



Indexable Insert Endmill

FULLCUT MILL FCR Type

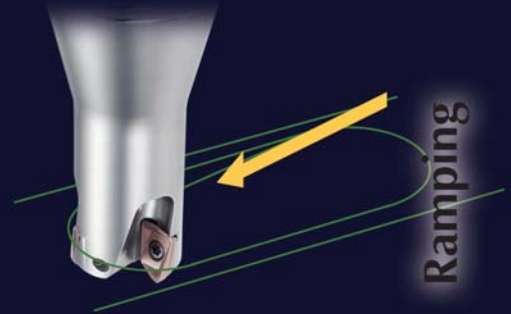
PAT.

BIG DAISHOWA SEIKI CO LTD

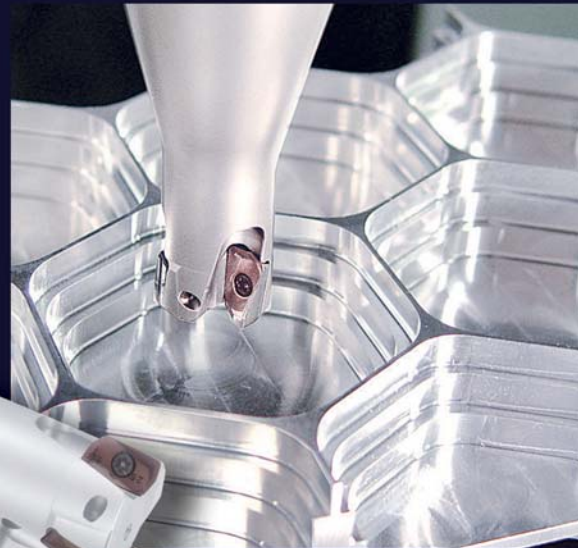
CATALOG No. **EXi135**



Cutter Dia.
ø5/8" - ø1-1/4"
ø16mm - ø32mm



Ramping



Helical Milling

Supreme cutting performance for your most demanding applications!!



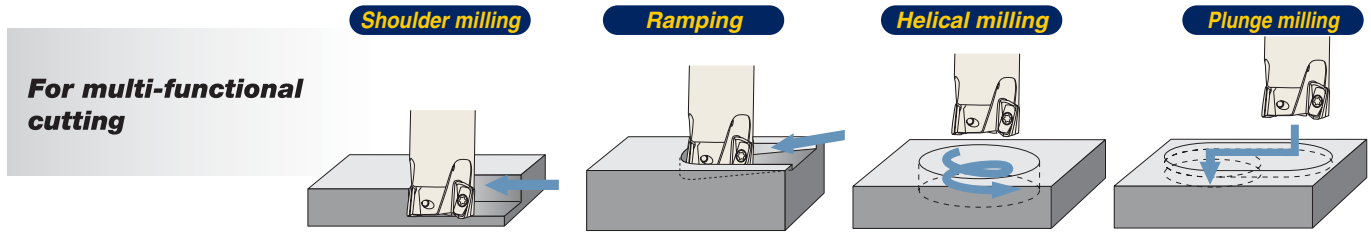
BIG-PLUS
SPINDLE SYSTEM PAT.
DUAL CONTACT

Patented:
Japan, USA, Canada, Germany,
UK, France, Italy, Taiwan,
and South Korea
US Patent No.5,352,073

Sharp cutting edge by both high radial and axial rake angles

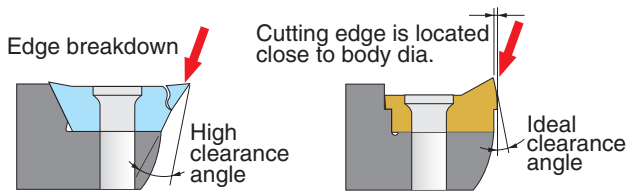
BIG FULLCUT MILL
 BIG DAISHOWA FCR Type PAT.

Positive high rake cutting edge for both radial and axial directions achieves smooth and quiet endmilling.



Cutter Dia.	Max. Ramping Angle	Flat Bottom		Through Hole		Max. Plunge Interval			
		Max. Hole Dia.	Min. Hole Dia.	Min. Hole Dia.	Max. Plunge Interval				
ø.625 ø16mm	3°	1.181	30mm	1.063	27mm	.866	22mm	.0197	0.5mm
ø.750 ø20mm		1.496	38mm	1.417	36mm	1.142	29mm	.0394	1.0mm
ø1.000 ø25mm		1.890	48mm	1.890	46mm	1.535	39mm	.0394	1.0mm
ø1.250 ø32mm		2.441	62mm	2.323	59mm	1.890	48mm	.0787	2.0mm

Strong cutting edge reduces edge chipping.



