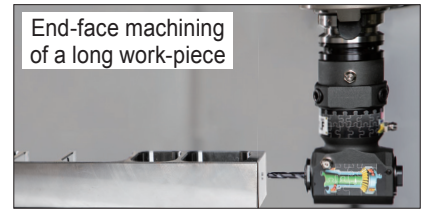
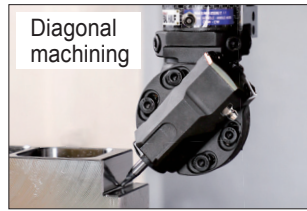
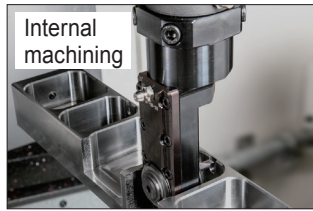
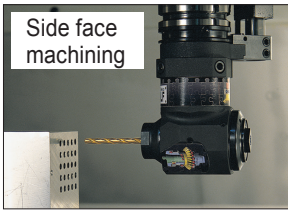







ANGLE HEAD

You can carry out 5-surface machining, such as side face and inside surface, without needing to change the positioning of the work-piece.







Voluminous variety

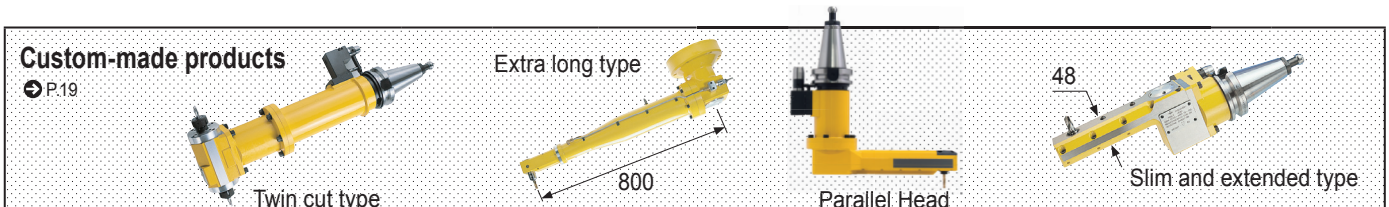
■ New concept Angle head **HALF** for drilling and tapping applications **Affordable • Lightweight • Short delivery!**

Type	Angle	MODEL	Application	Chucking range (φD)		MAX. (min ⁻¹) [Main spindle : Angle shaft]	ATC	 Kg
90° type  P. 8  mini type P. 10	90°	HFC6	Drill Endmill	φ3, 4, 6	FCS6	5680:5000 [1 : 0.88]	○	1.8
		HFD 7		φ1 ~ 7	D 7	6000:6000 [1(CW):1(CW)]		
		HFD12		φ2.5 ~ 13	D12	4000:4000 [1(CW):1(CW)]		
		HFA10		φ2.4 ~ 10	C10	6000:6000 [1(CW):1(CW)]		
		HFA20	φ5.8 ~ 20	C20	6000:5000 [1(CW):0.83(CW)]	4.4		
		HFC6	Tap	M4, 5, 6	FCS6	5680:5000 [1 : 0.88]		1.8
		HFT 4		M2 ~ 8	TA4	6000:6000 [1(CW):1(CW)]		2.3
		HFT 6		M3 ~ 12	TA6	4000:4000 [1(CW):1(CW)]		2.9
HFT12	M3 ~ 16	TA6/12		6000:5000 [1(CW):0.83(CW)]	4.4			
UNIVERSAL type (Free setting of cutting directions) P. 11 	0° ∩ 120°	HUD 7	Drill Endmill	φ1 ~ 7	D 7	6300:3000(BT30:7200:4000) [1(CW):0.48(CW)](BT30:1(CW):0.56(CW))	○	1.8
		HUA10		φ2.4 ~ 10	C10	6300:3000 [1(CW):0.48(CW)]		3.9
		HUA20		φ5.8 ~ 20	C20			4.8
		HUT 4	Tap	M2 ~ 8	TA4	6300:3000(BT30:7200:4000) [1(CW):0.48(CW)](BT30:1(CW):0.56(CW))		3.8
		HUT 6		M3 ~ 12	TA6	6300:3000 [1(CW):0.48(CW)]		4.8

■ High-rigidity **STANDARD** type

(※Use the BT30 tooling system with the Quick Change system.)

MODULAR type (Recombination type) P. 15 	90°	AHB 5	Drill Endmill	φ0.5 ~ 5	ER8	6000:6000 [1(CW):1(CW)]	○	5.5
		AHB 7		φ0.5 ~ 7	ESX12			5.3
		AHB10		φ2.4 ~ 10	C10			6.2
SOLID type P. 16 	90°	AHA20	Drill Endmill	φ5.8 ~ 20	C20	3000:2430 [1(CW):0.81(CW)]	○	7.3
		AHA25		φ5.8 ~ 25	C25	2500:2400 [1(CW):0.96(CW)]		13.6
		AHD30		BT30 [※]	BT30	14.7		
FLANGE type (Mounting directly on machine spindle) P. 17 	90°	AHA20	Drill Endmill	φ5.8 ~ 20	C20	3000:2430 [1(CW):0.81(CW)]	×	18.0
		AHA25		φ5.8 ~ 25	C25	2500:2400 [1(CW):0.96(CW)]		18.5
		AHD30		BT30 [※]	BT30	19.6		
UNIVERSAL type (Free setting of cutting directions) P. 18 	0° ∩ 90°	AHU10	Drill Endmill	φ2.4 ~ 10	C10	3000:4500 [1(CW):1.5(CW)]	○	9.6
		AHU20		φ5.8 ~ 20	C20	3000:3000 [1(CW):1(CW)]		15.8



ANGLE HEAD HALF

PAT.

- Affordable**
2,300USD~
- Speedy**
Shorter delivery
- Lightweight**
1.8kg~
- Compact**
φ36~
- Repair it yourself**

Drilling and tapping account for 80% of angle head operation.

The Angle Head HALF was redesigned to achieve the necessary rigidity and accuracy, it allows;

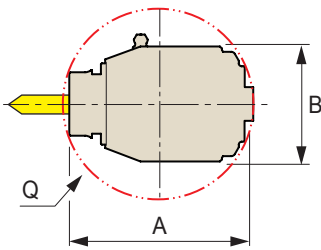
- AFFORDABLE** (Price : 1/2)
- QUICK DELIVERY** (Lead Time : 1/2)
- LIGHTWEIGHT** (Weight : 1/2)

NEW CONCEPT



<p>90° type</p> <p>BT30/40/50 HSK-A63 DIN40/50, CAT.40/50</p> <p>HFD/HFA φ1~20mm</p> <p>HFT M2~16</p>	<p>mini type</p> <p>Extra-compact head</p> <p>BT30/40/50 DIN40/50 CAT.40/50</p> <p>HFCS φ3,4,6mm M4,5,6</p> <p>15.5 31.5</p> <p>φ36</p>	<p>UNIVERSAL type</p> <p>Angle can be set arbitrarily</p> <p>BT30/40/50 DIN40/50 CAT.40/50</p> <p>HUD/HUA φ1~20mm</p> <p>HUT M2~12</p> <p>120°</p> <p>120°</p>
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Compact design



Type	MODEL	Q	A	B
90° type	HFD 7	72	68	38
	HFD12	98	93	58
	HFT 4	75	73	38
	HFT 6	97	92	58
	HFA10	90	87	38
	HFA20	119	111	64
	HFT12	97	96	64
mini type	HFCS6	36	31.5	31

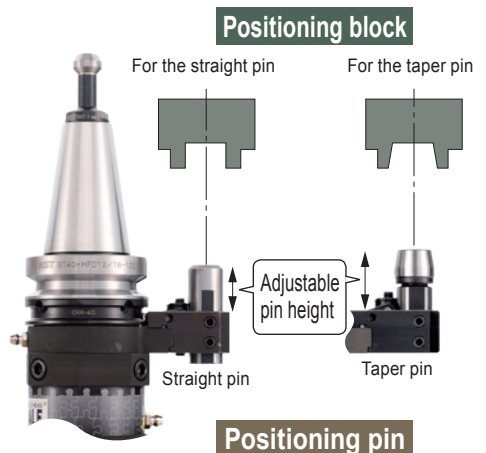
Auto Tool Changer (A.T.C) is available on BT30 machine.



BT30
1.8kg

Easy installation

The positioning pin allows an in-use positioning block to be used is now a standard feature. Can be used with a variety of machining centers.



