

TOOLING SYSTEM



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Tooling System

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TOOLING SYSTEM

For high speed machining

DBT Series

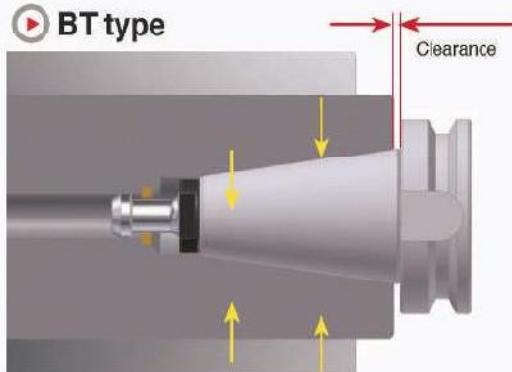
2 face constrained system of taper and shank face for excellent surface roughness and high quality finish in heavy cutting at high speed

Features of 2 face constrained system

- Stable machining can be possible at high speed
- Improvement of tool-life for machine spindle and cutting tool
- Prevention for corrosion of taper portion of both machine spindle and tool holder by heavy duty machining vibration
- Guarantee for the most suitable machining and high accuracy

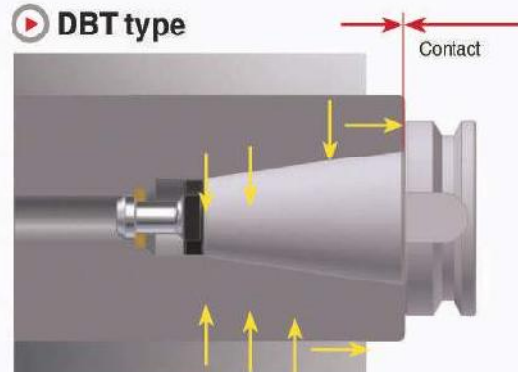


BT type



The clearance between spindle and face of shank

DBT type

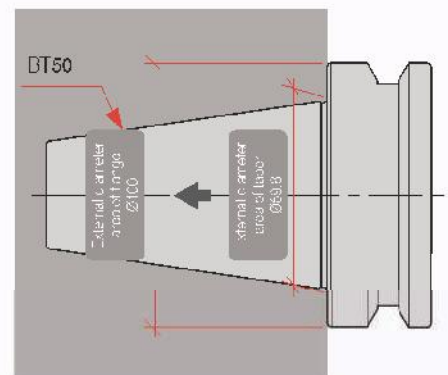


Perfect contact of both faces
Better precision / less vibration

Higher stability and precision

Stability and precision increase due to the close contact between taper face and wide external diameter of flange at DBT shank than at BT shank

Shank	Taper	Flange
BT30	Ø31.7	→ Ø46
BT40	Ø44.4	→ Ø63
BT50	Ø69.8	→ Ø100



Difference between taper face contact and flange contact at its external diameter

Various models

Drilling/Endmilling		Milling		Face Milling	Angular Head
DBT-SDC	DBT-HPS	DBT-NPM	CBT-DHE	DBT-FMA	DBT-KAG

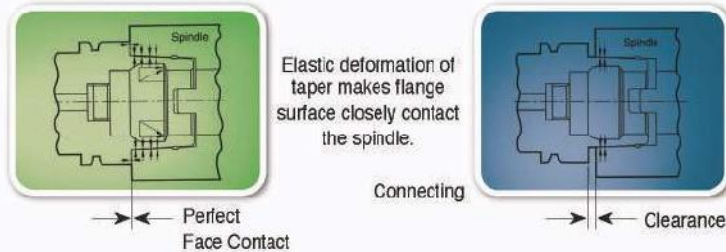


HSK Tooling System

► HSK 2 Face Constrained Toolholder

The 7/24 taper shank for multi-purpose has been pointed out that its performance is inappropriate in terms of repeatability, joint stiffness and high speed machining.

Drawbacks of 7/24 taper shank had been eliminated by using new two face contact.

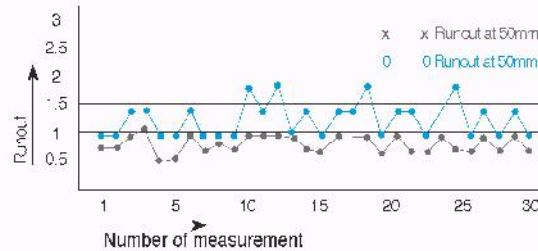
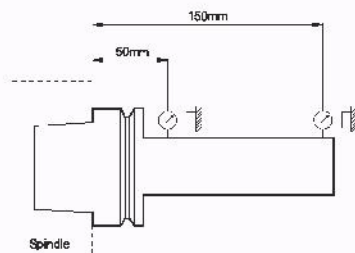


HSK shank -Perfect 2-surface constrained System

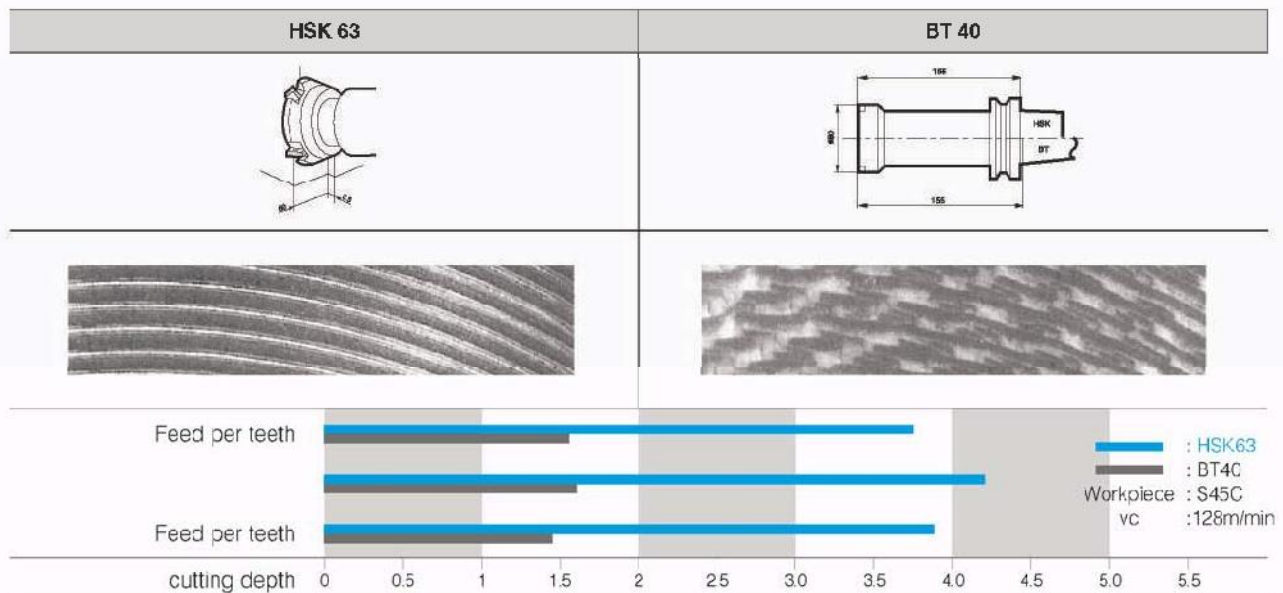


► Excellent Repeatability-Run out Accuracy

As taper of holder will deform elastically following the profile of the spindle shape, there is no eccentricity between the spindle and the other. Also, due to perfect face contact between flange surface of the holder and spindle face, bending strength of the holder is very high, which makes radial and axial and accuracy very high.

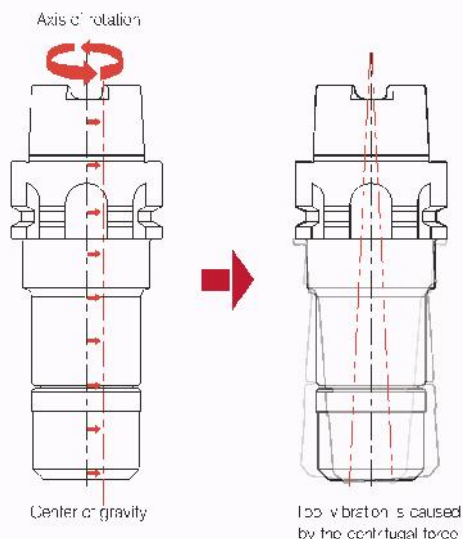


► High Rigidity Against Bending Load



Balancing System

▶ Imbalance



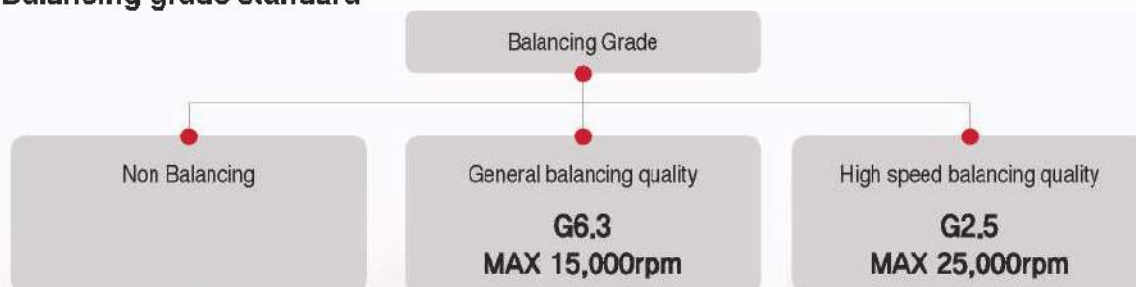
- ▶ **Cause of imbalance**
Imbalance occurs due to the asymmetry of tool geometries and spindle run-out
- ▶ **Difficulties of imbalance**
Shorter tool life, inferior surface roughness and noise are caused by vibration during rotation and damage on spindle bearing
- ▶ **Need for balancing**
Balancing is needed to prevent unbalance for better surface roughness, precision and tool life

※ A case that the tool's center of gravity deviates from the rotation axis

▶ The most optimal accuracy at high speed

1. Without bending from rotation of an unbalanced load,
High accuracy and rigidity are maintained
2. Excellent Balance ($\leq G1.0$ or $0.5 \text{ g}\cdot\text{mm/kg}$)
3. Tool life, surface finish, dimension of accuracy
and productivity can be realized at high speed

▶ Balancing grade standard



Various balancing quality available

BT, SK Shank,
HSK Shank

79 350 48
Ø48 88 gmm
Whole balanced type 30,000 1/min



Hydraulic Expansion Chuck  I 17	Shrinking Chuck  I 10	Champion Milling Chuck  I 17	Milling Chuck  I 20
Collet Chuck  I 24	Collet Chuck  I 28	Collet Chuck  I 29	High Speed Synchro Slim Chuck  I 31
Collet Chuck  I 34	High Speed Synchro Tapping Chuck  I 39	Drill Chuck  I 41	Tap Chuck  I 43
Side Lock Arbor  I 46	Face Mill Arbor  I 48	Morse Taper Arbor  I 51	Angular Head Series  I 54
Angular Head Series  I 55	Angular Head Series  I 56	Angular Head Series  I 57	Angular Head Series  I 58
Angular Head Series  I 59	Boring Tool  I 61	Boring Tool  I 66	Boring Tool  I 68
Boring Tool  I 69	Boring Tool  I 70	Boring Tool  I 71	Modular System  I 73
Modular System Extension Bar  I 75	Modular System Reducer Bar  I 76	DAMPING PRO FMA/FMC  I 79	

Hydraulic expansion chuck

DHE Series

- Ideal for mold making and machining automobile components & precise parts due to high precision machining
- Improved surface roughness due to vibration proof by hydraulic chamber
- Reduced replacement time and tiredness of worker with the use of T wrench for removal
- Applicable shank diameter : D3-32



Code System



Features

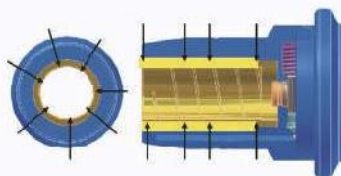
High accuracy provides long tool life due to reduced wear and hydraulic room enhances a surface roughness by lessening vibrations.

- RUN OUT : under $5\mu\text{m}$
- L = 3 x $\varnothing\text{D}$
- Shank : Tolerance of $\varnothing\text{D} : \text{h6}$



Internal sealing structure(Durability)

- Internal sealing system protects the chuck against dust, cutting oil, lubricant and chips getting into it.
- Maintaining clamping force and accuracy for a long time



SHANK	Grade	Max.rpm
BT50, SK50, HSK100A	G6.3	10,000
BT40, SK40, HSK63A		15,000
BT30, HSK50A, SK30		20,000
HSK40A	-	25,000

With simple T-Wrench, very easy to change a tool

- Clamping structure for easy operation (Convenience)
- : Decrease of worker's fatigue
- : Improving machine capacity



Strong clamping

The clearance between holder and tool is fixed by hydraulic pressure



BT-DHE

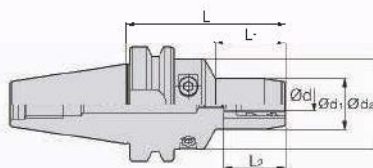


Fig. 1

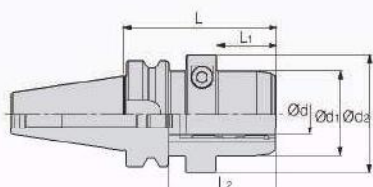


Fig. 2

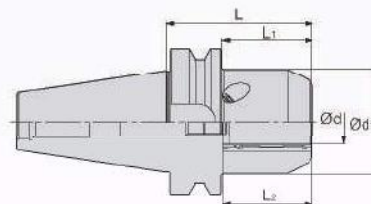


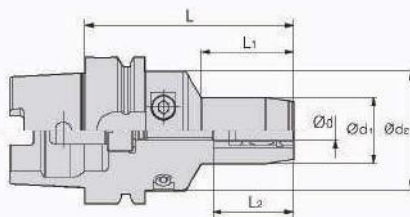
Fig. 3

(mm)

Designation		Ød	L	Ød1	Ød2	L1	L2	Screw	Fig.	
BT30 -	DHE 6 - 65	6	65	29	45	33	30~39.8	M5	1	0.7
	DHE 8 - 65	8	65	31	45	33	30~39.8	M5	1	0.7
	DHE 10 - 65	10	65	33	45	34	35~44.8	M10	1	0.7
	DHE 12 - 65	12	65	35	45	34	41~50.8	M10	1	0.7
	DHE 14 - 90	14	90	36	45	40	43~52.8	M10	1	0.9
	DHE 16 - 90	16	90	40	45	45	46~55.8	M10	1	1.0
	DHE 18 - 90	18	90	42	45	40	49~58.8	M10	1	1.0
	DHE 20 - 90	20	90	44	45	45	49~58.8	M10	1	1.1
BT40 -	DHE 6 - 90	6	90	29	50	40	30~39.8	M5	1	1.4
	140	6	140	29	50	40	30~39.8	M5	1	2.2
	DHE 8 - 90	8	90	31	50	40	30~39.8	M5	1	1.4
	140	8	140	31	50	40	30~39.8	M5	1	2.2
	DHE 10 - 90	10	90	33	50	40	35~44.8	M5	1	1.5
	140	10	140	33	50	40	35~44.8	M5	1	2.2
	DHE 12 - 90	12	90	35	50	40	41~50.8	M10	1	1.5
	140	12	140	35	50	40	41~50.8	M10	1	2.3
	DHE 14 - 90	14	90	36	50	40	43~52.8	M10	1	1.5
	140	14	140	36	50	40	43~52.8	M10	1	2.3
	DHE 16 - 90	16	90	40	50	45	46~55.8	M10	1	1.5
	140	16	140	40	50	45	46~55.8	M10	1	2.3
	DHE 18 - 90	18	90	42	50	45	49~58.8	M10	1	1.5
	140	18	140	42	50	45	49~58.8	M10	1	2.3
	DHE 20 - 90	20	90	44	50	47	49~58.8	M10	1	1.5
	140	20	140	44	50	47	49~58.8	M10	1	2.3
	DHE 25 - 90	25	90	50	70	35	58~67.8	M16	2	1.9
	DHE 32 - 90	32	90	63	80	35	58~67.8	M16	2	2.0
BT50 -	DHE 6 - 90	6	90	29	50	34	30~39.8	M5	1	3.9
	140	6	140	29	50	34	30~39.8	M5	1	4.5
	DHE 8 - 90	8	90	31	50	34	30~39.8	M5	1	3.9
	140	8	140	31	50	34	30~39.8	M5	1	4.5
	DHE 10 - 90	10	90	33	50	34	35~44.8	M5	1	3.9
	140	10	140	33	50	34	35~44.8	M5	1	4.5
	DHE 12 - 90	12	90	35	50	34	41~50.8	M10	1	4.0
	140	12	140	35	50	34	41~50.8	M10	1	4.6
	DHE 14 - 90	14	90	36	50	34	43~52.8	M10	1	4.0
	140	14	140	36	50	34	43~52.8	M10	1	4.6
	DHE 16 - 90	16	90	40	50	34	46~55.8	M10	1	4.1
	140	16	140	40	50	34	46~55.8	M10	1	4.7
	DHE 18 - 90	18	90	42	50	34	49~58.8	M10	1	4.1
	140	18	140	42	50	34	49~58.8	M10	1	4.7
	DHE 20 - 90	20	90	44	50	34	49~58.8	M10	1	4.2
	140	20	140	44	50	34	49~58.8	M10	1	4.7
	DHE 25 - 90	25	90	66	-	52	58~67.8	M16	3	4.7
	DHE 32 - 90	32	90	72	-	52	58~67.8	M16	3	4.8



HSK-DHE

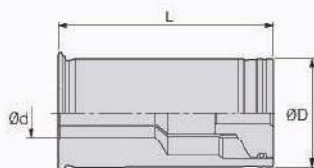


(mm)

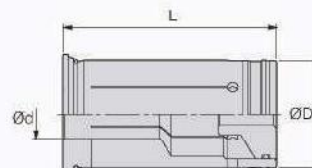
Designation		Ød	L	Ød ₁	Ød ₂	L ₁	L ₂	Screw	
HSK63A -	DHE 6 - 75	6	75	29	50	34	30~39.8	M5	1.C
	DHE 8 - 75	8	75	31	50	34	30~39.8	M5	1.C
	DHE 10 - 85	10	85	33	50	34	35~44.8	M5	1.2
	DHE 12 - 90	12	90	35	50	40	41~50.8	M10	1.2
	DHE 16 - 95	16	95	40	50	45	43~55.8	M10	1.3
	DHE 20 - 100	20	100	44	50	50	49~58.8	M10	1.4
	150	20	150	44	50	50	49~58.8	M10	2.C
HSK100A -	DHE 20 - 105	20	105	44	50	50	49~58.8	M10	2.B
	DHE 25 - 115	25	90	50	63	62	58~67.8	M16	3.3
	DHE 32 - 115	32	90	63	75	62	55~67.8	M16	3.C

• L2: Insertion depth of tool (Min.~max.) • Through coolant system is optional.

DHC Collet (General type)



DHC Collet (Accuracy type)



Designation	ØD	Ød	L
DHC12 - 3, 4, 5, 6, 8	12	3, 4, 5, 6, 8	47
DHC20 - 3, 4, 5, 6, 8, 10, 12, 14, 16	20	3, 4, 5, 6, 8, 10, 12, 14, 16	52
DHC32 - 6, 8, 10, 12, 14, 16, 18, 20, 25	32	6, 8, 10, 12, 14, 16, 18, 20, 25	60

Designation	ØD	Ød	L
DHC12 - 3(P), 4(P), 5(P), 6(P), 8(P)	12	3, 4, 5, 6, 8	47
DHC20 - 3(P), 4(P), 5(P), 6(P), 8(P), 10(P), 12(P), 14(P), 16(P)	20	3, 4, 5, 6, 8, 10, 12, 14, 16	52
DHC32 - 6(P), 8(P), 10(P), 12(P), 14(P), 16(P), 18(P), 20(P), 25(P)	32	6, 8, 10, 12, 14, 16, 18, 20, 25	60

Parts

Spare Parts					
Chuck		Clamp Screw	Wrench	Chuck	Screw
Type				Type	
BT30 / SK30 / HSK50	DHE 6, 8, 10, 12	D-IE-M8(C)	DHETW-4	DHE 6, 8, 10	DHE-M5 (AD.)
BT30 / SK30 / HSK50	DHE 14, 16, 18, 20	DHE-M10i(C)	DHETW-5		DHE 12, 16, 20
HSK63A / HSK100A / BT40 / BT50 / SK40 / SK50	DHE 6, 8, 10, 12, 14, 16 18, 20				
HSK63A / HSK100A / BT40 / BT50 / SK40 / SK50	DHE 25, 32	DHE-M12(C)	DHETW-6	DHE 25, 32	DHE-M16 (ADJ)



Shrinking Chuck

DSC

- Use of specially heat-treated steel
- High precision machining and clamping
- Increased precision and longer tool life due to minimized overhang when machining deep grooves
- Applicable shank diameter : D3-32



Code System

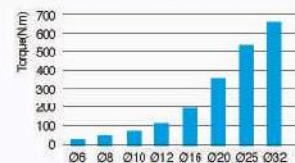
BT50 - DSC 6 - S - 165 - S					
Shank type	Holder type	Tool Dia.	Type	Length	Special
BT, HSK, SK, ST, CS, CM	DSC : Shrinking chuck SLK : 2piece holder Collet		S : Slim M : Middle NON : general		S : CURVE TYPE NON : general

Mono Curve type

- Integral DSC with excellent precision and balancing
- Long but stable holder design



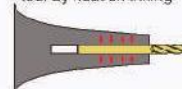
High Clamping Force



- 30 % stronger Clamping Force
- Run-Cut ($\leq 0.003\text{mm}$)
- Higher Power transmission Clamping Force by Inner-Size.

Shrinking chuck

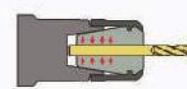
Fix the clearance between holder and tool by heat shrinking



Highly strong clamping

Collet chuck

Fix the tool by elasticity of collet



Strong clamping

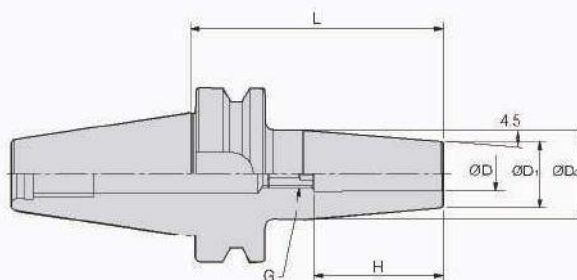
Mono type

Figure	Accuracy

2-pieces type

Figure	Accuracy

BT-DSC



(mm)

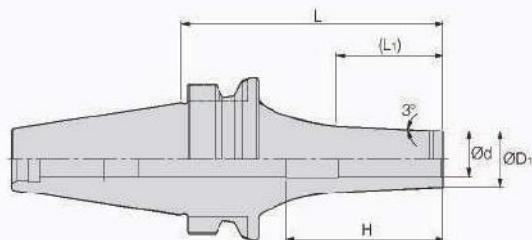
Designation	ØD	L	ØD ₁	ØD ₂	H	G	$\frac{1}{kg}$
BT30 - DSC3 - 60	3	60	11	16.5	82	-	0.6
DSC4 - 60	4	60	13	20.5	82	-	0.6
BT40 - DSC6 - 90	6	90	21	27	36	M5	1.2
120	6	120	21	27	36	M5	1.2
160	6	160	21	27	36	M5	1.4
DSC8 - 90	8	90	21	27	36	M5	1.2
120	8	120	21	27	36	M5	1.2
160	8	160	21	27	36	M5	1.4
DSC10 - 90	10	90	24	32	42	M8	1.2
120	10	120	24	32	42	M8	1.2
160	10	160	24	32	42	M8	1.6
DSC12 - 90	12	90	24	32	47	M8	1.2
120	12	120	24	32	48	M8	1.2
160	12	160	24	32	49	M8	1.6
DSC16 - 90	16	90	27	34	50	M12	1.3
120	16	120	27	34	50	M12	1.3
160	16	160	27	34	50	M12	1.7
DSC20 - 90	20	90	33	42	52	M12	1.3
120	20	120	33	42	52	M12	1.5
160	20	160	33	42	52	M12	2.1

Adjust: screw 116

• Through coolant system available



BT-DSC/M Mono Curve type *New*



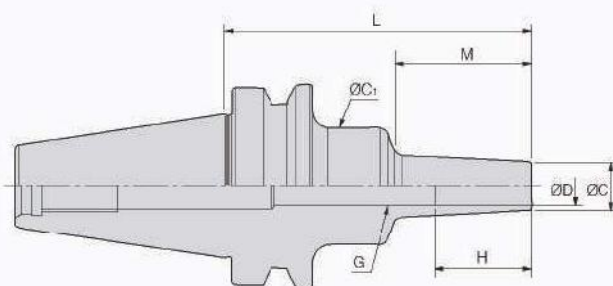
(mm)

Designation		ØD	L	L1	ØD1	ØC1	H	G	
BT30 -	DSC3M - 75S	3	75	29.8	8	25	97	-	0.6
	DSC4M - 75S	4	75	31.8	10	25	97	-	0.6
	DSC6M - 75S	6	75	28.9	12	30	97	-	0.6
	DSC8M - 75S	8	75	28.9	14	32	97	-	0.6
	DSC10M - 75S	10	75	30.66	16	32	45	-	0.6