Other manufacturers



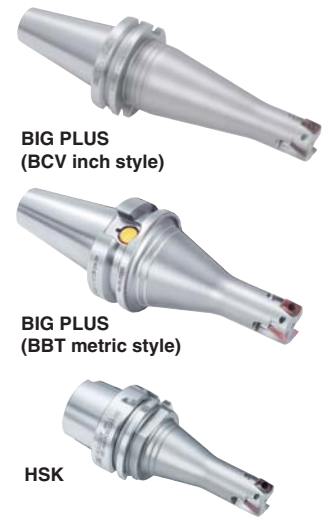
Higher rigidity with integral body and dual contact system.

BIG-PLUS
 SPINDLE SYSTEM PAT.
 DUAL CONTACT

US Patent No.5,352,073

SIMULTANEOUS DUAL CONTACT SYSTEM

- Higher rigidity due to larger contact diameter.
- Improved ATC repeatability.
- Elimination of axial movement at high speeds.

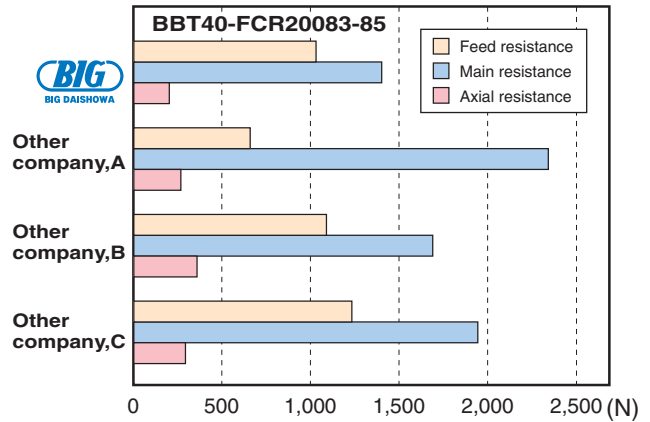
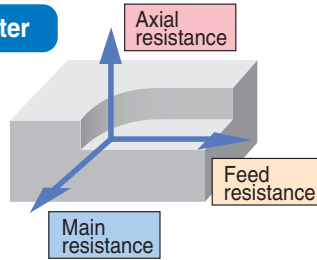


Lower cutting resistance than any other competitors.

High rake angle and ground cutting edges sharply reduce cutting resistance.

Shouldering with $\phi 20\text{mm}$ cutter

Vertical MC with BIG PLUS BT40
 Material 1050 Steel
 Cutting speed 492 SFPM
 Feed rate .006 ipt
 Axial DOC .118 in
 Radial DOC .394 in

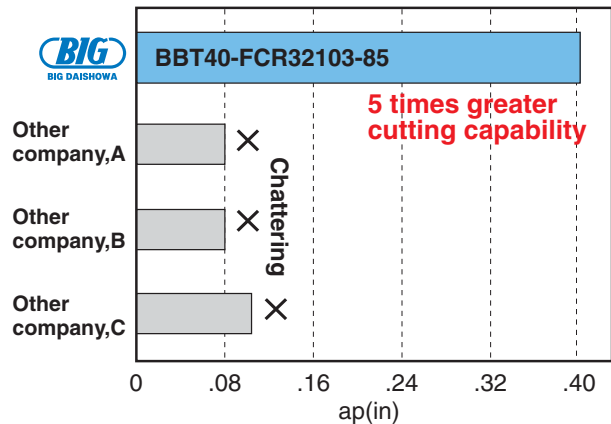
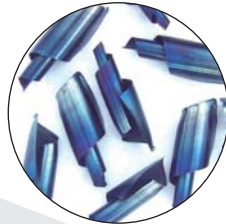
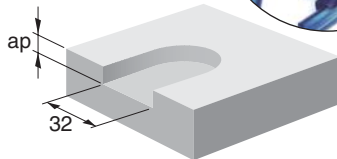


A rigid integral body is optimal for all machining centers.

FULLCUT MILL achieves 5 times greater DOC than other high rake cutters. It performs well in MC and workpieces with low rigidity.

