

SUPERBEE®

Proudly made in the USA!



T5700 proprietary MDC coating on NT56, the ultimate in heat & wear resistance and lubricity. T5700 out performs all other coatings in steel, stainless steel and exotics. Upgrade to T5700 from AlTiN and increase SFPM by at least 15%. Feeds & speeds increased up to 30%, tool life increased up to 200% is normal with T5700.

T520 AlTiN coating on NT56. AlTiN is a high performance coating which excels machining abrasive and hard to machine materials such as cast iron, aluminum alloys, tool steels and nickel alloys. Its superior oxidation resistance provides unparalleled performance in high temp machining. This coating is best for applications that generate the high heat at the tools cutting edge.

NT5T TiCN-TiN coating on NT56. Designed for added wear resistance when milling steel, stainless steel and cast iron.

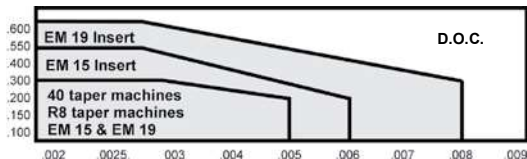
NT33 Uncoated grade for general purpose milling of aluminum, brass, cast iron and all non-ferrous materials. Excellent strength and wear resistance.

NT56 Uncoated carbide with extreme edge strength. Designed for general purpose milling of steel and cast iron. It is ideal for stainless steel and difficult machining conditions such as interrupted cutting.

NT13 Uncoated carbide grade suitable for machining of nickel based alloys.

NC57 Cermet, a Titanium Nitride, Carbide, Tantalum composite for milling steels. Good balance of wear resistance and toughness.

ALWAYS CLIMB CUT. USE NEW-LUBE LUBRICANT, AIR BLAST OR DRY. FLOOD COOLANT MAY BE USEFUL FOR CUTTING UNDER 300 SFPM.



Materials (Grade Selection)

Aluminum Wrought & Cast Alloy-Low Silicon, 6061-T6, 7075, Plastic
Aluminum- High Silicon And Copper Alloys Brass, Bronze
Cast Iron Nodular, Grey Cast Iron, Malleable Cast Iron
Non-Alloy Steel, Cast Steel Free Cutting Steel 1018, A36 ,8620
Low Alloy Steel ,Cast Steel 4130, 4140, 8620, 4330, 4340
Die & Mold Steels P20, A-2, D-2, M2, M42, T15
Stainless Steel (Precipitation)15-5Ph, 17-4Ph
Stainless Steels (Austenitic)303, 304, 304L, 312, 316, 316L
High Temp Alloys (Alpha+Beta Alloys) Titanium Alloys Ti-6Al4V
High Temp Alloys(Ni & Co Based), Monel 400, Hastolloy, Inconel
Hardened Steels (55-60Rc)

App Key							
Substrate	C-5	C-5	C-5	C-5	C-2	C-2	C1-C3
Coating	MDC	ALTIN	TiCN-TiN	None	None	None	None
Edge Prep	Honed	Honed	Honed	Honed	Honed	Sharp	Honed

USA	ISO	UN COATED	COATED	CERMET	USA	ISO	UN COATED	COATED	CERMET
C8	P01				C4	K01			
C7	P10		T 5 7 0 0	N C 5 7	C3	K10	N T 3 3	T 5 2 0	N C 5 7
C6	P20	N T 5 6	T 5 2 0		C2	K20			
C5	P30				C1	K30			
	P40								

RECOMMENDED CUTTING CONDITIONS

Material	RC Hardness	Grade	Cutting Speed Feet/Min	Feed In/Tooth
Mild Steel	—	T5700 / 520 NT56	500 - 1100	.003 - .008
Carbon Steel	—	T5700 / 520 NT56	500 - 1000	.003 - .008
Alloy Steel	36 & under 37 - 45	T5700 520	450 - 850 350 - 650	.003 - .006
Stainless Steel	35 & under	T5700 / 520 NT56	325 - 850	.003 - .005
300 Series	—	T5700 / 520 NT56	325 - 550	.003 - .005
PH Stainless	33 & under	T5700 / 520 NT56	450 - 700	.002 - .004
15-5 / 17-4	34 - 40	T5700 / 520 NT56	325 - 650	.002 - .004
Die & Mold Steel / P20 H13	33 & under 34 - 42	T5700 / 520 NT56	450 - 750 350 - 550	.003 - .006
Cast Iron	—	NT56 / NT33 T5700 / 520	275 - 750	.004 - .008
Aluminum	—	NT33	900 - 3200	.004 - .008

SUPERBEE®

CUTTER BODY NOMENCLATURE

SUPERBEE INDEXABLE FORM CUTTERS

BE = 90° SHOULDER MILLING CUTTER

BB = BALL
 BC = LARGE CONCAVE RADIUS CUTTER
 BD = BACKDRAFT CUTTER
 BBD = BACKDRAFT BALL END CUTTER
 CB = COUNTERBORE
 CM = CHAMFER/ANGLE SHELL MILL
 CMS = CHAMFER/ANGLE MILL

DIAMETER IN 64ths OF AN INCH

40 = 5/8"	128 = 2"
48 = 3/4"	144 = 2-1/4"
56 = 7/8"	160 = 2-1/2"
64 = 1"	192 = 3"
80 = 1-1/4"	224 = 3-1/2"
96 = 1-1/2"	320 = 5"

OF CUTTING TEETH / FLUTES

5/8" - 1FL	1-1/4" - 2FL to 3FL
3/4" - 1FL	1-1/2" - 2FL to 3FL
1" - 1FL to 2FL	
SHELL MILLS - 3FL TO 6 FL	

BE

64

2

BE6421564R1

15

64

R1

INSERT TYPE

14 = EM14	21 = SD21.5
15 = EM15	22 = SD22
18 = EM18	32 = SP32
19 = EM19	42 = SP42

SHANK TYPE DIA. OR ARBOR HOLE

40 = 5/8"
48 = 3/4" SHK/ARBOR HOLE
64 = 1"
80 = 1-1/4" R8 = R8 TAPER SHANK

ANGLE, RADIUS OR BALL SERIES

A10 through A60 = ANGLE
 C1 through C6 = CONCAVE RADIUS
 T&BC# = Top & Bottom Concave
R1 to R8 = CONVEX RADIUS

Please Note:

Each **SUPERBEE** cutter with a **Concave Radius C SERIES** allows for a range of radii. For example, Catalog Item Number **BE6411964C6** can support an insert with radii ranging from .236 to .250. Ranges listed below.

C # = CONCAVE RADIUS RANGE

C 1 ACCOMMODATES CONCAVE RADII FROM .010" TO .060"	C 4 ACCOMMODATES CONCAVE RADII FROM .170" TO .190"
C 2 ACCOMMODATES CONCAVE RADII FROM .070" TO .125"	C 5 ACCOMMODATES CONCAVE RADII FROM .197" TO .220"
C 3 ACCOMMODATES CONCAVE RADII FROM .130" TO .160"	C 6 ACCOMMODATES CONCAVE RADII FROM .236" TO .250"

SUPERBEE Angle Cutters. Each **SUPERBEE** Angle Cutter will accommodate only **one style angle insert**. For example, if you need a 1" single flute cutter with a 1" shank and a 45° per side angle, the part number would be **BE6411964A45**.

SUPERBEE Convex Radius R SERIES. R1, R2, R3, and R4 cutters will cut a range of radii. For example, BE6421564R1 will accommodate cutting of .007" to .060" radii. BE8031580R4 will accommodate cutting of .200" to .250" radii. However, R5, R6, R7, and R8 cutters will only cut a specific radius. That is, BE5611948R6 accommodates a .375" radius only. The chart below is for R Series Cutter Radii:

R # = CONVEX RADIUS RANGE

R 1 ACCOMMODATES CONVEX RADII FROM .007" TO .060"	R 5 ACCOMMODATES A .312" CONVEX RADIUS ONLY
R 2 ACCOMMODATES CONVEX RADII FROM .070" TO .130"	R 6 ACCOMMODATES A .375" CONVEX RADIUS ONLY
R 3 ACCOMMODATES CONVEX RADII FROM .140" TO .190"	R 7 ACCOMMODATES A .437" CONVEX RADIUS ONLY
R 4 ACCOMMODATES CONVEX RADII FROM .200" TO .250"	R 8 ACCOMMODATES A .500" CONVEX RADIUS ONLY

SUPERBEE®

INSERT NOMENCLATURE

SUPERBEE INDEXABLE CARBIDE INSERTS
EB = BALL NOSE CUTTER PARALLELOGRAM INSERT
EC = LARGE CONCAVE INSERT
EG = PRECISION GROUND SUPERBEE INSERT
EM = STANDARD PARALLELOGRAM INSERT
SD/SP - STANDARD SQUARE INSERT

NOMINAL LENGTH (MM) / I.C. DIAMETER (INCH)
EM14 = 14MM 21-22 = 1/4" I.C.
EM15 = 15MM 32 = 3/8" I.C.
EM18 = 18MM 42 = 1/2" I.C.
EM19 = 19MM 52 = 5/8" I.C.

ANGLE, BALL, CONCAVE RADIUS OR SPECIALS
A = ANGLE
B = BALL END
C = CONCAVE RADIUS
BLANK = CONVEX RADIUS
S = SPECIAL

EM

15

C

EM15C060ET520

060

RADIUS SIZE FOR "R" SERIES ANGLE CUTTERS	
015 = .015 RAD	190 = .190 RAD
030 = .030 RAD	250 = .250 RAD
060 = .060 RAD	312 = .312 RAD
090 = .090 RAD	375 = .375 RAD
120 = .120 RAD	437 = .437 RAD
160 = .160 RAD	500 = .500 RAD
58 = 5/8" BALL	34 = 3/4" BALL
78 = 7/8" BALL	1 = 1" BALL

E

EDGE PREPARATION
E - HONED
F = SHARP

T520

GRADE
NC57 = C5-C7
NT13 = C1-C3
NT33 = C3
NT56 = C5-C6
NT5T = TiN
T520 = AITiN
T5700 = MDC

Please Note:

SUPERBEE inserts are only interchangeable if you're using an R1 through R4 series cutter. That means an R5 through R8 cutter requires the specified insert matching the radius you intend to cut. An angle cutter that cuts a 30° angle requires an insert for a 30° angle, a concave radius cutter that cuts a .250" radius requires a .250" concave radius insert.

Additionally, cutters are not made to cut convex, angle and concave radii all from one insert, each insert is specific to the geometry it will cut. A convex cutter requires a convex insert matching the radius you intend to cut. The same holds true for angle and concave cutters as well.

NEW!

