



NC TOOLING SYSTEM

Our company is much delighted at presents the best products and to receive the coning of the High-Speed Age with our customers.

For the customers who use high-speed machine centers, always require high standard products. They emphasized much more on quality, efficiency, cost and safety. Corresponding to these expectations and to satisfy customers' requirements, KOJEX make the best improvements toward this aspect. By provide extensive levels of quality guarantee to let customers feel satisfied.



Technology

Humanity

page



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KOJEX



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01

02



Technology & Humanity



KOJEX, since established in 1988, is specialized in manufacturing tool holders, collets and collet chuck for machine centers and supply the high quality products. By widely reception and approved of both domestic and foreign customers, we feel much consolation and appreciation.

For recent 5 years, we endeavor to develop the collets used on high-speed spindle. Now we have ability to supply the collets for spindle of 120,000 rpm. (accuracy 2μ , safe elasticity over 100,000). As for the problems might happen on high-speed rotary processing: metal transform, gripping power decrease and dynamic balance, we also consider completely for customers during product design and testing. These factors that effect quality, efficiency and safety, finally solved after our many times study and test. We present the latest DC, UC, HEC, SD and HPC high quality series products to satisfy customers' high standard requirements to high-speed machine centers. This is to give customers more confidence and satisfaction. From now on, we expect ourselves to have advanced progress on quality, accuracy, safety and cost. Hope we can achieve good success with customers at the high-Speed Age.



03

04



A DIN 69893 HSK form A

E DIN 69893 HSK form E

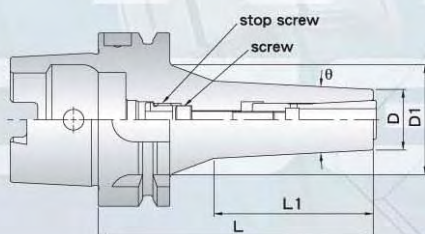
F DIN 69893 HSK form F



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DC Slim Chuck

- Runout : $< 5 \mu\text{m}$ ($4 \times D$)
- Smallest outside diameter in the world : $\varnothing 13$
(Collet inside diameter $\varnothing 2 \sim \varnothing 6$)
- Max speed : 30,000rpm; G2.5.
- Collet chuck designed without nut and with inner-holding collet. This can have strong stiffness rigidity and High stability.



Order Code	Gripping Range	L	L1	D	D1	θ	Spanner	Screw	Stop Screw	Max rpm
HSK63A-DC6-75	2~6	75	34	13	--	6°	30194~642(M4)	M5L20	OP-M10	30,000
DC6-95	2~6	95	45	13	46	6°	30194~642(M4)	M5L20	OP-M10	30,000
DC6-120	2~6	120	53	13	48	6°	30194~642(M4)	M5L40	OP-M10	30,000
DC6-150	2~6	150	80	13	45	6°	30194~644(M4)	M5L80	OP-M10	30,000
DC8-100	3~8	100	58	22	48	6°	30194~653(M5)	M6L25	OP-M12	30,000
DC10-110	3~10	110	55	28	48	--	30194~663(M6)	M8L30	OP-M16	30,000
DC12-120	3~12	120	55	34	50	--	30194~683(M8)	M10L35	OP-M18	30,000

Spanner

Screw

Stop Screw



Order Code	mm	L
30194-642	4	100
-644	4	200
-653	5	150
-663	6	150
-683	8	150

Order Code	Thread	L
M5L20	M5	20
M5L40	M5	40
M5L80	M5	80
M6L25	M6	25
M8L30	M8	30
M10L35	M10	35

Order Code	Thread
OP-M10	M10(L)
OP-M12	M12(L)
OP-M16	M16(L)
OP-M18	M18(L)

thread of stop screw is leftward

A

DC-E Collet (for end mill)

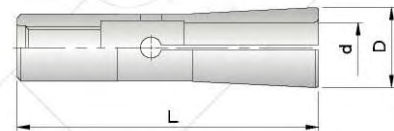
- The design of DC-E collets is emphasized on increase the clamping force of end mills.

Runout < 5 μ m



Set of SD-E Collets

Order Code	ϕd	Quantity
SDC10E-5	3, 4, 6, 8, 10	5 pcs
SDC12E-6	3, 4, 6, 8, 10, 12	6 pcs



Order Code		L	ϕD
Collet series	ϕd		
DC6-	3E, 3.175E, 4E, 6E, 6.35E	36	9.6
DC8-	3E, 4E, 6E, 8E	45	15
DC10-	3E, 4E, 6E, 8E, 10E	52	19.1
DC12-	3E, 4E, 5E, 6E, 8E, 10E, 12E	60	22

order example : DC6-3E 2pcs

DC Collet

- DC6 collets can clamp any type of drills, reamers and taps below $\phi 6$ mm.
- Gripping range of each type of collets is 0.25mm.