Slotting with $\phi 32\text{mm}$ cutter

Vertical MC with BIG PLUS BT40
 Material 1050 Steel
 Cutting speed 394 SFPM
 Feed rate .004 ipt



Application Examples

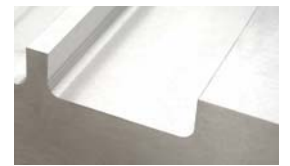
(All the following application examples are achieved with dry cutting.)

Large Nose Radius



After end milling for a distance of 200 feet, a fine surface finish of Ry 4.3 μm was achieved and maintained, including the corner radius.

Fullcut Mill	BCV40-FCR1.250-3.5	Cutting Speed V	1,650 SFPM
Insert	BRG321030(DC20)	Feed Rate f	.006 IPM
Work Material	Aluminum / Air blow	Axial DOC Ad	.350 in \times 3 times

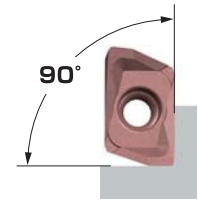


Bore Dia. 1.5 in with helical milling



In 1050 Carbon Steel, very smooth cutting with feed rate of 43 IPM and excellent squareness is achieved.

Fullcut Mill	BBT40-FCR20083-120	Cutting Speed V	492 SFPM
Insert	BRG200808(ACZ350S)	Feed Rate f	43 IPM
Work Material	1050 / Air blow	Axial DOC Ad	.079 in \times 3 times

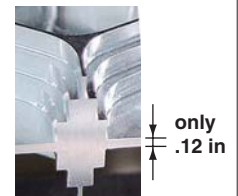


Honeycombed Pocket with ramping



In a low rigidity workpiece with .12 in thickness clamped by a vise, feed rate of 169 IPM on both sides of the workpiece is achieved.

Fullcut Mill	BBT40-FCR20083-85	Cutting Speed V	2,461 SFPM
Insert	BRG200808(DC20)	Feed Rate f	169 IPM
Work Material	Aluminum / Air blow	Axial DOC Ad	.236 in \times 3 times



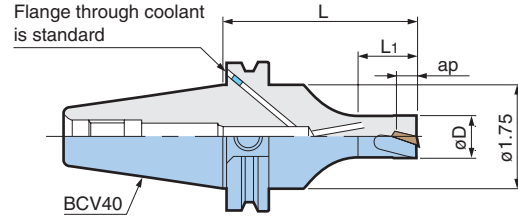
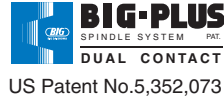
BIG-PLUS integral shank version

ASME B5.50-1994

BIG PLUS Dual Contact Spindle System is available in all standard 7/24 taper types to provide the highest rigidity and accuracy.

BCV DIN 69871 A/B BIG-PLUS

Cutter Dia. ϕ .625 - ϕ 1.250



Coolant bores in accordance to DIN 69871/Form B*

Inch style

ASME B5.50-1994

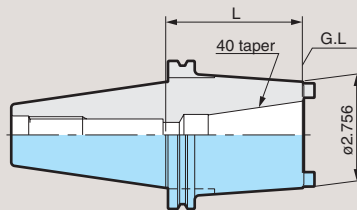
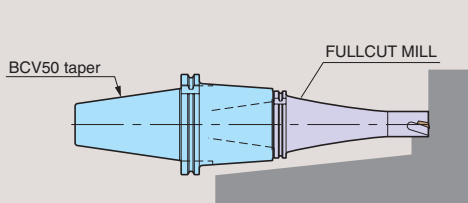
Model	Cutter Dia. ϕ D	ap	L	L1	No. of Insert	Insert Model
BCV40-FCR .625 -3.5	.625	.315	3.346	.984	2	BRG160808
- 5			4.724	1.181		
-5.5			5.315	.984		
-FCR .750 -3.5	.750	.315	3.346	1.378	3	BRG200808
- 5			4.724	1.181		
-5.5			5.315	1.181		
-FCR1.000-3.5	1.000	.315	3.346	1.575	3	BRG250808
- 5			4.724	1.772		
-5.5			5.315	1.378		
-FCR1.250-3.5	1.250	.394	3.346	1.772	3	BRG321008
- 5			4.724	1.969		
-5.5			5.315	1.575		