• Not able to use the adjust screw • Through coolant system available



BT-DSC/M Mono type



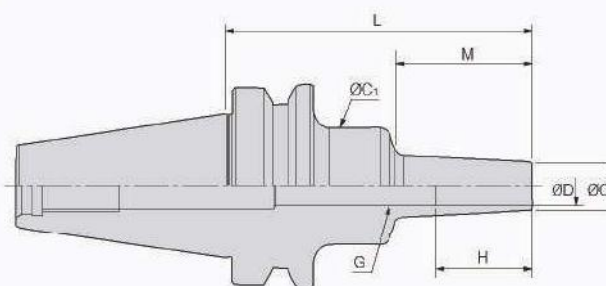
		(mm)							
Designation		ØD	L	ØD ₁	ØC ₁	M	H	G	
BT40 -	DSC6M - 95	6	95	10	26	42	18	M5	1.2
	120	6	120	10	26	67	18	M5	1.2
	160	6	160	10	36	97	18	M5	1.5
	DSC8M - 95	8	95	13	36	42	24	M6	1.2
	120	8	120	13	36	67	24	M6	1.2
	160	8	160	13	36	97	24	M6	1.5
	DSC10M - 95	10	95	16	36	42	30	M8	1.2
	120	10	120	16	36	67	30	M8	1.2
	160	10	160	16	36	97	30	M8	1.5
	DSC12M - 95	12	95	19	36	42	30	M8	1.2
	120	12	120	19	36	67	30	M8	1.2
	160	12	160	19	36	97	30	M8	1.5
	DSC16M - 95	16	95	24	50	42	32	M12	1.2
	120	16	120	24	50	67	32	M12	1.2
	160	16	160	24	50	97	32	M12	1.5
	DSC20M - 95	20	95	29	50	42	40	M12	1.2
	120	20	120	29	50	67	40	M12	1.2
	160	20	160	29	50	97	40	M12	1.5
BT50 -	DSC6M - 110	6	110	10	26	42	18	M5	3.5
	160	6	160	10	36	97	18	M5	4
	DSC8M - 110	8	110	13	36	42	24	M5	3.5
	160	8	160	13	36	97	24	M5	4
	DSC10M - 110	10	110	16	36	42	30	M6	3.5
	160	10	160	16	36	97	30	M6	4
	DSC12M - 110	12	110	19	36	42	30	M6	3.5
	160	12	160	19	50	97	30	M6	4
	DSC16M - 110	16	110	24	50	42	32	M12	3.5
	160	16	160	24	50	97	32	M12	4
	DSC20M - 110	20	110	29	50	42	40	M12	3.5
	160	20	160	29	50	97	40	M12	4

 Adjust screw 116

• Through coolant system available



BT-DSC/S Mono Slim type



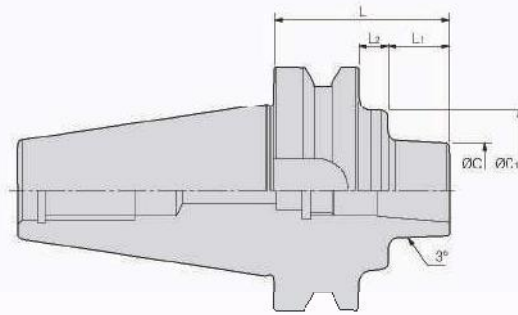
(mm)

Designation		ØD	L	ØD ₁	M	H	G
BT30 -	DSC6S - 60	6	60	9	20	22	18
	80	6	80	9	20	42	18
	120	6	120	9	25	57	18
BT40 -	DSC6S - 95	6	95	9	25	42	18
	120	6	120	9	25	57	18
	160	6	160	9	35	97	18
	DSC8S - 95	8	95	11	35	42	24
	120	8	120	11	35	57	24
	160	8	160	11	35	97	24
	DSC10S - 95	10	95	13	35	42	30
	120	10	120	13	35	57	30
	160	10	160	13	35	97	30
	DSC12S - 95	12	95	15	35	42	30
	120	12	120	15	35	57	30
	160	12	160	15	35	97	30
BT50 -	DSC6S - 110	6	110	9	25	42	18
	160	6	160	9	35	97	18
	DSC8S - 110	8	110	11	35	42	24
	160	8	160	11	35	97	24
	DSC10S - 110	10	110	13	35	42	30
	160	10	160	13	35	97	30
	DSC12S - 110	12	110	15	35	42	30
	160	12	160	15	35	97	30

• Not able to use the adjust. screw • Through coolant system, available



BT-SLK 2-pieces type



(mm)

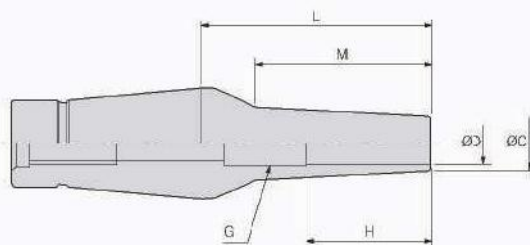
Designation		L	ØC	L1	L2	ØC1
BT30 -	SLK12 - 35	35	38	13	-	-
BT40 -	SLK12 - 45	45	38	18	-	-
	45F	45	41	18	-	-
	75	75	38	48	-	-
	75F	75	41	48	-	-
	135F	135	41	108	-	-
BT50 -	SLK12 - 75	75	38	25	12	65
	75F	75	41	25	12	65
	105F	105	41	55	12	65
	135F	135	41	85	12	65
	225	225	38	150	57	65
	315	315	38	150	127	90

 Spare Part 116

• Through coolant system available • PULL STUD BOLT is needed for BT30 SLK 2 35



CS/CM 2-pieces type



(mm)

Designation			ØD	ØC	L	M	H
CS12 -	6 -	35	6	9	35	22	18
		55	6	9	55	42	18
		80	6	9	90	67	18
		110	6	9	110	97	18
	8 -	35	8	11	35	22	24
		55	8	11	55	42	24
		80	8	11	90	67	24
		110	8	11	110	97	24
	10 -	35	10	13	35	22	30
		55	10	13	55	42	30
		80	10	13	90	67	30
		110	10	13	110	97	30
	12 -	35	12	15	35	22	30
		55	12	15	55	42	30
		80	12	15	90	67	30
		110	12	15	110	97	30

• Not able to use the adjust. screw • Through coolant system, available

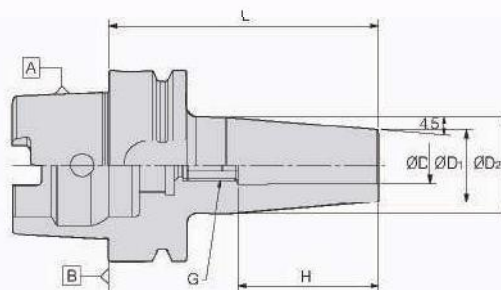
(mm)

Designation			ØD	ØC	L	M	H
CM12 -	6 -	35	6	12	35	22	18
		55	6	12	55	42	18
		80	6	12	90	67	18
	8 -	35	8	14	35	22	24
		55	8	14	55	42	24
		80	8	14	90	67	24
	10 -	35	10	16	35	22	30
		55	10	16	55	42	30
		80	10	16	90	67	30
	12 -	35	12	20	35	22	30
		55	12	20	55	42	30
		80	12	20	90	67	30

Adjust screw T16

• Through coolant system, available

HSK-DSC/M Mono type

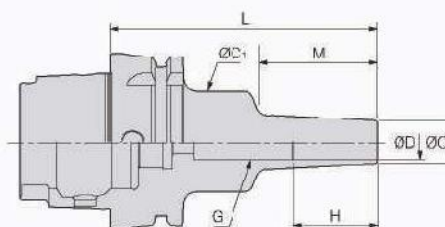


(mm)

Designation		ØD	L	ØD ₁	ØC ₁	M	H	G
HSK63A -	DSC6M - 95	6	95	10	26	42	18	M5
	DSC8M - 95	8	95	13	36	42	24	M5
	DSC10M - 120	10	120	16	36	67	30	M6
	DSC12M - 120	12	120	19	36	67	30	M8
	DSC16M - 120	16	120	24	50	67	32	M12

• Not able to use the adjust screw • Through coolant system is optional.

HSK-DSC/S Mono type



(mm)

Designation		ØD	L	ØD ₁	ØC ₁	M	H
HSK63A -	DSC6S - 95	6	95	9	26	42	18
	120	6	120	9	26	67	18
	DSC8S - 95	8	95	11	36	42	24
	160	8	160	11	36	97	24
	DSC10S - 95	10	95	13	36	42	30
	160	10	160	13	36	97	30
	DSC12S - 95	12	95	15	36	42	30
	160	12	160	15	36	97	30

• Not able to use the adjust screw • Through coolant system is optional.

Parts

Spare Parts											
Type		DSC6	DSC8	DSC10	DSC12	DSC14	DSC16	DSC18	DSC20	DSC25	DSC32
Screw		M520C		M820C		M1230C					



Champion milling chuck

CPM

- Improved tool life by blocking dust and lubricant leaking with perfect sealing structure on O-ring and Nut
- Available through coolant system with CTC set
- Length regulator is inserted in CPM, user can adjust length conveniently.

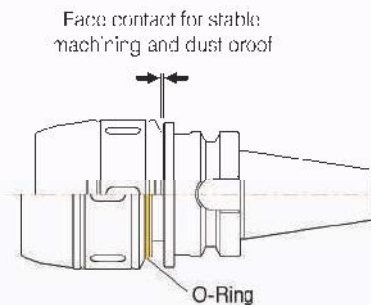


Code System



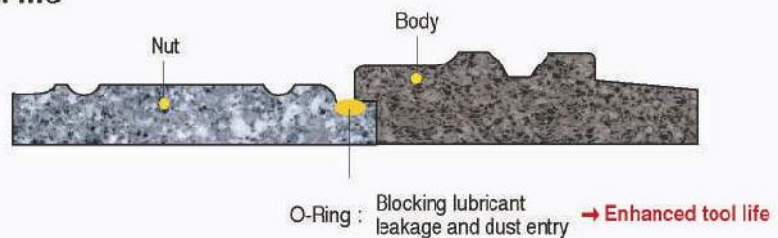
Prevention of grease leak and dust proof

CPM has O-Ring on nuts to absorb cutting vibration for stable operation and prevents inflow of debris.

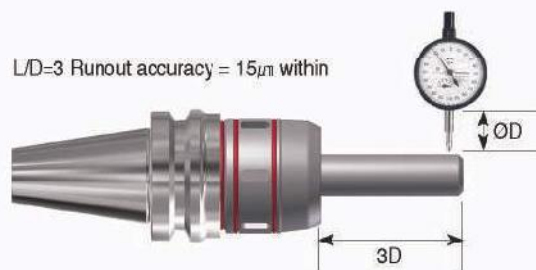


Correlation of oil leaking and tool life

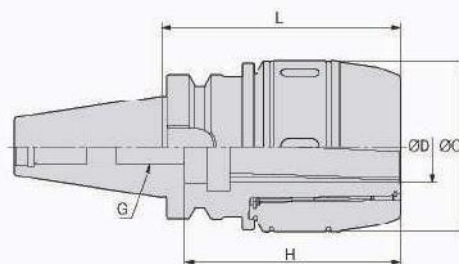
Obvious increase of tool life after applying dust proof system



L/D=3 Runout accuracy = 15 μ m within



BT-CPM



(mm)

Designation		ØD	L	ØC	H	G	Collet	
BT30 -	CPM20 - 80	20	80	54	85	M 6	DC20, DSC20	1.1
BT40 -	CPM20 - 90	20	90	54	85	M 6	DC20, DSC20	2.3
	CPM32 - 90	32	90	75	85	M 6	DC32, DCS32	2.8
	105	32	105	75	95	M 6	DC32, DCS32	2.9
BT50 -	CPM32 - 105	32	105	75	105	M24	DC32, DCS32	5.0
	135	32	135	75	105	M24	DC32, DCS32	5.8
	165	32	165	75	105	M24	DC32, DCS32	6.8

• Order made sets available • Through coolant system is optional.



New power milling chuck

NPM

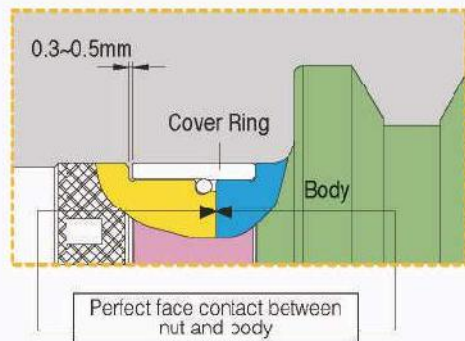
- Strong clamping over 500kgf·m (on NPM42 basis)
- DUST BLOCK functions for blocking foreign substance
- Jet coolant available
- High precision within 15 μ m at L/D=3
- Applicable shank diameter : D6-42



Code System



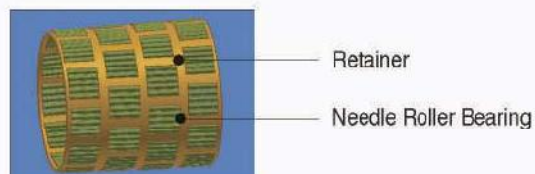
Improvement of Durability by preventing minute dust, chips and coolant



Adopted Stop Ring on Head parts
- Preventing minute dust by Shim&O-Ring



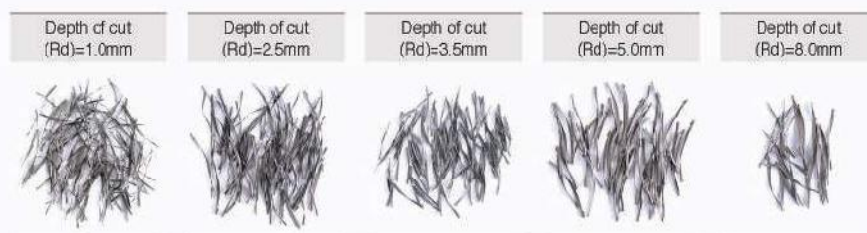
Needle Roller Bearing



- Specially designed Steel Bearing for prevention of damage
- Strong Clamping by spreading the force

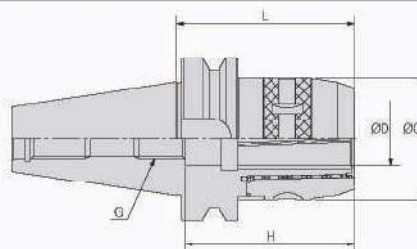
Stable machining from Heavy to Fine

Perfect face contact and Powerful clamping force strengthen both Cutting force and Absorption of vibration.



Possible machining from heavy milling to fine finishing

BT-NPM



(mm)

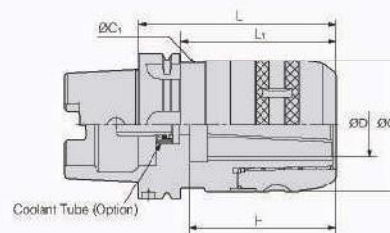
Designation	ØD	L	ØC	H	G	Collet	kg
BT30 - NPM20 - 85	20	85	54	85	M16	DC20, DSC20	1.1
BT40 -	85	20	85	54	M16	DC20, DSC20	2.3
	100	20	100	54	M16	DC20, DSC20	2.3
	NPM25 - 85	25	85	61	M16	DC25, DSC25	2.5
	NPM32 - 90	32	90	75	M16	DC32, DCS32	2.8
	110	32	110	75	M16	DC32, DCS32	2.9
BT50 -	135	32	135	75	M16	DC32, DCS32	3.5
	NPM20 - 95	20	95	54	M24	DC20, DSC20	4.3
	125	20	125	54	M24	DC20, DSC20	4.8
	165	20	165	54	M24	DC20, DSC20	5.3
	NPM32 - 110	32	110	75	M24	DC32, DCS32	5.0
	135	32	135	75	M24	DC32, DCS32	5.8
	165	32	165	75	M24	DC32, DCS32	6.8
	NPM42 - 110	42	110	90	M24	DC42, DCS42	5.4
	135	42	135	90	M24	DC42, DCS42	6.6
	165	42	165	90	M24	DC42, DCS42	8.0

Applicable collet: I21

• Through coolant system available is optional

• In case of L ≤ 90, chucks with over 90mm are recommended for medium cutting by short cap.

HSK-NPM



(mm)

Designation		ØD	L	L1	ØC	H	G	Collet	
HSK63A -	NPM20 - 100	20	85	54	85	M16	M16	DC20, DSC20	1.1
	NPM32 - 120	42	135	90	125	M24	M24	DC42, DCS42	5.6
HSK100A -	NPM32 - 130	42	165	90	125	M24	M24	DC42, DCS42	8.0

Applicable collet: I21

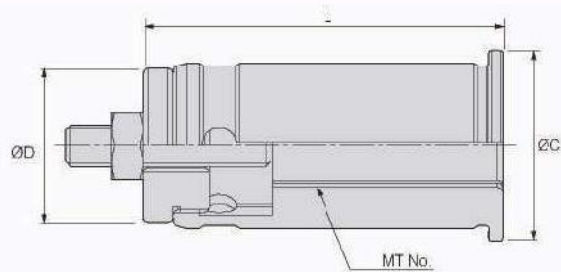
• Through coolant system is optional.

Parts

Division	Spare Parts		
	Option		
	Collet	Spanner	Through Coolant System
Type			
NPM20	DC20, DSC20	57-60	CTC20-20
NPM32	DC32, DCS32	75-79	CTC32-32
NPM42	DC42, DCS42	92-96	CTC42-42



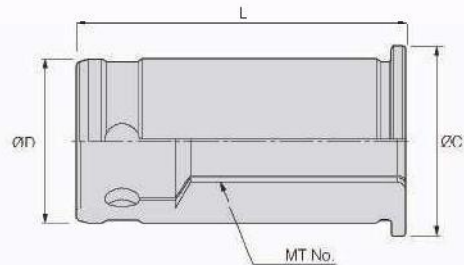
DCS Straight Collet



(mm)

Designation	ØD	Ød	ØC	L	$\frac{1}{kg}$
DCS20 - 6, 8, 10, 12, 16	20	6, 8, 10, 12, 16	26	55	0.2
DCS25 - 6, 8, 10, 12, 16, 20	25	6, 8, 10, 12, 16, 20	29	66.5	0.3
DCS32 - 6, 8, 10, 12, 14, 16, 19, 20, 25	32	6, 8, 10, 12, 14, 16, 19, 20, 25	38	70	0.4
DCS42 - 6, 8, 10, 12, 16, 20, 25, 32	42	6, 8, 10, 12, 16, 20, 25, 32	48	75	0.7

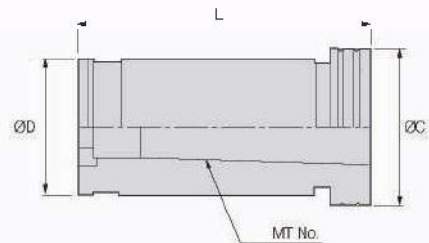
DC Straight Collet



(mm)

Designation	ØD	Ød	ØC	L	$\frac{1}{kg}$
DC20 - 6, 8, 10, 12, 14, 16	20	6, 8, 10, 12, 14, 16	26	55	0.2
DC25 - 6, 8, 10, 12, 16, 20	25	6, 8, 10, 12, 16, 20	29	61.5	0.3
DC32 - 6, 8, 10, 12, 14, 16, 19, 20, 25	32	6, 8, 10, 12, 14, 16, 19, 20, 25	38	70	0.4
DC42 - 6, 8, 10, 12, 16, 20, 25, 32	42	6, 8, 10, 12, 16, 20, 25, 32	48	75	0.7

TC Taper Collet



(mm)

Designation	MT No.	ØD	ØC	L
TC20 - 1	MT1	20	26	60
TC20 - 2	MT2	20	26	72
TC25 - 1	MT1	25	32	60
TC25 - 2	MT2	25	32	72
TC32 - 1	MT1	32	38	60
TC32 - 2	MT2	32	38	72

Designation	MT No.	ØD	ØC	L
TC32 - 3	MT3	32	38	90
TC42 - 1	MT1	42	48	60
TC42 - 2	MT2	42	48	72
TC42 - 3	MT3	42	48	90
TC42 - 4	MT4	42	48	112.5



Collet Chuck Series

- High Accuracy and Powerful clamping force
- Convenient tool change
- Various models
- Chucking Diameter $\varnothing 0.5 \sim \varnothing 34.0\text{mm}$



Collet Chuck Series

Collet Chuck



SDC

- Max. Chucking dia. : $\varnothing 34.0\text{mm}$
- For use of Drilling, Reaming, Endmilling and Tapping etc.

Slim Collet Chuck



SDC/S

- Max. Chucking dia. : $\varnothing 16.0\text{mm}$
- For use of Drilling, Reaming, Endmilling of narrow and deep place

High Speed Collet Chuck



HPS

- Max. Chucking dia. : $\varnothing 20.0\text{mm}$
- Balanced G6.3
- Max. Revolution : 15,000rpm

High Speed Slim Collet Chuck



GSK

- Max. Chucking dia. : $\varnothing 25.0\text{mm}$
- Balanced G2.5
- Max. Revolution : 25,000rpm

High Precision Collet

- Accuracy type : $5\mu\text{m}$ (GER-B)
- High accuracy type : $2\mu\text{m}$ (GER-HP)
- Through Coolant type



- Accuracy type
- High accuracy type



- Through Coolant type



Collet chuck

SDC

- ER collet chuck, standard type for general machining
- Applicable shank diameter : D0.5~34

▶ **First-class nut (SWISS Made⁺)**



Easy clamping of collets



Special hardening treatment



SDC
(For low speed machining)



High speed collet chuck

HPS

- Available for machining at max.15,000RPM and balancing of G6.3
- ER collet chuck proper for high speed machining with its use of Swiss made sleeve nut and balancing
- Applicable shank diameter : D0.5~34

▶ **First-class nut (SWISS Made⁺)**



Specialized design for dust proof



Smooth sleeve bearing



HPS
(For high speed machining)



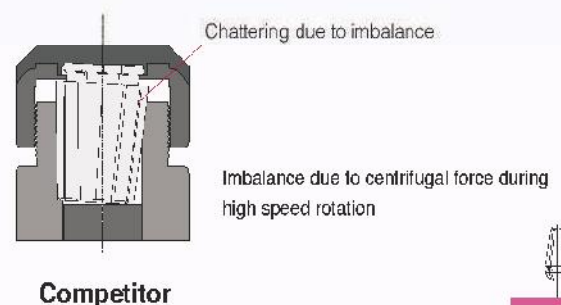
▶ Nuts can be differently used according to the purpose

Great speed slim collet chuck

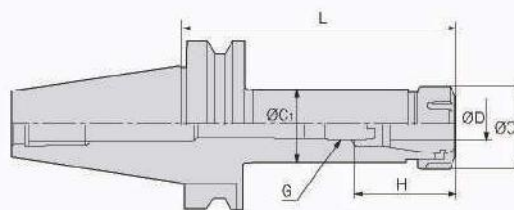
GSK

- Available for machining at max.25,000RPM and balancing of G2.5
- Increased productivity due to high speed machining
- Minimized tool vibration during operation by using collet 8°
- Swiss made high precision nut enhances stability by pressing collet uniformly
- Applicable shank diameter : D0.5~34

▶ **Original design**



BT-SDC



(mm)

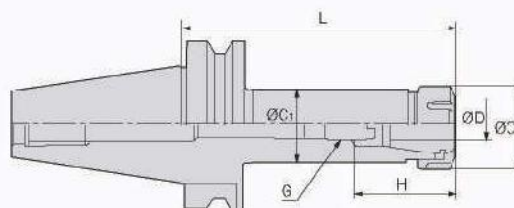
Designation		ØD	L	H	Collet / Step	G	ØC	ØC ₁	$\frac{L}{kg}$
BT30 -	SDC7 - 50	1.0~7.0	50	50	GER11/0.5	M7	19	19	0.5
	75	1.0~7.0	75	75	GER11/0.5	M7	19	19	0.5
	105	1.0~7.0	105	105	GER11/0.5	M7	19	19	0.6
	SDC10 - 50	1.0~10.0	50	50	GER16/1.0	M10	28	28	0.5
	75	1.0~10.0	75	75	GER16/1.0	M10	28	28	0.5
	105	1.0~10.0	105	105	GER16/1.0	M10	28	28	0.6
	SDC13 - 50	1.0~13.0	50	50	GER20/1.0	M7	35	35	0.5
	75	1.0~13.0	75	75	GER20/1.0	M13	35	35	0.6
	105	1.0~13.0	105	105	GER20/1.0	M13	35	35	0.7
	SDC16 - 50	1.0~16.0	50	50	GER25/1.0	M7	42	42	0.6
	75	1.0~16.0	75	75	GER25/1.0	M18	42	42	0.7
	105	1.0~16.0	105	105	GER25/1.0	M18	42	42	0.8
BT40 -	SDC20 - 60	1.0~20.0	60	60	GER32/1.0	M7	50	44	0.5
	90	1.0~20.0	90	90	GER32/1.0	M22	50	44	0.8
	120	1.0~20.0	120	120	GER32/1.0	M22	50	44	1.0
	SDC7 - 60	1.0~7.0	60	60	GER11/0.5	M7	19	19	1.0
	90	1.0~7.0	90	90	GER11/0.5	M7	19	19	1.1
	135	1.0~7.0	135	135	GER11/0.5	M7	19	19	1.2
	SDC10 - 60	1.0~10.0	60	60	GER16/1.0	M10	28	28	1.1
	90	1.0~10.0	90	90	GER16/1.0	M10	28	28	1.2
	135	1.0~10.0	135	135	GER16/1.0	M10	28	28	1.4
	SDC13 - 60	1.0~13.0	60	60	GER20/1.0	M13	35	35	1.1
	90	1.0~13.0	90	90	GER20/1.0	M13	35	35	1.3
	120	1.0~13.0	120	120	GER20/1.0	M13	35	35	1.5
BT40 -	150	1.0~13.0	150	150	GER20/1.0	M13	35	35	1.8
	SDC16 - 60	1.0~16.0	60	60	GER25/1.0	M18	42	42	1.2
	90	1.0~16.0	90	90	GER25/1.0	M18	42	42	1.4
	120	1.0~16.0	120	120	GER25/1.0	M18	42	42	1.6
	SDC20 - 60	1.0~20.0	60	60	GER32/1.0	M7	50	44	1.1
	90	1.0~20.0	90	90	GER32/1.0	M22	50	44	1.4
	120	1.0~20.0	120	120	GER32/1.0	M22	50	44	1.7
	SDC26 - 90	3.0~26.0	90	90	GER40/1.0	M28	63	54	2.4

Spare Part 126

• Through coolant system is optional. • Collets in the right size are recommended for oil hole type.



