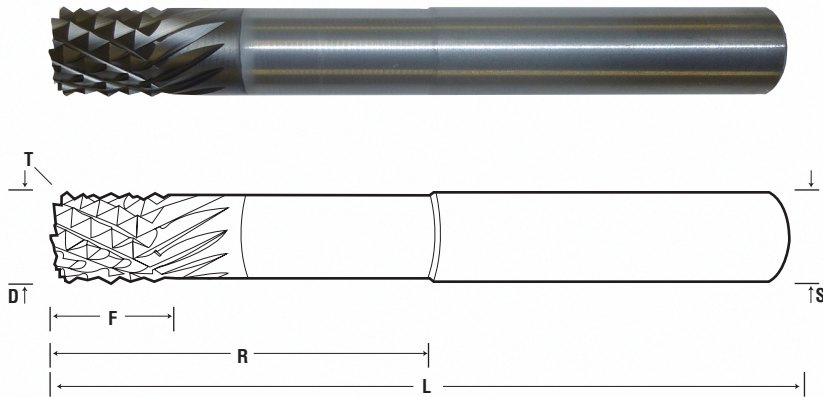
IMPERIAL CVD DIAMOND ROUGHER

CATALOG NUMBER	NUMBER OF FLUTES (T)	EFFECTIVE CUTTING DIAMETER (D)	FLUTE LENGTH (F)	EFFECTIVE REACH (R)	SHANK DIAMETER (S)	OVERALL LENGTH (L)	LIST PRICE
DDBR-500-SS40	8	.500	.500	2.00	.500	4.00	\$266.00
DDBR-500-R2-SS60	8	.500	.500	2.00	.500	6.00	266.00
DDBR-500-R3-SS60	8	.500	.500	3.00	.500	6.00	266.00
DDBR-750-R4-SS80	8	.750	.500	4.00	.750	8.00	439.00

Note: All dimensions in inches unless otherwise noted.

Phone: 1-248-814-9290

D2 DIAMOND DENSE BARRACUDA ROUGHER



METRIC CVD DIAMOND ROUGHER

CATALOG NUMBER	NUMBER OF FLUTES (T)	EFFECTIVE CUTTING DIAMETER (D)	FLUTE LENGTH (F)	EFFECTIVE REACH (R)	SHANK DIAMETER (S)	OVERALL LENGTH (L)	LIST PRICE
DDBR-12MM-SS100	8	12 mm	12 mm	50 mm	12 mm	100 mm	\$266.00
DDBR-12MM-R50-SS150	8	12 mm	12 mm	50 mm	12 mm	150 mm	266.00
DDBR-12MM-R75-SS150	8	12 mm	12 mm	75 mm	12 mm	150 mm	266.00

EFFECTIVE DIAMETER OF CUTTER	SURFACE FEET PER MINUTE	CHIP LOAD PER TOOTH	NUMBER OF FLUTES	REVOLUTIONS PER MINUTE	INCHES PER MINUTE
.500" / 12 mm	2356 to 2487	.0013" to .0015"	8	18,000 to 19,000	187 to 240
.500" / 12 mm	1309 to 1571	.0013" to .0015"	8	10,000 to 12,000	104 to 144
.750"	1000 to 1500	.003" to .004"	8	5,093 to 7,640	122 to 244
RADIAL STEP OVER: UP TO 75% OF DIAMETER AXIAL DEPTH OF CUT: 25% OF DIAMETER, MAXIMUM: 50% OF DIAMETER					

Note: All dimensions in inches unless otherwise noted.

Fax: 1-866-900-9853

D² DIAMOND DENSE STANDARD LENGTH

D² — Diamond Dense CVD — Chemical Vapor Deposition

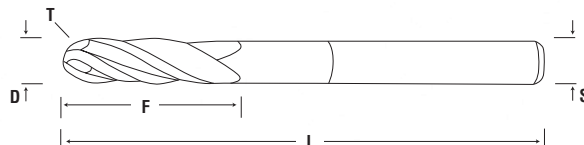
D² is a CVD coating which is grown directly onto a carbide end mill. This produces a diamond coating with the highest degree of hardness and the lowest coefficient of friction. The result is an end product with the longest life available for machining graphite.

The low coefficient-of-friction property allows for maximum machining speeds, higher feed rates and less machining time in the manufacture of graphite electrodes.

D² is 10 – 13 times thicker than the amorphous diamond coating (AD-98). It can outlast other diamond coatings 5 – 10 times in some applications.



DDBH-4S-250



STANDARD LENGTH D² COATED BALL, FLAT AND CORNER RADIUS END MILLS

END MILL TYPE (T)	CATALOG NUMBER	EFFECTIVE CUTTING DIAMETER (D)	FLUTE LENGTH (F)	OVERALL LENGTH (L)	SHANK DIAMETER (S)	LIST PRICE
4 FLUTE BALL STANDARD LENGTH	DDB2M-15-F30	.015	.030	1.50	.125	\$130.00
	DDBH-4S-016	.016	.047	1.50	.125	105.00
	DDBH-4S-032	.032	.093	1.50	.125	110.00
	DDBH-4S-047	.047	.187	1.50	.125	110.00
	DDBH-4S-063	.063	.187	1.50	.125	110.00
	DDBH-4S-078	.078	.250	1.50	.125	110.00
	DDBH-4S-093	.093	.375	1.50	.125	110.00
	DDBH-4S-125	.125	.500	1.50	.125	110.00
	DDBH-4S-187	.187	.625	2.00	.187	125.00
	DDBH-4S-250	.250	.750	2.50	.250	150.00
	DDBH-4S-312	.312	.813	2.50	.312	175.00
	DDBH-4S-375	.375	1.000	2.50	.375	185.00
4 FLUTE FLAT STANDARD LENGTH	DDF2M-15-F30	.015	.030	1.50	.125	120.00
	DDFH-4S-016	.016	.047	1.50	.125	105.00
	DDFH-4S-032	.032	.093	1.50	.125	100.00
	DDFH-4S-063	.063	.187	1.50	.125	100.00
	DDFH-4S-078	.078	.250	1.50	.125	100.00
	DDFH-4S-093	.093	.375	1.50	.125	100.00
	DDFH-4S-125	.125	.500	1.50	.125	100.00
	DDFH-4S-187	.187	.625	2.00	.187	115.00
	DDFH-4S-250	.250	.750	2.50	.250	140.00
	DDFH-4S-312	.312	.812	2.50	.312	165.00
	DDFH-4S-375	.375	1.000	3.00	.375	175.00
	DDFH-4S-500	.500	1.000	3.00	.500	210.00
4 FLUTE CORNER RADIUS STANDARD LENGTH	DDFH-4S-125 R*	.125	.500	1.50	.125	110.00
	DDFH-4S-187 R*	.187	.625	2.00	.187	130.00
	DDFH-4S-250 R*	.250	.750	2.50	.250	155.00
	DDFH-4S-312 R*	.312	.813	2.50	.312	180.00
	DDFH-4S-375 R*	.375	1.000	3.00	.375	190.00
	DDFH-4S-500 R*	.500	1.000	3.00	.500	225.00

Note: All dimensions in inches unless otherwise noted.

* TO COMPLETE ORDER INDICATE RADIUS SIZE:

R1= 1/64" RADIUS

R2= 1/32" RADIUS

R4= 1/16" RADIUS

R010= .010" RADIUS

R020= .020" RADIUS

Phone: 1-248-814-9290

D² DIAMOND DENSE “X”, “XL”, “XXL” LENGTH

“X”, “XL” AND “XXL” LENGTH D² COATED BALL, FLAT AND CORNER RADIUS END MILLS

END MILL TYPE (T)	CATALOG NUMBER	EFFECTIVE CUTTING DIAMETER (D)	FLUTE LENGTH (F)	OVERALL LENGTH (L)	SHANK DIAMETER (S)	LIST PRICE
4 FLUTE BALL “X” LENGTH	DDBH-4X-125	.125	.625	2.00	.125	\$125.00
	DDBH-4X-187	.187	.750	2.50	.187	135.00
	DDBH-4X-250	.250	1.000	3.00	.250	165.00
	DDBH 4X 375	.375	1.125	3.00	.375	205.00
	DDBH-4X-500	.500	2.000	4.00	.500	260.00
4 FLUTE FLAT “X” LENGTH	DDFH-4X-125	.125	.625	2.00	.125	115.00
	DDFH-4X-187	.187	.750	2.50	.187	130.00
	DDFH-4X-250	.250	1.000	3.00	.250	155.00
	DDFH 4X 375	.375	1.125	3.00	.375	195.00
	DDFH-4X-500	.500	2.000	4.00	.500	250.00
4 FLUTE BALL “XL” LENGTH	DDBH-4XL-125	.125	1.000	3.00	.125	135.00
	DDBH-4XL-187	.187	1.250	3.00	.187	150.00
	DDBH-4XL-250	.250	1.500	4.00	.250	185.00
	DDBH-4XL-375	.375	2.000	4.00	.375	225.00
	DDBH-4XL-500	.500	3.000	6.00	.500	280.00
4 FLUTE FLAT “XL” LENGTH	DDFH-4XL-125	.125	1.000	3.00	.125	125.00
	DDFH-4XL-187	.187	1.250	3.00	.187	140.00
	DDFH-4XL-250	.250	1.500	4.00	.250	165.00
	DDFH-4XL-375	.375	2.000	4.00	.375	215.00
	DDFH-4XL-500	.500	3.000	6.00	.500	270.00
4 FLUTE CORNER RADIUS “XL” LENGTH	DDFH-4XL-125 R*	.125	1.000	3.00	.125	140.00
	DDFH-4XL-187 R*	.187	1.250	3.00	.187	150.00
	DDFH-4XL-250 R*	.250	1.500	4.00	.250	180.00
	DDFH-4XL-375 R*	.375	2.000	4.00	.375	225.00
	DDFH-4XL-500 R*	.500	3.000	6.00	.500	285.00
4 FLUTE BALL “XXL” LENGTH	DDBH-4XXL-125	.125	1.000	4.00	.125	150.00
	DDBH-4XXL-187	.187	1.000	4.00	.187	160.00
	DDBH-4XXL-250	.250	1.500	6.00	.250	200.00
	DDBH-4XXL-375	.375	1.500	6.00	.375	235.00
4 FLUTE FLAT “XXL” LENGTH	DDFH-4XXL-125	.125	1.000	4.00	.125	130.00
	DDFH-4XXL-187	.187	1.000	4.00	.187	140.00
	DDFH-4XXL-250	.250	1.500	6.00	.250	185.00
	DDFH-4XXL-375	.375	1.500	6.00	.375	225.00
4 FLUTE CORNER RADIUS “XXL” LENGTH	DDFH-4XXL-125 R*	.125	1.000	4.00	.125	150.00
	DDFH-4XXL-187 R*	.187	1.000	4.00	.187	160.00
	DDFH-4XXL-250 R*	.250	1.500	6.00	.250	200.00
	DDFH-4XXL-375 R*	.375	1.500	6.00	.375	235.00

* TO COMPLETE ORDER INDICATE RADIUS SIZE:
 R1= 1/64" RADIUS R010= .010" RADIUS
 R2= 1/32" RADIUS R020= .020" RADIUS
 R4= 1/16" RADIUS

Note: All dimensions in inches unless otherwise noted.