ap=The Length of Effective Cutting Edge

1. Inserts are ordered separately.
2. BIG-PLUS tools can be used in machining centers with conventional spindles.

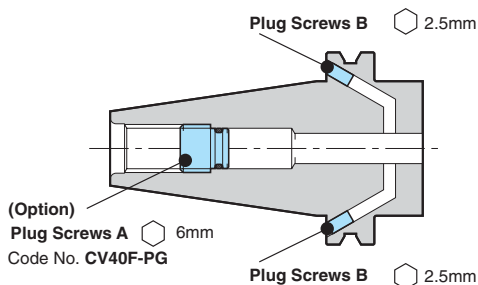
For Insert : Back cover page

Adapter for CAT50 taper shank



Model	L
BCV50-BCV40-50	1.969
-90	3.543

Plug Screw for flange through coolant



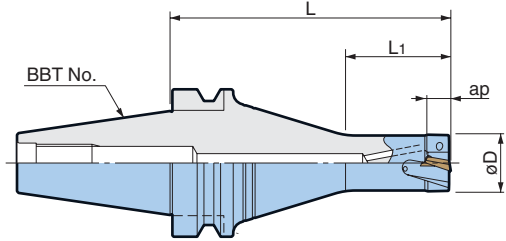
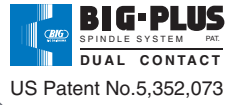
This Plug Screw A(option) prevents coolant leakage through retention knobs.

Bores on form B are sealed with Plug Screw B.

- *Remove 2 pcs Plug Screws B from end face of flange.
- *Failure to use the Plug Screw "A" or other sealing method may result in coolant contamination of spindle and lead to its premature failure or accidents.

BBT MAS 403 BIG-PLUS

Cutter Dia. $\phi 16 - \phi 32$



Metric style

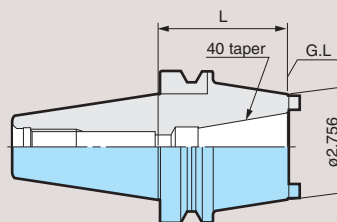
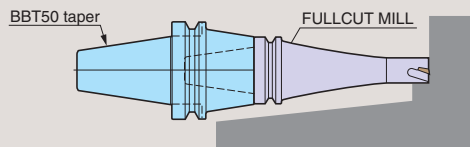
Model	Cutter Dia. ϕD (inch)	ap	L	L1	No. of Insert	Insert Model
BBT30-FCR16082- 65	16mm(.630)	.315	2.559	1.102	2	BRG160808
-FCR20083- 65	20mm(.787)			1.102		BRG200808
-FCR25083- 65	25mm(.984)			1.299	3	BRG250808
-FCR32103- 65	32mm(1.260)	.394	1.575	BRG321008		
BBT40-FCR16082- 85	16mm(.630)	.315	3.346	.984	2	BRG160808
-120			4.724	1.181		
-135			5.315	.984		
-FCR20083- 85	20mm(.787)	.315	3.346	1.378	3	BRG200808
-120			4.724	1.181		
-135			5.315	1.181		
-FCR25083- 85	25mm(.984)	.315	3.346	1.575	3	BRG250808
-120			4.724	1.772		
-135			5.315	1.378		
-FCR32103- 85	32mm(1.260)	.394	3.346	1.772	3	BRG321008
-120			4.724	1.969		
-135			5.315	1.575		

