



TOOLING SYSTEM



Tooling System

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DBT Series

For high speed machining

DBT Series

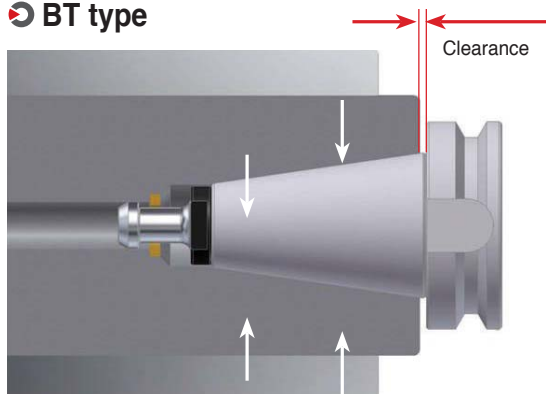
2 face constrained system of taper and shank face for excellent surface roughness and high quality finish in heavy cutting at high speed



Features of 2 face constrained system

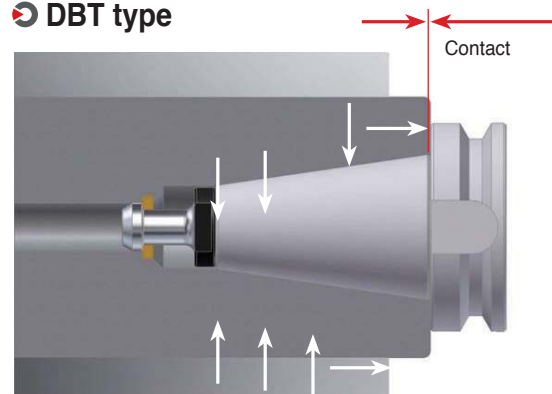
- Stable machining can be possible at high speed
- Improvement of tool-life for machine spindle and cutting tool
- Prevention for corrosion of taper portion of both machine spindle and tool holder by heavy duty machining vibration
- Guarantee for the most suitable machining and high accuracy

BT type



The clearance between spindle and face of shank

DBT type

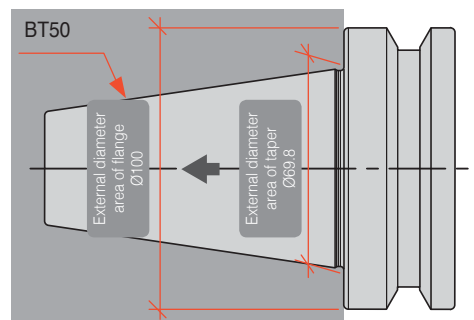


Perfect contact of both faces Better precision/less vibration

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

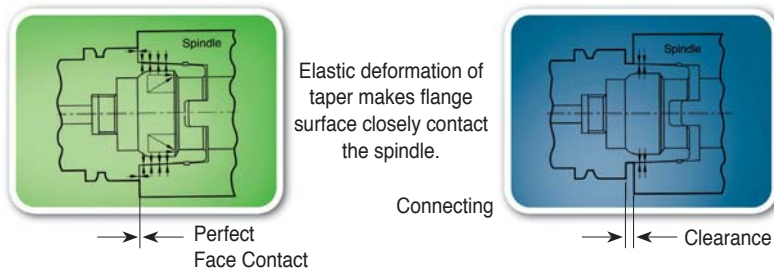
Tapping	Milling		Face milling	Angular head
				
BT-DST	BT-NPM	BT-DHE	BT-FMA	BT-KAG



HSK Tooling System

Features of 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

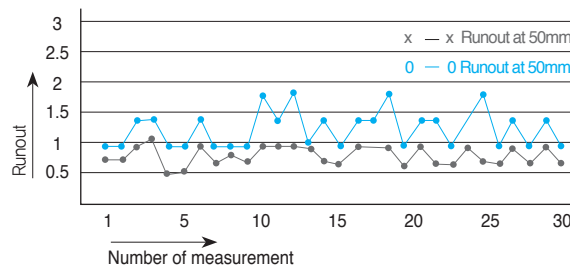
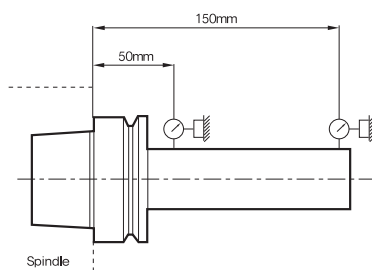


HSK shank -Perfect 2-surface constrained system



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

HSK 63	BT 40

Balancing System

Imbalance

• Cause of imbalance

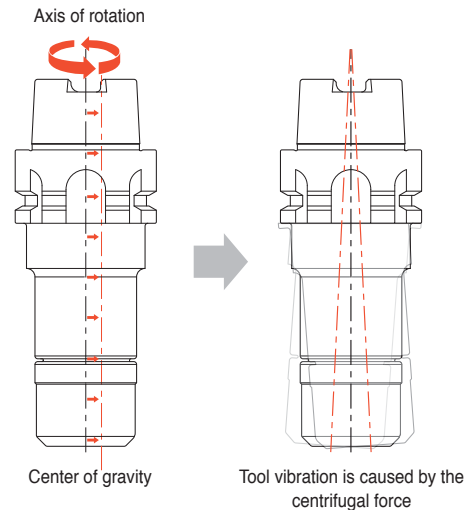
Imbalance occurs due to the asymmetry of tool geometries and spindle run-out

• 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

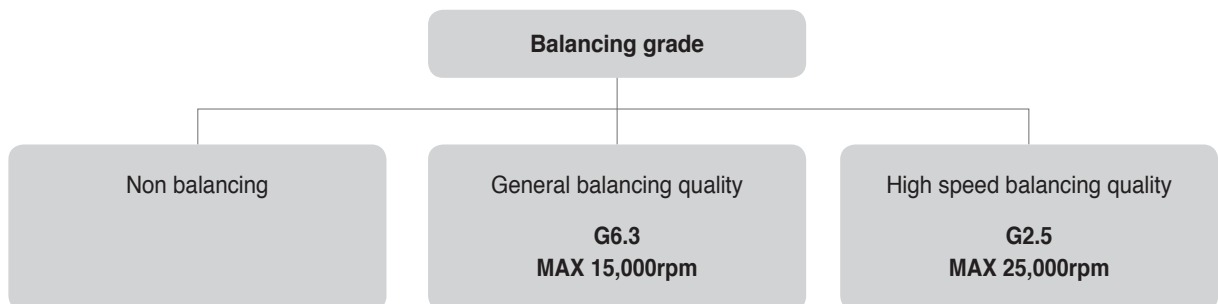


※ A case that the tool's center of gravity deviates from the rotation axis

The most optimal accuracy at high speed

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

Balancing grade standard



Various balancing quality available



Hydraulic Expansion Chuck  DHE I 17	Shrinking Chuck  DSC I 11	Champion Milling Chuck  CPM I 18	Milling Chuck  NPM I 20
Collet Chuck  SDC I 24	Collet Chuck  SDC/S I 28	High Speed Synchro Slim Chuck  GSK I 29	Collet Chuck  DSK I 32
High Speed Synchro Tapping Chuck  DST I 38	Drill Chuck  NPU I 39	Tap Chuck  DTN I 41	Side Lock Arbor  SLA I 44
Face Mill Arbor  FMA, FMC I 46	Angular Head Series  MAH I 51	Angular Head Series  HRAG I 52	Angular Head Series  KHU I 53
Angular Head Series  KAG I 54	Angular Head Series  KAH I 55	Angular Head Series  KAC I 56	Boring Tool  FBH/B I 58
Boring Tool  TBC, FBC I 63	Boring Tool  DBC I 65	Boring Tool  KMB I 66	Boring Tool  SMB I 67
Boring Tool  SMH I 68	Modular System Arbors  MD I 70	Modular System Extension Bar  EXT I 72	Modular System Reducer Bar  RDC I 73
DAMPING PRO  FMA/FMC I 76			

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: Ø3-32



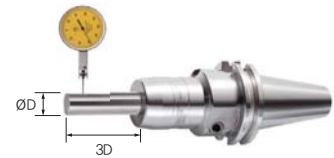
Code system



Features

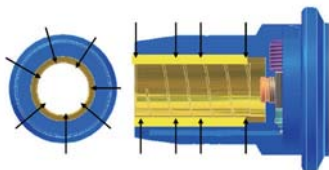
High accuracy provides long tool life due to reduced wear and hydraulic room enhances a surface roughness by lessening vibrations

- RUN OUT: under 5 μm
- $L = 3 \times \text{ØD}$
- Shank: Tolerance of $\text{ØD}: h6$



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



With simple t-wrench, very easy to change a tool

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



Stable clamping

The clearance between holder and tool is fixed by hydraulic pressure



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



BT-DHE

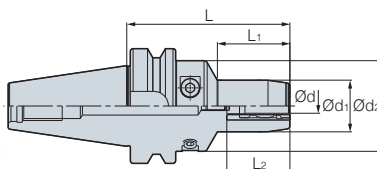


Fig. 1

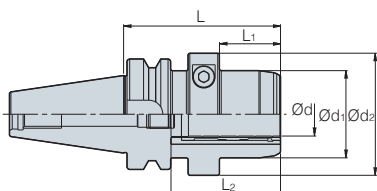


Fig. 2

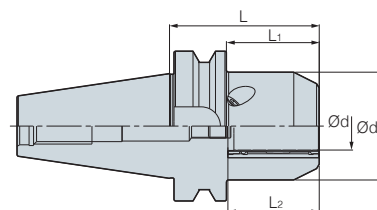


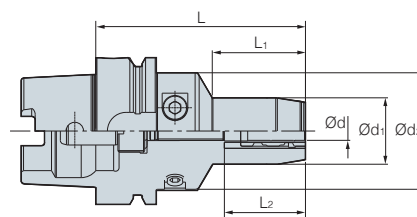
Fig. 3

(mm)

Designation	Ød	L	Ød ₁	Ød ₂	L ₁	L ₂	Adjust screw	Fig.	kg
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	32	45	34	35~44.8	M5	1	0.7
DHE 12 - 65	12	65	35	45	34	41~50.8	M5	1	0.7
DHE 14 - 90	14	90	36	45	40	43~52.8	M5	1	0.9
DHE 16 - 90	16	90	40	45	45	46~55.8	M5	1	1.0
DHE 18 - 90	18	90	42	45	40	49~58.8	M5	1	1.0
DHE 20 - 90	20	90	44	45	45	49~58.8	M5	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	40	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	40	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	40	49~58.8	M10	1	4.1
140	18	140	42	50	45	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	47	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

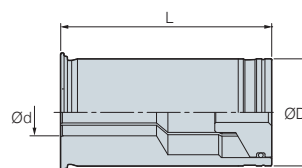


(mm)

Designation			Ød	L	Ød ₁	Ød ₂	L ₁	L ₂	Adjust Screw	 kg
HSK63A -	DHE 6 -	75	6	75	29	50	34	30~39.8	M5	1.0
	DHE 8 -	75	8	75	31	50	34	30~39.8	M5	1.0
	DHE 10 -	85	10	85	33	50	40	35~44.8	M5	1.2
	DHE 12 -	90	12	90	35	50	40	41~50.8	M5	1.2
	DHE 16 -	95	16	95	40	50	45	46~55.8	M10	1.3
	DHE 20 -	100	20	100	44	50	50	49~58.8	M10	1.4
HSK100A -		150	20	150	44	50	50	49~58.8	M10	2.0
	DHE 20 -	105	20	105	44	50	50	49~58.8	M10	2.8
	DHE 25 -	115	25	115	50	63	62	58~67.8	M16	3.3
	DHE 32 -	115	32	115	63	75	62	58~67.8	M16	3.8

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

DHC Collet (General type)

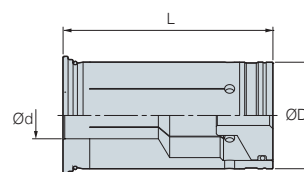


(mm)

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	63



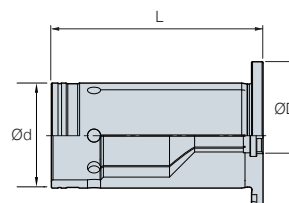
DHC Collet (Accuracy type)



(mm)

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	63

DHJ Collet (Jet coolant)



(mm)

Designation	ØD	Ød	L
DHJ20 - 6, 8, 10, 12, 14, 16	20	6, 8, 10, 12, 14, 16	50

Parts

Spare Parts					
Chuck		Clamp screw	Wrench	Chuck	Adjust screw
Type				Type	
BT30/SK30/HSK50	DHE 6, 8, 10, 12	DHE-M8 (C)	DHETW-4	DHE 6, 8, 10	DHE-M5 (ADJ)
	DHE 14, 16, 18, 20	DHE-M10 (C)	DHETW-5		
BT40/BT50/SK40/SK50 HSK63A/HSK100A	DHE 6, 8, 10, 12, 14, 16, 18, 20	DHE-M10 (C)	DHETW-5	DHE 12, 14, 16, 18, 20	DHE-M10 (ADJ)
	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: Ø3-32



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

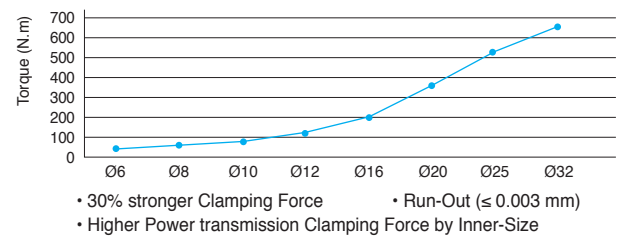


Symmetric design

- High clamping force

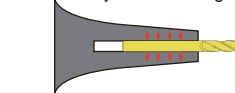


High clamping force



Shrinking chuck

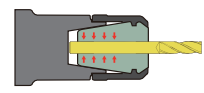
Fix the clearance between holder and tool by heat shrinking



Thermal expansion ▶ Thermal shrinking
Highly strong clamping

Collet chuck

Fix the tool by elasticity of collet



Elastic deformation
Strong clamping

Mono type

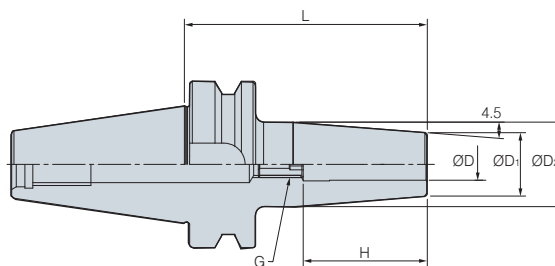
Figure	Accuracy
3° taper Thickness t	Run-out 3 μm
Slim type Middle type 1.5t 2~4.5t	

2-pieces type

Figure	Accuracy
Holder Collet Bolt 3° taper Thickness t	Run-out 5 μm
Slim type Middle type 1.5t 2~3.5t	



BT-DSC



(mm)

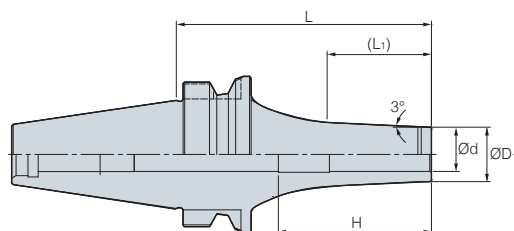
Designation			ØD	L	ØD ₁	ØD ₂	H	G		MAX RPM
BT30 -	DSC3 -	60	3	60	11	18.5	82	-	0.6	25,000
	DSC4 -	60	4	60	13	20.5	82	-	0.6	25,000
BT40 -	DSC6 -	90	6	90	21	27	36	M5	1.2	20,000
		120	6	120	21	27	36	M5	1.2	20,000
		160	6	160	21	27	36	M5	1.4	20,000
	DSC8 -	90	8	90	21	27	36	M5	1.2	20,000
		120	8	120	21	27	36	M5	1.2	20,000
		160	8	160	21	27	36	M5	1.4	20,000
	DSC10 -	90	10	90	24	32	42	M8	1.2	20,000
		120	10	120	24	32	42	M8	1.2	20,000
		160	10	160	24	32	42	M8	1.6	20,000
	DSC12 -	90	12	90	24	32	47	M8	1.2	20,000
		120	12	120	24	32	47	M8	1.2	20,000
		160	12	160	24	32	47	M8	1.6	20,000
	DSC16 -	90	16	90	27	34	50	M12	1.3	20,000
		120	16	120	27	34	50	M12	1.3	20,000
		160	16	160	27	34	50	M12	1.7	20,000
	DSC20 -	90	20	90	33	42	52	M12	1.3	20,000
		120	20	120	33	42	52	M12	1.5	20,000
		160	20	160	33	42	52	M12	2.1	20,000

Adjust screw I16

• Through coolant system available

BT-DSC/M

Mono Curve type



(mm)

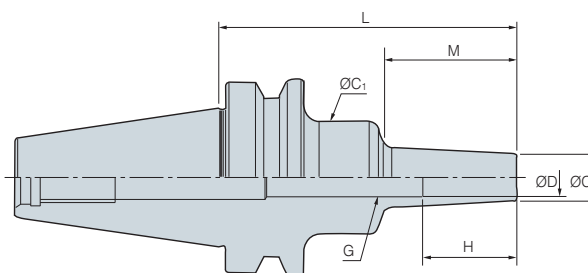
Designation		ØD	L	L ₁	ØD ₁	ØC ₁	H	G		MAX RPM
BT30 -	DSC3M - 75S	3	75	29.8	8	25	97	-	0.6	25,000
	DSC4M - 75S	4	75	31.8	10	25	97	-	0.6	25,000
	DSC6M - 75S	6	75	28.9	12	30	97	-	0.6	25,000
	DSC8M - 75S	8	75	28.9	14	32	97	-	0.6	25,000
	DSC10M - 75S	10	75	30.66	16	32	45	-	0.6	25,000

• 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	
BT40 -	DSC6M - 95	6	95	10	26	42	18	1.2
	120	6	120	10	26	67	18	1.2
	160	6	160	10	36	97	18	1.5
	DSC8M - 95	8	95	13	36	42	24	1.2
	120	8	120	13	36	67	24	1.2
	160	8	160	13	36	97	24	1.5
	DSC10M - 95	10	95	16	36	42	30	1.2
	120	10	120	16	36	67	30	1.2
	160	10	160	16	36	97	30	1.5
	DSC12M - 95	12	95	19	36	42	30	1.2
	120	12	120	19	36	67	30	1.2
	160	12	160	19	36	97	30	1.5
	DSC16M - 95	16	95	24	50	42	32	1.2
	120	16	120	24	50	67	32	1.2
	160	16	160	24	50	97	32	1.5
DSC20M - 95	20	95	29	50	42	40	1.2	
120	20	120	29	50	67	40	1.2	
160	20	160	29	50	97	40	1.5	
BT50 -	DSC6M - 110	6	110	10	26	42	18	3.5
	160	6	160	10	36	97	18	4
	DSC8M - 110	8	110	13	36	42	24	3.5
	160	8	160	13	36	97	24	4
	DSC10M - 110	10	110	16	36	42	30	3.5
	160	10	160	16	36	97	30	4
	DSC12M - 110	12	110	19	36	42	30	3.5
	160	12	160	19	50	97	30	4
	DSC16M - 110	16	110	24	50	42	32	3.5
	160	16	160	24	50	97	32	4
	DSC20M - 110	20	110	29	50	42	40	3.5
	160	20	160	29	50	97	40	4