Fax: 1-866-900-9853

D² DIAMOND DENSE “X”, “XL”, “XXL” LENGTH

D2 DIAMOND DENSE MINI MILLS PROFILER WITH RELIEF

DDFHR-4S-063



MINI BALL AND FLAT END MILLS DIAMOND DENSE COATED WITH RELIEF PAST THE FLUTE FOR LONG REACH APPLICATIONS

END MILL TYPE (T)	CATALOG NUMBER	EFFECTIVE CUTTING DIAMETER (D)	FLUTE LENGTH (F)	NECK DIAMETER (N)	TOTAL REACH FROM TIP (R)	OVERALL LENGTH (L)	SHANK DIAMETER (S)	LIST PRICE
4 FLUTE RELIEF MINI BALL	DDBHR-2S-016	.016	.047	.012	.130	1.50	.125	\$165.00
	DDBHR-4S-032	.032	.093	.027	.310	3.00	.125	155.00
	DDBHR-4S-047	.047	.187	.043	.470	3.00	.125	155.00
	DDBHR-4S-063	.063	.187	.058	.630	3.00	.125	155.00
	DDBHR-4S-093	.093	.375	.088	1.000	3.00	.125	155.00
4 FLUTE RELIEF MINI FLAT	DDFHR-2S-016	.016	.047	.012	.130	1.50	.125	155.00
	DDFHR-4S-032	.032	.093	.027	.310	3.00	.125	145.00
	DDFHR-4S-047	.047	.187	.043	.470	3.00	.125	145.00
	DDFHR-4S-063	.063	.187	.058	.630	3.00	.125	145.00
	DDFHR-4S-093	.093	.375	.088	1.000	3.00	.125	145.00

DDPFR-4XL-250



P² PROFILER FLAT END MILLS DIAMOND DENSE COATED WITH RELIEF PAST THE FLUTE FOR POINT-TO-POINT PROFILING AND CONTOURING

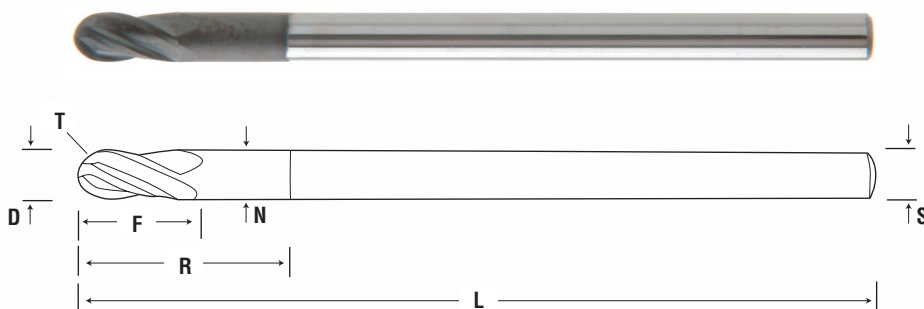
END MILL TYPE (T)	CATALOG NUMBER	EFFECTIVE CUTTING DIAMETER (D)	FLUTE LENGTH (F)	NECK DIAMETER (N)	TOTAL REACH FROM TIP (R)	OVERALL LENGTH (L)	SHANK DIAMETER (S)	LIST PRICE
4 FLUTE PROFILER BALL "X" AND "XL" LENGTH	DDPBR-4XL-063	.063	.063	.058	.750	3.00	.125	\$110.00
	DDPBR-4XL-093	.093	.093	.088	.750	3.00	.125	110.00
	DDPBR-4XL-125	.125	.125	.120	1.500	3.00	.125	110.00
	DDPBR-4XL-187	.187	.187	.182	1.000	3.00	.187	125.00
	DDPBR-4XL-250	.250	.250	.240	2.000	4.00	.250	130.00
	DDPBR-4XL-375	.375	.375	.365	2.000	4.00	.375	180.00
	DDPBR-4X-500	.500	.500	.490	2.000	4.00	.500	200.00
4 FLUTE PROFILER FLAT "X" AND "XL" LENGTH	DDPFR-4XL-125	.125	.125	.120	1.500	3.00	.125	100.00
	DDPFR-4XL-187	.187	.187	.182	1.000	3.00	.187	115.00
	DDPFR-4XL-250	.250	.250	.240	2.000	4.00	.250	130.00
	DDPFR-4XL-375	.375	.375	.365	2.000	4.00	.375	160.00
	DDPFR-4X-500	.500	.500	.490	2.000	4.00	.500	200.00
4 FLUTE PROFILER CORNER RADIUS "X" AND "XL" LENGTH	DDPFR-4XL-125 R*	.125	.125	.120	1.500	3.00	.125	110.00
	DDPFR-4XL-187 R*	.187	.187	.182	1.500	3.00	.187	140.00
	DDPFR-4XL-250 R*	.250	.250	.240	2.000	4.00	.250	140.00
	DDPFR-4XL-375 R*	.375	.375	.365	2.000	4.00	.375	170.00
	DDPFR-4X-500 R*	.500	.500	.490	2.000	4.00	.500	210.00
4 FLUTE BALL "XXL"	DDPBR-4XXL-125	.125	.125	.120	1.000	4.00	.125	120.00
	DDPBR-4XXL-187	.187	.187	.182	1.870	4.00	.187	130.00

* TO COMPLETE ORDER INDICATE R1= 1/64" RADIUS R4= 1/16" RADIUS R020= .020" RADIUS
RADIUS SIZE: R2= 1/32" RADIUS R010= .010" RADIUS

Note: All dimensions in inches unless otherwise noted.

D2 DIAMOND DENSE PROFILER WITHOUT RELIEF

DDPB-4XL-250



P² PROFILER BALL AND FLAT END MILLS DIAMOND DENSE COATED WITHOUT RELIEF PAST THE FLUTE FOR POINT-TO-POINT PROFILING AND CONTOURING

END MILL TYPE (T)	CATALOG NUMBER	EFFECTIVE CUTTING DIAMETER (D)	FLUTE LENGTH (F)	NECK DIAMETER (N)	TOTAL REACH FROM TIP (R)	OVERALL LENGTH (L)	SHANK DIAMETER (S)	LIST PRICE
4 FLUTE BALL STANDARD LENGTH	DDPB-4S-125	.125	.250	NONE	NONE	2.00	.125	\$100.00
	DDPB-4S-187	.187	.375	NONE	NONE	2.00	.187	115.00
	DDPB-4S-250	.250	.375	NONE	NONE	3.00	.250	140.00
	DDPB-4S-375	.375	.625	NONE	NONE	3.00	.375	175.00
	DDPB-4S-500	.500	.625	NONE	NONE	3.00	.500	215.00
4 FLUTE FLAT STANDARD LENGTH	DDPF-4S-125	.125	.250	NONE	NONE	2.00	.125	90.00
	DDPF-4S-187	.187	.375	NONE	NONE	2.00	.187	105.00
	DDPF-4S-250	.250	.500	NONE	NONE	3.00	.250	130.00
	DDPF-4S-375	.375	.625	NONE	NONE	3.00	.375	165.00
	DDPF-4S-500	.500	.625	NONE	NONE	3.00	.500	205.00
4 FLUTE CORNER RADIUS STANDARD LENGTH	DDPF-4S-125 R*	.125	.250	NONE	NONE	2.00	.125	100.00
	DDPF-4S-187 R*	.187	.375	NONE	NONE	2.00	.187	115.00
	DDPF-4S-250 R*	.250	.500	NONE	NONE	3.00	.250	140.00
	DDPF-4S-375 R*	.375	.625	NONE	NONE	2.50	.375	175.00
	DDPF-4S-500 R*	.500	.625	NONE	NONE	3.00	.500	215.00
4 FLUTE BALL "XL" LENGTH	DDPB-4XL-125	.125	.250	NONE	NONE	3.00	.125	110.00
	DDPB-4XL-187	.187	.375	NONE	NONE	3.00	.187	125.00
	DDPB-4XL-250	.250	.375	NONE	NONE	4.00	.250	150.00
4 FLUTE FLAT "XL" LENGTH	DDPF-4XL-125	.125	.250	NONE	NONE	3.00	.125	100.00
	DDPF-4XL-187	.187	.375	NONE	NONE	3.00	.187	115.00
	DDPF-4XL-250	.250	.375	NONE	NONE	4.00	.250	140.00
4 FLUTE CORNER RADIUS "XL" LENGTH	DDPF-4XL-125 R*	.125	.250	NONE	NONE	3.00	.125	110.00
	DDPF-4XL-187 R*	.187	.375	NONE	NONE	3.00	.187	125.00
	DDPF-4XL-250 R*	.250	.375	NONE	NONE	4.00	.250	150.00

* TO COMPLETE ORDER INDICATE RADIUS SIZE:

R1= 1/64" RADIUS

R010= .010" RADIUS

R2= 1/32" RADIUS

R020= .020" RADIUS

R4= 1/16" RADIUS

Note: All dimensions in inches unless otherwise noted.

Fax: 1-866-900-9853

D2 DIAMOND DENSE PROFILER WITHOUT RELIEF

D² DIAMOND DENSE MINI MILLS

DDBMM-32-F25



DIAMOND DENSE COATED MINI MILLS

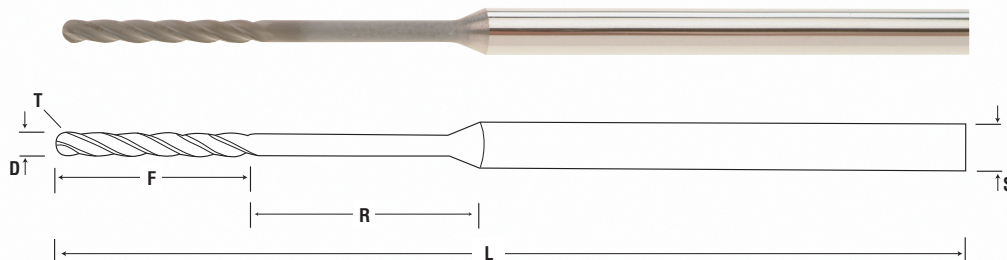
END MILL TYPE (T)	CATALOG NUMBER	EFFECTIVE CUTTING DIAMETER (D)	FLUTE LENGTH (F)	TOTAL REACH FROM TIP	OVERALL LENGTH (L)	SHANK DIAMETER (S)	LIST PRICE
4 FLUTE BALL MINI MILL	DDBMM-32-F15	.032	.150	NONE	3.00	.125	\$89.00
	DDBMM-32-F25	.032	.250	NONE	3.00	.125	89.00
	DDBMM-39-F25	.039	.250	NONE	3.00	.125	89.00
	DDBMM-47-F25	.047	.250	NONE	3.00	.125	89.00
	DDBMM-62-F50	.063	.500	NONE	3.00	.125	89.00
	DDBMM-80-F50	.080	.500	NONE	3.00	.125	89.00
	DDBMM-94-F75	.094	.750	NONE	3.00	.125	89.00
4 FLUTE FLAT MINI MILL	DDFMM-32-F15	.032	.150	NONE	3.00	.125	87.00
	DDFMM-32-F25	.032	.250	NONE	3.00	.125	87.00
	DDFMM-39-F25	.039	.250	NONE	3.00	.125	87.00
	DDFMM-47-F25	.047	.250	NONE	3.00	.125	87.00
	DDFMM-62-F50	.063	.500	NONE	3.00	.125	87.00
	DDFMM-80-F50	.080	.500	NONE	3.00	.125	87.00
	DDFMM-94-F75	.093	.750	NONE	3.00	.125	87.00
4 FLUTE CORNER RADIUS MINI MILL	DDFRM-62-R1	.063	.500	NONE	3.00	.125	89.00
	DDFRM-94-R1	.094	.500	NONE	3.00	.125	89.00

Note: All dimensions in inches unless otherwise noted.

Phone: 1-248-814-9290

D² DIAMOND DENSE CLEARANCE CUTTERS

DDBCC-62-F50



DIAMOND DENSE COATED MINI CLEARANCE CUTTERS

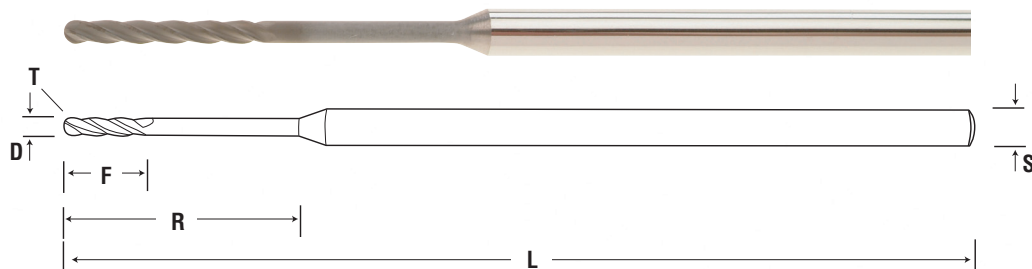
END MILL TYPE (T)	CATALOG NUMBER	EFFECTIVE CUTTING DIAMETER (D)	FLUTE LENGTH (F)	RELIEF PAST FLUTE (R)	OVERALL LENGTH (L)	SHANK DIAMETER (S)	LIST PRICE
4 FLUTE BALL CLEARANCE CUTTER TAPER RELIEF	DDBCC-32-F15	.032	.150	After flute, .500" total relief = .100" straight, .400" 2° taper per side	3.00	.125	\$91.00
	DDBCC-32-F25	.032	.250		3.00	.125	91.00
	DDBCC-39-F25	.039	.250		3.00	.125	91.00
	DDBCC-47-F25	.047	.250		3.00	.125	91.00
4 FLUTE FLAT CLEARANCE CUTTER TAPER RELIEF	DDFCC-32-F15	.032	.150	After flute, .500" total relief = .100" straight, .400" 2° taper per side	3.00	.125	89.00
	DDFCC-32-F25	.032	.250		3.00	.125	89.00
	DDFCC-39-F25	.039	.250		3.00	.125	89.00
	DDFCC-47-F25	.047	.250		3.00	.125	89.00
4 FLUTE BALL CLEARANCE CUTTER STRAIGHT RELIEF	DDBCC-62-F50	.063	.500	After flute, .500" straight relief	3.00	.125	91.00
	DDBCC-80-F50	.080	.500		3.00	.125	91.00
	DDBCC-94-F75	.094	.750		3.00	.125	91.00
4 FLUTE FLAT CLEARANCE CUTTER STRAIGHT RELIEF	DDFCC-62-F50	.063	.500	After flute, .500" straight relief	3.00	.125	89.00
	DDFCC-80-F50	.080	.500		3.00	.125	89.00
	DDFCC-94-F75	.094	.750		3.00	.125	89.00

Note: All dimensions in inches unless otherwise noted.