45° COOLANT THROUGH FACE MILL



Part #	DIA	# Fl	Arbor Hole	Insert	Description	Screw #
FM9641532	1.50	4	0.50	FMI15	45 DEG FACE MILL 1.5 DIA 4 FLUTE 15MM FMI INSERT .500	FM15MMSMSCREW
FM12841548	2.00	4	0.75	FMI15	45 DEG FACE MILL 2.0 DIA 4 FLUTE 15MM FMI INSERT .750	" "
FM16051548	2.50	5	0.75	FMI15	45 DEG FACE MILL 2.5 DIA 5 FLUTE 15MM FMI INSERT .750	" "
FM19261564	3.00	6	1.00	FMI15	45 DEG FACE MILL 3.0 DIA 6 FLUTE 15MM FMI INSERT 1.0	" "
FM25671596	4.00	7	1.50	FMI15	45 DEG FACE MILL 4.0 DIA 7 FLUTE 15MM FMI INSERT 1.50	" "
FM32081596	5.00	8	1.50	FMI15	45 DEG FACE MILL 5.0 DIA 8 FLUTE 15MM FMI INSERT 1.50	" "



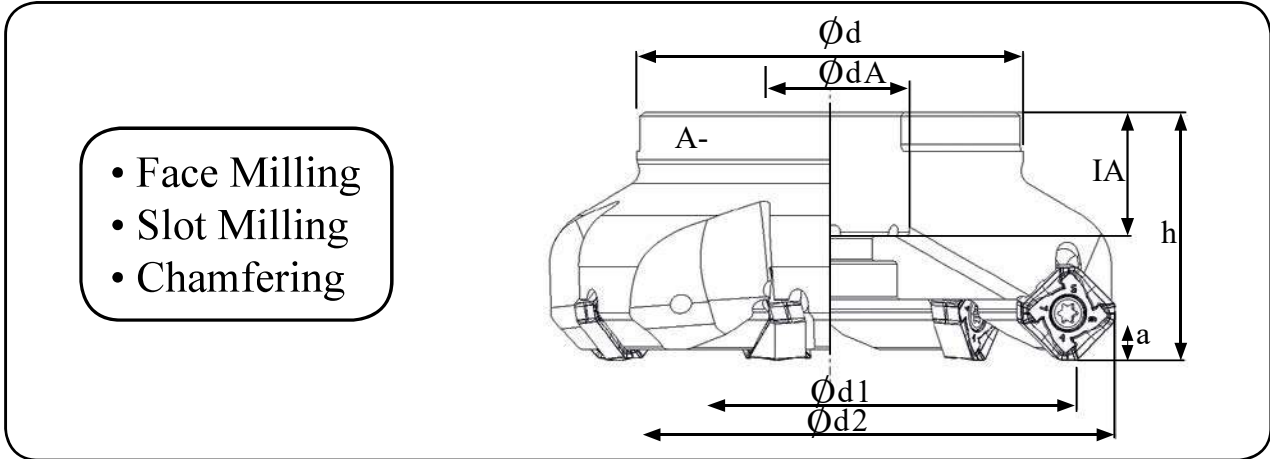
Steel
Part #: FMI15ET520
Grade: ET520 AlTiN

- **Double sided inserts with 8 indexes**
- **Designed with positive rake for smooth cutting action**



High Temp Alloys & Stainless Steels
Part #: FMI15ET5700
Grade: ET5700 MDC

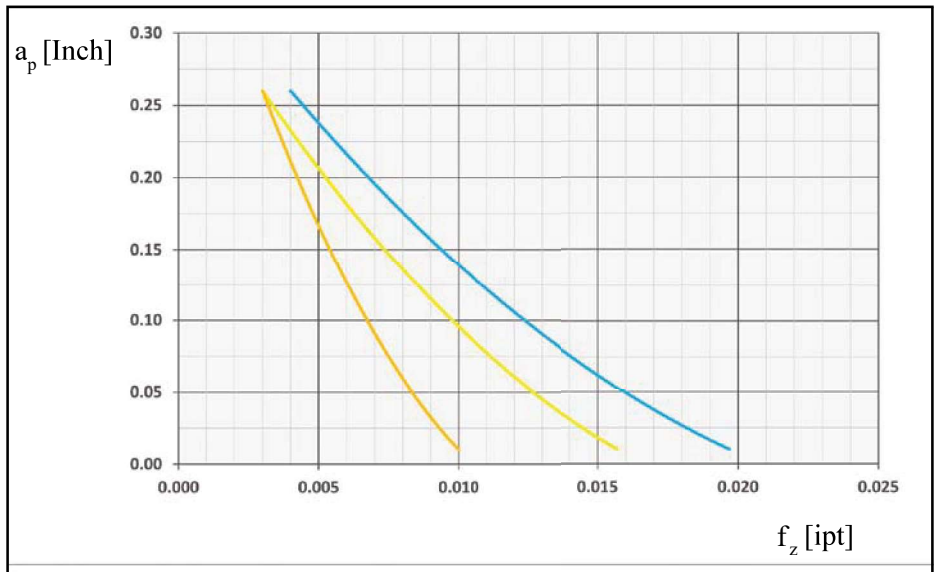
MILLING TECH DATA SPEEDS & FEEDS



Part #	d1	d2	h	d	dA	a	n_{max} [min ⁻¹]	Flutes (z)
FM9641532	1.50	2.091	1.772	1.811	0.50	0.256	15900	4
FM12841548	2.00	2.591	1.772	1.772	0.75	0.256	12700	4
FM16051548	2.50	3.091	1.772	1.968	0.75	0.256	10100	5
FM19261564	3.00	3.591	1.968	2.362	1.00	0.256	7900	6
FM25671596	4.00	4.591	2.480	3.779	1.50	0.256	6300	7
FM32081596	5.00	5.591	2.480	3.779	1.50	0.256	5000	8

FM15

Materials	Coating	Cutting Speed		Feed		Depth Of Cut	
		V_c Max	V_c Min	F_z Min [ipt]	F_z Max [ipt]	A_p Max [inch]	A_p Min [inch]
Steel	ET520	720	200	0.004	0.020	0.26	0.01
Stainless Steel	ET5700	660	200	0.003	0.016	0.26	0.01
High Temp Alloys	ET5700	250	80	0.003	0.010	0.26	0.01



NEW!

HIGH FEED COOLANT THROUGH SHELL MILL WITH 10MM INSERTS



Part #	DIA	# FI	Arbor Hole	Insert	Description	Screw #
HF9641032	1.50	4	0.50	HF110MM	HIGH FEED SHELL MILL 1.5 DIA 4 FLUTE 10MM HFI INSERT .500AH	HF10MMSMSCREW
HF12851048	2.00	5	0.75	HF110MM	HIGH FEED SHELL MILL 2.0 DIA 5 FLUTE 10MM HFI INSERT .750AH	" "
HF16061048	2.50	6	0.75	HF110MM	HIGH FEED SHELL MILL 2.5 DIA 6 FLUTE 10MM HFI INSERT .750AH	" "

HIGH FEED COOLANT THROUGH STICKMILL WITH 10MM INSERTS



Part #	DIA	# FI	Arbor Hole	Insert	Description	Screw #
HF6431064	1.00	3	1.00	HF110MM	HIGH FEED INTEGRAL SHANK 1.0 DIA 3 FLUTE 10MM INSERT 9.0 OAL or cut to specified OAL	HF10MMISSCREW



Steel

Part #: HF110MMET520
Grade: ET520 AlTiN

- 4 cutting edges for economical operation
- Insert designed for maximum feed rates

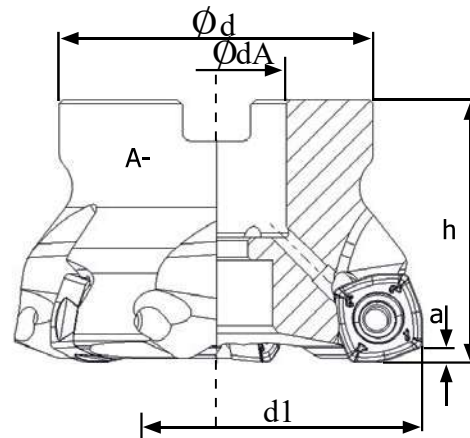
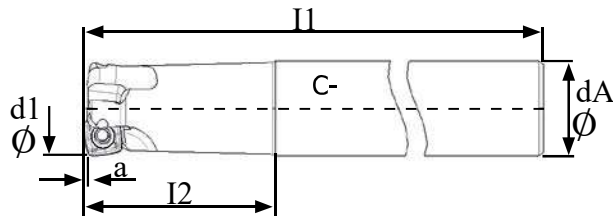


High Temp Alloys

Part #: HF110MMET5700
Grade: ET5700 MDC

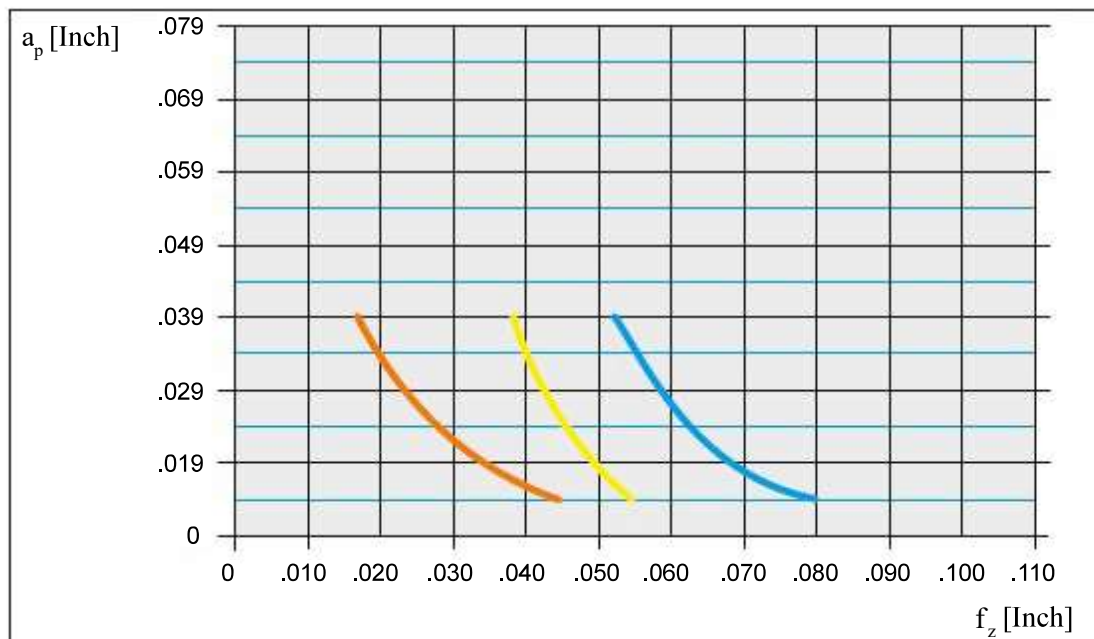
HIGH FEED COOLANT THROUGH SHELL MILL 10MM TECH DATA

- Face Milling
- Helical Plunging
- Profile Milling
- Slot Milling
- Angle Milling
- Plunge Milling
- Pocket Milling



Part #	d1	I1	I2	h	d	dA	a	Flutes (z)
HF6431064	1.00	8.858	1.968	—	—	1.00	0.039	3
HF9641032	1.50	—	—	1.575	1.457	0.50	0.039	4
HF12851048	2.00	—	—	1.575	1.770	0.75	0.039	5
HF16061048	2.50	—	—	1.575	1.920	0.75	0.039	6

Materials	Coating	Cutting Speed		Feed		Depth Of Cut	
		V_c Max	V_c Min	F_z Min [ipt]	F_z Max [ipt]	A_p Max [inch]	A_p Min [inch]
Steel	ET520	720	200	0.051	0.079	0.039	0.010
Stainless Steel	ET5700	660	200	0.035	0.053	0.039	0.010
High Temp Alloys	ET5700	250	80	0.018	0.042	0.039	0.010



NEW!