BT-SDC



(mm)

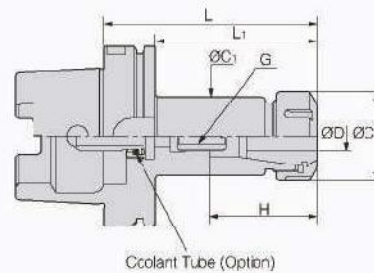
Designation		ØD	L	H	Collet / Step	G	ØC	ØC ₁	/ kg
BT50 -	SDC10 - 90	1.0~10.0	90	44.5	GEF16/1.0	M10	28	28	3.8
	120	1.0~10.0	120	44.5	GEF16/1.0	M10	28	28	4.0
	165	1.0~10.0	165	44.5	GEF16/1.0	M10	28	28	4.2
	SDC13 - 105	1.0~13.0	105	49	GEF20/1.0	M13	35	35	3.9
	135	1.0~13.0	135	49	GEF20/1.0	M13	35	35	4.1
	165	1.0~13.0	165	49	GEF20/1.0	M13	35	35	4.5
	SDC16 - 105	1.0~16.0	105	50	GEH25/1.0	M18	42	42	4.1
	165	1.0~16.0	165	50	GEH25/1.0	M18	42	42	4.4
	SDC20 - 75	1.0~20.0	75	50	GEF32/1.0	M7	50	44	4.0
	105	1.0~20.0	105	50	GEF32/1.0	M22	50	44	4.3
	135	1.0~20.0	135	50	GEF32/1.0	M22	50	44	4.9
	165	1.0~20.0	165	50	GEF32/1.0	M22	50	44	5.0
180	1.0~20.0	180	50	GEF32/1.0	M22	50	44	5.0	
SDC26 - 165	3.0~26.0	165	70	GEF40/1.0	M26	63	54	6.0	

Scale Part 126

• Through coolant system is optional.

• Collets in the right size are recommended for chisel type.

HSK-SDC



(mm)

Designation		ØD	L	H	Collet / Step	G	ØC	ØC ₁	$\frac{1}{kg}$
HSK63A -	SDC10 - 95	1.0~10.0	95	41.5	GER16/1.C	M10	28	28	1.0
	SDC13 - 95	1.0~13.0	95	40	GER20/1.C	M13	35	35	1.2
	SDC16 - 100	1.0~16.0	90	50	GER25/1.C	M18	42	42	1.3
	SDC20 - 110	1.0~20.0	110	60	GER32/1.C	M13	50	44	1.4
HSK100A -	SDC16 - 110	1.0~16.0	110	50	GER25/1.C	M18	42	42	3.2
	SDC20 - 120	2.0~20.0	120	60	GER32/1.C	M10	50	44	3.4

Spare Part 126

- Through coolant system is optional.

- Collets in the right size are recommended for oil hole type.

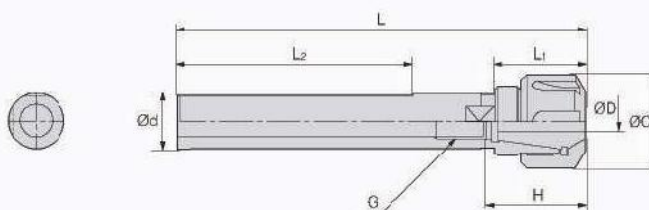
Parts

Division	Spare Parts					
	Basic			Option		
	Nut		Adjust screw	Spanner		(G)ER Collet
Type						
SDC7	R11	-	BN0716F	S-17	-	GER/ER 11-ØD
SDC10	R16	-	BN1025F	S-25	-	GER/ER 16-ØD
SDC13	-	RU20 - SDC13	BN1525F	-	35-38	GER/ER 20-ØD
SDC16	-	RU25 - SDC16	BN183CF	-	42-46	GER/ER 25-ØD
SDC20	-	RU32 - SDC20	BN223CF	-	48-52	GER/ER 32-ØD
SDC26	-	RU40 - SDC26	BN2638F	-	62-66	GER/ER 40-ØD
SDC34	-	RU50 - SDC34	BN3638F	-	75-79	GER/ER 50-ØD

• NOTES : In case of the RU20 nut, order a 35-38 spanner. In case of the RU20 nut, a S-33 spanner.



S-SDC

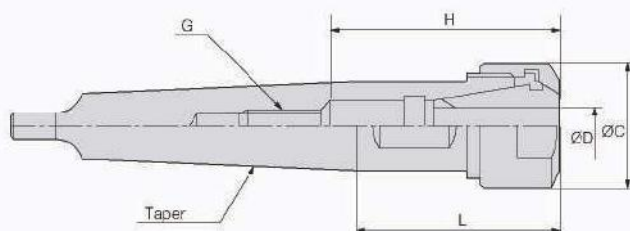


(mm)

Designation			ØD	Ød	ØC	L	L ₁	L ₂	H	Collet / Step	G	1 kg \
S16 -	SDC7 - 120M		1.0~7.0	16	9	120	-	-	33	GER11/C.5	M7	0.2
	120T		1.0~7.0	16	9	120		73	33	GER11/C.5	M7	0.2
	SDC10 - 150T		1.0~0.0	16	28	150	46.5	83	34.5	GER16/1.0	M10	0.2
S20 -	SDC10 - 150M		1.0~0.0	20	28	150	26.5	-	34.5	GER16/1.0	M10	0.3
	150T		1.0~0.0	20	28	150	26.5	83	34.5	GER16/1.0	M10	0.3
	SDC13 - 150M		1.0~3.0	20	35	150	50	-	46	GER20/1.0	M13	0.3
	150T		1.0~3.0	20	35	150	50	83	46	GER20/1.0	M13	0.3
S25 -	SDC10 - 150M		1.0~0.0	25	28	150	-	-	34.5	GER16/1.0	M10	0.5
	150T		1.0~0.0	25	28	150	-	83	34.5	GER16/1.0	M10	0.5
	SDC13 - 150M		1.0~3.0	25	35	150	-	-	46	GER20/1.0	M13	0.5
	150T		1.0~3.0	25	35	150		83	46	GER20/1.0	M13	0.5
S32 -	SDC13 - 150M		1.0~3.0	32	35	150	-	-	46	GER20/1.0	M13	0.7
	150T		1.0~3.0	32	35	150	-	83	46	GER20/1.0	M13	0.7
	SDC20 - 165M		2.0~20.0	32	50	165	-	-	60	GER32/1.0	M22	0.7
	165T		2.0~20.0	32	50	165	-	83	60	GER32/1.0	M22	0.7

* Through coolant system is optional.

MT-SDC



(mm)

Designation	ØD	Taper	L	H	G	ØC	/ kg
MT4 - SDC20 - 60	2.0~20.0	MT4	60	67	M22	50	1
MT5 - SDC20 - 60	2.0~20.0	MT5	60	60	M22	60	1.6

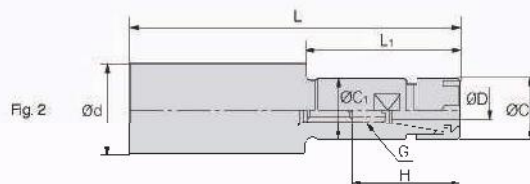
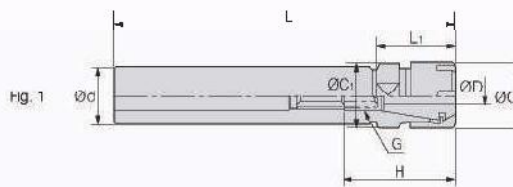
* Through coolant system is optional.

* Collets in the right size are recommended for chisel type.

* Order made balanced type available



S-SDC/S



										(mm)
Designation	ØD	Ød	ØC	L	L ₁	H	Collet/step	G		
S16 -	SDC7S - 100M	1.0~7.0	15	16	100	-	33	GER11/0.5	M7	0.2
	150M	1.0~7.0	15	16	150	-	33	GER11/0.5	M7	0.2
	SDC10S - 100M	1.0~10.0	15	22	100	50	44.5	GCR16/1.0	M10	0.3
	150M	1.0~10.0	15	22	150	50	44.5	GER16/1.0	M10	0.3
S20 -	SDC7S - 100M	1.0~7.0	20	16	100	30	35	GER11/0.5	M7	0.3
	150M	1.0~7.0	20	16	150	80	35	GER11/0.5	M7	0.3
	SDC10S - 100M	1.0~10.0	20	22	100	50	44.5	GER16/1.0	M10	0.3
	150M	1.0~10.0	20	22	150	50	44.5	GER16/1.0	M10	0.3
	200M	1.0~10.0	20	22	200	50	44.5	GER16/1.0	M10	0.4
	SDC13S - 100M	1.0~13.0	20	28	100	50	49	GER20/1.0	M13	0.3
S25 -	150M	1.0~13.0	20	28	150	50	49	GER20/1.0	M13	0.3
	SDC7S - 100M	1.0~7.0	25	16	100	30	33	GCR11/0.5	M7	0.4
	150M	1.0~7.0	25	16	150	80	33	GER11/0.5	M7	0.4
	SDC10S - 100M	1.0~10.0	25	22	100	30	44.5	GER16/1.0	M10	0.4
	150M	1.0~10.0	25	22	150	80	44.5	GER16/1.0	M10	0.4
	SDC13S - 100M	1.0~13.0	25	28	100	-	49	GFR20/1.0	M13	0.5
	150M	1.0~13.0	25	28	150	-	49	GER20/1.0	M13	0.5
	SDC16S - 100M	1.0~16.0	25	35	100	50	50	GER25/1.0	M18	0.5
S32 -	150M	1.0~16.0	25	35	150	50	50	GER25/1.0	M18	0.5
	200M	1.0~16.0	25	35	200	50	50	GER25/1.0	M18	0.7
	SDC16S - 120M	1.0~16.0	32	35	120	-	50	GER25/1.0	M18	1
	150M	1.0~16.0	32	35	150	-	50	GER25/1.0	M18	1

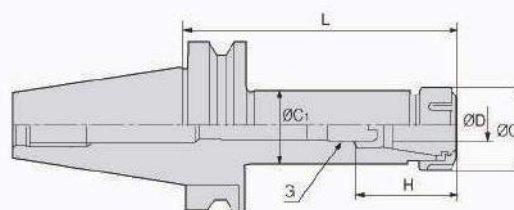
- Through coolant system is optional.

Parts

Division	Spare Parts			
	Basic		Option	
	Nut	Adjust screw	Spanner	(G)ER Collet
Type				
SDC7S	R11M	BN0716F	M11M	(G)ER 11-ØD
SDC10S	R16M	BN1025F	M13M	(G)ER 16-ØD
SDC13S	R20M	BN1325F	M20M	(G)ER 20-ØD
SDC16S	R25M	BN1830F	M25M	(G)ER 25-ØD



BT-HPS



(mm)

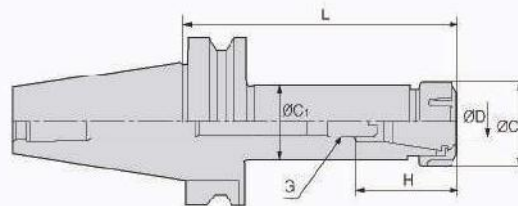
Designation		ØD	L	H	Collet / Step	G	ØC	ØC ₁	/ kg	MAX RPM
BT30 -	HPS7 - 50	1.0~7.0	50	33	GER11°/0.5	M7	19	19	0.5	15,000
	75	1.0~7.0	75	33	GER11°/0.5	M7	19	19	0.5	15,000
	105	1.0~7.0	105	33	GER11°/0.5	M7	19	19	0.6	15,000
	HPS10 - 50	1 C~10.0	50	44.5	GER16/1 0	M10	28	28	0.5	15,000
	75	1 C~10.0	75	44.5	GER16/1 0	M10	28	28	0.5	15,000
	105	1 C~10.0	105	44.5	GER16/1 0	M10	28	28	0.6	15,000
	HPS13 - 50	1 C~13.0	50	49	GER20/1 0	M7	35	35	0.5	15,000
	75	1 C~13.0	75	49	GER20/1 0	M13	35	35	0.6	15,000
	105	1 C~13.0	105	49	GER20/1 0	M13	35	35	0.7	15,000
	HPS16 - 50	1 C~16.0	50	50	GER25/1 0	M7	42	42	0.6	15,000
	75	1 C~16.0	75	50	GER25/1 0	M18	42	42	0.7	15,000
	105	1 C~16.0	105	50	GER25/1 0	M18	42	42	0.8	15,000
HPS20 - 60	1 C~20.0	60	60	GER32/1 0	M7	50	44	0.5	15,000	
90	1 C~20.0	90	60	GER32/1 0	M22	50	44	0.8	15,000	
120	1 C~20.0	120	60	GER32/1 0	M22	50	44	1.0	15,000	
BT40 -	HPS7 - 60	1.0~7.0	60	33	GER11°/0.5	M7	19	19	1.0	10,000
	90	1.0~7.0	90	33	GER11°/0.5	M7	19	19	1.1	10,000
	135	1.0~7.0	135	33	GER11°/0.5	M7	19	19	1.2	10,000
	HPS10 - 60	1 C~10.0	60	44.5	GER16/1 0	M10	28	28	1.1	10,000
	90	1 C~10.0	90	44.5	GER16/1 0	M10	28	28	1.2	10,000
	135	1 C~10.0	135	44.5	GER16/1 0	M10	28	28	1.4	10,000
	HPS13 - 60	1 C~13.0	60	49	GER20/1 0	M13	35	35	1.1	10,000
	90	1 C~13.0	90	49	GER20/1 0	M13	35	35	1.3	10,000
	120	1 C~13.0	120	49	GER20/1 0	M13	35	35	1.5	10,000
	150	1 C~13.0	150	49	GER20/1 0	M13	35	35	1.8	10,000
	HPS16 - 60	1 C~16.0	60	50	GER25/1 0	M18	42	42	1.2	10,000
	90	1 C~16.0	90	50	GER25/1 0	M18	42	42	1.4	10,000
	120	1 C~16.0	120	50	GER25/1 0	M18	42	42	1.6	10,000
	HPS20 - 60	1 C~20.0	60	60	GER32/1 0	M7	50	44	1.1	10,000
	90	1 C~20.0	90	60	GER32/1 0	M22	50	44	1.4	10,000
	120	1 C~20.0	120	60	GER32/1 0	M22	50	44	1.7	10,000

Scale Part 130

• Through cooler: system is optional. • Collets in the right size are recommended for c.H hole type.



BT-HPS



(mm)

Designation		ØD	L	H	Collet / Step	G	ØC	ØC1	$\frac{L}{kg}$	MAX RPM
BT50 -	HPS10 - 90	1.0~10.0	90	11.5	GER16/1.0	M10	28	28	3.8	8,000
	120	1.0~10.0	120	44.5	GER16/1.0	M10	28	28	4.0	8,000
	165	1.0~10.0	165	44.5	GER16/1.0	M10	28	28	4.2	8,000
	HPS13 - 105	1.0~13.0	105	49	GER20/1.0	M13	35	35	3.9	8,000
	135	1.0~13.0	135	49	GER20/1.0	M13	35	35	4.1	8,000
	165	1.0~13.0	165	49	GER20/1.0	M13	35	35	4.5	8,000
	HPS16 - 105	1.0~16.0	105	50	GER25/1.0	M18	42	42	4.1	8,000
	165	1.0~16.0	165	50	GER25/1.0	M18	42	42	4.4	8,000
	HPS20 - 75	1.0~20.0	75	60	GER32/1.0	M7	50	44	4.0	8,000
	105	1.0~20.0	105	60	GER32/1.0	M22	50	44	4.3	8,000
	165	1.0~20.0	165	60	GER32/1.0	M22	50	44	5.0	8,000

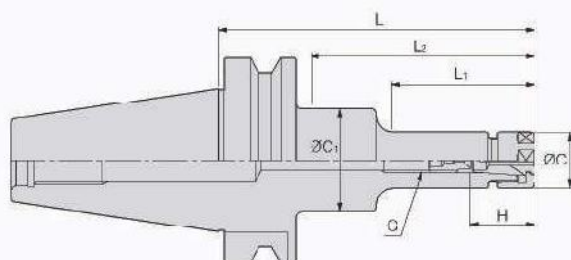
• Through coolant system is optional. • Collets in the right size are recommended for oil hole type.

Parts

Division	Spare Parts			
	Basic		Option	
	Nut	Adjust screw	Spanner	(G)ER Collet
Type				
HPS7	RN11	BN0716F	20-22	GER 11-ØD
HPS10	RN16	BN1025F	32-35	GER 16-ØD
HPS13	RN20	BN1325F	35-38	GER 20-ØD
HPS16	RN25	BN1830F	42-46	GER 25-ØD
HPS20	RN32	BN2230F	48-52	GER 32-ØD



BT-GSK



(mm)

Designation	ØD	L	L ₁	L ₂	H	Collet / Step	G	ØC	ØC ₁	/ kg	MAX RPM
BT30 -	GSK6 - 60	1.0~6.0	60	33	35	HC6/0.5	M8	19.5	19.5	0.7	25 000
	90	1.0~6.0	90	56	35	HC6/0.5	M8	19.5	32	0.8	25 000
	GSK10 - 60	2.0~10.0	60	35	50	HC10/0.5	M12	27.5	27.5	0.9	25 000
	90	2.0~10.0	90	65	50	HC10/0.5	M12	27.5	27.5	1.0	25 000
	GSK13 - 60	3.0~13.0	60	36	43	HC13/1.0	M12	33	33	0.8	25 000
	GSK16 - 60	3.0~16.0	60	37	60	HC16/0.5	M12	40	40	1.1	25 000
	90	3.0~16.0	90	67	60	HC16/0.5	M16	40	40	1.2	25 000
BT40 -	GSK25 - 90	6.0~25.0	90	67.5	63.5	HC25/0.5	M12	55	55	1.1	25 000
	GSK6 - 90	1.0~6.0	90	51	35	HC6/0.5	M8	19.5	32	1.1	20 000
	120	1.0~6.0	120	60	35	HC6/0.5	M8	19.5	32	1.4	20 000
	150	1.0~6.0	150	60	35	HC6/0.5	M8	19.5	25	1.5	20 000
	GSK10 - 90	2.0~6.0	90	48	50	HC10/0.5	M12	27.5	40	1.2	20 000
	120	2.0~6.0	120	73	50	HC10/0.5	M12	27.5	40	1.4	20 000
	150	2.0~6.0	150	73	50	HC10/0.5	M12	27.5	34.5	1.8	20 000
	GSK13 - 90	3.0~13.0	90	59	43	HC13/1.0	M15	33	33	1.4	20 000
	GSK16 - 90	3.0~16.0	90	58	60	HC16/0.5	M16	40	40	1.5	20 000
	120	3.0~16.0	120	88	60	HC16/0.5	M16	40	40	1.7	20 000
	150	3.0~16.0	150	118	60	HC16/0.5	M16	40	40	1.9	20 000
	GSK20 - 90	4.0~20.0	90	60	70	HC20/0.5	M22	48	48	1.8	20 000
	120	4.0~20.0	120	90	70	HC20/0.5	M22	48	48	2.0	20 000
	GSK25 - 90	6.0~25.0	90	61	75	HC25/0.5	M26	55	55	1.8	20 000
	120	6.0~25.0	120	91	85	HC25/0.5	M26	55	55	2.0	20 000
BT50 -	GSK6 - 105	1.0~6.0	105	55	35	HC6/0.5	M8	19.5	32	3.8	15 000
	135	1.0~6.0	135	60	35	HC6/0.5	M8	19.5	32	3.9	15 000
	165	1.0~6.0	165	60	35	HC6/0.5	M8	19.5	32	4.0	15 000
	GSK10 - 105	2.0~10.0	105	57	50	HC10/0.5	M12	27.5	27.5	3.8	15 000
	135	2.0~10.0	135	70	50	HC10/0.5	M12	27.5	32	4.0	15 000
	165	2.0~10.0	165	75	50	HC10/0.5	M12	27.5	36	4.2	15 000
	GSK13 - 135	3.0~13.0	135	92	43	HC13/1.0	M15	33	33	4.2	15 000
	GSK16 - 105	3.0~16.0	105	62	60	HC16/0.5	M16	40	40	4.1	15 000
	135	3.0~16.0	135	92	60	HC16/0.5	M16	40	40	4.3	15 000
	165	3.0~16.0	165	40	60	HC16/0.5	M16	40	50	4.5	15 000
	GSK20 - 105	4.0~20.0	105	62	70	HC20/0.5	M22	48	40	4.3	15 000
	135	4.0~20.0	135	92	70	HC20/0.5	M22	48	40	4.5	15 000
	165	4.0~20.0	165	122	70	HC20/0.5	M22	48	40	5.0	15 000
	GSK25 - 105	6.0~25.0	105	62	85	HC25/0.5	M26	55	55	4.8	15 000
	135	6.0~25.0	135	92	85	HC25/0.5	M26	55	55	5.2	15 000
	165	6.0~25.0	165	122	85	HC25/0.5	M26	55	55	5.3	15 000

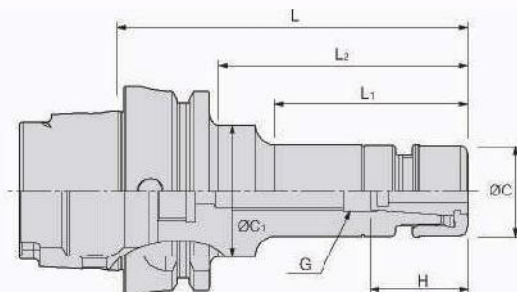
Scale Part 132

* Through coolant system is optional.

* Coolant coils are recommended when using the coolant system.



HSK-GSK



(mm)

Designation		ØD	L ₁	L ₂	H	Collet / Step	G	ØC	ØC ₁	MAX RPM
HSK63A -	GSK6 - 100	1.0~6.0	51	61	35	HC6/0.5	M8	19.5	32	20,000
	GSK10 - 105	2.0~6.0	73	118	50	HC10/0.5	M12	27.5	34.5	20,000
	GSK16 - 120	3.0~16.0	58	58	60	HC16/0.5	M16	40	40	20,000
	GSK20 - 120	4.0~20.0	60	60	70	HC20/0.5	M22	48	48	20,000
HSK100A -	GSK6 - 120	1.0~6.0	55	64	35	HC6/0.5	M8	19.5	32	15,000
	GSK10 - 120	2.0~10.0	57	57	50	HC10/0.5	M12	27.5	27.5	15,000
	GSK16 - 140	3.0~16.0	62	62	60	HC16/0.5	M16	40	40	15,000
	GSK25 - 155	16.0~25.0	62	62	85	HC25/0.5	M26	55	55	15,000

• Through coolant system is optional. • Coolant collets are recommended when using the coolant system.

Parts

Division	Spare Parts		
	Basic		
	Nut	Adjust screw	Extractor
Type			
GSK6	GN6	M820C	GSK-6CE
GSK10	GN10	M1230C	GSK-10CE
GSK13	GN13	BN1530F	GSK-13CE
GSK16	GN16	BN1830F	GSK-16CE
GSK20	GN20	BN2230F	GSK-20CE
GSK25	GN25	BN2838F	GSK-25CE

Spanner(Optional)

Spanner	Head	Handle														
	 GSKS06 GSKS10 GSKS13 GSKS16 GSKS20 GSKS25 One-Way Clutch System. Replace the head to the right size.	 GSKS200HL Choose the proper length of handle to ease the effort. (In case of GSK25 : Less than 30kg)														
<table><tr><th>Designation</th><th>Type</th></tr><tr><td>GSK6 SPANNER</td><td>GSK6</td></tr><tr><td>GSK10 SPANNER</td><td>GSK10</td></tr><tr><td>GSK13 SPANNER</td><td>GSK13</td></tr><tr><td>GSK16 SPANNER</td><td>GSK16</td></tr><tr><td>GSK20 SPANNER</td><td>GSK20</td></tr><tr><td>GSK25 SPANNER</td><td>GSK25</td></tr></table>	Designation	Type	GSK6 SPANNER	GSK6	GSK10 SPANNER	GSK10	GSK13 SPANNER	GSK13	GSK16 SPANNER	GSK16	GSK20 SPANNER	GSK20	GSK25 SPANNER	GSK25		
Designation	Type															
GSK6 SPANNER	GSK6															
GSK10 SPANNER	GSK10															
GSK13 SPANNER	GSK13															
GSK16 SPANNER	GSK16															
GSK20 SPANNER	GSK20															
GSK25 SPANNER	GSK25															



Slim type collet chuck

DSK

- Balancing G6.3 available for machining at max 15,000RPM
- Minimized tool vibration during operation by using collet 8°
- Swiss made high precision nut enhances stability
- Applicable shank diameter : D1.8~25



Code System

BT30 - DSK 10 - 90

Spindle

High Speed Slim Collet Chuck

Max. Clamping dia.

