BIG DAISHOWA

Indexable Insert Endmill

FULLCUT MILL FCR Type

PAT.

BIG DAISHOWA SEIKI CO LTD

CATALOG No. **EXi151**

Cutter Dia.
ø5/8"–ø1-1/4"
ø16–ø32

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

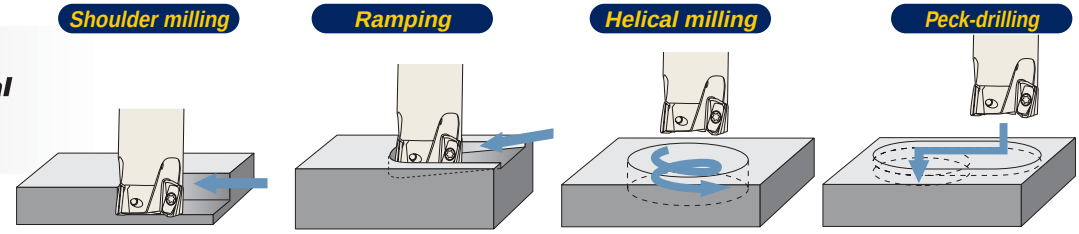
Sharp cutting edge by both high radial and axial rake angles

BIG DAISHOWA **FULLCUT MILL** PAT.

FCR Type

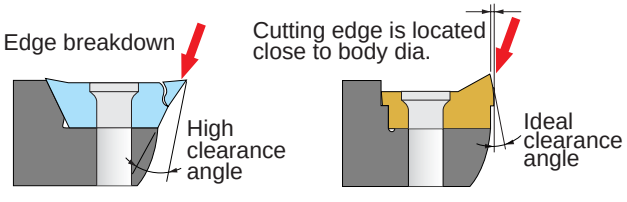
Positive high rake cutting edge for both radial and axial directions achieves smooth and quiet endmilling.

For multi-functional cutting



Cutter Dia.	Max. Ramping Angle	Flat Bottom				Through Hole		Max. Peck Interval	
		Max. Hole Dia.		Min. Hole Dia.		Min. Hole Dia.			
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

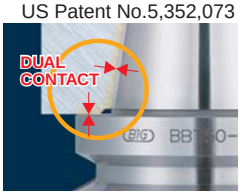
BIG DAISHOWA **FULLCUT MILL**

Higher rigidity with integral body and dual contact system.

BIG-PLUS SPINDLE SYSTEM PAT.

DUAL CONTACT

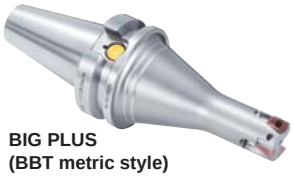
US Patent No.5,352,073



SIMULTANEOUS DUAL CONTACT SYSTEM

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

BIG PLUS (BCV inch style)



BIG PLUS (BBT metric style)

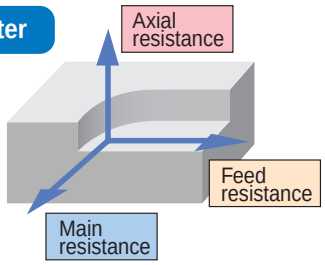
HSK

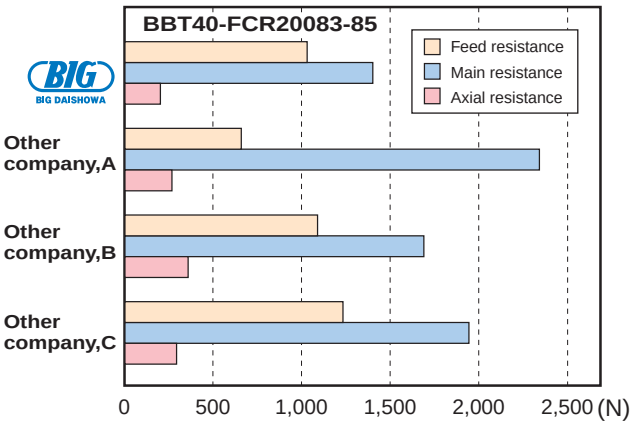
Lower cutting resistance than any other competitors.