HIGH FEED COOLANT THROUGH SHELL MILL WITH 13MM INSERTS



Part #	DIA	# Fl	Arbor Hole	Insert	Description	Screw #
HF12841348	2.00	4	0.75	HF113MM	HIGH FEED SHELL MILL 2.0 DIA 4 FLUTE 13MM HFI INSERT .750AH	HF13MMSCREW
HF16051348	2.50	5	0.75	HF113MM	HIGH FEED SHELL MILL 2.5 DIA 5 FLUTE 13MM HFI INSERT .750AH	" "
HF19271364	3.00	7	1.00	HF113MM	HIGH FEED SHELL MILL 3.0 DIA 7 FLUTE 13MM HFI INSERT 1.0AH	" "

HIGH FEED COOLANT THROUGH STICKMILL WITH 13MM INSERTS



Part #	DIA	# Fl	Arbor Hole	Insert	Description	Screw #
HF9631396	1.50	3	1.50	HF113MM	HIGH FEED INTEGRAL SHANK 1.5 DIA 3 FLUTE 13MM INSERT 1.5D 10 OAL or cut to specified OAL	HF13MMSCREW



Steel

Part #: HF113MMET520
Grade: ET520 AlTiN

- 4 cutting edges for economical operation
- Insert designed for maximum feed rates

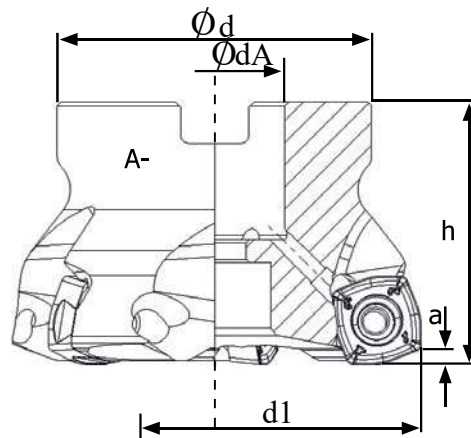
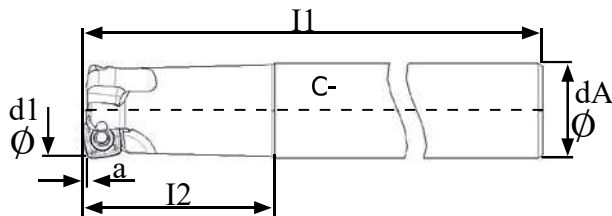


High Temp Alloys

Part #: HF113MMET5700
Grade: ET5700 MDC

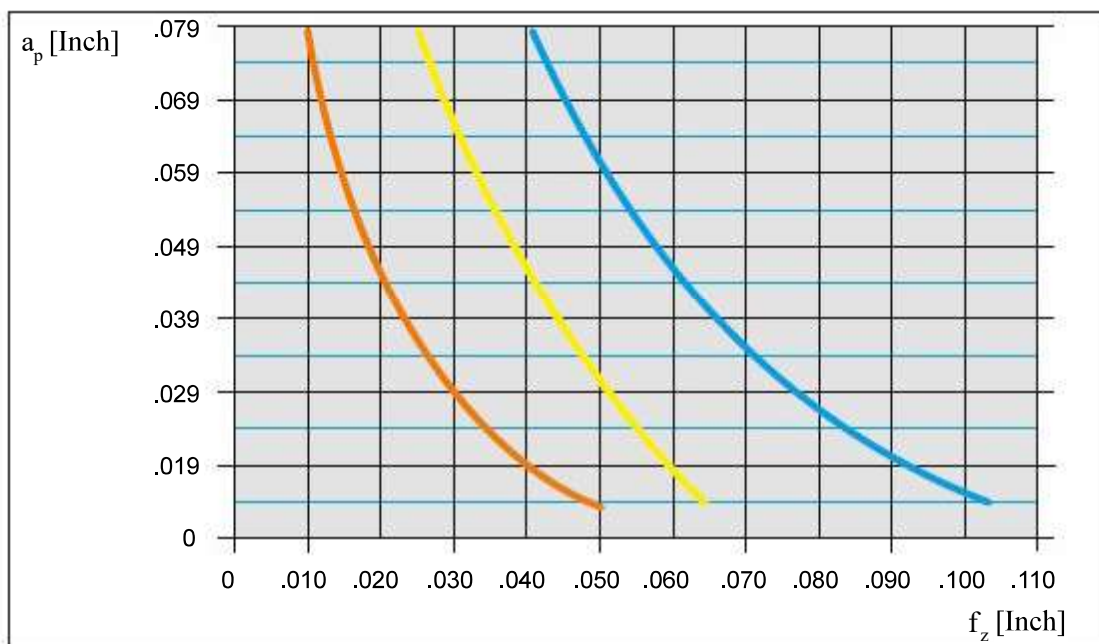
HIGH FEED COOLANT THROUGH SHELL MILL 13MM TECH DATA

- Face Milling
- Helical Plunging
- Profile Milling
- Slot Milling
- Angle Milling
- Plunge Milling
- Pocket Milling



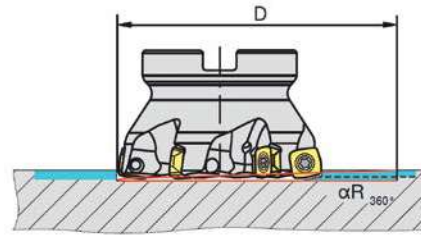
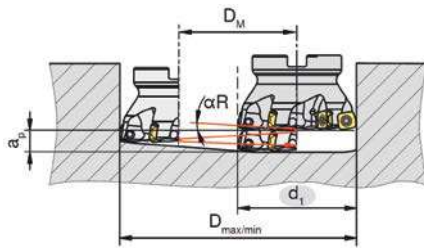
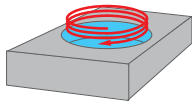
Part #	d1	I1	I2	h	d	dA	a	Flutes (z)
HF9631396	1.50	9.843	2.480	–	–	1.50	0.079	3
HF12841348	2.00	–	–	1.575	1.773	0.75	0.079	4
HF16051348	2.50	–	–	1.575	1.968	0.75	0.079	5
HF19271364	3.00	–	–	1.968	2.283	1.00	0.079	7

Materials	Coating	Cutting Speed		Feed		Depth Of Cut	
		V _c Max	V _c Min	F _z Min [ipt]	F _z Max [ipt]	A _p Max [inch]	A _p Min [inch]
Steel	ET520	720	200	0.052	0.112	0.079	0.010
Stainless Steel	ET5700	660	200	0.036	0.074	0.079	0.010
High Temp Alloys	ET5700	250	80	0.020	0.060	0.079	0.010



HIGH FEED 10MM TECH DATA CONTINUED

Application data (helical plunge milling HFI10MM)



D_{max} [inch] = maximum diameter for flat bottom ground

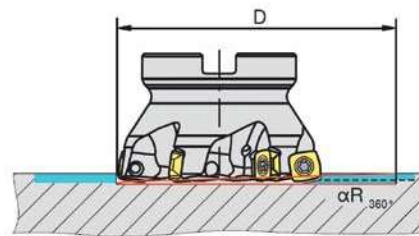
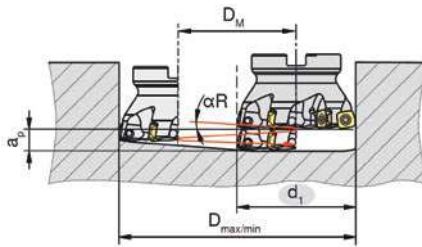
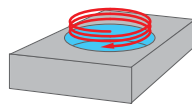
D_{min} [inch] = minimum hole diameter

$D_M = D_{max} - d_1$ or $D_{min} - d_1$

Part #	d1 [inch]	D_{max} [inch]	D_{min} [inch]	α_R [°]
HF6431064	1.00	1.9213	1.4094	3.1
HF9641032	1.50	2.9213	2.4094	1.0
HF12851048	2.00	3.9213	3.4094	0.8
HF16061048	2.50	4.9213	4.4094	0.7

HIGH FEED 13MM TECH DATA CONTINUED

Application data (helical plunge milling HFI13MM)



D_{max} [inch] = maximum diameter for flat bottom ground

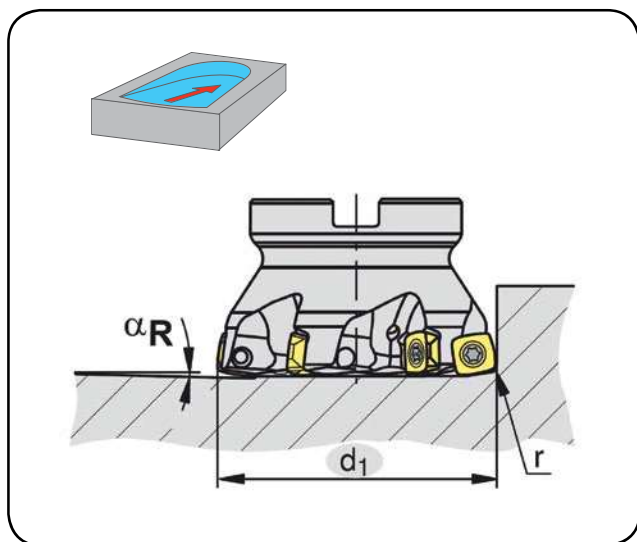
D_{min} [inch] = minimum hole diameter

$D_M = D_{max} - d_1$ or $D_{min} - d_1$

Part #	d1 [inch]	D_{max} [inch]	D_{min} [inch]	α_R [°]
HF9631396	1.50	2.9213	2.2126	3.7
HF12841348	2.00	3.9213	3.2126	1.3
HF16051348	2.50	4.9213	4.2126	0.9
HF19271364	3.00	5.9213	5.2126	1.1

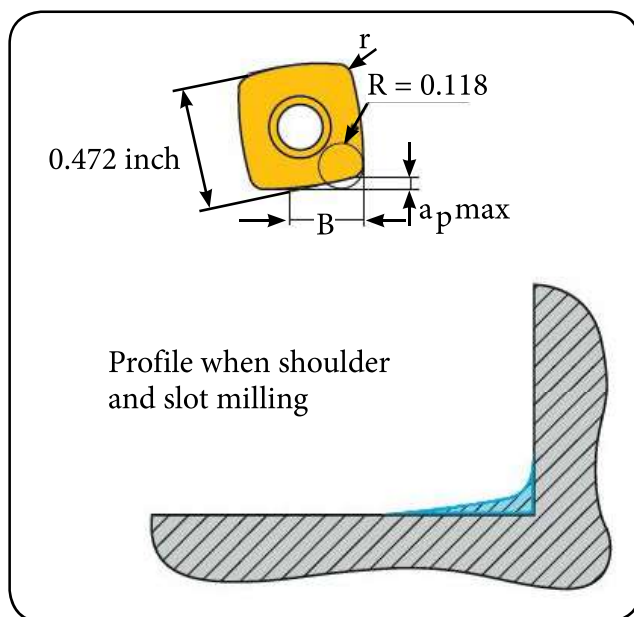
HIGH FEED 10MM & HFI 13MM TECH DATA CONTINUED

Application data (angled ramping)



Part #	d1	α_R [°]
HF6431064	1.000	3.5
HF9641032	1.500	1.2
HF12851048	2.000	0.9
HF16061048	2.500	0.8
HF9631396	1.500	4.4
HF12841348	2.000	1.4
HF16051348	2.500	1.1
HF19271364	3.000	1.0

Depth of cut and remaining material



R = Programmed Radius

Recommended $f_z \geq 0.020$ inch/ tooth

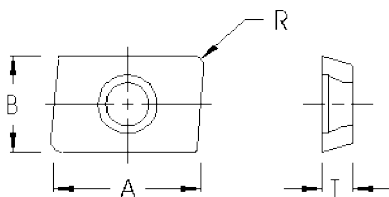
Insert	I [inch]	R [inch]	B [inch]	r [inch]	$a_{p \max}$ [inch]
HFI10MM	0.3937	0.0787	0.2323	0.0315	0.0394
HFI13MM	0.5118	0.1181	0.3346	0.0394	0.0787

EM15 INS CX SERIES

Convex Fillet Radius Inserts

30 different convex fillet radii stocked in .010 increments including fractional and metric sizes, 3 different types of cutter bodies to choose from. Positive geometry for more aggressive cutting action, proprietary pocket design provides unmatched repeatability reducing runout and producing far better finishes.

- Superbee inserts are precision ground on all surfaces ensuring the tightest tolerances possible. This provides a stronger edge with better wear characteristics than a pressed insert.
- T5700 grade provides superior lubricity & heat resistance, up to 30% higher SFM and up to 70% better tool life in steel, stainless and exotic materials.