M/C Tool

HSK-T Tooling Systems for Turning Mill

General Purpose Tool

JIG

Measuring Equipment

Maintenance Tool

Wire EDM fixture

Technical Information

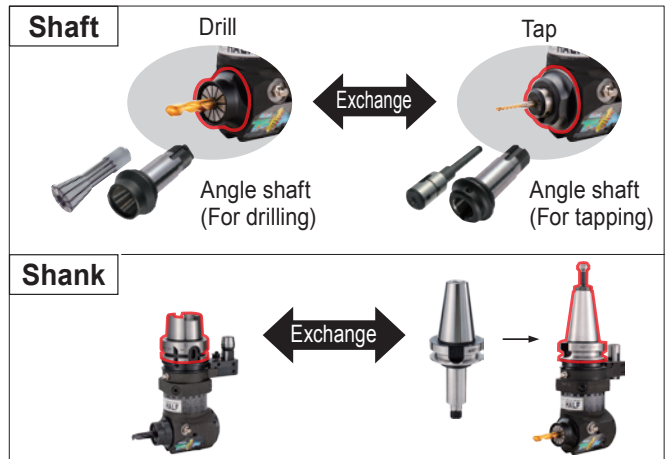
Easy disassembly and assembly

- The number of parts (22 pcs.) is half that of conventional angle heads.
- No need for fine matching and adjustment.
- Makes use of commercial items such as bearings. Affordable and readily available.
- An informative video and an instruction manual for disassembly and reassembly are provided.

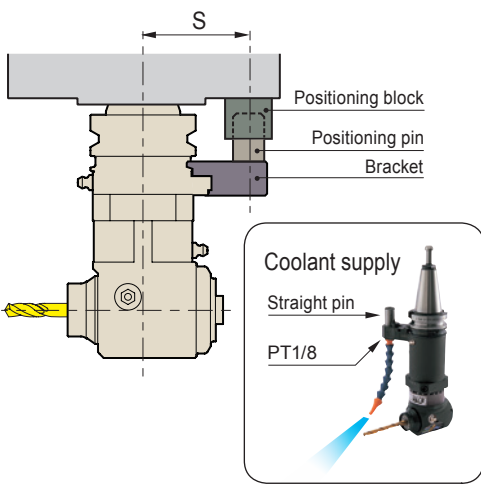


Running cost is reduced by 90% as a result of reduced repair costs and machine down time.

Easy to reassemble



Positioning block and positioning pin

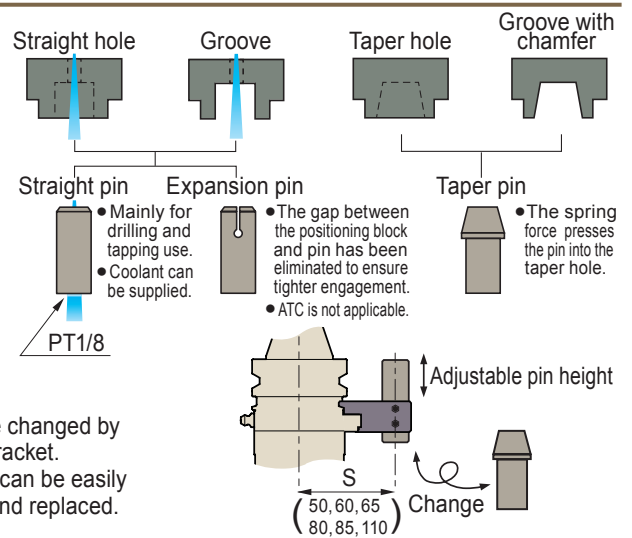


Positioning block

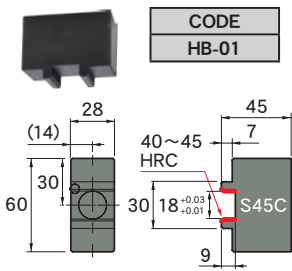
Positioning pin

Bracket

- S dimension can be changed by reassembling the bracket.
- The positioning pin can be easily adjusted in length and replaced.



Semi-finished positioning block



- Note**
- Please confirm with the machine tool manufacturer about the dimensions of the positioning block.
 - We have a semi-finished positioning block with a taper hole available. (→P.19)

Positioning block for machines

• FANUC
ROBODRILL
α-DiB series

CODE
ABF005

• MAZAK
SUPER VELOCITY CENTER
2000L/120-II 2000L/200-II

• BROTHER
SPEEDIO
Compact machining center

CODE	NOTE
ABF213	S300X1 /X2, S500X1 /X2, S700X1 /X2
ABF259	S1000X1
ABF176	TC-S2, S2A*, S2B, S2C, S2D, R2B*

Caution

- TC-S2A* (Tapping center), The user needs to confirm whether the positioning block can be mounted on the machine (spindle surface) or not. Please contact us.
- TC-R2B* (Tapping center) machining area is limited to some extent due to interference between the positioning block and the internal part cover of the machine. For more information, please contact us.

A product code example when ordering Angle Head HALF.

- FANUC BT30-HFD7-122-S65
- BROTHER BT30-HFD7L-120-S50C

Kit Package

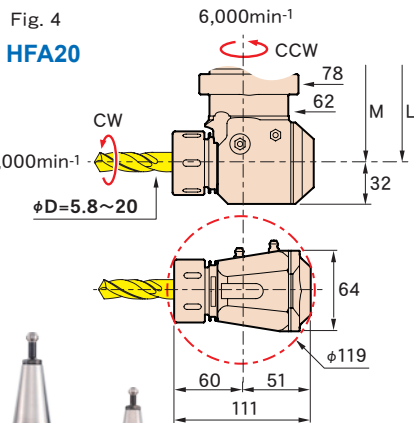
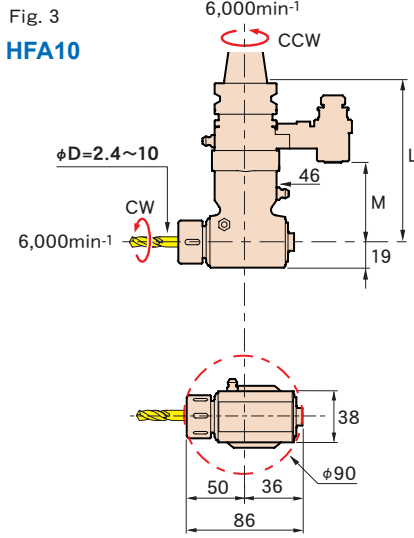
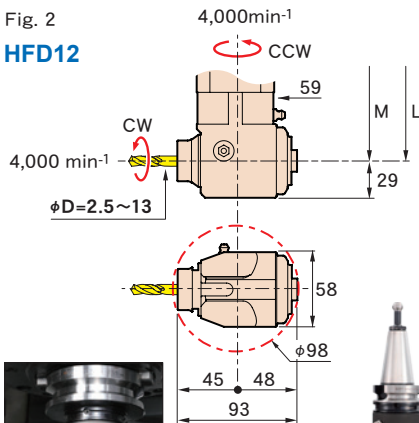
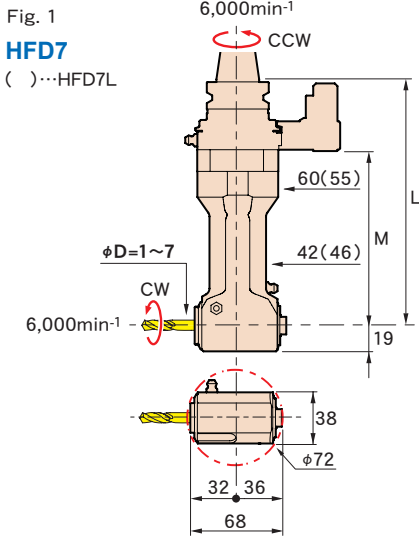
- Learning Kit to understand gear and bearing mechanism.
- There are only 22 parts and anyone can assemble them in about 10 min.
- Spare/consumable parts and assembly tools are included.