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

Shouldering with ø20mm 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



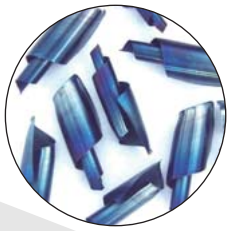


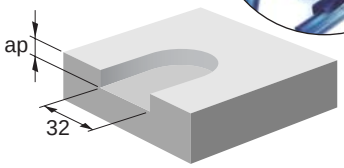
A rigid integral body is optimal for all machining centers.

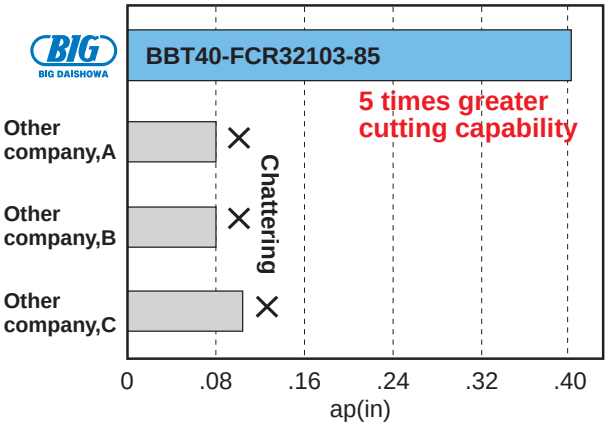
FULLCUT MILL achieves 5 times greater DOC than other high rake cutters.
It performs well in MC and workpieces with low rigidity.

Slotting with ø32mm cutter

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







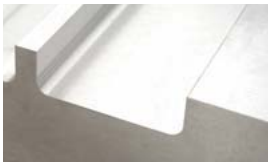
Application Examples

(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 4.3μ m was achieved and maintained, including the corner radius."

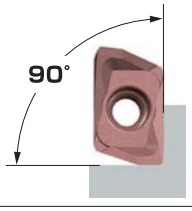
Fullcut Mill	**BCV40-FCR1.250-3.5**	Cutting Speed V	1,650 SFPM
Insert	BRG321030(DC20)	Feed Rate f	.006 IPM
Work Material	Aluminum / Air blow	Axial DOC Ad	.350in× 3 times



■ Bore Dia. 1.5in with Helical milling

In1050 Carbon Steel, very smooth cutting with feed rate of 43 IPM and excellent squareness are achieved.

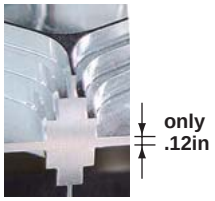
Fullcut Mill	**BBT40-FCR20083-120**	Cutting Speed V	492 SFPM
Insert	BRG200808(ACZ350S)	Feed Rate f	43 IPM
Work Material	1050 / Air blow	Axial DOC Ad	.079in× 3 times



■ Honeycombed Pocket with Ramping

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

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



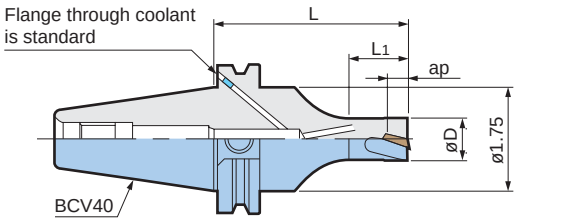
BIG PLUS Dual Contact Spindle System is available in all standard 7/24 taper types to provide the highest rigidity and accuracy.