Fax: 1-866-900-9853

D² DIAMOND DENSE METRIC CLEARANCE CUTTERS

DDBCS-4MM-R25

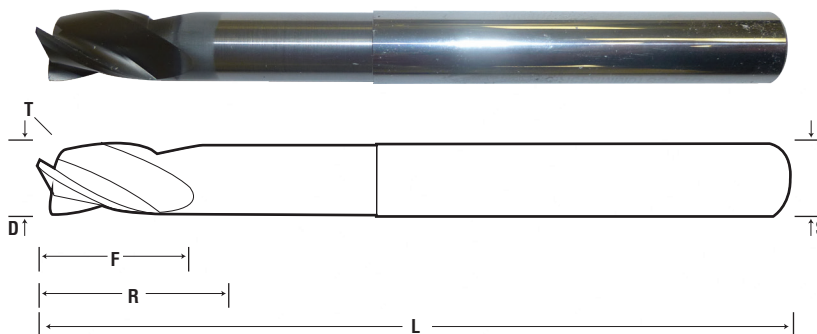


END MILL TYPE (T)	CATALOG NUMBER	EFFECTIVE CUTTING DIAMETER (D)	FLUTE LENGTH (F)	TOTAL REACH FROM TIP	OVERALL LENGTH (L)	SHANK DIAMETER (S)	LIST PRICE
BALL NOSE	DDBCS.5MM-R1.5	.5 mm	.75 mm	1.5 mm	50 mm	4 mm	\$96.00
	DDBCS.5MM-R3	.5 mm	.75 mm	3 mm	50 mm	4 mm	96.00
	DDBCS.5MM-R5	.5 mm	.75 mm	5 mm	50 mm	4 mm	96.00
	DDBCS.5MM-R10	.5 mm	.75 mm	10 mm	50 mm	4 mm	96.00
	DDBCS-1MM-R5	1 mm	1.5 mm	5 mm	50 mm	4 mm	79.00
	DDBCS-1MM-R10	1 mm	1.5 mm	10 mm	50 mm	4 mm	82.00
	DDBCS-1MM-R20	1 mm	1.5 mm	20 mm	50 mm	4 mm	85.00
	DDBCS-1.5MM-R10	1.5 mm	2.3 mm	10 mm	50 mm	4 mm	81.00
	DDBCS-1.5MM-R25	1.5 mm	2.3 mm	25 mm	50 mm	4 mm	110.00
	DDBCS-2MM-R10	2 mm	3 mm	10 mm	50 mm	4 mm	80.00
	DDBCS-2MM-R15	2 mm	3 mm	15 mm	50 mm	4 mm	80.00
	DDBCS-2MM-R25	2 mm	3 mm	25 mm	50 mm	4 mm	80.00
	DDBCS-3MM-R10	3 mm	4.5 mm	10 mm	50 mm	4 mm	81.00
	DDBCS-3MM-R20	3 mm	4.5 mm	20 mm	50 mm	4 mm	110.00
	DDBCS-4MM-R25	4 mm	6 mm	25 mm	75 mm	4 mm	110.00
	DDBCS-6MM-R30	6 mm	9 mm	30 mm	75 mm	6 mm	110.00
	DDBCS-6MM-R45	6 mm	9 mm	45 mm	100 mm	6 mm	130.00
	DDBCS-6MM-R60	6 mm	9 mm	60 mm	155 mm	6 mm	140.00
	DDBCS-8MM-R45	8 mm	12 mm	45 mm	100 mm	8 mm	145.00
	DDBCS-8MM-R60	8 mm	12 mm	60 mm	155 mm	8 mm	160.00

Note: All dimensions in millimeters

Phone: 1-248-814-9290

D² DIAMOND DENSE METRIC CLEARANCE CUTTERS



END MILL TYPE (T)	CATALOG NUMBER	EFFECTIVE CUTTING DIAMETER (D)	FLUTE LENGTH (F)	TOTAL REACH FROM TIP	OVERALL LENGTH (L)	SHANK DIAMETER (S)	LIST PRICE
.05 mm radius	DDFCS.5MM-R5 R.05	.5 mm	.75 mm	5 mm	50 mm	4 mm	\$94.00
	DDFCS.5MM-R10 R.05	.5 mm	.75 mm	10 mm	50 mm	4 mm	98.00
1.0 mm radius	DDFCS-1MM-R5 R.10	1 mm	1.5 mm	5 mm	50 mm	4 mm	84.00
	DDFCS-1MM-R10 R.10	1 mm	1.5 mm	10 mm	50 mm	4 mm	79.00
.20 mm radius	DDFCS-1MM-R15 R.20	1 mm	1.5 mm	20 mm	50 mm	4 mm	88.00
.15 mm radius	DDFCS-1.5MM-R10 R.15	1.5 mm	2.3 mm	10 mm	50 mm	4 mm	68.00
	DDFH-2S-1.5MM R.15	2 mm	2.3 mm	none	50 mm	4 mm	82.00
.20 mm radius	DDFCS-2MM-R5 R.20	2 mm	3 mm	5 mm	50 mm	4 mm	82.00
.10 mm radius	DDFCS-2MM-R10 R.10	2 mm	3 mm	10 mm	50 mm	4 mm	82.00
.20 mm radius	DDFCS-2MM-R20 R.20	2 mm	3 mm	20 mm	73 mm	4 mm	104.00
	DDFCS-2MM-R25 R.20	2 mm	3 mm	25 mm	73 mm	4 mm	110.00
.30 mm radius	DDFCS-3MM-R10 R.30	3 mm	4.5 mm	10 mm	50 mm	4 mm	84.00
	DDFCS-3MM-R15 R.30	3 mm	4.5 mm	15 mm	50 mm	4 mm	84.00
	DDFCS-3MM-R25 R.30	3 mm	4.5 mm	25 mm	73 mm	4 mm	112.00
	DDFCS-4MM-R15 R.30	4 mm	6 mm	15 mm	50 mm	4 mm	84.00
1.0 mm radius	DDFCS-4MM-R25 R1.0	4 mm	6 mm	25 mm	73 mm	4 mm	112.00
	DDFCS-4MM-R45 R.30	4mm	6 mm	45 mm	100 mm	4 mm	116.00
	DDFCS-6MM-R20 R1.0	6 mm	9 mm	20 mm	73 mm	6 mm	128.00
.30 mm radius	DDFCS-6MM-R25 R.30	6 mm	9 mm	25 mm	73 mm	6 mm	138.00
1.0 mm radius	DDFCS-6MM-R45 R1.0	6 mm	9 mm	45 mm	73 mm	6 mm	134.00
.50 mm radius	DDFCS-8MM-R20 R.50	8 mm	12 mm	20 mm	64 mm	8 mm	164.00
	DDFCS-8MM-R45 R.50	8 mm	12 mm	45 mm	100 mm	8 mm	166.00
	DDFCS-8MM-R60 R.50	8 mm	12 mm	60 mm	150 mm	8 mm	188.00
	DDFH-3S-10MM R.50	10 mm	15 mm	NONE	73 mm	10 mm	144.00
	DDFCS-10MM-R45 R.50	10 mm	15 mm	45 mm	100 mm	10 mm	171.00

Note: All dimensions in millimeters.

Fax: 1-866-900-9853

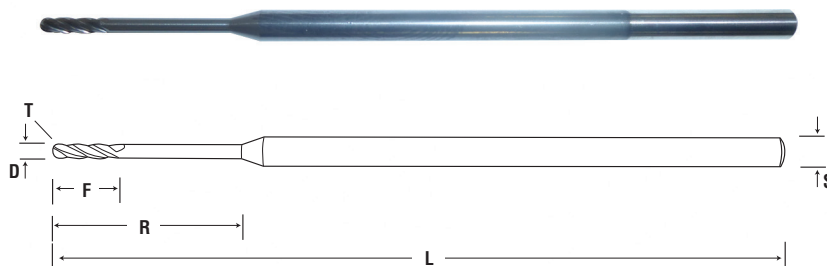
D² DIAMOND DENSE METRIC CLEARANCE CUTTERS

AD-2000 CLEARANCE CUTTERS & MINI-MILLS

AD-2000 — Amorphous Diamond Coating for Cutting Graphite Electrodes PVD — Physical Vapor Deposition

AD2000 amorphous diamond coating has found performance success in machining non-ferrous and carbon composite materials. AD2000's superior abrasion resistance, combined with the 2-3 micron thickness provides longer machining time with finer finishes than our AD-98 coating.

BCS-62-R50-AD20



AD-2000 COATED CLEARANCE CUTTERS

END MILL TYPE (T)	CATALOG NUMBER	EFFECTIVE CUTTING DIAMETER (D)	FLUTE LENGTH (F)	TOTAL REACH FROM TIP	OVERALL LENGTH (L)	SHANK DIAMETER (S)	LIST PRICE
4 FLUTE BALL CLEARANCE CUTTERS	BCS-32-R50-AD20	.032	.250	.500 STRAIGHT	3.00	.125	49.00
	BCS-32-R75-AD20	.032	.250	.750 STRAIGHT	3.00	.125	49.00
	BCS-39-R50-AD20	.039	.250	.500 STRAIGHT	3.00	.125	49.00
	BCS-39-R75-AD20	.039	.250	.750 STRAIGHT	3.00	.125	49.00
	BCS-62-R50-AD20	.062	.250	.500 STRAIGHT	3.00	.125	49.00
	BCS-62-R75-AD20	.062	.250	.750 STRAIGHT	3.00	.125	49.00
	BCS-62-R10-AD20	.062	.250	1.000 STRAIGHT	3.00	.125	49.00
	BCS-80-R50-AD20	.080	.250	.500 STRAIGHT	3.00	.125	49.00
	BCS-80-R75-AD20	.080	.250	.750 STRAIGHT	3.00	.125	49.00
	BCS-80-R10-AD20	.080	.250	1.000 STRAIGHT	3.00	.125	49.00
	BCC-32-F25-AD20	.032	.250	.750 TAPERED	2.50	.125	49.00
	BCC-39-F25-AD20	.039	.250	.750 TAPERED	2.50	.125	49.00
	BCC-62-F50-AD20	.062	.500	1.000 STRAIGHT	2.50	.125	49.00
	BCC-80-F50 AD20	.080	.500	1.000 STRAIGHT	2.50	.125	49.00
4 FLUTE BALL MINI MILLS	BMM-32-F25-AD20	.032	.250	NONE	2.50	.125	42.00
	BMM-39-F25-AD20	.039	.250	NONE	2.50	.125	42.00
	BMM-47-F25-AD20	.047	.250	NONE	2.50	.125	42.00
	BMM-62-F50-AD20	.062	.500	NONE	2.50	.125	42.00
	BMM-80-F50-AD20	.080	.500	NONE	2.50	.125	42.00

Note: All dimensions in inches unless otherwise noted.