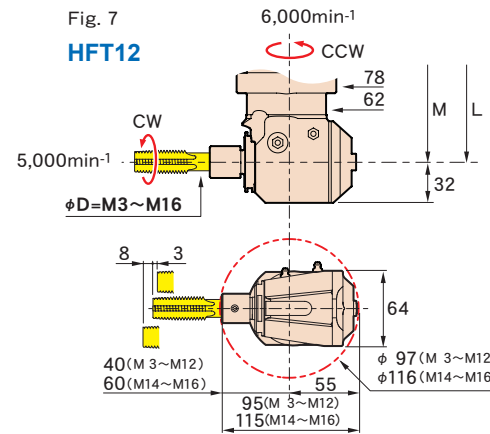
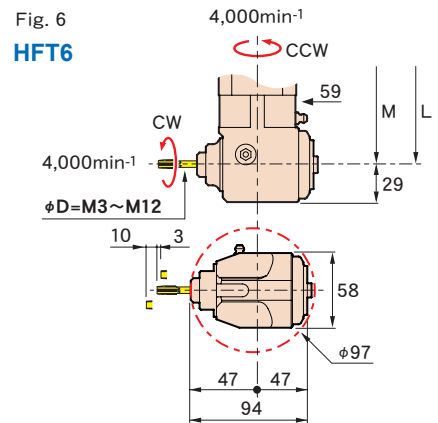
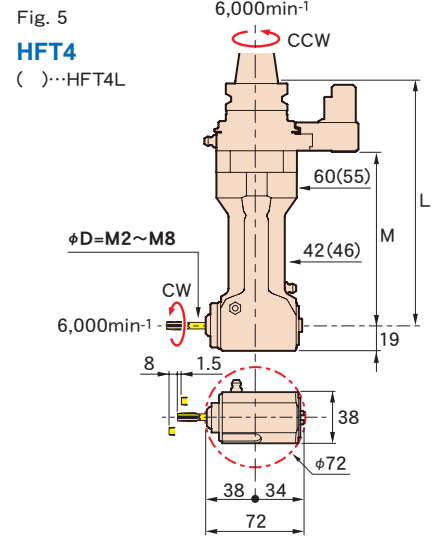
Contents of kit	CODE	
	BT40-HF12-LK	BT50-HF12-LK
Complete unit	BT40-HFD12-180-S65 (1pc.)	BT50-HFD12-195-S80 (1pc.)
Angle shaft (For tapping)	FR-T6 (1pc.)	
Tap sleeve	TA6-3, 4, 5, 6, 8 (each 1pc.)	
DETa-1 Collet	D12-4, 6, 8, 10, 12, 13 (each 1pc.)	
Positioning pin	HP-50T(1pc.)	HP-62T(1pc.)
Spare bearing	7005ADB (1set), 6805 (1pc.), 51106 (1pc.)	

HALF 90° type

Drill · Endmill



Tap

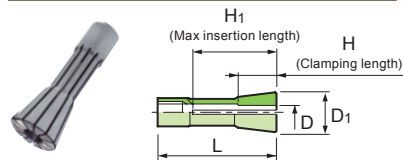


BT40-HFA20-135

BT40-HFD12-120

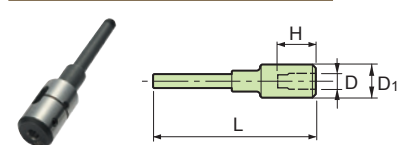
BT30-HFD7-122

DETa-1 Collet (HFD,HUD)



CODE	φD	φD ₁	L	H	H ₁	Holder type
D 7- 1.5	1 ~ 1.5	17	50	7	36	HFD 7
- 2	1.5 ~ 2			10		HUD 7
- 2.5	2 ~ 2.5			12		
- 3	2.5 ~ 3			14		
- 4	3 ~ 4			16		
- 5	4 ~ 5					
- 6	5 ~ 6					
- 7	6 ~ 7					
D12- 4	2.5 ~ 4	26	70	16	50	HFD12
- 6	4 ~ 6			20		
- 8	6 ~ 8			22		
-10	8 ~ 10					
-12	10 ~ 12					
-13	11 ~ 13					

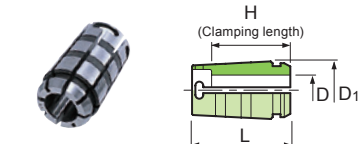
Tap sleeve (HFT,HUT)



CODE	φD	L	φD ₁	H	Holder type
TA 4-M 2	M 2	67.5	16	19	HFT 4
-M 3	M 3			20	HUT 4
-M 4	M 4			21	
-M 5	M 5				
-M 6	M 6				
-M 8	M 8				
TA 6-M 3	M 3	92	19	21	HFT 6
-M 4	M 4			22	HUT 6
-M 5	M 5				HFT12
-M 6	M 6				
-M 8	M 8			23	
-M10	M10			24	
-M12	M12			33	
TA12-M14	M14	111.5	25	33	HFT12
-M16	M16			35	

■ Note
 ● Above products meet JIS standards. We can produce other standard Tap sleeves, such as ANSI, ISO, DIN and others. For more information, please contact us.

Spring collet (HFA,HUA)



CODE	φD	φD ₁	L	H	Holder type
C10-D	2.6 2.8 3 ... (0.2Steps) ... 9.6 9.8 10	17.2	26	16 (φD=2.6~5) Except for 18 ※3, 4 (φD=3, 4, 20 5.2~5.8) (φD=6~10)	HFA10 HUA10
C20-D	6 6.2 6.4 ... (0.2Steps) ... 19.8 20	29.5	50	32 (φD=6~9.8) 35 (φD=10~15.8) 40 (φD=16~20)	HFA10 HUA10

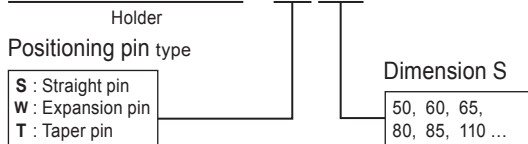
Ex. φD C10-6

CODE (Master holder)	Fig.	φD	L	M	Kg
BT30-HFD 7 -122	1	1 ~ 7	122	70	2.3
			182	130	3.0
			120	57	1.8
-HFD 7L-120			120	57	1.8
-HFD12 -122	2	2.5~ 13	122	70	2.9
-HFA10 -120	3	2.4~ 10	120	65	1.8
-HFT 4 -122	5	M2~M 8	122	70	2.3
			182	130	3.0
			120	57	1.8
-HFT 4L-120			120	57	1.8
-HFT 6 -122	6	M3~M12	122	70	2.9
BT40-HFD 7 -120	1	1 ~ 7	120	70	3.0
			180	130	3.3
-HFD12 -120	2	2.5~ 13	120	70	3.6
-180			180	130	4.9
-HFA20 -135	4	5.8~ 20	135	77	4.4
-195			195	137	5.6
-HFT 4 -120	5	M2~M 8	120	70	3.0
-180			180	130	3.3
-HFT 6 -120	6	M3~M12	120	70	3.6
-180			180	130	4.9
-HFT12 -135	7	M3~M16	135	77	4.4
-195			195	137	5.6
BT50-HFD 7 -195	1	1 ~ 7	195	130	6.4
			255	190	6.8
-HFD12 -135	2	2.5~ 13	135	70	6.3
-195			195	130	7.6
-255			255	190	8.9
-HFA20 -150	4	5.8~ 20	150	77	7.1
-210			210	137	8.3
-270			270	197	9.4
-HFT 4 -195	5	M2~M 8	195	130	6.4
-255			255	190	6.8
-HFT 6 -135	6	M3~M12	135	70	6.3
-195			195	130	7.6
-255			255	190	8.9
-HFT12 -150	7	M3~M16	150	77	7.1
-210			210	137	8.3
-270			270	197	9.4
A63 -HFD 7 -183	1	1 ~ 7	183	130	3.5
			243	190	3.9
-243			243	190	3.9
-HFD12 -123	2	2.5~ 13	123	70	3.3
-183			183	130	4.7
-243			243	190	6.0
-HFA20 -198	4	5.8~ 20	198	137	5.4
-258			258	197	6.5
-HFT 4 -183	5	M2~M 8	183	130	3.5
-243			243	190	3.9
-HFT 6 -123	6	M3~M12	123	70	3.3
-183			183	130	4.7
-243			243	190	6.0
-HFT12 -198	7	M3~M16	198	137	5.4
-258			258	197	6.5

CODE (Master holder)	Fig.	φD	L	M	Kg (lbs)
DN40A-HFD 7-135	1	1 ~ 7	135	70	3.1
			195	130	3.4
			120	57	1.8
-HFD12-135	2	2.5~ 13	135	70	3.7
-195			195	130	5.0
-HFA20-150	4	5.8~ 20	150	77	4.7
-210			210	137	5.8
-HFT 4-135	5	M2~M 8	135	70	3.1
-195			195	130	3.4
-HFT 6-135	6	M3~M12	135	70	3.7
-195			195	130	5.0
-HFT12-150	7	M3~M16	150	77	4.7
-210			210	137	5.8
DN50A-HFD 7-195	1	1 ~ 7	195	130	5.9
			255	190	6.3
-HFD12-135	2	2.5~ 13	135	70	5.8
-195			195	130	7.1
-255			255	190	8.4
-HFA20-150	4	5.8~ 20	150	77	6.6
-210			210	137	7.8
-270			270	197	8.9
-HFT 4-195	5	M2~M 8	195	130	5.9
-255			255	190	6.3
-HFT 6-135	6	M3~M12	135	70	5.8
-195			195	130	7.1
-255			255	190	8.4
-HFT12-150	7	M3~M16	150	77	6.6
-210			210	137	7.8
-270			270	197	8.9
CT40 -HFD 7-135	1	0.4~.28	5.31	2.75	6.8
			7.68	5.11	7.5
-195			7.68	5.11	7.5
-HFD12-135	2	2.5~ 13	5.31	2.75	8.2
-195			7.68	5.11	11.0
-HFA20-150	4	.23~ .79	5.91	3.03	10.4
-210			8.27	5.39	12.9
-HFT 4-135	5	M2~M 8	5.31	2.75	6.8
-195			7.68	5.11	7.5
-HFT 6-135	6	M3~M12	5.31	2.75	8.2
-195			7.68	5.11	11.0
-HFT12-150	7	#4 ~ 5/8	5.91	3.03	10.4
-210			8.27	5.39	12.9
CT50 -HFD 7-195	1	0.4~.28	7.68	5.11	13.0
			10.04	7.47	13.8
-255			10.04	7.47	13.8
-HFD12-135	2	.10~ .51	5.31	2.75	12.8
-195			7.68	5.11	15.6
-255			10.04	7.47	18.5
-HFA20-150	4	.23~ .79	5.91	3.03	14.7
-210			8.27	5.39	17.3
-270			10.63	7.76	19.8
-HFT 4-195	5	M2~M 8	7.68	5.11	13.0
-255			10.04	7.47	13.8
-HFT 6-135	6	M3~M12	5.31	2.75	12.8
-195			7.68	5.39	15.6
-255			10.04	7.47	18.5
-HFT12-150	7	#4 ~ 5/8	5.91	3.03	14.7
-210			8.27	5.39	17.3
-270			10.63	7.76	19.8

■ A product code example when ordering.

