BIG DAISHOWA

Profit Maker Tools

BIG DAISHOWA SEIKI CO LTD

CATALOG No. **EXi 302-1**

HIGHER PERFORMANCE GUARANTEED

Patented: USA, Canada, Germany, UK, France, Italy and South Korea

BIG-PLUS® SPINDLE SYSTEM PAT.

DUAL CONTACT

US Patent No. 5,352,073

ANGLE HEAD

PAT.

AG90/AGU SERIES

Patented: USA, Canada, Germany, UK,
France, Italy and South Korea

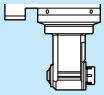
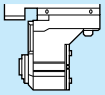
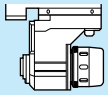
BIG-PLUS® SPINDLE SYSTEM PAT.
DUAL CONTACT
US Patent No. 5352073

BIG ANGLE HEADS eliminate multiple set-ups and combine vertical, horizontal and angular operations on one machine. One original set-up saves time, speeds production and guarantees accuracy.

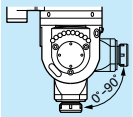
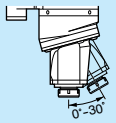
WIDE RANGE OF COMPACT AND RIGID HEADS, FROM MILLING CHUCK TYPES TO UNIVERSAL TYPES, SUITABLE FOR ALL KINDS OF MACHINING APPLICATIONS.

BIG BIG DAISHOWA ANGLE HEAD SERIES

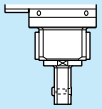
AG90 SERIES

- NBS TYPE  PG. 7-8
- COMPACT TYPE  PG. 9
- BUILD-UP TYPE  PG. 11-12
- HMC TYPE  PG. 13

AGU SERIES

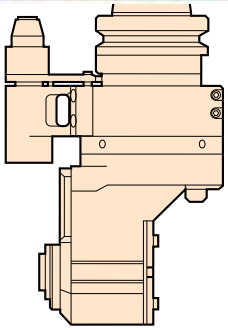
- UNIVERSAL 90° TYPE  PG. 15
- UNIVERSAL 30° TYPE  PG. 16

SPECIAL DESIGNS PG. 17

- SMALL BORE TYPE  PG. 10

BUILD-UP TYPE / HMC TYPE

Compact design assures rigidity

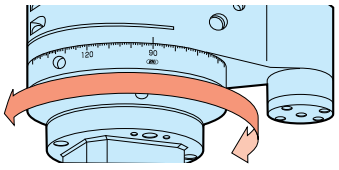


Overhang is minimized for added rigidity and strength. As a result, the projection length with the cutting tool is shorter, which reduces the overall load on the Angle Head and thus improves the unit's cutting capabilities. Futher, the minimized overhang helps eliminate interference with the ATC (automatic tool changer) and connecting storage pockets in the tool magazine.
High Rididity S-Type, which has a steel housing and a stronger locating pin assembly, is also available.

※ ATC may not be utilized for some machining centers.

Cutter head adjustable 360°

Reference faces are provided on both sides of all heads for easier setting of cutter directions.



Superior quality components

For smooth and powerful operation and to minimize noise and vibration, all Angle Heads are equipped with hardened and ground chrome-nickel steel spiral bevel gears, super precision hardened and ground spindles, and high precision angular contact ball bearings.

Innovative sealing method

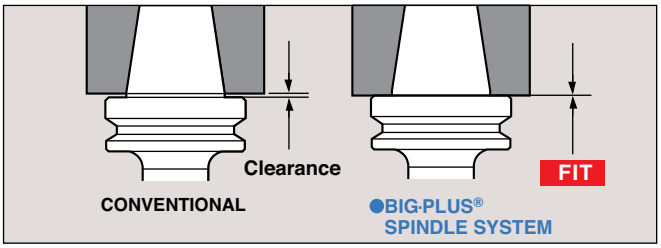
The advanced non-contact sealing method prevents coolant and particle contamination better than any other sealing method.

Unique coolant jacket

Jacket allows coolant coming through the stop block to be efficiently directed to the tool cutting edge while simultaneously cooling the Angle Head.

BIG-PLUS® is standard on all BT & CV taper versions PAT.

Simultaneous taper and flange contact between the machine spindle and tool holder provides improved rigidity and ATC repeatability. Interchangeability with conventional spindles ensures suitability for your existing machines.



BIG-PLUS® SPINDLE SYSTEM PAT.
DUAL CONTACT
US Patent No. 5352073

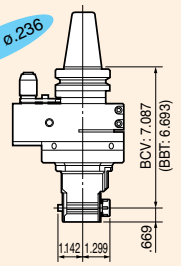
BIG-PLUS® tools can be used in machining centers with conventional spindles.

AG90 SERIES (SPINDLE ANGLE: 90°) NBS TYPE

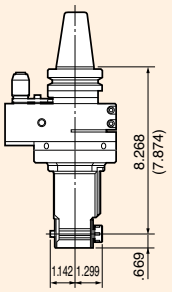
PG. 7-8

BCV40 (BBT40) MAX. 6,000 RPM (Except for NBS20 models)

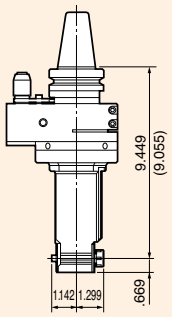
ø.010 - ø.236



BCV40-AG90/NBS6-180
BBT40-AG90/NBS6-170

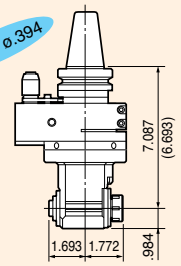


BCV40-AG90/NBS6-210
BBT40-AG90/NBS6-200

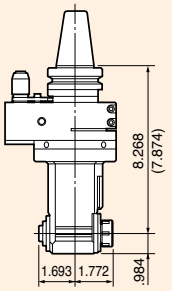


BCV40-AG90/NBS6-240
BBT40-AG90/NBS6-230

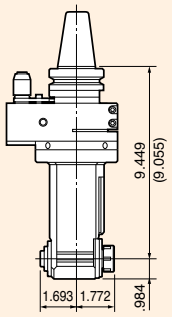
ø.059 - ø.394



BCV40-AG90/NBS10-180
BBT40-AG90/NBS10-170

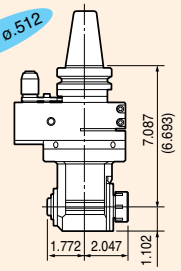


BCV40-AG90/NBS10-210
BBT40-AG90/NBS10-200

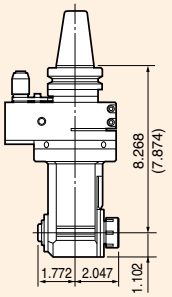


BCV40-AG90/NBS10-240
BBT40-AG90/NBS10-230

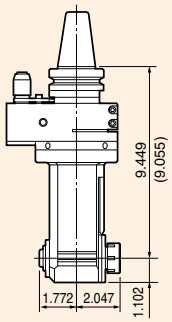
ø.098 - ø.512



BCV40-AG90/NBS13-180
BBT40-AG90/NBS13-170

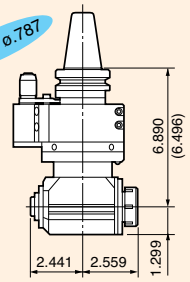


BCV40-AG90/NBS13-210
BBT40-AG90/NBS13-200



BCV40-AG90/NBS13-240
BBT40-AG90/NBS13-230

ø.098 - ø.787



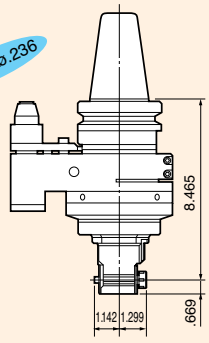
BCV40-AG90/NBS20S-175S
BBT40-AG90/NBS20S-165S
MAX. **3,000** RPM

Automatic tool change may not be utilized for some machining centers.

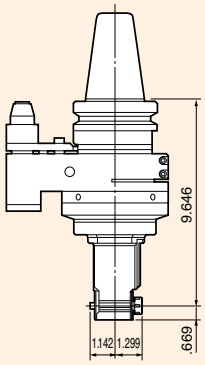
BCV50 (BBT50)

MAX. **6,000** RPM (Except for NBS20 models)

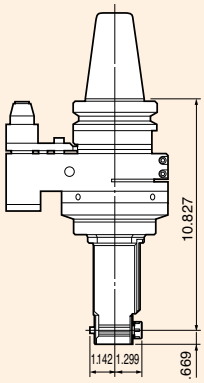
ø.010 - ø.236



BCV50-AG90/NBS6-215
BBT50-AG90/NBS6-215

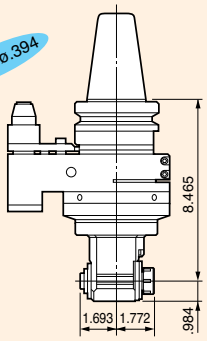


BCV50-AG90/NBS6-245
BBT50-AG90/NBS6-245

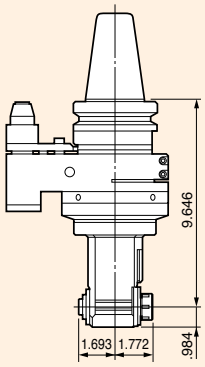


BCV50-AG90/NBS6-275
BBT50-AG90/NBS6-275

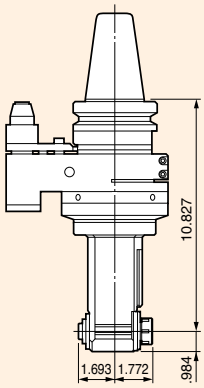
ø.059 - ø.394



BCV50-AG90/NBS10-215
BBT50-AG90/NBS10-215

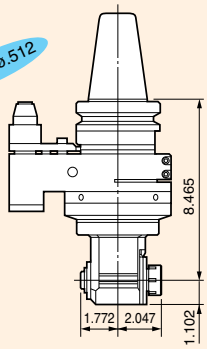


BCV50-AG90/NBS10-245
BBT50-AG90/NBS10-245

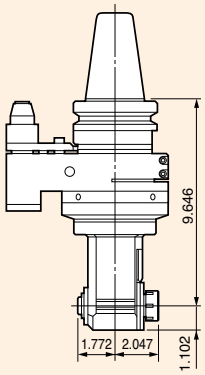


BCV50-AG90/NBS10-275
BBT50-AG90/NBS10-275

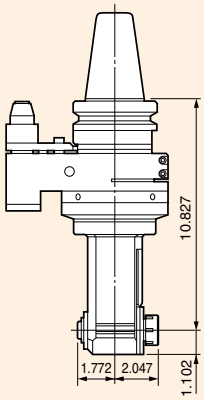
ø.098 - ø.512



BCV50-AG90/NBS13-215
BBT50-AG90/NBS13-215

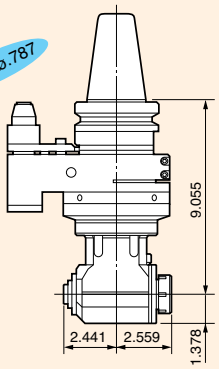


BCV50-AG90/NBS13-245
BBT50-AG90/NBS13-245



BCV50-AG90/NBS13-275
BBT50-AG90/NBS13-275

ø.098 - ø.787



BCV50-AG90/NBS20-230
BBT50-AG90/NBS20-230
MAX. **3,000** RPM

Automatic tool change may not be utilized for some machining centers.

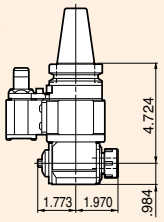
AG90 SERIES (SPINDLE ANGLE: 90°)

COMPACT TYPE PG. 9

BCV40 (BBT40)

ø.098 - ø.512

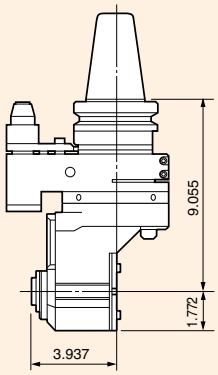
BCV40-AG90-13-120
BBT40-AG90-13-120
MAX. **5,000** RPM



BUILD-UP TYPE PG. 11-12

BCV50 (BBT50)

BCV50-AG90/AGH35-230
BBT50-AG90/AGH35-230
MAX. **3,000** RPM
(QUICK CHANGE ADAPTERS)

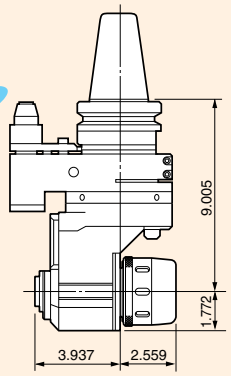


HMC TYPE PG. 13

BCV50 (BBT50)

ø1.250

BCV50-AG90/HMC1.250-230
BBT50-AG90/HMC1.250-230
MAX. **3,000** RPM



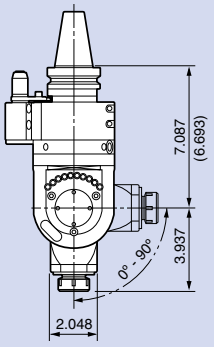
Automatic tool change may not be utilized for some machining centers.

AGU SERIES

UNIVERSAL TYPE PG. 15

(SPINDLE ANGLE: 0° – 90°)

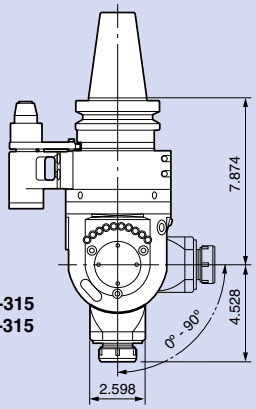
BCV40 (BBT40)



ø.098 - ø.512

BCV40-AGU/NBS13-280
BBT40-AGU/NBS13-270
MAX. **6,000** RPM

BCV50 (BBT50)



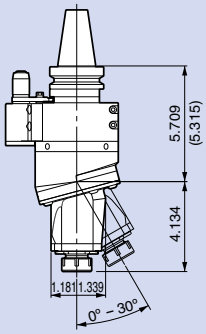
ø.098 - ø.787

BCV50-AGU/NBS20-315
BBT50-AGU/NBS20-315
MAX. **4,000** RPM

UNIVERSAL 30 TYPE PG. 16

(SPINDLE ANGLE: 0° – 30°)

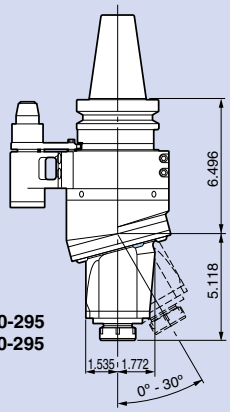
BCV40 (BBT40)



ø.098 - ø.512

BCV40-AGU30/NBS13-250
BBT40-AGU30/NBS13-240
MAX. **6,000** RPM

BCV50 (BBT50)

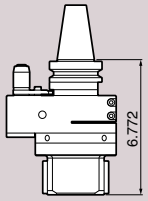


ø.098 - ø.787

BCV50-AGU30/NBS20-295
BBT50-AGU30/NBS20-295
MAX. **4,000** RPM

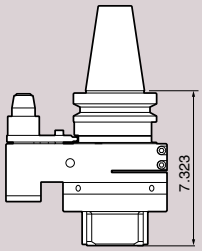
SMALL BORE TYPE PG. 10

BCV40
MAX. **2,000** RPM



BCV40-AGB-172

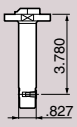
BCV50
MAX. **2,000** RPM



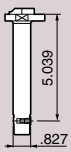
BCV50-AGB-186

ø3, 3.5, 4mm

AG90-CA4SGM-64



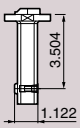
AG90-CA4SGM-96



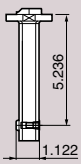
AG90-CA4SGM-128

ø3, 4, 5, 6mm

AG90-CA6SGM-45



AG90-CA6SGM-89



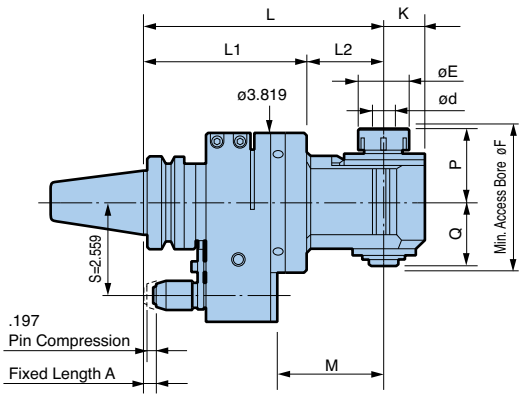
AG90-CA6SGM-133

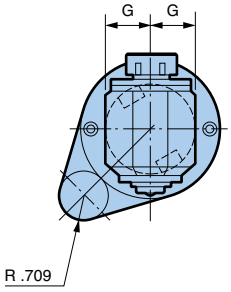
Automatic tool change may not be utilized for some machining centers.