Materials (Grade Selection)

Aluminum Wrought & Cast Alloy-Low Silicon, 6061-T6, 7075, Plastic
Aluminum- High Silicon And Copper Alloys Brass, Bronze
Cast Iron Nodular, Grey Cast Iron, Malleable Cast Iron
Non-Alloy Steel, Cast Steel Free Cutting Steel 1018, A36, 8620
Low Alloy Steel, Cast Steel 4130, 4140, 8620, 4330, 4340
Die & Mold Steels P20, A-2, D-2, M2, M42, T15
Stainless Steel (Precipitation)15-5Ph, 17-4Ph
Stainless Steels (Austenitic)303, 304, 304L, 312, 316, 316L
High Temp Alloys (Alpha+Beta Alloys) Titanium Alloys Ti-6Al4V
High Temp Alloys(Ni & Co Based), Monel 400, Hastelloy, Inconel
Hardened Steels (55-60Rc)

Range	Part Number	Radius	Frac/Metric	A	B	T	App Key						
							Substrate	C5	C5	C5	C5	C2	C2
							Coating	MDC	AlTiN	TiCN-TiN	None	None	None
Edge Prep	Honed	Honed	Honed	Honed	Honed	Sharp							
R1	EM15007	0.007		0.625	0.375	0.125	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
	EM15015	0.015	1/64	0.625	0.375	0.125	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
	EM15020	0.020		0.625	0.375	0.125	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
	EM15030	0.030	1/32	0.625	0.375	0.125	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
	EM15040	0.040	1MM	0.625	0.375	0.125	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
	EM15050	0.050		0.625	0.375	0.125	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
	EM15060	0.060	1/16	0.625	0.375	0.125	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
R2	EM15070	0.070		0.625	0.375	0.125	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
	EM15080	0.080		0.625	0.375	0.125	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
	EM15090	0.090		0.625	0.375	0.125	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
	EM15100	0.100		0.625	0.375	0.125	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
	EM15110	0.110	7/64	0.625	0.375	0.125	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
	EM15120	0.120	3MM	0.625	0.375	0.125	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
	EM15125	0.125	1/8	0.625	0.375	0.125	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
	EM15130	0.130		0.625	0.375	0.125	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
R3	EM15140	0.140	9/64	0.625	0.375	0.125	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
	EM15150	0.150		0.625	0.375	0.125	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
	EM15156	0.156	5/32, 4MM	0.625	0.375	0.125	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
	EM15160	0.160		0.625	0.375	0.125	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
	EM15170	0.170		0.625	0.375	0.125	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
	EM15187	0.187	3/16	0.625	0.375	0.125	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
	EM15190	0.190		0.625	0.375	0.125	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
	EM15200	0.200		0.625	0.375	0.125	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
R4	EM15210	0.210		0.625	0.375	0.125	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
	EM15220	0.220		0.625	0.375	0.125	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
	EM15250	0.250	1/4	0.625	0.375	0.125	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
	R5	EM15312	0.312	5/16	0.625	0.375	0.125	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
R6	EM15375	0.375	3/8	0.625	0.375	0.125	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	

Special shapes, forms and sizes are available upon request.

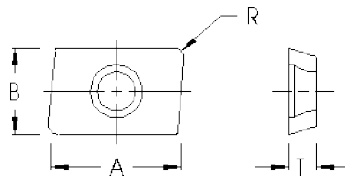
EM19 INS CX SERIES

Convex Fillet Radius Inserts

30 different convex fillet radii stocked in .010 increments including fractional and metric sizes, 3 different types of cutter bodies to choose from. Positive geometry for more aggressive cutting action, proprietary pocket design provides unmatched repeatability reducing runout and producing far better finishes.

- Superbee inserts are precision ground on all surfaces ensuring the tightest tolerances possible. This provides a stronger edge with better wear characteristics than a pressed insert.

- T5700 grade provides superior lubricity & heat resistance, up to 30% higher SFM and up to 70% better tool life in steel, stainless and exotic materials.



Materials (Grade Selection)

Aluminum Wrought & Cast Alloy-Low Silicon, 6061-T6, 7075, Plastic
Aluminum- High Silicon And Copper Alloys Brass, Bronze
Cast Iron Nodular, Grey Cast Iron, Malleable Cast Iron
Non-Alloy Steel, Cast Steel Free Cutting Steel 1018, A36, 8620
Low Alloy Steel, Cast Steel 4130, 4140, 8620, 4330, 4340
Die & Mold Steels P20, A-2, D-2, M2, M42, T15
Stainless Steel (Precipitation) 15-5Ph, 17-4Ph
Stainless Steels (Austenitic) 303, 304, 304L, 312, 316, 316L
High Temp Alloys (Alpha+Beta Alloys) Titanium Alloys Ti-6Al4V
High Temp Alloys (Ni & Co Based), Monel 400, Hastelloy, Inconel
Hardened Steels (55-60Rc)

Range	Part Number	Radius	Frac/Metric	A	B	T	App Key								
							Substrate	Coating	Edge Prep	Color 1	Color 2	Color 3	Color 4	Color 5	Color 6
R1	EM19007	0.007		0.750	0.500	0.156	C5	MDC	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19015	0.015	1/64	0.750	0.500	0.156	C5	AITiN	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19020	0.020		0.750	0.500	0.156	C5	TiCN-TiN	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19030	0.030	1/32	0.750	0.500	0.156	C5	None	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19040	0.040	1MM	0.750	0.500	0.156	C5	None	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19050	0.050		0.750	0.500	0.156	C5	None	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19060	0.060	1/16	0.750	0.500	0.156	C5	None	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
R2	EM19070	0.070		0.750	0.500	0.156	C5	None	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19080	0.080		0.750	0.500	0.156	C5	None	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19090	0.090		0.750	0.500	0.156	C5	None	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19100	0.100		0.750	0.500	0.156	C5	None	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19110	0.110	7/64	0.750	0.500	0.156	C5	None	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19120	0.120	3MM	0.750	0.500	0.156	C5	None	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19125	0.125	1/8	0.750	0.500	0.156	C5	None	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
R3	EM19130	0.130		0.750	0.500	0.156	C5	None	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19140	0.140	9/64	0.750	0.500	0.156	C5	None	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19150	0.150		0.750	0.500	0.156	C5	None	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19156	0.156	5/32, 4MM	0.750	0.500	0.156	C5	None	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19160	0.160		0.750	0.500	0.156	C5	None	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19170	0.170		0.750	0.500	0.156	C5	None	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19187	0.187	3/16	0.750	0.500	0.156	C5	None	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
R4	EM19190	0.190		0.750	0.500	0.156	C5	None	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19200	0.200		0.750	0.500	0.156	C5	None	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19210	0.210		0.750	0.500	0.156	C5	None	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19220	0.220		0.750	0.500	0.156	C5	None	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
R5	EM19250	0.250		0.750	0.500	0.156	C5	None	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
R6	EM19312	0.312	5/16	0.750	0.500	0.156	C5	None	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
R7	EM19375	0.375	3/8	0.750	0.500	0.156	C5	None	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
R8	EM19437	0.437	7/16	0.750	0.500	0.156	C5	None	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
R8	EM19500	0.500	1/2	0.750	0.500	0.156	C5	None	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33

Special shapes, forms and sizes are available upon request.

BE CX WS SERIES

Weldon Shank Indexable Convex Fillet Radius Cutter

End mill style indexable cutter body with 30 different convex radii stocked in .010 increments including fractional and metric sizes. Positive geometry for more aggressive cutting action, proprietary pocket design provides unmatched repeatability reducing runout and producing far better finishes.

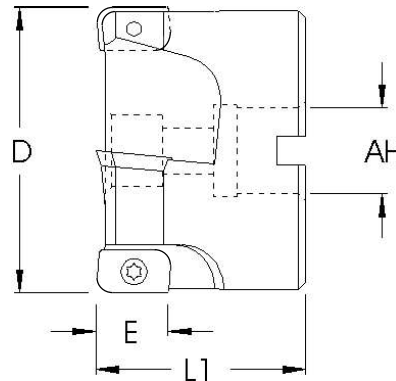


Part Number	D	Shank	L1	L2	FL	E	Insert	Convex Radius Range							
								.007-.060R	.070-.130R	.140-.190R	.200-.250R	.312R	.375R	.437R	.050R
BE4011540	0.625	0.625	3.375	1.000	1	0.625	EM15	R1	R2	R3	R4	R5	R6		
BE4411548	0.687	0.75	4.000	1.250	1	0.625	EM15	R1	R2	R3	R4	R5	R6		
BE4811548	0.750	0.75	4.000	1.250	1	0.625	EM15	R1	R2	R3	R4	R5	R6		
BE5611948	0.875	0.75	4.500	1.250	1	0.750	EM19	R1	R2	R3	R4	R5	R6	R7	R8
BE5611964	0.875	1.0	4.500	1.250	1	0.750	EM19	R1	R2	R3	R4	R5	R6	R7	R8
BE6411948	1.000	0.75	4.500	1.250	1	0.750	EM19	R1	R2	R3	R4	R5	R6	R7	R8
BE6411964	1.000	1.0	4.500	1.250	1	0.750	EM19	R1	R2	R3	R4	R5	R6	R7	R8
BE6421548	1.000	0.75	4.500	1.250	2	0.625	EM15	R1	R2	R3	R4	R5	R6		
BE6421564	1.000	1.0	4.500	1.250	2	0.625	EM15	R1	R2	R3	R4	R5	R6		
BE8021980	1.250	1.25	5.000	1.750	2	0.750	EM19	R1	R2	R3	R4	R5	R6	R7	R8
BE8031580	1.250	1.25	5.000	1.750	3	0.625	EM15	R1	R2	R3	R4	R5	R6		
BE9621980	1.500	1.25	5.000	1.750	2	0.750	EM19	R1	R2	R3	R4	R5	R6	R7	R8
BE9631580	1.500	1.25	5.000	1.750	3	0.625	EM15	R1	R2	R3	R4	R5	R6		

BE CX SM SERIES

Shell Mill Indexable Convex Fillet Radius Cutter

Shell mill style cutter body with more flutes cutting to achieve faster feed rates. 30 different convex radii stocked in .010 increments including fractional and metric sizes. Positive geometry for more aggressive cutting action, proprietary pocket design provides unmatched repeatability reducing runout and producing far better finishes.



Part Number	D	AH	L1	FL	E	Insert	Last 2 Digits of Part Number for Radius							
							.007-.060R	.070-.130R	.140-.190R	.200-.250R	.312R	.375R	.437R	.050R
BE12831948	2.000	0.750	1.825	3	0.625	EM19	R1	R2	R3	R4	R5	R6	R7	R8
BE12851548	2.000	0.750	1.825	5	0.625	EM15	R1	R2	R3	R4	R5	R6		
BE14451548	2.250	0.750	1.825	5	0.625	EM15	R1	R2	R3	R4	R5	R6		
BE16031948	2.500	0.750	1.825	3	0.750	EM19	R1	R2	R3	R4	R5	R6	R7	R8
BE16051548	2.500	0.750	1.825	5	0.625	EM15	R1	R2	R3	R4	R5	R6		
BE19261564	3.000	1.000	1.825	6	0.625	EM15	R1	R2	R3	R4	R5	R6		
BE22461580	3.500	1.250	1.825	6	0.625	EM15	R1	R2	R3	R4	R5	R6		

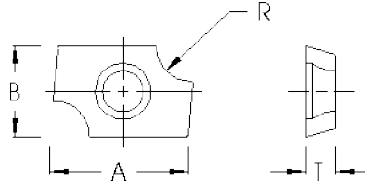
EM15 INS CV SERIES

Concave Corner Rounding Radius Inserts

Pick from 32 different corner rounding radii stocked in .010 increments including fractional and metric sizes, three different types of cutter bodies to choose from. Positive geometry for more aggressive cutting action, proprietary pocket design provides unmatched repeatability reducing runout and producing far better finishes.

- Superbee inserts are precision ground on all surfaces ensuring the tightest tolerances possible. This provides a stronger edge with better wear characteristics than a pressed insert.

- T5700 grade provides superior lubricity & heat resistance, up to 30% higher SFM and up to 70% better tool life in steel, stainless and exotic materials.