ap=The Length of Effective Cutting Edge

1. Inserts are ordered separately.
2. BIG-PLUS tools can be used in machining centers with conventional spindles.

For Insert : Back cover page

Adapter for BT50 taper shank



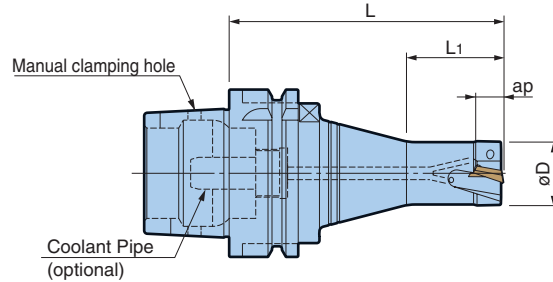
Model	L
BBT50-BBT40-50	1.969
-90	3.543

HSK integral shank version

ISO 12164 & DIN 69893-1 HSK

HSK ISO 12164 & DIN 69893-1

Cutter Dia. $\phi 16 - \phi 32$



Metric style

Model	Cutter Dia. ϕD (inch)	ap	L	L1	No. of Insert	Insert Model
HSK-A50-FCR16082- 75	16mm(.630)	.315	2.953	1.063	2	BRG160808
-FCR20083- 75	20mm(.787)			1.102		3
-FCR25083- 75	25mm(.984)			1.299	3	
-FCR32103- 75	32mm(1.260)			.394		1.535
HSK-A63-FCR16082- 85	16mm(.630)	.315	3.346	.984	2	BRG160808
-120			4.724	1.181		
-135			5.315	.984		
-FCR20083- 85	20mm(.787)	.315	3.346	1.260	3	BRG200808
-120			4.724	1.181		
-135			5.315	1.181		
-FCR25083- 85	25mm(.984)	.315	3.346	1.378	3	BRG250808
-120			4.724	1.772		
-135			5.315	1.378		
-FCR32103- 85	32mm(1.260)	.394	3.346	1.575	3	BRG321008
-120			4.724	1.969		
-135			5.315	1.575		

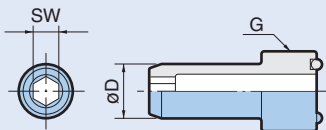
ap=The Length of Effective Cutting Edge

1. Inserts are ordered separately.
2. Coolant Pipe ordered separately.

For Insert : Back cover page

COOLANT PIPE for Form A

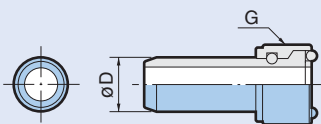
- Mono block type



Model	ϕD	G	Hexagon	SW
HSK 40-CP	8	M12×P1	4	
50-CP	10	M16×P1	5	
63-CP	12	M18×P1	6	
100-CP	16	M24×P1.5	8	

Unit(mm)

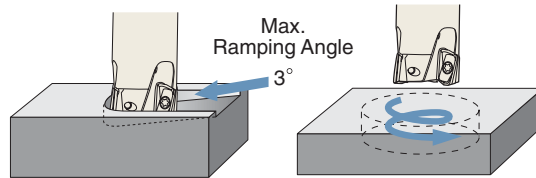
- 1° swing type



Model	ϕD	G	Wrench(optional)
HSK 40-CPM	8	M12×P1	CPW 40
50-CPM	10	M16×P1	CPW 50
63-CPM	12	M18×P1	CPW 63
100-CPM	16	M24×P1.5	CPW100

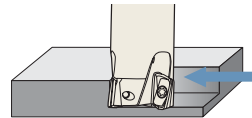
Unit(mm)

FCR Cutting Data



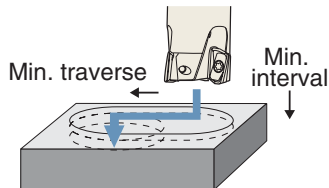
Ramping and helical interpolation

Cutter Dia. øD	Work Material	Carbon steel Alloy steel	Unalloyed steel	Prehardened steel < HRC40	Stainless steel	Die steel	Cast iron	Aluminum
	Insert Grade	ACZ350S					ACZ310	DC20
	Cutting fluid	Dry		Wet	Dry/Wet	Dry		Dry/Wet
.625 (16mm)	Speed(SFM)	330-655	490-720	195-260	330-490	195-260	330-590	655-3280
	Feed(IPT)	.002-.005	.002-.005	.002-.003	.003-.006	.002-.004	.003-.007	.002-.009
.750(20mm) 1.000(25mm)	Speed(SFM)	330-655	490-655	195-330	395-490	195-330	330-590	655-3280
	Feed(IPT)	.003-.008	.003-.008	.002-.004	.005-.008	.002-.004	.001-.007	.004-.014
1.250 (32mm)	Speed(SFM)	330-655	490-655	195-330	395-490	195-395	330-590	655-3280
	Feed(IPT)	.003-.008	.003-.008	.002-.004	.005-.008	.003-.005	.002-.008	.004-.014



Shouldering and slotting

Cutter Dia. øD	Work Material	Carbon steel Alloy steel	Unalloyed steel	Prehardened steel < HRC40	Stainless steel	Die steel	Cast iron	Aluminum
	Insert Grade	ACZ350S					ACZ310	DC20
	Cutting fluid	Dry		Wet	Dry/Wet	Dry		Dry/Wet
.625(16mm) .750(20mm)	Speed(SFM)	330-655	330-655	195-260	395-590	260-395	330-590	655-3280
	Feed(IPT)	.003-.007	.003-.007	.002-.004	.005-.007	.003-.005	.003-.007	.004-.012
1.000(25mm) 1.250(32mm)	Speed(SFM)	330-655	330-655	195-330	395-590	260-395	330-590	655-4920
	Feed(IPT)	.003-.008	.003-.008	.002-.004	.005-.008	.003-.005	.003-.008	.004-.014