AG90 SERIES (SPINDLE ANGLE: 90°) NBS TYPE

It is the outstanding rigidity and accuracy of the New Baby Collet, used for holding the cutting tool, that produces high precision with less runout. Available in various sizes to meet specific production requirements.

40 TAPER





• Model Description

BCV40 - AG90 / NBS 6 - 180

- BCV40: BIG-PLUS® Shank No.
- AG90: AG90 Series
- NBS: New Baby Chuck Type
- 6: Max. Capacity (mm)
- 180: L= Projection Length (mm)

BIG-PLUS® tools can be used in machining centers with conventional spindles.

• The rotation of the cutting tool is in reverse direction of the machine spindle. (Speed Ratio 1:1)

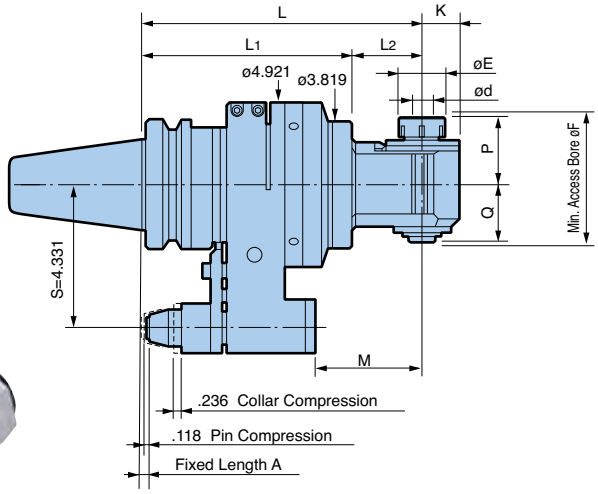
Stop Block is required. PG. 19

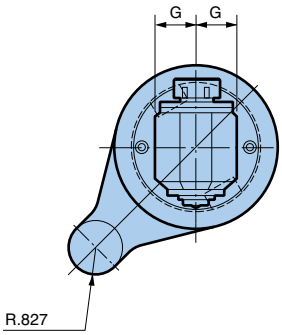
Shank	Model	ød	øE	G	K	L	L1	L2	M	P	Q	øF	Collet	Max. RPM	Weight (lbs)
BCV	BCV40-AG90/NBS6-180	.010 - .236	.787	.827	.669	7.087	4.921	2.165	3.031	1.299	1.142	2.638	NBC 6	6,000	11.2
	-210					8.268		3.346	4.213						11.7
	-240					9.449		4.528	5.394						12.1
	-AG90/NBS10-180	.059 - .394	1.181	1.181	.984	7.087	4.921	2.165	3.031	1.772	1.693	3.583	NBC10	6,000	12.1
	-210					8.268		3.346	4.213						13.0
	-240					9.449		4.528	5.394						13.7
	-AG90/NBS13-180	.098 - .512	1.378	1.220	1.102	7.087	4.921	2.165	3.031	2.047	1.772	3.976	NBC13	6,000	12.3
	-210					8.268		3.346	4.213						13.2
	-240					9.449		4.528	5.394						13.9
	-AG90/NBS20S-175S	.098 - .787	1.811	1.378	1.299	6.890	4.803	2.087	2.835	2.559	2.441	5.197	NBC20	3,000	17.6
BBT	BBT40-AG90/NBS6-170	.010 - .236	.787	.827	.669	6.693	4.528	2.165	3.031	1.299	1.142	2.638	NBC 6	6,000	11.2
	-200					7.874		3.346	4.213						11.7
	-230					9.055		4.528	5.394						12.1
	-260					10.236		5.709	6.575						12.5
	-AG90/NBS10-170	.059 - .394	1.181	1.181	.984	6.693	4.528	2.165	3.031	1.772	1.693	3.583	NBC10	6,000	12.1
	-200					7.874		3.346	4.213						13.0
	-230					9.055		4.528	5.394						13.7
	-AG90/NBS13-170	.098 - .512	1.378	1.220	1.102	6.693	4.528	2.165	3.031	2.047	1.772	3.976	NBC13	6,000	12.3
	-200					7.874		3.346	4.213						13.2
	-230					9.055		4.528	5.394						13.9
	-AG90/NBS20S-165S	.098 - .787	1.811	1.378	1.299	6.496	4.409	2.087	2.835	2.559	2.441	5.197	NBC20	3,000	17.6

1. The standard fixed length A is .315. Other lengths are available upon request.
2. The angles of positioning pin to drive key groove and direction of cutting edge are adjustable from 0˚ to 360˚.
3. Nut and wrench are included. Collet must be ordered separately.
4. For greater rigidity, High Rigidity S-Type with a steel housing and a stronger locating pin assembly is also available. Please add "S" after each model number when ordering High Rigidity Type.

For NEW BABY COLLET PG. 38
For WRENCH PG. 14

50 TAPER





BIG-PLUS® tools can be used in machining centers with conventional spindles.

- The rotation of the cutting tool is in reverse direction of the machine spindle. (Speed Ratio 1:1)

Stop Block is required. PG. 19

Shank	Model	ød	øE	G	K	L	L1	L2	M	P	Q	øF	Collet	Max. RPM	Weight (lbs)
BCV	BCV50-AG90/NBS6-215	.010 -.236	.787	.827	.669	8.465	6.299	2.165	3.228	1.299	1.142	2.638	NBC 6	6,000	27.8
	-245					9.646		3.346	4.409						28.2
	-275					10.827		4.528	5.591						28.7
	-AG90/NBS10-215	.059 -.394	1.181	1.181	.984	8.465	6.299	2.165	3.228	1.772	1.693	3.583	NBC10	6,000	28.7
	-245					9.646		3.346	4.409						29.5
	-275					10.827		4.528	5.591						30.2
	-AG90/NBS13-215	.098 -.512	1.378	1.220	1.102	8.465	6.299	2.165	3.228	2.047	1.772	3.976	NBC13	6,000	28.9
	-245					9.646		3.346	4.409						29.8
	-275					10.827		4.528	5.591						30.4
	-AG90/NBS20-230	.098 -.787	1.811	1.378	1.378	9.055	6.299	2.756	3.819	2.559	2.441	5.197	NBC20	3,000	31.3
BBT	BBT50-AG90/NBS6-215	.010 -.236	.787	.827	.669	8.465	6.299	2.165	3.228	1.299	1.142	2.638	NBC 6	6,000	27.8
	-245					9.646		3.346	4.409						28.2
	-275					10.827		4.528	5.591						28.7
	-305					12.008		5.709	6.772						29.0
	-AG90/NBS10-215	.059 -.394	1.181	1.181	.984	8.465	6.299	2.165	3.228	1.772	1.693	3.583	NBC10	6,000	28.7
	-245					9.646		3.346	4.409						29.5
	-275					10.827		4.528	5.591						30.2
	-AG90/NBS13-215	.098 -.512	1.378	1.220	1.102	8.465	6.299	2.165	3.228	2.047	1.772	3.976	NBC13	6,000	28.9
	-245					9.646		3.346	4.409						29.8
	-275					10.827		4.528	5.591						30.4
	-AG90/NBS20-230	.098 -.787	1.811	1.378	1.378	9.055	6.299	2.756	3.819	2.559	2.441	5.197	NBC20	3,000	31.3

1. The standard fixed length A is .315. Other lengths are available upon request.
2. The angles of positioning pin to drive key groove and direction of cutting edge are adjustable from 0˚ to 360˚.
3. Nut and wrench are included. Collet must be ordered separately.
4. For greater rigidity, High Rigidity S-Type with a stronger locating pin assembly is also available. Please add "S" after each model number when ordering High Rigidity Type.

For NEW BABY COLLET PG. 38
For WRENCH PG. 14

AG90 SERIES (SPINDLE ANGLE: 90°) COMPACT TYPE

BIG-PLUS® SPINDLE SYSTEM PAT.
DUAL CONTACT
US Patent No. 5352073

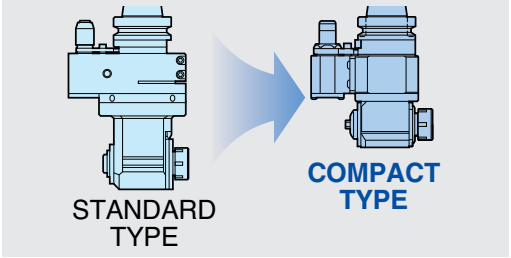
Compact and lightweight design combined with the accuracy required for drilling.
Ideal size for small machining centers.

For Drilling

High quality components

- **High precision New Baby Collet**
- **Spiral bevel gears and angular contact bearings**
- **Advanced non-contact sealing structure**

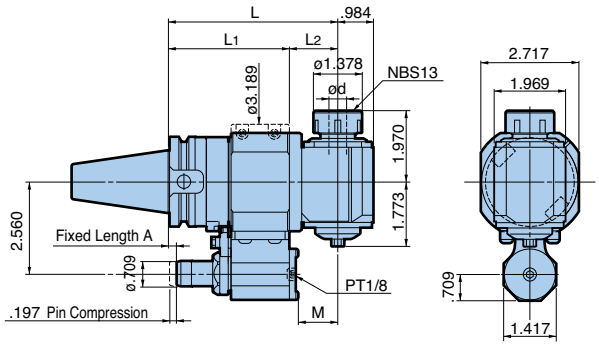
Case & head sizes are substantially reduced.



• Model Description

BCV40 - AG90 - 13 - 120

- 120: L= Projection Length (mm)
- 13: Max. Capacity (mm)
- AG90: AG90 Series
- BCV40: BIG-PLUS® Shank No.



BIG-PLUS® tools can be used in machining centers with conventional spindles.

• The rotation of the cutting tool is in reverse direction of the machine spindle. (Speed Ratio 1:1)

Stop Block is required. PG. 19

Shank	Model	ød	L	L1	L2	M	Collet	Speed Ratio	Max. RPM	Weight (lbs)
BCV	BCV40-AG90-13-120	.098 - .512	4.724	3.386	1.339	1.096	NBC13	1:1	5,000	10
BBT	BBT40-AG90-13-120	.098 - .512	4.724	3.386	1.339	1.096	NBC13	1:1	5,000	10

1. Nut and wrench are included. Collet must be ordered separately.
2. End mill collet cannot be used.
3. Stop Block is necessary to mount the Angle Head on the machine. Please order separately.
4. ATC may not be utilized on some CV machining centers. Consult engineering for specifications.

For NBC COLLET PG. 38
For WRENCH PG. 14

Application Example

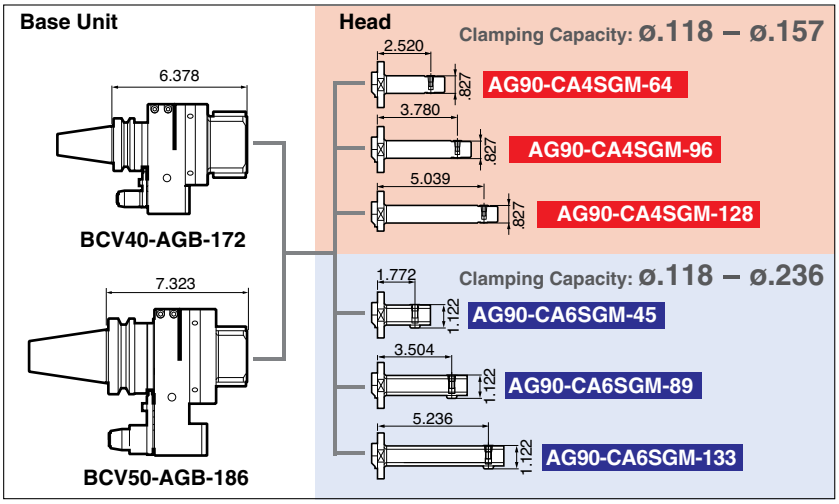
Stable machining is obtained due to high rigidity and good runout.

	Drilling
Cutter	ø.472" (12mm) carbide drill
Workpiece	1050 Steel
Cutting Speed	230 SFM
Cutting Feed	14.6 IPM
	.008 IPR
Spindle Speed	1,860 RPM

SMALL BORE TYPE

BIG-PLUS® SPINDLE SYSTEM PAT.
DUAL CONTACT
US Patent No. 5352073

Angular operations within a ø1.181 inch bore is possible. Modular heads enhance versatility and the head is aligned with the spindle center for easy programming.



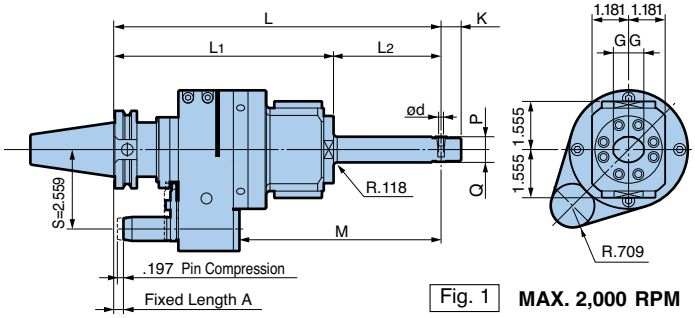


Fig. 1 **MAX. 2,000 RPM**

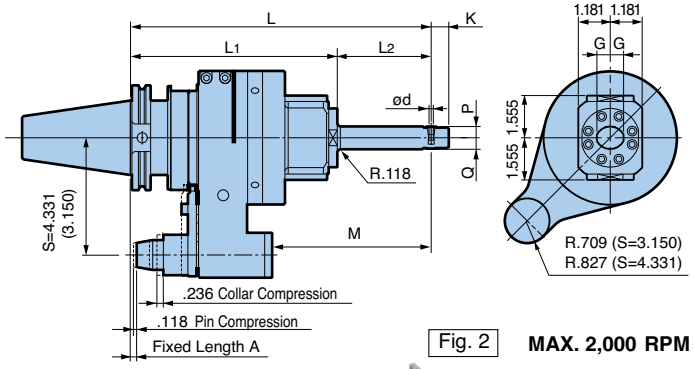


Fig. 2 **MAX. 2,000 RPM**

BIG-PLUS® tools can be used in machining centers with conventional spindles.

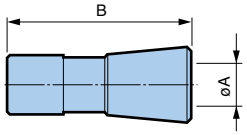
- The cutter rotates in the same direction of the machine spindle.

Stop Block is required. PG. 19

Shank	Set Model	Base	Head	Fig.	ød	G	K	L	L1	L2	M	P	Q	Speed Ratio	Weight (lbs) S=2.559	S=3.150	S=4.331
BCV	BCV40-AG90-CA4SGM-236	BCV40-AGB-172	AG90-CA4SGM-64	1	.118 - .157	.492	.650	9.291	7.087	2.205	5.236	.413	.413	1:1.06 (Increase)	12.6	-	-
	-268		-96					10.551		3.465	6.496				12.8		
	-300		-128					11.811		4.724	7.756				13.0		
	-CA6SGM-217		AG90-CA6SGM-45	1	.118 - .236	.591	.787	8.543	7.087	1.457	4.488	.492	.630	1:0.77 (Decrease)	12.8	-	-
	-261		-89					10.276		3.189	6.220				13.2		
	-305		-133					12.008		4.921	7.953				13.7		
	BCV50-AG90-CA4SGM-250☐	BBT50-AGB-186☐	AG90-CA4SGM-64	2	.118 - .157	.492	.650	10.236	8.031	2.205	4.606	.413	.413	1:1.06 (Increase)	-	27.6	26.3
	-282☐		-96					11.496		3.465	5.866					27.8	26.5
	-314☐		-128					12.756		4.724	7.126					28.0	26.7
	-CA6SGM-231☐		AG90-CA6SGM-45	2	.118 - .236	.591	.787	9.488	8.031	1.457	3.858	.492	.630	1:0.77 (Decrease)	-	27.8	26.5
	-275☐		-89					11.220		3.189	5.591					28.3	26.9
	-319☐		-133					12.953		4.921	7.323					28.7	27.4

1. The standard fixed length A: 40 taper= .315, 50 taper= .236. Other lengths are available upon request.
2. The angles of positioning pin to drive key groove and direction of cutting edge are adjustable from 0˚ to 360˚.
3. Coolant cannot be supplied through the Locating Pin.
4. Exclusive collets should be ordered separately.
5. S= 3.150 type is available for #50 taper models upon request.