Length

First-class nut (SWISS Made)

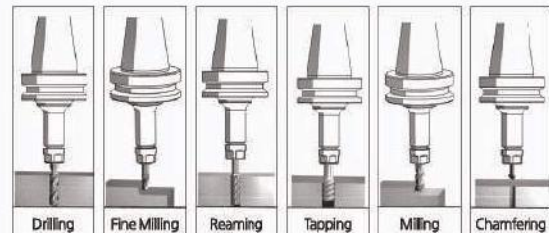


Easy clamping of collet



Special hardening treatment

Multifunctional applications



Collet

Standard type & Precision type	Designation	Arbor	Max Chacking	Run-out	8° HC collet
	HC6 - Ød	10.5	6.0	Standard type 5µm	
	HC10 - Ød	15.5	10.0		
	HC13 - Ød	20.1	13.0	Precision type 3µm	
	HC16 - Ød	24.6	16.0		
	HC20 - Ød	29.1	20.0		
	HC25 - Ød	35.6	25.0		

Minimized tool vibration during operation

Minimized tool vibration during operation

Spanner

	Designation	Chuck
	DSS - 6	DSK - 6
	DSS - 10	DSK - 10
	DSS - 16	DSK - 16
	DSS - 20	DSK - 20
	DSS - 25	DSK - 25

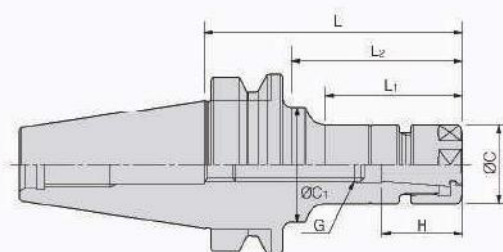
Spanner

	Designation	Chuck
	DSS - 6	DSK - 6
	DSS - 10	DSK - 10
	DSS - 16	DSK - 16
	DSS - 20	DSK - 20
	DSS - 25	DSK - 25

Collet Extractor



BT-DSK



(mm)

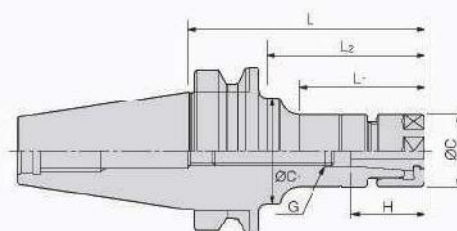
Designation		ØD	L	L ₁	L ₂	H	Collet / Step	G	ØC	ØC ₁	$\frac{f}{k_2}$	MAX RPM
BT30 -	DSK6 - 60	1.0~6.0	60	33	33	35	HC6/0.5	M8	19.5	19.5	0.7	15,000
	90	1.0~6.0	90	56	66	35	HC6/0.5	M8	19.5	32	0.8	15,000
	DSK10- 60	2.0~10.0	60	35	35	50	HC10/0.5	M*2	27.5	27.5	0.9	15,000
	90	2.0~10.0	90	65	65	50	HC10/0.5	M*2	27.5	27.5	1.0	15,000
	DSK13 - 60	3.0~13.0	60	36	36	43	HC13/0.5	M*2	33	33	0.6	15,000
	DSK16 - 60	3.0~16.0	60	37	37	60	HC16/0.5	M*2	40	40	1.1	15,000
	90	3.0~16.0	90	67	67	60	HC16/0.5	M*8	40	40	1.2	15,000
	DSK25 - 90	16.0~25.0	90	67.5	67.5	63.5	HC25/0.5	M*2	55	55	1.1	15,000
BT40 -	DSK6 - 90	1.0~6.0	90	51	61	35	HC6/0.5	M8	19.5	32	1.1	10,000
	120	1.0~6.0	120	80	90	35	HC6/0.5	M8	19.5	32	1.1	10,000
	150	1.0~6.0	150	80	120	35	HC6/0.5	M8	19.5	25	1.5	10,000
	DSK10 - 90	2.0~6.0	90	48	60	50	HC10/0.5	M*2	27.5	40	1.2	10,000
	120	2.0~6.0	120	73	90	50	HC10/0.5	M*2	27.5	40	1.4	10,000
	150	2.0~6.0	150	73	118	50	HC10/0.5	M*2	27.5	34.5	1.6	10,000
	DSK13 - 90	3.0~13.0	90	59	59	43	HC13/1.0	M*5	33	33	1.4	10,000
	DSK16 - 90	3.0~16.0	90	58	58	60	HC16/0.5	M*8	40	40	1.5	10,000
	120	3.0~16.0	120	88	88	60	HC16/0.5	M*8	40	40	1.7	10,000
	150	3.0~16.0	150	118	118	60	HC16/0.5	M*8	40	40	1.9	10,000
	DSK20 - 90	4.0~20.0	90	60	60	70	HC20/0.5	M22	48	48	1.6	10,000
	120	4.0~20.0	120	90	90	70	HC20/0.5	M22	48	48	2.0	10,000
	DSK25 - 90	16.0~25.0	90	61	61	75	HC25/0.5	M28	55	55	1.8	10,000
	120	16.0~25.0	120	91	91	65	HC25/0.5	M28	55	55	2.0	10,000

Spare Part: 135

• Through coolant system is optional. • Coolant collets are recommended when using the coolant system.



BT-DSK



(mm)

Designation		ØD	L	L1	L2	H	Collet / Step	G	ØC	ØC1	/ kg	MAX RPM
BT50 -	DSK6 - 105	1.0~6.0	±05	55	64	35	HC6/0.5	M8	19.5	32	3.9	8,000
	135	1.0~6.0	±35	60	92	35	HC6/0.5	M8	19.5	32	3.9	8,000
	165	1.0~6.0	±65	60	114	35	HC6/0.5	M8	19.5	32	4.0	8,000
	DSK10 - 105	2.0~10.0	±05	57	57	50	HC10/0.5	M12	27.5	27.5	3.9	8,000
	135	2.0~10.0	±35	70	92	50	HC10/0.5	M12	27.5	32	4.0	8,000
	165	2.0~10.0	±65	75	114	50	HC10/0.5	M12	27.5	36	4.2	8,000
	DSK13 - 135	3.0~13.0	±35	92	92	43	HC13/1.0	M15	33	33	4.2	8,000
	DSK16 - 105	3.0~16.0	±05	62	62	60	HC16/0.5	M16	40	40	4.1	8,000
	135	3.0~16.0	±35	92	92	60	HC16/0.5	M16	40	40	4.3	8,000
	165	3.0~16.0	±65	110	122	60	HC16/0.5	M16	40	50	4.5	8,000
	DSK20 - 105	4.0~20.0	±05	62	62	70	HC20/0.5	M22	46	40	4.3	8,000
	135	4.0~20.0	±35	92	92	70	HC20/0.5	M22	46	40	4.3	8,000
	165	4.0~20.0	±05	122	122	70	HC20/0.5	M22	46	40	5.0	8,000
	DSK25 - 105	6.0~25.0	±05	62	62	85	HC25/0.5	M28	55	55	4.9	8,000
	135	6.0~25.0	±35	92	92	85	HC25/0.5	M28	55	55	5.2	8,000
165	6.0~25.0	±65	122	122	85	HC25/0.5	M28	55	55	5.5	8,000	

• Through coolant system is optional. • Coolant collets are recommended when using the coolant system.

Parts

Division	Spare Parts		
	Option		
	Nut	Adjust screw	Spanner
Type			
DSK6	DN6	BN0825F	DSS-6
DSK10	DN10	BN1225F	DSS10
DSK16	DN16	BN1830F	DSS16
DSK20	DN20	BN2230F	DSS20
DSK25	DN25	BN2838F	DSS25



Technical Information for GERC

GER Collet_GER

GERC *New*

- Corrosion resistant collet to micro unit
- High tech coating for long lasting precision
- Longer tool life and higher productivity



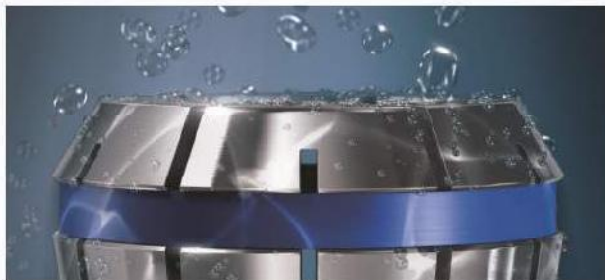
Code System



Special coating technology

Unlike GERC collets, Conventional non-coated collets have the following features :

Non-coated collets are affected by corrosion due to high humidity, cutting fluid, cleaner, salt, gas and many other factors, which in result deteriorates whole quality of machining.



When a collet gets rusty, the tool life is shortened and precision considerably decreases. To prevent this problem, surface treatment by micro unit was applied to GERC collets for effective protection and long lasting precision



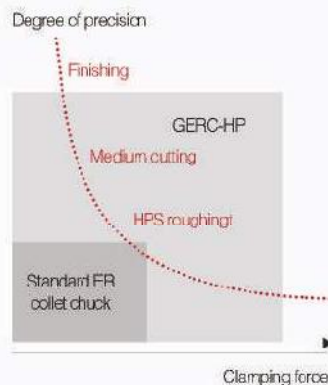
Two samples of collets after 4 months of use :
Left : Non-coated, Right : GERC collet

GERC-HP

A precision type collet chuck is expensive than standard one, but still it has more advantages in long term cost and efficiency. Using GERC-HP can minimize pricy reworking due to smaller tolerance with maximum precision.



Precision type
collet 2 μ m

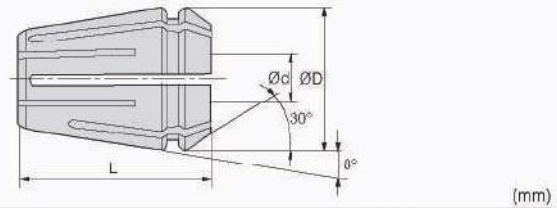


Optimized design

Remaining imbalance is minimized to ensure maximum symmetry and the nut's center is highly accurate due to double guide.

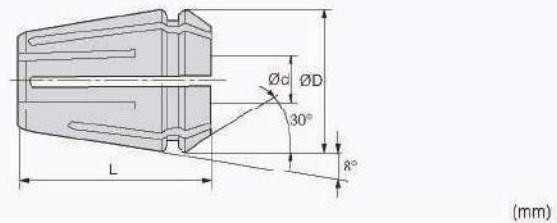


GERC Collet (Accuracy type / High Accuracy type)



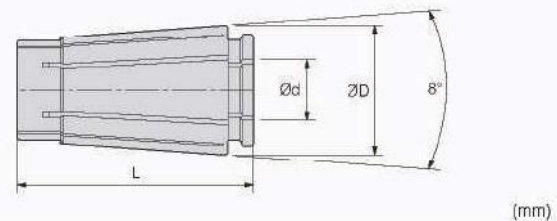
Designation	ER Size	ØD	L	Ød (Max.)	Distance (mm)	Tolerance	
						Standard type	Precision type(HP)
GER11 - Ød(HP)	11	11.5	18.0	7.0	0.5	5µm	2µm
GER16 - Ød(HP)	16	17.0	27.5	10.0	1.0		
GER20 - Ød(HP)	20	21.0	31.5	13.0	1.0		
GER25 - Ød(HP)	25	26.0	34.0	16.0	1.0		
GER32 - Ød(HP)	32	33.0	40.0	20.0	1.0		
GER40 - Ød(HP)	40	41.0	46.0	26.0	1.0		

ER Collet (Trough coolant type)



Designation	ER Size	ØD	L	Ød (Max.)	Min. pi of water proof type	Distance (mm)	Tolerance
ER11 - Ød	11	11.5	18.0	7.0	-	0.5	1Cµm
ER16 - Ød(C)	16	17.0	27.5	10.0	4.0	1.0	
ER20 - Ød(C)	20	21.0	31.5	13.0	6.0	1.0	
ER25 - Ød(C)	25	26.0	34.0	16.0	6.0	1.0	
ER32 - Ød(C)	32	33.0	40.0	20.0	8.0	1.0	
ER40 - Ød(C)	40	41.0	46.0	26.0	10.0	1.0	

HC Slim Collet (General & Accuracy type)



Designation	ØD	L	Ød (Max.)	Distance (mm)	Tolerance	
					Standard type	Precision type(HP)
HC6 - Ød(P)	10.5	25.0	6.0	1.0	5µm	3µm
HC10 - Ød(P)	15.6	30.5	10.0	1.0		
HC13 - Ød(P)	20.1	39.0	13.0	1.0		
HC16 - Ød(P)	24.6	45.0	16.0	1.0		
HC20 - Ød(P)	29.2	54.3	20.0	1.0		
HC25 - Ød(P)	35.7	57.0	25.0	1.0		

GERC Collet (Accuracy type)



(mm)

Designation	Ød	Distance	Collet amount	Tolerance
GERC11 1.0 - 7.0mm / 0.5mm	1.0-7.0	0.5	13pcs	5µm
GERC16 1.0 - 10.0mm / 1.0mm	1.0-10.0	1.0	10pcs	5µm
GERC20 2.0 - 13.0mm / 1.0mm	2.0-13.0	1.0	12pcs	5µm
GERC25 2.0 - 16.0mm / 1.0mm	2.0-16.0	1.0	15pcs	5µm
GERC32 3.0 - 20.0mm / 1.0mm	3.0-20.0	1.0	18pcs	5µm
GERC40 4.0 - 26.0mm / 1.0mm	4.0-26.0	1.0	23pcs	5µm

ER Collet (General type)



(mm)

Designation	Ød	Distance	Collet amount	Tolerance
ER11(SET)	1.5-7.0	0.5	12pcs	10µm
ER16(SET)	2.0-10.0	1.0	10pcs	10µm
ER20(SET)	2.0-13.0	1.0	12pcs	10µm
ER25(SET)	2.0-16.0	1.0	15pcs	10µm
ER32(SET)	3.0-20.0	1.0	18pcs	10µm
ER40(SET)	6.0-26.0	1.0	21pcs	15µm



High speed synchro tapping chuck

DST *New*

- Tapping chuck for high speed machining
- Specially designed structure for absorbing thrust load and preventing damage on the tap
- Through coolant system available
- Applicable range : M1-M22

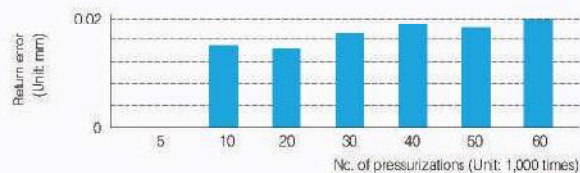
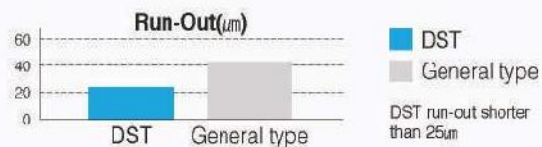
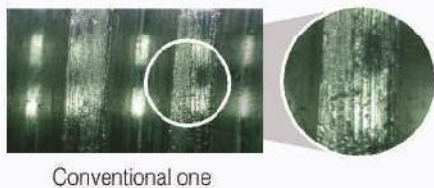
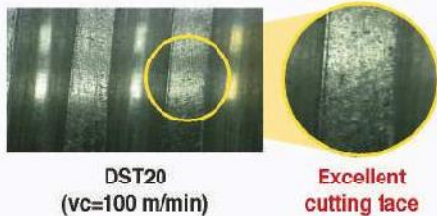


Code System



Excellent performance, precise machining

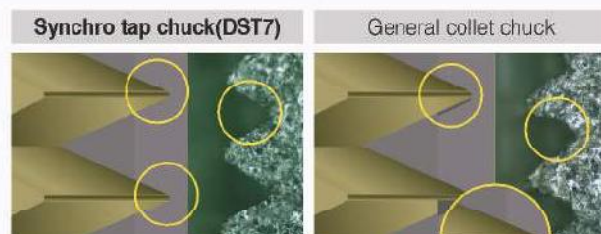
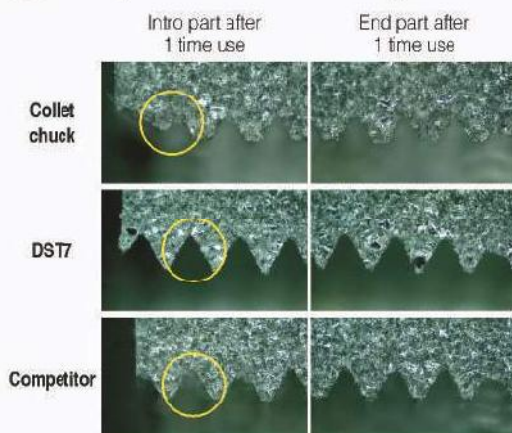
Expanded machining area



Exclusive collet for tapping

- At tapping work use of TER collet
- DST7: Use of ER11 collet

Comparison of thread figures



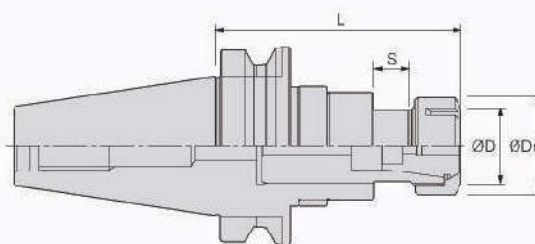
When tapping under the same cutting conditions, threads of general collet chuck seem to be damaged

The tread appears to be out of form due to synchronization error.

• Through coolant system is optional.



BT-DST



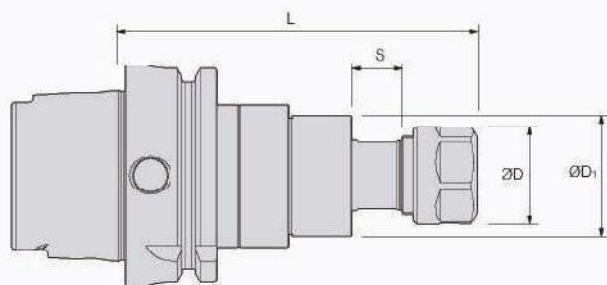
(mm)

Designation	ØD	ØD ₁	L	S	Collet	Tapping Range	F-	F+
BT30 - DST3 - 70	26	19	70	6	ER11	M1~M3	0.5	0.5
DST10 - 95	±0.4	28	95	11	TER16	M3~M10	0.5	0.5
BT40 - DST10 - 100	±0.4	28	100	11	TER16	M3~M10	0.5	0.5
DST22 - 110	60	±9.5	110	18	TER32	M6~M22	0.7	0.7
BT50 - DST10 - 110	60	±9.5	110	11	TER16	M3~M10	0.5	0.5
DST22 - 130	60	±9.5	125	18	TER32	M6~M22	0.7	0.7

Applicable collet 137, 45

• Through coolant system is optional.

HSK-DST



(mm)

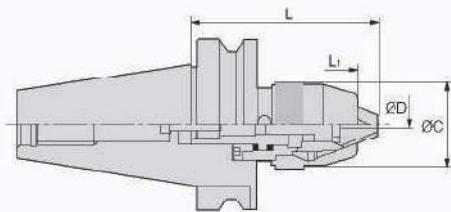
Designation	ØD	ØD ₁	L	S	Collet	Tapping Range	F-	F+
HSK63A - DST10 - 100	±0.4	28	100	11	TER16	M3~M10	0.5	0.5
DST22 - 130	60	±9.5	130	18	TER32	M6~M22	0.7	0.7

Applicable collet 145

• Through coolant system is optional.



BT-NPU



(mm)

Designation		ØD (Clamping Range)	ØC	L	L ₁	$\frac{L}{L_1}$
BT30 -	NPU8 - 97	0~8	38	97	9.5	0.8
	NPU13 - 125	1~13	50	125	12.5	1.5
BT40 -	NPU8 - 87	0~8	38	87	9.5	1.3
	NPU13 - 105	1~13	50	105	12.5	1.7
	NPU1a3 - 130	1~13	50	130	12.5	2.0
BT50 -	NPU13 - 115	1~13	50	115	12.5	4.4
	NPU13 - 130	1~13	50	130	12.5	4.6
	NPU13 - 190	1~13	50	190	12.5	5.4

• Through coolant system not available

▶ Parts

Division	Spare Parts		
	Basic		Option
	Chuck	Bolt	Spanner
Type			
NPU08	NPU08	BX0820	NPU0836
NPU13	NPU13	BX0826	NPU1348



Tapping holder

DTN

- Compact design and slim type
- Improvement of tapping force
- Tapping range M3 ~ M38

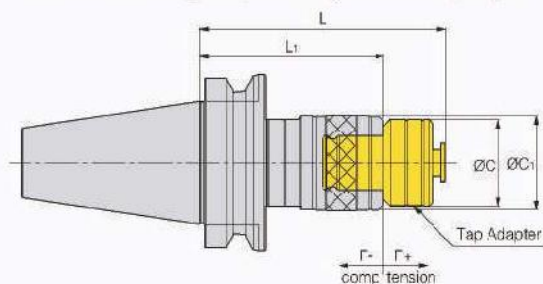


Code System



Easy exchange of TCA(Tap adaptor)

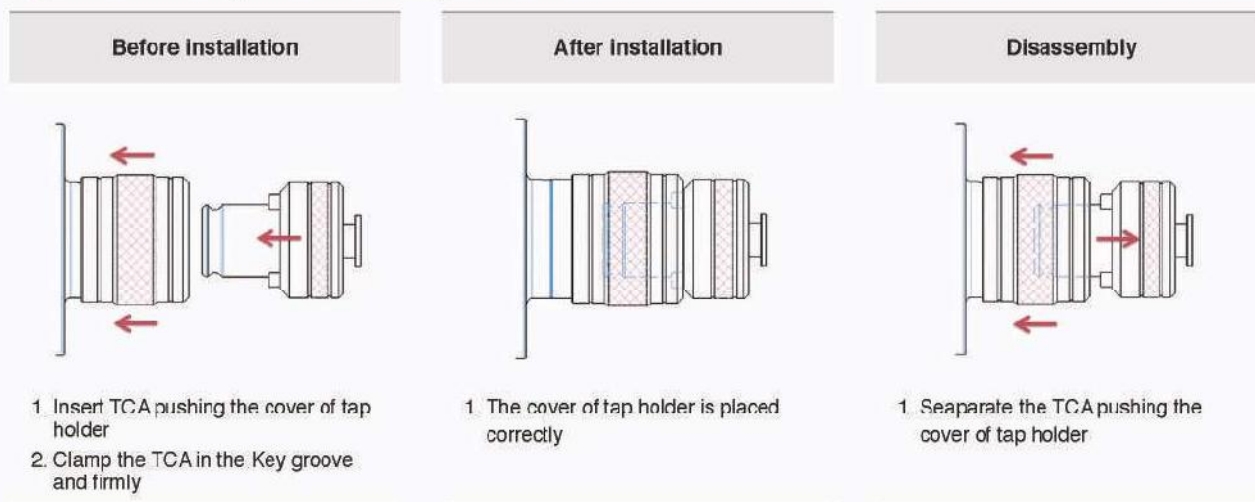
Convenient one-touch exchange type for high precision and longer tool life.
Contraction of length is possible by axial floating way.



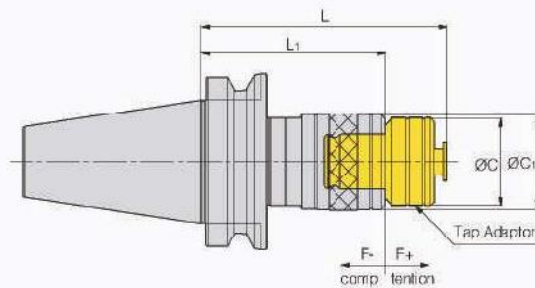
Improved cutting result



How to clamp TCA and a tap holder



BT-DTN



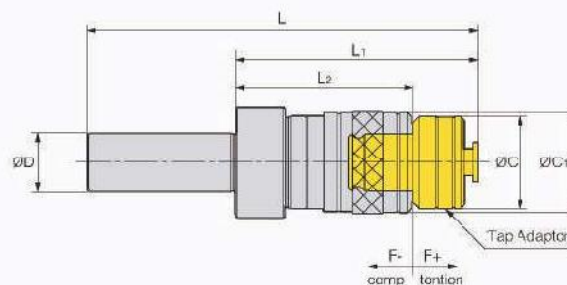
(mm)

Designation		Tapping Range	L	L ₁	ØC	ØC ₁	Tap Adaptor	F-	F+	
BT30 -	DTN12 - 85	V3-M12	85	60	32	39	TCA1-M	4	10	C.7
BT40 -	DTN12 - 90	V3-M12	90	65	32	39	TCA1-M	4	10	1.2
	120	V3-M12	120	95	32	39	TCA1-M	4	10	1.4
	DTN22 - 130	V8-M22	130	96	50	56	TCA2-M	12.5	12.5	1.7
	160	V8-M22	160	125	50	56	TCA2-M	12.5	12.5	2.1
BT50 -	DTN12 - 100	V3-M12	100	75	32	39	TCA1-M	4	10	3.7
	130	V3-M12	130	105	32	39	TCA1-M	4	10	3.9
	DTN22 - 140	V8-M22	140	104	50	56	TCA2-M	12.5	12.5	4.2
	170	V8-M22	170	134	50	56	TCA2-M	12.5	12.5	4.7
	DTN38 - 185	M16-M38	185	110	72	81	TCA3-M	20	20	5.7
	215	M16-M38	215	170	72	81	TCA3-M	20	20	6.6

Tap Adapter (TCA) 144

• Through coolant system not available

S-DTN



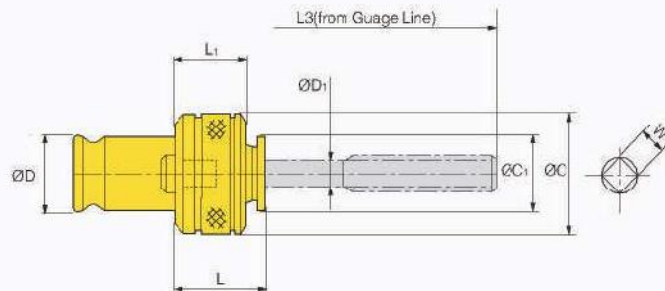
(mm)

Designation	Tapping Range	ØD	L	L ₁	L ₂	ØD	ØD	F ₋	F ₊	Tap Adaptor
S32 - DTN12 - 90	M3-M12	32	170	90	65	32	39	4	10	TCA1
S32 - DTN22 - 130	M8-M24	32	210	130	96	50	56	12.5	12.5	TCA2

Spare Part 144

• Through coolant system not available

TCA Tap Adaptor



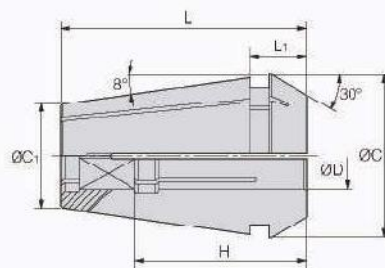
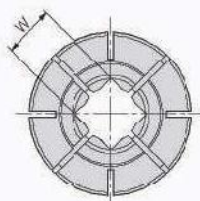
(mm)

Designation		ØD	ØC	L	L1	
TCA1 -	M3	4	3.2	24	22	0.2
	M4	5	4	24	22	0.2
	M5	5.5	4.5	24	22	0.2
	M6, 1/4U	6	4.5	24	22	0.2
	M8	6.2	5	25	22	0.2
	M10, 3/8U	7	5.5	25	22	0.2
	M11	8	6	39	22	0.2
	M12	8.5	6.5	25	22	0.2
TCA2 -	M8	6.2	5	38	28	0.6
TCS2 -	M10	7	5.5	38	28	0.6
TCA2 -	M12	8.5	6.5	39	28	0.6
	M14, 3/4U	10.5	6	41	28	0.6
	P1/4	11	9	31	28	0.6
TCS2 -	M16	12.5	10	43	28	0.6
TCA2 -	M18, P3/8	14	11	44	28	0.6
	M20	15	12	45	28	0.6
	M22	17	13	46	28	0.6
	P1/2	18	14	36	28	0.6
	M24	19	15	46	28	1.8
TCA3 -	M16	12.5	10	35	37	1.8
	M18	14	11	37	37	1.8
	M20	15	12	37	37	1.8
	M22	17	13	38	37	1.8
	M24	19	15	44	37	1.8
	M27, 1U	20	15	62	37	1.8
	M30, P3/4	23	17	62	37	1.8
	M33	25	19	66	37	1.8
	M36, M38	28	21	68	37	1.8