AD-2000 CLEARANCE CUTTERS & MINI-MILLS

FCS-62-R50-AD20



AD-2000 COATED CLEARANCE CUTTERS

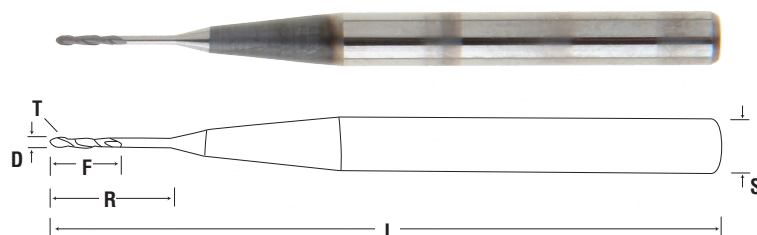
END MILL TYPE (T)	CATALOG NUMBER	EFFECTIVE CUTTING DIAMETER (D)	FLUTE LENGTH (F)	TOTAL REACH FROM TIP	OVERALL LENGTH (L)	SHANK DIAMETER (S)	LIST PRICE
4 FLUTE FLAT CLEARANCE CUTTERS	FCS-32-R50-AD20	.032	.250	.500 STRAIGHT	3.00	.125	47.00
	FCS-32-R75-AD20	.032	.250	.750 STRAIGHT	3.00	.125	47.00
	FCS-39-R50-AD20	.039	.250	.500 STRAIGHT	3.00	.125	47.00
	FCS-39-R75-AD20	.039	.250	.750 STRAIGHT	3.00	.125	47.00
	FCS-62-R50-AD20	.062	.250	.500 STRAIGHT	3.00	.125	47.00
	FCS-62-R75-AD20	.062	.250	.750 STRAIGHT	3.00	.125	47.00
	FCS-62-R10-AD20	.062	.250	1.000 STRAIGHT	3.00	.125	47.00
	FCS-80-R50-AD20	.080	.250	.500 STRAIGHT	3.00	.125	47.00
	FCS-80-R75-AD20	.080	.250	.750 STRAIGHT	3.00	.125	47.00
	FCS-80-R10-AD20	.080	.250	1.000 STRAIGHT	3.00	.125	47.00
	FCC-32-F25-AD20	.032	.250	.750 TAPERED	2.50	.125	47.00
	FCC-39-F25-AD20	.039	.250	.750 TAPERED	2.50	.125	47.00
	FCC-62-F50-AD20	.062	.500	1.000 STRAIGHT	2.50	.125	47.00
	FCC-80-F50 AD20	.080	.500	1.000 STRAIGHT	2.50	.125	47.00
4 FLUTE FLAT MINI MILLS	FMM-32-F25-AD20	.032	.250	NONE	2.50	.125	39.00
	FMM-39-F25-AD20	.039	.250	NONE	2.50	.125	39.00
	FMM-47-F25-AD20	.047	.250	NONE	2.50	.125	39.00
	FMM-62-F50-AD20	.062	.500	NONE	2.50	.125	39.00
	FMM-80-F50-AD20	.080	.500	NONE	2.50	.125	39.00

Note: All dimensions in inches unless otherwise noted.

Fax: 1-866-900-9853

AD-2000 MRB - MRF 5X DIAMETER WITH RELIEF

MRB-2X-20-R20-AD20



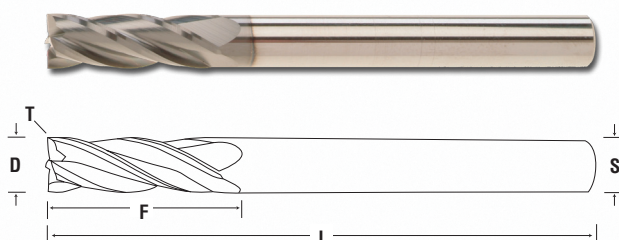
AD-2000 COATED MRB MINI RELIEF BALL END MILLS 5X DIAMETER

END MILL TYPE (T)	CATALOG NUMBER	EFFECTIVE CUTTING DIAMETER (D)	FLUTE LENGTH (F)	TOTAL REACH FROM TIP (R)	OVERALL LENGTH (L)	SHANK DIAMETER (S)	LIST PRICE
2 FLUTE BALL MINI RELIEF	MRB-2X-10-R10-AD20	.010	.050	.100	1.50	.125	\$65.00
	MRB-2X-15-R20-AD20	.015	.075	.200	1.50	.125	65.00
	MRB-2X-15-R30-AD20	.015	.075	.300	1.50	.125	65.00
	MRB-2X-20-R20-AD20	.020	.100	.200	1.50	.125	65.00
	MRB-2X-20-R30-AD20	.020	.100	.300	1.50	.125	65.00
	MRB-2X-25-R20-AD20	.025	.125	.200	1.50	.125	63.00
	MRB-2X-25-R30-AD20	.025	.125	.300	1.50	.125	63.00
	MRB-2X-30-R30-AD20	.030	.150	.300	1.50	.125	63.00
AD-2000 COATED MRF MINI RELIEF FLAT END MILLS 5X DIAMETER							
2 FLUTE FLAT MINI RELIEF	MRF-2X-10-R10-AD20	.010	.050	.100	1.50	.125	63.00
	MRF-2X-15-R20-AD20	.015	.075	.200	1.50	.125	63.00
	MRF-2X-15-R30-AD20	.015	.075	.300	1.50	.125	63.00
	MRF-2X-20-R20-AD20	.020	.100	.200	1.50	.125	63.00
	MRF-2X-20-R30-AD20	.020	.100	.300	1.50	.125	63.00
	MRF-2X-25-R20-AD20	.025	.125	.200	1.50	.125	61.00
	MRF-2X-25-R30-AD20	.025	.125	.300	1.50	.125	61.00
	MRF-2X-30-R30-AD20	.030	.150	.300	1.50	.125	61.00

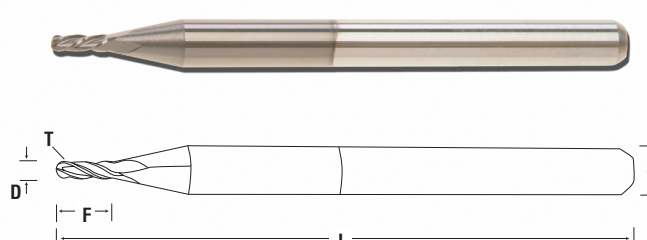
Note: All dimensions in inches unless otherwise noted.

AD-2000 STANDARD LENGTH

FH-4S-250-AD2000



BH-4S-063-AD2000



AD-2000 COATED STANDARD LENGTH BALL AND FLAT END MILLS

END MILL TYPE (T)	CATALOG NUMBER	EFFECTIVE CUTTING DIAMETER (D)	FLUTE LENGTH (F)	OVERALL LENGTH (L)	SHANK DIAMETER (S)	LIST PRICE
4 FLUTE BALL STANDARD LENGTH	BH-4S-016-AD20	.016	.032	1.50	.125	\$41.00
	BH-4S-032-AD20	.032	.125	1.50	.125	39.00
	BH-4S-047-AD20	.047	.125	1.50	.125	39.00
	BH-4S-063-AD20	.063	.250	1.50	.125	39.00
	BH-4S-078-AD20	.078	.250	1.50	.125	39.00
	BH-4S-094-AD20	.094	.375	1.50	.125	39.00
	BH-4S-125-AD20	.125	.500	1.50	.125	39.00
	BH-4S-187-AD20	.187	.625	2.00	.187	41.00
	BH-4S-250-AD20	.250	.750	2.50	.250	46.00
	BH-4S-312-AD20	.312	.813	2.50	.312	61.00
	BH-4S-375-AD20	.375	1.000	2.50	.375	76.00
4 FLUTE FLAT STANDARD LENGTH	BH-4S-500-AD20	.500	1.000	3.00	.500	96.00
	FH-4S-016-AD20	.016	.032	1.50	.125	36.00
	FH-4S-032-AD20	.032	.125	1.50	.125	36.00
	FH-4S-047-AD20	.047	.125	1.50	.125	36.00
	FH-4S-063-AD20	.063	.250	1.50	.125	36.00
	FH-4S-078-AD20	.078	.250	1.50	.125	36.00
	FH-4S-094-AD20	.094	.375	1.50	.125	36.00
	FH-4S-109-AD20	.109	.375	1.50	.125	36.00
	FH-4S-125-AD20	.125	.500	1.50	.125	36.00

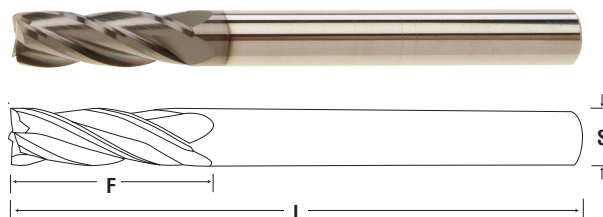
Note: All dimensions in inches unless otherwise noted.

Fax: 1-866-900-9853

AD-2000 STANDARD LENGTH

AD-2000 STANDARD, "X" LENGTH

FH-4X-250-AD2000



AD-2000 COATED STANDARD AND "X" LENGTH BALL, FLAT AND CORNER RADIUS END MILLS

END MILL TYPE (T)	CATALOG NUMBER	EFFECTIVE CUTTING DIAMETER (D)	FLUTE LENGTH (F)	OVERALL LENGTH (L)	SHANK DIAMETER (S)	LIST PRICE
4 FLUTE FLAT STANDARD LENGTH	FH-4S-187-AD20	.187	.625	2.000	.187	\$38.00
	FH-4S-250-AD20	.250	.750	2.500	.250	38.00
	FH-4S-312-AD20	.312	.813	2.500	.312	56.00
	FH-4S-375-AD20	.375	1.000	2.500	.375	70.00
	FH-4S-500-AD20	.500	1.000	3.000	.500	89.00
4 FLUTE CORNER RADIUS STANDARD LENGTH	FH-4S-125-AD20 R*	.125	.375	1.500	.125	38.00
	FH-4S-187-AD20 R*	.187	.625	2.000	.187	46.00
	FH-4S-250-AD20 R*	.250	.750	2.500	.250	55.00
	FH-4S-375-AD20 R*	.375	1.000	2.500	.375	76.00
	FH-4S-500-AD20 R*	.500	1.000	3.000	.500	96.00
4 FLUTE BALL "X" LENGTH	BH-4X-125-AD20	.125	.625	2.000	.125	42.00
	BH-4X-187-AD20	.187	.750	2.500	.187	45.00
	BH-4X-250-AD20	.250	1.125	3.000	.250	50.00
	BH-4X-375-AD20	.375	1.125	3.000	.375	83.00
	BH-4X-500-AD20	.500	2.000	4.000	.500	105.00
4 FLUTE FLAT "X" LENGTH	FH-4X-125-AD20	.125	.625	2.000	.125	42.00
	FH-4X-187-AD20	.187	.750	2.500	.187	41.00
	FH-4X-250-AD20	.250	1.125	3.000	.250	42.00
	FH-4X-375-AD20	.375	1.125	3.000	.375	77.00
	FH-4X-500-AD20	.500	2.000	4.000	.500	97.00
4 FLUTE CORNER RADIUS "X" LENGTH	FH-4X-125-AD20 R*	.125	.625	2.000	.125	42.00
	FH-4X-187-AD20 R*	.187	1.000	3.000	.187	45.00
	FH-4X-250-AD20 R*	.250	1.000	3.000	.250	50.00
	FH-4X-375-AD20 R*	.375	1.000	3.000	.375	83.00
	FH-4X-500-AD20 R*	.500	2.000	4.000	.500	105.00

* TO COMPLETE ORDER INDICATE RADIUS SIZE:

R1= 1/64" RADIUS

R010= .010" RADIUS

R2= 1/32" RADIUS

R020= .020" RADIUS

R4= 1/16" RADIUS

Note: All dimensions in inches unless otherwise noted.