• EXCLUSIVE COLLET



Model	øA	B
CA4-3	.118	.650
-3.5	.138	
-4	.157	

Model	øA	B
CA6-3	.118	.866
-4	.157	
-5	.197	
-6	.236	

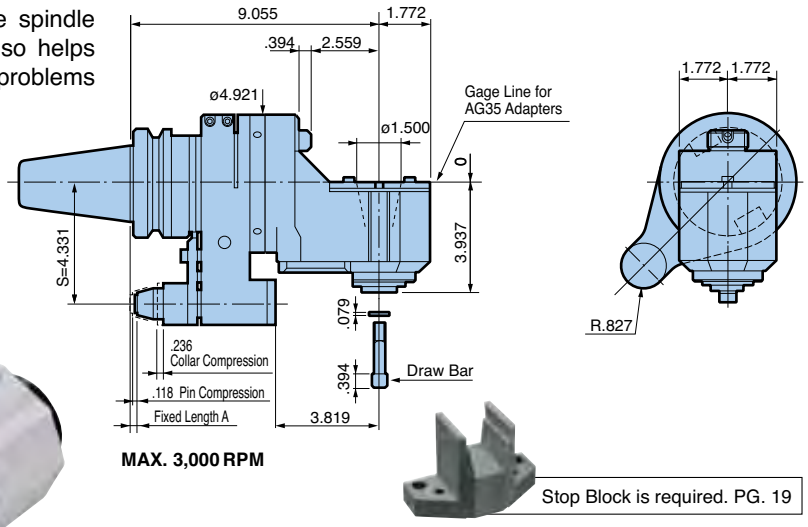
1. Use only a cutting tool shank with exactly the same diameter as the collet bore diameter.
2. Tolerance of the cutting tool shank must be within h7.

AG90 SERIES (SPINDLE ANGLE: 90°) BUILD-UP TYPE

Spindle head is equipped with a short taper for quick changing of various adapters.

STANDARD TYPE

Designed for greater rigidity by having the face of the spindle bore in line with the center of the machine spindle. Also helps minimize interference problems with ATC and storage problems within the magazine.



MAX. 3,000 RPM

Stop Block is required. PG. 19

BIG-PLUS® tools can be used in machining centers with conventional spindles.

- The cutter rotates in the same direction of the machine spindle.

Shank	Model	Weight (lbs)
BCV	BCV50-AG90/AGH35-230	33.1
BBT	BBT50-AG90/AGH35-230	33.1

1. The standard fixed length A is .236. Other lengths are available upon request.
2. The angles of positioning pin to drive key groove and direction of cutting edge are adjustable from 0° to 360°.

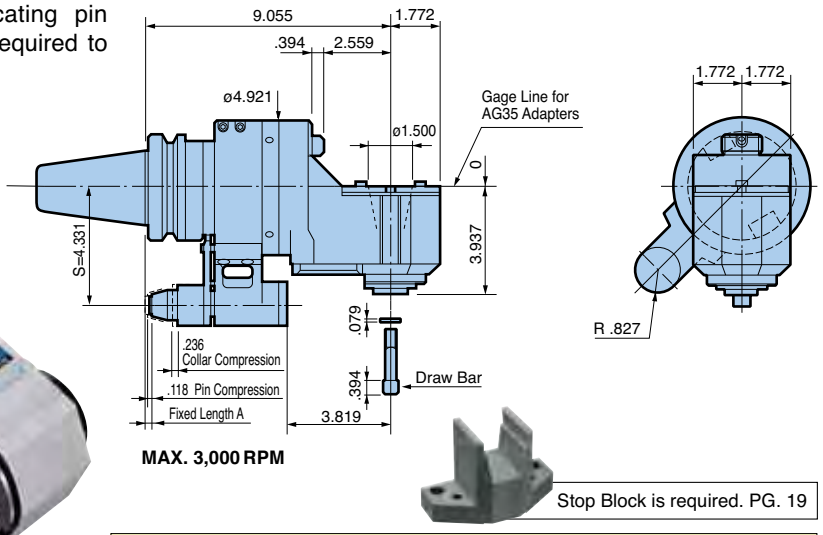
- Model Description

BCV50 - AG90 / AGH 35 - 230

- 230: L= Projection Length (mm)
- 35: Taper Size
- AGH: Build-Up Type
- AG90: AG90 Series
- BCV50: BIG-PLUS® Shank No.

HIGH RIGIDITY TYPE

Provided with a steel housing and reinforced locating pin assembly for applications where increased rigidity is required to perform various types of heavier machining.



MAX. 3,000 RPM

Stop Block is required. PG. 19

BIG-PLUS® tools can be used in machining centers with conventional spindles.

- The cutter rotates in the same direction of the machine spindle.

Shank	Model	Weight (lbs)
BCV	BCV50-AG90/AGH35-230S	35.9
BBT	BBT50-AG90/AGH35-230S	35.9

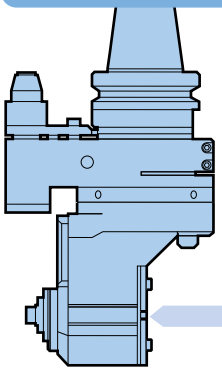
1. The standard fixed length A is .236. Other lengths are available upon request.
2. The angles of positioning pin to drive key groove and direction of cutting edge are adjustable from 0° to 360°.

- Model Description

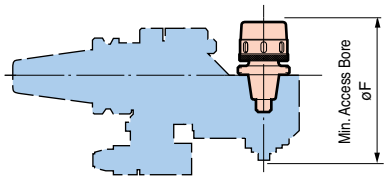
BCV50 - AG90 / AGH 35 - 230 - S

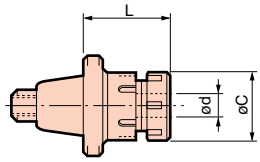
- S: High Rigidity Type
- 230: L= Projection Length (mm)
- 35: Taper Size
- AGH: Build-Up Type
- AG90: AG90 Series
- BCV50: BIG-PLUS® Shank No.

BUILD-UP TYPE AG35 ADAPTER SERIES



øF= Minimum bore size that an AG35 adapter can fit into, excluding the cutting tool.

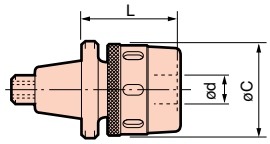




NEW BABY CHUCK

Model	ød	L	øC	øF	Weight (lbs)
AG35-NBS10	.059-.394	1.850	1.181	6.378	1.3
-NBS13	.098-.512	2.126	1.378	6.614	1.5
-NBS16	.098-.630		1.654	6.693	1.8
-NBS20	.098-.787		1.811		2.0

For NEW BABY COLLET PG.38 For WRENCH PG.14

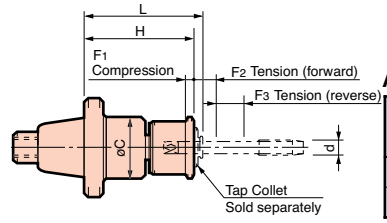


HI-POWER MILLING CHUCK

Model	ød	L	øC	øF	Weight (lbs)
AG35-HMC.750	.750	2.362	2.079	7.008	3.3

Wrench is included (FK52-55)

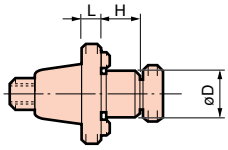
For STRAIGHT COLLET PG.14



AUTO TAPPER TYPE B

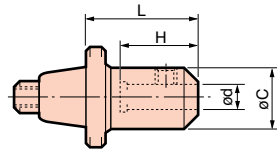
Model	d	L	øC	H	F_1	F_2	F_3	Weight (lbs)
AG35-ATB12E	No.6-U1/2	3.150	1.594	2.835	.020	.197	.157	2.2
-ATB20E	U3/8-U3/4	4.528	2.264	4.035		.256	.197	3.7

Tap collets with torque control or positive drive available upon request.



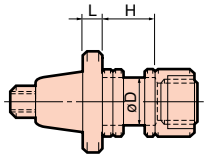
SHELL MILL ARBOR

Model	øD	L	H	Weight (lbs)
AG35-SM1.000-20	1.000	.787	.689	2.2



END MILL ADAPTER

Model	ød	L	øC	H	øF	Weight (lbs)
AG35-EM.750	.750	3.248	1.750	3.880	7.756	3.0



STUB ARBOR

Model	øD	L	H	Weight (lbs)
AG35-SA1.000	1.000	.394	1.181	2.8

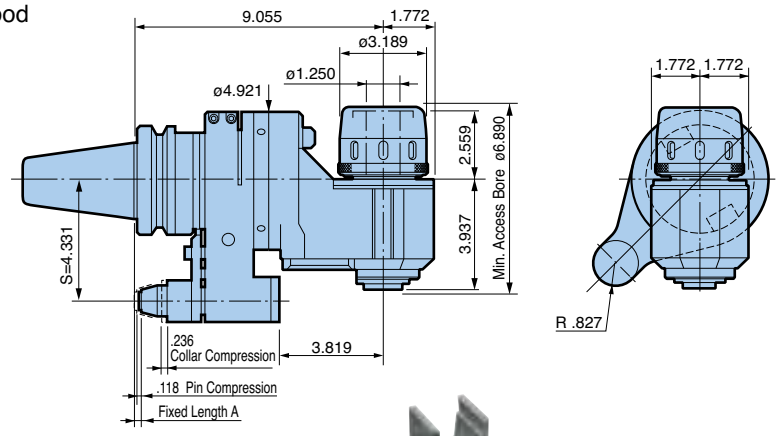
AG90 SERIES (SPINDLE ANGLE: 90°) HMC TYPE

BIG-PLUS® SPINDLE SYSTEM PAT.
DUAL CONTACT
US Patent No. 5352073

Greater versatility is obtainable with Milling Chuck capacity of ø1.250" by utilizing Straight Reduction Collets and other accessories.

STANDARD TYPE

Hi-Power Milling Chuck Type with powerful clamping and good rigidity for the most popular straight shank cutting tools.



MAX. 3,000 RPM

Stop Block is required. PG. 19

BIG-PLUS® tools can be used in machining centers with conventional spindles.

- The cutter rotates in the same direction of the machine spindle.

Shank	Model	Weight (lbs)
BCV	BCV50-AG90/HMC1.250-230	37.0
BBT	BBT50-AG90/HMC1.250-230	37.0

1. The standard fixed length A is .236. Other lengths are available upon request.
2. The angles of positioning pin to drive key groove and direction of cutting edge are adjustable from 0° to 360°.

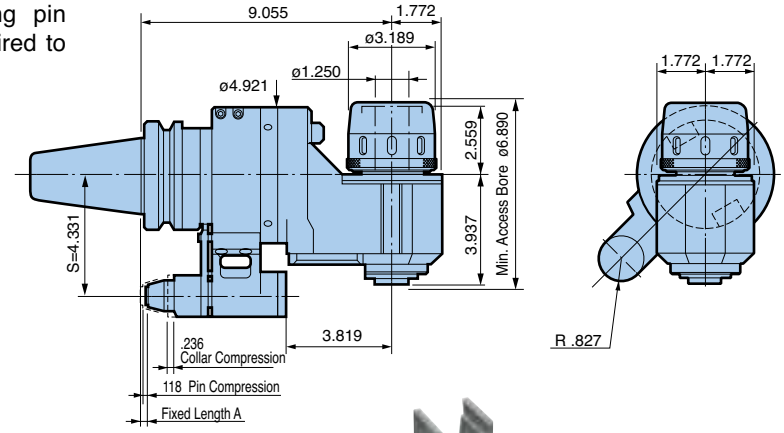
- Model Description

BCV50 - AG90 / HMC 1.250 - 230

- 230: L= Projection Length (mm)
- 1.250: Clamping Size (in)
- HMC: Hi-Power Milling Chuck Type
- AG90: AG90 Series
- BCV50: BIG-PLUS® Shank No.

HIGH RIGIDITY TYPE

Provided with a steel housing and reinforced locating pin assembly for applications where increased rigidity is required to perform various types of heavier machining.



MAX. 3,000 RPM

Stop Block is required. PG. 19

BIG-PLUS® tools can be used in machining centers with conventional spindles.

- The cutter rotates in the same direction of the machine spindle.

Shank	Model	Weight (lbs)
BCV	BCV50-AG90/HMC1.250-230S	39.9
BBT	BBT50-AG90/HMC1.250-230S	39.9

1. The standard fixed length A is .236. Other lengths are available upon request.
2. The angles of positioning pin to drive key groove and direction of cutting edge are adjustable from 0° to 360°.

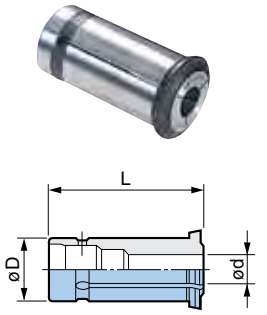
- Model Description

BCV50 - AG90 / HMC 1.250 - 230 S

- S: High Rigidity Type
- 230: L= Projection Length (mm)
- 1.250: Clamping Size (in)
- HMC: Hi-Power Milling Chuck Type
- AG90: AG90 Series
- BCV50: BIG-PLUS® Shank No.

ACCESSORIES for Angle Head

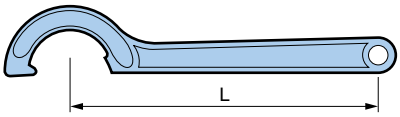
• STRAIGHT COLLET for Milling Chuck



Model	ød	øD	L
C.750-1/4	.250	.750	2.36
-5/16	.312		
-3/8	.375		
-7/16	.437		
-1/2	.500		
-9/16	.562		
-5/8	.625		

Model	ød	øD	L
C1.25-1/4	.250	1.250	2.91
-5/16	.312		
-3/8	.375		
-7/16	.437		
-1/2	.500		
-9/16	.562		
-5/8	.625		
-11/16	.687		
-3/4	.750		
-13/16	.812		
-7/8	.875		
-15/16	.937		
-1	1.000		

• WRENCH for Angle Head

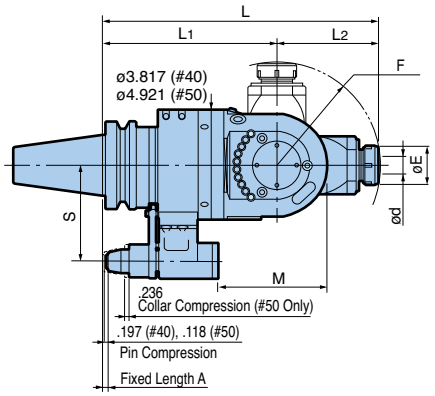


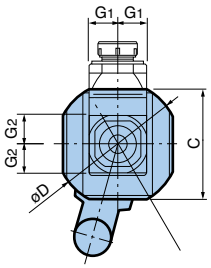
Model	L	Collet
NBK6	2.559	NBC6
NBK10	4.094	NBC10
NBK13	4.449	NBC13
NBK16	4.803	NBC16
NBK20	5.157	NBC20

AGU SERIES (SPINDLE ANGLE: 0° to 90°) UNIVERSAL TYPE

BIG-PLUS® SPINDLE SYSTEM PAT.
DUAL CONTACT
US Patent No. 5352073

Suitable for all cutting angles. In addition to the cutter head being adjustable a full 360°, the spindle also becomes easily and precisely adjustable from 0° to 90° by 1° increments.





BIG-PLUS® tools can be used in machining centers with conventional spindles.

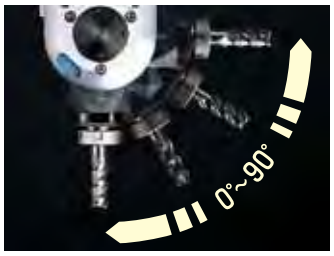
- The cutter rotates in the same direction of the machine spindle.

Stop Block is required. PG. 19

Shank	Model	ød	øE	øD	C	G1	G2	L	L1	L2	M	F	S	Collet	Max. RPM	Weight (lbs)
BCV	BCV40-AGU/NBS13-280	.098 - .512	1.378	4.528	3.819	1.024	1.014	11.024	7.087	3.937	4.882	4.016	2.559	NBC13	6,000	21.4
	BCV50-AGU/NBS20-315	.098 -. 787	1.811	5.512	4.921	1.299	1.280	12.402	7.874	4.528	4.921	4.646	4.331	NBC20	4,000	44.1
BBT	BBT40-AGU/NBS13-270	.098 - .512	1.378	4.528	3.819	1.024	1.014	10.630	6.693	3.937	4.882	4.016	2.559	NBC13	6,000	21.4
	BBT50-AGU/NBS20-315	.098 - .787	1.811	5.512	4.921	1.299	1.280	12.402	7.874	4.528	4.921	4.646	4.331	NBC20	4,000	44.1

1. The standard fixed length A: 40 taper= .315, 50 taper= .236. Other lengths are available upon request.
2. The angles of positioning pin to drive key groove and direction of cutting edge are adjustable from 0° to 360°.
3. Clamping nut & wrench included. Collet must be ordered separately.

For NEW BABY COLLET PG. 38



EASILY ADJUSTABLE SPINDLE ANGLE FROM 0° to 90°.