BT40-HFD7-120 - S 65



■ Option

- DETa-1 Collet (HFD) • Spring collet (HFA) • Tap sleeve (HFT)
- Retention knob→P.64 • Tools for assembly

■ Std. Access.

- Coolant duct (HSK-A) • Fixing spanner(Except for HFA10/HFT4L)
- Hexagonal wrench set • Spanner(HFA)
- Single-ended wrench(HFD7L/HFA10) • Spanner(HFA) • Low head bolt

■ Note

- Other shanks are also available upon request.

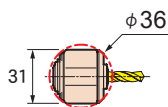
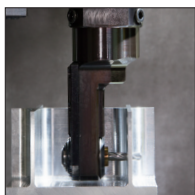
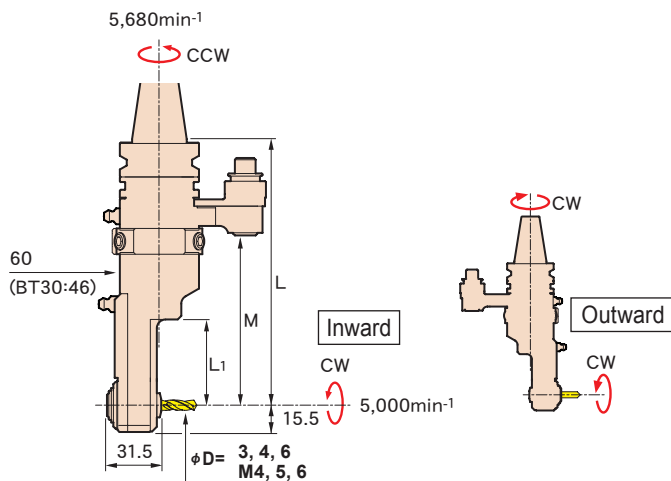
Cutting data
P.13

Parts list
P.105

HALF mini type

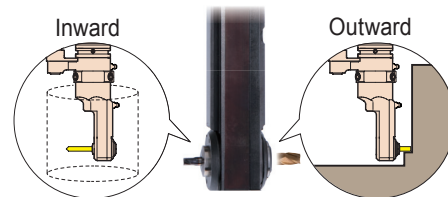


BT40-HFCS6-205



Cutter mounts in two directions

A cutting tool can be mounted both ways, inward or outward, by reassembling the angle shaft.



Allows maximum tool holder diameter limitation even when using a long cutting tool.

Minimal interference with face of workpiece.

Collet exchange system

Shaft exchange system for Shrink-fit collet for carbide cutter (end-mill, drill) or Tap collet for Tap.



Option

- Shrink-fit collet • Tap collet
- Retention knob → P.64 • Tools for assembly

Std. Access.

- Fixing spanner • Hexagonal wrench set • Low head bolt

Note

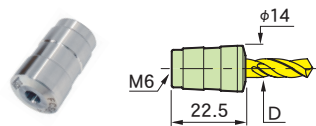
- When shipping, the head direction is inward. The tool for assembly (pliers for retaining ring) is required to reassemble the collet to allow for outward positioning of the cutting tool.
- Other shanks such as HSK are also available upon request.

Caution

- The angle axis rotating direction is different due to its mounting direction, inward and outward.

CODE (Master holder)	φD	L	L ₁	M	KG (lbs)
BT30 -HFCS6-155	Drill·Endmill φ3, 4, 6	155	50	100	1.8
BT40 -HFCS6-160		160	50	110	2.8
-205		205	95	155	3.0
BT50 -HFCS6-175	Tap M4, 5, 6	175	50	110	5.6
-220		220	95	155	5.8
DN40A-HFCS6-175	Drill·Endmill φ3, 4, 6	175	50	110	3.0
-220		220	95	155	3.2
DN50A-HFCS6-175	Tap M4, 5, 6	175	50	110	5.1
-220		220	95	155	5.3
CT40 -HFCS6-175	Drill·Endmill φ3, 4, 6	6.89	1.97	4.33	6.61
-220		8.66	3.74	6.10	7.28
CT50 -HFCS6-175	Tap M4, 5, 6	6.89	1.97	4.33	11.24
-220		8.66	3.74	6.10	11.68

Shrink-Fit Collet

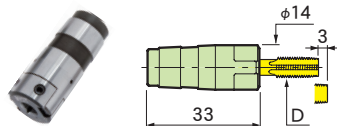


CODE	φD	Holding length
FCS6- 3	3	11~13
- 4	4	
- 6	6	12~13

Caution

- The dedicated shrink-fit collet for the Angle Head Half Mini.
- A shrink-fit heating device is required to insert and remove cutting tools.

Tap collet



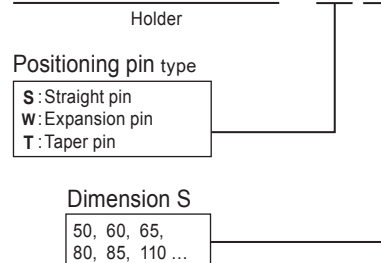
CODE	φD	Holding length
FCS6-M4	M4	16
-M5	M5	
-M6	M6	

Note

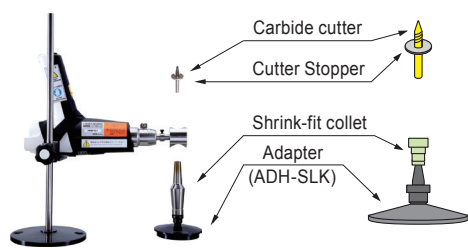
- Tap collets meet JIS standards. We can produce ANSI standard tap collet. For more information, please contact us.

■ A product code example when ordering.

BT30-HFCS6-155 - S 65



Procedure of cutter insertion to shrink-fit collet



Shrink-fit Heater (HRB-01)

1. Attach the shrink-fit collet to the adapter (ADH-SLK).
2. Heat the shrink-fit collet with the shrink-fit heater.
3. Attach a stopper to the carbide cutter. After finishing heating, insert the cutter to the shrink-fit collet.
4. Cool the shrink-fit collet with the shrink-fit heater.

CODE	Power
HRB-01	100V

Cutting data
→ P.13

Parts list
→ P.105

HALF UNIVERSAL type

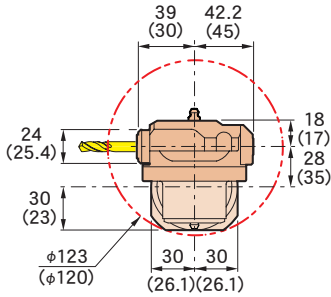
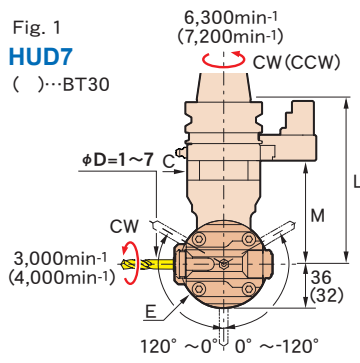
Drill · Endmill

Tap

Fig. 1

HUD7

()...BT30



BT40-HUA20-135

Fig. 2

HUA10

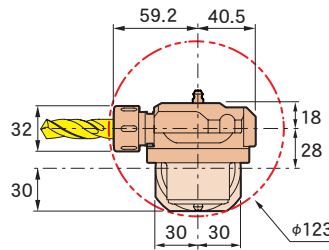
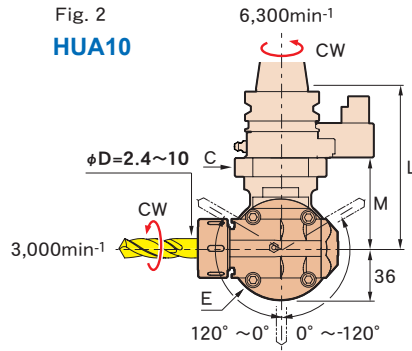