• DIN standard products can be ordered. • Through coolant system not available



TER Tap Collet



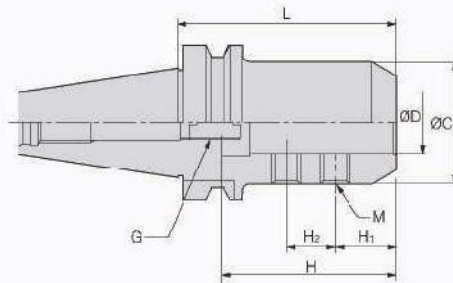
(mm)

Designation	Tapping Range	ØD	W	ØC	ØC ₁	L	L ₁	H
TER16 -	4x3.2	M3	4	3.2	16.74	10.1	27.5	6.3
	5x4	M4	5	4	16.74	10.1	27.5	6.3
	5.5x4.5	M5	5.5	4.5	16.74	10.1	27.5	6.3
	6x4.5	M5 U1/4	6	4.5	16.74	10.1	27.5	6.3
	6.2x5	V7, M8	6.2	5	16.74	10.1	27.5	6.3
	7x5.5	M9, M10, U3/8	7	5.5	16.74	10.1	27.5	6.3
TER20 -	5x4	M4	5	4	20.74	13.2	31.5	7.2
	5.5x4.5	M5	5.5	4.5	20.74	13.2	31.5	7.2
	6x4.5	M5 U1/4	6	4.5	20.74	13.2	31.5	7.2
	6.2x5	V7, M8	6.2	5	20.74	13.2	31.5	7.2
	7x5.5	M9, M10, U3/8	7	5.5	20.74	13.2	31.5	7.2
	8x6	M11, U7/16, P1/8	8	6	20.74	-	-	-
	8.5x6.5	M12	8.5	6.5	20.74	13.2	31.5	7.2
TER25 -	5x4	M4	5	4	25.74	17.6	34	7.5
	5.5x4.5	M5	5.5	4.5	25.74	17.6	34	7.5
	6x4.5	M6	6	4.5	25.74	17.6	34	7.5
	6.2x5	V7, M8	6.2	5	25.74	17.6	34	7.5
	7x5.5	M9, M10, U3/8	7	5.5	25.74	17.6	34	7.5
	8.5x6.5	M12	8.5	6.5	25.74	17.6	34	7.5
TER32 -	6x4.5	M5 U1/4	6	4.5	32.74	23.1	40	8.2
	6.2x5	V7, M8	6.2	5	32.74	23.1	40	8.2
	7x5.5	M9, M10, U3/8	7	5.5	32.74	23.1	40	8.2
	8x6	M11, U7/16, P1/8	8	6	32.74	23.1	40	8.2
	8.5x6.5	M12	8.5	6.5	32.74	23.1	40	8.2
	10.5x8	M14, U9/16	10.5	6	32.74	23.1	40	8.2
	12.5x10	M16	12.5	10	32.74	23.1	40	8.2
	14x11	M18, P3/8	14	11	32.74	23.1	40	8.2
	15x12	M20	15	12	32.74	23.1	40	8.2
	17x13	M22, U7/8	17	13	32.74	23.1	40	8.2
	11x9	P1/4	11	9	32.74	23.1	40	8.2
	12x9	U5/8	12	9	32.74	23.1	40	8.2
	9x7	U1/2	9	7	32.74	23.1	40	8.2

* Water proof tapping is possible with the use of RTJW and nuts (limited to the right sizes)



BT-SLA



(mm)

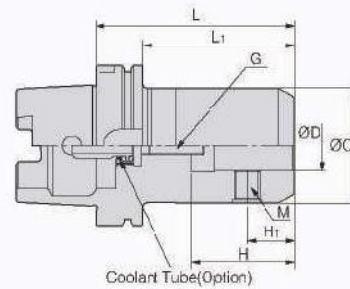
Designation		ØD	L	ØC	H	H ₁	H ₂	M	G	/ kg \
BT30 -	SLA16 - 90	16	90	40	70	25	20	M10	M12	1.1
	SLA20 - 90	20	90	50	70	25	20	M12	M12	1.2
	SLA25 - 90	25	90	50	70	25	20	M12	M12	1.2
BT40 -	SLA16 - 90	16	90	40	70	25	20	M10	M12	1.5
	SLA20 - 90	20	90	50	70	25	20	M12	M12	1.8
	SLA25 - 90	25	90	50	70	25	20	M12	M12	2.0
	SLA32 - 90	32	90	60	80	25	25	M14	M12	2.2
	105	32	105	60	80	25	25	M14	M12	2.4
	SLA40 - 105	40	105	80	80	25	25	M16	M12	2.4
BT50 -	SLA16 - 90	16	90	40	70	25	20	M10	M12	4.2
	SLA20 - 105	20	105	50	70	25	20	M12	M12	4.4
	SLA25 - 105	25	105	50	70	25	20	M12	M12	4.4
	135	25	135	50	70	25	20	M12	M12	4.7
	SLA32 - 105	32	105	60	80	25	25	M14	M12	4.8
	135	32	135	60	80	25	25	M14	M12	5.4
	165	32	165	60	80	25	25	M14	M12	6.2
	SLA40 - 105	40	105	80	80	25	25	M16	M12	5.2
	150	40	150	90	80	25	25	M16	M12	5.8
SLA42 - 105	42	105	90	80	25	25	M16	M12	5.8	

Spare Part: 147

• Through coolant system is optional.



HSK-SLA



(mm)

Designation		ØD	L	ØC	H	H ₁	M	G	$\frac{I}{kg}$
HSK63A -	SLA20 - 100	20	100	52	51	25	M16	M12	2.0
	SLA25 - 105	25	105	55	59	25	M18	M12	2.7
	SLA32 - 105	32	105	72	63	30	M20	M12	2.9
HSK100A -	SLA20 - 105	20	105	52	51	25	M16	M12	3.9
	SLA25 - 110	25	110	55	59	25	M18	M12	4.0
	SLA32 - 125	32	125	72	63	30	M20	M12	4.3

- Through coolant system is optional.

Parts

Arbor	Spare Parts				
	Basic			Option	
	Set Screw		Adjust Screw	Wrench	
Type					
	DRT / RT type	HSK / SK type		DRT / RT type	HSK / SK type
SLA16	B11-1C10	B11-1414-1.5	M1230C	LW-5	LW-6
SLA19	BTF1212-1.5	BTF1616-1.5		LW-6	LW-8
SLA20		BTF1818-1.5			
SLA25		BTF1414-1.5			
SLA32	BTF1624-1.5				
SLA40					
SLA42					



BT-FMA

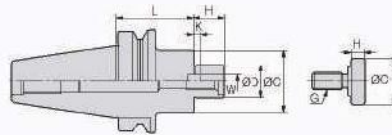


Fig. 1

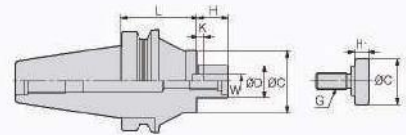


Fig. 2

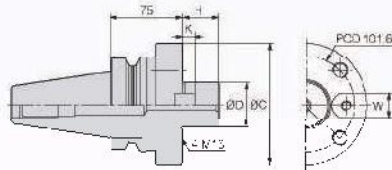


Fig. 3

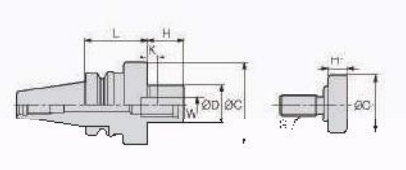


Fig. 4

(mm)

Designation	Cutter Dia.	ØD	L	ØC	H	W	K	G		Fig.
BT30 - FMA25.4 - 45	90	25.4	45	50	22	9.5	5	M12	1.2	4
BT40 - FMA25.4 - 45	90	25.4	45	50	22	9.5	5	M12	1.4	1
FMA25.4 - 90	90	25.4	90	50	22	9.5	5	M12	3.1	1
FMA31.75 - 45	100	31.75	45	60	30	12.7	7	M16	1.8	1
FMA31.75 - 90	100	31.75	90	60	30	12.7	7	M16	3.0	1
FMA38.1 - 60	125	38.1	60	80	34	15.87	9	M20	2.9	4
BT50 - FMA25.4 - 45	90	25.4	45	50	22	9.5	5	M12	3.8	1
FMA25.4 - 90	90	25.4	90	50	22	9.5	5	M12	4.5	1
FMA25.4 - 150	90	25.4	150	50	22	9.5	5	M12	5.5	2
FMA31.75 - 45	100	31.75	45	60	30	12.7	7	M16	4.8	1
FMA31.75 - 75	100	31.75	75	60	30	12.7	7	M16	5.2	1
FMA31.75 - 105	100	31.75	105	60	30	12.7	7	M16	6.0	2
FMA38.1 - 45	125	38.1	45	80	34	15.87	9	M20	4.3	1
FMA38.1 - 75	125	38.1	75	80	34	15.87	9	M20	5.5	1
FMA50.8 - 45	160	50.8	45	100	36	19.05	10	M24	4.8	1
FMA50.8 - 75	160	50.8	75	100	36	19.05	10	M24	6.8	1
FMA47.625 - 75	200	47.625	75	128	38	25.4	12.5	-	7.5	3

• Through coolant system is optional. • The weight above exclude the face cutter.

Parts

Arbor	Spare Parts				
	Basic				Option
	Key	Clamp Bolt	Key Bolt	Wrench Bolt	Wrench
Type					
FMA22	K8.0	MBA-M10	BX0310	-	LW-8
FMA22.225	K8.0	MBA-M10	BX0310	-	LW-8
FMA25.4	K9.5	MBA-M12	BX0412	BX1230	LW-10
FMA31.75	K12.7	MBA-M15	BX0516	-	LW-14
FMA38.1	K15.87	MBA-M20	BX0616	-	LW-17
FMA50.8	K19.05	MBA-M24	BX0820	-	LW-19
FMA47.625	K25.4	-	BX1020	BX1645	-
S-FMA25.4	-	-	-	-	LW-10
S-FMA31.75	-	-	-	-	LW-14



BT-FMC

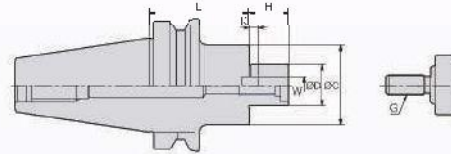


Fig. 1

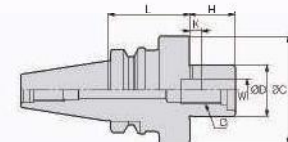


Fig. 2

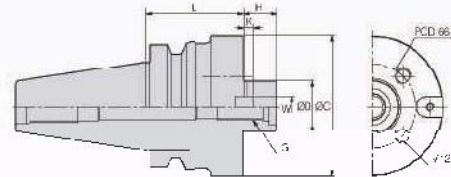


Fig. 3

(mm)

Designation			Cutter Dia.	ØD	L	ØC	H	W	K	G	$\frac{G}{L}$	Fig.
BT30 -	FMC16 - 45		40	16	45	38	17	8	5.0	M8	0.7	1
	FMC22 - 45		50/63	22	45	48	19	10	5.6	M10	0.8	2
	FMC27 - 50		80	27	50	60	21	12	6.3	M12	1.2	2
BT40 -	FMC16 - 60		40	16	60	38	17	8	5.0	M8	1.2	1
	FMC22 - 45		50/63	22	45	48	19	10	5.6	M10	1.2	1
	FMC22 - 90		50/63	22	90	48	19	10	5.6	M10	1.2	1
	FMC27 - 60		80	27	60	60	21	12	6.3	M12	1.8	2
	FMC27 - 90		80	27	90	60	21	12	6.3	M12	3.2	2
	FMC32 - 60		100	32	60	78	24	14	7.0	M16	2.3	2
	FMC40 - 50		125/160	40	50	80	27	15.87	8.0	M20	3.3	3
BT50 -	FMC16 - 60		40	16	60	38	17	8	5.0	M8	3.9	1
	FMC22 - 60		50/63	22	60	48	19	10	5.6	M10	4.1	1
	FMC27 - 40		80	27	40	60	21	12	6.3	M12	4.1	1
	FMC27 - 90		80	27	90	60	21	12	6.3	M12	5.5	1
	FMC27 - 150		80	27	150	60	21	12	6.3	M12	6.1	1
	FMC32 - 45		100	32	45	78	24	14	7.0	M16	4.2	1
	FMC32 - 75		100	32	75	78	24	14	7.0	M16	4.2	1
	FMC32 - 105		100	32	105	78	24	14	7.0	M16	4.2	1
	FMC40 - 50		125/160	40	50	80	27	15.87	8.0	M20	4.6	3

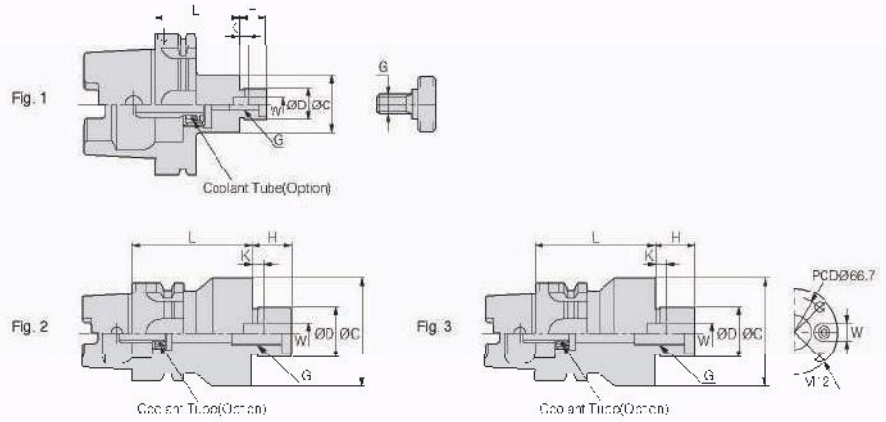
*Through coolan. system is optional. *The weight above exclude the face cutter.

Parts

Arbor	Spare Parts				
	Basic				Option
	Key	Clamp Bolt	Key Bolt	Wrench Bolt	Wrench
Type					
FMC 16	K8 0	-	BX0310	BX0930	LW-6
FMC 22	K10 0.0	-	BX0412	BX1030	LW-8
FMC 25.4	K9 5	-	BX0516	BX1230	LW-10
FMC 27	K12 2.0	MBA-M12	BX0616	-	LW-10
FMC 32	K14 4.0	MBA-M16	BX0616	-	LW-14
FMC38.1	K15 87	MBA-M16	BX0616	-	LW-14
FMC40	K15 87	MBA-M20	BX0616	-	LW-17



HSK-FMC



(mm)

Designation	Cutter Dia.	ØD	L	ØC	H	W	K	G		Fig.
HSK50A - FMC16 - 40	40	16	40	38	17	8	5	M8	0.8	1
FMC22 - 50	50/63	22	50	48	19	10	5.6	M10	0.9	1
HSK63A - FMC16 - 50	40	16	50	38	17	8	5.0	M8	1.1	1
FMC22 - 50	50/63	22	50	48	19	10	5.6	M10	1.2	1
FMC27 - 60	50	27	60	60	21	12	6.3	M12	1.4	1
FMC32 - 60	100	32	60	78	24	14	7.0	M16	1.8	2
FMC40 - 60	125/160	40	60	89	27	15.87	8.0	M20	2	3

• Through coolant system is optional. • The weight above exclude the face cutter.

Parts

Arbor	Spare Parts				
	Basic				Option
	Key	Clamp Bolt	Key Bolt	Wrench Bolt	Wrench
Type					
FMC 16	K8.0	-	BX0310	BXC830	LW-6
FMC 22	K10.0	-	BX0412	BX1030	LW-8
FMC 25.4	K9.5	-	BX0516	BX1230	LW-10
FMC 27	K12.0	M3A-M12	BX0616	-	LW-10
FMC 32	K14.0	M3A-M15	BX0616	-	LW-14
FMC38.1	K15.87	M3A-M15	BX0616	-	LW-14
FMC40	K15.87	M3A-M20	BX0616	-	LW-17



BT-MTA

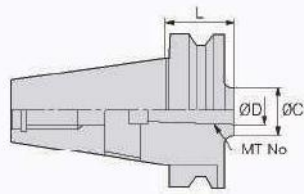


Fig. 1

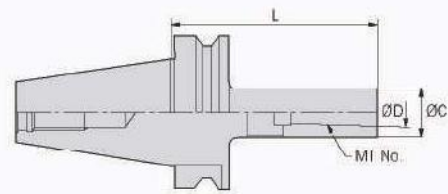


Fig. 2

(mm)

Designation		MT No.	L	ØD	ØC	$\frac{L}{\phi D}$	Fig.
BT40 -	MTA1 - 45	1	45	12.065	25	1.1	1
	MTA2 - 60	2	60	17.780	32	1.1	1
	MTA3 - 75	3	75	23.825	40	1.2	1
	MTA4 - 95	4	95	31.267	50	1.4	1
BT50 -	MTA1 - 45	1	45	12.065	25	3.9	1
	MTA1 - 120	1	120	12.065	25	4.2	2
	MTA1 - 180	1	180	12.065	25	4.3	2
	MTA2 - 45	2	45	17.780	32	3.9	1
	MTA2 - 135	2	135	17.780	32	4.3	2
	MTA2 - 180	2	180	17.780	32	4.6	2
	MTA3 - 45	3	45	23.825	40	3.8	1
	MTA3 - 150	3	150	23.825	40	4.6	2
	MTA3 - 180	3	180	23.825	40	4.9	2
	MTA4 - 75	4	75	31.267	50	3.9	1
	MTA4 - 180	4	180	31.267	50	5.4	2
	MTA5 - 105	5	105	44.399	55	4.5	1

• Through coolant system not available



ANGULAR HEAD

ANGULAR HEAD

Features of solid type

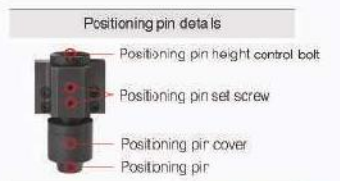
- Doubled effect by one equipment
- Available for various angles
- Lighter aluminum body



Code System

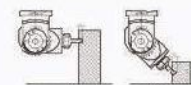


Name of Angular head parts



Various applications

360-degree rotating angular head



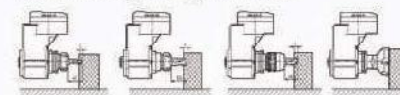
Fixed 90-degree type angular head



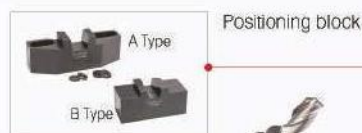
Fixed 45-degree type angular head



Attachment type angular head



Components



Part (Basic)

The warranty

Video clip CD



MAH

Universal type MAH(Reinforced series)

Reinforced type
Better performance by improving existing universal Angular head

1. Stability on large mold machining
2. Use 32mm Ball Endmill
3. Reinforced from KHU type



HRAG

Attachment type HRAG(Reinforced type)

HRAG : The reinforced bracket enhanced durability upto 200%

1. Stability on face milling machining
2. Reinforced stiffness from KAG type.

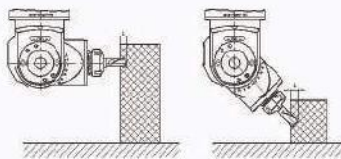


KHU

Universal type KHU(Freeangle)

Free angle adjusting up to 90°

1. Possible to use various tools of BT40 and BT30
2. HSK and SK type are order made.
3. Coolant type is optional.



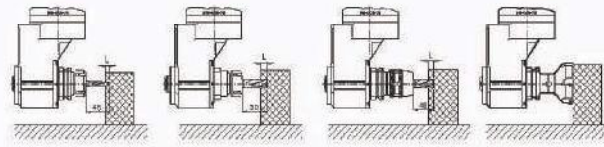
BT50-KHU20-135

KAG

Attachment type KHU(Universal type)

Free 360° angle adjusting from side to side

1. Possible to use various tools of BT40 and BT30
2. HSK and SK type are order made.
3. Coolant type is optional.



BT40-SDC20-60
(Ø12 E/M)

NT40-SDC20-60
(Ø20 E/M)

BT40-NPM20-85
(Ø20 E/M)

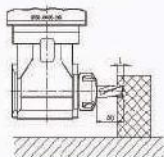
BT40-FMA25.4-45
(Ø80 Shoulder Mill)

KAH

Modular type KHU(90° type)

Free 360° angle adjusting from side to side

1. In case of using a tap collet, please contact us in advance.
2. HSK and SK type are order made.
3. Coolant type is optional.



BT50-KAH20-200

KAC

Modular type KAC(45° type)

Free 360° angle adjusting from side to side

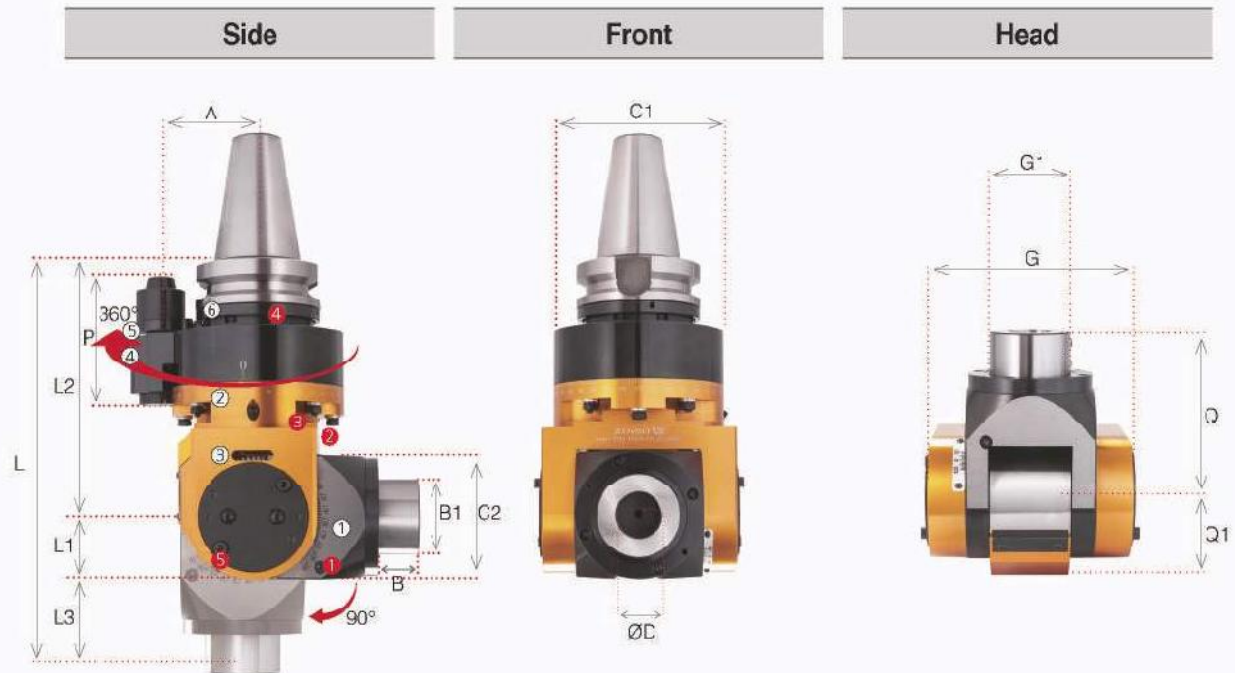
1. HSK and SK type are order made.
2. Coolant type is optional.