PRECISE ANGLE ADJUSTMENT

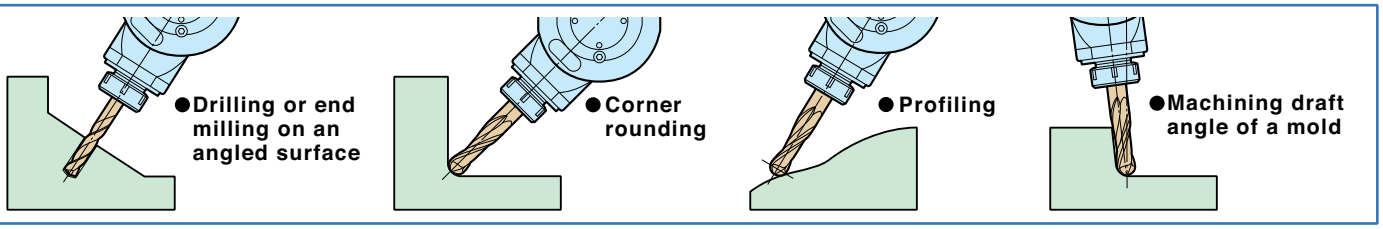
Unique setting mechanism enables the spindle angle to be precisely set at 1° increments.

EXCLUSIVE CLAMPING BOLTS AND NUTS

Specially selected materials and special design for clamping the head guarantees rigidity even for end milling applications.

APPLICATION EXAMPLES

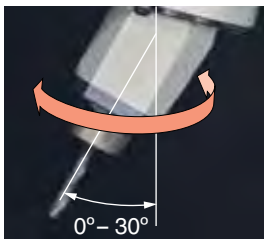
Adjustable AGU Universal Series expands Angle Head capabilities to accomplish various angular machining applications.



AGU SERIES (SPINDLE ANGLE: 0° to 30°) AGU30 TYPE

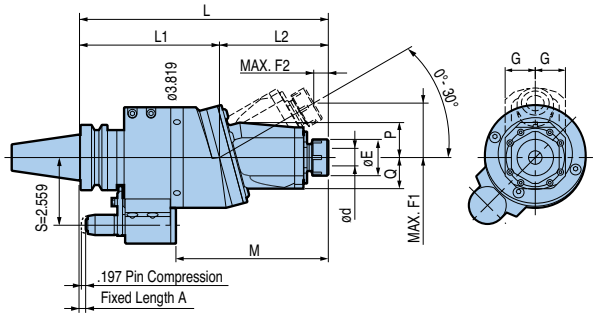
BIG-PLUS® SPINDLE SYSTEM PAT.
DUAL CONTACT
US Patent No. 5352073

Spindle angle is adjustable from 0° to 30°.
Large swivel flange assures high rigidity.

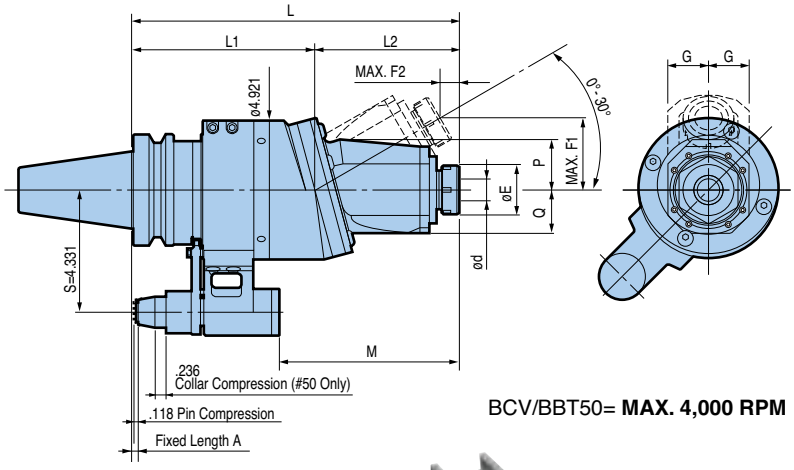


Angle adjustment by aligning divisions

Spindle angle is easily adjustable from 0° to 30° using the scale indication on the body.



BCV/BBT40= **MAX. 6,000 RPM**



BCV/BBT50= **MAX. 4,000 RPM**

BIG-PLUS® tools can be used in machining centers with conventional spindles.

- The cutter rotates in the same direction of the machine spindle.

Stop Block is required. PG. 19

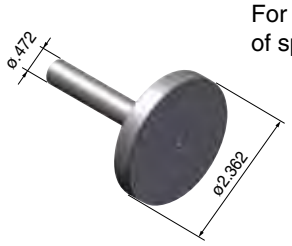
Shank	Model	ød	øE	G	L	L1	L2	M	P	Q	F1	F2	Collet	Speed Ratio	Weight (lbs)
BCV	BCV40-AGU30/NBS13-250	.098-.512	1.378	1.142	9.842	5.71	4.13	5.79	1.34	1.18	2.07	.55	NBC13	1 : 1	15.23
	BCV50-AGU30/NBS20-295	.098-.787	1.811	1.437	11.614	6.50	5.12	6.38	1.77	1.54	2.56	.67	NBC20	1 : 1	35.54
BBT	BBT40-AGU30/NBS13-240	.098-.512	1.378	1.142	9.449	5.315	4.134	5.787	1.339	1.181	2.067	.551	NBC13	1 : 1	15.33
	BBT50-AGU30/NBS20-295	.098-.787	1.811	1.437	11.614	6.496	5.118	6.378	1.772	1.535	2.559	.669	NBC20	1 : 1	35.78

1. The standard fixed length A: 40 taper= .315, 50 taper= .236. Other lengths are available upon request.
2. Clamping nut and wrench are included. Collet must be ordered separately.
3. The angles of positioning pin to drive key groove and direction of cutting edge are adjustable from 0° to 360°.

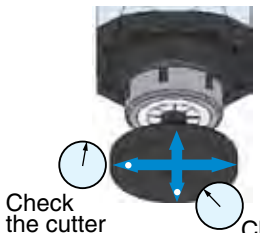
For NEW BABY COLLET PG. 38

- **SETTING DISC** PAT.P (Included accessory)

For the precise adjustment of spindle angle or direction.



Clamp the Setting Disc into the angled spindle.



SPECIAL DESIGNS

Our long experience and expertise enables us to design and manufacture special custom made Angle Heads for almost any customer application.

SPECIAL CUTTER HEAD

Twin Head

For Shell Mill

For Slot Milling Cutter

ULTRA SMALL HEAD

For Small Cutter

SPECIAL ANGLE

35 Degree
New Baby Collet NBS20

115 Degree
New Baby Collet NBS13

180 Degree
New Baby Collet NBS20

EXTRA LONG

New Baby Collet NBS20

FLANGE MOUNT

Milling Chuck 1.250"

Shell Mill Adapter 1.500"

New Baby Collet NBS20

OIL FEEDER

HSK Shank
New Baby Collet NBS13

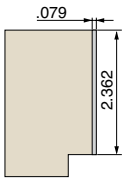
APPLICATION EXAMPLES

• AG90 SERIES (Build-Up Type)

STANDARD

BBT50-AG90/AGH35-230 (with AG35-SM1.000)

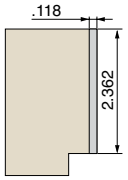
Workpiece: Carbon Steel 1055 (ANSI)
Cutter: 3.150 shell mill
Cutting Depth: .079
Spindle Speed: 600 RPM
Cutting Speed: 492 SFM
Cutting Feed: 14.173 IPM



HIGH RIGIDITY

BBT50-AG90/AGH35-230S (with AG35-SM1.000)

Workpiece: Carbon Steel 1055 (ANSI)
Cutter: 3.150 shell mill
Cutting Depth: .118
Spindle Speed: 600 RPM
Cutting Speed: 492 SFM
Cutting Feed: 14.173 IPM

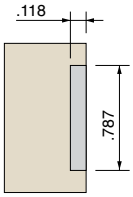


• AG90 SERIES (HMC Type)

STANDARD

BBT50-AG90/HMC1.250-230

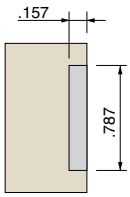
Workpiece: Carbon Steel 1055 (ANSI)
Cutter: .787 2-flute H.S.S. end mill
Cutting Depth: .118
Spindle Speed: 400 RPM
Cutting Speed: 82 SFM
Cutting Feed: 2.835 IPM



HIGH RIGIDITY

BBT50-AG90/HMC1.250-230S

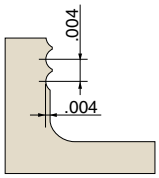
Workpiece: Carbon Steel 1055 (ANSI)
Cutter: .787 2-flute H.S.S. end mill
Cutting Depth: .157
Spindle Speed: 400 RPM
Cutting Speed: 82 SFM
Cutting Feed: 2.835 IPM



• AGU SERIES (AGU30 Type)

BBT40-AGU30/NBS13-240

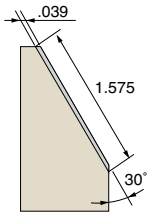
Workpiece: Pre-hardened Steel (HRC40)
Cutter: R.197 2-flute carbide ball nose end mill
Spindle Speed: 6,000 RPM
Cutting Speed: 623 SFM
Cutting Feed: 35.433 IPM
Cutting Depth: .004
Peck Feed: .004



• AGU SERIES (Universal Type)

BBT50-AGU/NBS20-315

Workpiece: Carbon Steel 1055 (ANSI)
Cutter: .787 2-flute H.S.S. end mill
Cutting Depth: .039
Cutting Width: 1.575
Spindle Speed: 400 RPM
Cutting Speed: 82 SFM
Cutting Feed: 3.937 IPM



All new applications are subject to review by engineering in order to confirm the Angle Head will operate within its capacity.

※Results will vary depending on workpiece, cutting tool, machine model, and other conditions.

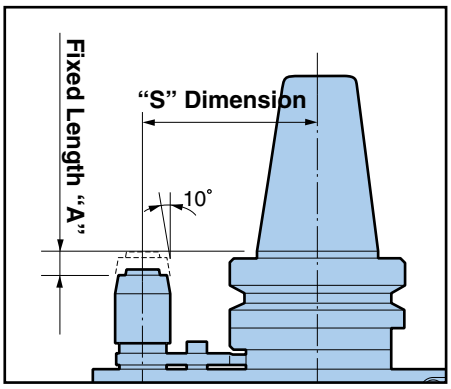
SET UP INFORMATION FOR *ANGLE HEAD*

• Preparing the Stop Block

The Angle Head utilizes a Locating Pin that engages with the Stop Block, which is mounted to the machine spindle to prevent radial movement of the Angle Head during operation. Therefore, it is necessary to use a Stop Block with the proper dimensions to match the Locating Pin of the BIG Angle Head.
Please contact a BIG Kaiser agent if using an existing Stop Block.

1. Standard Setup of the Locating Pin

Please note that the “S” dimension and Fixed Length “A” are not adjustable by the user. If the standard dimensional values shown below are not suitable for your machine, please contact a BIG Kaiser agent.



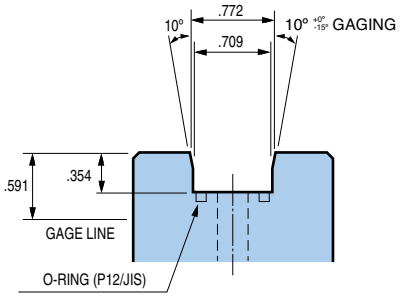
《”S” Dimension》
The distance from the centerline of the Angle Head spindle to the centerline of the Locating Pin.

《Fixed Length “A”》
The axial distance from the gage line to the top of the Locating Pin, when the Locating Pin is properly engaged in the Stop Block.

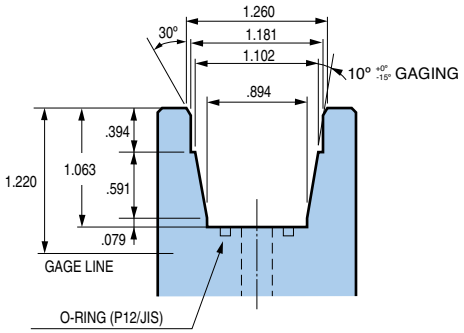
	“S” Dimension	Fixed Length “A”
BCV/BBT40	2.559	.315
BCV/BBT50	4.331	.236

2. Stop Block Dimensions

Please order a Stop Block from the machine tool builder.
Refer to the following diagrams for the proper Stop Block groove dimensions and configurations for use with a BIG Angle Head.



For #40 (S=2.559)



For #50 (S=4.331)

Note: For a BCV50/BBT50 unit with an 3.150 “S” dimension, please use the Stop Block dimensions for BCV40/BBT40, as the Locating Pin dimension differs from that of a standard unit with a 4.331 ”S” dimension.

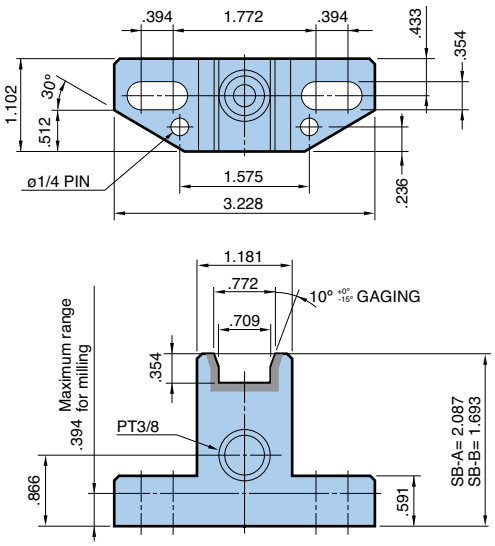
3. Semi-Finished Stop Block

A semi-finished Stop Block has the proper groove form for use with BIG Air Power Spindle, High Spindle and Hi-Jet Holder, as well as additional material to allow the customer to machine the block to the correct height.
(NOTE: Stop Block SB-F is not height-adjustable.)

If a pre-made Stop Block is unobtainable from the machine tool builder, a semi-finished Stop Block can be used.
Please consult with the machine tool builder for selection, machining, and mounting of the semi-finished Stop Block.

For #40 (S=2.559)

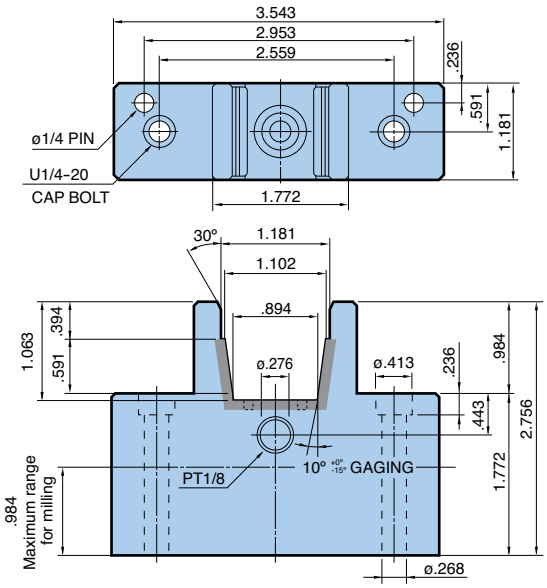
• MODEL: SB-A/SB-B



1. Adjustment to the required height by milling the base.
2. Fix the stop block by inserting two dowel pins (ø1/4).

For #50 (S=4.331)

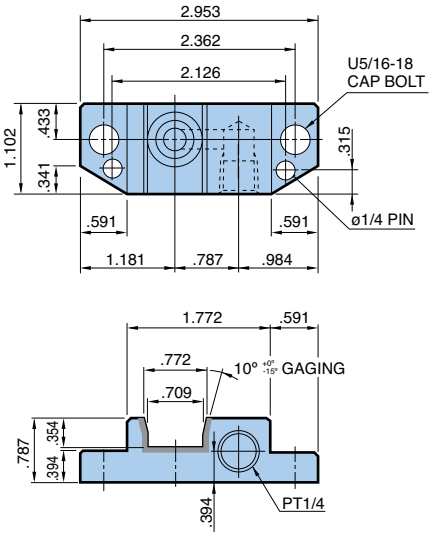
• MODEL: SB-G/E



1. Adjustment to the required height by milling the base.
2. Fix the stop block by inserting two dowel pins (ø1/4).

For #40 (S=2.559)

• MODEL: SB-F

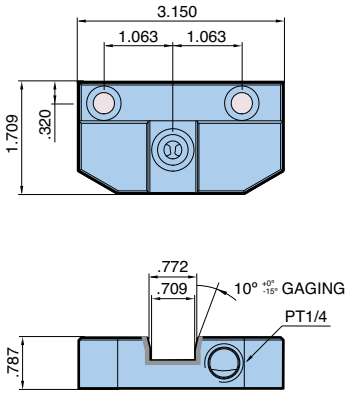


1. Fix the stop block by inserting two dowel pins (ø1/4).

For #40 (S=2.559)