AD-2000 “XL”, “XXL” LENGTH

BH-4XXL-125-AD2000



AD-2000 COATED “XL” LENGTH BALL, FLAT AND CORNER RADIUS END MILLS

END MILL TYPE (T)	CATALOG NUMBER	EFFECTIVE CUTTING DIAMETER (D)	FLUTE LENGTH (F)	OVERALL LENGTH (L)	SHANK DIAMETER (S)	LIST PRICE
4 FLUTE BALL “XL” LENGTH	BH-4XL-125-AD20	.125	1.000	3.00	.125	\$46.00
	BH-4XL-187-AD20	.187	1.125	3.00	.187	49.00
	BH-4XL-250-AD20	.250	1.500	4.00	.250	55.00
	BH-4XL-375-AD20	.375	1.750	4.00	.375	91.00
	BH-4XL-500-AD20	.500	3.000	6.00	.500	115.00
4 FLUTE FLAT “XL” LENGTH	FH-4XL-125-AD20	.125	1.000	3.00	.125	46.00
	FH-4XL-187-AD20	.187	1.125	3.00	.187	45.00
	FH-4XL-250-AD20	.250	1.500	4.00	.250	46.00
	FH-4XL-375-AD20	.375	1.750	4.00	.375	84.00
	FH-4XL-500-AD20	.500	3.000	6.00	.500	106.00
4 FLUTE CORNER RADIUS “XL” LENGTH	FH-4XL-125-AD20 R*	.125	1.000	3.00	.125	49.00
	FH-4XL-187-AD20 R*	.187	1.125	3.00	.187	57.00
	FH-4XL-250-AD20 R*	.250	1.500	4.00	.250	68.00
	FH-4XL-375-AD20 R*	.375	1.750	4.00	.375	89.00
	FH-4XL-500-AD20 R*	.500	3.000	6.00	.500	105.00
AD-2000 COATED “XXL” BALL, FLAT AND CORNER RADIUS END MILLS						
4 FLUTE BALL “XXL” LENGTH	BH-4XXL-125-AD20	.125	1.000	4.00	.125	\$51.00
	BH-4XXL-187-AD20	.187	1.000	4.00	.187	54.00
	BH-4XXL-250-AD20	.250	1.500	6.00	.250	61.00
	BH-4XXL-375-AD20	.375	1.500	6.00	.375	99.00
4 FLUTE FLAT “XXL” LENGTH	FH-4XXL-125-AD20	.125	1.000	4.00	.125	51.00
	FH-4XXL-187-AD20	.187	1.000	4.00	.187	49.00
	FH-4XXL-250-AD20	.250	1.500	6.00	.250	51.00
	FH-4XXL-375-AD20	.375	1.500	6.00	.375	93.00
4 FLUTE RADIUS “XXL” LENGTH	FH-4XXL-125-AD20 R*	.125	1.000	4.00	.125	54.00
	FH-4XXL-187-AD20 R*	.187	1.000	4.00	.187	63.00
	FH-4XXL-250-AD20 R*	.250	1.500	6.00	.250	75.00
	FH-4XXL-375-AD20 R*	.375	1.500	6.00	.375	98.00

* TO COMPLETE ORDER INDICATE RADIUS SIZE:
R1= 1/64" RADIUS R010= .010" RADIUS
R2= 1/32" RADIUS R020= .020" RADIUS
R4= 1/16" RADIUS

Note: All dimensions in inches unless otherwise noted.

Fax: 1-866-900-9853

AD-2000 “XL”, “XXL” LENGTH

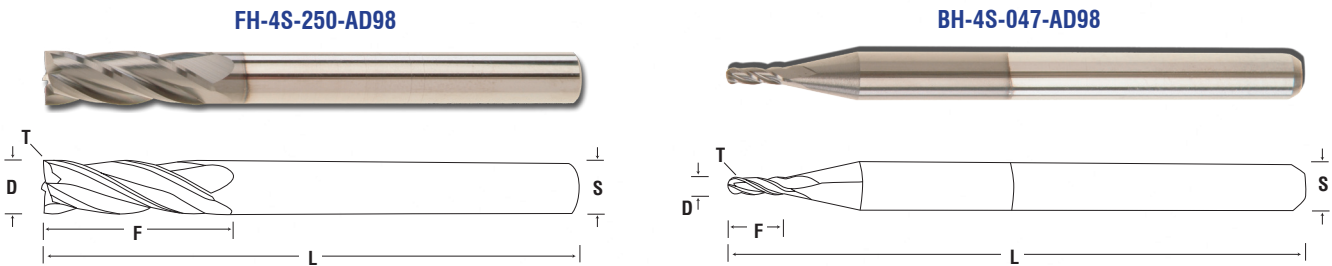
AD-98 STANDARD LENGTH

AD-98 STANDARD LENGTH

AD-98 — Amorphous Diamond Coating for Cutting Graphite Electrodes PVD — Physical Vapor Deposition

AD-98 is a PVD amorphous diamond coating, the chief characteristic of which is its abrasion resistance. This quality adds many hours to the cutting time achieved when machining graphite, which means machining with this coating is done at a very low cost as compared to use of other diamond coating products.

AD-98 is a micron thick diamond film that does not change the carbide end mill size, shape or tolerance. It has the added advantage of a “no build-up edge,” which provides a sharp cutting edge, resulting in a better surface finish on electrodes.



AD-98 COATED STANDARD LENGTH BALL AND FLAT END MILLS

END MILL TYPE (T)	CATALOG NUMBER	EFFECTIVE CUTTING DIAMETER (D)	FLUTE LENGTH (F)	OVERALL LENGTH (L)	SHANK DIAMETER (S)	LIST PRICE
4 FLUTE BALL STANDARD LENGTH	BH-4S-016-AD98	.016	.032	1.50	.125	\$31.50
	BH-4S-032-AD98	.032	.125	1.50	.125	22.00
	BH-4S-047-AD98	.047	.125	1.50	.125	22.00
	BH-4S-063-AD98	.063	.250	1.50	.125	19.50
	BH-4S-078-AD98	.078	.250	1.50	.125	19.50
	BH-4S-094-AD98	.094	.375	1.50	.125	19.50
	BH-4S-109-AD98	.109	.375	1.50	.125	19.50
	BH-4S-125-AD98	.125	.500	1.50	.125	22.50
	BH-4S-156-AD98	.156	.500	2.00	.187	28.50
	BH-4S-187-AD98	.187	.625	2.00	.187	29.00
	BH-4S-250-AD98	.250	.750	2.50	.250	36.50
	BH-4S-312-AD98	.312	.813	2.50	.312	44.00
	BH-4S-375-AD98	.375	1.000	2.50	.375	49.00
	BH-4S-500-AD98	.500	1.000	3.00	.500	80.00
4 FLUTE FLAT STANDARD LENGTH	FH-4S-016-AD98	.016	.032	1.50	.125	27.00
	FH-4S-032-AD98	.032	.125	1.50	.125	19.25
	FH-4S-047-AD98	.047	.125	1.50	.125	19.25
	FH-4S-063-AD98	.063	.250	1.50	.125	17.50
	FH-4S-078-AD98	.078	.250	1.50	.125	17.50
	FH-4S-094-AD98	.094	.375	1.50	.125	17.50
	FH-4S-109-AD98	.109	.375	1.50	.125	17.50
	FH-4S-125-AD98	.125	.500	1.50	.125	21.00

Note: All dimensions in inches unless otherwise noted.

Phone: 1-248-814-9290

AD-98 STANDARD, "X" LENGTH

AD-98 COATED STANDARD AND "X" LENGTH BALL, FLAT AND CORNER RADIUS END MILLS

END MILL TYPE (T)	CATALOG NUMBER	EFFECTIVE CUTTING DIAMETER (D)	FLUTE LENGTH (F)	OVERALL LENGTH (L)	SHANK DIAMETER (S)	LIST PRICE
4 FLUTE FLAT STANDARD LENGTH	FH-4S-156-AD98	.156	.500	2.000	.187	\$26.50
	FH-4S-187-AD98	.187	.625	2.000	.187	27.00
	FH-4S-250-AD98	.250	.750	2.500	.250	33.50
	FH-4S-312-AD98	.312	.813	2.500	.312	41.00
	FH-4S-375-AD98	.375	1.000	2.500	.375	45.00
	FH-4S-500-AD98	.500	1.000	3.000	.500	74.00
4 FLUTE CORNER RADIUS STANDARD LENGTH	FH-4S-125-AD98 R*	.125	.375	1.500	.125	22.50
	FH-4S-187-AD98 R*	.187	.625	2.000	.187	29.00
	FH-4S-250-AD98 R*	.250	.750	2.500	.250	36.50
	FH-4S-375-AD98 R*	.375	1.000	2.500	.375	49.00
	FH-4S-500-AD98 R*	.500	1.000	3.000	.500	80.00
4 FLUTE BALL "X" LENGTH	BH-4X-125-AD98	.125	.625	2.000	.125	26.50
	BH-4X-156-AD98	.156	.750	2.125	.187	29.00
	BH-4X-187-AD98	.187	.750	2.500	.187	33.00
	BH-4X-250-AD98	.250	1.125	3.000	.250	41.00
	BH-4X-312-AD98	.312	1.125	3.000	.312	49.50
	BH-4X-375-AD98	.375	1.125	3.000	.375	59.00
	BH-4X-500-AD98	.500	2.000	4.000	.500	110.00
	BH-4X-625-AD98	.625	2.250	5.000	.625	191.00
	BH-4X-750-AD98	.750	2.250	5.000	.750	226.00
	BH-4X-1000-AD98	1.000	2.250	5.000	1.000	401.00
4 FLUTE FLAT "X" LENGTH	FH-4X-125-AD98	.125	.625	2.000	.125	25.00
	FH-4X-156-AD98	.156	.750	2.125	.187	27.00
	FH-4X-187-AD98	.187	.750	2.500	.187	30.00
	FH-4X-250-AD98	.250	1.125	3.000	.250	37.00
	FH-4X-312-AD98	.312	1.125	3.000	.312	46.00
	FH-4X-375-AD98	.375	1.125	3.000	.375	53.00
	FH-4X-500-AD98	.500	2.000	4.000	.500	99.00
	FH-4X-625-AD98	.625	2.250	5.000	.625	175.00
	FH-4X-750-AD98	.750	2.250	5.000	.750	201.00
	FH-4X-1000-AD98	1.000	2.250	5.000	1.000	350.00
4 FLUTE CORNER RADIUS "X" LENGTH	FH-4X-125-AD98 R*	.125	.625	2.000	.125	26.50
	FH-4X-187-AD98 R*	.187	1.000	3.000	.187	33.00
	FH-4X-250-AD98 R*	.250	1.000	3.000	.250	41.00
	FH-4X-375-AD98 R*	.375	1.000	3.000	.375	59.00
	FH-4X-500-AD98 R*	.500	2.000	4.000	.500	110.00

* TO COMPLETE ORDER INDICATE RADIUS SIZE:
R1= 1/64" RADIUS R010= .010" RADIUS
R2= 1/32" RADIUS R020= .020" RADIUS
R4= 1/16" RADIUS

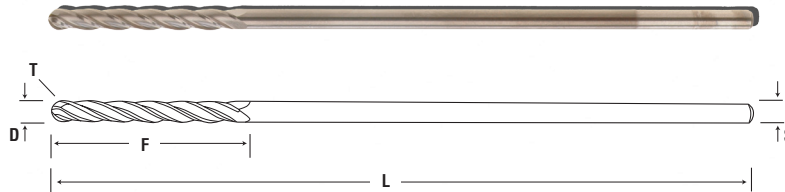
Note: All dimensions in inches unless otherwise noted.