Angular Head Series

MHA for mold(Free angle)_Reinforced type(0°~90°)

BT-MAH



Positioning pin



Shank Size	L	A	ØD
BT50	56.5	30°	ø40

NO	Name
①	Inclination angle gradation (Axial positioning in 0°~90°)
②	Rotating angle gradation (Free radius position in 360°)
③	Head
④	Positioning pin part
⑤	Jaw key
⑥	Positioning ring
⑦	Positioning pin cover
⑧	Positioning pin

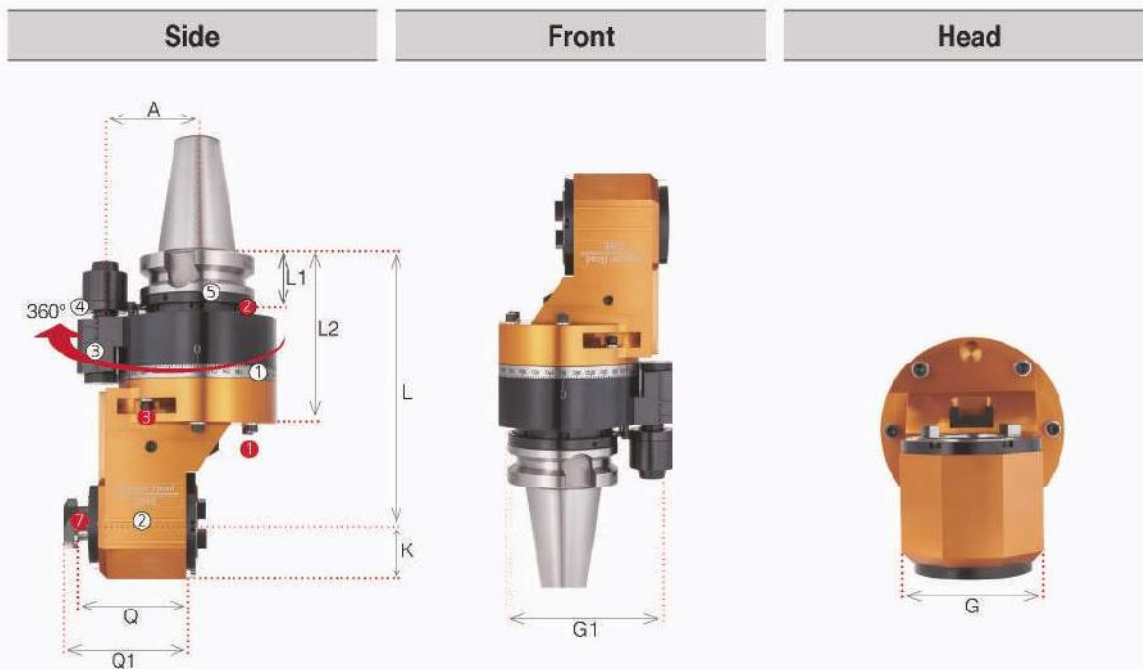
NO	Part name	Designation
①	Inclination angle gradation Screw	BT1216
②	Head fixed bolts	BT0545
③	Rotating angle gradation screw	BT0540
④	Positioning ring set screw	MSST5-12
⑤	Tilt axes fixing bolts	BH0616
⑥	Positioning pin height control bolt	BT0516
⑦	Positioning pin set screw	BTC512
⑧	Body position block set screw	BX0516

Designation	ØD	L	L1	L2	L3	C	C1	G	C2	Q	Q1	B	B1	P	A	MAX RPM	kg	SIDE LOCK
BT50-MAH32-200	32	200	47	78	325	136	95	154	95	125	63	31	60	95	80	3,000	19	



HRAG(90° fixed)_Reinforced type

BT-HRAG



Positioning pin



Shank Size	L	A	ØD
BT50	56.5	30°	ø40

NO	Name	
①	Rotating angle graduation (Free radius position in 360°)	
②	Head	
③	Positioning pin part	
④	Jaw key	
⑤	Positioning ring	
⑥	Positioning pin cover	
⑦	Positioning pin	

NO	Part name	Designation
①	Lead fixed bolts	3X0660
②	Positioning ring set screw	MSST5-12
③	Rotating angle graduation screw	BT0648
④	Positioning pin height control bolt	BT0516
⑤	Positioning pin set screw	BT0512
⑥	Body position block set screw	3X0518
⑦	BT / NT Bolt	

Designation	L	L1	L2	L3	L4	Q	Q1	A	G	G1	MAX RPM	Tool Shank	kg
BT50-HRAG40-230	230	56.5	145	46.5	276.5	89	101	80	93	136	3000	BT40 / NT40	15.75



Angular Head Series

KHU(Free angle)_Collet type(0°~90°)

BT-KHU



Positioning pin



Shank Size	L	L1	A	ØD
BT40	Max : 32 Min : 26	10	20°	Ø19.6
BT50	Max : 35 Min : 29	15		Ø28

NO	Name
①	Inclination angle gradation (Axial positioning in 0°~90°)
②	Rotating angle gradation (Free radius position in 360°)
③	Head
④	Positioning pin part
⑤	Jaw key
⑥	Height control wrench hole

NO	Part name	Designation
①	Tilt Axes fixing bolts	BH0630
②	Bracket angle fixing bolt	BX0330
③	Position block fixing bolt	BX0512
④	Set screw	BT0404
⑤	Fixing bolts	BX05630

Designation	ØD	ØD1	L	L1	L2	L3	B	B1	E	F	C	A	G	Q	Q1	Torque rate (IN:OUT)	Direction of rotation (IN:OUT)	MAX RPM	Collet	kg
BT40-KHU10-160	1.0~10.0	58	160	33	54	247	22	28	51	98	96	65	90	87	40	1:2	CW:CW	6,000	GC7C16	6.4
BT50-KHU10-180	1.0~10.0	58	180	33	54	267	22	28	53	103	114	80	90	87	40	1:2	CW:CW	6,000	GERC16	10.5
BT50-KHU20-195	2.0~20.0	84	195	47	73	315	29	50	53	132	114	80	124	120	63	1:1	CW:CW	3,000	GERC32	15.8



KAG(90° Fixed type)

BT-KAG


Positioning pin



Shank Size	L	L1	A	ØD
BT40	Max : 32 Min : 26	10	20°	Ø19.6
BT50	Max : 35 Min : 29	15		Ø28

NO	Name	
①	Rotating angle graduation (Free radius position in 360°)	
②	Head	
③	Positioning pin part	
④	Jaw key	
⑤	Height control wrench hole	

NO	Part name	Designation
①	Set screw	3T0404
②	Fixing bolts	BX50630
③	DT / NT Bolt	

Designation	L1	L2	L3	L4	L5	L6	Q	Q1	A	C	G	Torque rate (IN:OUT)	Direction of rotation (IN:OUT)	MAX RPM	Holder Shank	kg
BT40-KAG30-195	44	86	65	37.5	195	232.5	66	70	65	96	75	1:1	CW:CW	4,000	BT30/NT30	6.4
BT50-KAG40-230	57	88	85	46.5	230	276.5	89	94	80	114	93	1:1	CW:CW	3,000	BT40/NT40	10.5

Angular Head Series

HRAG(90° fixed)_Collet type

BT-KAH



Positioning pin



Shank Size	L	L1	A	ØD
BT40	Max : 32 Min : 26	10	20°	Ø19.6
BT50	Max : 35 Min : 29	15		Ø28

NO	Name	
①	Head	
②	Rotating angle graduation (Free radius position in 300°)	
③	Positioning pin part	
④	Jaw key	
⑤	Height control wrench hole	

NO	Part name	Designation
①	Head fixing bolts	BX0518
②	Set screw	BT0404
③	Fixing bolts	BX50630

Designation	ØD	L	L1	L2	L3	L4	B	A	P	Q	G	G1	Torque rate (N·m/OUT)	MAX RPM	Collet	kg
BT40-KAH7-170	1.0~7.0	170	20	44	71	55	19	65	37	24.5	40	96	1:1	5,000	GERC11	4.6
BT40-KAH10-195	1.0~10.0	195	25	44	71	80	28	65	46	32	58	96	1:1	5,000	GERC16	5.8
BT40-KAH13-165	1.0~13.0	165	28	44	71	50	35	65	53	35	60	96	1:1	5,000	GERC20	5.7
BT40-KAH20-180	2.0~20.0	180	38	44	71	65	50	65	71	49	76	96	1:1	3,500	GERC32	6.7
BT50-KAH07-220	1.0~7.0	220	20	57	54	109	19	80	37	24.5	40	96	1:1	5,000	GERC11	9.8
BT50-KAH10-215	1.0~10.0	215	25	57	54	104	28	80	46	32	58	96	1:1	5,000	GERC16	10.7
BT50-KAH10-260	1.0~10.0	260	25	57	54	149	28	80	46	32	58	96	1:1	5,000	GERC16	11.0
BT50-KAH13-260	1.0~13.0	260	28	57	54	149	35	80	53	35	60	96	1:1	5,000	GERC20	11.2
BT50-KAH20-200	2.0~20.0	200	38	57	54	89	50	80	71	49	76	96	1:1	3,500	GERC32	11.6
BT50-KAH20-240	2.0~20.0	240	38	57	54	129	50	80	71	49	76	96	1:1	3,500	GERC32	12.4



KAC(45° fixed)_Collet type

BT-KAC



Positioning pin



Shank Size	L	L1	A	ØD
BT40	Max : 32 Min : 26	10	20°	Ø19.6
BT50	Max : 35 Min : 29	15		Ø28

NO	Name
①	Head
②	Rotating angle graduation (Free radius position in 360°)
③	Positioning pin part
④	Jaw key
⑤	Height control wrench hole

NO	Part name	Designation
①	Head fixing bolts	BX06 13
②	Set screw	3T0404
③	Fixing bolts	BX50630

Designation	ØD	L	L1	L2	L3	B	G	G1	P	Q	A	MAX RPM	Collet	kg
BT40-KAC10-220	1.0~10.0	220	44	71	105	28	60	96	25	54	65	5,000	GERC16	5.3
BT40-KAC13-220	1.0~13.0	220	44	71	105	28	60	96	25	54	65	5,000	GLHC20	5.5
BT40-KAC20-230	2.0~20.0	230	44	71	115	50	72	96	30	60	65	3,500	GERC32	6.8
BT50-KAC10-240	1.0~10.0	240	57	54	129	28	80	96	25	54	80	5,000	GERC16	10.2
BT50-KAC13-240	1.0~13.0	240	57	54	129	28	80	96	25	54	80	5,000	GERC20	10.4
BT50-KAC20-250	2.0~20.0	250	57	54	139	50	72	96	30	60	80	3,500	GERC32	11.7



FBH back boring & balanced type

FBH

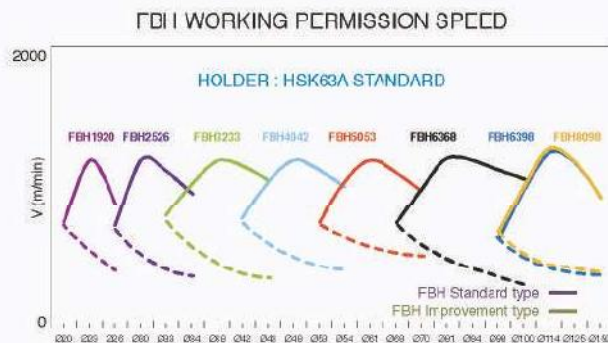
- High speed machining : G2.5
- Back Boring funtion
- Adjustment range: 1DIV=0.002mm



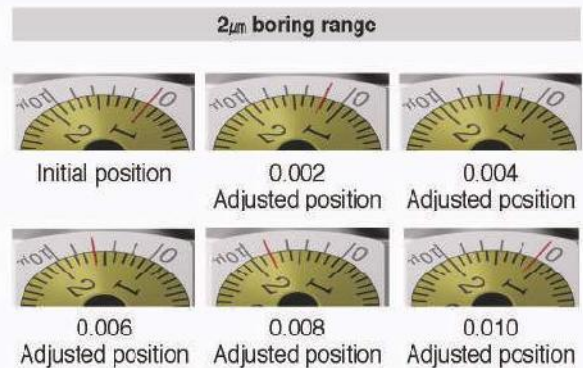
Code System



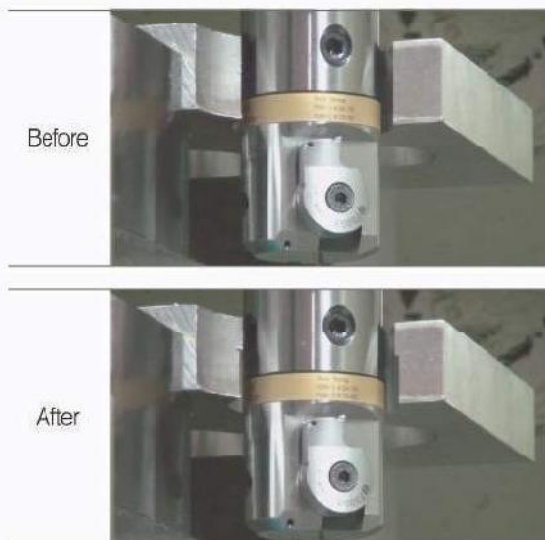
Working Permission Speed



Boring range adjustment method



Back boring



Adjusting machining direction available



Easy change of machining direction
on y by adjusting the bite



BT-FBHB Micro Boring Balance Type

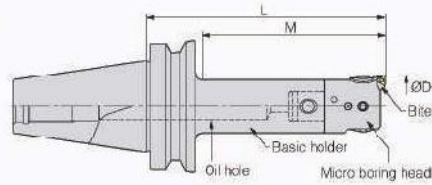


Fig. 1

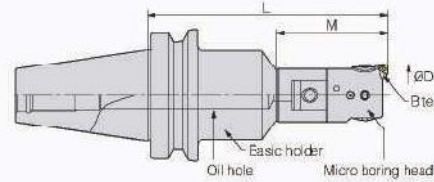


Fig. 2

(mm)

Designation			Boring Range ØD		L	Max. Boring Depth	/kg\	Fig.
Micro Boring Head	Bite	Body (Basic Holder)	Min	Max				
FBH1920B	FBB20N-□□□□	BT30 -	MD19F - 70R		103	50	0.5	2
FBH2526B	FBB26N-□□□□		MD25F - 90R		127	50	0.7	2
FBH3233B	FBB33N-□□□□		MD32F - 80R		121	50	0.8	2
FBH4042B	FBB42N-□□□□		MD40F - 80R		127	36	1.1	2
FBH5053B	FBB53N-□□□□		MD50F - 70		127	37	1.7	1
FBH1920B	FBB20N-□□□□	BT40 -	MD19F - 70R		103	45	1.9	2
FBH2526B	FBB26N-□□□□		MD25F - 95R		133	59	2	2
FBH3233B	FBB33N-□□□□		MD32F - 100R		141	77	2.5	2
FBH4042B	FBB42N-□□□□		MD40F - 115R		162	107	3.1	2
FBH5053B	FBB53N-□□□□		MD50F - 105		162	135	3.5	1
FBH6368B	FBB68N-□□□□	BT50 -	MD63F - 110		181	154	5.3	1
FBH6398B	FBB68N-□□□□		MD63F - 135		206	179	7.1	1
FBH8098B	FBB68N-□□□□		MD80F - 100		171	147	9.3	1
FBH1920B	FBB20N-□□□□	BT50 -	MD19F - 85		118	50	5.2	1
FBH2526B	FBB26N-□□□□		MD25F - 105R		142	59	5.8	2
FBH3233B	FBB33N-□□□□		MD32F - 110R		151	77	6	2
FBH4042B	FBB42N-□□□□		MD40F - 195R		242	130	9.3	2
FBH5053B	FBB53N-□□□□		MD50F - 225R		282	182	9.6	2
FBH6368B	FBB68N-□□□□	BT50 -	MD63F - 230R		301	220	7.2	2
FBH6398B	FBB68N-□□□□		MD63F - 195R		206	191	9.5	2
FBH8098B	FBB68N-□□□□		MD80F - 175		246	208	12.8	1

Scale Part 163

•Through coolant system available

FBH Micro Boring Head

FBH1920B

New Type (mm)

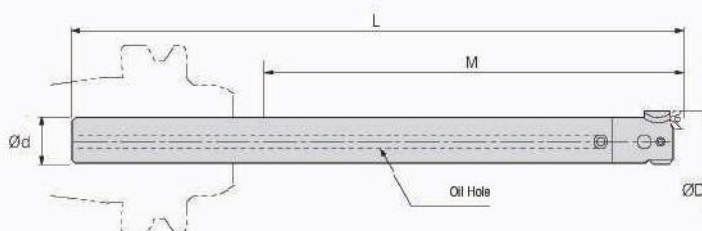
Designation		Boring Range ØD		L	Scale Ring 1Rev. Adjustable range	MD No.	/kg\
		Min	Max				
FBH -	1920B	20	26(30)	33	Ø0.4mm	MD1911	0.06
	2526B	25	34(40)	37	Ø0.4mm	MD2514	0.12
	3233B	33	43(50)	41	Ø0.5mm	MD3218	0.24
	4042B	42	54(62)	47	Ø0.5mm	MD4022	0.41
	5053B	53	70(82)	57	Ø0.6mm	MD5026	0.8
	6368B	68	100(122)	71	Ø0.8mm	MD6336	1.7
	6398B	98	150(172)	71	Ø0.8mm	MD6336	2.35

• Stock of basic holders, heads and bites are separately managed.

• () : Max. boring diameter of extension type



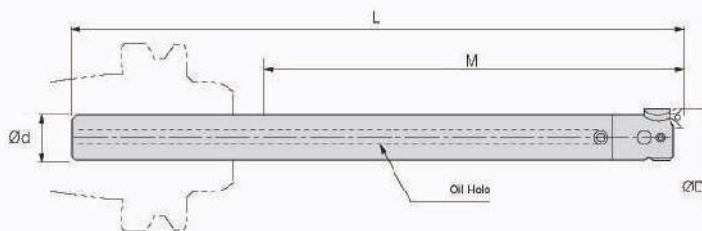
S-FBH Small Micro Boring



Designation		Shank dia ϕd	Boring Range ϕD		L	M	Designation			/ kg
			Min	Max			Basic Shank	Boring Head	Bite	
S19W -	FBH20B - 120	19	20	26	190	120	S19W-MD19F-157	F3F-1920B	FBB20N	0.6
	140	19	20	26	210	140	S19W-MD19F-177	F3F-1920B	FBB20N	0.7
	160	19	20	26	230	160	S19W-MD19F-197	F3F-1920B	FBB20N	0.8
S25W -	FBH26B - 150	25	26	34	235	150	S25W-MD25F-197.5	F3F-2526B	FBB26N	1.4
	175	25	26	34	260	175	S25W-MD25F-222.5	F3F-2526B	FBB26N	1.6
	200	25	26	34	285	200	S25W-MD25F-247.5	F3F-2526B	FBB26N	2
S32W -	FBH33B - 180	32	33	43	280	180	S32W-MD32F-239	F3F-3233B	FBB33N	2.8
	240	32	33	43	340	240	S32W-MD32F-299	F3F-3233B	FBB33N	3.5
S19 -	FBH20B - 40	19	20	26	110	40	S19-MD19F-77	F3F-1920B	FBB20N	0.1
	80	19	20	26	150	80	S19-MD19F-117	F3F-1920B	FBB20N	0.2
S25 -	FBH26B - 50	25	26	34	135	50	S25-MD25F-97.5	F3F-2526B	FBB26N	0.4
	100	25	26	34	185	100	S25-MD25F-147.5	F3F-2526B	FBB26N	0.6
S32 -	FBH33B - 90	32	33	43	190	90	S32-MD32F-149	F3F-3233B	FBB33N	1.1
	120	32	33	43	220	120	S32-MD32F-179	F3F-3233B	FBB33N	1.2

• Through coolant system available

S-FBH Mini Small Micro Boring



Designation		Shank dia ϕd	Boring Range ϕD		L	M	Designation			/ kg
			Min	Max			Basic Shank	Boring Head	Bite	
S14W	FBH15 - 85	14	15	10	155	85	S14W-M8-123	FBH15	FBB15-C	0.2
	110	14	15	18	180	110	S14W-M8-148	FBH15	FBB15-C	0.3
S16W	FBH18 - 95	16	18	22	165	95	S16W-M8-128	FBH18	FBB18-C	0.3
	125	16	18	22	195	120	S16W-M8-158	FBH18	FBB18-C	0.4
S14	FBH15 - 40	14	15	18	110	40	S14-M8-78	FBH15	FBB15-C	0.1
S16	FBH18 - 45	16	18	22	115	45	S16-M8-78	FBH18	FBB18-C	0.1

• Through coolant system available



 Parts

Spare Parts		
Type(FBH)	Lock Screw	Clamp Screw
FBH1920B	BTF0404	3XC0304
FBH2526B	BTF0505	3XC0405
FBH3233B	BTF0606	3XC0506
FBH4042B	BTF0808	3XC0610
FBH5053B	BTF0812	3XC0610
FBH6368B	BTF1016	3XC0810
FBH6398B	RTF1012	3XC0810
FBH8098B	RTF1014	3XC0810

FBF Bite (New Type)

Designation	Boring Range	Insert Screw	Clamp Bolt
FBF15-C	Ø15 ~ Ø18mm	FTNA01633	BFTX02506N
	Ø18 ~ Ø22mm		
FBF20N	Ø20 ~ Ø26mm	BFTX0204A	BXC0304
FBF20N	Ø20 ~ Ø26mm	-	
FBF20N	-	1	
FBF20N	-	-	
FBF26N	Ø26 ~ Ø34mm	BFTX0204A	BXC0405
FBF26N		-	
FBF26N	-	1	
FBF26N	-	-	
FBF33N	Ø33 ~ Ø43mm	BFTX0204A	BXC0506
FBF33N		-	
FBF33N	-	1	
FBF33N		-	
FBF42N	Ø42 ~ Ø54mm	BFTX0204A	BXC0810
FBF42N	Ø42 ~ Ø54mm	-	
FBF42N	Ø42 ~ Ø54mm	-	
FBF42N	-	1	
FBF42N	-	-	
FBF42N	-	-	
FBF53N	Ø53 ~ Ø70mm	BFTX0204A	
FBF53N		-	
FBF53N		-	
FBF53N		-	
FBF53N	-	1	
FBF53N		-	
FBF53N		-	
FBF53N		-	
FBF68N	Ø68 ~ Ø100mm Ø98 ~ Ø150mm	BFTX0204A	BXC0810
FBF68N		-	
FBF68N		-	
FBF68N	-	1	
FBF68N		-	
FBF68N		-	

Technical Information for TBC

Balance cut tool for Rough boring

TBC

- Wide boring range for big diameters - $\varnothing 130 \sim \varnothing 540\text{mm}$
- Stable structure against for cutting load - Assembly by dove-tail structure
- Interconvert with FBC
 - Common boring head and rail adopted, different cartridge
- Light-weight (5%~20% reduced)
- Various cartridge approach angle - $15^\circ, 45^\circ$
- Internal coolant pin - Easy assembly - Spray coolant to 6 directions



Code System

BT50-TBC 50-85+TBR130-BCC1348+CCMT1204□□

Spindle

Balance cut tool for finish boring

Max. Chucking dia.

Length

Rail

Cartridge

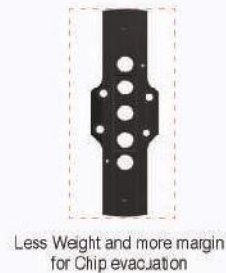
Insert

TBC Boring Tool structure & Features

TBC Compositions



Cartridge : BCC1348
Insert : CCMT1204□□
CNMG1204□□



Less Weight and more margin for Chip evacuation



Enhanced Strength and Weight

TBC Boring Tool Cutting condition

Work-piece	Grade(HRC)	Cutting condition		
		Tip (Grade)	Cutting Speed (m/min.)	Feed per Revolution (mm/rev.)
ALL	ADC12	N Material	N Material	0.1
Mild steel	SS41(HB160)	P Material	P Material	0.1
Steel	S45C(H250)	P Material	P Material	0.1
Stainless Steel	SUS304	M Material	M Material	0.1
Cast-iron	FC250(ID250)	K Material	K Material	0.1

Boring range

Grade	Dia(Ø)		Body	Head Set	Insert
	min	max			
TBC130	130	180	FMD50	T3C130S	CCMT1204□□
TBC175	175	225	FMD50	T3C175S	CCMT1204□□
TBC220	220	270	FMD50	T3C220S	CCMT1204□□
TBC265	265	315	FMD50	T3C265S	CCMT1204□□
TBC310	310	390	FMD50	T3C310S	CCMT1204□□
TBC385	385	465	FMD50	T3C385S	CCMT1204□□
TBC460	460	540	FMD50	T3C460S	CCMT1204□□



Balance cut tool for Fine boring

FBC

- Wide boring range for big diameters - $\varnothing 130 \sim \varnothing 540\text{mm}$
- Interconvert with TBC
 - Common boring head and rail adopted,
 - different cartridge [micro cartridge + balancing block]
- Various Insert according to bite
 - Applicable insert : CCMT09T3/1204, TPMT1103 (Cermet, cBN, PCD)



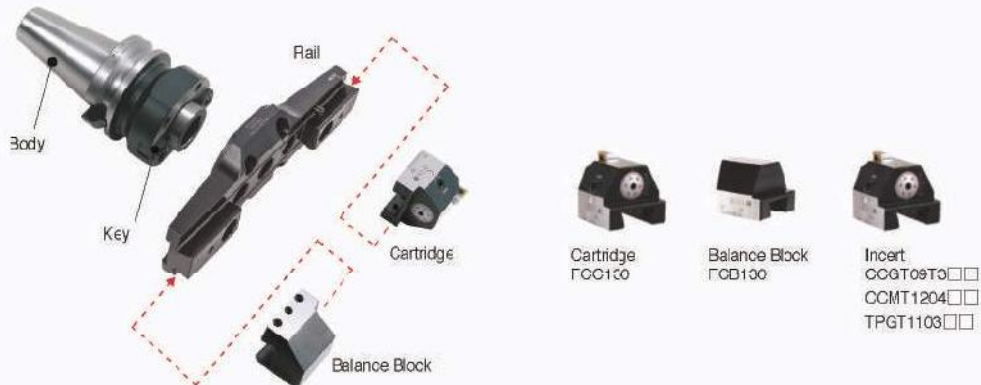
Code System

BT50-FBC 50-85+TBR130-BCC1348+CCMT1204 □□

Spindle Balance cut tool for finish boring Max. Chucking dia. Length Rail Cartridge Insert

FBC Boring Tool structure & Features

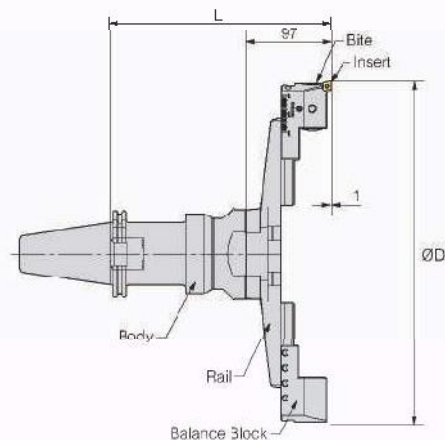
FBC Compositions



FBC Boring Tool Cutting condition

Grade	Dia(φ)		Head Set	Insert
	min	max		
FBC130	130	180	FBC130S(TBR130+FCC130+FCB130)	FBB130-C09 (CCMT09T3□□, CCMT09T3□□) FBB130-C12 (CCMT1204□□) FBB130-T11 (TPMT1103□□, TPGT1103□□)
FBC175	175	225	FBC175S(TBR175+FCC130+FCB130)	
FBC220	220	270	FBC220S(TBR220+FCC130+FCB130)	
FBC265	265	315	FBC265S(TBR265+FCC130+FCB130)	
FBC310	310	390	FBC310S(TBR310+FCC310+FCB310)	
FBC385	385	465	FBC385S(TBR385+FCC310+FCB310)	
FBC460	460	540	FBC460S(TBR460+FCC310+FCB310)	

TBC, FBC



(mm)