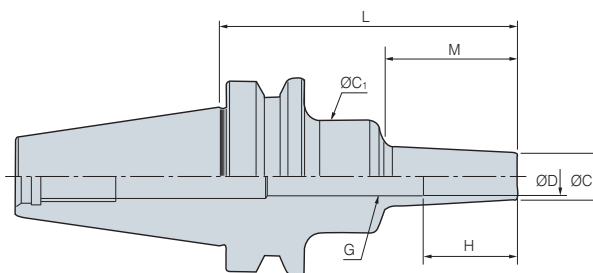
 Adjust screw I 16

• Through coolant system available



BT-DSC/S

Mono Slim type



(mm)

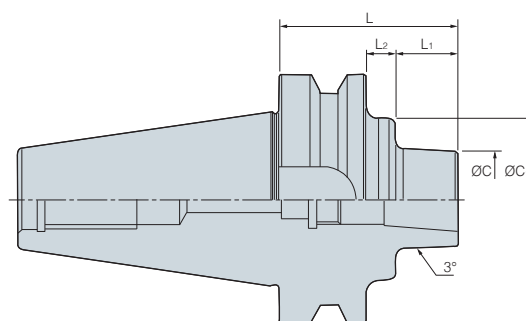
Designation		ØD	L	ØD ₁	ØC ₁	M	H
BT30 -	DSC6S - 60	6	60	9	20	22	18
	80	6	80	9	20	42	18
	120	6	120	9	25	67	18
BT40 -	DSC6S - 95	6	95	9	26	42	18
	120	6	120	9	26	67	18
	160	6	160	9	36	97	18
	DSC8S - 95	8	95	11	36	42	24
	120	8	120	11	36	67	24
	160	8	160	11	36	97	24
	DSC10S - 95	10	95	13	36	42	30
	120	10	120	13	36	67	30
	160	10	160	13	36	97	30
	DSC12S - 95	12	95	15	36	42	30
	120	12	120	15	36	67	30
	160	12	160	15	36	97	30
	DSC6S - 110	6	110	9	26	42	18
	160	6	160	9	36	97	18
	DSC8S - 110	8	110	11	36	42	24
	160	8	160	11	36	97	24
BT50 -	DSC10S - 110	10	110	13	36	42	30
	160	10	160	13	36	97	30
	DSC12S - 110	12	110	15	36	42	30
	160	12	160	15	36	97	30

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



BT-SLK

2-pieces type



(mm)

Designation			L	ØC	L ₁	L ₂	ØC ₁
BT30 -	SLK12 -	35	35	38	13	-	-
	SLK12 -	45	45	38	18	-	-
BT40 -		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	37	65
		315	315	38	150	127	90

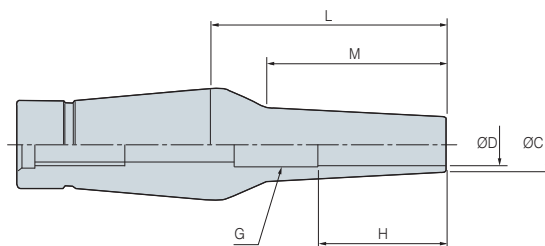
Adjust screw I 16

• Through coolant system available • PULL STUD BOLT is needed for BT30-SLK12-35



CS/CM

2-pieces type



(mm)

Designation			ØD	ØC	L	M	H
CS12 -	6 -	36	6	9	35	22	18
		55	6	9	55	42	18
		80	6	9	80	67	18
		110	6	9	110	97	18
	8 -	35	8	11	35	22	24
		55	8	11	55	42	24
		80	8	11	80	67	24
		110	8	11	110	97	24
	10 -	35	10	13	35	22	30
		55	10	13	55	42	30
		80	10	13	80	67	30
		110	10	13	110	97	30
	12 -	35	12	15	35	22	30
		55	12	15	55	42	30
		80	12	15	80	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	80	67	18
	8 -	35	8	14	35	22	24
		55	8	14	55	42	24
		80	8	14	80	67	24
	10 -	35	10	16	35	22	30
		55	10	16	55	42	30
		80	10	16	80	67	30
	12 -	35	12	20	35	22	30
		55	12	20	55	42	30
		80	12	20	80	67	30

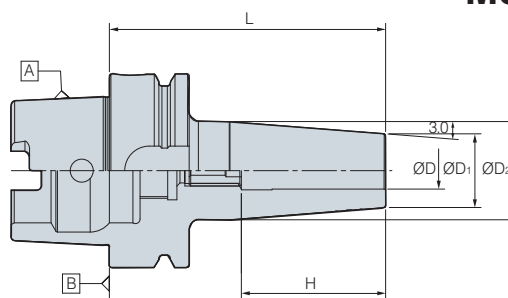
Adjust screw I 116

• Through coolant system available



HSK-DSC/M

Mono type



(mm)

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

• 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
Adjust 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



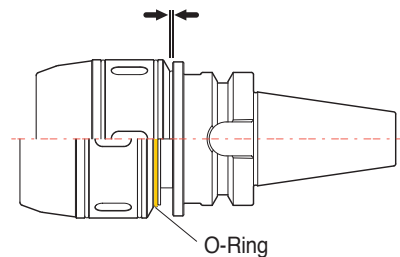
Code system



Prevention of grease leak and dust proof

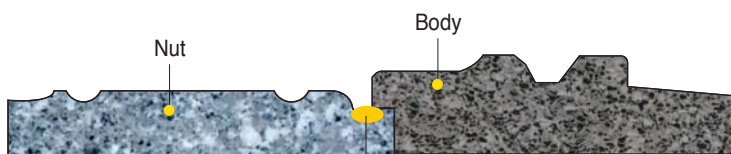
CPM has O-Ring on nuts to absorb cutting vibration for stable operation and prevents inflow of debris

Face contact for stable machining and dust proof

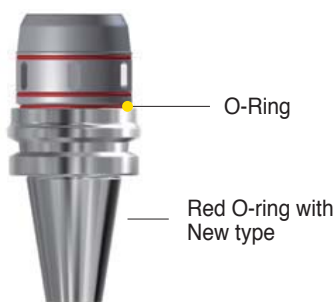
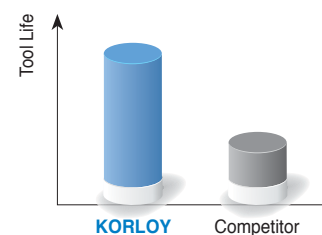


Correlation of oil leaking and tool life

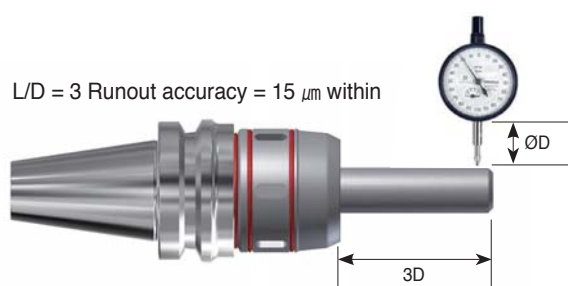
Obvious increase of tool life after applying dust proof system



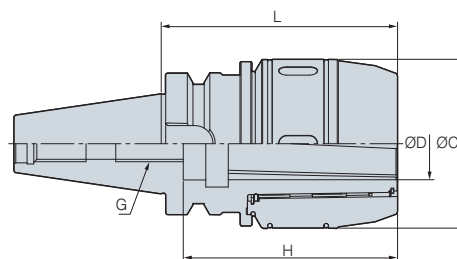
O-Ring: Blocking lubricant leakage and dust entry → Enhanced tool life



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	80	M16	DC20, DSC20	1.1
	CPM20 -	90	20	90	54	80	M16	DC20, DSC20	2.3
BT40 -	CPM32 -	90	32	90	75	85	M16	DC32, DCS32	2.8
		105	32	105	75	95	M16	DC32, DCS32	2.9
BT50 -	CPM32 -	105	32	105	75	95	M24	DC32, DCS32	5.0
		135	32	135	75	95	M24	DC32, DCS32	5.8
		165	32	165	75	95	M24	DC32, DCS32	6.8

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



New power milling chuck

NPM

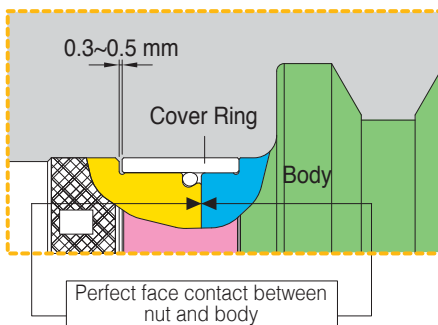
- Strong clamping over 500kgf·m (on NPM42 basis)
- DUST BLOCK functions for blocking foreign substance
- Jet coolant available
- High precision within 15 μ m at L/D = 3
- Applicable shank diameter: D6-42



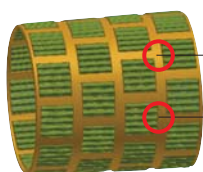
Code system



Improvement of durability by preventing minute dust, chips and coolant



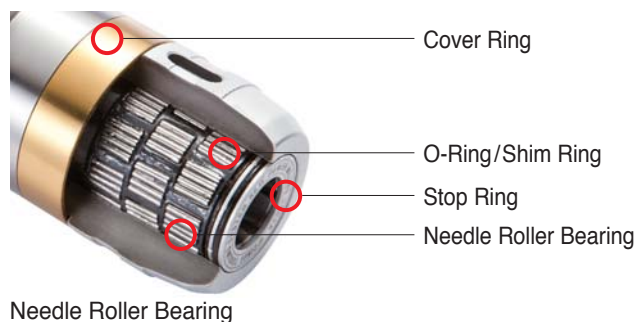
- Adopted Stop Ring on Head parts
- Preventing minute dust by Shim&O-Ring



Retainer

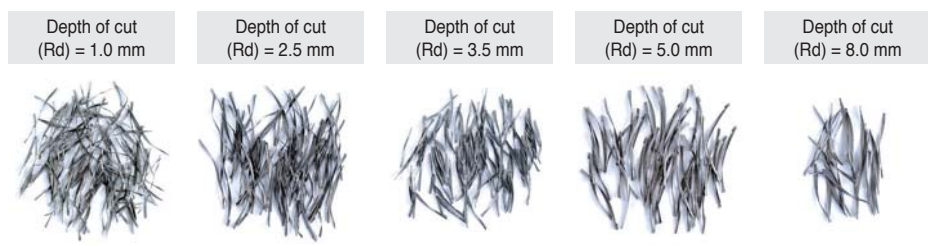
Needle Roller Bearing

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



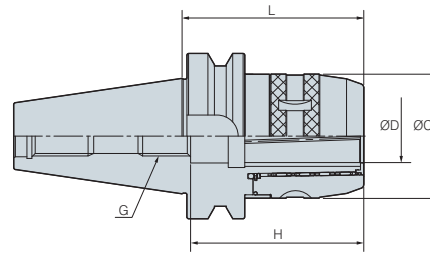
Stable machining from heavy to fine

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



Possible machining from heavy milling to fine finishing

BT-NPM



(mm)

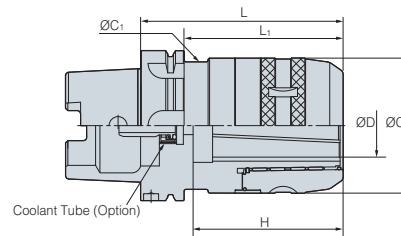
Designation	ØD	L	ØC	H	G	Collet	kg
BT30 - NPM20 - 85	20	85	54	85	M16	DC20, DSC20	1.1
BT40 -	85	85	54	85	M16	DC20, DSC20	2.3
	100	100	54	85	M16	DC20, DSC20	2.3
	NPM25 - 85	25	85	61	M16	DC25, DSC25	2.5
	NPM32 - 90	32	90	75	M16	DC32, DCS32	2.8
	110	32	110	75	M16	DC32, DCS32	2.9
BT50 -	135	32	135	75	M16	DC32, 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 121

• Through coolant system available is optional

• In case of $L \leq 90$, chucks with over 90mm are recommended for medium cutting by short cap

HSK-NPM



(mm)

Designation	ØD	L	L ₁	ØC	Collet	kg
HSK63A - NPM20 - 100	20	95	54	75	DC20, DSC20	1.1
NPM32 - 120	42	135	90	90	DC42, DCS42	6.6
HSK100A - NPM32 - 130	42	165	90	90	DC42, DCS42	8.0

Applicable collet 121

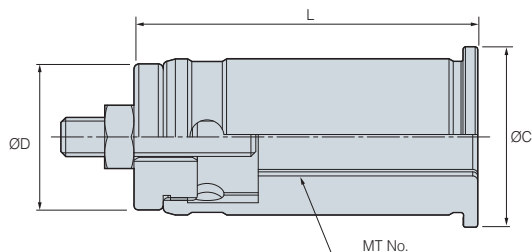
• Through coolant system is optional

Parts

Division	Spare parts		
	Option		
	Collet	Spanner	Through coolant system
Type			
NPM20	DC20, DCS20	57-60	CTC20-20
NPM32	DC32, DCS32	75-79	CTC32-32
NPM42	DC42, DCS42	92-96	CTC42-42

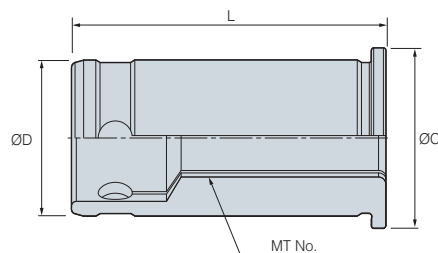


DCS Straight Collet



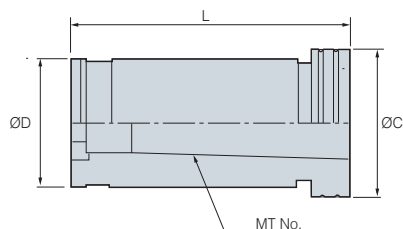
Designation	ØD	Ød	ØC	L	(mm)
DCS20 - 6, 8, 10, 12, 16	20	6, 8, 10, 12, 16	26	55	0.2
DCS25 - 6, 8, 10, 12, 16, 20	25	6, 8, 10, 12, 16, 20	29	66.5	0.3
DCS32 - 6, 8, 10, 12, 14, 16, 19, 20, 25	32	6, 8, 10, 12, 14, 16, 19, 20, 25	38	70	0.4
DCS42 - 6, 8, 10, 12, 16, 20, 25, 32	42	6, 8, 10, 12, 16, 20, 25, 32	48	75	0.7

DC Straight Collet



Designation	ØD	Ød	ØC	L	(mm)
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



Designation	MT No.	ØD	ØC	L	(mm)
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	(mm)
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 $\varnothing 1.0 \sim \varnothing 26.0 \text{ mm}$



Collet Chuck Series

Collet chuck	High speed collet chuck	High speed slim collet chuck
		
SDC/P - Max. Chucking dia.: $\varnothing 26.0 \text{ mm}$ - For use of drilling, Reaming, Endmilling and tapping etc	DSK - Max. Chucking dia.: $\varnothing 25.0 \text{ mm}$ - Balanced G6.3 - Max. Revolution: 15,000 rpm	GSK - Max. Chucking dia.: $\varnothing 25.0 \text{ mm}$ - Balanced G2.5 - Max. Revolution: 25,000 rpm

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/P

- ER collet chuck, standard type for general machining
- Applicable shank diameter: $\varnothing 1.0 \sim 26.0$

➤ **First-class nut (SWISS Made)**



Easy clamping of collets



Special hardening treatment

For SDC/P
(General machining)

High speed collet chuck

DSK

- Available for machining at max.15,000RPM and balancing of G6.3
- Minimized tool vibration during operation by using collet 8°
- Swiss made high precision nut enhances stability
- Applicable shank diameter: $\varnothing 1.8 \sim 25$



Standard type & Precision type	Designation	Arbor	Max chucking	Run-out
	HC6- $\varnothing d$	10.5	6.0	Standard type 5 μm
	HC10- $\varnothing d$	15.5	10.0	
	HC13- $\varnothing d$	20.1	13.0	
	HC16- $\varnothing d$	24.6	16.0	Precision type 3 μm
	HC20- $\varnothing d$	29.1	20.0	
	HC25- $\varnothing d$	35.6	25.0	

8° HC collet

Minimized tool vibration during operation

Great speed slim collet chuck

GSK

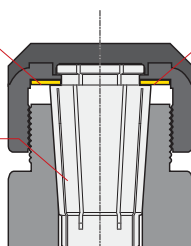
- Available for machining at max.25,000RPM and balancing of G6.3
- Increased productivity due to high speed machining
- Minimized tool vibration during operation by using collet 8°
- Swiss made high precision nut enhances stability by pressing collet uniformly
- Applicable shank diameter: $\varnothing 1.8 \sim 25$

➤ **Original design**

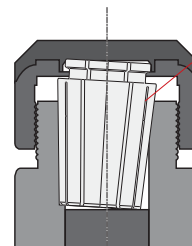
Fix on planar part

Nut ideal for
high speed rotation

8° HC collet



GSK

Strong clamping by 8° collet and stable
fixing with the use of planar part fixing

Competitor

Chattering due to imbalance

Imbalance due to centrifugal force during
high speed rotation

BT-SDC/P

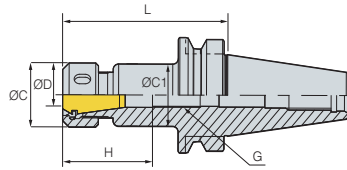


Fig. 1

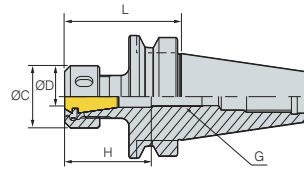


Fig. 2

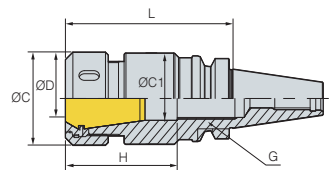


Fig. 3

(mm)