Fax: 1-866-900-9853

AD-98 STANDARD, "X" LENGTH

AD-98 “XL” LENGTH

BH-4XL-125-AD98



AD-98 COATED “XL” LENGTH BALL, FLAT AND CORNER RADIUS END MILLS

END MILL TYPE (T)	CATALOG NUMBER	EFFECTIVE CUTTING DIAMETER (D)	FLUTE LENGTH (F)	OVERALL LENGTH (L)	SHANK DIAMETER (S)	LIST PRICE
4 FLUTE BALL “XL” LENGTH	BH-4XL-125-AD98	.125	1.000	3.00	.125	\$32.00
	BH-4XL-156-AD98	.156	1.125	3.00	.187	34.00
	BH-4XL-187-AD98	.187	1.125	3.00	.187	36.50
	BH-4XL-250-AD98	.250	1.500	4.00	.250	45.50
	BH-4XL-312-AD98	.312	1.625	4.00	.312	56.00
	BH-4XL-375-AD98	.375	1.750	4.00	.375	69.00
	BH-4XL-500-AD98	.500	3.000	6.00	.500	140.00
	BH-4XL-625-AD98	.625	3.000	6.00	.625	245.00
	BH-4XL-750-AD98	.750	3.000	6.00	.750	287.00
	BH-4XL-1000-AD98	1.000	3.000	6.00	1.000	435.00
4 FLUTE FLAT “XL” LENGTH	FH-4XL-125-AD98	.125	1.000	3.00	.125	29.00
	FH-4XL-156-AD98	.156	1.125	3.00	.187	31.00
	FH-4XL-187-AD98	.187	1.125	3.00	.187	33.00
	FH-4XL-250-AD98	.250	1.500	4.00	.250	41.00
	FH-4XL-312-AD98	.312	1.625	4.00	.312	51.00
	FH-4XL-375-AD98	.375	1.750	4.00	.375	61.00
	FH-4XL-500-AD98	.500	3.000	6.00	.500	124.00
	FH-4XL-625-AD98	.625	3.000	6.00	.625	216.00
	FH-4XL-750-AD98	.750	3.000	6.00	.750	252.00
	FH-4XL-1000-AD98	1.000	3.000	6.00	1.000	381.00
4 FLUTE CORNER RADIUS “XL” LENGTH	FH-4XL-125-AD98 R*	.125	1.000	3.00	.125	32.00
	FH-4XL-187-AD98 R*	.187	1.125	3.00	.187	36.50
	FH-4XL-250-AD98 R*	.250	1.500	4.00	.250	45.50
	FH-4XL-375-AD98 R*	.375	1.750	4.00	.375	69.00
	FH-4XL-500-AD98 R*	.500	3.000	6.00	.500	140.00

* TO COMPLETE ORDER INDICATE RADIUS SIZE:

R1 = 1/64" RADIUS R010 = .010" RADIUS
R2 = 1/32" RADIUS R020 = .020" RADIUS
R4 = 1/16" RADIUS

Note: All dimensions in inches unless otherwise noted.

AD-98 “XXL”, “XXXL” LENGTH

BH-4XXL-125-AD98



AD-98 COATED “XXL” AND “XXXL” LENGTH BALL, FLAT AND CORNER RADIUS END MILLS

END MILL TYPE (T)	CATALOG NUMBER	EFFECTIVE CUTTING DIAMETER (D)	FLUTE LENGTH (F)	OVERALL LENGTH (L)	SHANK DIAMETER (S)	LIST PRICE
4 FLUTE BALL “XXL” LENGTH	BH-4XXL-125-AD98	.125	1.000	4.00	.125	\$39.00
	BH-4XXL-187-AD98	.187	1.000	4.00	.187	43.00
	BH-4XXL-250-AD98	.250	1.500	6.00	.250	52.00
	BH-4XXL-312-AD98	.312	1.500	6.00	.312	62.00
	BH-4XXL-375-AD98	.375	1.500	6.00	.375	76.00
4 FLUTE FLAT “XXL” LENGTH	FH-4XXL-125-AD98	.125	1.000	4.00	.125	36.00
	FH-4XXL-187-AD98	.187	1.000	4.00	.187	40.00
	FH-4XXL-250-AD98	.250	1.500	6.00	.250	48.00
	FH-4XXL-312-AD98	.312	1.500	6.00	.312	58.00
	FH-4XXL-375-AD98	.375	1.500	6.00	.375	67.00
4 FLUTE CORNER RADIUS “XXL” LENGTH	FH-4XXL-125-AD98 R*	.125	1.000	4.00	.125	39.00
	FH-4XXL-187-AD98 R*	.187	1.125	4.00	.187	43.00
	FH-4XXL-250-AD98 R*	.250	1.500	6.00	.250	52.00
	FH-4XXL-375-AD98 R*	.375	1.500	6.00	.375	76.00
4 FLUTE BALL “XXXL” LENGTH	BH-4XXXL-125-AD98	.125	1.000	6.00	.125	49.00
	BH-4XXXL-187-AD98	.187	1.000	6.00	.187	53.00
	BH-4XXXL-250-AD98	.250	1.000	7.50	.250	69.00
	BH-4XXXL-312-AD98	.312	1.000	7.50	.312	79.00
	BH-4XXXL-375-AD98	.375	1.000	7.50	.375	89.00

* TO COMPLETE ORDER INDICATE RADIUS SIZE:

R1= 1/64" RADIUS

R2= 1/32" RADIUS

R4= 1/16" RADIUS

R010= .010" RADIUS

R020= .020" RADIUS

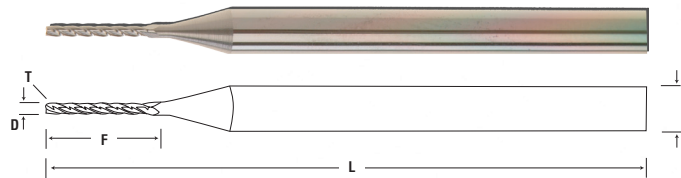
AD-98 “XXL”, “XXXL” LENGTH

Note: All dimensions in inches unless otherwise noted.

Fax: 1-866-900-9853

AD-98 MINI MILLS

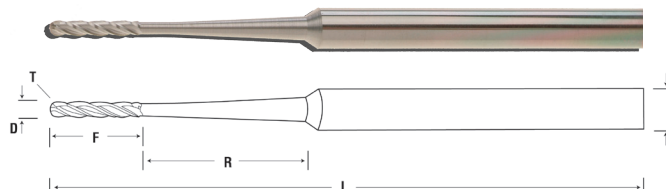
BMM-32-F25-AD98



AD-98 COATED MINI MILLS EXTENDED FLUTE AND RELIEVED BALL AND FLAT END MILLS

END MILL TYPE (T)	CATALOG NUMBER	EFFECTIVE CUTTING DIAMETER (D)	FLUTE LENGTH (F)	RELIEF PAST FLUTE	OVERALL LENGTH (L)	SHANK DIAMETER (S)	LIST PRICE
4 FLUTE BALL MINI MILL	BMM-32-F15-AD98	.032	.150	NONE	2.50	.125	\$29.00
	BMM-32-F25-AD98	.032	.250	NONE	2.50	.125	31.00
	BMM-39-F25-AD98	.039	.250	NONE	2.50	.125	31.00
	BMM-47-F25-AD98	.047	.250	NONE	2.50	.125	27.00
	BMM-62-F50-AD98	.062	.500	NONE	2.50	.125	28.00
	BMX-62-F10-AD98	.062	1.000	NONE	4.00	.125	49.00
	BMM-80-F50-AD98	.080	.500	NONE	2.50	.125	29.00
	BMX-80-F10-AD98	.080	1.000	NONE	4.00	.125	49.00
	BMM-94-F75-AD98	.094	.750	NONE	2.50	.125	30.00
	BMX-94-F10-AD98	.094	1.000	NONE	4.00	.125	49.00
4 FLUTE FLAT MINI MILL	FMM-32-F15-AD98	.032	.150	NONE	2.50	.125	27.00
	FMM-32-F25-AD98	.032	.250	NONE	2.50	.125	29.00
	FMM-39-F25-AD98	.039	.250	NONE	2.50	.125	29.00
	FMM-47-F25-AD98	.047	.250	NONE	2.50	.125	25.00
	FMM-62-F50-AD98	.062	.500	NONE	2.50	.125	26.00
	FMX-62-F10-AD98	.062	1.000	NONE	4.00	.125	47.00
	FMM-80-F50-AD98	.080	.500	NONE	2.50	.125	27.00
	FMX-80-F10-AD98	.080	1.000	NONE	4.00	.125	47.00
	FMM-94-F75-AD98	.094	.750	NONE	2.50	.125	28.00
	FMX-94-F10-AD98	.094	1.000	NONE	4.00	.125	47.00

BMM-125-TRS60-AD98



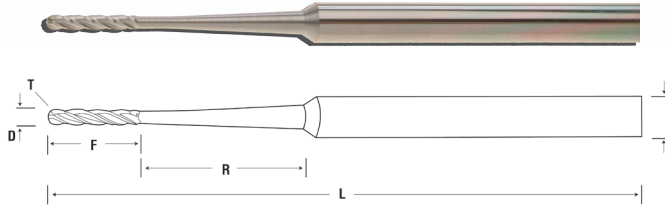
MINI MILL TAPER REACH CUTTERS

END MILL TYPE (T)	CATALOG NUMBER	EFFECTIVE CUTTING DIAMETER (D)	FLUTE LENGTH (F)	RELIEF PAST FLUTE (R)	OVERALL LENGTH (L)	SHANK DIAMETER (S)	LIST PRICE
4 FLUTE BALL MINI MILL TAPER REACH	BMM-39-TRS30-AD98	.040	.250	NONE	3.00	.187	\$45.00
	BMM-62-TRS30-AD98	.062	.250	1.125", 1° PER SIDE	3.00	.187	45.00
	BMM-80-TRS30-AD98	.080	.250	1.250", 1° PER SIDE	3.00	.187	45.00
	BMM-125-TRS45-AD98	.125	.500	1.500", 1° PER SIDE	4.50	.250	59.00
	BMM-125-TRS60-AD98	.125	.500	2.500", 1° PER SIDE	6.00	.250	69.00

Note: All dimensions in inches unless otherwise noted.

AD-98 CLEARANCE CUTTERS

BCC-47-F25-AD98



AD-98 COATED EXTENDED FLUTE AND RELIEVED BALL AND FLAT CLEARANCE CUTTERS

END MILL TYPE (T)	CATALOG NUMBER	EFFECTIVE CUTTING DIAMETER (D)	FLUTE LENGTH (F)	RELIEF PAST FLUTE (R)	OVERALL LENGTH (L)	SHANK DIAMETER (S)	LIST PRICE
4 FLUTE BALL CLEARANCE CUTTER TAPER RELIEF	BCC-32-F15-AD98	.032	.150	After flute, .500" total relief = .100" straight, .400" 2° taper per side	2.500	.125	\$32.00
	BCC-32-F25-AD98	.032	.250				34.00
	BCC-39-F25-AD98	.039	.250				34.00
	BCC-47-F25-AD98	.047	.250				30.00
4 FLUTE FLAT CLEARANCE CUTTER TAPER RELIEF	FCC-32-F15-AD98	.032	.150	After flute, .500" total relief = .100" straight, .400" 2° taper per side	2.500	.125	30.00
	FCC-32-F25-AD98	.032	.250				32.00
	FCC-39-F25-AD98	.039	.250				32.00
	FCC-47-F25-AD98	.047	.250				28.00
4 FLUTE BALL CLEARANCE CUTTER STRAIGHT RELIEF	BCC-62-F50-AD98	.062	.500	After flute, .500" straight	2.500	.125	31.00
	BCC-80-F50-AD98	.080	.500				32.00
	BCC-94-F75-AD98	.093	.750				33.00
4 FLUTE FLAT CLEARANCE CUTTER STRAIGHT RELIEF	FCC-62-F50-AD98	.062	.500	After flute, .500" straight	2.500	.125	29.00
	FCC-80-F50-AD98	.080	.500				30.00
	FCC-94-F75-AD98	.093	.750				31.00
4 FLUTE .010 RADIUS	FRC-62-AD98 R01	.062	.500	After flute, .500" straight	2.500	.125	34.00
4 FLUTE .015 RADIUS	FRC-62-AD98 R1	.062	.500	After flute, .500" straight	2.500	.125	34.00

AD-98 COATED CORNER RADIUS END MILLS

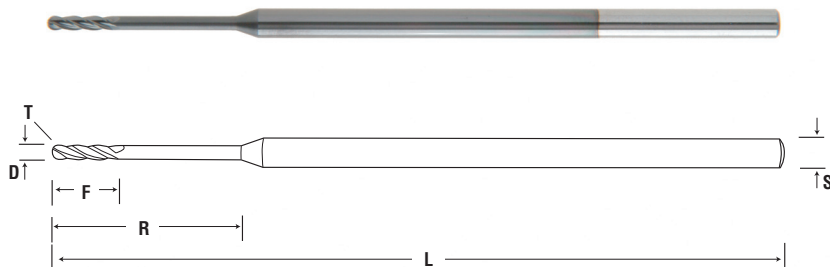
END MILL TYPE (T)	CATALOG NUMBER	EFFECTIVE CUTTING DIAMETER (D)	FLUTE LENGTH (F)	OVERALL LENGTH (L)	SHANK DIAMETER (S)	LIST PRICE
4 FLUTE .005 RADIUS	FRM-32-AD98 R05	.032	.250	3.00	.125	\$29.00
4 FLUTE .015 RADIUS	FRM-39-AD98 R1	.039	.250	3.00	.125	31.00
4 FLUTE .010 RADIUS	FRM-39-AD98 R010	.039	.250	3.00	.125	31.00
4 FLUTE .015 RADIUS	FRM-47-AD98 R1	.047	.500	3.00	.125	27.00
4 FLUTE .010 RADIUS	FRM-47-AD98 R010	.047	.500	3.00	.125	27.00
4 FLUTE .015 RADIUS	FRM-62-AD98 R1	.062	.500	3.00	.125	28.00
4 FLUTE .010 RADIUS	FRM-62-AD98 R010	.062	.500	3.00	.125	28.00
4 FLUTE .015 RADIUS	FRM-80-AD98 R1	.080	.500	3.00	.125	29.00
4 FLUTE .010 RADIUS	FRM-80-AD98 R010	.080	.500	3.00	.125	29.00
4 FLUTE .015 RADIUS	FRM-94-AD98 R1	.094	.500	3.00	.125	30.00
4 FLUTE .010 RADIUS	FRM-94-AD98 R01	.094	.500	3.00	.125	30.00

Note: All dimensions in inches unless otherwise noted.