• MODEL: SB-H40

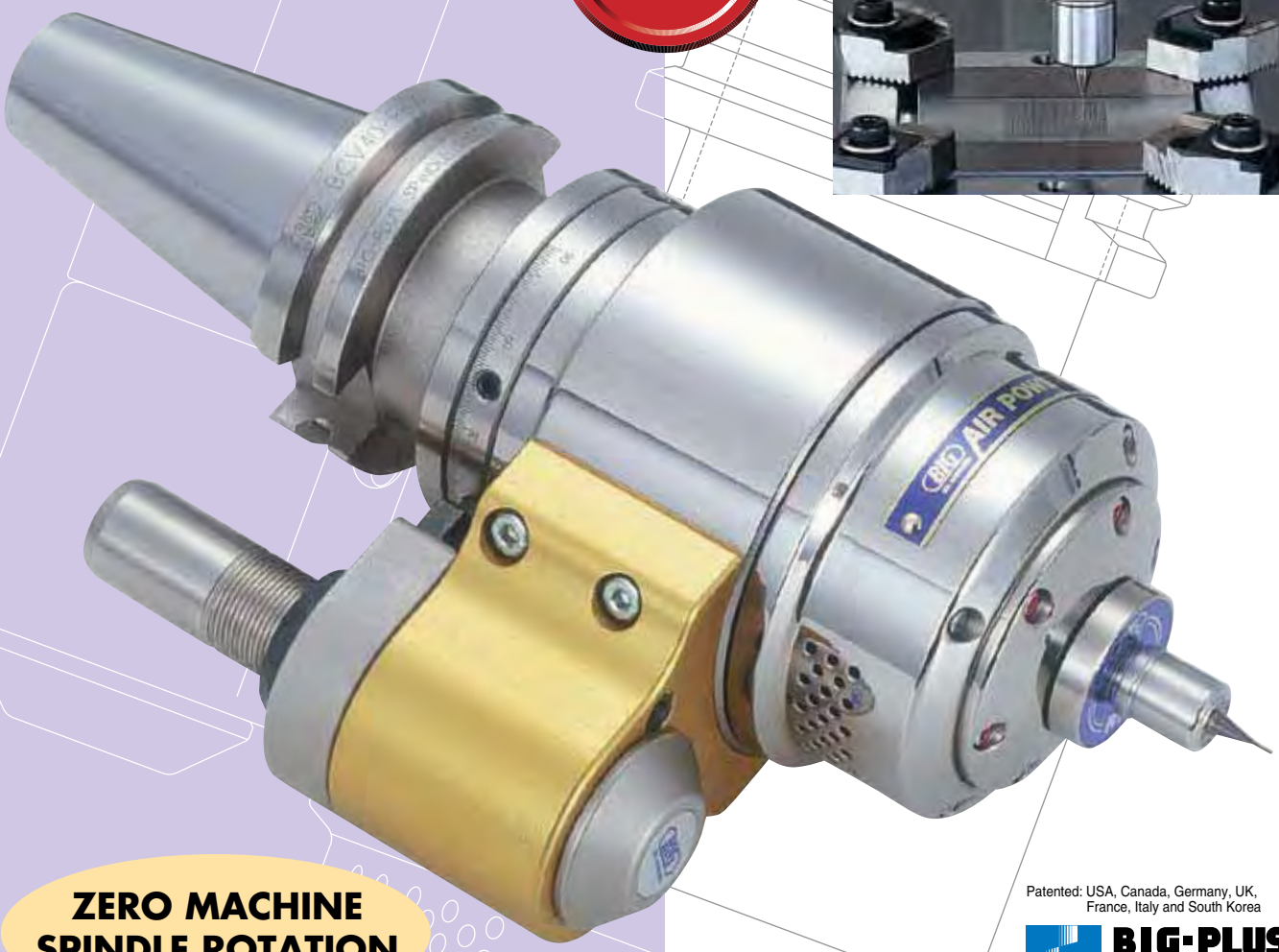
For use with most Haas 40 taper machines.



Note: on the sketch indicates heat treatment (HRC45−50), all other surfaces can be milled.

AIR POWER SPINDLE

MAX
80,000
RPM



ZERO MACHINE SPINDLE ROTATION

Patented: USA, Canada, Germany, UK, France, Italy and South Korea

BIG-PLUS®
SPINDLE SYSTEM PAT.
DUAL CONTACT
US Patent No. 5352073

High-speed micro-machining can be done on a normal machining center, eliminating the need of an expensive high-speed machine.

Automatic Tool Change

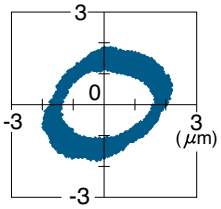
ATC type is available by supplying air via a stop block to enhance productivity with unmanned operation.

Using Air Power Spindle for super high spindle speed, an expensive high-speed machine is no longer required.

Dynamic runout accuracy

Most problems associated with micro-machining are caused by poor dynamic runout of a machine spindle. We have established a runout measuring system that can detect spindle movement during rotation at high speed and achieved the best dynamic runout accuracy.

Plotted position of a test bar at the max. spindle speed. (reference value)



RBX
(80,000 RPM)

Improved machining accuracy

Extended tool life

Superior surface finish

Ultra low vibration design

Perfect dynamic balance is obtained for ultra low vibration.
A notch-free nut eliminates unbalance at high speed rotation.

Cutting tool is clamped with an exclusive wrench.

Environmental measures

Saving power consumption

Compared with power consumption of a machine spindle, Air Power Spindle minimizes the loss of energy.

Air pressure: 90 PSI, Air consumption: 7 CFM
(e.g.: Power output of a compressor: 5 HP 8.8 CFM)

Low noise design (Within 65 dB)

Air channels and turbine are optimized for low noise.
Cutting noise of micro tools can be heard.

2 types of Air Power Spindle

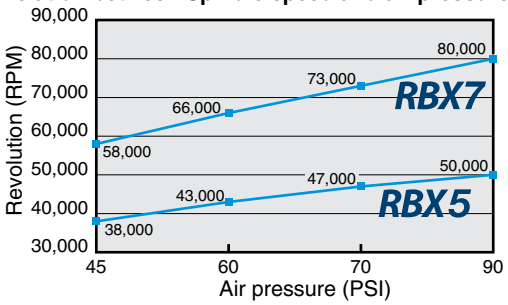
◎ ···· Optimum △ ···· Dependent upon cutting conditions
○ ···· Acceptable × ···· Not recommended for use

		RBX7	RBX5
Drill	ø0.1 - 0.3mm	○	○
	ø0.3 -0.5mm	◎	○
	ø0.5 - 1.0mm	○	◎
	ø1.0 - 1.5mm	×	△
End mill	ø0.1 - 1.0mm	◎	◎
	ø1.0 - 1.5mm	△	◎
Jig grinding		◎	◎

The table is just for reference. Machining range may change according to material, cutting conditions and cutting tools.

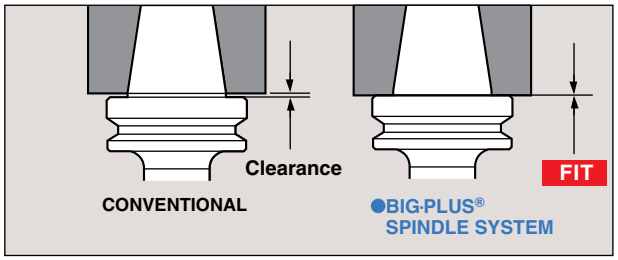
	RBX7	RBX5
Practical spindle speed (RPM)	**60,000 - 80,000**	**40,000 - 50,000**
Clamping range	ø0.45 - ø4.05mm (.018"-.159")	
T.I.R. at nose	Less than 1μm (.00004")	
Air pressure	Less than 0.6 MPa (90 PSI)	
Air flow	200L/min [ANR] (7 CFM)	

Relation between Spindle speed and air pressure (Reference)



BIG-PLUS® is standard on all BT & CV taper versions PAT.

Simultaneous taper and flange contact between the machine spindle and tool holder provides improved rigidity and ATC repeatability. Interchangeability with conventional spindles ensures suitability for your existing machines.



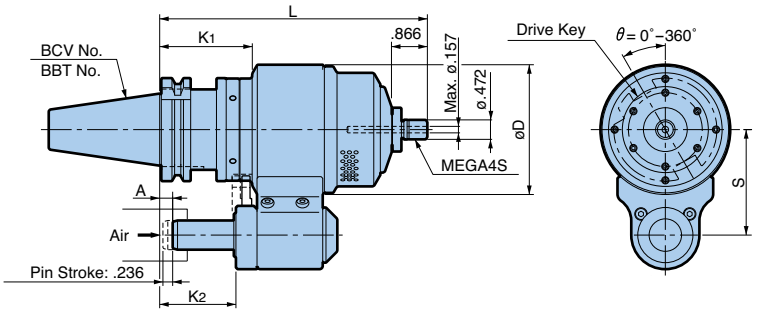
BIG-PLUS® SPINDLE SYSTEM PAT.
DUAL CONTACT
US Patent No. 5352073

BIG-PLUS® tools can be used in machining centers with conventional spindles.

For automatic tool change

The compressed air is supplied through the stop block which also enables automatic tool change.

BIG-PLUS® SPINDLE SYSTEM PAT.
DUAL CONTACT
US Patent No. 5352073



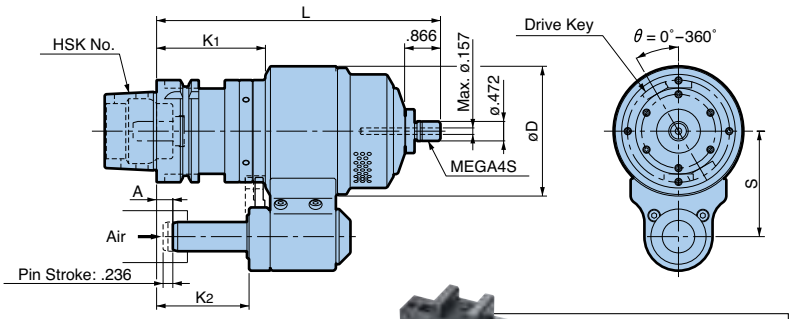

Stop Block is required. PG. 35

BIG-PLUS® tools can be used in machining centers with conventional spindles.

Shank	Model	Practical Spindle Speed (RPM)	L	øD	K1	K2	S	A	Weight (lbs)
BCV	BCV40-RBX7-4S-165-65	60,000 - 80,000	6.496	3.150	2.244	1.850	2.559	- .394 - 1.378	8.82
	-RBX5-4S-165-65	40,000 - 50,000		3.780					11.02
	BCV50-RBX7-4S-170-80	60,000 - 80,000	6.693	3.937	2.441	2.047	3.150	- .197 - 1.575	19.18
	-RBX5-4S-170-80	40,000 - 50,000							21.38
BBT	BBT30-RBX7-4S-152-55	60,000 - 80,000	5.984	3.150	1.102	1.299	2.165	- .394 - .866	5.95
	BBT40-RBX7-4S-151-65	60,000 - 80,000	5.945	3.150	1.693	1.299	2.559	- .945 - .827	8.82
	-RBX5-4S-151-65	40,000 - 50,000		3.780					11.02
	BBT50-RBX7-4S-166-80	60,000 - 80,000	6.535	3.937	2.283	1.890	3.150	- .354 - 1.417	19.18
	-RBX5-4S-166-80	40,000 - 50,000							21.38

1. Nut and wrench are included. Collet must be ordered separately.

For MICRO COLLET PG. 26




Stop Block is required. PG. 35

Shank	Model	Practical Spindle Speed (RPM)	L	øD	K1	K2	S	A	Weight (lbs)
HSK-A	HSK-A63-RBX7-4S-175-65	60,000 - 80,000	6.890	3.150	2.638	2.244	2.560	0 - 1.772	8.38
	-RBX5-4S-175-65	40,000 - 50,000		3.780					10.58
	HSK-A100-RBX7-4S-180-80	60,000 - 80,000	7.087	3.937	2.835	2.441	3.150	.197 - 1.969	18.52
	-RBX5-4S-180-80	40,000 - 50,000							20.72

1. Nut and wrench are included. Collet must be ordered separately.

For MICRO COLLET PG. 26

[For manual tool change]

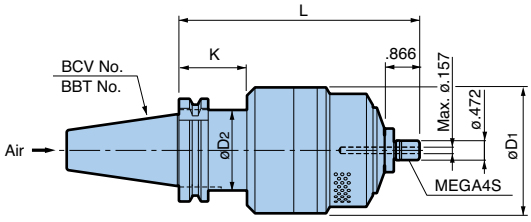
Easily mounted on machines without a stop block.

When ordering, please exchange the end of model number H.

Order Example
BCV40-RBX7-4S-165-65
↓
BCV40-RBX7-4S-165H

For compressed air through the machine spindle.

BIG-PLUS® SPINDLE SYSTEM PAT.
DUAL CONTACT
US Patent No. 5352073



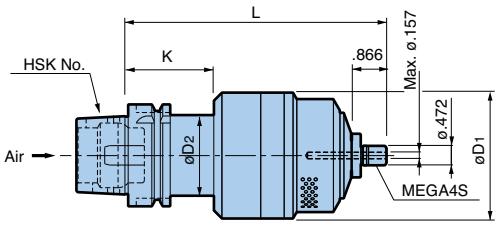
BIG-PLUS® tools can be used in machining centers with conventional spindles.

Shank	Model	Practical Spindle Speed (RPM)	L	øD1	øD2	K	Weight (lbs)
BCV	BCV40-RBX7C-4S-150	60,000 - 80,000	5.906	3.071	1.953	1.693	6.83
	-RBX5C-4S-150	40,000 - 50,000		3.780			9.04
	BCV50-RBX7C-4S-145	60,000 - 80,000	5.709	3.071	2.677	1.496	12.79
	-RBX5C-4S-145	40,000 - 50,000		3.780			14.99
BBT	BBT40-RBX7C-4S-150	60,000 - 80,000	5.906	3.071	1.969	1.693	6.83
	-RBX5C-4S-150	40,000 - 50,000		3.780			9.04
	BBT50-RBX7C-4S-160	60,000 - 80,000	6.299	3.071	2.677	2.087	13.89
	-RBX5C-4S-160	40,000 - 50,000		3.780			16.09

1. Nut and wrench are included. Collet must be ordered separately.

For MICRO COLLET PG. 26

Caution Compressed air to drive the Air Power Spindle must be clean. Coolant should not be supplied through the spindle on the machine that uses the Air Power Spindle.



Shank	Model	Practical Spindle Speed (RPM)	L	øD1	øD2	K	Weight (lbs)
HSK-A	HSK-A63-RBX7C-4S-160	60,000 - 80,000	6.299	3.071	1.969	2.087	6.39
	-RBX5C-4S-160	40,000 - 50,000		3.780			8.60
	HSK-A100-RBX7C-4S-165	60,000 - 80,000	6.496	3.071	2.677	2.283	10.80
	-RBX5C-4S-165	40,000 - 50,000		3.780			13.00

1. Nut and wrench are included. Collet must be ordered separately.

For MICRO COLLET PG. 26

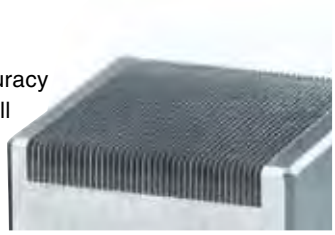
Caution Compressed air to drive the Air Power Spindle must be clean. Coolant should not be supplied through the spindle on the machine that uses the Air Power Spindle.

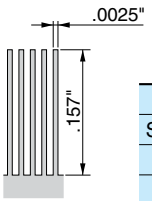
APPLICATION EXAMPLES

RBX7

Aluminum

Outstanding runout accuracy permits super thin wall cutting.

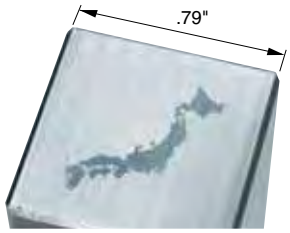




Cutter	ø.020" Rib end mill
Spindle Speed	70,000 RPM
Feed	59 IPM
D.O.C.	Ad= .0008"

Prehardened Steel
HRC40

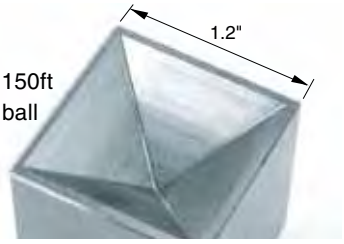
Drastic time reduction by ultra high speed rotation.
Excellent dynamic runout accuracy makes DOC of .0002" clearly visible.



Cutter	R .004" Ball nose end mill
Spindle Speed	80,000 RPM
Feed	15.75 IPM
D.O.C.	Ad= .0004"

Prehardened Steel
HRC40

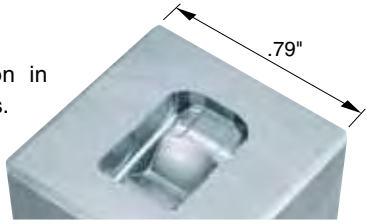
Overall cutting length of 2,150ft can be achieved with one ball nose endmill.
Drastically extended tool life.