Designation		ØD	L	H	Collet/Step	G	ØC	ØC ₁	Fig.
BT30 -	SDC7P - 70	1.0~7.0	70	33	GERC11/0.5	M7	18	17	1
	100	1.0~7.0	100	33	GERC11/0.5	M7	18	17	1
	SDC10P - 50	1.0~10.0	50	44.5	GERC16/1.0	M10	32	-	2
	70	1.0~10.0	70	44.5	GERC16/1.0	M10	32	31	1
	100	1.0~10.0	100	44.5	GERC16/1.0	M10	32	31	1
	SDC13P - 50	1.0~13.0	50	49	GERC20/1.0	M7	35	-	2
	70	1.0~13.0	70	49	GERC20/1.0	M13	35	34	1
	100	1.0~13.0	100	49	GERC20/1.0	M13	35	34	1
	SDC16P - 50	1.0~16.0	50	50	GERC25/1.0	M7	42	-	2
	70	1.0~16.0	70	50	GERC25/1.0	M18	42	41	1
	100	1.0~16.0	100	50	GERC25/1.0	M18	42	41	1
	SDC20P - 60	1.0~20.0	60	60	GERC32/1.0	M7	50	-	2
BT40 -	90	1.0~20.0	90	60	GERC32/1.0	M22	50	49	3
	120	1.0~20.0	120	60	GERC32/1.0	M22	50	49	3
	SDC7P - 70	1.0~7.0	70	33	GERC11/0.5	M7	18	17	1
	90	1.0~7.0	90	33	GERC11/0.5	M7	18	17	1
	130	1.0~7.0	130	33	GERC11/0.5	M7	18	17	1
	SDC10P - 70	1.0~10.0	70	44.5	GERC16/1.0	M10	32	31	1
	90	1.0~10.0	90	44.5	GERC16/1.0	M10	32	31	1
	130	1.0~10.0	130	44.5	GERC16/1.0	M10	32	31	1
	SDC13P - 70	1.0~13.0	70	49	GERC20/1.0	M13	35	34	1
	90	1.0~13.0	90	49	GERC20/1.0	M13	35	34	1
	130	1.0~13.0	130	49	GERC20/1.0	M13	35	34	1
	150	1.0~13.0	150	49	GERC20/1.0	M13	35	34	1
	SDC16P - 70	1.0~16.0	70	50	GERC25/1.0	M18	42	41	1
	90	1.0~16.0	90	50	GERC25/1.0	M18	42	41	1
	130	1.0~16.0	130	50	GERC25/1.0	M18	42	41	1
	SDC20P - 70	1.0~20.0	70	60	GERC32/1.0	M22	50	-	2
	90	1.0~20.0	90	60	GERC32/1.0	M22	50	49	1
	130	1.0~20.0	130	60	GERC32/1.0	M22	50	49	1
	150	1.0~20.0	150	60	GERC32/1.0	M22	50	49	1
	SDC26P - 90	3.0~26.0	90	71	GERC40/1.0	M28	63	62	1

Spare Part 126

• Through coolant system is optional

• Collets in the right size are recommended for oil hole type



BT-SDC/P

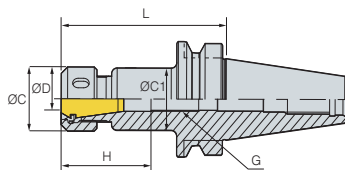


Fig. 1

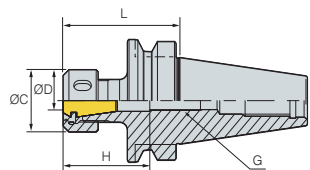


Fig. 2

									(mm)
Designation		ØD	L	H	Collet/Step	G	ØC	ØC ₁	Fig.
BT50 -	SDC10P - 100	1.0~10.0	100	44.5	GERC16/1.0	M10	32	31	1
	120	1.0~10.0	120	44.5	GERC16/1.0	M10	32	31	1
	160	1.0~10.0	160	44.5	GERC16/1.0	M10	32	31	1
	SDC13P - 100	1.0~13.0	100	49	GERC20/1.0	M13	35	34	1
	130	1.0~13.0	130	49	GERC20/1.0	M13	35	34	1
	160	1.0~13.0	160	49	GERC20/1.0	M13	35	34	1
	180	1.0~13.0	180	49	GERC20/1.0	M13	35	34	1
	SDC16P - 100	1.0~16.0	100	50	GERC25/1.0	M18	42	41	1
	160	1.0~16.0	160	50	GERC25/1.0	M18	42	41	1
	SDC20P - 70	1.0~20.0	70	60	GERC32/1.0	M22	50	-	2
	100	1.0~20.0	100	60	GERC32/1.0	M22	50	49	1
	130	1.0~20.0	130	60	GERC32/1.0	M22	50	49	1
	160	1.0~20.0	160	60	GERC32/1.0	M22	50	49	1
	180	1.0~20.0	180	60	GERC32/1.0	M22	50	49	1
	SDC26P - 160	3.0~26.0	160	71	GERC40/1.0	M28	63	62	1

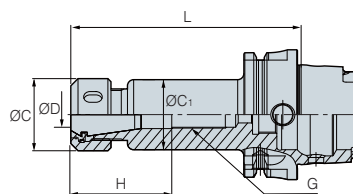
➔ Spare Part 126

• Through coolant system is optional

• Collets in the right size are recommended for oil hole type



HSK-SDC/P



(mm)

Designation		ØD	L	H	Collet/Step	G	ØC	ØC ₁
HSK63A -	SDC10P - 100	1.0~10.0	100	44.5	GER16/1.0	M10	32	31
	SDC13P - 100	1.0~13.0	100	49	GER20/1.0	M7	35	34
	SDC16P - 100	1.0~16.0	100	50	GER25/1.0	M7	42	41
	SDC20P - 110	1.0~20.0	110	60	GER32/1.0	M7	50	49
HSK100A -	SDC16P - 110	1.0~16.0	110	50	GER25/1.0	M13	42	41
	SDC20P - 120	2.0~20.0	120	60	GER32/1.0	M10	50	49

Spare Part I26

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

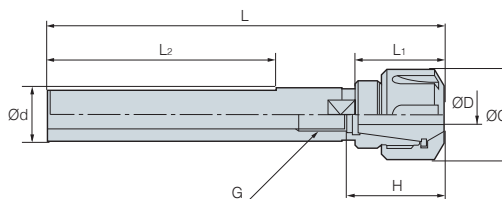
Parts

Division	Spare parts			
	Basic		Option	
	Sleeve bearing nut	Adjust screw	Spanner	Collet
Type				
SDC7	RN11	BN0716F	20-22	GER/ER 11-ØD
SDC10	RN16	BN1025F	32-35	GER/ER 16-ØD
SDC13	RN20	BN1325F	35-38	GER/ER 20-ØD
SDC16	RN25	BN1830F	42-46	GER/ER 25-ØD
SDC20	RN32	BN2230F	48-52	GER/ER 32-ØD
SDC26	RN40	BN2838F	62-65	GER/ER 40-ØD

• NOTES : In case of the RU20 nut, order a 35-38 spanner. In case of the R20 nut, a S-30 spanner



S-SDC



												(mm)
Designation			ØD	Ød	ØC	L	L ₁	L ₂	H	Collet/Step	G	
S16 -	SDC7 -	120M	1.0~7.0	16	19	120	-	-	33	GER11/0.5	M7	0.2
		120T	1.0~7.0	16	19	120	-	73	33	GER11/0.5	M7	0.2
	SDC10 -	150T	1.0~10.0	16	28	150	46.5	83	34.5	GER16/1.0	M10	0.2
S20 -	SDC10 -	150M	1.0~10.0	20	28	150	26.5	-	34.5	GER16/1.0	M10	0.3
		150T	1.0~10.0	20	28	150	26.5	83	34.5	GER16/1.0	M10	0.3
	SDC13 -	150M	1.0~13.0	20	35	150	50	-	49	GER20/1.0	M13	0.3
		150T	1.0~13.0	20	35	150	50	83	49	GER20/1.0	M13	0.3
S25 -	SDC10 -	150M	1.0~10.0	25	28	150	-	-	34.5	GER16/1.0	M10	0.5
		150T	1.0~10.0	25	28	150	-	83	34.5	GER16/1.0	M10	0.5
	SDC13 -	150M	1.0~13.0	25	35	150	-	-	49	GER20/1.0	M13	0.5
		150T	1.0~13.0	25	35	150	-	83	49	GER20/1.0	M13	0.5
S32 -	SDC13 -	150M	1.0~13.0	32	35	150	-	-	49	GER20/1.0	M13	0.7
		150T	1.0~13.0	32	35	150	-	83	49	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

 Spare Part 128

• Through coolant system is optional



S-SDC/S

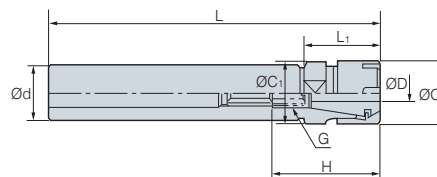


Fig. 1

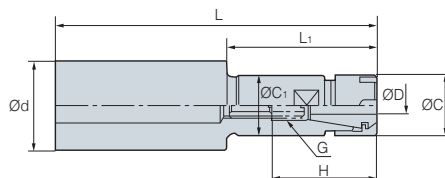


Fig. 2

(mm)

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

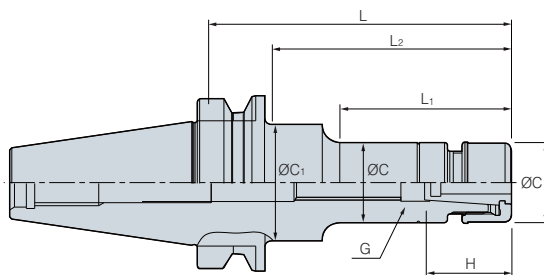
• Through coolant system is optional

 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	M16M	(G)ER 16-ØD
SDC13S	R20M	BN1325F	M20M	(G)ER 20-ØD
SDC16S	R25M	BN1830F	M25M	(G)ER 25-ØD



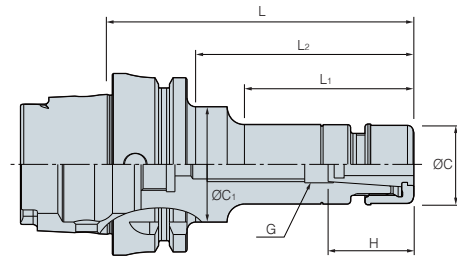
BT-GSK



													(mm)
Designation			ØD	L	L ₁	L ₂	H	Collet/ Step	G	ØC	ØC ₁		MAX RPM
BT30 -	GSK6 -	60	1.0~6.0	60	33	33	35	HC6/0.5	M8	19.5	19.5	0.7	25,000
		90	1.0~6.0	90	56	65	35	HC6/0.5	M8	19.5	32	0.8	25,000
	GSK10 -	60	2.0~10.0	60	35	35	50	HC10/0.5	M12	27	27	0.9	25,000
		90	2.0~10.0	90	65	65	50	HC10/0.5	M12	27	27	1.0	25,000
	GSK13 -	60	3.0~13.0	60	36	36	43	HC13/1.0	M12	35	35	0.6	25,000
	GSK16 -	60	3.0~16.0	60	37	37	60	HC16/0.5	M12	40	40	1.1	25,000
		90	3.0~16.0	90	67	67	60	HC16/0.5	M18	40	40	1.2	25,000
	GSK25 -	90	16.0~25.0	90	67.5	67.5	63.5	HC25/0.5	M12	55	55	1.1	25,000
BT40 -	GSK6 -	90	1.0~6.0	90	51	61	35	HC6/0.5	M8	19.5	32	1.1	20,000
		120	1.0~6.0	120	60	90	35	HC6/0.5	M8	19.5	32	1.4	20,000
		150	1.0~6.0	150	60	120	35	HC6/0.5	M8	19.5	25	1.5	20,000
	GSK10 -	90	2.0~6.0	90	48	60	50	HC10/0.5	M12	27	40	1.2	20,000
		120	2.0~6.0	120	73	90	50	HC10/0.5	M12	27	40	1.4	20,000
		150	2.0~6.0	150	73	118	50	HC10/0.5	M12	27	34.5	1.6	20,000
	GSK13 -	90	3.0~13.0	90	59	59	43	HC13/1.0	M15	35	35	1.4	20,000
	GSK16 -	90	3.0~16.0	90	58	58	60	HC16/0.5	M18	40	40	1.5	20,000
		120	3.0~16.0	120	88	88	60	HC16/0.5	M18	40	40	1.7	20,000
		150	3.0~16.0	150	118	118	60	HC16/0.5	M18	40	40	1.9	20,000
	GSK20 -	90	4.0~20.0	90	60	60	70	HC20/0.5	M22	48	48	1.6	20,000
		120	4.0~20.0	120	90	90	70	HC20/0.5	M22	48	48	2.0	20,000
	GSK25 -	90	16.0~25.0	90	61	61	75	HC25/0.5	M28	55	55	1.8	20,000
		120	16.0~25.0	120	91	91	85	HC25/0.5	M28	55	55	2.0	20,000
	GSK6 -	105	1.0~6.0	105	55	64	35	HC6/0.5	M8	19.5	32	3.8	15,000
		135	1.0~6.0	135	60	92	35	HC6/0.5	M8	19.5	32	3.9	15,000
BT50 -		165	1.0~6.0	165	60	114	35	HC6/0.5	M8	19.5	32	4.0	15,000
	GSK10 -	105	2.0~10.0	105	57	57	50	HC10/0.5	M12	27	27	3.8	15,000
		135	2.0~10.0	135	70	92	50	HC10/0.5	M12	27	32	4.0	15,000
		165	2.0~10.0	165	75	114	50	HC10/0.5	M12	27	36	4.2	15,000
	GSK13 -	135	3.0~13.0	135	92	92	43	HC13/1.0	M15	35	35	4.2	15,000
	GSK16 -	105	3.0~16.0	105	62	62	60	HC16/0.5	M18	40	40	4.1	15,000
		135	3.0~16.0	135	92	92	60	HC16/0.5	M18	40	40	4.3	15,000
		165	3.0~16.0	165	40	122	60	HC16/0.5	M18	40	50	4.5	15,000
	GSK20 -	105	4.0~20.0	105	62	62	70	HC20/0.5	M22	48	-	4.3	15,000
		135	4.0~20.0	135	92	92	70	HC20/0.5	M22	48	-	4.6	15,000
		165	4.0~20.0	165	122	122	70	HC20/0.5	M22	48	-	5.0	15,000
	GSK25 -	105	16.0~25.0	105	62	62	85	HC25/0.5	M28	55	55	4.8	15,000
		135	16.0~25.0	135	92	92	85	HC25/0.5	M28	55	55	5.2	15,000
		165	16.0~25.0	165	122	122	85	HC25/0.5	M28	55	55	5.6	15,000

 Spare Part 130


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	34.5	20,000
	GSK16 -	120	3.0~16.0	58	58	60	HC16/0.5	M18	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	27	15,000
	GSK16 -	140	3.0~16.0	62	62	60	HC16/0.5	M18	40	40	15,000
	GSK25 -	155	16.0~25.0	62	62	85	HC25/0.5	M28	55	55	15,000

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 (Option)



Designation
GSK6
GSK10
GSK13
GSK16
GSK20
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: Ø1.8~25



Code system



First-class nut (SWISS made)

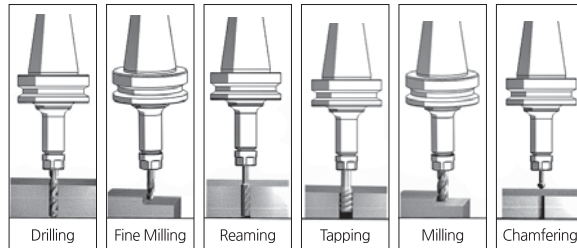


Easy clamping of collet



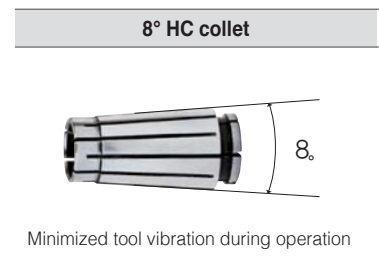
Special hardening treatment

Multifunctional applications



Collet

Standard type & Precision type	Designation	Diameter	Max chucking	Run-out
	HC6-Ød	10.5	6.0	Standard type 5µm Precision type 3µm
	HC10-Ød	15.5	10.0	
	HC13-Ød	20.1	13.0	
	HC16-Ød	24.6	16.0	
	HC20-Ød	29.1	20.0	
	HC25-Ød	35.6	25.0	

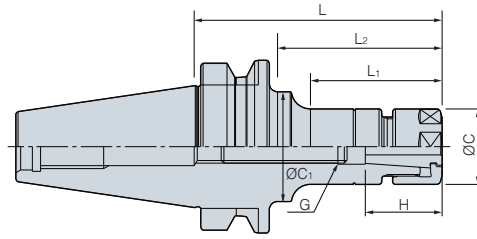


Spanner (Option)

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

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

BT-DSK



(mm)

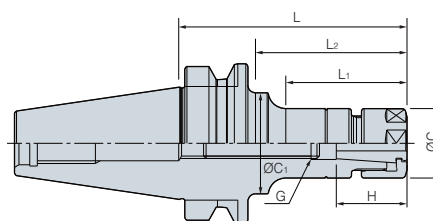
Designation			ØD	L	L ₁	L ₂	H	Collet / Step	G	ØC	ØC ₁	kg	MAX RPM
BT30 -	DSK6 -	60	1.0~6.0	60	33	33	35	HC6/0.5	M8	19.5	19.5	0.7	15,000
		90	1.0~6.0	90	56	65	35	HC6/0.5	M8	19.5	32	0.8	15,000
	DSK10-	60	2.0~10.0	60	35	35	50	HC10/0.5	M12	27.5	27.5	0.9	15,000
		90	2.0~10.0	90	65	65	50	HC10/0.5	M12	27.5	27.5	1.0	15,000
	DSK13 -	60	3.0~13.0	60	36	36	43	HC13/0.5	M12	33	33	0.6	15,000
	DSK16 -	60	3.0~16.0	60	37	37	60	HC16/0.5	M12	40	40	1.1	15,000
		90	3.0~16.0	90	67	67	60	HC16/0.5	M18	40	40	1.2	15,000
	DSK25 -	90	16.0~25.0	90	67.5	67.5	63.5	HC25/0.5	M12	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	60	90	35	HC6/0.5	M8	19.5	32	1.4	10,000
		150	1.0~6.0	150	60	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	M12	27.5	40	1.2	10,000
		120	2.0~6.0	120	73	90	50	HC10/0.5	M12	27.5	40	1.4	10,000
		150	2.0~6.0	150	73	118	50	HC10/0.5	M12	27.5	34.5	1.6	10,000
	DSK13 -	90	3.0~13.0	90	59	59	43	HC13/1.0	M15	33	33	1.4	10,000
	DSK16 -	90	3.0~16.0	90	58	58	60	HC16/0.5	M18	40	40	1.5	10,000
		120	3.0~16.0	120	88	88	60	HC16/0.5	M18	40	40	1.7	10,000
		150	3.0~16.0	150	118	118	60	HC16/0.5	M18	40	40	1.9	10,000
	DSK20 -	90	4.0~20.0	90	60	60	70	HC20/0.5	M22	46.5	48.5	1.6	10,000
		120	4.0~20.0	120	90	90	70	HC20/0.5	M22	46.5	48.5	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	85	HC25/0.5	M28	55	55	2.0	10,000