Fig. 3

HUA20

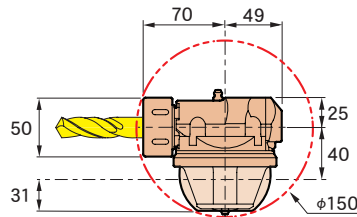
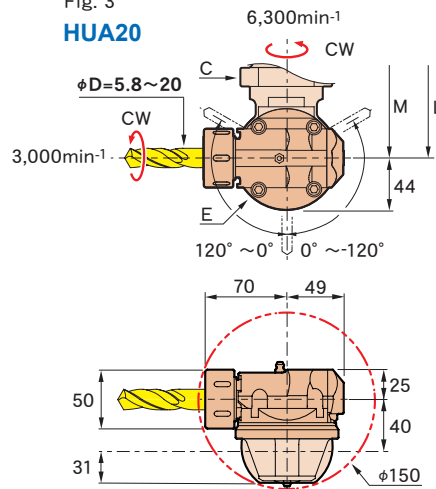


Fig. 4

HUT4

()...BT30

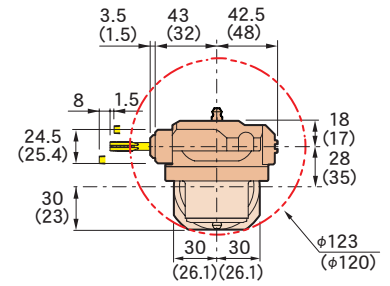
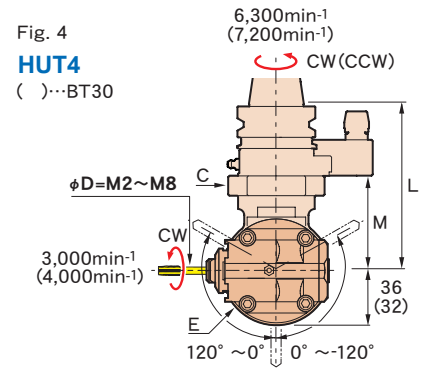
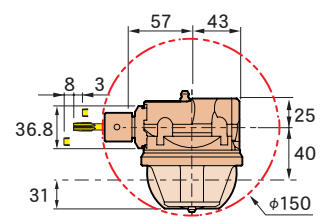
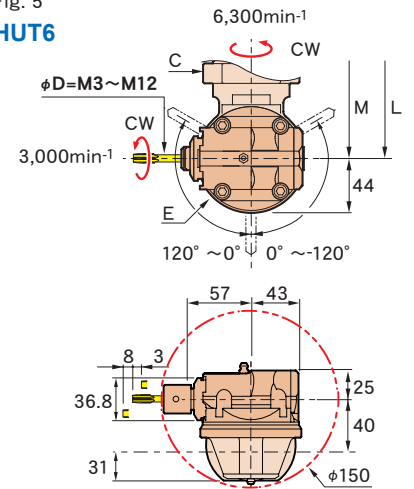



Fig. 5

HUT6



CODE (Master holder)	Fig.	φD	L	M	φC	φE	 Kg (lbs)	Moment kgf·mm
BT30 -HUD 7-102	1	1 ~ 7	102	39	46	64	1.8	116
	4	M2 ~ M 8						
BT40 -HUD 7-135	1	1 ~ 7	135	85	60	72	3.8	251
	2	2.4 ~ 10						
	3	5.8 ~ 20						
	4	M2 ~ M 8						
	5	M3 ~ M12						
	7	77 ~ 88						
BT50 -HUD 7-150	1	1 ~ 7	150	85	60	72	6.6	277
	2	2.4 ~ 10						
	3	5.8 ~ 20						
	4	M2 ~ M 8						
	5	M3 ~ M12						
	7	77 ~ 88						
DN40A -HUD 7-150	1	1 ~ 7	150	85	60	72	3.8	251
	2	2.4 ~ 10						
	3	5.8 ~ 20						
	4	M2 ~ M 8						
	5	M3 ~ M12						
	7	77 ~ 88						
DN50A -HUD 7-150	1	1 ~ 7	150	85	60	72	6.6	277
	2	2.4 ~ 10						
	3	5.8 ~ 20						
	4	M2 ~ M 8						
	5	M3 ~ M12						
	7	77 ~ 88						
CT40 -HUD 7-150	1	.04 ~ .28	5.91	3.3	2.4	2.8	8.4	251
	2	.09 ~ .39						
	3	.23 ~ .79						
	4	M2 ~ M 8						
	5	#4 ~ 1/2						
	7	3 ~ 3.5						
CT50 -HUD 7-150	1	.04 ~ .28	5.91	3.3	2.4	2.8	14.6	277
	2	.09 ~ .39						
	3	.23 ~ .79						
	4	M2 ~ M 8						
	5	#4 ~ 1/2						
	7	3 ~ 3.5						

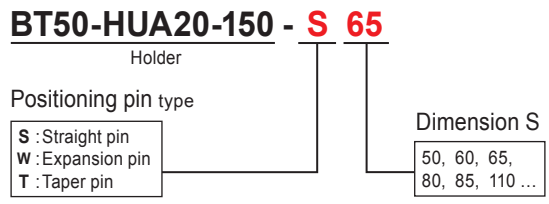
※Distance from a gage line to center of gravity × weight (kg · mm)

- **Option**
 - DETa-1 Collet (HUD)→P.8 • Spring collet (HUA)→P.8
 - Tap sleeve (HUT)→P.8 • Retention knob→P.64 • Tools for assembly
- **Std. Access.**
 - Fixing spanner • Hexagonal wrench set • Spanner (HUA) • Low head bolt
- **Note**
 - Other shanks such as HSK are also available upon request.

Cutting data
➡ P. 13

Parts list
➡ P. 105

■ A product code example when ordering.



Cutting data

90° type

<p>S55C $\phi 12$ Drill</p> <p>n 670 min⁻¹ Vf 80 mm/min Vc 25.5 m/min f 0.12 mm/rev</p> <p>BT40-HFD12-120</p>	<p>S55C M12 Tap</p> <p>n 184 min⁻¹ Vf 322 mm/min Vc 7 m/min</p> <p>BT40-HFT6-120</p>	<p>S50C M16 Tap</p> <p>n 60 min⁻¹ Vf 120 mm/min Vc 3 m/min</p> <p>BT40-HFT12-135</p>	<p>S55C $\phi 10$ Endmill 2-flutes</p> <p>n 350 min⁻¹ Vf 50 mm/min Vc 11 m/min fz 0.07 mm/t</p> <p>BT40-HFD12-120</p>	<p>S50C $\phi 20$ Endmill 2-flutes</p> <p>n 158 min⁻¹ Vf 32 mm/min Vc 10 m/min fz 0.10 mm/t</p> <p>BT40-HFA20-135</p>
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mini type

<p>S50C $\phi 6$ Carbide drill</p> <p>n 5000 min⁻¹ Vf 250 mm/min Vc 94 m/min f 0.05 mm/rev</p> <p>BT30-HFCS6-155</p>	<p>S50C $\phi 6$ Carbide endmill 2-flutes</p> <p>n 3500 min⁻¹ Vf 210 mm/min Vc 66 m/min fz 0.03 mm/t</p> <p>BT40-HFCS6-205</p>	<p>A7075 $\phi 6$ Carbide endmill 2-flutes</p> <p>n 5000 min⁻¹ Vf 300 mm/min Vc 94 m/min fz 0.03 mm/t</p> <p>BT30-HFCS6-155</p>
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UNIVERSAL type

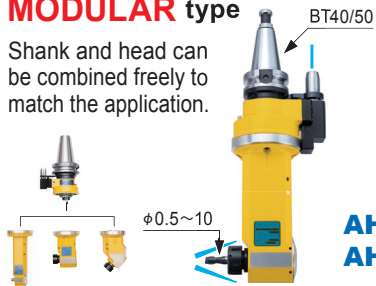
<p>S50C $\phi 10$ Endmill 2-flutes</p> <p>n 900 min⁻¹ Vf 100 mm/min Vc 28 m/min fz 0.06 mm/t</p> <p>BT50-HUA10-150</p>	<p>S50C M8 Tap</p> <p>n 250 min⁻¹ Vf 312 mm/min Vc 6.3 m/min</p> <p>BT40-HUT4-135</p>	<p>S50C M12 Tap</p> <p>n 184 min⁻¹ Vf 322 mm/min Vc 7 m/min</p> <p>BT40-HUT6-135</p>	<p>SUS304 $\phi 10$ Drill</p> <p>n 314 min⁻¹ Vf 16 mm/min Vc 9.9 m/min f 0.05 mm/rev</p> <p>BT50-HUA10-150</p>	<p>S50C $\phi 16$ Endmill 2-flutes</p> <p>n 140 min⁻¹ Vf 40 mm/min Vc 7 m/min fz 0.14 mm/t</p> <p>BT40-HUA20-135</p>
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ANGLE HEAD STANDARD type

High-rigidity standard type for end-milling applications

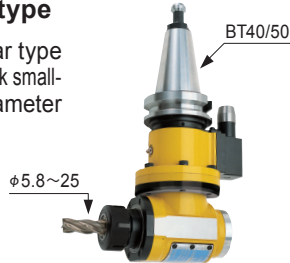
MODULAR type

Shank and head can be combined freely to match the application.