Cutter Dia. øD	Min. interval	Min. traverse
.625(16mm)	0.5	14
.750(20mm)	1	18
1.000(25mm)	1	23
1.250(32mm)	2	30

Plunge milling

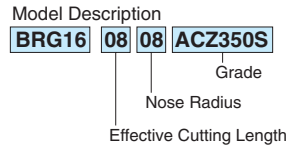
Cutter Dia. øD	Work Material	Carbon steel Alloy steel	Unalloyed steel	Prehardened steel < HRC40	Stainless steel	Die steel	Cast iron	Aluminum
	Insert Grade	ACZ350S					ACZ310	DC20
	Cutting fluid	Air blow		Wet	Air/Wet	Air blow		ir/Wet
.625 (16mm)	Speed(SFM)	260-395	260-395	197	260-395	197-262	260-525	655-1150
	Feed (IPR)	.002-.004	.002-.004	.001-.002	.002-.003	.002-.003	.002-.004	.002-.004
.750(20mm) 1.000(25mm)	Speed(SFM)	330-525	330-525	197-328	330-525	197-328	260-590	655-1640
	Feed (IPR)	.004-.001	.004-.001	.004-.001	.005-.001	.004-.008	.003-.012	.004-.012
1.250 (32mm)	Speed(SFM)	330-525	330-525	197-328	330-525	197-328	260-590	655-1970
	Feed (IPR)	.004-.012	.004-.012	.001-.012	.0047-.0118	.004-.008	.003-.016	.004-.012



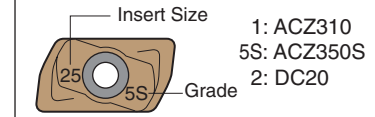
Caution

- *The table is just a reference to determine cutting conditions. It should be adjusted according to the condition of the machine tool and workpiece.
- *When long projection length type is used, it is necessary to lower feed rate.
- *Since chips may scatter, utilize safety enclosures.
- *Do not use oil-based cutting fluid, or a fire may take place.

Indexable Inserts



Marking Description



Cutter Dia.		Insert	Effective Cutting Length	Nose Radius	Insert Grade		
inch	metric				ACZ350S (for general steel)	ACZ310 (for cast iron)	DC20 (for aluminum)
.625	16	BRG160808	.315	.031	○	○	○
.750	20	BRG200808			○	○	○
1.000	25	BRG250808			○	○	○
1.250	32	BRG321008	.394	.031	○	○	○
		BRG321030		.125	○	○	○

Inserts are available in packets of 10 pcs.
Please specify the insert type and grade when ordering.
For example, use ordering code: BRG160808ACZ350S.

⚠ Caution

- FULLCUT MILL uses a different insert for each cutter diameter. If an unsuitable insert is used, a problem will result.
- There is no compatibility with FCM and FCR type inserts.

Spare Parts

Cutter Dia.		Insert	● Insert Clamping Screw Set	● Wrench	● Anti-seize Lubricant
inch	metric		Model	Model	Model
.625	16	BRG160808	S2506DS	DA-T8	BN-5
.750	20	BRG200808			
1.000	25	BRG250808			
1.250	32	BRG321008	S3508DS	DA-T15	



Note

It is recommended to regularly replace clamping screws and wrench to ensure the correct clamping force is maintained.


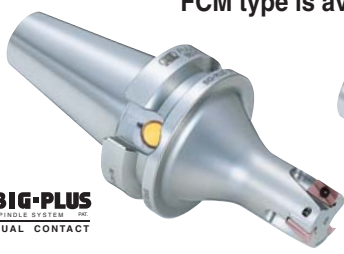


Shouldering and slotting PAT.

FULLCUT MILL

FCM Type

ø1/2" – ø2"

FCM type is available in a variety of shanks.

BIG KAISER[®]

PRECISION TOOLING INC.

641 Fargo Avenue Elk Grove Village, IL 60007
Tel: 847.228.7660 Fax: 847.228.0881
www.bigkaiser.com bigkaiser@bigkaiser.com