Materials (Grade Selection)

Aluminum Wrought & Cast Alloy-Low Silicon, 6061-T6, 7075, Plastic
Aluminum, High Silicon And Copper Alloys Brass, Bronze
Cast Iron Nodular, Grey Cast Iron, Malleable Cast Iron
Non-Alloy Steel, Cast Steel Free Cutting Steel 1018, A36, 8620
Low Alloy Steel, Cast Steel 4130, 4140, 8620, 4330, 4340
Die & Mold Steels P20, A-2, D-2, M2, M42, T15
Stainless Steel (Precipitation)15-5Ph, 17-4Ph
Stainless Steels (Austenitic)303, 304, 304L, 312, 316, 316L
High Temp Alloys (Alpha+Beta Alloys) Titanium Alloys Ti-6Al4V
High Temp Alloys(Ni & Co Based), Monel 400, Hastalloy, Inconel
Hardened Steels (55-60Rc)

Range	Part Number	Radius	Frac/ Metric	A	B	T	App Key								
							Substrate	Coating	Edge Prep	Color 1	Color 2	Color 3	Color 4	Color 5	Color 6
C1	EM15C010	0.010		0.625	0.375	0.125	C5	MDC	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM15C015	0.015	1/64	0.625	0.375	0.125	C5	MDC	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM15C020	0.020		0.625	0.375	0.125	C5	MDC	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM15C030	0.030	1/32	0.625	0.375	0.125	C5	MDC	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM15C0393	0.039	1MM	0.625	0.375	0.125	C5	MDC	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM15C040	0.040	1MM	0.625	0.375	0.125	C5	MDC	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM15C050	0.050		0.625	0.375	0.125	C5	MDC	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
C2	EM15C060	0.060	1/16	0.625	0.375	0.125	C5	MDC	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM15C070	0.070		0.625	0.375	0.125	C5	MDC	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM15C0787	0.079	5/64, 2MM	0.625	0.375	0.125	C5	MDC	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM15C080	0.080		0.625	0.375	0.125	C5	MDC	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM15C090	0.090		0.625	0.375	0.125	C5	MDC	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM15C100	0.100		0.625	0.375	0.125	C5	MDC	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM15C110	0.110	7/64	0.625	0.375	0.125	C5	MDC	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM15C118	0.118	3MM	0.625	0.375	0.125	C5	MDC	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
EM15C120	0.120	3MM	0.625	0.375	0.125	C5	MDC	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
EM15C125	0.125	1/8	0.625	0.375	0.125	C5	MDC	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	

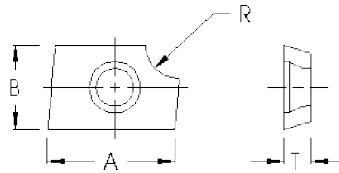
Special shapes, forms and sizes are available upon request.

EM19 INS CV SERIES

Concave Corner Rounding Radius Inserts

Pick from 32 different corner rounding radii stocked in .010 increments including fractional and metric sizes, three different types of cutter bodies to choose from. Positive geometry for more aggressive cutting action, proprietary pocket design provides unmatched repeatability reducing runout and producing far better finishes.

- Superbee inserts are precision ground on all surfaces ensuring the tightest tolerances possible. This provides a stronger edge with better wear characteristics than a pressed insert.



- T5700 grade provides superior lubricity & heat resistance, up to 30% higher SFM and up to 70% better tool life in steel, stainless and exotic materials.

Materials (Grade Selection)

Aluminum Wrought & Cast Alloy-Low Silicon, 6061-T6, 7075, Plastic
Aluminum-High Silicon And Copper Alloys Brass, Bronze
Cast Iron Nodular, Grey Cast Iron, Malleable Cast Iron
Non-Alloy Steel, Cast Steel Free Cutting Steel 1018, A36, 8620
Low Alloy Steel, Cast Steel 4130, 4140, 8620, 4330, 4340
Die & Mold Steels P20, A-2, D-2, M2, M42, T15
Stainless Steel (Precipitation)15-5Ph, 17-4Ph
Stainless Steels (Austenitic)303, 304, 304L, 312, 316, 316L
High Temp Alloys (Alpha+Beta Alloys) Titanium Alloys Ti-6Al4V
High Temp Alloys(Ni & Co Based), Monel 400, Hastolloy, Inconel
Hardened Steels (55-60Rc)

Double End

Single End

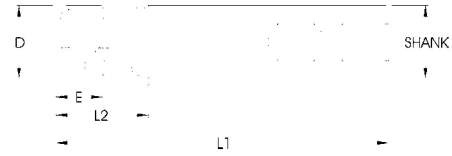
							App Key						
							C5		C5		C2		
Range	Part Number	Radius	Frac/Metric	A	B	T	Coating	MDC	AlTiN	TiCN-TiN	None	None	None
							Edge Prep	Honed	Honed	Honed	Honed	Honed	Sharp
C1	EM19C010	0.010		0.750	0.500	0.156		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19C015	0.015	1/64	0.750	0.500	0.156		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19C020	0.020		0.750	0.500	0.156		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19C030	0.030	1/32	0.750	0.500	0.156		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19C0393	0.039	1MM	0.750	0.500	0.156		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19C040	0.040	1MM	0.750	0.500	0.156		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19C050	0.050		0.750	0.500	0.156		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19C060	0.060	1/16	0.750	0.500	0.156		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
C2	EM19C070	0.070		0.750	0.500	0.156		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19C0787	0.079	5/64, 2MM	0.750	0.500	0.156		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19C080	0.080		0.750	0.500	0.156		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19C090	0.090		0.750	0.500	0.156		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19C100	0.100		0.750	0.500	0.156		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19C110	0.110	7/64	0.750	0.500	0.156		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19C118	0.118	3MM	0.750	0.500	0.156		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19C120	0.120	3MM	0.750	0.500	0.156		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
EM19C125	0.125	1/8	0.750	0.500	0.156		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
C3	EM19C130	0.130		0.750	0.500	0.156		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19C140	0.140	9/64	0.750	0.500	0.156		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19C150	0.150		0.750	0.500	0.156		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19C156	0.156	5/32, 4MM	0.750	0.500	0.156		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19C157	0.157	5/32, 4MM	0.750	0.500	0.156		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19C160	0.160		0.750	0.500	0.156		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
C4	EM19C170	0.170		0.750	0.500	0.156		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19C180	0.180		0.750	0.500	0.156		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19C187	0.187	3/16	0.750	0.500	0.156		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19C190	0.190		0.750	0.500	0.156		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
C5	EM19C197	0.197	5MM	0.750	0.500	0.156		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19C200	0.200		0.750	0.500	0.156		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19C210	0.210		0.750	0.500	0.156		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19C220	0.220		0.750	0.500	0.156		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
C6	EM19C236	0.236	15/64, 6MM	0.750	0.500	0.156		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
	EM19C250	0.250	1/4	0.750	0.500	0.156		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33

Special shapes, forms and sizes are available upon request.

BE CV WS SERIES

Weldon Shank Indexable Concave Corner Rounding Cutter

End mill style indexable cutter body with 32 different corner rounding radii stocked in .010 increments including fractional and metric sizes. Positive geometry for more aggressive cutting action, proprietary pocket design provides unmatched repeatability reducing runout and producing far better finishes.

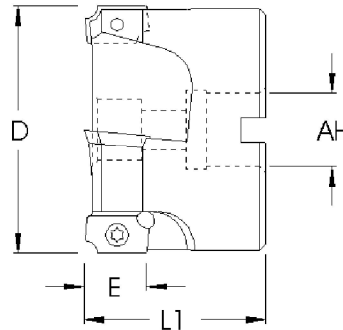


Part Number	D	Shank	L1	L2	Flutes	E	Insert	Concave Radius Range					
								.010-.060	.070-.125	.130-.160	.170-.190	.197-.220	.236-.250
BE4011540	0.625	0.625	3.375	1.000	1	0.625	EM15	C1	C2				
BE4411548	0.687	0.750	4.000	1.250	1	0.625	EM15	C1	C2				
BE4811548	0.750	0.750	4.000	1.250	1	0.625	EM15	C1	C2				
BE5611948	0.875	0.750	4.500	1.250	1	0.750	EM19	C1	C2	C3	C4	C5	C6
BE5611964	0.875	1.000	4.500	1.250	1	0.750	EM19	C1	C2	C3	C4	C5	C6
BE6411948	1.000	0.750	4.500	1.250	1	0.750	EM19	C1	C2	C3	C4	C5	C6
BE6411964	1.000	1.000	4.500	1.250	1	0.750	EM19	C1	C2	C3	C4	C5	C6
BE6421548	1.000	0.750	4.500	1.250	2	0.625	EM15	C1	C2				
BE6421564	1.000	1.000	4.500	1.250	2	0.625	EM15	C1	C2				
BE8021980	1.250	1.250	5.000	1.750	2	0.750	EM19	C1	C2	C3	C4	C5	C6
BE8031580	1.250	1.250	5.000	1.750	3	0.625	EM15	C1	C2				
BE9621980	1.500	1.250	5.000	1.750	2	0.750	EM19	C1	C2	C3	C4	C5	C6
BE9631580	1.500	1.250	5.000	1.750	3	0.625	EM15	C1	C2				

BE CV SM SERIES

Shell Mill Indexable Concave Corner Rounding Cutter

Shell mill style indexable cutter with 32 different corner rounding radii stocked in .010 increments including fractional and metric sizes. Positive geometry for more aggressive cutting action, proprietary pocket design provides unmatched repeatability reducing runout and producing far better finishes.

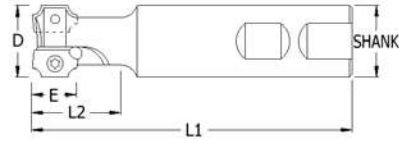


Part Number	D	AH	L1	Flutes	E	Insert	Last 2 Digits of Part Number for Radius					
							.010-.060	.070-.125	.130-.160	.170-.190	.197-.220	.236-.250
BE12831948	2.000	0.750	1.825	3	0.650	EM19	C1	C2	C3	C4	C5	C6
BE12851548	2.000	0.750	1.825	5	0.550	EM15	C1	C2				
BE14451548	2.250	0.750	1.825	5	0.550	EM15	C1	C2				
BE16031948	2.500	0.750	1.825	3	0.650	EM19	C1	C2	C3	C4	C5	C6
BE16051548	2.500	0.750	1.825	5	0.550	EM15	C1	C2				
BE19261564	3.000	1.000	1.825	5	0.550	EM15	C1	C2				
BE22461580	3.500	1.250	1.825	6	0.550	EM15	C1	C2				

BE TNB SERIES

Top & Bottom 180° Corner Rounding Cutter

End mill style indexable cutter body for 180° corner rounding, cuts a radius on the top or bottom. Positive geometry for more aggressive cutting action, proprietary pocket design provides unmatched repeatability reducing runout and producing far better finishes.



Part Number	D	Shank	L1	L2	Flutes	E	Insert
BE6421548TBC1	1.000	0.750	4.500	1.250	2	0.625	EM15
BE6421548TBC2	1.000	0.750	4.500	1.250	2	0.625	EM15
BE6421564TBC1	1.000	1.000	4.500	1.250	2	0.625	EM15
BE6421564TBC2	1.000	1.000	4.500	1.250	2	0.625	EM15
BE8021980TBC3	1.250	1.250	5.000	1.750	2	0.750	EM19
BE8021980TBC4	1.250	1.250	5.000	1.750	2	0.750	EM19
BE8021980TBC5	1.250	1.250	5.000	1.750	2	0.750	EM19
BE8021980TBC6	1.250	1.250	5.000	1.750	2	0.750	EM19
BE8031580TBC1	1.250	1.250	5.000	1.750	3	0.625	EM15
BE8031580TBC2	1.250	1.250	5.000	1.750	3	0.625	EM15

EMS INS TB SERIES

Top & Bottom 180° Corner Rounding Inserts

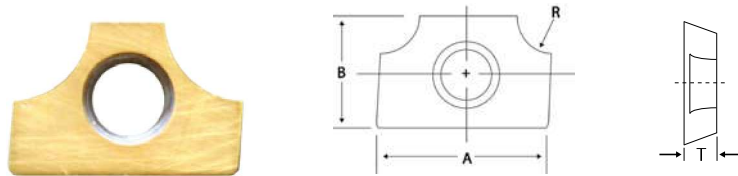
These inserts cut a full 180° radius on the top, bottom or both. Positive geometry for more aggressive cutting action, proprietary pocket design provides unmatched repeatability reducing runout and producing far better finishes.

- Superbee inserts are precision ground on all surfaces ensuring the tightest tolerances possible. This provides a stronger edge with better wear characteristics than a pressed insert.

- T5700 grade provides superior lubricity & heat resistance, up to 30% higher SFM and up to 70% better tool life in steel, stainless and exotic materials.