SOLID type

The popular type that can chuck small-to large-diameter cutters.



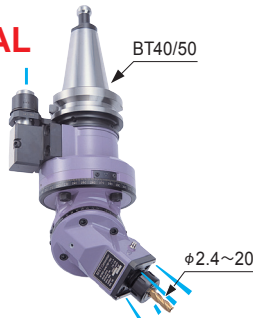
FLANGE type

Heavy-duty type that mounts directly on the machine spindle surface.



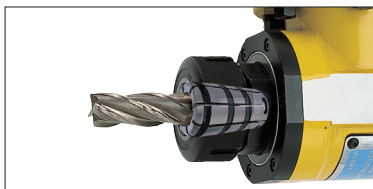
UNIVERSAL type

Cutting angle can be adjusted arbitrarily.



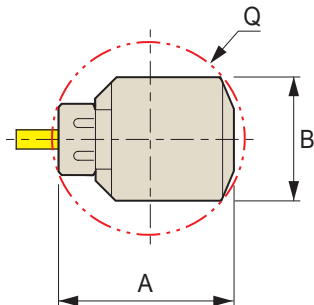
Use of collet holder

To chuck a cutting tool, the collet chuck system is used, which has a long history of good performance. This product is applicable to all the types of machining, including drilling and milling.



Compact design

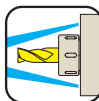
Ideal for internal machining.



Type	Model	Q	A	B
MODULAR type	AHB 5	62	57	46
	AHB 7	76	72	56
	AHB10	96	88	62
SOLID type FLANGE type	AHA20	171	160	88
	AHA25	193	180	90
UNIVERSAL type	AHU10	156	154	55
	AHU20	192	188.5	70

Body-through coolant

Coolant can be feed from a closer position to the cutting edge. Prevents heat generation inside the body to achieve high-speed rotation. (MODULAR type, UNIVERSAL type)



MST's Quick Change system(AHD type)

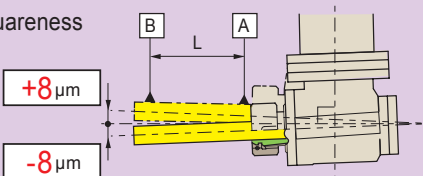
By adopting the BT30 Quick Change mechanism at the angle axis, a large variety of machining applications are made possible.



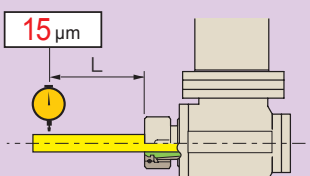
Highest Guaranteed Accuracies

All standard type angle heads have passed an accuracy test and rotation test.

Squareness



Runout accuracy



Type	Model	L
MODULAR type	AHB 5 AHB 7 AHB10 AHC10	40
	UNIVERSAL type	AHU10
	SOLID type FLANGE type	AHA20 AHA25 AHD30
UNIVERSAL type		AHU20

M/C Tool

HSK-T Tooling Systems for Turning Mill

General Purpose Tool

JIG

Measuring Equipment

Maintenance Tool

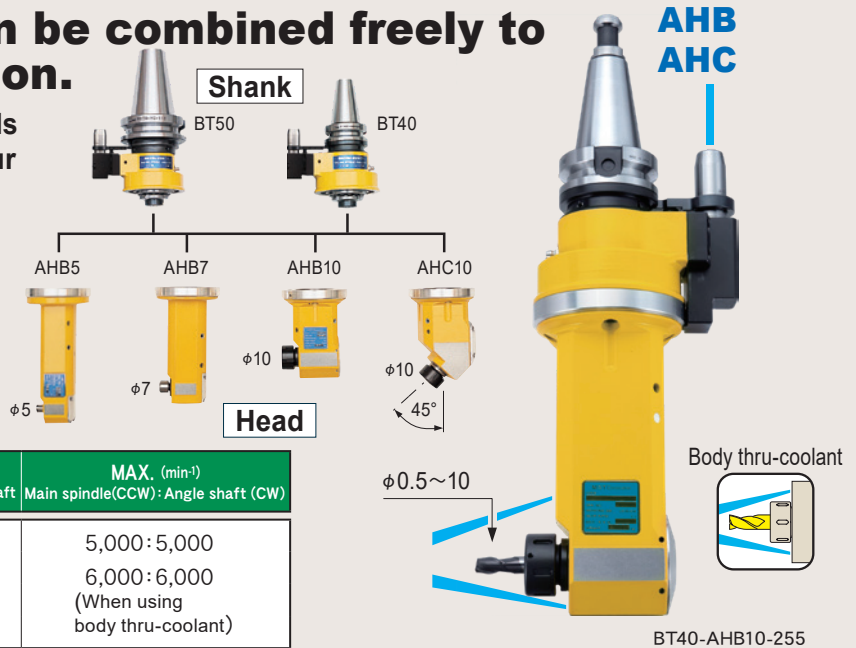
Wire EDM fixture

Technical Information

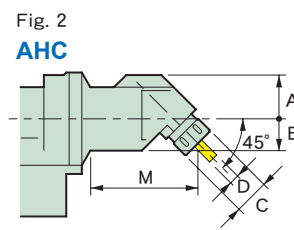
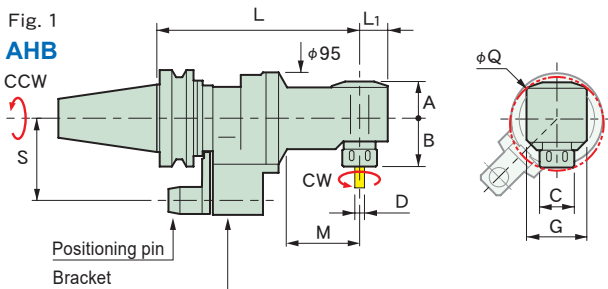
STANDARD type MODULAR type

Shank and head can be combined freely to match the application.

▷ Various types of shanks and heads are freely combined to meet your machining needs.



MODEL	Chucking range	Gear ratio Main spindle:Angle shaft	MAX. (min ⁻¹)
			Main spindle(CCW): Angle shaft (CW)
AHB 5	φ0.5~ 5	1:1	5,000:5,000
AHB 7	φ0.5~ 7		6,000:6,000
AHB10	φ2.4~ 10		(When using body thru-coolant)
AHC10			



CODE	Fig.	φD	L	φC	L1	M	A	B	G	φQ	Kg	
BT40-AHB 5-210	1	0.5~ 5	210	12	20	85	25	32	46	62	5.5	ER8
			270			145					6.4	
-AHB 7-180		0.5~ 7	180	19	22	60	29	43	56	76	5.3	ESX12
			240			120					6.6	
-AHB10-195		2.4~ 10	195	36	29	80	38	50	63	96	6.2	C10
			255			140					7.9	
-AHC10-230	2		230		—	110	45	32.5	65	—	6.2	
BT50-AHB 5-225	1	0.5~ 5	225	12	20	85	25	32	47	62	8.8	ER8
			285			145					9.7	
-AHB 7-195		0.5~ 7	195	19	22	60	29	43	57	76	8.6	ESX12
			255			120					9.9	
-AHB10-210		2.4~ 10	210	36	29	80	38	50	62	96	9.5	C10
			270			140					11.2	
-AHC10-245	2		245		—	110	45	32.5	66	—	9.5	

Available for
DIN / CAT.

Cutting data
P.20

Option

- Spring collet→P.19 • Retention knob →P.64
- Semi-finished positioning block→P.19

Std. Access.

- A complete set of spanners and wrenches.

Note

- The phase of the drive key and the positioning pin is set freely.
- Standard specifications:
S = 60 mm, 65 mm (BT40), 80 mm, 85 mm, and 110 mm (BT50).
- Other shanks such as HSK are also available upon request.

Caution

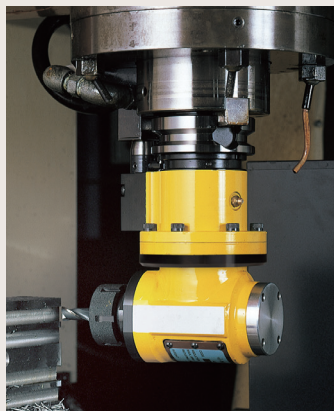
- For the shape and mounting position of the positioning block, contact the machine manufacturer or MST.
- The height of the positioning pin depends on the shape of the positioning block.
- The machine spindle and angle shaft should rotate in reverse directions, so make sure the spindle rotates in the reverse direction.
- For precautions and maintenance, refer to page 115.