BCV DIN 69871 A/B BIG-PLUS

Cutter Dia. ø .625 - ø1.250

BIG-PLUS SPINDLE SYSTEM PAT. DUAL CONTACT

US Patent No.5,352,073



Coolant bores in accordance to DIN69871/Form B*

Inch style

ASME B5.50 - 1994

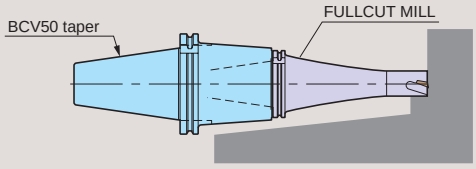
Model	Cutter Dia. øD	ap	L	L1	No. of Insert	Insert Model
BCV40-FCR .625 -3.5	.625	.315	3.346	.984	2	BRG160808
- 5			4.724	1.181		
-5.5			5.315	.984		
-FCR .750 -3.5	.750	.315	3.346	1.378	3	BRG200808
- 5			4.724	1.181		
-5.5			5.315	1.181		
-FCR1.000-3.5	1.000	.315	3.346	1.575	3	BRG250808
- 5			4.724	1.772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

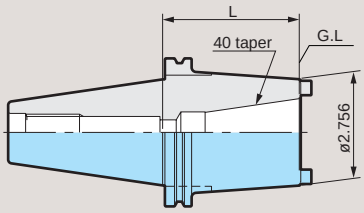
ap=The Length of Effective Cutting Edge

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

For Insert : Back cover page

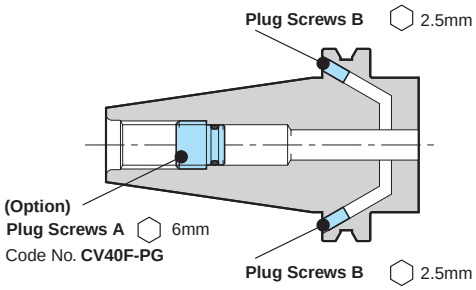
Adapter for CAT50 taper shank





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.

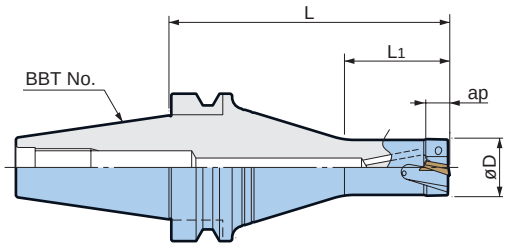
Bores on form B are sealed with Plug Screw B.

*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 it's premature failure or accidents.

BBT MAS403 BIG-PLUS

Cutter Dia. ø16 - ø32

BIG-PLUS SPINDLE SYSTEM PAT.
DUAL CONTACT
US Patent No.5,352,073



Metric style

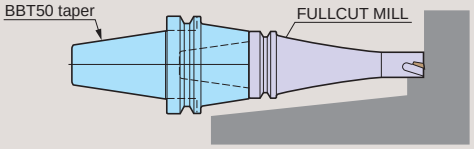
Model	Cutter Dia. øD(inch)	ap	L	L1	No. of Insert	Insert Model
BBT30-FCR16082- 65	16mm(.630)	.315	2.559	1.102	2	BRG160808
-FCR20083- 65	20mm(.787)			1.102	3	BRG200808
-FCR25083- 65	25mm(.984)			1.299		BRG250808
-FCR32103- 65	32mm(1.260)	.394		1.575		BRG321008
BBT40-FCR16082- 85	16mm(.630)	.315	3.346	.984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