Materials (Grade Selection)

Aluminum Wrought & Cast Alloy-Low Silicon, 6061-T6, 7075, Plastic
Aluminum, High Silicon And Copper Alloys Brass, Bronze
Cast Iron Nodular, Grey Cast Iron, Malleable Cast Iron
Non-Alloy Steel, Cast Steel Free Cutting Steel 1018, A36, 8620
Low Alloy Steel, Cast Steel 4130, 4140, 8620, 4330, 4340
Die & Mold Steels P20, A-2, D-2, M2, M42, T16
Stainless Steel (Precipitation) 15-5Ph, 17-4Ph
Stainless Steels (Austenitic) 303, 304, 304L, 312, 316, 316L
High Temp Alloys (Alpha+Beta Alloys) Titanium Alloys Ti-6Al4V
High Temp Alloys (Ni & Co Based) Monel 400, Hastelloy, Inconel
Hardened Steels (55-60Rc)



App Key	Substrate									
	C5	C5	C5	C2	C2					
Coating	Edge Prep									
	MDC	ALTIN	None	None	None					
Part Number	Radius	Frac/Metric	A	B	T	ET5700	ET520	ENT56	ENT33	FNT33
EM15C030TB	0.030	1/32	0.625	0.375	0.125	ET5700	ET520	ENT56	ENT33	FNT33
EM15C0393TB	0.039	1MM	0.625	0.375	0.125	ET5700	ET520	ENT56	ENT33	FNT33
EM15C060TB	0.060	1/16	0.625	0.375	0.125	ET5700	ET520	ENT56	ENT33	FNT33
EM15C0787TB	0.079	5/64, 2MM	0.625	0.375	0.125	ET5700	ET520	ENT56	ENT33	FNT33
EM15C090TB	0.090		0.625	0.375	0.125	ET5700	ET520	ENT56	ENT33	FNT33
EM15C118TB	0.118	3MM	0.625	0.375	0.125	ET5700	ET520	ENT56	ENT33	FNT33
EM15C120TB	0.120	3MM	0.625	0.375	0.125	ET5700	ET520	ENT56	ENT33	FNT33
EM15C125TB	0.125	1/8	0.625	0.375	0.125	ET5700	ET520	ENT56	ENT33	FNT33
EM19C156TB	0.156	5/32, 4MM	0.750	0.500	0.156	ET5700	ET520	ENT56	ENT33	FNT33
EM19C157TB	0.157	5/32, 4MM	0.750	0.500	0.156	ET5700	ET520	ENT56	ENT33	FNT33
EM19C187TB	0.187	3/16	0.750	0.500	0.156	ET5700	ET520	ENT56	ENT33	FNT33
EM19C197TB	0.197	5MM	0.750	0.500	0.156	ET5700	ET520	ENT56	ENT33	FNT33
EM19C236TB	0.236	15/64, 6MM	0.750	0.500	0.156	ET5700	ET520	ENT56	ENT33	FNT33
EM19C250TB	0.250	1/4	0.750	0.500	0.156	ET5700	ET520	ENT56	ENT33	FNT33

EC15 INS SERIES

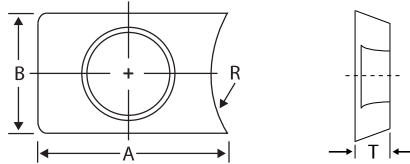
Large Corner Rounding Concave Inserts

The fastest way to cut a large radius, patent protected design breaks up a large radius into segments reducing tool pressure and creating up to 10 times faster feeds. Over 40 different radii available including fractional and metric sizes.

- Superbee inserts are precision ground on all surfaces ensuring the tightest tolerances possible. This provides a stronger edge with better wear characteristics than a pressed insert.
- T5700 grade provides superior lubricity & heat resistance, up to 30% higher SFM and up to 70% better tool life in steel, stainless and exotic materials.



PATENT # 6,053,673



Materials (Grade Selection)

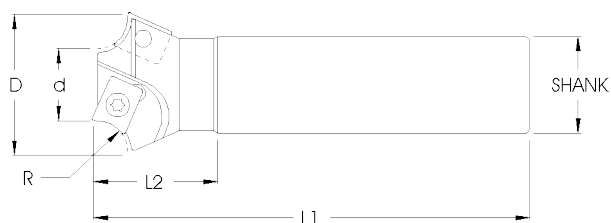
Aluminum Wrought & Cast Alloy-Low Silicon, 6061-T6, 7075, Plastic
Aluminum, High Silicon And Copper Alloys Brass, Bronze
Cast Iron Nodular, Gray Cast Iron, Malleable Cast Iron
Non-Alloy Steel, Cast Steel Free Cutting Steel 1018, A36, 8620
Low Alloy Steel, Cast Steel 4130, 4140, 8620, 4330, 4340
Die & Mold Steels P20, A-2, D-2, M2, M42, T15
Stainless Steel (Precipitation) 15-5Ph, 17-4Ph
Stainless Steels (Austenitic) 303, 304, 304L, 312, 316, 316L
High Temp Alloys (Alpha+Beta Alloys) Titanium Alloys Ti-6Al4V
High Temp Alloys (Ni & Co Based) Monel 400, Hastelloy, Inconel
Hardened Steels (55-60Rc)

Part Number	Radius	Frac/ Metric	A	B	T	App Key						
						Substrate	C5	C5	C5	C5	C2	C2
						Coating	MDC	AlTiN	TiCN-TiN	None	None	None
Edge Prep	Honed	Honed	Honed	Honed	Honed	Sharp						
EC15C250	0.250	1/4	0.500	0.375	0.125	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
EC15C275	0.275	7MM	0.500	0.375	0.125	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
EC15C281	0.281	9/32	0.500	0.375	0.125	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
EC15C312	0.312	5/16	0.500	0.375	0.125	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
EC15C315	0.315	8MM	0.500	0.375	0.125	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
EC15C343	0.343	11/32	0.500	0.375	0.125	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
EC15C354	0.354	9MM	0.500	0.375	0.125	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
EC15C375	0.375	3/8	0.500	0.375	0.125	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
EC15C393	0.393	10MM	0.500	0.375	0.125	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
EC19C406	0.406	13/32	0.625	0.500	0.156	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
EC19C433	0.433	11MM	0.625	0.500	0.156	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
EC19C437	0.437	7/16	0.625	0.500	0.156	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
EC19C468	0.468	15/32	0.625	0.500	0.156	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
EC19C472	0.472	12MM	0.625	0.500	0.156	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
EC19CS00	0.500	1/2	0.625	0.500	0.156	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
EC19C512	0.512	13MM	0.625	0.500	0.156	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
EC15C531	0.531	17/32	0.500	0.375	0.125	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
EC15C551	0.551	14MM	0.500	0.375	0.125	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
EC15C562	0.562	9/16	0.500	0.375	0.125	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
EC15C590	0.590	15MM	0.500	0.375	0.125	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
EC15C625	0.625	5/8	0.500	0.375	0.125	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
EC15C629	0.629	16MM	0.500	0.375	0.125	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
EC19C656	0.656	21/32	0.625	0.500	0.156	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
EC19C669	0.669	17MM	0.625	0.500	0.156	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
EC19C687	0.687	11/16	0.625	0.500	0.156	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
EC19C708	0.708	18MM	0.625	0.500	0.156	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
EC19C718	0.718	23/32	0.625	0.500	0.156	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
EC19C748	0.748	19MM	0.625	0.500	0.156	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
EC19C750	0.750	3/4	0.625	0.500	0.156	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
EC19C781	0.781	25/32	0.625	0.500	0.156	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
EC19C787	0.787	20MM	0.625	0.500	0.156	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
EC19C812	0.812	13/16	0.625	0.500	0.156	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
EC19C875	0.875	7/8	0.625	0.500	0.156	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
EC19C906	0.906	29/32, 23MM	0.625	0.500	0.156	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
EC19C968	0.968	31/32	0.625	0.500	0.156	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
EC19C984	0.984	63/64, 25MM	0.625	0.500	0.156	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	
EC19C100	1.000	1	0.625	0.500	0.156	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33	

BE BC SERIES

Large Concave Corner Rounding Radius Cutter

Patent protected indexable design breaks up a large radius into segments reducing tool pressure and creating up to 10 times faster feeds. Over 40 different radii available including fractional and metric sizes.



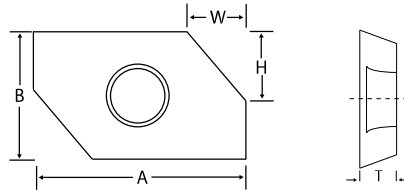
Part Number	R	D	d	Shank	L1	L2	FLutes	Insert Range
BC4821564C250	.250 - .280	1.250	0.750	1.00	4.500	1.250	2	EC15 (.250 - .280)
BC4821564C281	.281 - .311	1.312	0.750	1.00	4.500	1.250	2	EC15 (.281 - .311)
BC4821564C312	.312 - .342	1.375	0.750	1.00	4.500	1.250	2	EC15 (.312 - .342)
BC4821564C343	.343 - .374	1.437	0.750	1.00	4.500	1.250	2	EC15 (.343 - .374)
BC4821564C375	.375 - .405	1.500	0.750	1.00	4.500	1.250	2	EC15 (.375 - .405)
BC5621980C406	.406 - .436	1.687	0.875	1.25	5.000	1.750	2	EC19 (.460 - .436)
BC5621980C437	.437 - .467	1.750	0.875	1.25	5.000	1.750	2	EC19 (.437 - .468)
BC5621980C468	.468 - .499	1.812	0.875	1.25	5.000	1.750	2	EC19 (.468 - .499)
BC5621980C500	.500 - .530	1.875	0.875	1.25	5.000	1.750	2	EC19 (.500 - .530)
BC8031580C531	.531 - .561	2.312	1.250	1.25	5.000	1.750	3	EC15 (.531 - .561)
BC8031580C562	.562 - .592	2.375	1.250	1.25	5.000	1.750	3	EC15 (.562 - .592)
BC8031580C625	.625 - .655	2.500	1.250	1.25	5.000	1.750	3	EC15 (.625 - .655)
BC9631980C656	.656 - .686	2.812	1.500	1.25	5.000	1.750	3	EC19 (.656 - .686)
BC9631980C687	.687 - .717	2.875	1.500	1.25	5.000	1.750	3	EC19 (.687 - .717)
BC9631980C718	.718 - .749	2.937	1.500	1.25	5.000	1.750	3	EC19 (.718 - .749)
BC9631980C750	.750 - .780	3.000	1.500	1.25	5.000	1.750	3	EC19 (.750 - .780)
BC9631980C781	.781 - .811	3.062	1.500	1.25	5.000	1.750	3	EC19 (.781 - .811)
BC9631980C812	.812 - .842	3.120	1.500	1.25	5.000	1.750	3	EC19 (.812 - .842)
BC11241980C875	.875 - .905	3.500	1.750	1.25	5.250	2.000	4	EC19 (.875 - .905)
BC11241980C906	.906 - .936	3.562	1.750	1.25	5.250	2.000	4	EC19 (.906 - .936)
BC11241980C968	.968 - .999	3.687	1.750	1.25	5.250	2.000	4	EC19 (.968 - .999)
BC11241980C1.000	1.000	3.750	1.750	1.25	5.250	2.000	4	EC19 (1.000)

EM15 INS CH SERIES Chamfer Angle Inserts

Choose from 8 different chamfer angles and 3 different types of cutter body. Positive geometry for more aggressive cutting action, proprietary pocket design provides unmatched repeatability reducing runout and producing far better finishes.

- Superbee inserts are precision ground on all surfaces ensuring the tightest tolerances possible. This provides a stronger edge with better wear characteristics than a pressed insert.

- T5700 grade provides superior lubricity & heat resistance, up to 30% higher SFM and up to 70% better tool life in steel, stainless and exotic materials.