Fax: 1-866-900-9853

AD-98 CLEARANCE CUTTERS STRAIGHT RELIEF BALL

BCS-62-R75-AD98



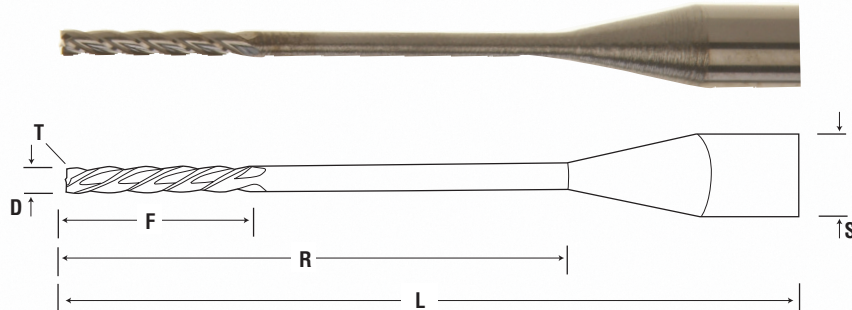
AD-98 COATED BCS CLEARANCE CUTTERS

END MILL TYPE (T)	CATALOG NUMBER	EFFECTIVE CUTTING DIAMETER (D)	FLUTE LENGTH (F)	REACH FROM TIP (R)	OVERALL LENGTH (L)	SHANK DIAMETER (S)	LIST PRICE
4 FLUTE BALL CLEARANCE CUTTERS STRAIGHT RELIEF	BCS-32-F25-AD98	.032	.250	NONE	3.00	.125	\$34.00
	BCS-32-R50-AD98	.032	.250	.500 STRAIGHT	3.00	.125	34.00
	BCS-32-R75-AD98	.032	.250	.750 STRAIGHT	3.00	.125	34.00
	BCS-32-R10-AD98	.032	.250	1.000 STRAIGHT	3.00	.125	34.00
	BCS-39-F25-AD98	.039	.250	NONE	3.00	.125	34.00
	BCS-39-R50-AD98	.039	.250	.500 STRAIGHT	3.00	.125	34.00
	BCS-39-R75-AD98	.039	.250	.750 STRAIGHT	3.00	.125	34.00
	BCS-39-R10-AD98	.039	.250	1.000 STRAIGHT	3.00	.125	34.00
	BCS-47-F25-AD98	.047	.250	NONE	3.00	.125	34.00
	BCS-47-R50-AD98	.047	.250	.500 STRAIGHT	3.00	.125	34.00
	BCS-47-R75-AD98	.047	.250	.750 STRAIGHT	3.00	.125	34.00
	BCS-47-R10-AD98	.047	.250	1.000 STRAIGHT	3.00	.125	34.00
	BCS-62-F25-AD98	.062	.250	NONE	3.00	.125	31.00
	BCS-62-R50-AD98	.062	.250	.500 STRAIGHT	3.00	.125	31.00
	BCS-62-R75-AD98	.062	.250	.750 STRAIGHT	3.00	.125	31.00
	BCS-62-R10-AD98	.062	.250	1.000 STRAIGHT	3.00	.125	31.00
	BCS-80-F25-AD98	.080	.250	NONE	3.00	.125	32.00
	BCS-80-R50-AD98	.080	.250	.500 STRAIGHT	3.00	.125	32.00
	BCS-80-R75-AD98	.080	.250	.750 STRAIGHT	3.00	.125	32.00
	BCS-80-R10-AD98	.080	.250	1.000 STRAIGHT	3.00	.125	32.00
	BCS-94-F25-AD98	.094	.250	NONE	3.00	.125	35.00
	BCS-94-R50-AD98	.094	.250	.500 STRAIGHT	3.00	.125	35.00
	BCS-94-R75-AD98	.094	.250	.750 STRAIGHT	3.00	.125	35.00
	BCS-94-R10-AD98	.094	.250	1.000 STRAIGHT	3.00	.125	35.00

Note: All dimensions in inches unless otherwise noted.

AD-98 CLEARANCE CUTTERS STRAIGHT RELIEF FLAT

FCS-62-R75-AD98



AD-98 COATED FCS CLEARANCE CUTTERS

END MILL TYPE (T)	CATALOG NUMBER	EFFECTIVE CUTTING DIAMETER (D)	FLUTE LENGTH (F)	REACH FROM TIP (R)	OVERALL LENGTH (L)	SHANK DIAMETER (S)	LIST PRICE
4 FLUTE FLAT CLEARANCE CUTTERS STRAIGHT RELIEF	FCS-32-F25-AD98	.032	.250	NONE	3.00	.125	\$32.00
	FCS-32-R50-AD98	.032	.250	.500 STRAIGHT	3.00	.125	32.00
	FCS-32-R75-AD98	.032	.250	.750 STRAIGHT	3.00	.125	32.00
	FCS-39-F25-AD98	.039	.250	NONE	3.00	.125	32.00
	FCS-39-R50-AD98	.039	.250	.500 STRAIGHT	3.00	.125	32.00
	FCS-39-R75-AD98	.039	.250	.750 STRAIGHT	3.00	.125	32.00
	FCS-47-F25-AD98	.047	.250	NONE	3.00	.125	32.00
	FCS-47-R50-AD98	.047	.250	.500 STRAIGHT	3.00	.125	32.00
	FCS-47-R75-AD98	.047	.250	.750 STRAIGHT	3.00	.125	32.00
	FCS-62-F25-AD98	.062	.250	NONE	3.00	.125	29.00
	FCS-62-R50-AD98	.062	.250	.500 STRAIGHT	3.00	.125	29.00
	FCS-62-R75-AD98	.062	.250	.750 STRAIGHT	3.00	.125	29.00
	FCS-62-R10-AD98	.062	.250	1.000 STRAIGHT	3.00	.125	29.00
	FCS-80-F25-AD98	.080	.250	NONE	3.00	.125	30.00
	FCS-80-R50-AD98	.080	.250	.500 STRAIGHT	3.00	.125	30.00
	FCS-80-R75-AD98	.080	.250	.750 STRAIGHT	3.00	.125	30.00
	FCS-80-R10-AD98	.080	.250	1.000 STRAIGHT	3.00	.125	30.00
	FCS-94-F25-AD98	.094	.250	NONE	3.00	.125	33.00
	FCS-94-R50-AD98	.094	.250	.500 STRAIGHT	3.00	.125	33.00
	FCS-94-R75-AD98	.094	.250	.750 STRAIGHT	3.00	.125	33.00
	FCS-94-R10-AD98	.094	.250	1.000 STRAIGHT	3.00	.125	33.00

Note: All dimensions in inches unless otherwise noted.

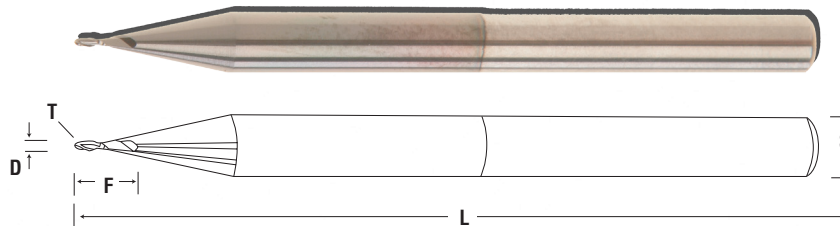
Fax: 1-866-900-9853

AD-98 CLEARANCE CUTTERS - STRAIGHT RELIEF FLAT

AD-98 B2M BALL 3X DIAMETER

AD-98 B2M BALL 3X DIAMETER

B2M-20-F60-AD98



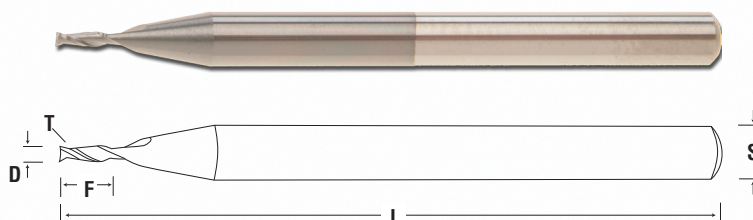
**MINI MILL 2-FLUTE BALL END MILLS WITH EXTENDED FLUTE LENGTHS
3X DIAMETER, COATED AD-98 FOR CUTTING GRAPHITE**

END MILL TYPE (T)	CATALOG NUMBER	EFFECTIVE CUTTING DIAMETER (D)	FLUTE LENGTH (F)	OVERALL LENGTH (L)	SHANK DIAMETER (S)	LIST PRICE
2 FLUTE BALL 3X DIAMETER	B2M-10-F30-AD98	.010	.030	1.50	.125	\$42.00
	B2M-11-F33-AD98	.011	.033	1.50	.125	39.00
	B2M-12-F36-AD98	.012	.036	1.50	.125	39.00
	B2M-13-F39-AD98	.013	.039	1.50	.125	35.00
	B2M-14-F42-AD98	.014	.042	1.50	.125	35.00
	B2M-15-F45-AD98	.015	.045	1.50	.125	33.00
	B2M-16-F48-AD98	.016	.048	1.50	.125	33.00
	B2M-17-F51-AD98	.017	.051	1.50	.125	33.00
	B2M-18-F54-AD98	.018	.054	1.50	.125	33.00
	B2M-19-F57-AD98	.019	.057	1.50	.125	31.00
	B2M-20-F60-AD98	.020	.060	1.50	.125	30.00
	B2M-21-F63-AD98	.021	.063	1.50	.125	30.00
	B2M-22-F66-AD98	.022	.066	1.50	.125	30.00
	B2M-23-F69-AD98	.023	.069	1.50	.125	30.00
	B2M-24-F72-AD98	.024	.072	1.50	.125	30.00
	B2M-25-F75-AD98	.025	.075	1.50	.125	29.00
	B2M-26-F78-AD98	.026	.078	1.50	.125	29.00
	B2M-27-F81-AD98	.027	.081	1.50	.125	29.00
	B2M-28-F84-AD98	.028	.084	1.50	.125	29.00
	B2M-29-F87-AD98	.029	.087	1.50	.125	29.00
	B2M-30-F90-AD98	.030	.090	1.50	.125	29.00

Note: All dimensions in inches unless otherwise noted.