Cutter	R .020" Ball nose end mill
Spindle Speed	65,000 RPM
Feed	1.63 IPM
D.O.C.	Ad= .008" Rd= .002"

Prehardened Steel
HRC40

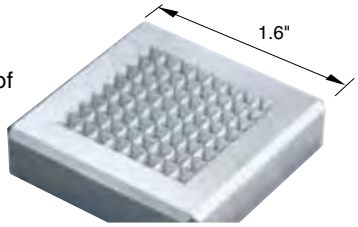
Original 5hour operation in MC is reduced to 2 hours.



Cutter	R .008" Ball nose end mill
Spindle Speed	70,000 RPM
Feed	39.4 IPM
D.O.C.	Ad= .0004"

Prehardened Steel
HRC40

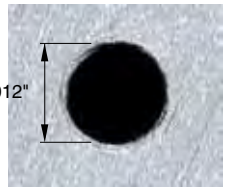
No thermal expansion of spindle results in finely detailed surface finish!



Cutter	R .020" Ball nose end mill
Spindle Speed	75,000 RPM
Feed	15.75 IPM
D.O.C.	Ad= .0008"

Aluminum

High-precision drilling is possible without center drill operation.
Even after 3,500 holes, no problems can be found on cutting edge.



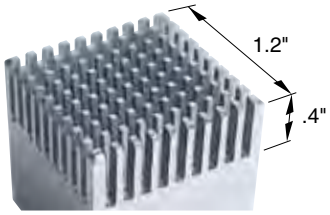
depth= .06"

Cutter	ø.012" Drill
Spindle Speed	75,000 RPM
Feed	7.87 IPM
Peck	.012"

RBX5

Prehardened Steel
HRC40

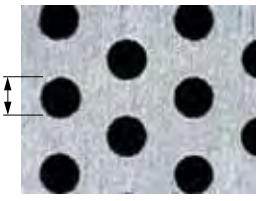
Even a taper endmill that has high cutting forces can achieve stable cutting.



Cutter	ø.060" Rib end mill
Spindle Speed	40,000 RPM
Feed	39.4 IPM
D.O.C.	Ad= .002"

Stainless Steel
SUS303

Tool life is doubled with over 1,200 holes and cutting time is reduced 1/3.



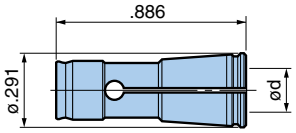
depth= .067"

Cutter	ø.020" Drill
Spindle Speed	40,000 RPM
Feed	787 IPM
Peck	.0004"

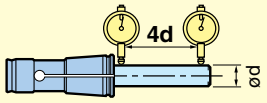
ACCESSORIES for Air Power Spindle

• MICRO COLLET

Clamping range from ø.018" to ø.159" with .004" increments.
Slim body and outstanding clamping force are ideal for micro-machining.
Collet class AA, max. runout 1 micron at collet nose.



Collet Class	Max. T.I.R.	
	At nose	At end of test bar
AA	.00004"	.00012"



MEGA4S

Model	Clamping Range ød
NBC4S-0.5AA	.018 - .022
-0.6AA	.022 - .026
-0.7AA	.026 - .030
-0.8AA	.030 - .033
-0.9AA	.033 - .037

Model	Clamping Range ød
NBC4S-1.0AA	.037 - .041
-1.1AA	.041 - .045
-1.2AA	.045 - .049
-1.3AA	.049 - .053
-1.4AA	.053 - .057
-1.5AA	.057 - .061
-1.6AA	.061 - .065
-1.7AA	.065 - .069
-1.8AA	.069 - .073
-1.9AA	.073 - .077

Model	Clamping Range ød
NBC4S-2.0AA	.077 - .081
-2.1AA	.081 - .085
-2.2AA	.085 - .089
-2.3AA	.089 - .093
-2.4AA	.093 - .096
-2.5AA	.096 - .100
-2.6AA	.100 - .104
-2.7AA	.104 - .108
-2.8AA	.108 - .112
-2.9AA	.112 - .116

Model	Clamping Range ød
NBC4S-3.0AA	.116 - .120
-3.1AA	.120 - .124
-3.175AA	.123 - .127
-3.2AA	.124 - .128
-3.3AA	.128 - .132
-3.4AA	.132 - .136
-3.5AA	.136 - .140
-3.6AA	.140 - .144
-3.7AA	.144 - .148
-3.8AA	.148 - .152
-3.9AA	.152 - .156
-4.0AA	.156 - .159

• AIR FILTER REGULATOR for RBX

Air filtering for turbine drive.

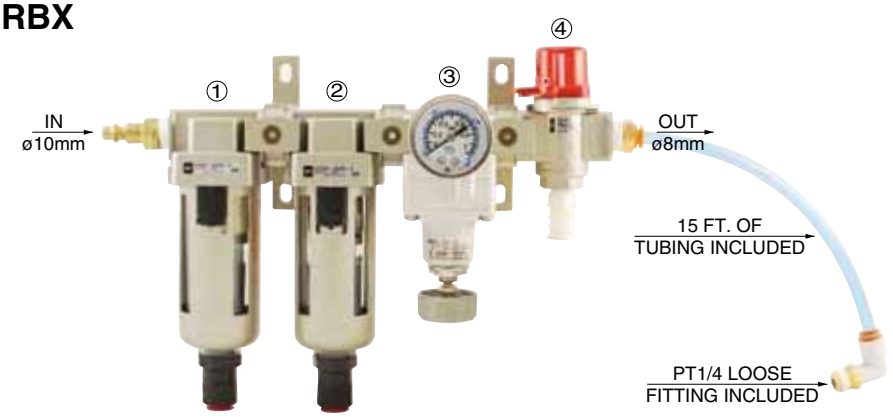
Model	XF1-NPT

①Mist separator (filtration: .012")

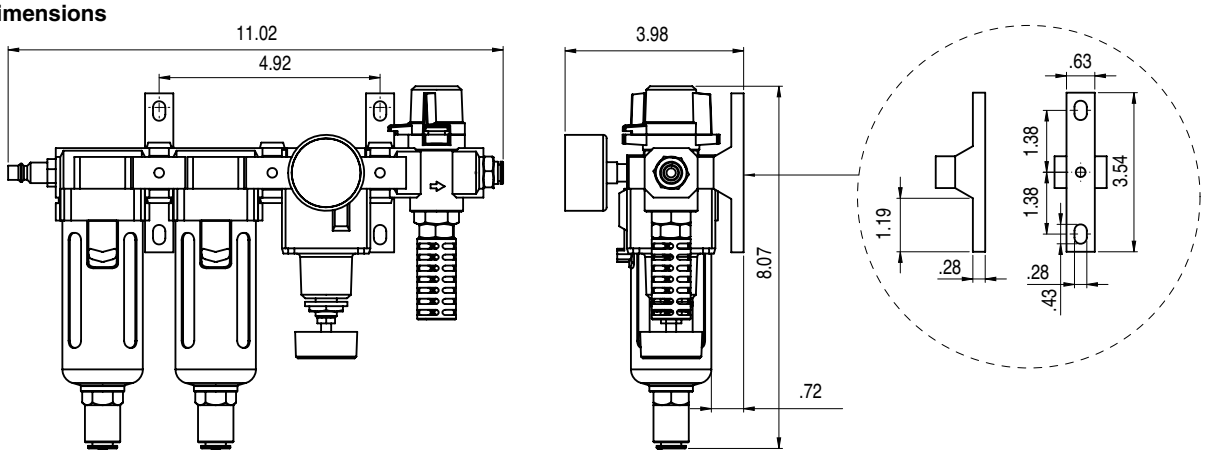
②Micro mist separator (filtration: .0004")

③Precision regulator

④Three port valves for extracting pressurization (non-grease type)



• Dimensions



Speed Increaser

HIGH SPINDLE

PAT.

MAX 20,000 RPM

Patented: USA, Canada, Germany, UK, France, Italy and South Korea

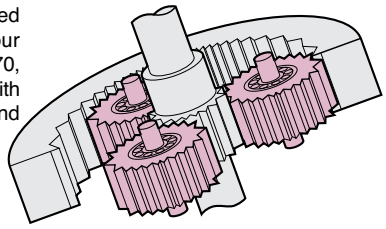
BIG-PLUS® SPINDLE SYSTEM PAT.
DUAL CONTACT
US Patent No. 5352073

High Spindle improves drilling and end milling performance on existing machines by multiplying the spindle speed 4, 5 or 6 times.

HIGH SPEED MACHINING INCREASES PRODUCTIVITY WITH GREATER ACCURACY AND SUPERIOR FINISH

Reinforced gear driving system

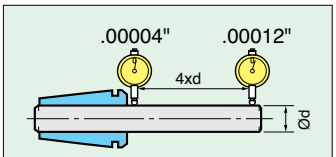
The planetary gears, which have been constantly upgraded since the development of our first "High Spindle" back in 1970, achieves smooth operation with minimal heat generation and high torque transmission.



High precision collet chuck system

The BIG New Baby Collet is world renowned for its unmatched accuracy and precision.
It offers concentricity close to sub-micron.

.00004" at nose
[New Baby Collet]

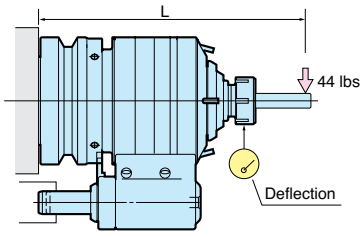


Collet Class	Max. Runout	
	At nose	At 4xd
AA	.00004"	.00012"

Runout at spindle nose in GTG4, 5, & 6 models guaranteed to be within .0002". Runout at 4x the distance of the cutter dia. in GTG4, 5 & 6 models guaranteed to be within .0004".

Rigidity increased 1.7 times

Larger diameter body and spindle with double angular contact bearings and reinforced locating pin assembly greatly increases rigidity.



Model	L	Deflection	Comparison Against Previous Model
BBT40-GTG5-10-140-65	7.874	.0014	58% less
BBT50-GTG6-10-158-80	8.661	.0010	78% less
BBT50-GTG4-16-177-80	9.449	.0004	93% less

Obtain optimum cutting tool performance

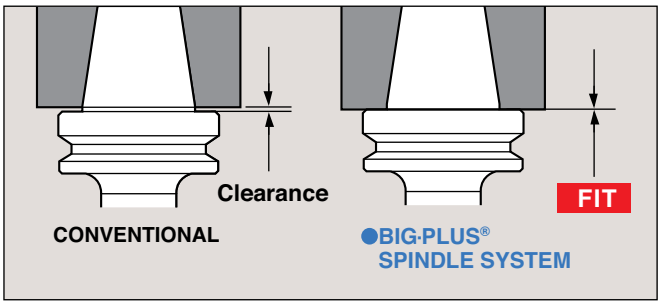
High efficiency cutting tools have been developed for advanced high speed machining. High Spindle maximizes the performance of these cutting tools by increasing the spindle speeds up to higher required levels.

Reduce load to machine spindle

Continuous use at high revolutions results in shorter life span of the machine spindle due to excessive load to its motor and bearings. High Spindle reduces this load and greatly extends the life of the expensive machine spindle.

BIG-PLUS® is standard on all BT & CV taper versions PAT.

Simultaneous taper and flange contact between the machine spindle and tool holder provides improved rigidity and ATC repeatability. Interchangeability with conventional spindles ensures suitability for your existing machines.



BIG-PLUS® SPINDLE SYSTEM PAT.
DUAL CONTACT
US Patent No. 5352073

BIG-PLUS® tools can be used in machining centers with conventional spindles.

Higher durability (Advanced sealing method)

The advanced non-contact sealing method provides improved protection against coolant and particle contamination more than any other seals.

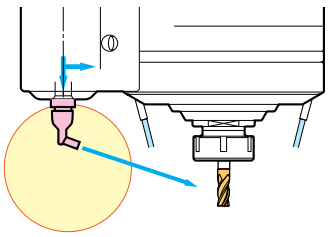
Multi-directional coolant supply

Universal coolant nozzles are capable of being adjusted to suit the length of cutting tool. Thus, the maximum coolant delivery to the cutting edge is assured.

Note: High Spindle can be operated without coolant running through the housing.

● Pinpoint coolant jet for shorter cutting tools

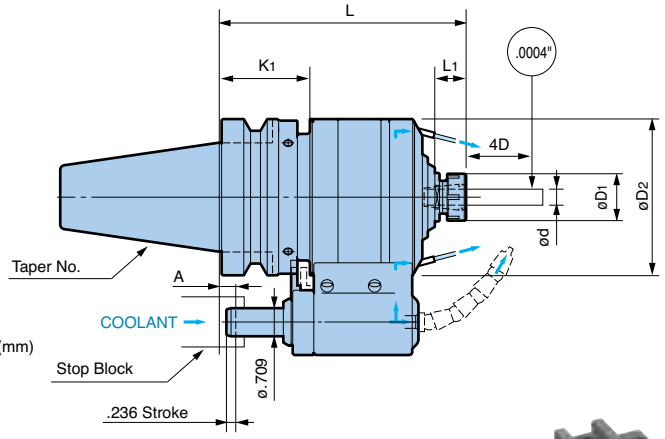
A 1/8" pipe tap thread is provided in the High Spindle so that various types of customer supplied coolant-jet nozzles can be utilzed which will provide pinpoint delivery to the cutting edge of short tools (BCV/BBT taper models only).

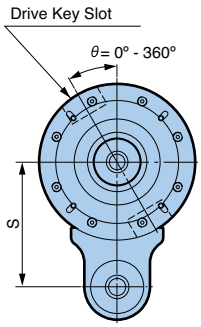


For Machining Centers

Higher spindle speeds are available without excessive load on the machine spindle.

BIG-PLUS® SPINDLE SYSTEM PAT.
DUAL CONTACT
US Patent No. 5352073





• Model Description

BCV40 - GTG 5 - 10 - 155 - 65

- BIG-PLUS® Shank No.
- Gear Type
- Speed Ratio
- Max. Capacity (mm)
- L= Projection Length (mm)

Stop Block is required. PG. 35

BIG-PLUS® tools can be used in machining centers with conventional spindles.

Shank	Model	ød	L	L1	øD1	øD2	K1	S	A	Speed Ratio	Max. RPM	Weight (lbs)
BCV	BCV40-GTG5-10-155-65	.059 - .394	6.102	.787	1.181	3.150	2.283	2.559	-.354 +.236	4.67	20,000	11.0
	BCV50-GTG6-10-163-80	.059 - .394	6.417	.787	1.181	3.937	2.480	3.150	-.157 +.433	5.67	20,000	19.8
	BCV50-GTG4-16-182-80	.098 - .630	7.165	1.004	1.654	4.331	2.480	3.150	-.157 +.433	3.80	15,000	23.8
BBT	BBT40-GTG5-10-140-65	.059 - .394	5.512	.787	1.181	3.150	1.693	2.559	-.354 +.236	4.67	20,000	10.6
	BBT50-GTG6-10-158-80	.059 - .394	6.220	.787	1.181	3.937	2.283	3.150	-.354 +.236	5.67	20,000	19.4
	BBT50-GTG4-16-177-80	.098 - .630	6.969	1.004	1.654	4.331	2.283	3.150	-.354 +.236	3.80	15,000	23.4

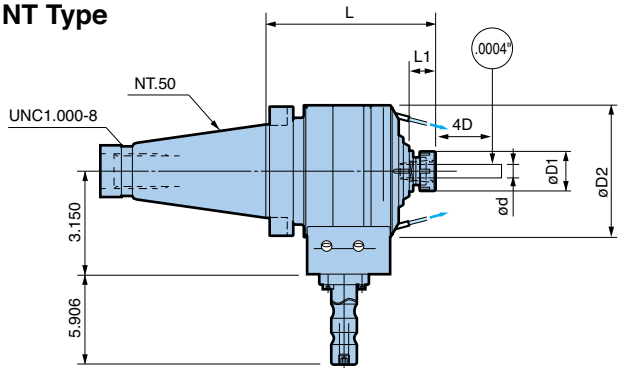
1. 1 pc. of maximum size collet is included as standard accessory. (GTG5, 6= NBC10-10AA, GTG4= NBC16-16AA)
2. θ (angle of locating pin to drive key groove) is adjustable to any degree from 0° - 360°.
3. Special air purge oil mist lubrication style is available upon request for machining graphite, ceramic, tungsten and other composite materials.
4. Please be aware of the risk of fire when using an oil based coolant.

For NEW BABY COLLET PG. 38
For POSITIONING PINS PG. 35

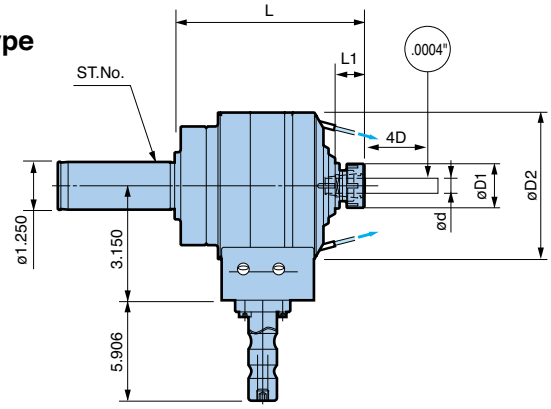
For Conventional Machines

Higher spindle speeds increase the productivity on conventional machines.