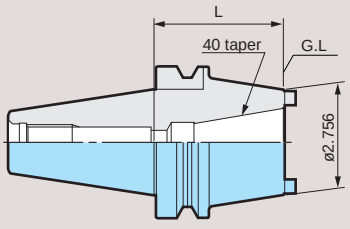
ap=The Length of Effective Cutting Edge

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

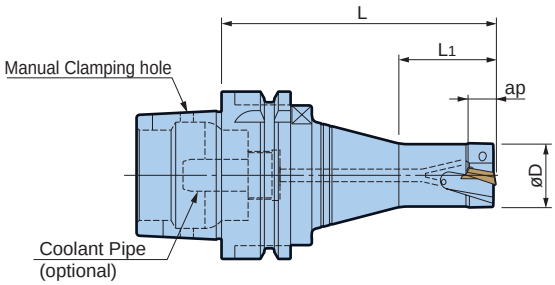




Model	L
BBT50-BBT40-50	1.969
-90	3.543

HSK ISO12164 & DIN69893-1

Cutter Dia. ø16 - ø32



Metric style

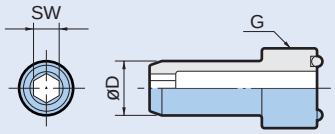
Model	Cutter Dia. øD(inch)	ap	L	L1	No. of Insert	Insert Model
HSK-A50-FCR16082- 75	16mm(.630)	.315	2.953	1.063	2	BRG160808
-FCR20083- 75	20mm(.787)			1.102	3	BRG200808
-FCR25083- 75	25mm(.984)			1.299		BRG250808
-FCR32103- 75	32mm(1.260)	.394		1.535		BRG321008
HSK-A63-FCR16082- 85	16mm(.630)	.315	3.346	.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 are ordered separately.

For Insert : Back cover page

COOLANT PIPE for Form A

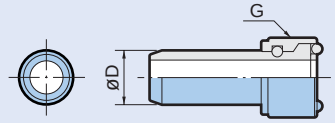
● Mono block Type



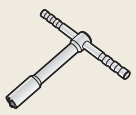
Model	øD	G	⬡ SW
HSK 40-CP	8	M12×P1	4
50-CP	10	M16×P1	5
63-CP	12	M18×P1	6
100-CP	16	M24×P1.5	8

Unit(mm)

● 1°swing type



Model	øD	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

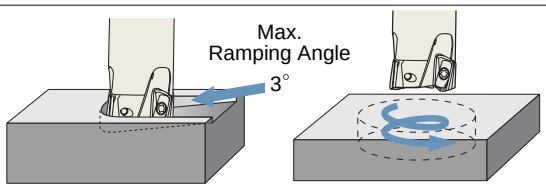


Unit(mm)

Change all SFPM to SFM and Round Values to multiples of 5(ez 328-656=325-655)
Round all Feed Values to 3 Decimal Places

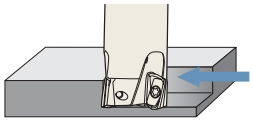
FCR Cutting Data

Ramping and helical interpolation



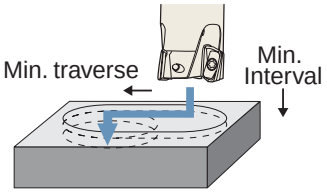
Cutter Dia. øD	Work Material	Carbon steel Alloy steel	Unalloyed steel	Prehardened steel < HRC40	Stainless steel	Die steel	Cast iron	Aluminum
	Insert Grade	ACZ350S					ACZ310	DC20
	Cutting fluid	Dry		Wet	Dry/Wet	Dry		Dry/Wet
.625 (16mm)	Speed(SFM)	330-655	490-720	195-260	330-490	195-260	330-590	655-3280
	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)	.003-080	.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-.0080	.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

Drilling with pecking



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

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		Air/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 a condition of a machine tool or 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.

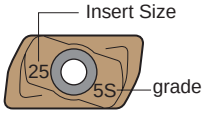
Indexable Inserts

Model Description

BRG16 | 08 | 08 | ACZ350S

- ACZ350S: Grade
- 08: Nose Radius
- 08: Effective Cutting Length

Marking Description



1: ACZ310
5S: ACZ350S
2: DC20

Cutter Dia. inch	Cutter Dia. metric	Insert	Effective Cutting Length	Nose Radius	Insert Grade: ACZ350S (for general steel)	Insert Grade: ACZ310 (for cast iron)	Insert Grade: 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 clarify 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 those of FCM type.**

Spare Parts

Cutter Dia. inch	Cutter Dia. metric	Insert	● Insert Clamping Screw Set (10 screws &1 wrench)	● Wrench	● Anti-seize Lubricant (A tube contains 5g)
			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

FULLCUT MILL PAT.

FCM Type
ø 1/2" – ø 2"

FCM type is available in a variety of shanks.

HSK | BIG Coromant Capto | Straight shank

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