Shank / Head reference list

CODE	Shank	Head
BT40-AHB 5-210	BT40-MS- 98	MB 5-112
-270		-172
-AHB 7-180		MB 7- 82
-240		-142
-AHB10-195	BT50-MS-113	MB10- 97
-255		-157
-AHC10-230		MC10-132
BT50-AHB 5-225		MB 5-112
-285	-172	
-AHB 7-195	BT50-MS-113	MB 7- 82
-255		-142
-AHB10-210		MB10- 97
-270		-157
-AHC10-245		MC10-132

STANDARD type **SOLID** type

The popular type that can chuck small- to large-diameter cutters.



MODEL	Chucking range	Gear ratio		MAX. (min ⁻¹)
		Main spindle : Angle shaft	Main spindle(CCW):Angle shaft(CW)	
AHA20	φ 5.8~20	1 : 0.81		3000 : 2430
AHA25	φ 5.8~25	1 : 0.96		2500 : 2400
AHD30	BT30 tools			

Fig. 1
AHA

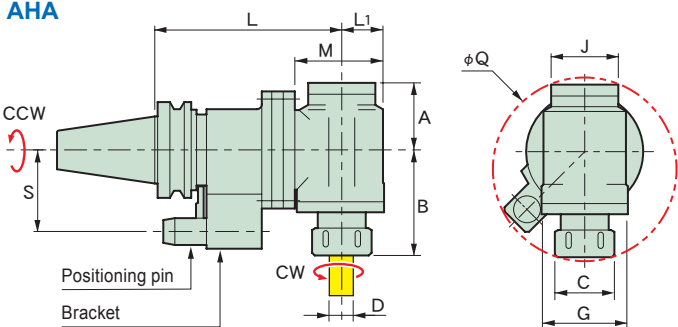
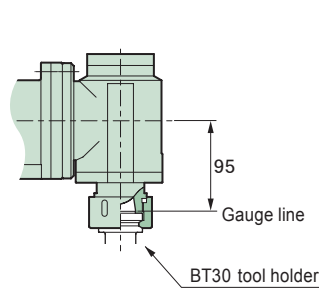


Fig. 2
AHD



CODE	Fig.	φD	L	L ₁	M	A	B	G	φC	J	φQ	Kg	
BT40-AHA20-160	1	5.8~20	160	40	85	65	95	88	50	65	171	7.3	C20
BT50-AHA20-195	1	5.8~20	195	40	89	65	95	88	50	65	171	13.1	C20
-250			249									14.8	
-AHA25-195		5.8~25	195	44	93	70	110	90	62	70	193	13.6	C25
-250			249									15.3	
-AHD30-195	2	—	195				112.6					14.7	—

■ **Option**

- Spring collet → P.19
- Retention knob → P.64
- Semi-finished positioning block → P.19

■ **Std. Access.**

- A complete set of spanners and wrenches

■ **Note**

- The phase of the drive key and the positioning pin is set freely.
- Standard specifications: S = 60 mm, 65 mm (BT40), 80 mm, 85 mm, and 110 mm (BT50).
- Other shanks such as HSK are also available upon request.

■ **Caution**

- For the shape and mounting position of the positioning block, contact the machine manufacturer or MST.
- The height of the positioning pin depends on the shape of the positioning block.
- The machine spindle and angle shaft should rotate in reverse directions, so make sure the spindle rotates in the reverse direction.
- For precautions and maintenance, refer to page 115.

Available for
DIN / CAT.

Cutting data
→ P.20

STANDARD type FLANGE type



MODEL	Chucking range	Gear ratio		MAX. (min ⁻¹)
		Main spindle: Angle shaft	Main spindle(CCW):Angle shaft(CW)	
AHA20	φ5.8~20	1:0.81		3000:2430
AHA25	φ5.8~25	1:0.96		2500:2400
AHD30	BT30 tools	1:0.96		



Fig. 1
AHA

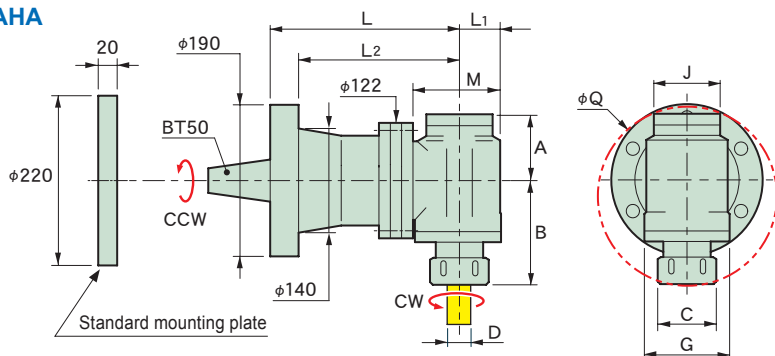
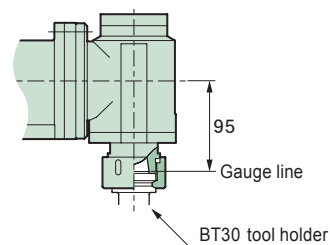


Fig. 2
AHD



CODE	Fig.	φD	L	L ₁	L ₂	M	A	B	G	φC	J	φQ	kg	
F190-AHA20-200	1	5.8~20	200	40	160	89	65	95	88	50	65	171	18	C20
			350		310								28	
-AHA25-200		5.8~25	200	44	160	93	70	110	90	62	70	193	18.5	C25
			350		310								28.5	
-AHD30-200	2	—	200		160					66			19.6	—
			350		310								29.8	

■Option

- Spring collet→P.19
- Retention knob →P.64

■Std. Access.

- A complete set of spanners and wrenches
- Standard mounting plate(No mounting holes are provided.)
- Mounting bolts for ANGLE HEAD

■Note

- NT50U shank is also available.

■Caution

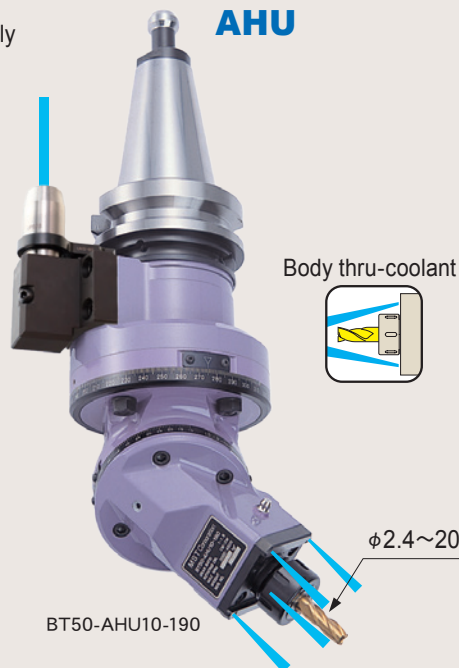
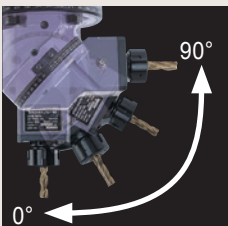
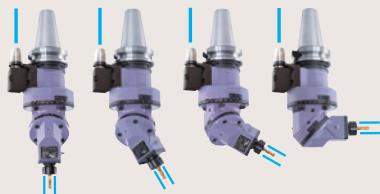
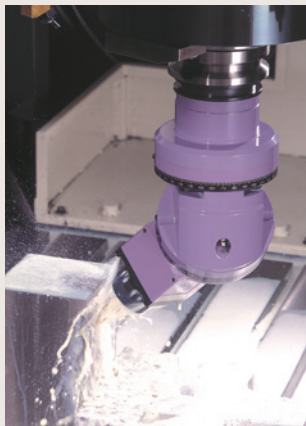
- For mounting plate shapes and mounting bolt location, contact the machine manufacturer or MST.
- The machine spindle and angle shaft should rotate in reverse directions, so make sure the spindle rotates in the reverse direction.
- For precautions and maintenance, refer to page 115.

STANDARD type UNIVERSAL type

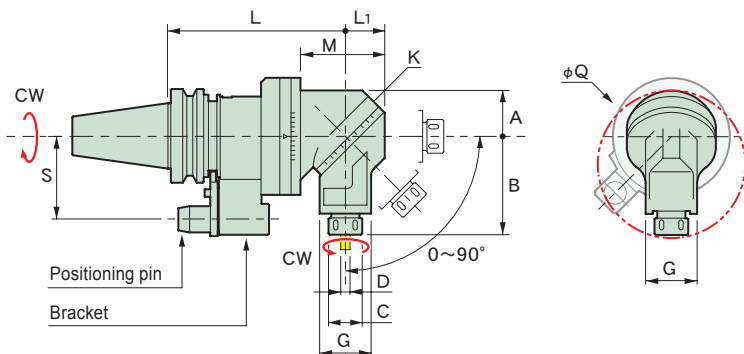
Machining at every angle is possible with just this one unit.