		Designation						Boring Range		
Body		Rough Boring (TBC)			Finish Boring (FBC)					
		TBC HEAD SET (Rail+Cartridge)	L		FBC HEAD SET (Rail+Cartridge+Balance Block)	L		Min	Max	
BT50 - FMD50 - 85	5.9	TBC130S(TBR130+BCC1348)	175	3.5	FBC130S(TBR130+FCC130+FCB130)	182	3.8	130	180	
	155	7.9	TBC130S(TBR130+BCC1348)	245	3.5	FBC130S(TBR130+FCC130+FCB130)	252	3.8	130	180
	205	9.7	TBC130S(TBR130+BCC1348)	295	3.5	FBC130S(TBR130+FCC130+FCB130)	302	3.8	130	180
	255	10.4	TBC130S(TBR130+BCC1348)	345	3.5	FBC130S(TBR130+FCC130+FCB130)	352	3.8	130	180
	85	5.9	TBC175S(TBR175+BCC1348)	175	3.9	FBC175S(TBR175+FCC130+FCB130)	182	4.1	175	225
	155	7.9	TBC175S(TBR175+BCC1348)	245	3.9	FBC175S(TBR175+FCC130+FCB130)	252	4.1	175	225
	205	9.7	TBC175S(TBR175+BCC1348)	295	3.9	FBC175S(TBR175+FCC130+FCB130)	302	4.1	175	225
	255	10.4	TBC175S(TBR175+BCC1348)	345	3.9	FBC175S(TBR175+FCC130+FCB130)	352	4.1	175	225
	85	5.9	TBC220S(TBR220+BCC1348)	175	4.3	FBC220S(TBR220+FCC130+FCB130)	182	4.5	220	270
	155	7.9	TBC220S(TBR220+BCC1348)	245	4.3	FBC220S(TBR220+FCC130+FCB130)	252	4.5	220	270
	205	9.7	TBC220S(TBR220+BCC1348)	295	4.3	FBC220S(TBR220+FCC130+FCB130)	302	4.5	220	270
	255	10.4	TBC220S(TBR220+BCC1348)	345	4.3	FBC220S(TBR220+FCC130+FCB130)	352	4.5	220	270
	85	5.9	TBC265S(TBR265+BCC1348)	175	4.5	FBC265S(TBR265+FCC130+FCB130)	182	4.6	265	315
	155	7.9	TBC265S(TBR265+BCC1348)	245	4.5	FBC265S(TBR265+FCC130+FCB130)	252	4.6	265	315
	205	9.7	TBC265S(TBR265+BCC1348)	295	4.5	FBC265S(TBR265+FCC130+FCB130)	302	4.6	265	315
	255	10.4	TBC265S(TBR265+BCC1348)	345	4.5	FBC265S(TBR265+FCC130+FCB130)	352	4.6	265	315
	85	5.9	TBC310S(TBR310+BCC1354)	175	5.5	FBC310S(TBR310+FCC130+FCB130)	182	5.5	310	390
	155	7.9	TBC310S(TBR310+BCC1354)	245	5.5	FBC310S(TBR310+FCC130+FCB130)	252	5.5	310	390
	205	9.7	TBC310S(TBR310+BCC1354)	295	5.5	FBC310S(TBR310+FCC130+FCB130)	302	5.5	310	390
	255	10.4	TBC310S(TBR310+BCC1354)	345	5.5	FBC310S(TBR310+FCC130+FCB130)	352	5.5	310	390
	85	5.9	TBC385S(TBR385+BCC1354)	175	5.8	FBC385S(TBR385+FCC130+FCB130)	182	5.8	385	465
	155	7.9	TBC385S(TBR385+BCC1354)	245	5.8	FBC385S(TBR385+FCC130+FCB130)	252	5.8	385	465
	205	9.7	TBC385S(TBR385+BCC1354)	295	5.8	FBC385S(TBR385+FCC130+FCB130)	302	5.8	385	465
	255	10.4	TBC385S(TBR385+BCC1354)	345	5.8	FBC385S(TBR385+FCC130+FCB130)	352	5.8	385	465
85	5.9	TBC460S(TBR460+BCC1354)	175	12.8	FBC460S(TBR460+FCC130+FCB130)	182	12.8	460	540	
155	7.9	TBC460S(TBR460+BCC1354)	245	12.8	FBC460S(TBR460+FCC130+FCB130)	252	12.8	460	540	
205	9.7	TBC460S(TBR460+BCC1354)	295	12.8	FBC460S(TBR460+FCC130+FCB130)	302	12.8	460	540	
255	10.4	TBC460S(TBR460+BCC1354)	345	12.8	FBC460S(TBR460+FCC130+FCB130)	352	12.8	460	540	



FBB FBB Bite



(mm)

Designation	Insert
FBB130 - C09	CCMT09T3 II I, CCGT09T3I
C12	CCMT1204 I
T11	TPMT1103 II I, TPGT1103I I

• TBC and DBC cartridges with lip angle of 15° / 15° can be purchased by order. (15° bases)

Parts

Arbor	Spare Parts								
	Basic								
	Rail	Cartridge	Cartridge	Clamp Bolt	Clamp Bolt	Balance Block	Wrench	Clamp Screw	Torx Wrench
Type									
TBC130S	TBR130	BCC1348		BX0820	BT0645		LW-3	BFTX0511N	TW20
TBC175S	TBR175								
TBC220S	TBR220								
TBC265S	TBR265								
TBC310S	TBR310	BCC1354 (BCN1354)		BX0820	BT0660		LW-3	BFTX0511N	TW20
TBC385S	TBR385								
TBC460S	TBR460								
FBC130S	TBR130		FCC130		BT0645	FCB130	LW 3		
FBC175S	TBR175								
FBC220S	TBR220								
FBC265S	TBR265								
FBC310S	TBR310		FCC310	BT0660	FCB310	LW 3			
FBC385S	TBR385								
FBC460S	TBR460								

BT-DBC

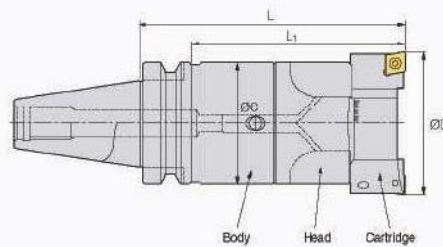


Fig. 1

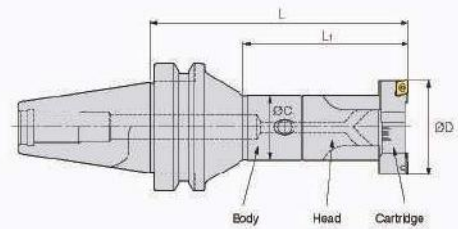


Fig. 2

(mm)

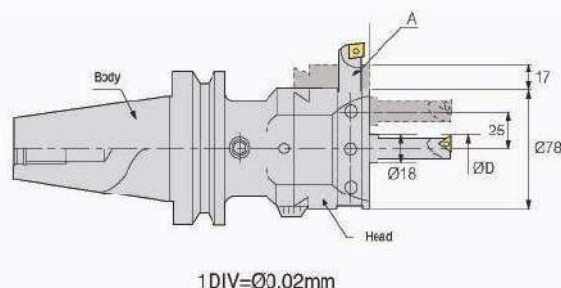
Designation				Boring Range ØD		L	Max. Boring Depth	Fig.
Micro Boring Head	/ kg \	Body (Basic Holder)	/ kg \	Min	Max			
DBC2528S	0.3	BT30-MD25F-90R	C.4	28	35	140	93	2
DBC3235S	0.4	BT30-MD32F-80R	C.4	35	46	145	114	2
DBC4046S	0.6	BT30-MD40F-80R	C.5	46	50	150	119	2
DBC5058S	1.1	BT30-MD50F-70	C.8	58	74	150	128	1
DBC2528S	0.3	BT40-MD25F-105R	1.9	28	35	165	100	2
DBC3235S	0.4	BT40-MD32F-115R	2.4	35	46	180	110	2
DBC4046S	0.6	BT40-MD40F-110R	2.7	46	58	180	130	2
DBC5058S	1.1	BT40-MD50F-100H	2.7	58	74	180	130	1
DBC6374S	2.0	BT40-MD63F-90	3.6	74	94	180	150	2
DBC8094S	3.5	BT40-MD80F-100	4.8	94	120	200	173	2
DBC2528S	0.3	BT50-MD25F-120R	4.7	28	35	180	100	2
DBC3235S	0.4	BT50-MD32F-235R	5.3	35	46	300	160	2
DBC4046S	0.6	BT50-MD40F-230R	5.6	46	58	300	250	2
DBC5058S	1.1	BT50-MD50F-250R	6.5	58	74	330	260	2
DBC6374S	2.0	BT50-MD63F-240R	8.4	74	94	330	280	2
DBC8094S	3.5	BT50-MD80F-175	9.5	94	120	275	225	1
DBC120S	5.3	BT50-MD80F-175	9.5	120	175	275	235	1

Parts

Division	Spare Parts								
	Basic								
	Head	Spring Pin	Wrench Bolt	Wrench	Cartridge	Set Screw	Wrench	Clamp Screw	Torx Wrench
Type									
DBC2528S	DBC2528	SP0308	BX0415	LW-3	BCC28	BT0308	LW-1.5	FTKA02565	TRX7
DBC3235S	DBC3235	SP0410	BX0515	LW-4	BCC35	BT0308			
DBC4046S	DBC4046	SP0516	DX0620	LW-5	BCC46	BT0410	LW-2	FTNA0408	TRX15
DBC5058S	DBC5058	SP0616			BCC58	BT0412			
DBC6374S	DBC6374	SP1018	BX0830	LW-6	BCC74	BT0516	LW-2.5	B=TX0511N	TRX20
DBC8094S	DBC8094	SP1020	BX1035	LW-8	BCC94	BT0620	LW-3		
DBC120S	DBC120N	SP1020	BX0830	LW-6.0	BCC120	BT0830	LW-4.0		



BT-KMB Micro Boring



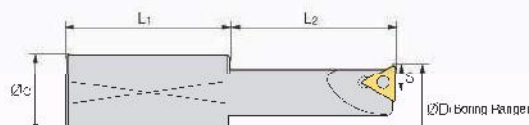
(mm)

Designation	Head (Modular)	Boring Bite	L	L ₁	$\frac{1}{kg}$
BT40 - MD63F - 64	KVB6336	BB18-L(S)	141	64	5.5
BT50 - MD63F - 75	KVB6336	BB16-L(S)	152	75	7.0

Boring Head	Bite	MD NO.	L	$\frac{1}{kg}$
KMB6336	BB18-L(S)	BTT11-MD63F	11	2.2

• Through coolant system is optional.

▶ Boring Bite : BBtype(for KMB)



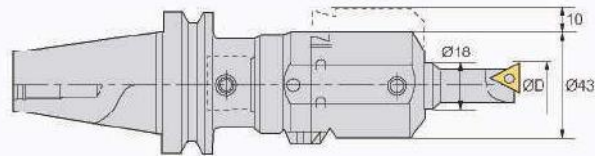
(mm)

Designation	Boring Range(Center)		Boring Range(Side)		S	L ₁	L ₂	Insert	Insert Screw
	Min	Max	Min	Max					
BB 18-7(S)	7	40	43	91	3.5	30	30	TBGT0601-L	BFTX0204A
18-9(S)	9	42	45	93	4.5	30	40	TPGT0802-L	BFTX0204A
18-11(S)	11	44	47	95	5.5	30	45	TPGT1103-L	BFTXC307A
18-13(S)	13	46	49	97	6.5	40	45	TPGT1103-L	BFTXC307A
18-15(S)	15	48	51	99	7.5	40	50	TPGT1103-L	BFTXC307A
18-17(S)	17	50	53	101	8.5	40	50	TPGT1103-L	BFTXC307A

▶ Parts

Division	Spare Parts				
	Basic			Option	
	Boring Head	Taper Screw	Wrench	Boring Bite	Basic Holder
Type					
KMB	KMB6336	BTT1620F	LW-8	BB18	MD63F

BT-SMB Small Micro Boring Bar



1 DIV=Ø0.02mm

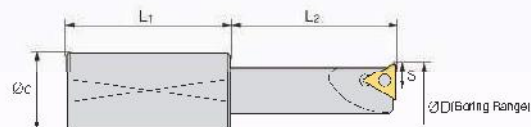
(mm)

Designation	Head (Modular)	Boring Bite	L	L1	$\frac{1}{kg}$
BT40 - MD40F - 60	SMB4022	BB18-O(S)	122.5	60	2.8
BT50 - MD40F - 60	SMB4022	BB18 O(S)	122.5	60	5.4

Boring Head	Bite	MD NO.	L	$\frac{1}{kg}$
SMB4022	B318-O(S)	BTOO-MD40T	62.5	0.6

• Through coolant system not available

▶ Boring Bite : BBtype(for SMB)



(mm)

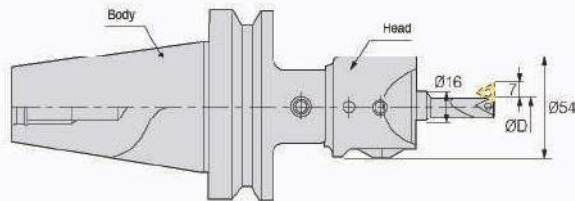
Designation	Boring Range		S	L1	L2	Insert	Insert Screw
	Min	Max					
BB 18-7(S)	7	27	3.5	30	30	TBGT0601PFL	BFTX0204A
18-9(S)	9	29	4.5	30	40	TPGT0602PFL	DTX0204A
18-11(S)	11	31	5.5	30	45	TPGT1103PFL	BFTX0307A
18-13(S)	13	33	6.5	40	45	TPGT1103LJL	BFTX0307A
18-15(S)	15	35	7.5	40	50	TPGT1103LJL	BFTX0307A
18-17(S)	17	37	8.5	40	50	TPGT1103L II	BFTX0307A

▶ Parts

Division	Spare Parts				
	Basic			Option	
	Boring Head	Taper Screw	Wrench	Boring Bite	Basic Holder
Type					
SMB	SMB4022	BTT1013F	LW-5	BB18	MD40F



BT-SMH Small Micro Boring Bar (for High Precision)



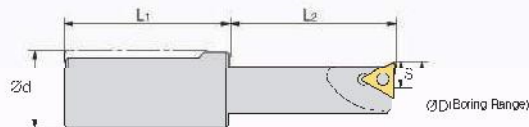
(mm)

Designation	Head (Modular)	Boring Bite	L	L ₁	$\frac{1}{kg}$
BT40 - MD40F - 60	SMH4022	BB16-O(S)	109	60	3.0
BT50 - MD40F - 60	SMH4022	BB16 O(S)	109	60	6.0

Boring Head	Bite	MD NO.	L	$\frac{1}{kg}$
SMH4022	BB18-O(S)	BTOO-MD40F	45	2.7

• Through coolant system not available

Boring Bite : BBtype(for SMH)



(mm)

Designation	Boring Range		S	L ₁	L ₂	Insert	Insert Screw	レンチ
	Min	Max						
BB 16-5(S)	5.5	19	2.75	34	20	WBGT0601FL	BFTXC203A	TRX06
16-7(S)	7	21	3.5	34	30	TBGT0601FL	BFTXC204A	TRX06
16-9(S)	9	23	4.5	34	40	TPGT0802FL	BFTXC204A	TRX06
16-11(S)	11	25	5.5	34	45	TPGT1103LL	BFTXC307A	TRX10
16-15(S)	15	29	7.5	34	50	TPGT1804LL	BFTXC307A	TRX10
16-19(S)	19	33	9.5	34	60	TPGT1103LL	BFTXC410A	TRX15

Parts

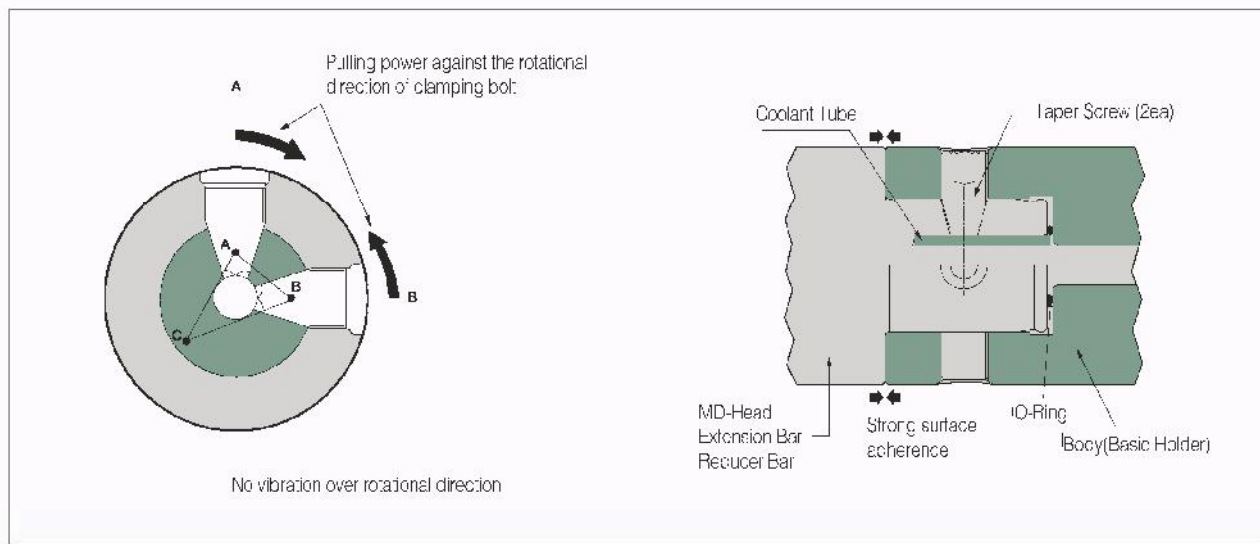
Division	Spare Parts				
	Basic			Option	
	Boring Head	Taper Screw	Wrench	Boring Bite	Basic Holder
Type					
SMH	SMH4022	BTT1013F	LW-5	BB16	MD40F



Versatile tooling system that can flexibly react to FMS

Modular System Series

- Versatile tooling system conforming to FMS specification.
- Flexible combination of tool units according to conditions of subject
- Joining with a specially designed screw provides high accuracy (error less than $5\mu\text{m}$) and ease of detach for one step setting.
- Cutting edge of boring system aligned with the groove of drive key.
- Corresponding accuracy and stiffness compared to uni-body type.



BT-MD

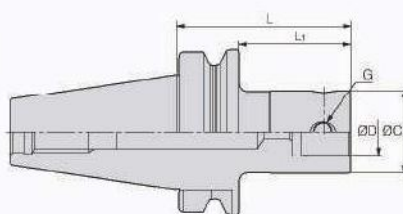


Fig. 1

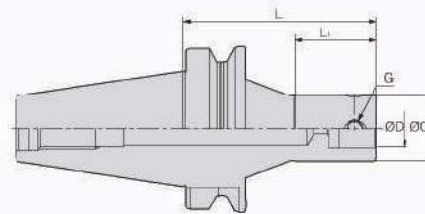


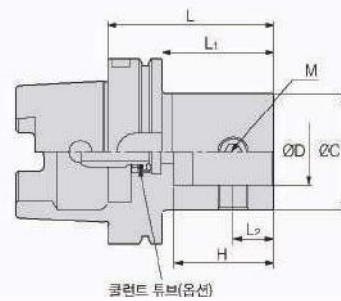
Fig. 2

(mm)

Designation		ØC	ØD	L	L ₁	G	$\frac{L}{kg}$	Fig.
BT30 -	MD19F - 70	19	11	70	45	M5	0.4	1
	MD25F - 90	25	14	90	63	M6	0.3	1
	MD32F - 80	32	18	80	55	M8	0.4	1
	MD40F - 45	40	22	45	22	M8	0.4	1
	MD40F - 60	40	22	60	36	M10	0.5	1
	MD40F - 80	40	22	80	56	M10	0.5	1
	MD50F- 70	50	28	70	48	M12	0.6	3
BT40 -	MD19F- 70	19	11	70	40	M5	1.8	1
	MD25F- 95	25	14	95	63	M6	1.9	1
	MD25F- 105R	25	14	105	40	M6	1.9	2
	MD32F- 100	32	18	100	70	M8	2.3	1
	MD32F- 115R	32	18	115	45	M8	2.4	2
	MD40F- 60	40	22	60	31	M10	2.7	1
	MD40F- 110R	40	22	110	60	M10	2.7	2
	MD40F- 115	40	22	115	83	M10	2.7	1
	MD50F- 105	50	28	105	73	M12	2.7	1
	MD63F- 64	63	36	64	37	M16	3.3	1
	MD63F- 110	63	36	110	83	M16	3.6	1
	MD63F- 135	63	36	135	108	M16	4.6	1
	MD80F- 100	80	45	100	73	M16	4.6	3
BT50 -	MD19F- 85	19	11	85	44	M5	4.3	1
	MD25F- 105	25	14	105	62	M6	4.5	1
	MD25F- 120R	25	14	120	40	M6	4.7	2
	MD32F- 110	32	18	110	67	M8	5.1	1
	MD32F- 115R	32	18	115	45	M8	5.1	2
	MD32F- 235R	32	18	235	115	M8	5.3	2
	MD40F- 60	40	22	60	22	M10	5.0	1
	MD40F- 195	40	22	195	152	M10	5.4	1
	MD40F- 230R	40	22	230	180	M10	5.6	2
	MD50F- 125	50	28	125	82	M12	5.0	1
	MD50F- 225	50	28	225	182	M12	5.4	1
	MD50F- 250R	50	28	250	81	M12	5.5	2
	MD63F- 75	63	36	75	35	M16	6.0	1
	MD63F- 130	63	36	130	87	M16	6.6	1
	MD63F- 195	63	36	195	152	M16	8.0	1
	MD63F- 230	63	36	230	187	M16	8.1	1
	MD80F- 75	80	45	75	36	M16	9.1	1
	MD80F- 110	80	45	110	69	M16	9.4	1
	MD80F- 175	80	45	175	134	M16	9.5	1
	MD90F- 75	90	45	75	34	M16	9.3	1
	MD90F- 145	90	45	145	104	M16	9.9	1
	MD90F- 195	90	45	195	154	M16	10.2	1



HSK-MD



(mm)

Designation	ØC	ØD	L	L ₁	L ₂	H	M
HSK 63A - MD19F - 60	19	11	60	34	6.5	15.5	M5
MD25F - 60	25	14	60	31	8	18.5	M6
MD32F - 65	32	18	65	31	11	23.5	M8
MD40F - 70	40	22	70	41	13	29	M10
MD50F - 85	50	28	85	53	17	36	M12
MD63F - 95	63	36	95	59	22	54	M16

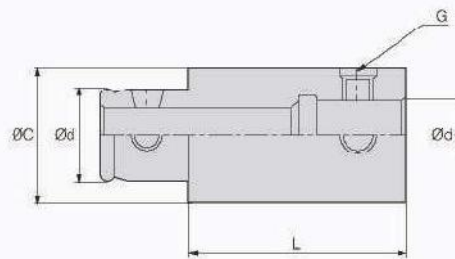
• Through coolant system available

Parts

Division	Spare Parts	
	Basic	Option
	Taper Screw	Wrench
Type		
MD19F	BTT0606F	LW-2.5
MD25F	3TT0608F	LW-3
MD32F	3TT0810F	LW-4
MD40F	3TT1013F	LW-5
MD50F	3TT1215F	LW-6
MD63F	3TT1620F	LW-8
MD80F	3TT1620F	LW-8
MD90F	3TT1631F	LW-8



EXT Extension Bar



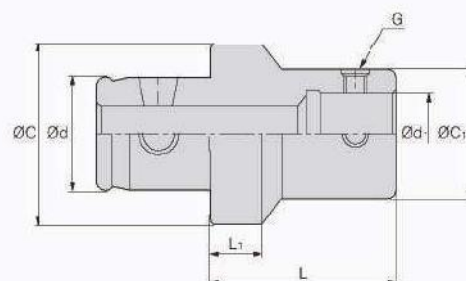
(mm)

Designation	ØC	Ød	L	Ød1	G
EXT - 1930F	19	11	30	11	M5
1950F	19	11	50	11	M5
2530F	25	14	30	14	M6
2550F	25	14	50	14	M6
3235F	32	18	35	18	M8
3260F	32	18	50	18	M8
4040F	40	22	40	22	M10
4090F	40	22	90	22	M12
5050F	50	28	50	28	M12
50100F	50	28	100	28	M12
6360F	63	36	60	36	M16
63120F	63	36	120	36	M16
8070F	80	45	70	45	M16
80120F	80	45	120	45	M16
9080F	90	45	80	45	M16
90130F	90	45	130	45	M16

*Through coolant system available



RDC Reducer Bar



(mm)

Designation	Ød	ØC1	Ød1	ØC	L	L1	G
RDC - 3225F	18	25	14	32	30	9	M6
4025F	22	25	14	40	30	9	M6
4032F	22	32	18	40	30	9	M8
5025F	28	25	14	50	30	9	M6
5032F	28	32	18	50	30	9	M8
5040F	28	40	22	50	40	10	M10
6325F	36	25	14	53	30	9	M6
6332F	36	32	18	53	30	9	M8
6340F	36	40	22	53	40	10	M10
6350F	36	50	28	53	45	10	M12
8032F	45	32	18	50	30	9	M6
8040F	45	40	22	50	40	10	M10
8050F	45	50	28	50	45	10	M12
8063F	45	63	36	50	50	13	M16

• Through coolant system available

Parts

Division	Spare Parts		
	Basic		Option
	Taper Screw	Spring Pin	Wrench
Type			
MD19F	BTT0506F	-	LW-2.5
MD25F	BTT0608F	SP0308	LW-3
MD32F	BTT0810F	SP0410	LW-4
MD40F	BTT1013F	SP0516	LW-5
MD50F	BTT1215F	SP0616	LW-6
MD63F	BTT1620F	SP0818	LW-8
MD80F	BTT1620F	SP1020	LW-8
MD90F	BTT1631F	SP1020	LW-8





KORLOY Anti-Vibration Tool

KORLOY DAMPING PRO

- The application of a special design provides an excellent Anti-Vibration effect and is optimized for Overhang work
- Capable to elevate Feed comparing to standard arbor with stable machining
- Longer tool life and noise decrease
- Provides a solution for Mold, Deep Cavity machining, and Heavy-duty work