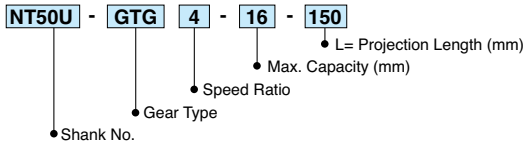
NT Type



ST Type



• Model Description

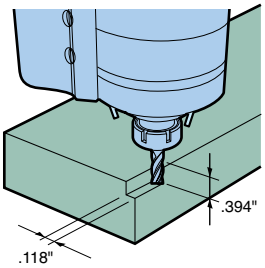
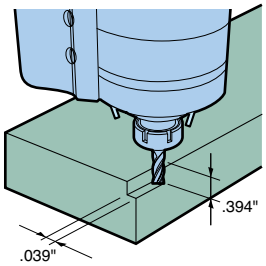
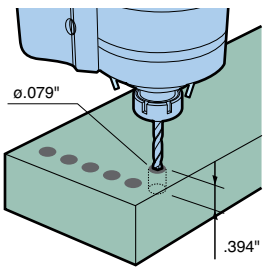
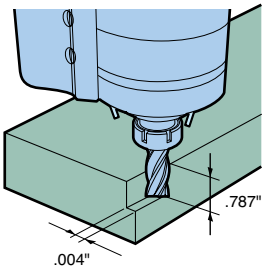


Model	Shank	ød	L	L1	øD1	øD2	Speed Ratio	Max. RPM	Weight (lbs)
NT50U-GTG4-16-150	50 taper	.098-.630	5.906	1.004	1.654	4.331	3.80	15,000	20.5
ST1.250-GTG4-16-155	1-1/4" cylindrical	.098-.630	6.102	1.004	1.654	4.331	3.80	15,000	15.9

1. 5 pcs of NBC collets are included. (NBC16-6, 8, 10, 12 & 16AA)
2. Please be aware of the risk of fire when using an oil based coolant.

For NEW BABY COLLET PG. 38

APPLICATION EXAMPLES

MODEL	BBT40-GTG5-10-140	BBT50-GTG6-10-158	BBT50-GTG6-10-158	BBT50-GTG4-16-177
CUTTER	Solid carbide end mill ø.315"/ 2 flutes	Solid carbide end mill ø.236"/ 2 flutes	Solid carbide drill ø.079"	Solid carbide end mill ø.630"
MATERIAL	Duralumin (A-2017)	1055	Duralumin (A-2017)	Duralumin (A-2017)
REVOLUTION	20,000 RPM	16,000 RPM	20,000 RPM	15,000 RPM
FEED RATE	118.1 IPM	137.8 IPM	78.7 IPM	39.4 IPM
RESULT	High metal removal rate 5.5 cu.in./min.	High metal removal rate 2.1 cu.in./min.	Extended tool life 1,200 holes by 1 drill	Surface roughness RMS max. .00008"
				

※Results will vary depending on workpiece, cutting tool, machine model, and other conditions.
※The rigidity and concentricity are often affected by the projection length of a cutting tool. It is recommended to keep the projection as short as possible.

Coolant Feed

Hi-JET HOLDER

PAT.

for water-soluble coolant only

Spindle speeds up to **10,000 RPM**

for 40 tapers and 8,000 RPM for 50 tapers

Patented: USA, Canada, Germany, UK, France, Italy and South Korea

BIG-PLUS® SPINDLE SYSTEM PAT.

DUAL CONTACT

US Patent No. 5352073

Bearings in a separate housing from the coolant for extended life.

ENSURING COOLANT DELIVERY TO THE CUTTING EDGE REQUIRED FOR HIGH SPEED CUTTING.

High speed available

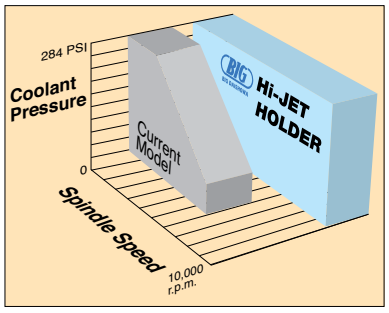
Spindle speeds up to 10,000 RPM 40 tapers

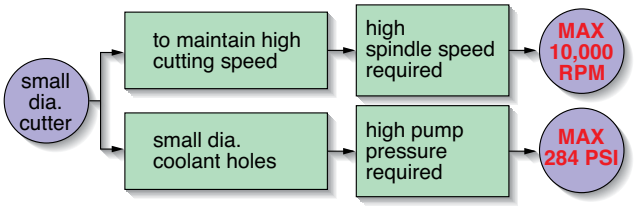
Spindle speeds up to 8,000 RPM 50 tapers

To meet the increasing demand for high-speed operations due to use of carbide cutters, Hi-Jet Coolant Feed Holder models are available that run at speeds up to 10,000 RPM for 40 taper and 8,000 RPM for 50 tapers. Their compact design and 360 adjustability assures compatibility with automatic tool changers of machining centers.

Suitable for small dia. cutters due to high speed and pressure

Small diameter cutters require high spindle speeds to maintain high cutting speed and high coolant pressure due to their small dia. coolant holes. The BIG Hi-Jet Holder accepts even smaller diameter shanks, providing high spindle speeds (Max. 10,000 RPM) and high coolant pressure (Max. 284 PSI)

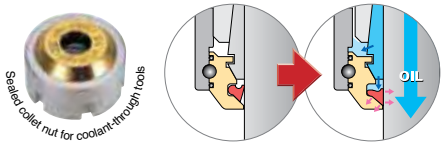




For New Baby Chuck type (ONBS) coolant sealed nut

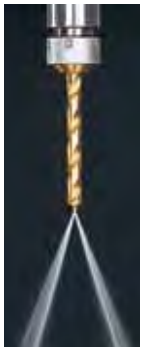
BABY PERFECT SEAL PAT.

US Patent No. 5975817



Perfect sealing by utilizing coolant pressure!

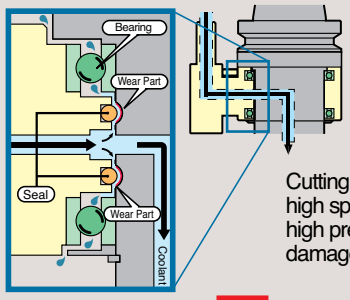
- For high speed cutting
- Prevents the ingress of particles to the collet and body
- Special collets no longer necessary



Non-contact seal design eliminates wear damage to body

With the Hi-Jet Holder, coolant runs through a separate sealing section called the Merit Set. In the Merit Set, the sealing ring that stays stationary when the body rotates does not come in contact with the body. Only the sealing plate, which rotates with the body, has actual contact with the body wear. As a result, there is no friction from any seals which can cause body wear. The only wear will be to the Merit Set seals, which are easily replaceable parts. Coolant contamination and high speed operations are no longer limiting factors to the service life of the Coolant Feed Holders.

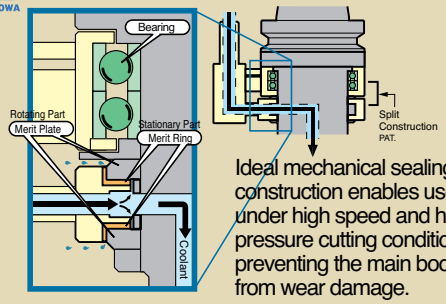
Competitor Design



Cutting particles in coolant, high speed operation and high pressure cause wear damage.

BIG Hi-JET HOLDER

BIG DAISHOWA

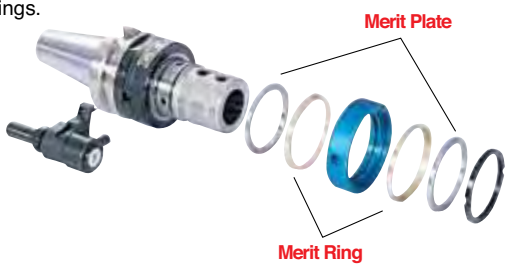


Ideal mechanical sealing construction enables use under high speed and high pressure cutting conditions, preventing the main body from wear damage.

US Patent No. 5439333

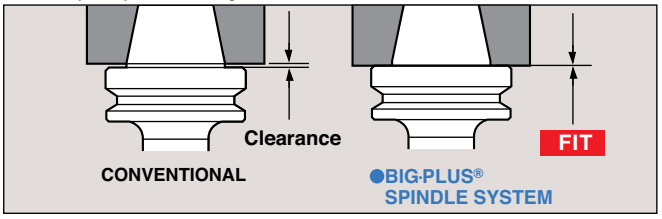
Easy maintenance by replacement of worn parts

Easily replaceable Merit Sets consist of Merit Plates, Merit Rings and O-Rings.



BIG-PLUS® is standard on all BT & CV taper versions PAT.

Simultaneous taper and flange contact between the machine spindle and tool holder provides improved rigidity and ATC repeatability. Interchangeability with conventional spindles ensures suitability for your existing machines.



BIG-PLUS® SPINDLE SYSTEM PAT.
DUAL CONTACT
US Patent No. 5352073

BIG-PLUS® tools can be used in machining centers with conventional spindles.

NEW BABY CHUCK TYPE

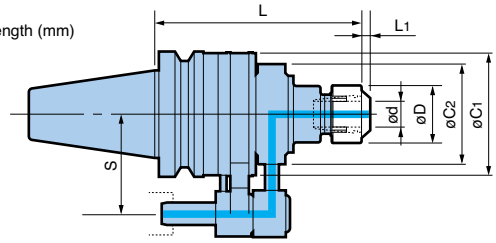
Suitable for small diameter drills, gun drills and end mills due to high precision New Baby Collet.

BIG-PLUS® SPINDLE SYSTEM PAT.
DUAL CONTACT
US Patent No. 5352073

• Model Description

CV40 - ONBS 13 N - 165

- 165: L= Projection Length (mm)
- N: Hi-Jet Type
- 13: Max. Capacity (mm)
- ONBS: Oil Hole New Baby Chuck
- CV40: Shank No.




Stop Block is required. PG. 35

BIG-PLUS® tools can be used in machining centers with conventional spindles.

Shank	Model	ød	øD	L	øC1	øC2	S	Max. RPM	Merit Set 2 pcs. of Merit Ring and 2 pcs. of Merit Plate	Weight (lbs)
CV	CV40-ONBS13N-165	.118 - .512	1.378	6.614	3.213	2.874	2.559	10,000	MES-40	8.8
	-ONBS20N-165	.118 - .787	1.811			3.150		8,000	MES-50	9.5
	CV50-ONBS13N-165	.118 - .512	1.378	6.614	3.921	3.150	3.150	8,000	MES-50	16.1
	-ONBS20N-165	.118 - .787	1.811			3.150		8,000	MES-50	16.5
BBT	BBT40-ONBS13N-165	.118 - .512	1.378	6.614	3.213	2.874	2.559	10,000	MES-40	8.8
	-ONBS20N-165	.118 - .787	1.811			3.150		8,000	MES-50	9.5
	BBT50-ONBS13N-165	.118 - .512	1.378	6.614	3.921	3.150	3.150	8,000	MES-50	16.1
	-ONBS20N-165	.118 - .787	1.811			3.150		8,000	MES-50	16.5

1. Collet, adjusting screw and wrench are optional items.
2. Max. coolant pressure is 284 PSI.
3. Clamping nut is sold seperately. Please order Baby Perfect Seal (BPS) for your application.

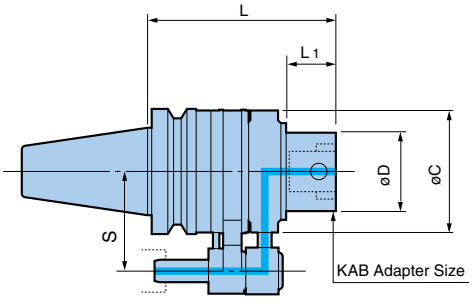
For NEW BABY COLLET PG. 38
For POSITIONING PINS PG. 35
For BABY PRERFECT SEAL PG. 37

KAISER SHANK TYPE

• Model Description

BBT50 - OCK 6 N - 139

- 139: L= Projection Length (mm)
- N: Hi-Jet Type
- 6: KAB Adapter Size
- OCK: Kaiser Shank
- BBT50: Shank No.




Stop Block is required. PG. 35

BIG-PLUS® tools can be used in machining centers with conventional spindles.

Shank	Model	Adapter Size	D	L	L1	C	S	Max. RPM	Merit Set 2 pcs. of Merit Ring and 2 pcs. of Merit Plate	Weight (lbs)
CV	CV40-OCK6N-144	KAB6	2.520	5.669	1.102	3.921	2.559	5,000	MES-65	13.4
	CV50-OCK6N-142	KAB6	2.520	5.591	1.063	3.921	3.150	5,000	MES-65	15.9
	-OCK7N-165	KAB7	3.543	6.496	1.358	5.102	3.150	4,000	MES-90	27.0
BBT	BBT40-OCK6N-149	KAB6	2.520	5.866	1.102	3.921	2.559	5,000	MES-65	13.4
	BBT50-OCK6N-139	KAB6	2.520	5.472	1.063	3.921	3.150	5,000	MES-65	15.9
	-OCK7N-165	KAB7	3.543	6.496	1.358	5.102	3.150	4,000	MES-90	27.0

1. Max. coolant pressure is 284 PSI.

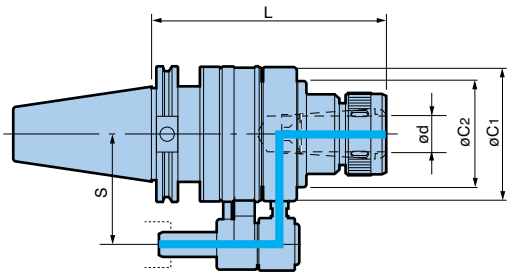
COLLET CHUCK TYPE

Accepts popular TG100 single angle style collets.

• Model Description

CV40 - OHC 1.000 N - 175

- CV40 - Shank No.
- OHC - Oil Hole Collet Chuck
- 1.000 - Max. Capacity (in)
- N - Hi-Jet Type
- 175 - L= Projection Length (mm)



Stop Block is required. PG. 35

Shank	Model	ød	Collet Series	L	øC1	øC2	S	Max. RPM	Merit Set 2 pcs. of Merit Ring and 2 pcs. of Merit Plate	Weight (lbs)
CV	CV40-OHC1.000N-175	.093 - 1.000	TG100	6.890	3.213	3.150	2.559	8,000	MES-50	11.1
	CV50-OHC1.000N-172			6.772	3.921	3.858	3.150	6,000	MES-65	16.5
BT	BT40-OHC1.000N-175			6.890	3.213	3.150	2.559	8,000	MES-50	11.1

1. Max. coolant pressure is 284 PSI.
2. Collet and clamping nut are optional items.

For POSITIONING PINS PG. 35

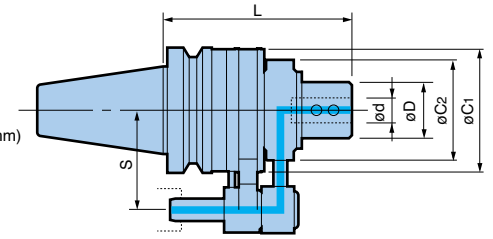
SIDE LOCK TYPE

Suitable for popular straight shanks with flat.