➤ Spare Part I33

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



BT-DSK



													(mm)
Designation			ØD	L	L ₁	L ₂	H	Collet/ Step	G	ØC	ØC ₁		MAX RPM
BT50 -	DSK6 -	105	1.0~6.0	105	55	64	35	HC6/0.5	M8	19.5	32	3.8	8,000
		135	1.0~6.0	135	60	92	35	HC6/0.5	M8	19.5	32	3.9	8,000
		165	1.0~6.0	165	60	114	35	HC6/0.5	M8	19.5	32	4.0	8,000
	DSK10 -	105	2.0~10.0	105	57	57	50	HC10/0.5	M12	27.5	27.5	3.8	8,000
		135	2.0~10.0	135	70	92	50	HC10/0.5	M12	27.5	32	4.0	8,000
		165	2.0~10.0	165	75	114	50	HC10/0.5	M12	27.5	36	4.2	8,000
	DSK13 -	135	3.0~13.0	135	92	92	43	HC13/1.0	M15	33	33	4.2	8,000
	DSK16 -	105	3.0~16.0	105	62	62	60	HC16/0.5	M18	40	40	4.1	8,000
		135	3.0~16.0	135	92	92	60	HC16/0.5	M18	40	40	4.3	8,000
		165	3.0~16.0	165	40	122	60	HC16/0.5	M18	40	50	4.5	8,000
	DSK20 -	105	4.0~20.0	105	62	62	70	HC20/0.5	M22	48.5	-	4.3	8,000
		135	4.0~20.0	135	92	92	70	HC20/0.5	M22	48.5	-	4.6	8,000
		165	4.0~20.0	165	122	122	70	HC20/0.5	M22	48.5	-	5.0	8,000
	DSK25 -	105	16.0~25.0	105	62	62	85	HC25/0.5	M28	55	55	4.8	8,000
		135	16.0~25.0	135	92	92	85	HC25/0.5	M28	55	55	5.2	8,000
165		16.0~25.0	165	122	122	85	HC25/0.5	M28	55	55	5.6	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



GERC



Competitor

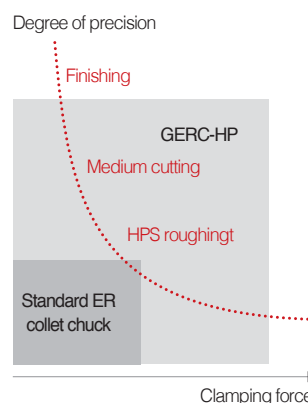
Two samples of collets after 4 months of use:
Left: GERC collet, Right: Non-coated

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

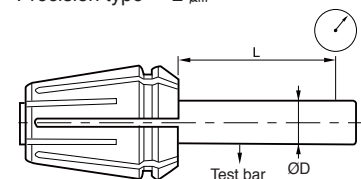


Precision type
collet 2 μ m



Precision (L/D = 3)

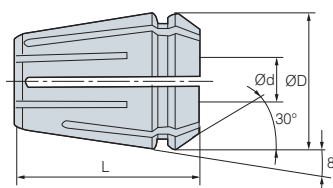
Standard type = 5 μ m
Precision type = 2 μ m



GERC Collet



Accuracy type/High Accuracy type



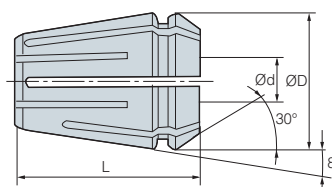
(mm)

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	5 µm	2 µm
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



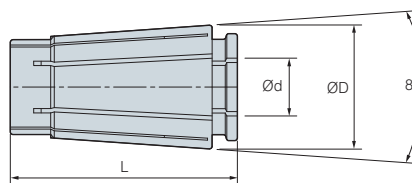
(mm)

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	10 µm
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



(mm)

Designation	ØD	L	Ød (Max.)	Distance (mm)	Tolerance	
					Standard type	Precision type (HP)
HC6 - Ød(P)	10.5	25.0	6.0	1.0	5 µm	3 µm
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	5 µm
GERC16 1.0-10.0mm/1.0mm	1.0-10.0	1.0	10pcs	5 µm
GERC20 2.0-13.0mm/1.0mm	2.0-13.0	1.0	12pcs	5 µm
GERC25 2.0-16.0mm/1.0mm	2.0-16.0	1.0	15pcs	5 µm
GERC32 3.0-20.0mm/1.0mm	3.0-20.0	1.0	18pcs	5 µm
GERC40 4.0-26.0mm/1.0mm	4.0-26.0	1.0	23pcs	5 µm

ER Collet

General type



(mm)

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



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

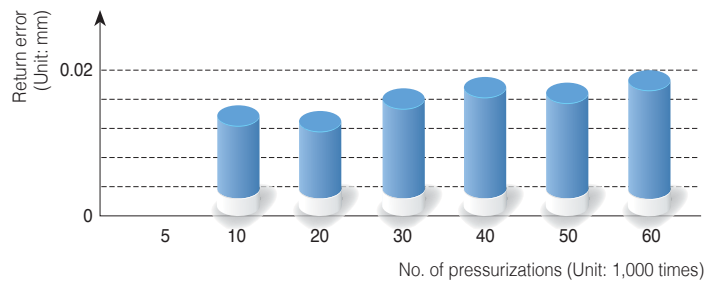
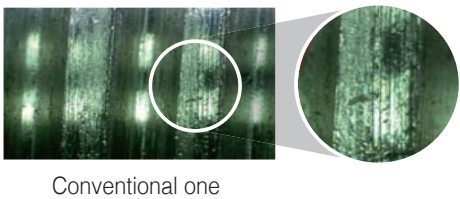


Code system



Excellent performance, precise machining

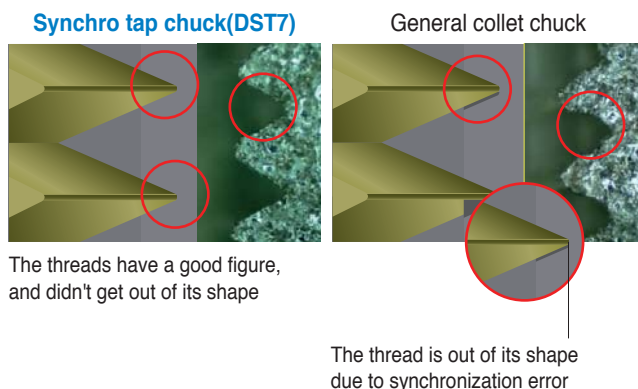
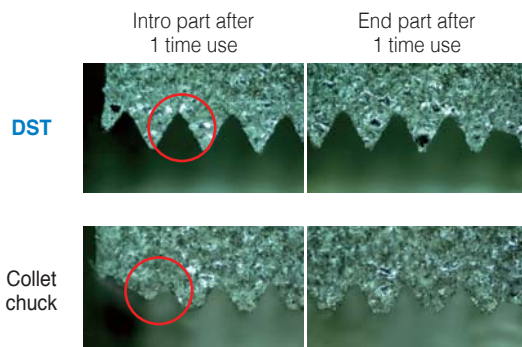
Expanded machining area



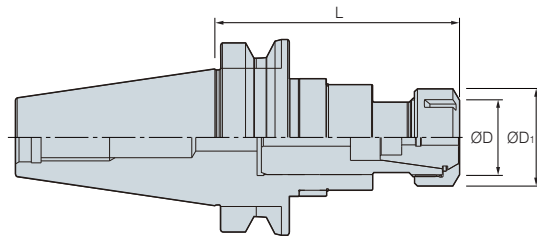
Exclusive collet for tapping

- At tapping work use of TER collet
- DST3: Use of ER11 collet

Comparison of thread figures



BT-DST



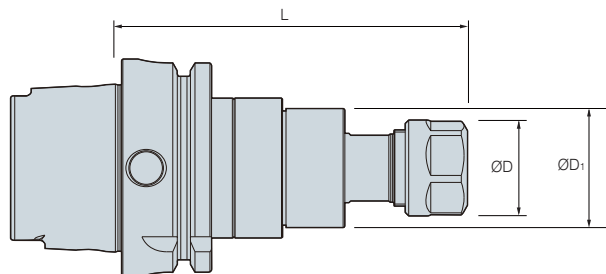
(mm)

Designation			ØD	ØD ₁	L	Collet	Tapping range	F-	F+
BT30 -	DST3 -	70	26	19	70	ER11	M1~M3	0.5	0.5
	DST10 -	95	40.4	28	95	TER16	M3~M10	0.5	0.5
BT40 -	DST10 -	100	40.4	28	100	TER16	M3~M10	0.5	0.5
	DST22 -	110	60	49.5	110	TER32	M6~M22	0.7	0.7
BT50 -	DST10 -	110	60	49.5	110	TER16	M3~M10	0.5	0.5
	DST22 -	130	60	49.5	125	TER32	M6~M22	0.7	0.7

Applicable collet 135, 143

• Through coolant system is optional

HSK-DST



(mm)

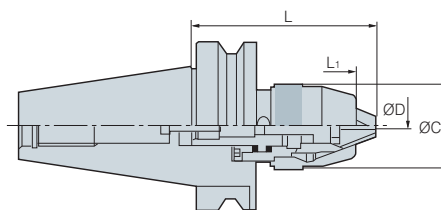
Designation			ØD	ØD ₁	L	Collet	Tapping range	F-	F+
HSK63A -	DST10 -	100	40.4	28	100	TER16	M3~M10	0.5	0.5
	DST22 -	130	60	49.5	130	TER32	M6~M22	0.7	0.7

Applicable collet 143

• Through coolant system is optional



BT-NPU



							(mm)
Designation			ØD (Clamping range)	ØC	L	L ₁	
BT30 -	NPU8 -	97	0~8	38	97	8.5	0.8
	NPU13 -	125	1~13	50	125	12.5	1.5
BT40 -	NPU8 -	87	0~8	38	87	8.5	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	BX0825	NPU1348

Technical Information for DTN

Tapping holder

DTN

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

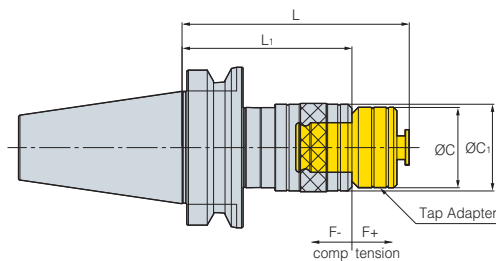


Code system



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

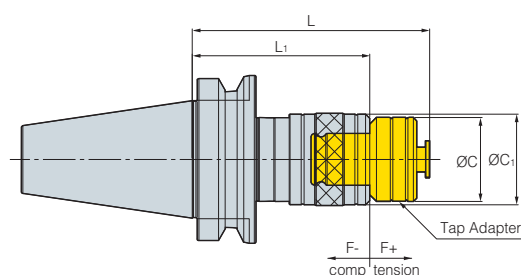


How to clamp TCA and a tap holder

Before installation	After installation	Disassembly
1. Insert TCA pushing the cover of tap holder 2. Clamp the TCA in the Key groove and firmly	1. The cover of tap holder is placed correctly	1. Separate the TCA pushing the cover of tap holder



BT-DTN

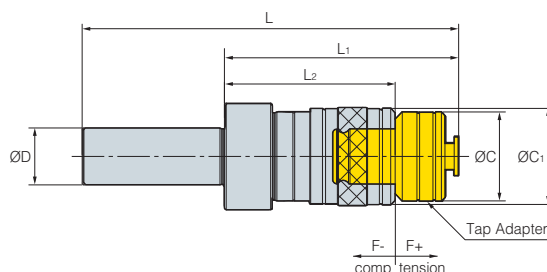


(mm)										
Designation	Tapping range	L	L ₁	ØC	ØC ₁	Adaptor	F-	F+		
BT30 -	DTN12 - 85	M3~M12	85	60	32	39	TCA1-M	4	10	0.7
BT40 -	DTN12 - 90	M3~M12	90	65	32	39	TCA1-M	4	10	1.2
	120	M3~M12	120	95	32	39	TCA1-M	4	10	1.4
	DTN22 - 130	M8~M22	130	96	50	56	TCA2-M	12.5	12.5	1.7
BT50 -	160	M8~M22	160	126	50	56	TCA2-M	12.5	12.5	2.1
	DTN12 - 100	M3~M12	100	75	32	39	TCA1-M	4	10	3.7
	130	M3~M12	130	105	32	39	TCA1-M	4	10	3.9
	DTN22 - 140	M8~M22	140	104	50	56	TCA2-M	12.5	12.5	4.2
	170	M8~M22	170	134	50	56	TCA2-M	12.5	12.5	4.7
	DTN38 - 185	M16~M38	185	140	72	81	TCA3-M	20	20	5.7
	215	M16~M38	215	170	72	81	TCA3-M	20	20	6.6

 Tap Adapter (TCA) I 42

• Through coolant system not available • Tap adaptor is optional

S-DTN



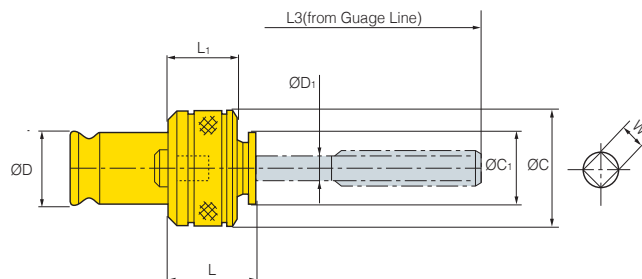
(mm)											
Designation	Tapping range	ØD	L	L ₁	L ₂	ØD	ØD	F-	F+	Adaptor	
S32 -	DTN12 - 90	M3-M12	32	170	90	65	32	39	4	10	TCA1
S32 -	DTN22 - 130	M8-M24	32	210	130	96	50	56	12.5	12.5	TCA2

 Tap Adapter (TCA) I 42

• Through coolant system not available • Tap adaptor is optional



TCA Tap Adaptor



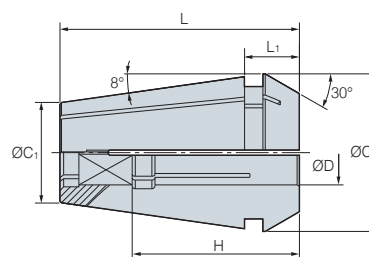
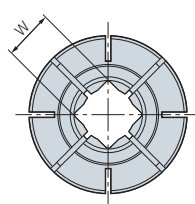
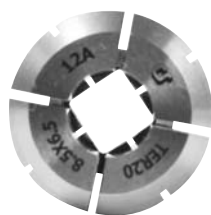
(mm)

Designation		ØD	ØC	L	L ₁	kg
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	26	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	8	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

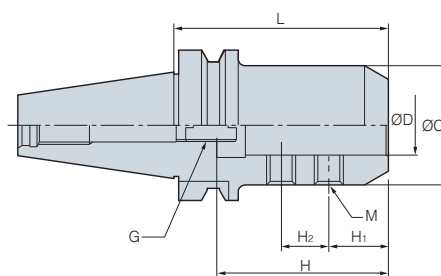


(mm)									
Designation	Tapping Range	ØD	W	ØC	ØC ₁	L	L ₁	H	
TER16 -	4x3.2	M3	4	3.2	16.74	10.1	27.5	6.3	18
	5x4	M4	5	4	16.74	10.1	27.5	6.3	18
	5.5x4.5	M5	5.5	4.5	16.74	10.1	27.5	6.3	18
	6x4.5	M6, U1/4	6	4.5	16.74	10.1	27.5	6.3	18
	6.2x5	M7, M8	6.2	5	16.74	10.1	27.5	6.3	18
	7x5.5	M9, M10, U3/8	7	5.5	16.74	10.1	27.5	6.3	18
TER20 -	5x4	M4	5	4	20.74	13.2	31.5	7.2	18
	5.5x4.5	M5	5.5	4.5	20.74	13.2	31.5	7.2	18
	6x4.5	M6, U1/4	6	4.5	20.74	13.2	31.5	7.2	18
	6.2x5	M7, M8	6.2	5	20.74	13.2	31.5	7.2	18
	7x5.5	M9, M10, U3/8	7	5.5	20.74	13.2	31.5	7.2	18
	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	22
TER25 -	5x4	M4	5	4	25.74	17.6	34	7.5	18
	5.5x4.5	M5	5.5	4.5	25.74	17.6	34	7.5	18
	6x4.5	M6	6	4.5	25.74	17.6	34	7.5	18
	6.2x5	M7, M8	6.2	5	25.74	17.6	34	7.5	18
	7x5.5	M9, M10, U3/8	7	5.5	25.74	17.6	34	7.5	18
	8.5x6.5	M12	8.5	6.5	25.74	17.6	34	7.5	22
TER32 -	6x4.5	M6, U1/4	6	4.5	32.74	23.1	40	8.2	18
	6.2x5	M7, M8	6.2	5	32.74	23.1	40	8.2	18
	7x5.5	M9, M10, U3/8	7	5.5	32.74	23.1	40	8.2	18
	8X6	M11, U7/16, P1/8	8	6	32.74	23.1	40	8.2	22
	8.5x6.5	M12	8.5	6.5	32.74	23.1	40	8.2	22
	10.5x8	M14, U9/16	10.5	8	32.74	23.1	40	8.2	25
	12.5x10	M16	12.5	10	32.74	23.1	40	8.2	25
	14x11	M18, P3/8	14	11	32.74	23.1	40	8.2	25
	15x12	M20	15	12	32.74	23.1	40	8.2	25
	17x13	M22, U7/8	17	13	32.74	23.1	40	8.2	25
	11x9	P1/4	11	9	32.74	23.1	40	8.2	25
	12x9	U5/8	12	9	32.74	23.1	40	8.2	25
	9x7	U1/2	9	7	32.74	23.1	40	8.2	22

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



BT-SLA



(mm)

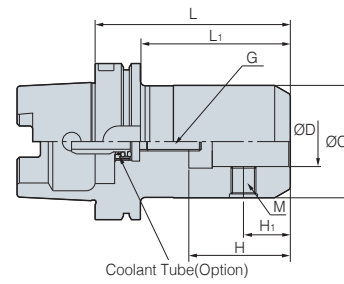
Designation			ØD	L	ØC	H	H ₁	H ₂	M	G	kg
BT30 -	SLA16 -	90	16	90	40	70	25	20	M10	M12	1.1
	SLA20 -	90	20	90	50	70	25	20	M12	M12	1.2
	SLA25 -	90	25	90	50	70	25	20	M12	M12	1.2
BT40 -	SLA16 -	90	16	90	40	70	25	20	M10	M12	1.5
	SLA20 -	90	20	90	50	70	25	20	M12	M12	1.8
	SLA25 -	90	25	90	50	70	25	20	M12	M12	2.0
	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	90	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 145

• Through coolant system is optional



HSK-SLA



Designation		ØD	L	ØC	H	H ₁	M	G	(mm)	
HSK63A -	SLA20 - 100	20	100	52	51	25	M16	M12	2.0	
	SLA25 - 105	25	105	65	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	65	59	25	M18	M12	4.0	
	SLA32 - 125	32	125	72	63	30	M20	M12	4.3	