Splash coolant-through body

Whatever machining angle is set, coolant is properly supplied to the cutting edge.



MODEL	Chucking range	Gear ratio		MAX. (min ⁻¹) Main spindle(CW):Angle shaft(CW)
		Main spindle	Angle shaft	
AHU10	φ2.4~10	1 : 1.5		3000 : 4500
AHU20	φ5.8~20	1 : 1		3000 : 3000



CODE	φD	L	L ₁	M	A	B	K	G	φC	φQ	Kg	⊕
BT40-AHU10-175	2.4~10	175	42	96	49	105	95	55	32	156	9.6	C10
BT50-AHU10-190	2.4~10	190	42	90	49	105	95	55	32	192	13.9	C10
-AHU20-200	5.8~20	200	54	112	58.5	130	120	70	50		15.8	C20

- Option
 - Spring collet →P.19
 - Retention knob →P.64
 - Semi-finished positioning block →P.19
 - Test bar

- Std. Access.
 - A complete set of spanners and wrenches

- Note
 - The phase of the drive key and the positioning pin is set freely.
 - Standard specifications: S = 60 mm, 65 mm (BT40), 80 mm, 85 mm, and 110 mm (BT50).
 - Products other than BT shanks can be manufactured upon request.

- Caution
 - For the shape and mounting position of the positioning block, contact the machine manufacturer or MST.
 - The machine spindle and angle shaft should rotate in reverse directions, so make sure the spindle rotates in the reverse direction.
 - The machine spindle and angle shaft should rotate in forward directions, so make sure the spindle rotates in the forward direction.
 - For precautions and maintenance, refer to page 115.

Test bar

Use for super accurate angle adjustment.

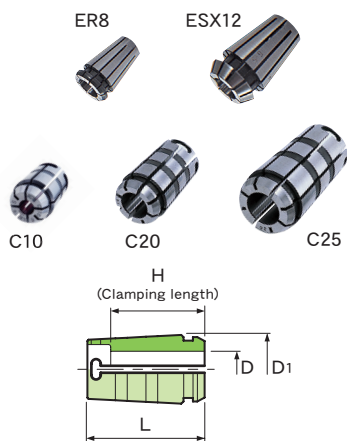
CODE	Holder type
TBU10	AHU10
TBU20	AHU20



Available for
DIN / CAT.

Cutting data
→ P.20

SPRING COLLET

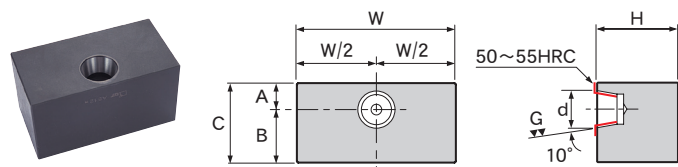


CODE	ϕD	ϕD_1	L	H	Holder type
ER8-D	1 ~ 5 (0.5 Steps)	8.5	13.5	-	AHB 5
ESX12-D	1 ~ 3 (0.5 Steps)	12	19.5	-	AHB 7
	4 ~ 7 (1.0 Steps)				
C10-D	2.6 ~ 5.8 (0.2 Steps)	17.2	26	18	AHB10
	6 ~ 10 (0.2 Steps)			20	AHC10 AHU10
C20-D	6 ~ 9.8 (0.2 Steps)	29.5	50	32	AHA20
	10 ~ 15.8 (0.2 Steps)			35	AHU20
	16 ~ 20 (0.2 Steps)			40	
C25-D	6, 8	36.5	68	38	AHA25
	10 ~ 15 (0.5 Steps)			48	
	15.5 ~ 20 (0.5 Steps)			54	
	20.5 ~ 25 (0.5 Steps)			57	

■ Option
 • Collet remover (C10, C20) → P.38

Semi-finished positioning block

The semi-finished positioning block must be modified to the appropriate shape by the customer after delivery. Determine the shape and dimensions as follows, and then modify the positioning block as necessary.



CODE	A	B	C	W	H	d	Spindle	Material
AB-15	15	43	58	92	58	20	BT40	S50C
-12	20		63	120	63	28	BT50	

1. Obtain the machine manufacturer's drawing for the positioning block and modify the positioning block in accordance with that drawing.
2. Determine the dimensions as shown in the instruction and then modify.
 - This block may not be applicable for dimensional reasons. Carefully check to see whether the positioning block is applicable.
 - The positioning block exclusively for your machine may also be available on request.
 - For further information, please contact MST.

Custom-made products

We are proud of our over 35 years of experience custom making products for our customers. We can produce the best product for you depending on your applications such as O.D and I.D machining thanks to our accumulated know-how.

35
years

Manufacturing history

1
unit

Production starting from just 1 unit

2~4
months

Delivery

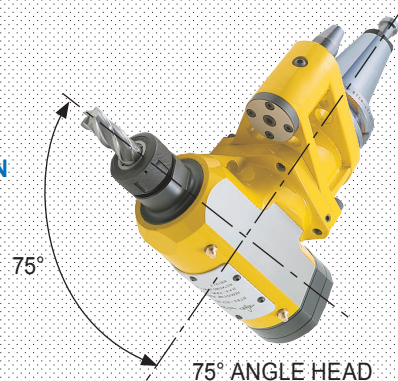
19,300
units

Custom : 1,300 units
Design
Standard : 18,000 units

ANGLE HEAD CUSTOM DESIGN



For more information, please contact us.



<h3>Dual side machining ANGLE HEAD</h3> <p>Medical equipment AL MAX 1500min⁻¹ BT50</p>	<h3>Side face machining ANGLE HEAD</h3> <p>Direct mount MAX 400min⁻¹</p>
<h3>Internal bore surface machining ANGLE HEAD</h3> <p>AL MAX 2650min⁻¹ BT50</p>	<h3>Internal bore surface machining ANGLE HEAD</h3> <p>Direct mount MAX 4500min⁻¹</p>

Cutting data

MODULAR type

<p>SUS304 $\phi 10$</p> <p>n 640 min⁻¹ Endmill Vf 60 mm/min 2 flutes Vc 20 m/min fz 0.05 mm/t</p> <p>BT40-AHB10-195</p>	<p>A2017 $\phi 10$</p> <p>n 4000 min⁻¹ Carbide Vf 400 mm/min endmill Vc 126 m/min 2 flutes fz 0.05 mm/t</p> <p>BT40-AHB10-195</p>	<p>S50C $\phi 10$</p> <p>n 640 min⁻¹ Endmill Vf 60 mm/min 2 flutes Vc 20 m/min fz 0.05 mm/t</p> <p>BT50-AHB10-210</p>
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SOLID type

<p>A2017 $\phi 16$</p> <p>n 1800 min⁻¹ Endmill Vf 130 mm/min 2 flutes Vc 90 m/min fz 0.04 mm/t</p> <p>BT50-AHA25-195</p>	<p>SUS304 $\phi 12$</p> <p>n 527 min⁻¹ Endmill Vf 20 mm/min 2 flutes Vc 60 m/min fz 0.06 mm/t</p> <p>BT40-AHA20-160</p>	<p>SUS304 $\phi 16$</p> <p>n 570 min⁻¹ Endmill Vf 40 mm/min 2 flutes Vc 29 m/min fz 0.04 mm/t</p> <p>BT50-AHA25-195</p>	<p>S55C $\phi 12$</p> <p>n 527 min⁻¹ Drill Vf 39 mm/min 2 flutes Vc 20 m/min f 0.07 mm/rev</p> <p>BT40-AHA20-160</p>	<p>FC30 $\phi 12$</p> <p>n 816 min⁻¹ Endmill Vf 60 mm/min 2 flutes Vc 31 m/min fz 0.04 mm/t</p> <p>BT50-AHD30-195 BT30-CTA20-45</p>
<p>S50C $\phi 16$</p> <p>n 630 min⁻¹ Endmill Vf 80 mm/min 2 flutes Vc 32 m/min fz 0.06 mm/t</p> <p>BT50-AHA25-195</p>				

UNIVERSAL type

<p>A2017 $\phi 10$</p> <p>n 2000 min⁻¹ Endmill Vf 200 mm/min 2 flutes Vc 63 m/min fz 0.07 mm/t</p> <p>BT50-AHU10-190(45°)</p>	<p>S50C $\phi 20$</p> <p>n 350 min⁻¹ Carbide Vf 70 mm/min endmill Vc 22 m/min 2 flutes fz 0.1 mm/t</p> <p>BT50-AHU20-200(45°)</p>
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M/C Tool

HSK-T Tooling Systems for Turning Mill

General Purpose Tool

JIG

Measuring Equipment

Maintenance Tool

Wire EDM fixture

Technical Information