• Model Description

CV40 - OSL 1.000 N - 165

- CV40 - Shank No.
- OSL - Oil Hole Side Lock Holder
- 1.000 - Max. Capacity (in)
- N - Hi-Jet Type
- 165 - L= Projection Length (mm)



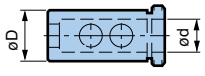
Stop Block is required. PG. 35

Shank	Model	ød	øD	L	øC1	øC2	S	Max. RPM	Merit Set 2 pcs. of Merit Ring and 2 pcs. of Merit Plate	Weight (lbs)
CV	CV40-OSL1.000N-165	1.000	1.890	6.496	3.213	3.150	2.559	8,000	MES-50	9.7
	-OSL1.250N-160	1.250	2.283	6.299	3.921	3.858		6,000	MES-65	12.6
	CV50-OSL.750N-150	.750	1.890	5.906		3.150	3.150	8,000	MES-50	16.3
	-OSL1.000N-165	1.000		6.496						16.5
	-OSL1.250N-165	1.250	2.283			3.858		6,000	MES-65	17.4
	-OSL1.500N-165	1.500	2.500							17.6
	-OSL2.000N-180	2.000	3.307	7.087	5.079	4.764		4,000	MES-90	26.2
BT	BT40-OSL1.000N-165	1.000	1.890	6.496	3.213	3.150	2.559	8,000	MES-50	9.7
	-OSL1.250N-165	1.250	2.283		3.921	3.858		6,000	MES-65	12.6
	BT50-OSL.750N-150	.750	1.890	5.906		3.150	3.150	8,000	MES-50	16.3
	-OSL1.000N-165	1.000		6.496						16.5
	-OSL1.250N-165	1.250	2.283			3.858		6,000	MES-65	17.4
	-OSL1.500N-165	1.500	2.500							17.6

1. Max. coolant pressure is 284 PSI.

For POSITIONING PINS PG. 35

OSL REDUCTION COLLET



Model	ød	øD
OSL1 1/4-3/4	.750	1.250
-1	1.000	
1 1/2-1	1.000	1.500
-1 1/4	1.250	

SET UP INFORMATION FOR AIR POWER SPINDLE, HIGH SPINDLE & Hi-JET HOLDER

• Preparing the Locating Pin and Stop Block

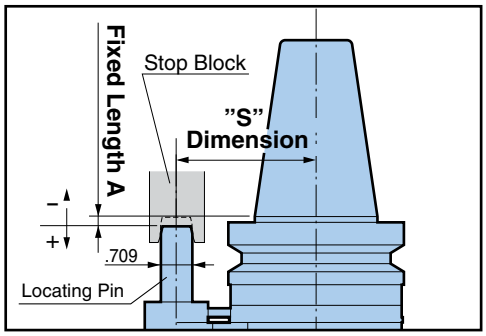
The Air Power Spindle, High Spindle and Hi-Jet Holder utilize a Locating Pin that engages with the Stop Block, which is mounted to the machine spindle. Please refer to the following instructions to select/adjust the Locating Pin, and to prepare it for the Stop Block.

1. Standard Setup of the Locating Pin

《"S" Dimension》

The distance from the centerline of the holder to the centerline of the Locating Pin. Please note that this dimension is not adjustable by the user.

	"S" Dimension
BCV/CV/BBT40	2.559
BCV/CV/BBT50	3.150



《Fixed Length "A"》

The axial distance from the gage line of the spindle to the bottom of the groove on the Stop Block. This dimension is adjustable by the user.

Three (3) Locating Pin models are available: LP-A, LP-B, and LP-C. Each Locating Pin is adjustable to provide a different range of Fixed Length "A", as shown in the tables below. Please specify the required Fixed Length "A" when ordering. Otherwise, it will be delivered set at the BIG standard, .236.

HIGH SPINDLE/AIR POWER SPINDLE

	BCV40	BCV50	BBT40	BBT50
LP-A	-.354 / +.236	-.157 / +.433	-.945 / -.354	-.354 / +.236
LP-B	+.236 / +.827	+.433 / +.1.024	-.354 / +.236	+.236 / +.827
LP-C	+.827 / +1.417	+1.024 / +1.614	+.236 / +.827	+.827 / +1.417

Note: ☐ indicates adjustable range of the BIG standard setup.

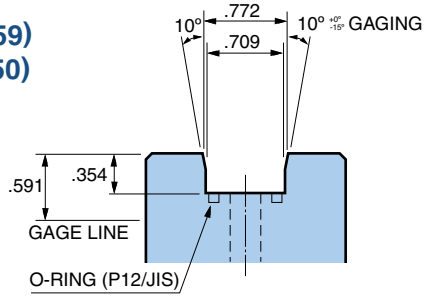
Hi-JET HOLDER

	CV/BT40	CV/BT50	CV40 - OSL1.250	CV50 - OSL2.000	BT50 - OSL2.000
LP-A	-.236 / +.354	-.354 / +.236	-.197 / +.394	-.079 / +.512	+.118 / +.709
LP-B	+.354 / +.945	+.236 / +.827	+.394 / +.984	+.512 / +1.102	+.709 / +.1.299
LP-C	+.945 / +1.535	+.827 / +1.417	+.984 / +1.575	+1.102 / +1.535	+1.299 / +1.535

2. Stop Block Dimensions

The diagram on the right shows the proper groove dimensions for a suitable Stop Block for use with BIG Air Power Spindle, High Spindle and Hi-Jet Holder. When ordering a Stop Block from a machine tool builder, please reference these dimensions.

FOR #40 (S=2.559)
#50 (S=3.150)

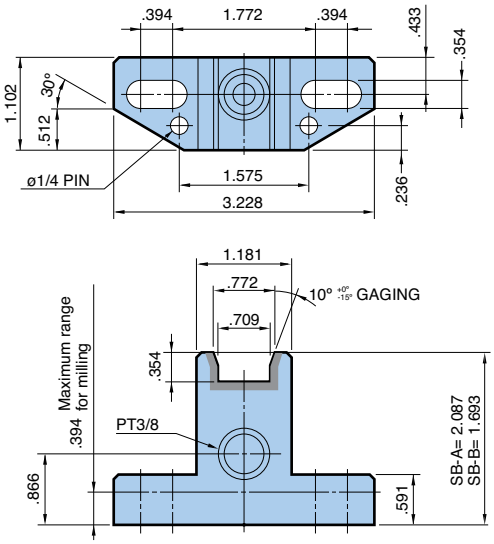


3. Semi-Finished Stop Block

A semi-finished Stop Block has the proper groove form for use with BIG Air Power Spindle, High Spindle and Hi-Jet Holder, as well as additional material to allow the customer to machine the block to the correct height.
(NOTE: Stop Block SB-F is not height-adjustable.)

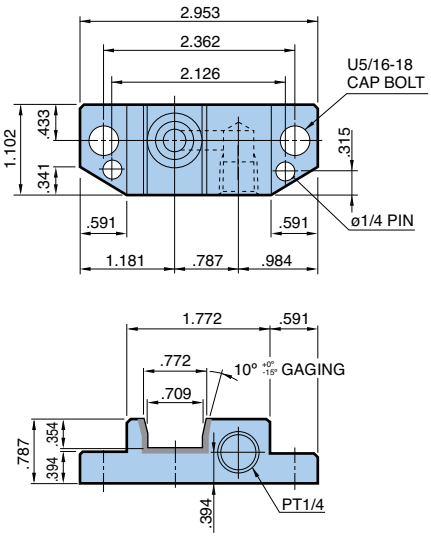
If a pre-made Stop Block is unobtainable from the machine tool builder, a semi-finished Stop Block can be used.
Please consult with the machine tool builder for selection, machining, and mounting of the semi-finished Stop Block.

• MODEL: SB-A/SB-B



1. Adjustment to the required height by milling the base.
2. Fix the stop block by inserting two dowel pins (ø1/4).

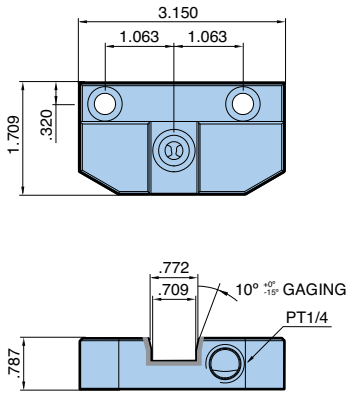
• MODEL: SB-F



1. Fix the stop block by inserting two dowel pins (ø1/4).

• MODEL: SB-H40

For use with most Haas 40 taper machines.



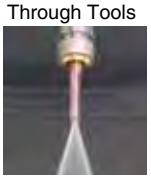
Note: on the sketch indicates heat treatment (HRC45−50), all other surfaces can be milled.

ACCESSORIES For High Spindle & Hi-Jet Holder

• BABY PERFECT SEAL PAT.

Sealed collet nut for coolant-through tools (order separately) US Patent No. 5975817

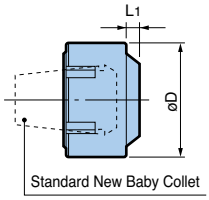
Through Tools



• Model Description

BPS 13 - 03035

- Tool Shank Dia. Clamping Range: ø3 - ø3.5mm (ø.118" - ø.138")
- Main Body Size
- Baby Perfect Seal



ONBS13

Model	Cutter Shank Dia.	øD	L1	Collet Model
BPS13-03035	.118 - .138	1.378	.169	NBC13-3-4
-0304	.118 - .157			-3-4.5
-04045	.157 - .177			-4-5
-0405	.157 - .197			-4-5.5
-05055	.197 - .217			-5-6
-0506	.197 - .236			-5-6.5
-06065	.236 - .256		.181	-6-7
-0607	.236 - .276			-6-7.5
-07075	.276 - .295			-7-8
-0708	.276 - .315			-7-8.5
-08085	.315 - .335		.193	-8-9
-0809	.315 - .354			-8-9.5
-09095	.354 - .374			-9-10
-0910	.354 - .394			-9-10.5
-10105	.394 - .413		.165	-10-11
-1011	.394 - .433			-10-11.5
-11115	.433 - .453			-11-12
-1112	.433 - .472			-11-12.5
-12125	.472 - .492			-12-13
-1213	.472 - .512			-12-13

ONBS20

Model	Cutter Shank Dia.	øD	L1	Collet Model
BPS20-03035	.118 - .138	1.811	.157	NBC20-3-4
-0304	.118 - .157			-3-4.5
-04045	.157 - .177			-4-5
-0405	.157 - .197			-4-5.5
-05055	.197 - .217			-5-6
-0506	.197 - .236			-5-6.5
-06065	.236 - .256		.169	-6-7
-0607	.236 - .276			-6-7.5
-07075	.276 - .295			-7-8
-0708	.276 - .315			-7-8.5
-08085	.315 - .335		.181	-8-9
-0809	.315 - .354			-8-9.5
-09095	.354 - .374			-9-10
-0910	.354 - .394			-9-10.5
-10105	.394 - .413		.201	-10-11
-1011	.394 - .433			-10-11.5
-11115	.433 - .453			-11-12
-1112	.433 - .472			-11-12.5
-12125	.472 - .492			-12-13
-1213	.472 - .512			-12-13.5
-1314	.512 - .551		.205	-13-14.5
-1415	.551 - .591			-14-15.5
-1516	.591 - .630			-15-16.5
-1617	.630 - .669		.181	-16-17.5
-1718	.669 - .709			-17-18.5
-1819	.709 - .748			-18-19.5
-1920	.748 - .787			-19-20

• PS RING

Spare seal for Baby Perfect Seal

1 package contains 5 pcs. (1 size)

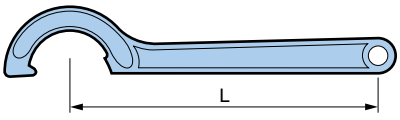
Model	Corresponding BPS Model
PS-0304	BPS□-03035, 0304
0405	-04045, 0405
0506	-05055, 0506
0607	-06065, 0607
0708	-07075, 0708

Model	Corresponding BPS Model
PS-0809	BPS□-08085, 0809
0910	-09095, 0910
1011	-10105, 1011
1112	-11115, 1112
1213	-12125, 1213

Model	Corresponding BPS Model
PS-1314	BPS□-1314
1415	-1415
1516	-1516
1617	-1617
1718	-1718
1819	-1819
1920	-1920

(Replacement of PS Ring is recommended when coolant leaks due to damage of the PS Ring.)

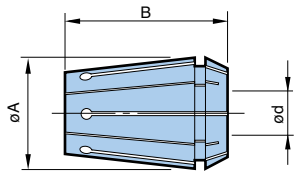
• WRENCH



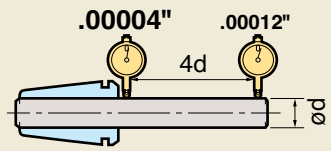
Model	L	Body Type	
		HIGH SPINDLE	Hi-JET HOLDER
NBK10	4.09	GTG□-10	—
NBK13	4.45	—	ONBS13·BPS13
NBK16	4.80	GTG□-16	—
NBK20	5.16	—	ONBS20·BPS20

• NEW BABY COLLET

New Baby Collet "AA" class guarantees T.I.R. of .00004" at the nose.

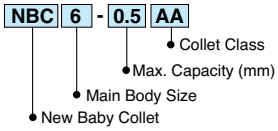


• T.I.R. of collet



Collet Class	T.I.R.	
	At nose	At end of test bar
AA	**.00004"**	**.00012"**

• Model Description



1. Collapsibility is .010" for NBC6 and .020" for NBC8 to NBC20.
2. For best performance, cutting tool shanks should be cylindrical without flats and be as long as the clamping section of the collet bore.

NBS6	
Model	Clamping Range ød
NBC6-0.5AA	.010 - .020
-0.75AA	.020 - .030
-1AA	.030 - .039
-1.25AA	.039 - .049
-1.5AA	.049 - .059
-1.75AA	.059 - .069
-2AA	.069 - .079
-2.25AA	.079 - .089
-2.5AA	.089 - .098
-2.75AA	.098 - .108
-3AA	.108 - .118
-3.175AA	.115 - .125
-3.25AA	.118 - .128
-3.5AA	.128 - .138
-3.75AA	.138 - .148
-4AA	.148 - .157
-4.25AA	.157 - .167
-4.5AA	.167 - .177
-4.75AA	.177 - .187
-5AA	.187 - .197
-5.25AA	.197 - .207
-5.5AA	.207 - .217
-5.75AA	.217 - .226
-6AA	.226 - .236

øA= .374 B= .551

NBS16	
Model	Clamping Range ød
NBC16-3AA	.098 - .118
-3.5AA	.118 - .138
-4AA	.138 - .157
-4.5AA	.157 - .177
-5AA	.177 - .197
-5.5AA	.197 - .217
-6AA	.217 - .236
-6.5AA	.236 - .256
-7AA	.256 - .276
-7.5AA	.276 - .295
-8AA	.295 - .315
-8.5AA	.315 - .335
-9AA	.335 - .354
-9.5AA	.354 - .375
-10AA	.376 - .394
-10.5AA	.394 - .413
-11AA	.413 - .433
-11.5AA	.433 - .453
-12AA	.453 - .472
-12.5AA	.472 - .492
-13AA	.492 - .512
-13.5AA	.512 - .531
-14AA	.531 - .551
-14.5AA	.551 - .571
-15AA	.571 - .591
-15.5AA	.591 - .610
-16AA	.610 - .630

øA= 1.004 B= 1.378

NBS10	
Model	Clamping Range ød
NBC10-1.75AA	.059 - .069
-2AA	.069 - .079
-2.25AA	.079 - .089
-2.5AA	.089 - .098
-2.75AA	.098 - .108
-3AA	.108 - .118
-3.175AA	.115 - .125
-3.5AA	.118 - .138
-4AA	.138 - .157
-4.5AA	.157 - .177
-5AA	.177 - .197
-5.5AA	.197 - .217
-6AA	.217 - .236
-6.5AA	.236 - .256
-7AA	.256 - .276
-7.5AA	.276 - .295
-8AA	.295 - .315
-8.5AA	.315 - .335
-9AA	.335 - .354
-9.5AA	.354 - .375
-10AA	.376 - .394

øA= .650 B= 1.063

NBS20	
Model	Clamping Range ød
NBC20-3AA	.098 - .118
-3.5AA	.118 - .138
-4AA	.138 - .157
-4.5AA	.157 - .177
-5AA	.177 - .197
-5.5AA	.197 - .217
-6AA	.217 - .236
-6.5AA	.236 - .256
-7AA	.256 - .276
-7.5AA	.276 - .295
-8AA	.295 - .315
-8.5AA	.315 - .335
-9AA	.335 - .354
-9.5AA	.354 - .375
-10AA	.376 - .394
-10.5AA	.394 - .413
-11AA	.413 - .433
-11.5AA	.433 - .453
-12AA	.453 - .472
-12.5AA	.472 - .492
-13AA	.492 - .512
-13.5AA	.512 - .531
-14AA	.531 - .551
-14.5AA	.551 - .571
-15AA	.571 - .591
-15.5AA	.591 - .610
-16AA	.610 - .630
-16.5AA	.630 - .650
-17AA	.650 - .669
-17.5AA	.669 - .689
-18AA	.689 - .709
-18.5AA	.709 - .728
-19AA	.728 - .750
-19.5AA	.751 - .768
-20AA	.768 - .787

øA= 1.122 B= 1.496

NBS13	
Model	Clamping Range ød
NBC13-3AA	.098 - .118
-3.175AA	.115 - .125
-3.5AA	.118 - .138
-4AA	.138 - .157
-4.5AA	.157 - .177
-5AA	.177 - .197
-5.5AA	.197 - .217
-6AA	.217 - .236
-6.5AA	.236 - .256
-7AA	.256 - .276
-7.5AA	.276 - .295
-8AA	.295 - .315
-8.5AA	.315 - .335
-9AA	.335 - .354
-9.5AA	.354 - .375
-10AA	.376 - .394
-10.5AA	.394 - .413
-11AA	.413 - .433
-11.5AA	.433 - .453
-12AA	.453 - .472
-12.5AA	.472 - .492
-13AA	.492 - .512

øA= .807 B= 1.220

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