• Through coolant system is optional

Parts

Division	Spare parts				
	Basic			Option	
	Set screw		Adjust screw	Wrench	
Type					
	DBT/BT type	HSK/SK type		DBT/BT type	HSK/SK type
SLA16	BTF1010	BTF1414-1.5	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	BTF2020-1.5			
SLA40					
SLA42					



BT-FMA

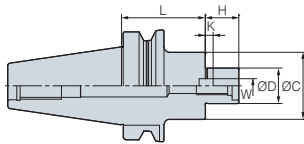


Fig. 1

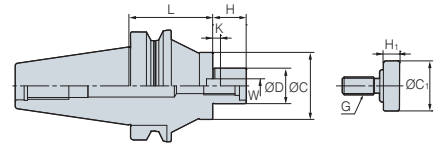


Fig. 2

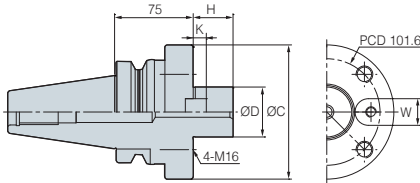


Fig. 3

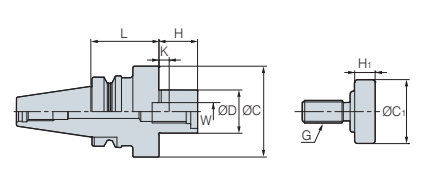


Fig. 4

(mm)

	Designation	Cutter dia.	ØD	L	ØC	H	W	K	G		Fig.
BT30 -	FMA25.4 - 45	80	25.4	45	50	22	9.5	5	M12	1.2	4
BT40 -	FMA25.4 - 45	80	25.4	45	50	22	9.5	5	M12	1.4	1
	FMA25.4 - 90	80	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	1.6	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	80	25.4	45	50	22	9.5	5	M12	3.8	1
	FMA25.4 - 90	80	25.4	90	50	22	9.5	5	M12	4.5	1
	FMA25.4 - 150	80	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	4.6	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

Division	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-M16	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

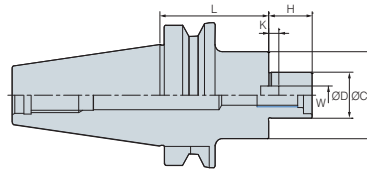


Fig. 1



Fig. 2

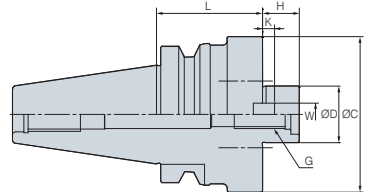


Fig. 3



(mm)												
Designation			Cutter dia.	ØD	L	ØC	H	W	K	G		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	89	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	89	27	15.87	8.0	M20	4.6	3

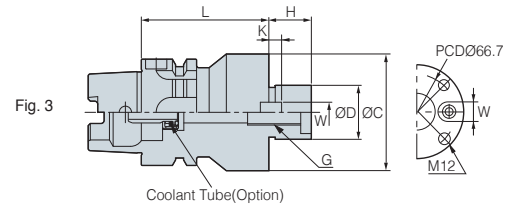
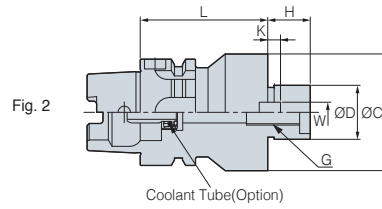
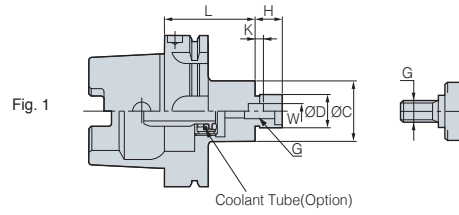
• Through coolant system is optional • The weight above exclude the face cutter

Parts

Division	Spare parts				
	Basic				Option
	Key	Clamp bolt	Key bolt	Wrench bolt	Wrench
Type					
FMC 16	K8.0	-	BX0310	BX0830	LW-6
FMC 22	K10.0	-	BX0412	BX1030	LW-8
FMC 25.4	K9.5	-	BX0516	BX1230	LW-10
FMC 27	K12.0	MBA-M12	BX0616	-	LW-10
FMC 32	K14.0	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			Cuttter dia.	ØD	L	ØC	H	W	K	G	kg	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	80	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

Division	Spare parts				
	Basic				Option
	Key	Clamp bolt	Key bolt	Wrench bolt	Wrench
Type					
FMC 16	K8.0	-	BX0310	BX0830	LW-6
FMC 22	K10.0	-	BX0412	BX1030	LW-8
FMC 25.4	K9.5	-	BX0516	BX1230	LW-10
FMC 27	K12.0	MBA-M12	BX0616	-	LW-10
FMC 32	K14.0	MBA-M16	BX0616	-	LW-14
FMC38.1	K15.87	MBA-M16	BX0616	-	LW-14
FMC40	K15.87	MBA-M20	BX0616	-	LW-17



Available for various angles

ANGULAR HEAD

Features

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



Code system



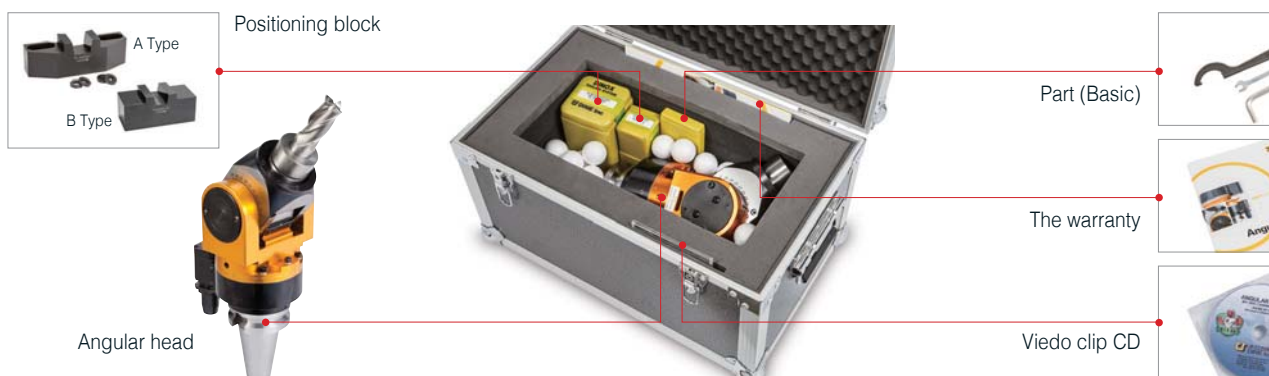
Name of angular head parts



Various applications

0~90-degree rotating (MAH, KHU)	Fixed 90-degree type (KAH)	Fixed 45-degree type (KAC)	Attachment type (HRAG, KAG)

Components



MAH

Universal type MAH (Reinforced series)

- Reinforced type Better performance by improving existing universal Angular head
 - Stability on large mold machining
 - Use 32mm Ball Endmill
 - Reinforced from KHU type



HRAG

Attachment type HRAG (Reinforced type)

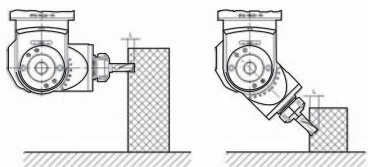
- HRAG: The reinforced bracket enhanced durability upto 200%
 - Stability on face milling machining
 - Reinforced stiffness from KAG type



KHU

Universal type KHU

- Free angle adjusting up to 90°
 - HSK and SK type are order made

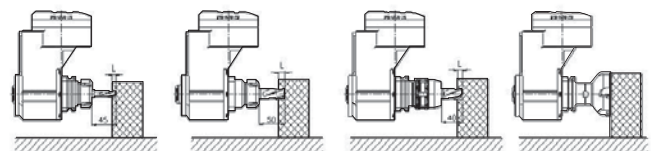


BT50-KHU20-195

KAG

Attachment type KAG

- Free 360° angle adjusting from side to side
 - Possible to use various tools of BT40 and BT30
 - HSK and SK type are order made



BT40-SDC20-60
(Ø12 E/M)

NT40-SDC20-60
(Ø20 E/M)

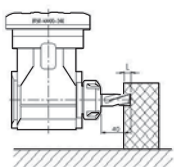
BT40-NPM20-85
(Ø20 E/M)

BT40-FMA25.4-45
(Ø80 Shoulder Mill)

KAH

Modular type KHU (90° type)

- Fixed 90° type angular head
 - In case of using a tap collet, please contact us in advance
 - HSK and SK type are order made



BT50-KAH20-200

KAC

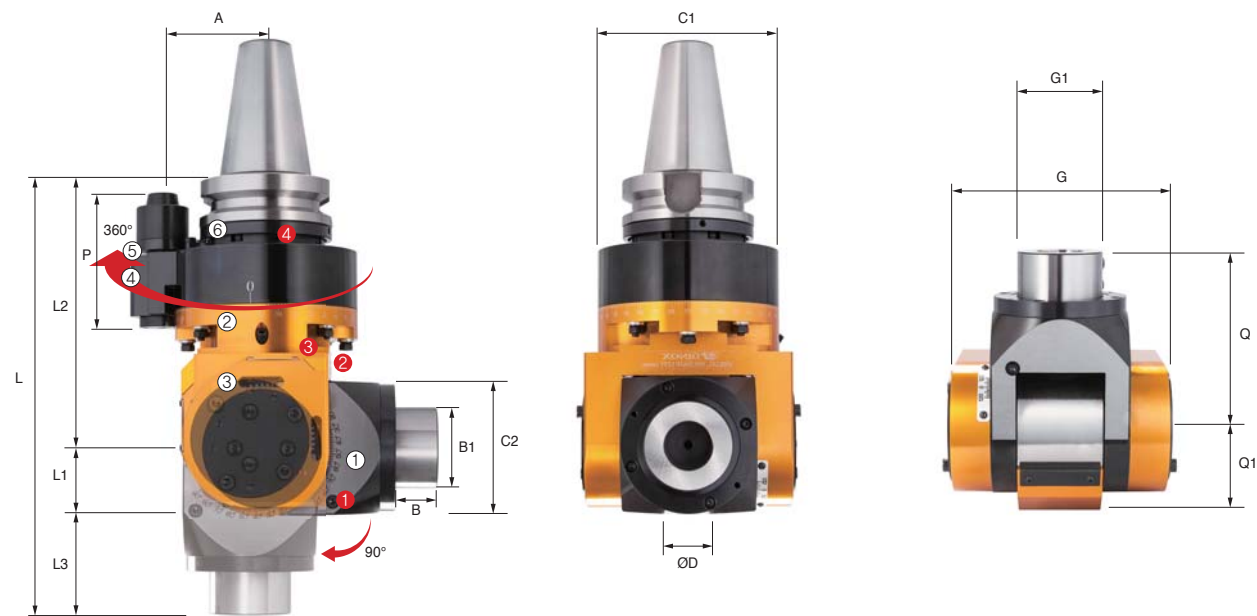
Modular type KAC (45° type)

- Fixed 45° type angular head
 - HSK and SK type are order made

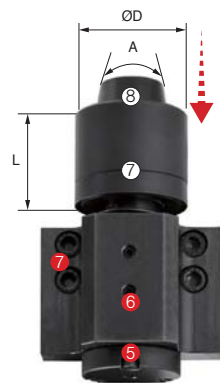


MHA for mold (0°~90°)_Reinforced type

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

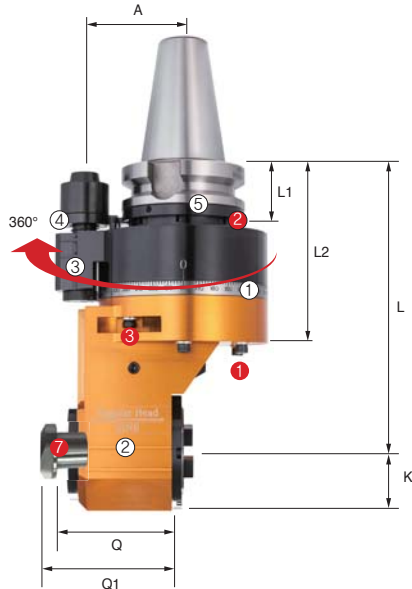
NO	Part name	Designation
①	Inclination angle gradation screw	BT1216
②	Head fixed bolts	BT0645
③	Rotating angle gradation screw	BT0640
④	Positioning ring set screw	MSST5-12
⑤	Positioning pin height control bolt	BT0516
⑥	Positioning pin set screw	BT0512
⑦	Body position block set screw	BX0516

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

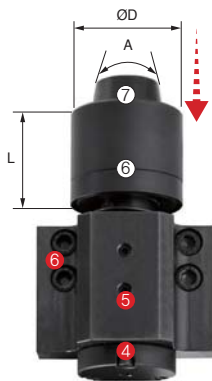
Angular Head Series

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

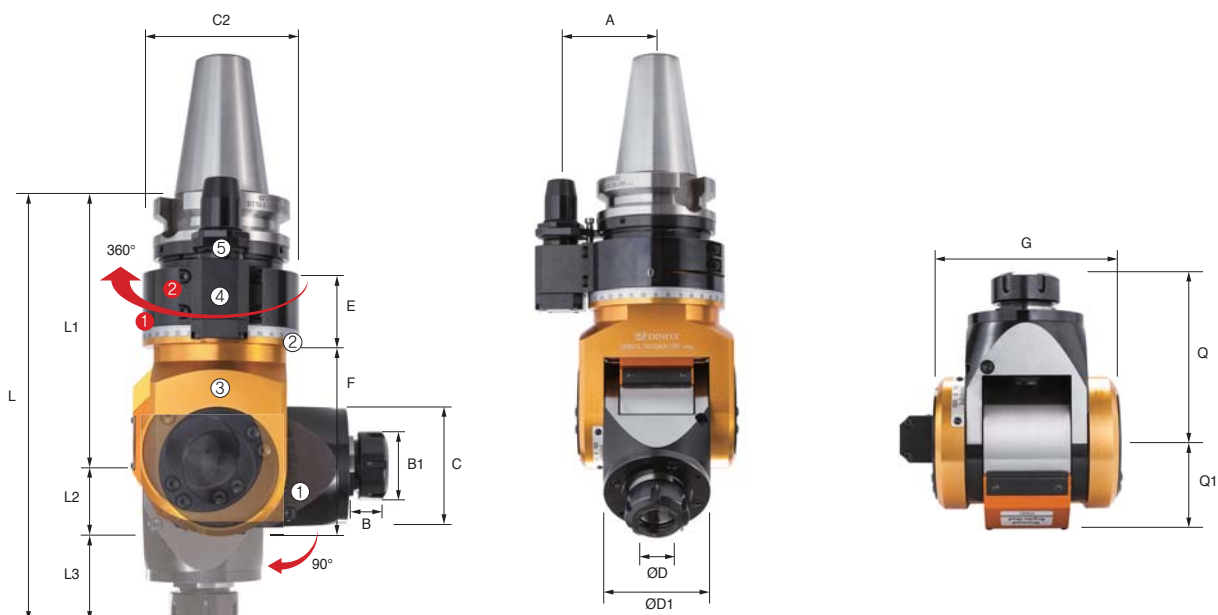
NO	Part name	Designation
①	Head fixed bolts	BX0660
②	Positioning ring set screw	MSST5-12
③	Rotating angle graduation screw	BT0648
④	Positioning pin height control bolt	BT0516
⑤	Positioning pin set screw	BT0512
⑥	Body position block set screw	BX0516
⑦	BT/NT Bolt	

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	BT/NT40	15.75

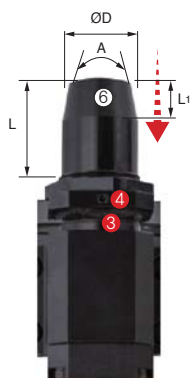


KHU (0°~90°)_Collet type

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	Bracket angle fixing bolt	BX0630
②	Position block fixing bolt	BX0512
③	Set screw	BT0404
④	Fixing bolts	BXS0630

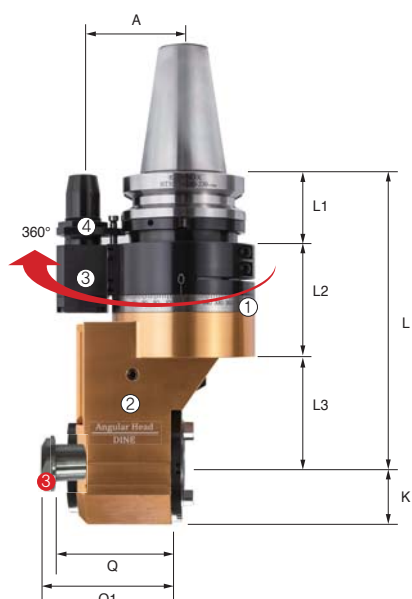
Designation	ØD	ØD1	L	L1	L2	L3	B	B1	E	F	C	A	G	Q	Q1	Torque rate (IN: OUT)	Direction of rotation (IN: OUT)	MAX RPM	Collet	kg
BT40-KHU10-160	1.0~10.0	58	160	33	54	247	22	28	51	98	96	65	90	87	40	1: 2	CW: CW	6,000	GER16	6.4
BT50-KHU10-180	1.0~10.0	58	180	33	54	267	22	28	53	103	114	80	90	87	40	1: 2	CW: CW	6,000	GER16	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	GER32	15.8



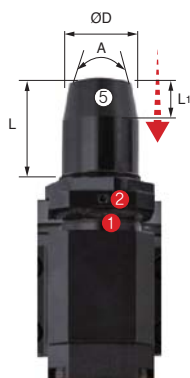
Angular Head Series

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

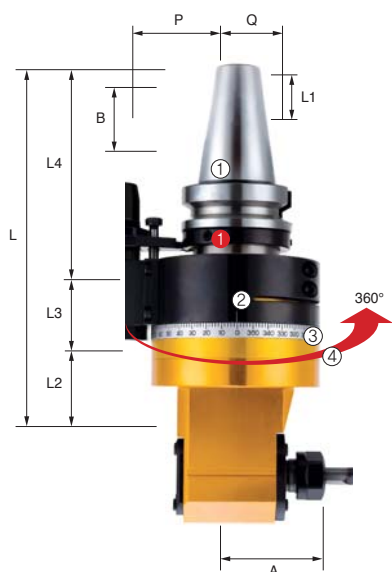
NO	Part name	Designation
①	Set screw	BT0404
②	Fixing bolts	BXS0630
③	BT / NT Bolt	

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	15.8

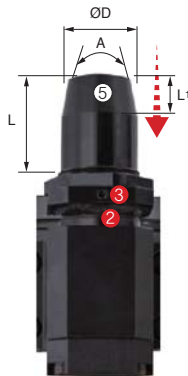


HRAG (90° fixed)_Collet type

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 360°)
③	Positioning pin part
④	Jaw key
⑤	Height control wrench hole

NO	Part name	Designation
①	Head fixing bolts	BX0618
②	Set screw	BT0404
③	Fixing bolts	BXS0630