Materials (Grade Selection)

Aluminum Wrought & Cast Alloy-Low Silicon, 6061-T6, 7075, Plastic
Aluminum, High Silicon And Copper Alloys Brass, Bronze
Cast Iron Nodular, Grey Cast Iron, Malleable Cast Iron
Non-Alloy Steel, Cast Steel Free Cutting Steel 1018, A36, 8620
Low Alloy Steel, Cast Steel 4130, 4140, 8620, 4330, 4340
Die & Mold Steels P20, A-2, D-2, M2, M42, T15
Stainless Steel (Precipitation)15-5Ph, 17-4Ph
Stainless Steels (Austenitic)303, 304, 304L, 312, 316, 316L
High Temp Alloys (Alpha+Beta Alloys) Titanium Alloys Ti-6Al4V
High Temp Alloys(Ni & Co Based), Monel 400, Hastelloy, Inconel
Hardened Steels (55-60Rc)

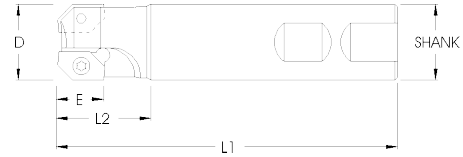
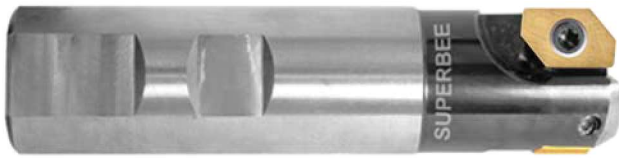
Part Number	Side Angle	H	W	A	App Key					
					Substrate	Coating	Edge Prep	C5	C5	C5
EM1510250	10°	0.044	0.250	0.625	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
EM1515250	15°	0.067	0.250	0.625	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
EM1520250	20°	0.091	0.250	0.625	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
EM1525250	25°	0.117	0.250	0.625	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
EM1530200	30°	0.115	0.200	0.625	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
EM1541200	41°	0.174	0.200	0.625	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
EM1545200	45°	0.200	0.200	0.625	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
EM1550200	50°	0.200	0.168	0.625	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
EM1560200	60°	0.200	0.115	0.625	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
EM1910300	10°	0.052	0.300	0.750	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
EM1915300	15°	0.080	0.300	0.750	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
EM1920300	20°	0.109	0.300	0.750	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
EM1925300	25°	0.140	0.300	0.750	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
EM1930250	30°	0.144	0.250	0.750	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
EM1941250	41°	0.217	0.250	0.750	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
EM1945250	45°	0.250	0.250	0.750	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
EM1950250	50°	0.250	0.210	0.750	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
EM1960250	60°	0.250	0.144	0.750	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33

Special shapes, forms and sizes are available upon request

BE CH WS SERIES

Weldon Shank Indexable Chamfer Angle Cutter

End mill style indexable cutter body with 8 different angles available. Positive geometry for more aggressive cutting action, proprietary pocket design provides unmatched repeatability reducing runout and producing far better finishes.



Add to end of Part # for Insert Type

Part Number	D	Shank	L1	L2	FLutes	E	Insert	10°	15°	20°	25°	30°	41°	45°	50°	60°
BE4011540	0.625	0.625	3.375	1.000	1	0.625	EM15	A10	A15	A20	A25	A30	A41	A45	A50	A60
BE4411548	0.687	0.750	4.000	1.250	1	0.625	EM15	A10	A15	A20	A25	A30	A41	A45	A50	A60
BE4811548	0.750	0.750	4.000	1.250	1	0.625	EM15	A10	A15	A20	A25	A30	A41	A45	A50	A60
BE5611948	0.875	0.750	4.500	1.250	1	0.750	EM19	A10	A15	A20	A25	A30	A41	A45	A50	A60
BE5611964	0.875	1.000	4.500	1.250	1	0.750	EM19	A10	A15	A20	A25	A30	A41	A45	A50	A60
BE6411948	1.000	0.750	4.500	1.250	1	0.750	EM19	A10	A15	A20	A25	A30	A41	A45	A50	A60
BE6411964	1.000	1.000	4.500	1.250	1	0.750	EM19	A10	A15	A20	A25	A30	A41	A45	A50	A60
BE6421548	1.000	0.750	4.500	1.250	2	0.625	EM15	A10	A15	A20	A25	A30	A41	A45	A50	A60
BE6421564	1.000	1.000	4.500	1.250	2	0.625	EM15	A10	A15	A20	A25	A30	A41	A45	A50	A60
BE8021980	1.250	1.250	5.000	1.750	2	0.750	EM19	A10	A15	A20	A25	A30	A41	A45	A50	A60
BE8031580	1.250	1.250	5.000	1.750	3	0.625	EM15	A10	A15	A20	A25	A30	A41	A45	A50	A60
BE9621980	1.500	1.250	5.000	1.750	2	0.750	EM19	A10	A15	A20	A25	A30	A41	A45	A50	A60
BE9631580	1.500	1.250	5.000	1.750	3	0.625	EM15	A10	A15	A20	A25	A30	A41	A45	A50	A60

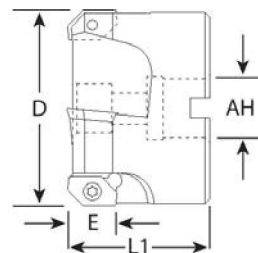
THE FORMULA FOR CALCULATING THE 'd' CUTTER DIMENSION IS:

$D - (2 \times W) = d$, WHERE D = CUTTER DIAMETER AND W IS THE DIMENSION ON THE ANGLE INSERT YOU WISH TO USE (SEE "W" IN THE CHART BELOW). FOR EXAMPLE:
 THE CUTTER DIAMETER IS 1", IT IS A 2 FLUTE CUTTER, AND THE ANGLE IS 25° ON AN EM1525250 INSERT. YOU WOULD TAKE 1.000" (D) - .234 (2 X W) = .766 (d).
 ANOTHER EXAMPLE WOULD BE A CUTTER DIAMETER OF 1", IT IS 1 FLUTE, THE ANGLE IS 30° AND THE INSERT IS AN EM1930250. YOU WOULD TAKE 1.000" (D) - .288 (2 X W) = .712 (d).

BE CH SM SERIES

Shell Mill Indexable Chamfer Angle Cutter

Shell mill style cutter body with more flutes cutting to achieve faster feed rates, 8 different chamfer angles. Positive geometry for more aggressive cutting action, proprietary pocket design provides unmatched repeatability reducing runout and producing far better finishes.

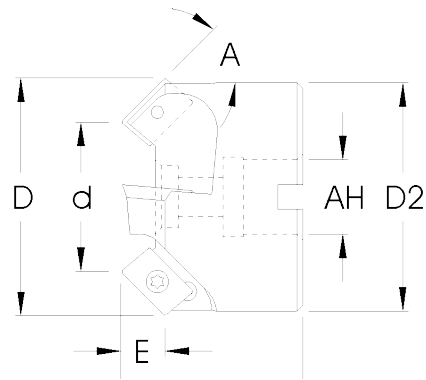


Add to end of Part # for Insert Type

Part Number	D	AH	L1	FLutes	E	Insert	10°	15°	20°	25°	30°	41°	45°	50°	60°
BE12831948	2.000	0.750	1.825	3	0.750	EM19	A10	A15	A20	A25	A30	A41	A45	A50	A60
BE12851548	2.000	0.750	1.825	5	0.625	EM15	A10	A15	A20	A25	A30	A41	A45	A50	A60
BE14451548	2.250	0.750	1.825	5	0.625	EM15	A10	A15	A20	A25	A30	A41	A45	A50	A60
BE16031948	2.500	0.750	1.825	3	0.750	EM19	A10	A15	A20	A25	A30	A41	A45	A50	A60
BE16051548	2.500	0.750	1.825	5	0.625	EM15	A10	A15	A20	A25	A30	A41	A45	A50	A60
BE19261564	3.000	1.000	1.825	6	0.625	EM15	A10	A15	A20	A25	A30	A41	A45	A50	A60
BE22461580	3.500	1.250	1.825	6	0.625	EM15	A10	A15	A20	A25	A30	A41	A45	A50	A60

BE CM SERIES 45° Indexable Chamfer Shell Mill

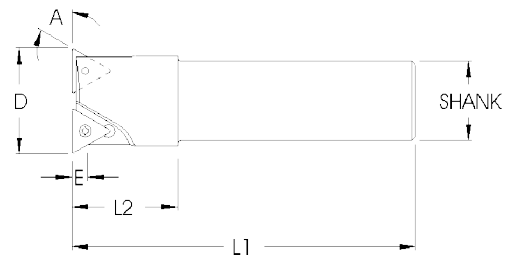
Holds a standard EM15 or EM10 insert at a 45° angle creating a longer length of cut than the BE CH series. Positive geometry for more aggressive cutting action, proprietary pocket design provides unmatched repeatability reducing runout and producing far better finishes.



Part Number	Angle	D	d	L1	AH	Flutes	E	Insert
CM963154845	45°	2.352	1.5	1.825	0.750	3	0.400	EM15
CM963194845	45°	2.530	1.5	1.825	0.750	3	0.400	EM19

BE DTS SERIES End Mill Style Indexable Dovetail Cutter

End mill style indexable cutter body with 60° dovetail utilizing industry standard TCMT insert. Positive geometry for more aggressive cutting action, proprietary pocket design provides unmatched repeatability reducing runout and producing far better finishes.

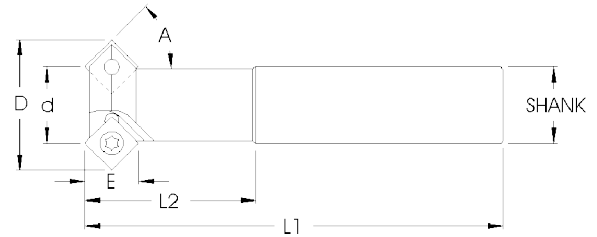


Part Number	Shank	L1	L2	Flutes	E	Insert
DT4813240A60	0.625	3.375	1.000	1	0.211	TCMT32.5
DT6422148A60	0.750	4.250	1.000	2	0.149	TCMT21.5
DT11233264A60	1.000	4.750	1.500	3	0.211	TCMT32.5

BE CMS SERIES

End Mill Style 45° Top & Bottom Chamfer Cutter

Cut a 45° on the top or bottom of a part, utilizes a square 4 cornered insert stocked with 5 different radii. Positive geometry for more aggressive cutting action, proprietary pocket design provides unmatched repeatability reducing runout and producing far better finishes.



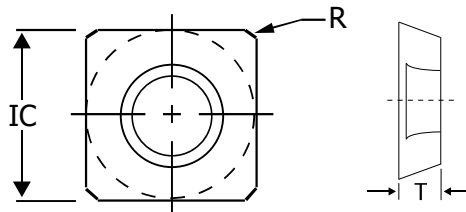
Part Number	D	d	Shank	L1	L2	Flutes	E	Insert
CMS4014264A45	0.989	0.312	1.000	5.000	1.750	1	0.500	SP42
CMS4814264A45	1.304	0.625	1.000	5.250	2.000	1	0.500	SP42
CMS6433280A45	1.504	1.000	1.250	5.500	2.250	3	0.375	SP32
CMS6424280A45	1.680	1.000	1.250	5.500	2.250	2	0.500	SP42
CMS8034280A45	1.931	1.250	1.250	5.500	2.250	3	0.500	SP42
CMS9634280A45	2.056	1.375	1.250	5.500	2.250	3	0.500	SP42

INS SP SERIES

Industry Standard Square Inserts

- Superbee inserts are precision ground on all surfaces ensuring the tightest tolerances possible. This provides a stronger edge with better wear characteristics than a pressed insert.

- T5700 grade provides superior lubricity & heat resistance, up to 30% higher SFM and up to 70% better tool life in steel, stainless and exotic materials.