Code System

KDP - BT50 - FMA25.4 - 260

**KORLOY
DAMPING PRO**

Arbor Taper

BT Type
HSK Type
SK Type

FMA : JIS B4113 Face milling

FMB : T-MAX Face milling / Shoulder Cutter

FMC : T-MAX Face milling / Shoulder Cutter

**Length of gauge
line**

Features



- ▶ Anti-Vibration : Exclusively designed Anti-Vibration structure
- ▶ Material : Special alloy steel
- ▶ Anti-Vibration body : Application of High density damper
- ▶ Overhang : Capable for 2D ~ 5D
- ▶ Coolant : Inner coolant is capable

▶ Size : Various types and sizes are applicable



BT Type



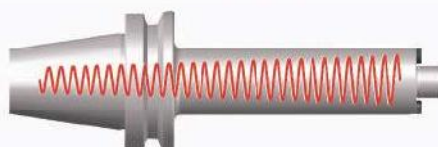
HSK Type



SK Type

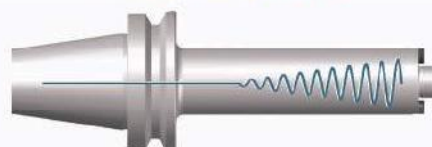
Comparison of Vibration damping time

Standard Arbor



Longer Vibration damping time /
Chattering is caused while Overhang work

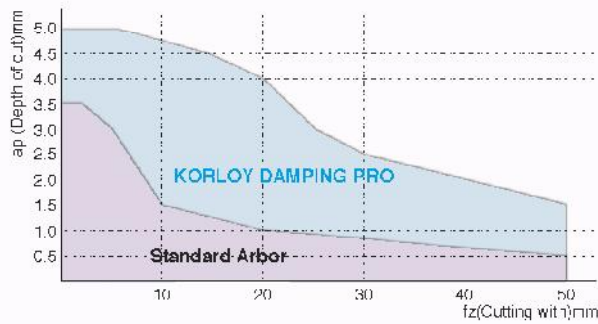
KORLOY DAMPING PRO



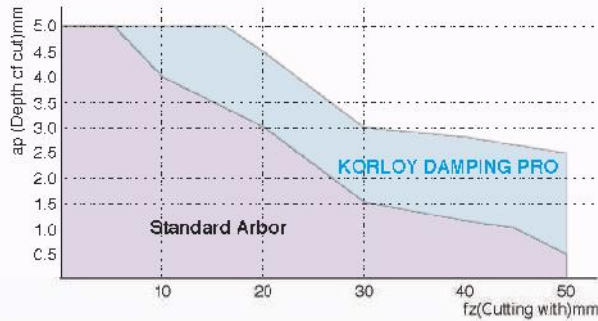
Short Vibration damping time /
Performance is 2~3 times better than standard arbor



Features



Cutting condition : $f_z(\text{mm/t}) = 0.1$
 $vc(\text{m/min}) = 100$
 CUTTER : AMC4063HS 6flute
 Arbor : BT50-FMC22-210 General arbor
 KDP-BT50-FMC22-210



Cutting condition : $f_z(\text{mm/t}) = 0.1$
 $vc(\text{m/min}) = 100$
 CUTTER : FMRC3063HRD-H 6flute
 Arbor : BT50-FMC22-210 General arbor
 KDP-BT50-FMC22-210

Application Example

Mold machining



Better productivity than general arbor

Side milling cutter machining



Excellent performance in the deep grooving

Facing for long depth



Better productivity and surface roughness than General arbor

Deep-hole Boring machining



Better surface roughness and machinability than General arbor

Side milling cutter machining example

- Faulty occurrence on size and surface roughness by the vibration, when use the general arbor
- Using DAMPING PRO, good size and surface roughness

Big size Crankshaft machining example

- General arbor : $ap=2\text{mm}$
- KORLOY DAMPING PRO : $ap=4\text{mm}$ available
- 2 times better productivity



General arbor

Cutting condition :
 $vc(\text{m/min}) = 50$
 $f_z(\text{mm/t}) = 0.1$
 $ae(\text{mm}) = 20$

DAMPING PRO

Cutting condition :
 $vc(\text{m/min}) = 100$
 $f_z(\text{mm/t}) = 0.1$
 $ae(\text{mm}) = 20$



General arbor

Cutting condition :
 $vc(\text{m/min}) = 100$
 $f_z(\text{mm/t}) = 0.15$
 $ap(\text{mm}) = 2$

DAMPING PRO

Cutting condition :
 $vc(\text{m/min}) = 100$
 $f_z(\text{mm/t}) = 0.15$
 $ap(\text{mm}) = 4$



BT-FMA

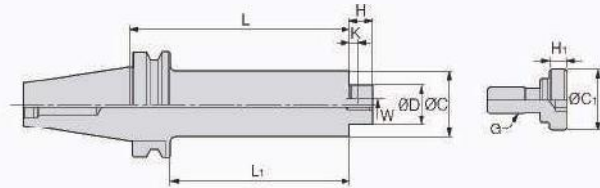


Fig. 1

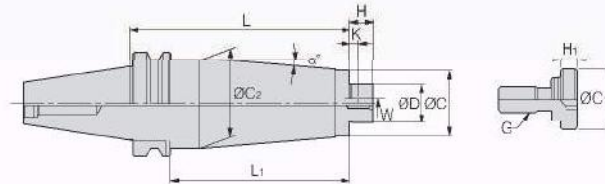


Fig. 2

(mm)

Designation	Cutter Dia.	ØD	L	L ₁	ØC	ØC ₂	H	W	K	G	ØC ₁	H ₁		Fig.	α°	
KDP-BT40 - FMA25.4 - 210	FMA25.4 - 210	80	25.4	210	183	50	60	22	9.5	5	M12	33	10	5.42	2	1
	FMA25.4 - 260	80	25.4	260	233	50	60	22	9.5	5	M12	33	10	6.5	2	1.1
	FMA31.75 - 210	100	31.75	210	183	60	-	30	12.7	7	M16	40	10	5.94	1	-
	FMA31.75 - 260	100	31.75	260	233	60	-	30	12.7	7	M16	40	10	7.25	1	-
KDP-BT50 - FMA25.4 - 210	FMA25.4 - 210	80	25.4	210	172	50	78	22	9.5	5	M12	33	10	9.63	2	4
	FMA25.4 - 260	80	25.4	260	222	50	78	22	9.5	5	M12	33	10	11.8	2	3
	FMA31.75 - 210	100	31.75	210	172	60	85	30	12.7	7	M16	40	10	11.8	2	3
	FMA31.75 - 260	100	31.75	260	222	60	85	30	12.7	7	M16	40	10	13.6	2	2.5

- The A type is for JIS B4113 Face milling.
- The B type and C type are arbors for T-MAX Face Milling and shoulder Cutter.
- The weight(kg) shown in the chart does not include the weight of face cutter.
- Key and screw are clamped.
- Wrench is separately sold.

Parts

Arbor	Spare Parts				
	Basic				Option
	Key	Clamp Bolt	Wrench Bolt	Wrench Bolt	Wrench
Type					
FMA25.4	K9.5(B)	NBA-M12	BX0412	BX1225	LW-10
FMA31.75	K12.7(D)	NBA-M15	BX0515	-	LW-14



BT-FMC

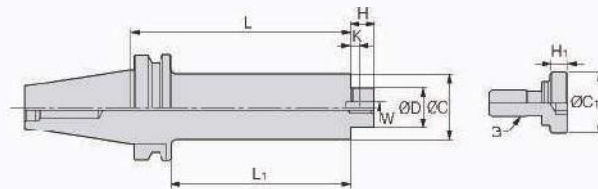


Fig. 1

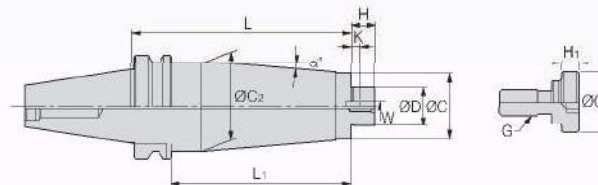


Fig. 2

(mm)

Designation	Cutter Dia	ØD	L	L ₁	ØC	ØC ₂	H	W	K	G		Fig.	α°	
KDP-BT40 - FMC16 - 160		40	16	160	133	38	-	17	8	5	M8	2.45	1	-
	FMC22 - 210	50/63	22	210	163	48	4.95	19	10	5.6	M10	4.37	2	0.1
	FMC22 - 260	50/63	22	260	233	48	60	19	10	5.6	M10	6.3	2	1.5
	FMC27 - 210	80	27	210	163	60	-	21	12	6.3	M12	6	-	-
	FMC27 - 260	80	27	260	233	60	-	21	12	6.3	M12	7.25	-	-
KDP-BT50 - FMC16 - 171		40	16	171	133	38	-	17	8	5	M8	5.1	-	-
	FMC22 - 210	50/63	22	210	172	48	49.5	19	10	5.6	M10	7.3	2	0.1
	FMC22 - 260	50/63	22	260	222	48	62	19	10	5.6	M10	10	2	1
	FMC27 - 210	80	27	210	172	60	78	21	12	6.3	M12	10.6	2	2.5
	FMC27 - 260	80	27	260	222	60	78	21	12	6.3	M12	12.6	2	2
	FMC27 - 320	80	27	320	262	60	78	21	12	6.3	M12	14.8	2	1
	FMC32 - 210	100	32	210	172	78	-	24	14	7	M15	11.7	-	-
	FMC32 - 260	100	32	260	222	78	-	24	14	7	M15	14.2	-	-
	FMC32 - 330	100	32	330	292	78	-	24	14	7	M15	15.6	-	-

- The A type is for JIS B4113 Face milling.
- The B type and C type are arbors for T-MAX Face Milling and shoulder Cutter.
- The weigh.(kg) shown in the chart, does not include the weigh. of face cutter.
- Key and screw are clamped.
- Wrench is separately sold.

Parts

Arbor	Spare Parts				
	Basic				Option
	Key	Clamp Bolt	Wrench Bolt	Wrench Bolt	Wrench
Type					
FMC16	K8.0(A)	-	BX0310	BX0820	LW-6
FMC22	K10.0(C)	-	BX0412	BX1030	LW-8
FMC27	K12.0	MBA-M12	BX0616	-	LW-10
FMC32	K14.0	MBA-M16	BX0820	-	LW-14



HSK-FMA

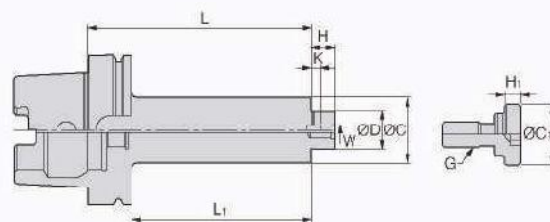


Fig. 1

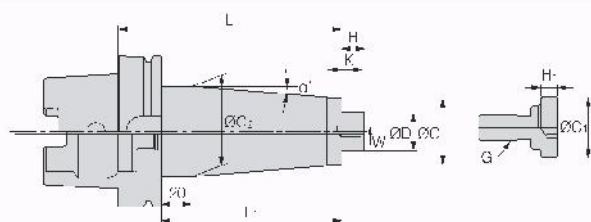


Fig. 2

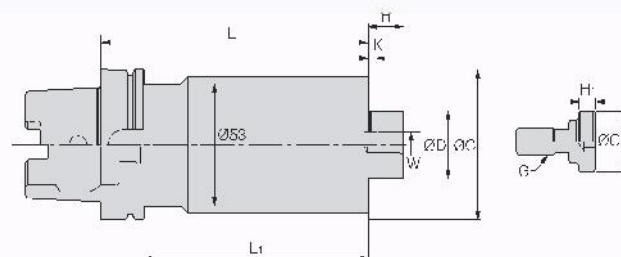


Fig. 3

Designation		Cutter Dia.	ØD	L	L ₁	ØC	ØC ₂	H	W	K	G	ØC ₁	H ₁	Weight / kg	Fig.	α°
KDP-HSK63	FMA25.4 · 210	80	25.4	210	184	50	53	22	9.5	5	M12	33	10	4.55	3	0.1
	FMA25.4 · 260	80	25.4	260	234	50	53	22	9.5	5	M12	33	10	5.6	3	0.1
	FMA31.75 · 210	100	31.75	210	181	60	-	30	12.7	7	M16	40	10	5.52	2	-
	FMA31.75 · 260	100	31.75	260	234	60	-	30	12.7	7	M16	40	10	6.9	2	-
KDP-HSK100	FMA25.4 · 210	80	25.4	210	181	50	78	22	9.5	5	M12	33	10	8.32	3	4
	FMA25.4 · 260	80	25.4	260	231	50	78	22	9.5	5	M12	33	10	10.5	3	3
	FMA31.75 · 210	100	31.75	210	181	60	85	30	12.7	7	M16	40	10	10.9	3	3
	FMA31.75 · 260	100	31.75	260	231	60	85	30	12.7	7	M16	40	10	12.8	3	2.5

(mm)

- The A type is for JIS B4113 Face milling.
- The B type and C type are arbors for T MAX Face Milling and shoulder Cutter.
- The weight(kg) shown in the chart does not include the weight of face cutter.
- Key and screw are clamped.
- Wrench is separately sold.

Parts

Arbor	Spare Parts				
	Basic				Option
	Key	Clamp Bolt	Wrench Bolt	Wrench Bolt	Wrench
Type					
FMA25.4	K9.5(B)	NBA-M12	BX0412	BX1230	LW-10
FMA31.75	K12.7(D)	NBA-M16	BX0515	-	LW-14

HSK-FMC

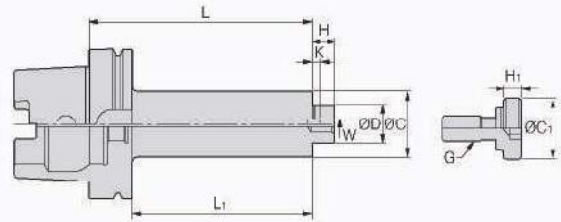


Fig. 1

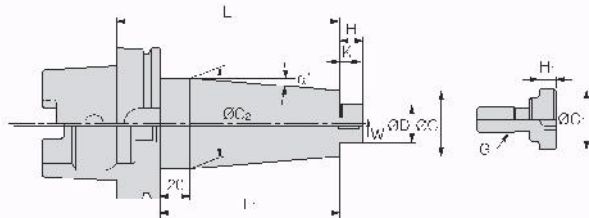


Fig. 2

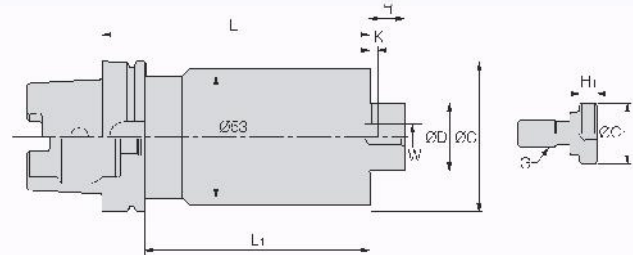


Fig. 3

														(mm)
Designation		Cutter Dia.	ØD	L	L1	ØC	ØC2	H	W	K	G	/ kg \	Fig.	α°
KDP-HSK63 -	FMC16 - 160	40	16	160	134	38	-	17	8	5	M8	2.10	-	-
	FMC22 - 210	50/63	22	210	184	48	4.95	19	10	5.6	M10	3.82	-	0.1
	FMC22 - 260	50/63	22	260	234	48	62	19	10	5.6	M10	6.14	3	1.6
	FMC27 - 210	80	27	210	184	60	-	21	12	6.3	M12	5.53	2	-
	FMC27 - 260	80	27	260	234	60	-	21	12	6.3	M12	6.85	2	-
KDP-HSK100 -	FMC16 - 160	40	16	160	131	38	-	17	8	5	M8	3.45	-	-
	FMC22 - 210	50/63	22	210	181	48	49.5	19	10	5.6	M10	4.60	3	0.1
	FMC22 - 260	50/63	22	260	231	48	62	19	10	5.6	M10	8.10	3	1
	FMC27 - 210	80	27	210	181	60	78	21	12	6.3	M12	8.44	3	2.5
	FMC27 - 260	80	27	260	231	60	78	21	12	6.3	M12	10.40	3	2
	FMC27 - 320	80	27	320	291	60	78	21	12	6.3	M12	13.80	3	1
	FMC32 - 210	100	32	210	181	78	-	24	14	7	M16	10.20	-	-
	FMC32 - 260	100	32	260	231	78	-	24	14	7	M16	13.00	-	-
	FMC32 - 330	100	32	330	301	78	-	24	14	7	M16	15.43	-	-

(mm)

- The A type is for JIS D4113 Face milling.
- The B type and C type are arbors for T-MAX Face Milling and shoulder Cutter.
- The weight (kg) shown in the chart does not include the weight of face cutter.
 - Key and screw are clamped.
 - Wrench is separately sold.

Parts

Arbor	Spare Parts				
	Basic				Option
	Key	Clamp Bolt	Wrench Bolt	Wrench Bolt	Wrench
Type					
FMC16	K8.0(A)	-	BX0310	BX0820	LW-6
FMC22	K10.0(C)	-	BX0412	BX1030	LW-8
FMC27	K12.0	MBA-M12	BX0616	-	LW-10
FMC32	K14.0	MBA-M16	BX0820	-	LW-14



SK-FMC

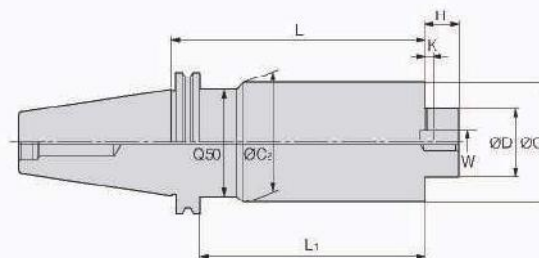


Fig. 1

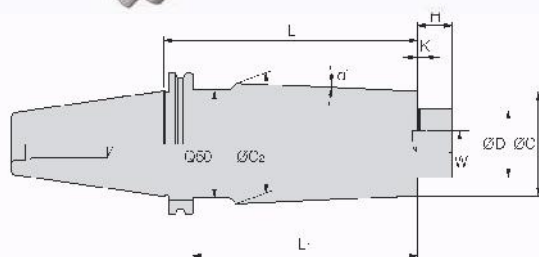


Fig. 2

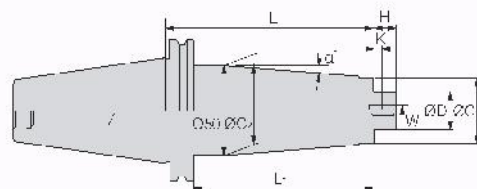


Fig. 3

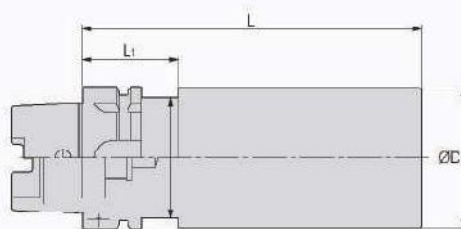
(mm)														
Designation	Cutter Dia.	ØD	L	L ₁	ØC	ØC ₂	H	W	K	G	$\frac{1}{kg}$	Fig.	α°	
KDP-SK40 - FMC22 - 210	50/63	22	210	183.0	48	49.5	19	10	4.4	M10	4.4	3	0.1	
	FMC22 - 260	50/63	22	260	233.0	48	60	19	10	5.6	M10	6.2	2	1.4
	FMC27 - 210	80	27	210	183.0	60	60	21	12	6.3	M12	5.9	1	-
	FMC27 - 260	80	27	260	233.0	60	60	21	12	6.3	M12	7.2	1	-
KDP-SK50 - FMC22 - 210	50/63	22	210	190.9	48	49.5	19	10	5.6	M10	6.4	3	0.1	
	FMC22 - 260	50/63	22	260	240.9	48	62	19	10	5.6	M10	9.1	3	1
	FMC27 - 210	80	27	210	190.9	60	78	21	12	6.3	M12	9.8	3	2.5
	FMC27 - 260	80	27	260	240.9	60	78	21	12	6.3	M12	12.4	3	1.6
	FMC27 - 320	80	27	320	300.9	60	78	21	12	6.3	M12	14.5	3	1.2
	FMC32 - 210	100	32	210	190.9	78	-	24	14	7	M16	11.5	1	-
	FMC32 - 260	100	32	260	240.9	78	-	24	14	7	M16	14	1	-
	FMC32 - 330	100	32	330	310.9	78	-	24	14	7	M16	16.1	1	-

- The A type is for JIS B113 Face milling.
- The B type and C type are arbors for T-MAX Face Milling and shoulder Corner.
- The weight(kg) shown in the chart does not include the weight of face cutter.
- Key and screw are damped.
- Wrench is separately sold.

Parts

Arbor	Spare Parts				
	Basic				Option
	Key	Clamp Bolt	Wrench Bolt	Wrench Bolt	Wrench
Type					
FMC16	K8.0(A)	-	BX0310	BX0820	LW-3
FMC22	K10.0(C)	-	BX0412	BX1030	LW-3
FMC27	K12.0	I/BA-M12	BX0616	-	LW-10
FMC32	K14.0	I/BA-M16	BX0820	-	LW-14

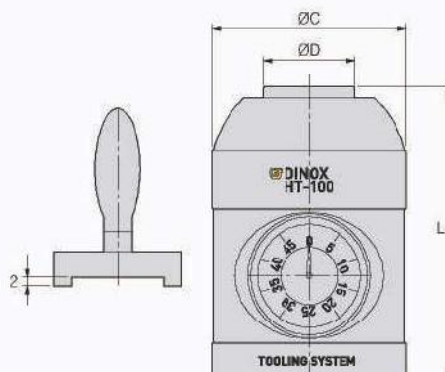
BLK Blank Tool



(mm)

Designation	Ød	ØC	L	L1
HSK40A - BLK42 - 180	42	34	180	35
HSK50A - BLK52 - 200	52	42	200	42
HSK63A -	BLK63 - 150	52	150	42
	BLK63 - 250	52	250	42
	BLK82 - 200	52	200	42
HSK100A -	BLK102 - 150	85	150	45
	BLK102 - 250	85	250	45
	BLK126 - 200	85	200	45
BT30 - BLK48 - 180	48	44	180	30
BT40 -	BLK63 - 150	61	150	35
	BLK63 - 250	61	250	35
	BLK82 - 200	61	200	35
BT50 -	BLK102 - 150	98	150	48
	BLK102 - 250	98	250	48
	BLK126 - 200	98	200	48

HT



(mm)

Designation	ØD	ØC	L
HT-100	32	68	100

- Good for setting the Tool length at CNC machine
- No interference between Height Touch setter and Tool makes safe work
- Location Accuracy : $\pm 0.003\text{mm}$



SC Spindle Cleaner



(mm)

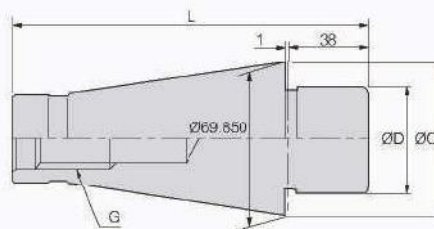
Designation	Taper	N.W.	G.W.
SC - BT30	BT30	0.06kg	0.08kg
BT40	BT40	0.07kg	0.1kg
BT50	BT50	0.16kg	0.2kg
HSK50	HSK50	0.08kg	0.12kg
HSK63	HSK63	0.1kg	0.13kg
HSK100	HSK100	0.5kg	0.7kg

► Features

- Cleaning ships of taper wipe is made of lambskin.

It can clean inside slide of spindles to prevention of static electricity and to extend spindles and tapers durable life.

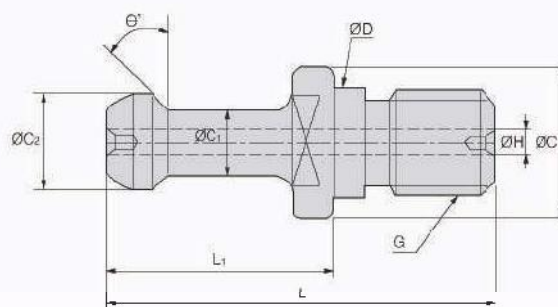
KCP



(mm)

Designation	Taper	Cutter Dia.	ØD	ØC	L	G
NTN 50 - KCP47.625	NT50	200(8"이상)	47.625	69.55	164.00	U1'-8(M24)
KCP60	NT50	200(8"이상)	60	69.55	164.00	M24

Pull Stud Bolt



(mm)

Designation	ØD	ØC	ØC1	ØC2	L1	L	Ø	G	ØH
P20T-1	8.5	12	6	8.5	17.5	31.5	15°	M8	
P30T-1	12.5	16.5	7	11	23	43	45°	M12	
P30T-1(Ø2.5)	12.5	16.5	7	11	23	43	45°	M12	Ø2.5
P30T-2	12.5	16.5	7	11	23	43	30°	M12	
P30T-2(Ø2.5)	12.5	16.5	7	11	23	43	30°	M12	Ø2.5
P40T-1	17	23	10	15	35	60	45°	M16	
P40T-1(3)	17	23	10	15	35	60	45°	M16	Ø3
P40T-2	17	23	10	15	35	60	30°	M16	
PS40-3F	17	23	10	15	35	60	0°	M16	
PS-G51	17	22	12.45	18.8	19.11	44.11	45°	M16	Ø7
DIN69872-A40	17	23	14	19	26	54	15°	M16	Ø7
DIN69872-B40	17	23	14	19	26	54	15°	M16	
JISB6339-A40(PS-806)	17	23	14	19	29	54	15°	M16	Ø7
JISB6339-B40(PS-805)	17	23	14	19	29	54	15°	M16	
P50T-1	25	38	17	23	45	85	45°	M24	
P50T-1(7)	25	38	17	23	45	85	45°	M24	Ø7
P50T-2	25	38	17	23	45	85	30°	M24	
PS50-1F	25	38	17	23	45	85	0°	M24	
PS50-1FH	25	38	17	23	45	85	0°	M24	Ø8
PS-G41	25	37	20.03	28.96	25.2	65.2	45°	M24	Ø10
DIN69872-A50	25	38	21	28	34	74	15°	M24	Ø11.5
P50T-1HS	25	38	17	23	45	85	45°	M24	Ø5.7



|||DAMPING PRO
Anti-Vibration Tool