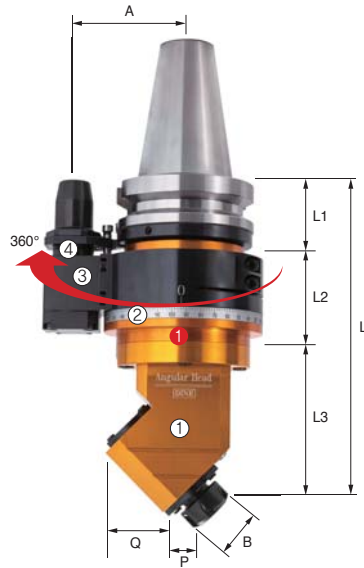
Designation	ØD	L	L1	L2	L3	L4	B	A	P	Q	G	G1	Torque rate (IN: OUT)	MAX RPM	Collet	kg
BT40-KAH7-170	1.0~7.0	170	20	44	71	55	19	65	37	24.5	40	96	1: 1	5,000	GER11	4.6
BT40-KAH10-195	1.0~10.0	195	25	44	71	80	28	65	46	32	58	96	1: 1	5,000	GER16	5.8
BT40-KAH13-165	1.0~13.0	165	28	44	71	50	35	65	53	35	60	96	1: 1	5,000	GER20	5.7
BT40-KAH20-180	2.0~20.0	180	38	44	71	65	50	65	71	49	76	96	1: 1	3,500	GER32	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	GER11	9.8
BT50-KAH10-215	1.0~10.0	215	25	57	54	104	28	80	46	32	58	96	1: 1	5,000	GER16	10.7
BT50-KAH10-260	1.0~10.0	260	25	57	54	149	28	80	46	32	58	96	1: 1	5,000	GER16	11.0
BT50-KAH13-260	1.0~13.0	260	28	57	54	149	35	80	53	35	60	96	1: 1	5,000	GER20	11.2
BT50-KAH20-200	2.0~20.0	200	38	57	54	89	50	80	71	49	76	96	1: 1	3,500	GER32	11.6
BT50-KAH20-240	2.0~20.0	240	38	57	54	129	50	80	71	49	76	96	1: 1	3,500	GER32	12.4



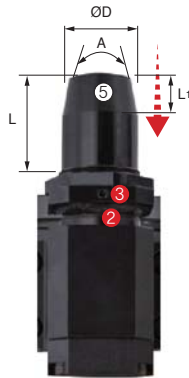
Angular Head Series

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	BX0618
②	Set screw	BT0404
③	Fixing bolts	BXS0630

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	GER16	5.3
BT40-KAC13-220	1.0~13.0	220	44	71	105	28	60	96	25	54	65	5,000	GER20	5.5
BT40-KAC20-230	2.0~20.0	230	44	71	115	50	72	96	30	60	65	3,500	GER32	6.8
BT50-KAC10-240	1.0~10.0	240	57	54	129	28	60	96	25	54	80	5,000	GER16	10.2
BT50-KAC13-240	1.0~13.0	240	57	54	129	28	60	96	25	54	80	5,000	GER20	10.4
BT50-KAC20-250	2.0~20.0	250	57	54	139	50	72	96	30	60	80	3,500	GER32	11.7



FBH back boring & balanced type

FBH/B

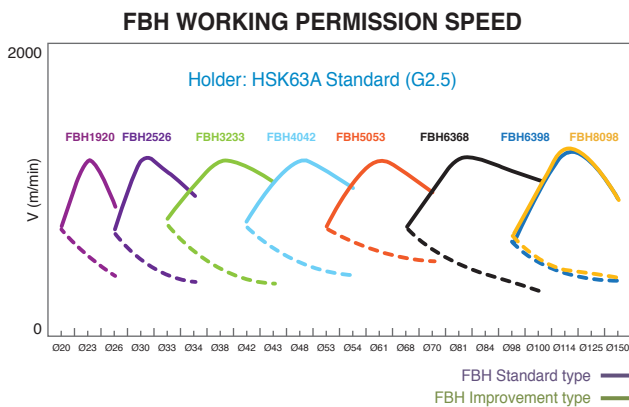
- High speed boring and back boring capability
- High precision balancing: G2.5, Head: G6.3
- Min. adjustment range: 2 μm



Code system

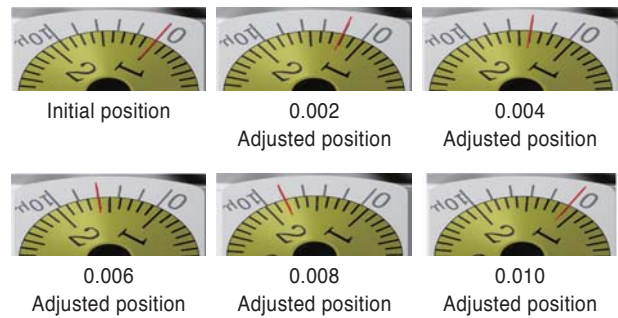


Working permission speed

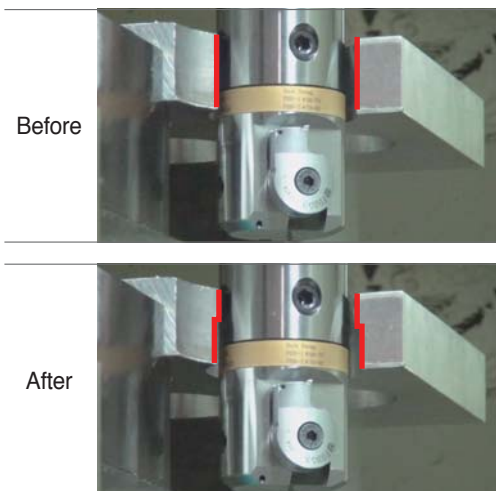


Boring range adjustment method

2 μm Boring range



Back boring



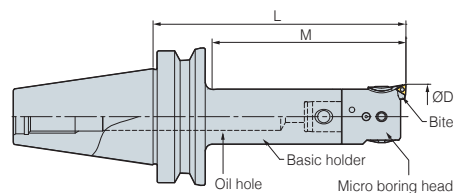
Adjusting machining direction available



Easy change of machining direction only by adjusting the bite

BT-FBH/B

Micro Boring Balance type



Designation				Boring range ØD		L	Max. Boring depth	
Head	Bite	Body (Basic holder)		Min	Max			
FBH1920B	FBB20N-□-□□	BT30 -	MD19F - 70R	20 (24)	26 (30)	103	60	0.5
FBH2526B	FBB26N-□-□□		MD25F - 90R	26 (32)	34 (40)	127	80	0.7
FBH3233B	FBB33N-□-□□		MD32F - 80R	33 (40)	43 (50)	121	80	0.8
FBH4042B	FBB42N-□-□□		MD40F - 80R	42 (50)	54 (62)	127	96	1.1
FBH5053B	FBB53N-□-□□		MD50F - 70	53 (65)	70 (82)	127	97	1.7
FBH1920B	FBB20N-□-□□	BT40 -	MD19F - 70R	20 (24)	26 (30)	103	45	1.9
FBH2526B	FBB26N-□-□□		MD25F - 95R	26 (32)	34 (40)	133	59	2
FBH3233B	FBB33N-□-□□		MD32F - 100R	33 (40)	43 (50)	141	77	2.5
FBH4042B	FBB42N-□-□□		MD40F - 115R	42 (50)	54 (62)	162	107	3.1
FBH5053B	FBB53N-□-□□		MD50F - 105	53 (65)	70 (82)	162	135	3.5
FBH6368B	FBB68N-□-□□	BT50 -	MD63F - 110	68 (90)	100 (122)	181	154	6.3
FBH6398B	FBB68N-□-□□		MD63F - 135	98 (120)	150 (172)	206	179	7.1
FBH8098B	FBB68N-□-□□		MD80F - 100	98 (120)	150 (172)	171	144	8.3
FBH1920B	FBB20N-□-□□		MD19F - 85	20 (24)	26 (30)	118	80	5.2
FBH2526B	FBB26N-□-□□		MD25F - 105R	26 (32)	34 (40)	142	59	5.8
FBH3233B	FBB33N-□-□□	BT50 -	MD32F - 110R	33 (40)	43 (50)	151	77	6
FBH4042B	FBB42N-□-□□		MD40F - 195R	42 (50)	54 (62)	242	130	6.3
FBH5053B	FBB53N-□-□□		MD50F - 225R	53 (65)	70 (82)	282	182	6.6
FBH6368B	FBB68N-□-□□		MD63F - 230R	68 (90)	100 (122)	301	220	7.2
FBH6398B	FBB68N-□-□□		MD63F - 195R	98 (120)	150 (172)	266	191	8.5
FBH8098B	FBB68N-□-□□		MD80F - 175	98 (120)	150 (172)	246	208	12.8

• Spare Part 160

• Through coolant system available

• FBB bites are divided into two sorts Normal type: FBB□□N, Scalable type: FBB□□N-1

There are also the other options for your insert type: FBB□□N-□-C09 or T11

FBB□□N, FBB□□N-1: TPGT, TPGW0802□□L

FBB□□N-□-C: CCMT,CCGT0602□□L

FBB□□N-□-C09: CCMT,CCGT09T3□□L

FBB□□N-□-T11: TPGT1103□□L

FBH

FBH1920B

New Type

Micro Boring Head

Designation		Boring range ØD		L	Scale ring 1rev. adjustable range	MD No.	
		Min	Max				
FBH -	1920B	20	26 (30)	33	Ø0.4 mm	MD1911	0.06
	2526B	26	34 (40)	37	Ø0.4 mm	MD2514	0.12
	3233B	33	43 (50)	41	Ø0.5 mm	MD3218	0.24
	4042B	42	54 (62)	47	Ø0.5 mm	MD4022	0.41
	5053B	53	70 (82)	57	Ø0.6 mm	MD5028	0.8
	6368B	68	100 (122)	71	Ø0.8 mm	MD6336	1.7
	6398B	98	150 (172)	71	Ø0.8 mm	MD6336	2.35

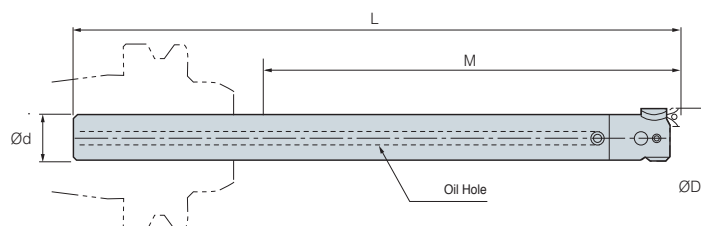
• Stock of basic holders, heads and bites are separately managed

• (): Max. boring diameter of extension type



S-FBH/B

Small Micro Boring

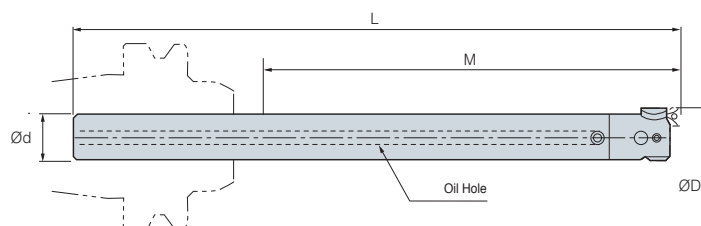


										(mm)
Designation		Shank dia øD	Boring range ØD		L	M	Designation			
			Min	Max			Basic shank	Boring head	Bite	
S19W -	FBH20B - 120	19	20	26	190	120	S19W-MD19F-157	FBH1920B	FBB20N	0.6
	140	19	20	26	210	140	S19W-MD19F-177	FBH1920B	FBB20N	0.7
	160	19	20	26	230	160	S19W-MD19F-197	FBH1920B	FBB20N	0.8
S25W -	FBH26B - 150	25	26	34	235	150	S25W-MD25F-197.5	FBH2526B	FBB26N	1.4
	175	25	26	34	260	175	S25W-MD25F-222.5	FBH2526B	FBB26N	1.6
	200	25	26	34	285	200	S25W-MD25F-247.5	FBH2526B	FBB26N	2
S32W -	FBH33B - 180	32	33	43	280	180	S32W-MD32F-239	FBH3233B	FBB33N	2.8
	240	32	33	43	340	240	S32W-MD32F-299	FBH3233B	FBB33N	3.5
S19 -	FBH20B - 40	19	20	26	110	40	S19-MD19F-77	FBH1920B	FBB20N	0.1
	80	19	20	26	150	80	S19-MD19F-117	FBH1920B	FBB20N	0.2
S25 -	FBH26B - 50	25	26	34	135	50	S25-MD25F-97.5	FBH2526B	FBB26N	0.4
	100	25	26	34	185	100	S25-MD25F-147.5	FBH2526B	FBB26N	0.6
S32 -	FBH33B - 90	32	33	43	190	90	S32-MD32F-149	FBH3233B	FBB33N	1.1
	120	32	33	43	220	120	S32-MD32F-179	FBH3233B	FBB33N	1.2

• Through coolant system available

S-FBH

Mini Small Micro Boring



											(mm)
Designation			Shank dia ϕd	Boring range		L	M	Designation			
				ϕD				Basic shank	Boring head	Bite	
			Min	Max							
S14W	FBH15	85	14	15	18	155	85	S14W-M6-123	FBH15	FBB15-C	0.2
	FBH15	110	14	15	18	180	110	S14W-M6-148	FBH15	FBB15-C	0.3
S16W	FBH18	95	16	18	22	165	95	S16W-M8-128	FBH18	FBB15-C	0.3
	FBH18	125	16	18	22	195	120	S16W-M8-158	FBH18	FBB15-C	0.4
S14	FBH15	40	14	15	18	110	40	S14-M6-78	FBH15	FBB15-C	0.1
S16	FBH18	45	16	18	22	115	45	S16-M8-78	FBH18	FBB15-C	0.1

• Through coolant system available



Parts

Spare parts		
Type (FBH)	Lock screw	Clamp screw
FBH1920B	BTF0404	BXC0304
FBH2526B	BTF0505	BXC0405
FBH3233B	BTF0606	BXC0506
FBH4042B	BTF0808	BXC0610
FBH5053B	BTF0812	BXC0610
FBH6368B	BTF1016	BXC0810
FBH6398B	BTF1012	BXC0810
FBH8098B	BTF1014	BXC0810

FBF Bite (New type)

Designation	Boring range	Insert	Insert screw	Clamp bolt
FBB15C	Ø15~Ø18 mm	CCET0301-□□L	FTNA01633	BFTX02506N
	Ø18~Ø22 mm			
FBB20N	Ø20~Ø26 mm	TPGT0802□□L/TPGW0802□□	BFTX0204A	BXC0304
FBB20N-C		CCET0401□□L	BFTX0204N	
FBB20N-1	Ø24~Ø30 mm	TPGT0802□□L/TPGW0802□□	BFTX0204A	
FBB20N-1-C		CCET0401□□L	BFTX0204N	
FBB26N	Ø26~Ø34 mm	TPGT0802□□L/TPGW0802□□	BFTX0204A	BXC0405
FBB26N-C		CCET0401□□L	BFTX0204N	
FBB26N-1	Ø32~Ø40 mm	TPGT0802□□L/TPGW0802□□	BFTX0204A	
FBB26N-1-C		CCET0401□□L	BFTX0204N	
FBB33N	Ø33~Ø43 mm	TPGT0802□□L/TPGW0802□□	BFTX0204A	BXC0506
FBB33N-C		CCMT0602□□/CCGT0602□□	BFTX02506N	
FBB33N-1	Ø41~Ø50 mm	TPGT0802□□L/TPGW0802□□	BFTX0204A	
FBB33N-1-C		CCMT0602□□/CCGT0602□□L	BFTX02506N	
FBB42N	Ø42~Ø54 mm	TPGT0802□□L/TPGW0802□□	BFTX0204A	BXC0610
FBB42N-		CCMT0602□□/CCGT0602□□L	BFTX02506N	
FBB42N-11	Ø50~Ø62 mm	TPGT1103□□L	BFTX0307A	
FBB42N-1		TPGT0802□□L/TPGW0802□□	BFTX0204A	
FBB42N-1-C		CCMT0602□□/CCGT0602□□L	BFTX02506N	
FBB42N-1-T11		TPGT1103□□L	BFTX0307A	
FBB53N	Ø53~Ø70 mm	TPGT0802□□L/TPGW0802□□	BFTX0204A	
FBB53N-C		CCMT0602□□/CCGT0602□□L	BFTX02506N	
FBB53N-11		TPGT1103□□L	BFTX0307A	
FBB53N-1	Ø65~Ø82 mm	TPGT0802□□L/TPGW0802□□	BFTX0204A	BXC0810
FBB53N-1-C		CCMT0602□□/CCGT0602□□L	BFTX02506N	
FBB53N-1-C09		CCMT09T3□□/CCGT09T3□□L	BFTX0409N	
FBB53N-1-T11		TPGT1103□□L	BFTX0307A	
FBB68N	Ø68~Ø100 mm	TPGT0802□□L/TPGW0802□□	BFTX0204A	
FBB68N-C		CCMT09T3□□/CCGT09T3□□L	BFTX0409N	
FBB68N-11	Ø90~Ø122 mm	TPGT1103□□L	BFTX0307A	
FBB68N-1		TPGT0802□□L/TPGW0802□□	BFTX0204A	
FBB68N-1-C09		CCMT09T3□□/CCGT09T3□□L	BFTX0409N	
FBB68N-1-T11	Ø120~Ø172 mm	TPGT1103□□L	BFTX0307A	



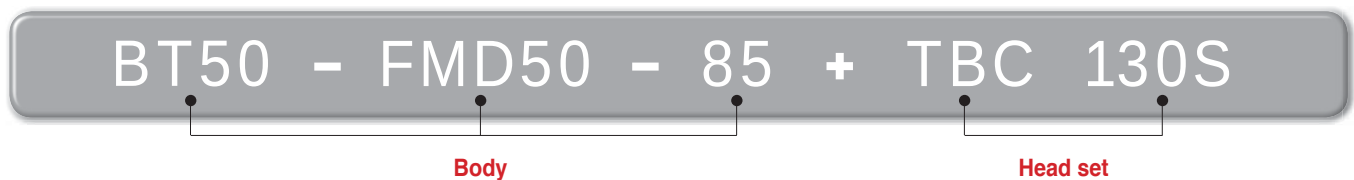
Balance cut tool for Rough boring

TBC

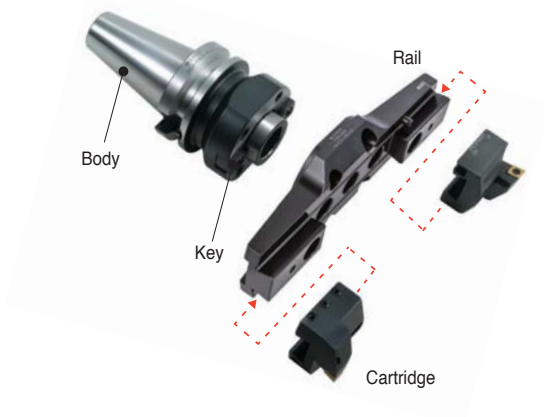
- Wide boring range for big diameters: $\varnothing 130 \sim \varnothing 540$ mm
- Stable structure against for cutting load - Assembly by dove-tail structure
- Interconvert with FBC
 - Common boring head and rail adopted, different cartridge
- Light-weight (5%~20% reduced)
- Various cartridge approach angle: $15^\circ, 45^\circ$