Materials (Grade Selection)

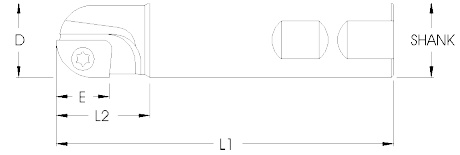
Aluminum Wrought & Cast Alloy-Low Silicon, 6061-T6, 7075, Plastic
Aluminum- High Silicon And Copper Alloys Brass, Bronze
Cast Iron Nodular, Grey Cast Iron, Malleable Cast Iron
Non-Alloy Steel, Cast Steel Free Cutting Steel 1018, A36, 8620
Low Alloy Steel, Cast Steel 4130, 4140, 8620, 4330, 4340
Die & Mold Steels P20, A-2, D-2, M2, M42, T15
Stainless Steel (Precipitation) 15-5Ph, 17-4Ph
Stainless Steels (Austenitic) 303, 304, 304L, 312, 316, 316L
High Temp Alloys (Alpha+Beta Alloys) Titanium Alloys Ti-6Al4V
High Temp Alloys (Ni & Co Based) Monel 400, Hastelloy, Inconel
Hardened Steels (55-60Rc)

Part Number	Radius	A	B	T	App Key							
					Substrate	Coating	Edge Prep	ENTST	ENT56	ENT33	FNT33	
SP32010	0.010	0.375	0.375	0.125	ET5700	ET520	Honed	Honed	Honed	Honed	Honed	Sharp
SP32015	0.015	0.375	0.375	0.125	ET5700	ET520	Honed	Honed	Honed	Honed	Honed	Sharp
SP32030	0.030	0.375	0.375	0.125	ET5700	ET520	Honed	Honed	Honed	Honed	Honed	Sharp
SP32060	0.060	0.375	0.375	0.125	ET5700	ET520	Honed	Honed	Honed	Honed	Honed	Sharp
SP32090	0.090	0.375	0.375	0.125	ET5700	ET520	Honed	Honed	Honed	Honed	Honed	Sharp
SP42010	0.010	0.500	0.500	0.125	ET5700	ET520	Honed	Honed	Honed	Honed	Honed	Sharp
SP42015	0.015	0.500	0.500	0.125	ET5700	ET520	Honed	Honed	Honed	Honed	Honed	Sharp
SP42030	0.030	0.500	0.500	0.125	ET5700	ET520	Honed	Honed	Honed	Honed	Honed	Sharp
SP42060	0.060	0.500	0.500	0.125	ET5700	ET520	Honed	Honed	Honed	Honed	Honed	Sharp
SP42090	0.090	0.500	0.500	0.125	ET5700	ET520	Honed	Honed	Honed	Honed	Honed	Sharp

BE BB SERIES

Ball End Indexable Cutter Body

Positive geometry for more aggressive cutting action, proprietary pocket design provides unmatched repeatability reducing runout and producing far better finishes.



Part Number	Ball Size	D	Shank	L1	L2	Flutes	E	Insert
BB4011440	5/8	0.625	0.625	3.375	1.000	1	0.625	EB14
BB40114402M	5/8	0.625	0.625	4.250	2.000	1	0.625	EB14
BB40114403M	5/8	0.625	0.625	4.750	3.000	1	0.625	EB14
BB4811548	3/4	0.750	0.750	4.000	1.250	1	0.625	EB15
BB4811548225M	3/4	0.750	0.750	4.750	2.250	1	0.625	EB15
BB481154835M	3/4	0.750	0.750	6.000	3.500	1	0.625	EB15
BB48115483M	3/4	0.750	0.750	5.500	3.000	1	0.625	EB15
BB48115485M	3/4	0.750	0.750	6.000	5.000	1	0.625	EB15
BB481156445M	3/4	0.750	0.750	4.500	4.500	1	0.625	EB15
BB5611948	7/8	0.875	0.750	4.500	1.250	1	0.750	EB19
BB5611964	7/8	0.875	1.000	4.500	1.250	1	0.750	EB19
BB6411948	1	1.000	0.750	4.500	1.250	1	0.750	EB19
BB6411964	1	1.000	1.000	4.500	1.250	1	0.750	EB19
BB64119642M	1	1.000	1.000	4.500	2.000	1	0.750	EB19
BB64119643M	1	1.000	1.000	5.500	3.000	1	0.750	EB19
BB64119644M	1	1.000	1.000	6.500	4.000	1	0.750	EB19
BB64119645M	1	1.000	1.000	7.500	5.000	1	0.750	EB19

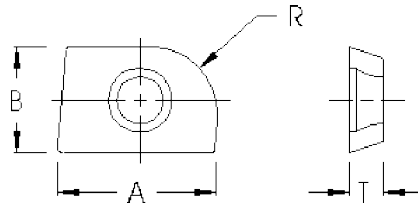
EM15 INS EB SERIES

Ball End Indexable Inserts

Positive geometry for more aggressive cutting action, proprietary pocket design provides unmatched repeatability reducing runout and producing far better finishes.

- Superbee inserts are precision ground on all surfaces ensuring the tightest tolerances possible. This provides a stronger edge with better wear characteristics than a pressed insert.

- T5700 grade provides superior lubricity & heat resistance, up to 30% higher SFM and up to 70% better tool life in steel, stainless and exotic materials.



Materials (Grade Selection)

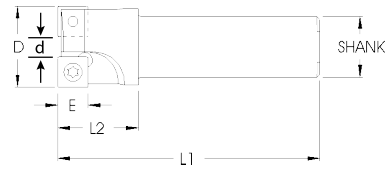
Aluminum Wrought & Cast Alloy Low Silicon 6061-T6, 7075, Plastic
Aluminum - High Silicon And Copper Alloys Brass, Bronze
Cast Iron Nodular, Grey Cast Iron, Malleable Cast Iron
Non-Alloy Steel, Cast Steel Free Cutting Steel 1018, A36, 8620
Low Alloy Steel, Cast Steel 4130, 4140, 8620, 4330, 4340
Die & Mold Steels P20, A-2, D-2, M2, M42, T15
Stainless Steel (Precipitation) 15-5Ph, 17-4Ph
Stainless Steels (Austenitic) 303, 304, 304L, 312, 316, 316L
High Temp Alloys (Alpha+Beta Alloys) Titanium Alloys Ti-6Al4V
High Temp Alloys (Ni & Co Based), Monel 400, Hastelloy, Inconel
Hardened Steels (55-60Rc)

Part Number	Ball	Frac/Metric	A	B	T	App Key								
						Substrate	Coating	Edge Prep	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
EB1458	0.625	5/8	0.625	0.375	0.125	C5	MDC	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
EB191	1.000	1	0.750	0.500	0.156	C5	AITiN	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
EB1978	0.875	7/8	0.750	0.500	0.156	C5	TiCN-TiN	Honed	ET5700	ET520	ENT5T	ENT56	ENT33	FNT33

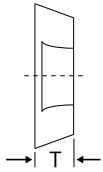
Special shapes, forms and sizes are available upon request

BE CB SERIES Indexable Counterbore Cutter

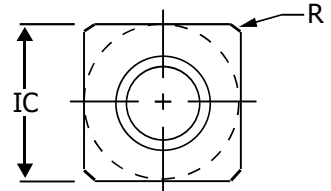
Cuts a flat bottom for effective counterboring, utilizes a square 4 cornered insert stocked with five different radii. Positive geometry for more aggressive cutting action, proprietary pocket design provides unmatched repeatability reducing runout and producing far better finishes.



Part Number	D	d	Shank	L1	L2	Flutes	E	Insert
CB3813240	0.594	0.125	0.625	3.250	1.000	1	0.370	SP32
CB4013240	0.625	0.125	0.625	3.250	1.000	1	0.370	SP32
CB4413248	0.687	0.125	0.750	3.250	1.000	1	0.370	SP32
CB4822248	0.750	0.290	0.750	3.250	1.000	2	0.245	SD22
CB5013248	0.781	0.125	0.750	3.250	1.000	1	0.370	SP32
CB5022248	0.781	0.321	0.750	3.250	1.000	2	0.245	SD22
CB5622248	0.875	0.415	0.750	3.250	1.000	2	0.370	SD22
CB6423248	1.000	0.290	0.750	3.250	1.000	2	0.370	SP32
CB6823248	1.062	0.352	0.750	3.250	1.000	2	0.370	SP32
CB7633264	1.187	0.477	1.000	4.250	1.000	3	0.370	SP32
CB8033264	1.250	0.540	1.000	4.250	1.000	3	0.370	SP32
CB8834264	1.375	0.415	1.000	4.250	1.000	3	0.495	SP42
CB9634264	1.500	0.540	1.000	4.250	1.000	3	0.495	SP42



INS SD & SP SERIES Industry Standard Square Inserts



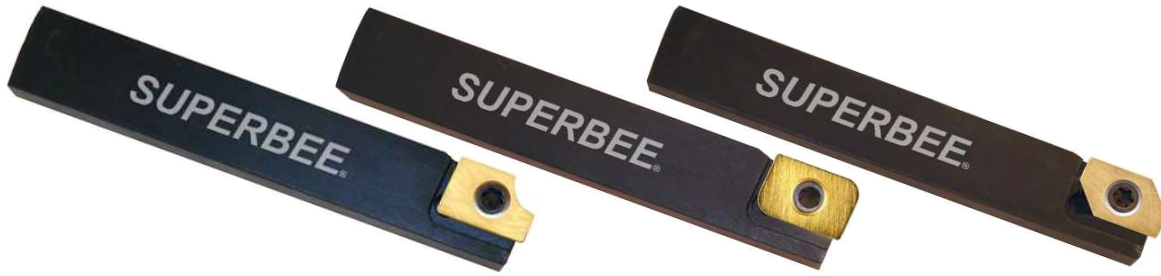
Part Number	Radius	A	B	T	App Key						
					Substrate	C5	C5	C5	C5	C2	C2
					Coating	MDC	AlTiN	TiCN-TiN	None	None	None
					Edge Prep	Honed	Honed	Honed	Honed	Honed	Sharp
SD21.5015	0.015	0.250	0.250	0.094		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
SD21.5030	0.030	0.250	0.250	0.094		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
SD21.5060	0.060	0.250	0.250	0.094		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
SD22010	0.010	0.250	0.250	0.125		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
SD22015	0.015	0.250	0.250	0.125		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
SD22030	0.030	0.250	0.250	0.125		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
SD22060	0.060	0.250	0.250	0.125		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
SP32010	0.010	0.375	0.375	0.125		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
SP32015	0.015	0.375	0.375	0.125		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
SP32030	0.030	0.375	0.375	0.125		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
SP32060	0.060	0.375	0.375	0.125		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
SP32090	0.090	0.375	0.375	0.125		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
SP42010	0.010	0.500	0.500	0.125		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
SP42015	0.015	0.500	0.500	0.125		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
SP42030	0.030	0.500	0.500	0.125		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
SP42060	0.060	0.500	0.500	0.125		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33
SP42090	0.090	0.500	0.500	0.125		ET5700	ET520	ENT5T	ENT56	ENT33	FNT33

Special shapes, forms and sizes are available upon request

BE TRN SERIES

Indexable Turning Holder For Fillet, Corner Round & Angle

Indexable .750 X .750 square tool bit holder for EM 19 inserts.
Can be used with chamfers, convex and concave radii.



Part #	R Range	Shank
DEMCLNR1219A10	A10	0.750
DEMCLNR1219A15	A15	0.750
DEMCLNR1219A20	A20	0.750
DEMCLNR1219A25	A25	0.750
DEMCLNR1219A30	A30	0.750
DEMCLNR1219A41	A41	0.750
DEMCLNR1219A45	A45	0.750
DEMCLNR1219A50	A50	0.750
DEMCLNR1219A60	A60	0.750
DEMCLNR1219C1	C1	0.750
DEMCLNR1219C2	C2	0.750
DEMCLNR1219C3	C3	0.750
DEMCLNR1219C4	C4	0.750
DEMCLNR1219C5	C5	0.750
DEMCLNR1219C6	C6	0.750
DEMCLNR1219R1	R1	0.750
DEMCLNR1219R2	R2	0.750
DEMCLNR1219R3	R3	0.750
DEMCLNR1219R4	R4	0.750
DEMCLNR1219R5	R5	0.750
DEMCLNR1219R6	R6	0.750
DEMCLNR1219R7	R7	0.750
DEMCLNR1219R8	R8	0.750

WRENCHES & SCREWS

Wrench For Cutter Body Screws
Part #
BW15(T-15)
BW19(T-20)
NT15(T-15)
BW19(T-19)
NT8(T-8)
BW9(T-9)



Screws For Superbee Indexable Cutters
Part #
BS15
BS19
CS3
CS5
CS4
TS25
TS4