AD-98 F2M FLAT 3X DIAMETER

F2M-20-F60-AD98



MINI MILL 2-FLUTE FLAT END MILLS WITH EXTENDED FLUTE LENGTHS 3X DIAMETER, COATED AD-98 FOR CUTTING GRAPHITE

END MILL TYPE (T)	CATALOG NUMBER	EFFECTIVE CUTTING DIAMETER (D)	FLUTE LENGTH (F)	OVERALL LENGTH (L)	SHANK DIAMETER (S)	LIST PRICE
2 FLUTE FLAT 3X DIAMETER	F2M-10-F30-AD98	.010	.030	1.50	.125	\$37.00
	F2M-11-F33-AD98	.011	.033	1.50	.125	34.00
	F2M-12-F36-AD98	.012	.036	1.50	.125	34.00
	F2M-13-F39-AD98	.013	.039	1.50	.125	29.00
	F2M-14-F42-AD98	.014	.042	1.50	.125	29.00
	F2M-15-F45-AD98	.015	.045	1.50	.125	27.00
	F2M-16-F48-AD98	.016	.048	1.50	.125	27.00
	F2M-17-F51-AD98	.017	.051	1.50	.125	27.00
	F2M-18-F54-AD98	.018	.054	1.50	.125	27.00
	F2M-19-F57-AD98	.019	.057	1.50	.125	25.00
	F2M-20-F60-AD98	.020	.060	1.50	.125	24.00
	F2M-21-F63-AD98	.021	.063	1.50	.125	24.00
	F2M-22-F66-AD98	.022	.066	1.50	.125	24.00
	F2M-23-F69-AD98	.023	.069	1.50	.125	24.00
	F2M-24-F72-AD98	.024	.072	1.50	.125	24.00
	F2M-25-F75-AD98	.025	.075	1.50	.125	23.00
	F2M-26-F78-AD98	.026	.078	1.50	.125	23.00
	F2M-27-F81-AD98	.027	.081	1.50	.125	23.00
	F2M-28-F84-AD98	.028	.084	1.50	.125	23.00
	F2M-29-F87-AD98	.029	.087	1.50	.125	23.00
	F2M-30-F90-AD98	.030	.090	1.50	.125	23.00

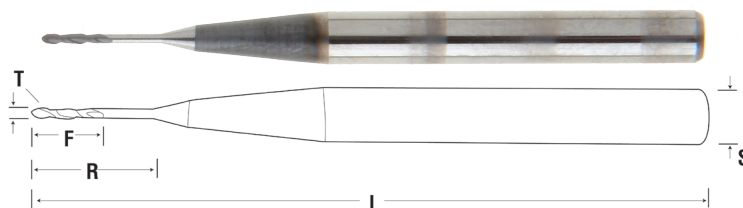
Note: All dimensions in inches unless otherwise noted.

Fax: 1-866-900-9853

AD-98 F2M FLAT 3X DIAMETER

AD-98 MRB - MRF 5X DIAMETER WITH RELIEF B2X 5X DIAMETER

MRB-2X-20-R30-AD98



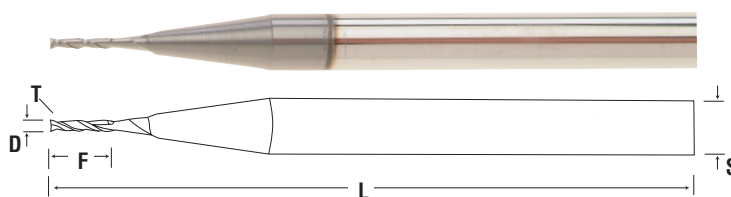
AD-98 COATED MRB MINI RELIEF BALL END MILLS 5X DIAMETER

END MILL TYPE (T)	CATALOG NUMBER	EFFECTIVE CUTTING DIAMETER (D)	FLUTE LENGTH (F)	TOTAL REACH FROM TIP (R)	OVERALL LENGTH (L)	SHANK DIAMETER (S)	LIST PRICE
2 FLUTE BALL MINI RELIEF	MRB-2X-10-R10-AD98	.010	.050	.100	1.50	.125	\$41.00
	MRB-2X-15-R20-AD98	.015	.075	.200	1.50	.125	41.00
	MRB-2X-15-R30-AD98	.015	.075	.300	1.50	.125	41.00
	MRB-2X-20-R20-AD98	.020	.100	.200	1.50	.125	41.00
	MRB-2X-20-R30-AD98	.020	.100	.300	1.50	.125	41.00
	MRB-2X-25-R20-AD98	.025	.125	.200	1.50	.125	39.00
	MRB-2X-25-R30-AD98	.025	.125	.300	1.50	.125	39.00
	MRB-2X-30-R30-AD98	.030	.150	.300	1.50	.125	39.00

AD-98 COATED MRF MINI RELIEF FLAT END MILLS 5X DIAMETER

2 FLUTE FLAT MINI RELIEF	MRF-2X-10-R10-AD98	.010	.050	.100	1.50	.125	\$39.00
	MRF-2X-15-R20-AD98	.015	.075	.200	1.50	.125	39.00
	MRF-2X-15-R30-AD98	.015	.075	.300	1.50	.125	39.00
	MRF-2X-20-R20-AD98	.020	.100	.200	1.50	.125	39.00
	MRF-2X-20-R30-AD98	.020	.100	.300	1.50	.125	39.00
	MRF-2X-25-R20-AD98	.025	.125	.200	1.50	.125	37.00
	MRF-2X-25-R30-AD98	.025	.125	.300	1.50	.125	37.00
	MRF-2X-30-R30-AD98	.030	.150	.300	1.50	.125	37.00

F2X-20-F100-AD98



MINI MILL 2-FLUTE BALL AND FLAT END MILLS WITH EXTENDED FLUTE LENGTHS 5X DIAMETER, COATED AD-98 FOR CUTTING GRAPHITE

END MILL TYPE (T)	CATALOG NUMBER	EFFECTIVE CUTTING DIAMETER (D)	FLUTE LENGTH (F)	OVERALL LENGTH (L)	SHANK DIAMETER (S)	LIST PRICE
2 FLUTE BALL 5X DIAMETER	B2X-10-F50-AD98	.010	.050	1.50	.125	\$34.00
	B2X-11-F55-AD98	.011	.055	1.50	.125	34.00
	B2X-12-F60-AD98	.012	.060	1.50	.125	34.00
	B2X-13-F65-AD98	.013	.065	1.50	.125	34.00
	B2X-14-F70-AD98	.014	.070	1.50	.125	34.00
	B2X-15-F75-AD98	.015	.075	1.50	.125	34.00

Note: All dimensions in inches unless otherwise noted.

AD-98 B2X - F2X 5X DIAMETER

MINI MILL 2-FLUTE BALL AND FLAT END MILLS WITH EXTENDED FLUTE LENGTHS 5X DIAMETER, COATED AD-98 FOR CUTTING GRAPHITE

END MILL TYPE (T)	CATALOG NUMBER	EFFECTIVE CUTTING DIAMETER (D)	FLUTE LENGTH (F)	OVERALL LENGTH (L)	SHANK DIAMETER (S)	LIST PRICE
2 FLUTE BALL 5X DIAMETER	B2X-16-F80-AD98	.016	.080	1.50	.125	\$34.00
	B2X-17-F85-AD98	.017	.085	1.50	.125	34.00
	B2X-18-F90-AD98	.018	.090	1.50	.125	34.00
	B2X-19-F95-AD98	.019	.095	1.50	.125	34.00
	B2X-20-F100-AD98	.020	.100	1.50	.125	34.00
	B2X-21-F105-AD98	.021	.105	1.50	.125	34.00
	B2X-22-F110-AD98	.022	.110	1.50	.125	34.00
	B2X-23-F115-AD98	.023	.115	1.50	.125	34.00
	B2X-24-F120-AD98	.024	.120	1.50	.125	34.00
	B2X-25-F125-AD98	.025	.125	1.50	.125	32.00
	B2X-26-F130-AD98	.026	.130	1.50	.125	32.00
	B2X-27-F135-AD98	.027	.135	1.50	.125	32.00
	B2X-28-F140-AD98	.028	.140	1.50	.125	32.00
	B2X-29-F145-AD98	.029	.145	1.50	.125	32.00
	B2X-30-F150-AD98	.030	.150	1.50	.125	32.00
	B2X-31-F155-AD98	.031	.155	1.50	.125	32.00
2 FLUTE FLAT 5X DIAMETER	F2X-10-F50-AD98	.010	.050	1.50	.125	33.00
	F2X-11-F55-AD98	.011	.055	1.50	.125	33.00
	F2X-12-F60-AD98	.012	.060	1.50	.125	33.00
	F2X-13-F65-AD98	.013	.065	1.50	.125	33.00
	F2X-14-F70-AD98	.014	.070	1.50	.125	33.00
	F2X-15-F75-AD98	.015	.075	1.50	.125	33.00
	F2X-16-F80-AD98	.016	.080	1.50	.125	33.00
	F2X-17-F85-AD98	.017	.085	1.50	.125	33.00
	F2X-18-F90-AD98	.018	.090	1.50	.125	33.00
	F2X-19-F95-AD98	.019	.095	1.50	.125	33.00
	F2X-20-F100-AD98	.020	.100	1.50	.125	33.00
	F2X-21-F105-AD98	.021	.105	1.50	.125	33.00
	F2X-22-F110-AD98	.022	.110	1.50	.125	33.00
	F2X-23-F115-AD98	.023	.115	1.50	.125	33.00
	F2X-24-F120-AD98	.024	.120	1.50	.125	33.00
	F2X-25-F125-AD98	.025	.125	1.50	.125	30.00
	F2X-26-F130-AD98	.026	.130	1.50	.125	30.00
	F2X-27-F135-AD98	.027	.135	1.50	.125	30.00
	F2X-28-F140-AD98	.028	.140	1.50	.125	30.00
	F2X-29-F145-AD98	.029	.145	1.50	.125	30.00
	F2X-30-F150-AD98	.030	.150	1.50	.125	30.00
	F2X-31-F155-AD98	.031	.155	1.50	.125	30.00

AD-98 B2X - F2X 5X DIAMETER

Note: All dimensions in inches unless otherwise noted.

Fax: 1-866-900-9853

FEEDS AND SPEEDS DATA

- Feeds and speeds are only starting points for cutting graphite. Reach and tight corners will change these recommendations.
- Too slow of a feed rate will cause excessive wear on the end mill.
- Use the maximum RPM of the machine if the SUGGESTED RPM is higher than the capacity of the machine.

Cutting thin wall stock: When machining tall thin (graphite) rib stock, use the largest cutting diameter possible — using fine (.005") z-level depths of cut — coal mining the graphite. DO NOT LEAVE SEMI-FINISH STOCK (.020 – .030") as you would when machining steel.

DIAMOND DENSE, AD-2000 & AD-98 COATED END MILLS — FEEDS AND SPEEDS FOR MACHINES WITHOUT HIGH SPEED CAPABILITY

EFFECTIVE DIAMETER OF CUTTER	SURFACE FEET PER MINUTE	CHIP LOAD	NUMBER OF FLUTES	REVOLUTIONS PER MINUTE	INCHES PER MINUTE
.032	100	.002	4	8,300	66
.063	135	.003	4	8,300	100
.093	200	.003	4	8,300	100
.125	200	.004	4	6,100	100
.187	300	.004	4	6,200	100
.250	410	.004	4	6,300	100
.375	620	.004	4	6,300	100
.500	820	.004	4	6,250	100

DIAMOND DENSE, AD-2000 & AD-98 COATED END MILLS — FEEDS AND SPEEDS FOR MACHINES WITH HIGH SPEED CAPABILITY UP TO 36,000 RPM

EFFECTIVE CUTTING DIAMETER	HIGH SPEED RPM'S	CHIP LOAD FINISH	STARTING FEED FINISH (IPM)	CHIP LOAD ROUGH	STARTING FEED ROUGH (IPM)
.015 (short)	40,000	.0002	32	.0003	48
.015 (long)	20,000	.0001	8-12	.0002	16
.032 (short)	35,812	.0004	70	.0006	85
.032	23,875	.0004	45	.0006	60
.047 (short)	33,064	.0006	85	.0008	105
.047	21,032	.0006	54	.0008	70
.062	30,317	.0008	100	.0010	125
.062	18,190	.0008	60	.0010	80
.093	24,645	.0010	100	.0015	150
.093	16,430	.0010	70	.0015	100
.125	22,920	.0015	140	.0025	225
.125	15,280	.0015	95	.0025	150
.187	15,320	.0023	145	.0038	235
.187	10,213	.0023	95	.0038	155
.250	15,280	.0030	185	.0050	300
.250	11,460	.0030	140	.0050	230
.312	12,243	.0038	190	.0063	315
.312	9,182	.0038	140	.0063	235
.375	10,186	.0045	185	.0075	310
.375	7,640	.0045	140	.0075	230
.500	7,640	.0050	150	.0085	265
.500	5,730	.0050	130	.0085	195

Note: All dimensions in inches unless otherwise noted.

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