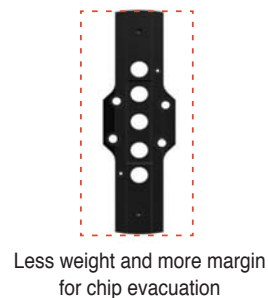
Code system



TBC boring tool structure & features



Cartridge: BCC1348
Insert: CCMT1204□□
CNMG1204□□



Less weight and more margin
for chip evacuation



Enhanced strength
and weight

TBC boring tool cutting condition

Workpiece	Grade (HRC)	Cutting condition		
		Tip (Grade)	Cutting speed (m/min)	Feed per revolution f (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	FC25 (HB250)	K Material	K Material	0.1

Boring range

Grade	Dia (Ø)		Body	Head set	Insert
	min	max			
TBC130	130	180	FMD50	TBC130S	CCMT1204□□
TBC175	175	225	FMD50	TBC175S	CCMT1204□□
TBC220	220	270	FMD50	TBC220S	CCMT1204□□
TBC265	265	315	FMD50	TBC265S	CCMT1204□□
TBC310	310	390	FMD50	TBC310S	CCMT1204□□
TBC385	385	465	FMD50	TBC385S	CCMT1204□□
TBC460	460	540	FMD50	TBC460S	CCMT1204□□



Technical Information for FBC

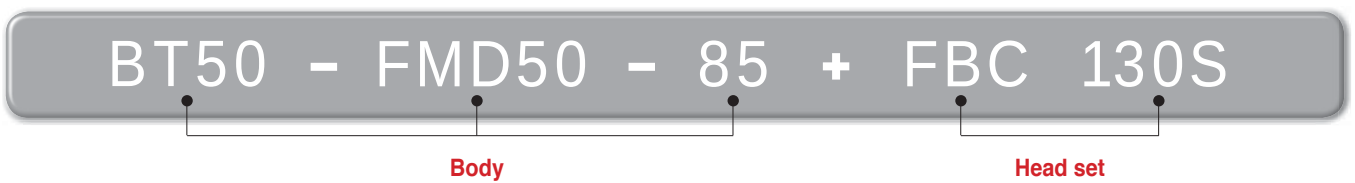
Balance cut tool for Fine boring

FBC

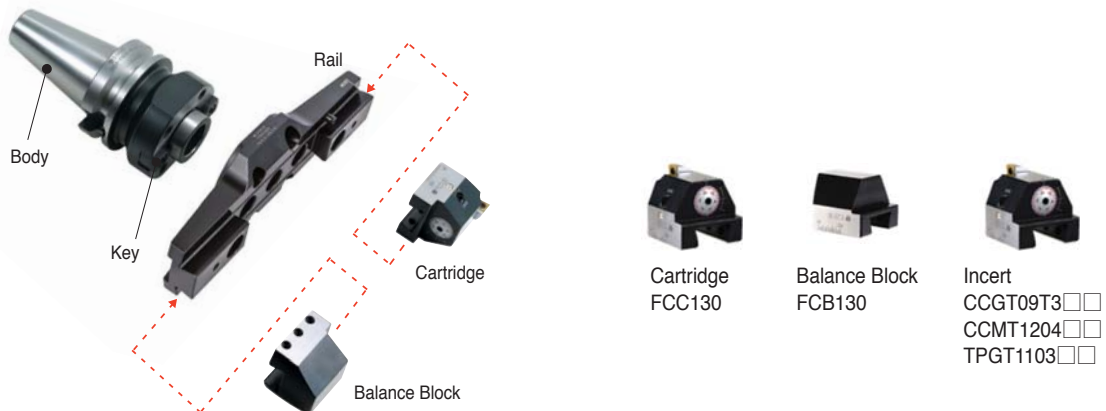
- Wide boring range for big diameters: $\varnothing 130 \sim \varnothing 540$ mm
- Interconvert with TBC
 - Common boring head and rail adopted, different cartridge [micro cartridge+balancing block]
- Various Insert according to bite
 - Applicable insert: CCMT09T3/1204, TPMT1103 (Cermet, cBN, PCD)



Code system



FBC boring tool structure & features

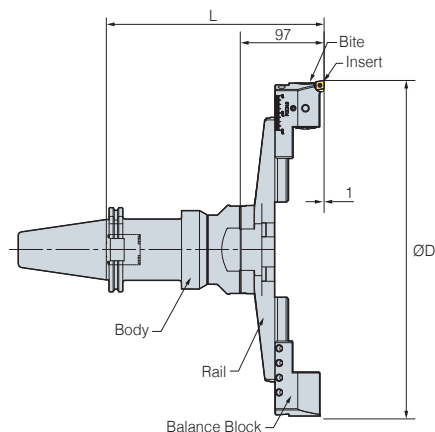


FBC boring tool cutting condition

Grade	Dia (Ø)		Head set	Insert
	min	max		
FBC130	130	180	FBC130S (TBR130+FCC130+FCB130)	FBB130-C09 (CCMT09T3□□, CCGT09T3□□) FBB130-C12 (CCMT1204□□) FBB130-T11 (TPMT1103□□, TPGT1103□□L)
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



Designation											(mm)	
Body		Rough boring (TBC)			Finish boring (FBC)					Boring range		
		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+FCC310+FCB310)	352	4.6	265	315		
	85	5.9	TBC310S (TBR310+BCC1354)	175	5.5	FBC310S (TBR310+FCC310+FCB310)	182	5.5	310	390		
	155	7.9	TBC310S (TBR310+BCC1354)	245	5.5	FBC310S (TBR310+FCC310+FCB310)	252	5.5	310	390		
	205	9.7	TBC310S (TBR310+BCC1354)	295	5.5	FBC310S (TBR310+FCC310+FCB310)	302	5.5	310	390		
	255	10.4	TBC310S (TBR310+BCC1354)	345	5.5	FBC310S (TBR310+FCC310+FCB310)	352	5.5	310	390		
	85	5.9	TBC385S (TBR385+BCC1354)	175	5.8	FBC385S (TBR385+FCC310+FCB310)	182	5.8	385	465		
	155	7.9	TBC385S (TBR385+BCC1354)	245	5.8	FBC385S (TBR385+FCC310+FCB310)	252	5.8	385	465		
	205	9.7	TBC385S (TBR385+BCC1354)	295	5.8	FBC385S (TBR385+FCC310+FCB310)	302	5.8	385	465		
	255	10.4	TBC385S (TBR385+BCC1354)	345	5.8	FBC385S (TBR385+FCC310+FCB310)	352	5.8	385	465		
	85	5.9	TBC460S (TBR460+BCC1354)	175	12.8	FBC460S (TBR460+FCC310+FCB310)	182	12.8	460	540		
	155	7.9	TBC460S (TBR460+BCC1354)	245	12.8	FBC460S (TBR460+FCC310+FCB310)	252	12.8	460	540		
	205	9.7	TBC460S (TBR460+BCC1354)	295	12.8	FBC460S (TBR460+FCC310+FCB310)	302	12.8	460	540		
	255	10.4	TBC460S (TBR460+BCC1354)	345	12.8	FBC460S (TBR460+FCC310+FCB310)	352	12.8	460	540		

*Bites for FBC are sold separately



FBB Bite (For FBC)



(mm)

Designation		Insert
FBB130 -	C09	CCMT09T3□□, CCGT09T3□□
	C12	CCMT1204□□
	T11	TPMT1103□□, TPGT1103□□

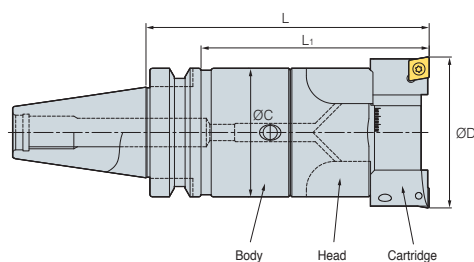
• TBC and DBC cartridges with tip angle of 15°/45° can be purchased by order (45° basis)

Parts

Division	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				BT0660												
TBC265S	TBR265																
TBC310S	TBR310	BCC1354 (BCN1354)	FCC130		BT0660	LW-3	-	-									
TBC385S	TBR385																
TBC460S	TBR460				BT0660												
FBC130S	TBR130																
FBC175S	TBR175	-	FCC310		BT0645				FCB310								
FBC220S	TBR220																
FBC265S	TBR265				BT0660												
FBC310S	TBR310																
FBC385S	TBR385	-	FCC130		BT0645				FCB130								
FBC460S	TBR460																



BT-DBC



(mm)

Designation				Boring range ØD		L	Max. Boring depth
Micro boring head		Body (Basic holder)		Min	Max		
DBC2528S	0.3	BT30-MD25F-90R	0.4	28	35	140	93
DBC3235S	0.4	BT30-MD32F-80R	0.4	35	46	145	114
DBC4046S	0.6	BT30-MD40F-80R	0.5	46	58	150	119
DBC5058S	1.1	BT30-MD50F-70	0.8	58	74	150	128
DBC2528S	0.3	BT40-MD25F-105R	1.9	28	35	165	100
DBC3235S	0.4	BT40-MD32F-115R	2.4	35	46	180	110
DBC4046S	0.6	BT40-MD40F-110R	2.7	46	58	180	130
DBC5058S	1.1	BT40-MD50F-100R	2.7	58	74	180	130
DBC6374S	2.0	BT40-MD63F-90	3.6	74	94	180	150
DBC8094S	3.5	BT40-MD80F-100	4.8	94	120	200	173
DBC2528S	0.3	BT50-MD25F-120R	4.7	28	35	180	100
DBC3235S	0.4	BT50-MD32F-235R	5.3	35	46	300	180
DBC4046S	0.6	BT50-MD40F-230R	5.6	46	58	300	250
DBC5058S	1.1	BT50-MD50F-250R	6.5	58	74	330	280
DBC6374S	2.0	BT50-MD63F-240R	8.4	74	94	330	280
DBC8094S	3.5	BT50-MD80F-175	9.5	94	120	275	225
DBC120S	5.3	BT50-MD80F-175	9.5	120	175	275	235

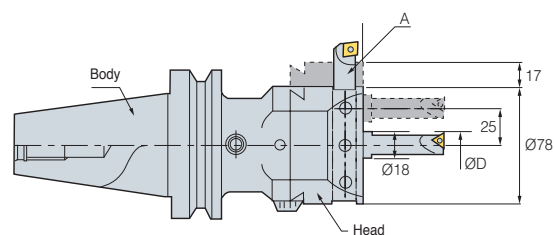
Parts

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	BT0306	LW-1.5	FTKA02565	TRX7
DBC3235S	DBC3235	SP0410	BX0515	LW-4	BCC35	BT0308			
DBC4046S	DBC4046	SP0516	BX0620	LW-5	BCC46	BT0410	LW-2	FTNA0408	TRX15
DBC5058S	DBC5058	SP0616			BCC58	BT0412			
DBC6374S	DBC6374	SP1018	BX0830	LW-6	BCC74	BT0516	LW-2.5	BFTX0511N	TRX20
DBC8094S	DBC8094	SP1020	BX1035	LW-8	BCC94	BT0620	LW-3		
DBC120S	DBC120N	SP1020	BX0830	LW-6.0	BCC120	BT0830	LW-4.0	BFTX0511N	TRX20



BT-KMB

Micro Boring



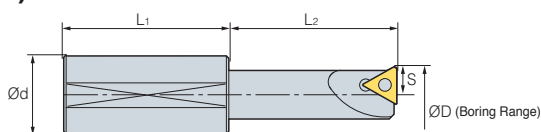
1DIV = Ø0.02mm

(mm)

Designation			Head (Modular)	Boring bite	L	L ₁	
BT40 -	MD63F -	64	KMB6336	BB18-□(S)	141	64	5.5
BT50 -	MD63F -	75	KMB6336	BB18-□(S)	152	75	7.0

Boring head	Bite	MD NO.	L	
KMB6336	BB18-□(S)	BT□□-MD63F	77	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	BFTX0307A
	18-13(S)	13	46	49	97	6.5	40	45	TPGT1103□□L	BFTX0307A
	18-15(S)	15	48	51	99	7.5	40	50	TPGT1103□□L	BFTX0307A
	18-17(S)	17	50	53	101	8.5	40	50	TPGT1103□□L	BFTX0307A

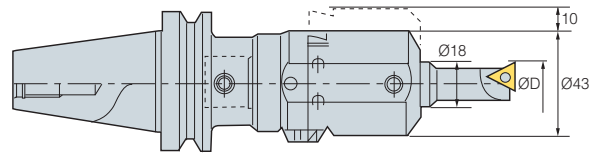
 Parts

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



1DIV = Ø0.02mm

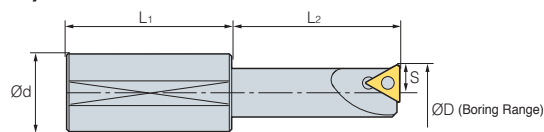
Designation			Head (Modular)	Boring bite	L	L ₁	
BT40 -	MD40F -	60	SMB4022	BB18-O(S)	122.5	60	2.8
BT50 -	MD40F -	60	SMB4022	BB18-O(S)	122.5	60	5.4

(mm)

Boring head	Bite	MD NO.	L	
SMB4022	BB18-O(S)	BTOO-MD40T	62.5	0.6

• Through coolant system not available

⚙ Boring bite: BBtype (For SMB)



Designation		Boring range		S	L ₁	L ₂	Insert	Insert screw
		Min	Max					
BB	18-7(S)	7	27	3.5	30	30	TBGT0601□□L	BFTX0204A
	18-9(S)	9	29	4.5	30	40	TPGT0802□□L	BFTX0204A
	18-11(S)	11	31	5.5	30	45	TPGT1103□□L	BFTX0307A
	18-13(S)	13	33	6.5	40	45	TPGT1103□□L	BFTX0307A
	18-15(S)	15	35	7.5	40	50	TPGT1103□□L	BFTX0307A
	18-17(S)	17	37	8.5	40	50	TPGT1103□□L	BFTX0307A

(mm)

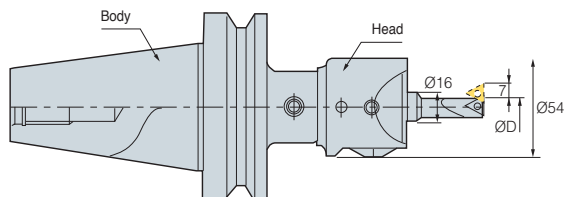
⚙ Parts

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)

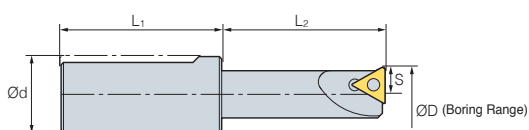


(mm)

Designation			Head (Modular)	Boring bite	L	L ₁	
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	
SMH4022	BB18-O(S)	BTOO-MD40F	49	2.7

• Through coolant system not available

 Boring bite: BBtype (For SMH)


(mm)

Designation		Boring range ØD		S	L ₁	L ₂	Insert	Insert screw	Wrench
		Min	Max						
BB	16-5(S)	5.5	19	2.75	34	20	WBG0601□□L	BFTX0203A	TRX06
	16-7(S)	7	21	3.5	34	30	TBGT0601□□L	BFTX0204A	TRX06
	16-9(S)	9	23	4.5	34	40	TPGT0802□□L	BFTX0204A	TRX06
	16-11(S)	11	25	5.5	34	45	TPGT1103□□L	BFTX0307A	TRX10
	16-15(S)	15	29	7.5	34	50	TPGT1604□□L	BFTX0307A	TRX10
	16-19(S)	19	33	9.5	34	60	TPGT1103□□L	BFTX0410A	TRX15

 Parts

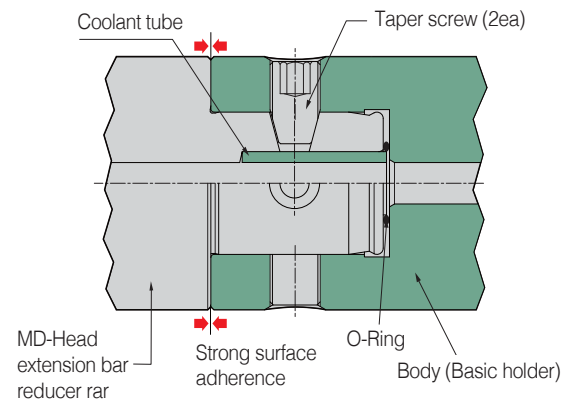
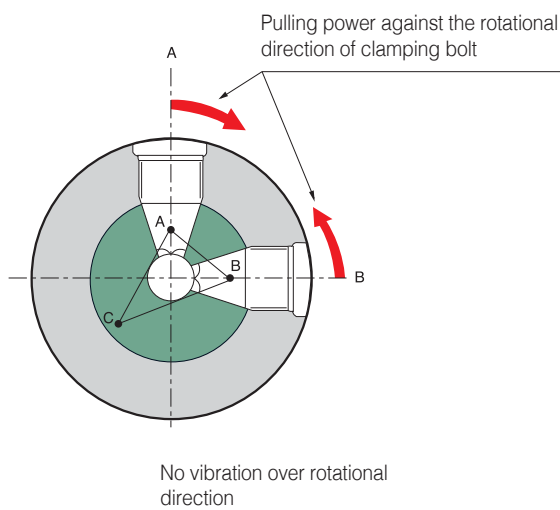
Division	Spare parts				
	Basic			Option	
	Boring head	Taper screw	Wrench	Boring bite	Basic holder
Type					
SMH	SMH4022	BTT1013F	LW-5	BB16	MD40F



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

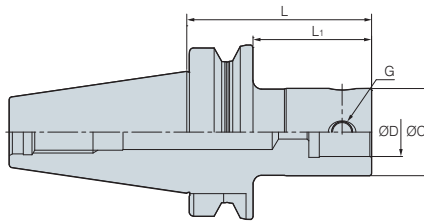


Fig. 1

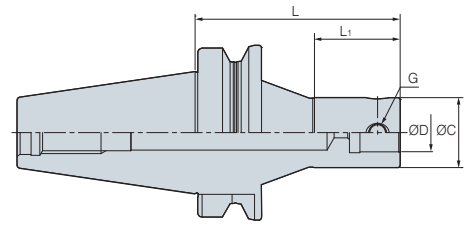


Fig. 2

(mm)

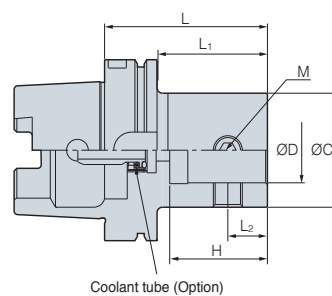
Designation	ØC	ØD	L	L ₁	G	kg	Fig.
BT30 -							
MD19F - 70	19	11	70	45	M5	0.4	1
MD25F - 90	25	14	90	63	M6	0.3	1
MD32F - 80	32	18	80	55	M8	0.4	1
MD40F - 45	40	22	45	22	M8	0.4	1
MD40F - 60	40	22	60	36	M10	0.5	1
MD40F - 80	40	22	80	56	M10	0.5	1
MD50F- 70	50	28	70	48	M12	0.8	3
BT40 -							
MD19F- 70	19	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	4.8	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	6.0	1
MD50F- 225	50	28	225	182	M12	6.4	1
MD50F- 250R	50	28	250	81	M12	6.5	2
MD63F- 75	63	36	75	35	M16	6.0	1
MD63F- 130	63	36	130	87	M16	6.8	1
MD63F- 195	63	36	195	152	M16	8.0	1
MD63F- 230	63	36	230	187	M16	8.4	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

Spare Part 171

• Through coolant system available • Order made body available



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	58	17	36	M12
MD63F - 95	63	36	95	69	22	54	M16

• Through coolant system available

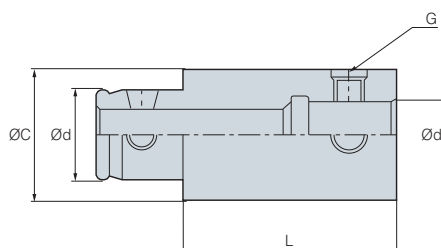
Parts

Division	Spare parts	
	Basic	Option
	Taper screw	Wrench
Type		
MD19F	BTT0506F	LW-2.5
MD25F	BTT0608F	LW-3
MD32F	BTT0810F	LW-4
MD40F	BTT1013F	LW-5
MD50F	BTT1215F	LW-6
MD63F	BTT1620F	LW-8
MD80F	BTT1626F	LW-8
MD90F	BTT1631F	LW-8



EXT

Extension Bar



(mm)

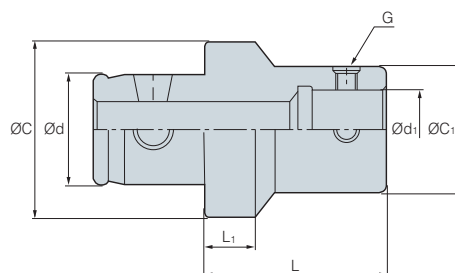
Designation	ØC	Ød	L	Ød ₁	G
EXT - 1930F	19	11	30	11	M5
1950F	19	11	50	11	M5
2530F	25	14	30	14	M6
2550F	25	14	50	14	M6
3235F	32	18	35	18	M8
3260F	32	18	60	18	M8
4040F	40	22	40	22	M10
4090F	40	22	90	22	M12
5050F	50	28	50	28	M12
50100F	50	28	100	28	M12
6360F	63	36	60	36	M16
63120F	63	36	120	36	M16
8070F	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	L ₁	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	63	30	9	M6
6332F	36	32	18	63	30	9	M8
6340F	36	40	22	63	40	10	M10
6350F	36	50	28	63	45	10	M12
8032F	45	32	18	80	30	9	M6
8040F	45	40	22	80	40	10	M10
8050F	45	50	28	80	45	10	M12
8063F	45	63	36	80	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	BTT1626F	SP1020	LW-8
MD90F	BTT1631F	SP1020	LW-8



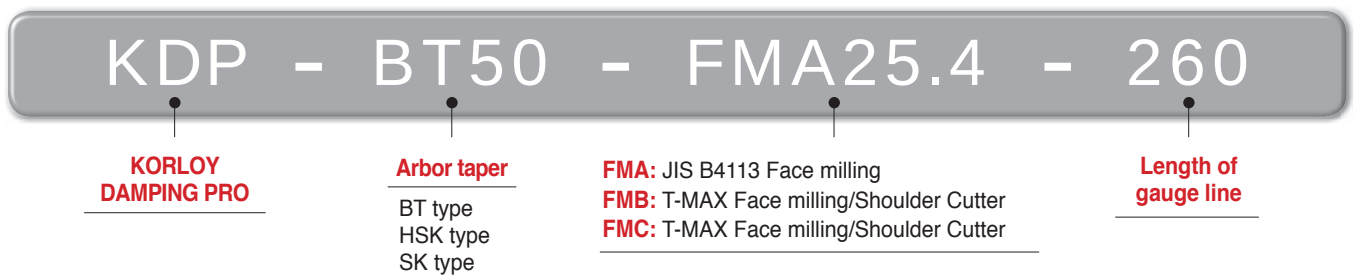


KORLOY Anti-Vibration tool

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



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



BT type



HSK type

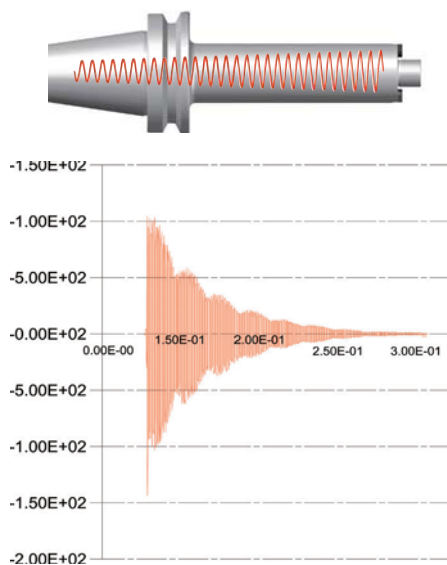


SK type

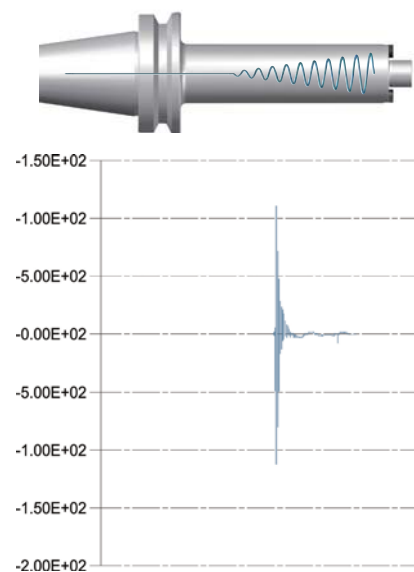
Various types and sizes are applicable

Comparison of vibration damping time

Standard arbor

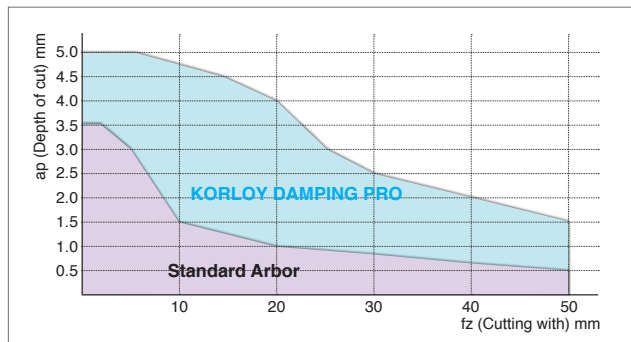


KORLOY DAMPING PRO

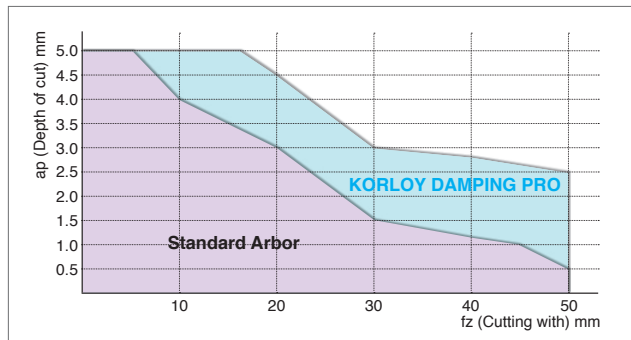


Performance evaluation

- **Cutting condition:** f_z (mm/t) = 0.1
 vc (m/min) = 100
- **Cutter:** AMC4063HS 6flute
- **Arbor:** BT50-FMC22-210 General arbor
KDP-BT50-FMC22-210 Damping pro



- **Cutting condition:** f_z (mm/t) = 0.1
 vc (m/min) = 100
- **Cutter:** FMRC3063HRD-H 6flute
- **Arbor:** BT50-FMC22-210 General arbor
KDP-BT50-FMC22-210 Damping pro



Application examples

Mold machining	Side milling cutter machining	Facing for long depth	Deep-hole Boring machining
			
Better productivity than general arbor	Excellent performance in the deep grooving	Better productivity and surface roughness than general arbor	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**



- **General arbor**
Cutting condition:
 vc (m/min) = 50
 f_z (mm/t) = 0.1
 ae (mm) = 20

- **DAMPING PRO**
Cutting condition:
 vc (m/min) = 100
 f_z (mm/t) = 0.1
 ae (mm) = 20

Big size Crankshaft machining example

- General arbor: ap = 2 mm
- KORLOY DAMPING PRO: ap = 4mm available
- **2 times better productivity**



- **General arbor**
Cutting condition:
 vc (m/min) = 100
 f_z (mm/t) = 0.15
 ap (mm) = 2

- **DAMPING PRO**
Cutting condition:
 vc (m/min) = 100
 f_z (mm/t) = 0.15
 ap (mm) = 4

BT-FMA

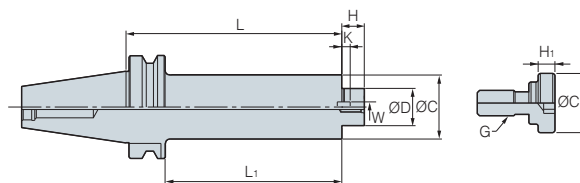


Fig. 1

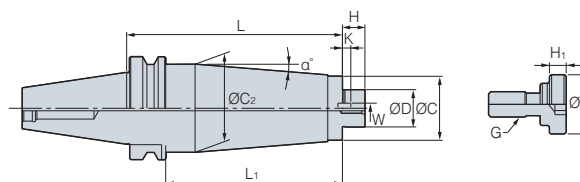


Fig. 2

(mm)

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

Division	Spare parts				
	Basic				Option
	Key	Clamp bolt	Wrench bolt	Wrench bolt	Wrench
Type					
FMA25.4	K9.5(B)	MBA-M12	BX0412	BX1225	LW-10
FMA31.75	K12.7(D)	MBA-M16	BX0515	-	LW-14



BT-FMC

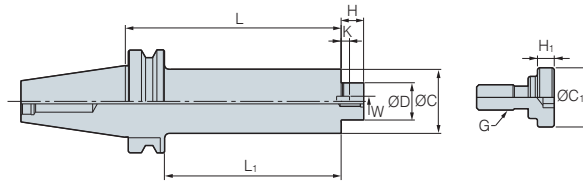


Fig. 1

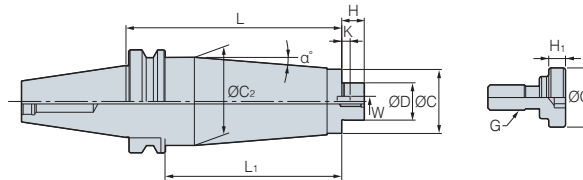


Fig. 2

														(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	183	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	183	60	-	21	12	6.3	M12	6	1	-
	FMC27 -	260	80	27	260	233	60	-	21	12	6.3	M12	7.25	1	-
KDP-BT50 -	FMC16 -	171	40	16	171	133	38	-	17	8	5	M8	5.1	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	282	60	78	21	12	6.3	M12	14.8	2	1
	FMC32 -	210	100	32	210	172	78	-	24	14	7	M16	11.7	1	-
	FMC32 -	260	100	32	260	222	78	-	24	14	7	M16	14.2	1	-
	FMC32 -	330	100	32	330	292	78	-	24	14	7	M16	16.6	1	-

- 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

Division	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

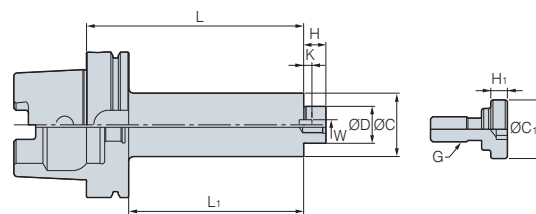


Fig. 1

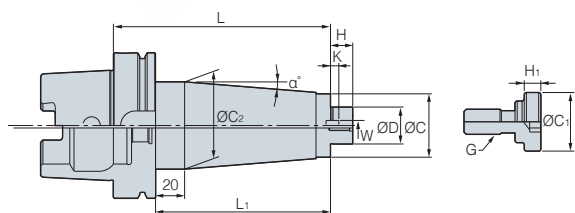


Fig. 2

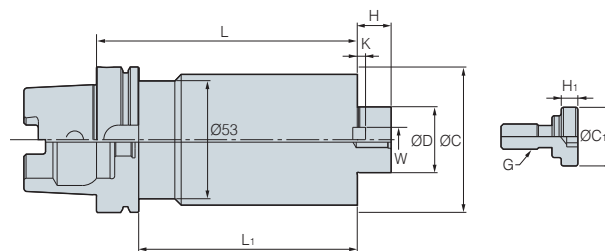


Fig. 3

(mm)

Designation		Cutter dia.	ØD	L	L ₁	ØC	ØC ₂	H	W	K	G	ØC ₁	H ₁		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	184	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

- 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

Division	Spare parts				
	Basic				Option
	Key	Clamp bolt	Wrench bolt	Wrench bolt	Wrench
Type					
FMA25.4	K9.5(B)	MBA-M12	BX0412	BX1230	LW-10
FMA31.75	K12.7(D)	MBA-M16	BX0515	-	LW-14



HSK-FMC

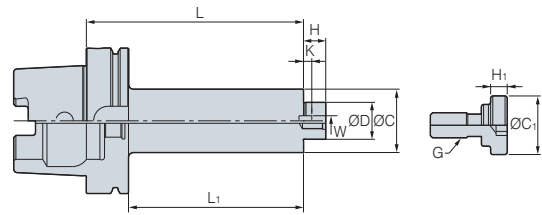


Fig. 1

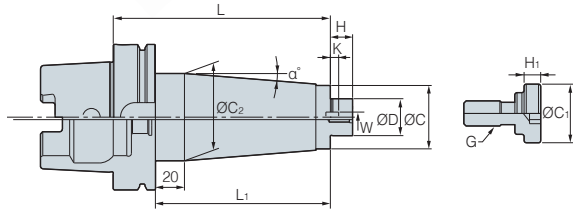


Fig. 2

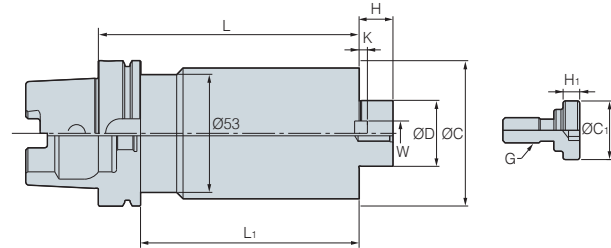


Fig. 3

(mm)															
Designation			Cutter dia.	ØD	L	L ₁	ØC	ØC ₂	H	W	K	G		Fig.	α°
KDP-HSK63 -	FMC16 - 160		40	16	160	134	38	-	17	8	5	M8	2.10	1	-
	FMC22 - 210		50/63	22	210	184	48	4.95	19	10	5.6	M10	3.82	1	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	6.83	2	-
KDP-HSK100 -	FMC16 - 160		40	16	160	131	38	-	17	8	5	M8	3.45	1	-
	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	13.60	3	1
	FMC32 - 210		100	32	210	181	78	-	24	14	7	M16	10.20	1	-
	FMC32 - 260		100	32	260	231	78	-	24	14	7	M16	13.00	1	-
	FMC32 - 330		100	32	330	301	78	-	24	14	7	M16	15.43	1	-

- 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

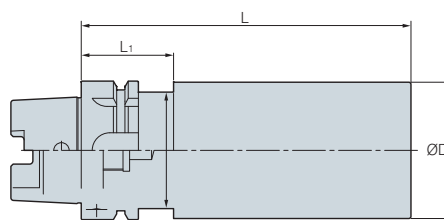
Parts

Division	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



BLK

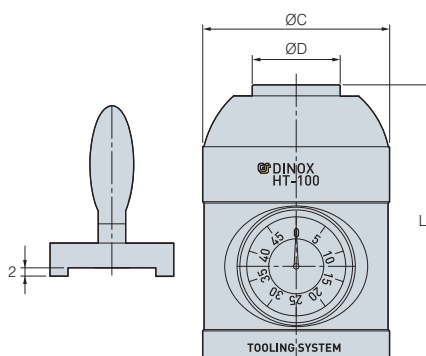
Blank Tool



(mm)

Designation			Ød	ØC	L	L ₁
HSK40A -	BLK42 -	180	42	34	180	35
HSK50A -	BLK52 -	200	52	42	200	42
HSK63A -	BLK63 -	150	63	52	150	42
	BLK63 -	250	63	52	250	42
	BLK82 -	200	82	52	200	42
HSK100A -	BLK102 -	150	102	85	150	45
	BLK102 -	250	102	85	250	45
	BLK126 -	200	126	85	200	45
BT30 -	BLK48 -	180	48	44	180	30
BT40 -	BLK63 -	150	63	61	150	35
	BLK63 -	250	63	61	250	35
	BLK82 -	200	82	61	200	35
BT50 -	BLK102 -	150	102	98	150	48
	BLK102 -	250	102	98	250	48
	BLK126 -	200	126	98	200	48

HT



(mm)

Designation	ØD	ØC	L
HT-100	32	68	100

- Good for setting the Tool length at CNC machine
- No inturference between height Touch setter and Tool makes safe work
- Location Accuracy: ± 0.003 mm



SC Spindle Cleaner



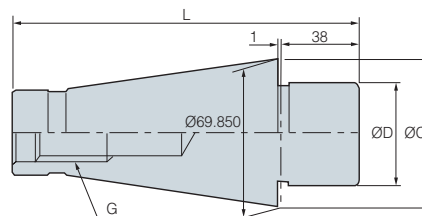
(mm)

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

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

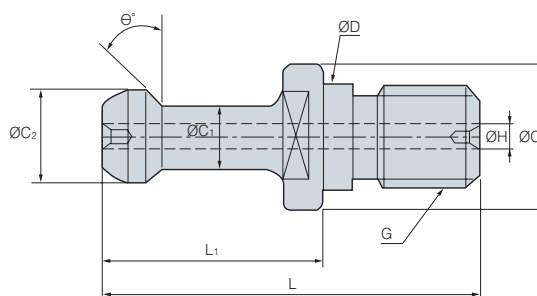


(mm)

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



Pull Stud Bolt



(mm)

Designation	ØD	ØC	ØC ₁	ØC ₂	L ₁	L	θ	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	20.83	28.96	25.2	65.2	45°	M24	Ø10
DIN69872-A50	25	36	21	28	34	74	15°	M24	Ø11.5
P50T-1HS	25	38	17	23	45	85	45°	M24	Ø5.7