Order Code		L	ϕD
Collet series	ϕd		
DC6-	2, 2.25, 2.5, 2.75, 3, 3.25	36	9.8
	3.5, 3.75, 4, 4.25, 4.5, 4.75		
	5, 5.25, 5.5, 5.75, 6		

order example : DC6-3 2pcs

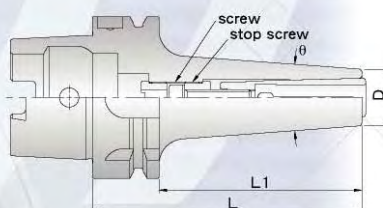
Set of DC6 Collets

Order Code	Collets	Quantity
SDC6-17	2~6	17 pcs



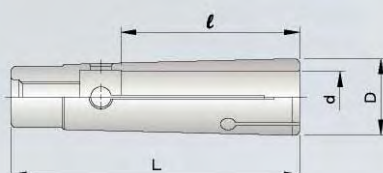
UC Gold Chuck

- Designed with inner-holding collet without nut can have strong stiffness rigidity and high stability.
- Suitable for end mills and reamer have the same shank diameter as end mills.
- Runout < 5 μ m (4xD)



Order Code	Gripping Range	L	L1	D	θ	Spanner	Screw	Stop Screw	Max rpm
HSK63A-UC10-110	3~10	110	74	22	10°	30194~653(M5)	M6L30	OP-M12Ax2	30,000

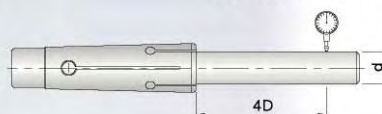
UC Collet



When put end mill into collet must reach length "l" to get best performance.

Order Code	d	l	D	L
UC10-3	3	15	15	56.5
4	4	20		
5	5	20		
6	6	25		
8	8	30		
10	10	35		

Runout < 5 μ m



Spanner

Screw

Stop Screw



Order Code	mm	L
30194-653	5	150



Order Code	Thread	L
M6L30	M6	30



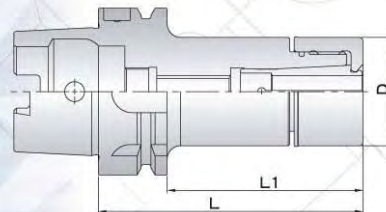
Order Code	Type
OP-M12A	Hexagon Socket

thread of stop screw is leftward

HEC High-Speed E Chuck - AM TYPE

Best choice for holding end mill !

- Collets specially designed for end mills. Long type collets with small angle enhance the stiffness rigidity and clamping force on end mills.
- Without use any tools on insert collet into nut and take off collet from nut. Nuts have precision processing after heat treatment can improve the balance value. During high speed cutting will not caused vibration.
- The unique design of HEC Collet chuck is that coolant can spurt out from the collet slot.
- Runout : $< 5 \mu m (4 \times D)$

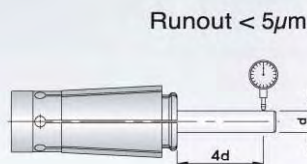
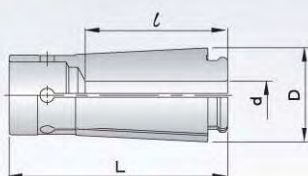


Order Code	Gripping Range	L	L1	D	Nut	Spanner	Max rpm
HSK63A-HEC8-75AM	3~8	75	49	30	CN-HEC8AM	SP-SR30	30,000
HEC8-100AM	3~8	100	74	30	CN-HEC8AM	SP-SR30	30,000
HEC12-75AM	3~12	75	49	42	CN-HEC12AM	SP-SR42	30,000
HEC12-100AM	3~12	100	74	42	CN-HEC12AM	SP-SR42	30,000

spanner and stop screw must be ordered separately

HEC Collet

- When put end mill into collet must reach length "L" to get best performance.
- Runout: $< 5 \mu m (4 \times D)$



Order Code	d	ℓ	D	L
HEC8-3	3	15	15.6	35
4	4	20		
5	5	25		
6	6	25		
8	8	25	20	46
HEC12-3	3	15		
4	4	20		
5	5	25		
6	6	30		
8	8	34		
10	10	34		
12	12	34		



HEC Nut-AM Type

HEC Spanner-AM Type



Order Code	outside dia.
CN-HEC8AM	30
CN-HEC12AM	42

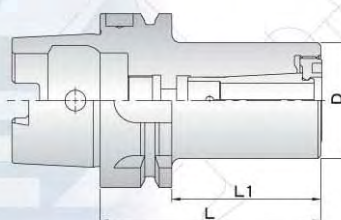


Order Code	interior dia.
SP-SR30	30
SP-SR42	42

HEC High-Speed E Chuck - B TYPE

Extra Short / Extra Strong
Best choice for holding end mill!

- Collets specially designed for end mills. Long type collets with small angle enhance the stiffness rigidity and clamping force on end mills.
- Without use any tools on insert collet into nut and take off collet from nut.
- The unique design of HEC Collet chuck is that coolant can spurt out from the collet slot.
- Runout : $< 5 \mu m$ ($4 \times D$)

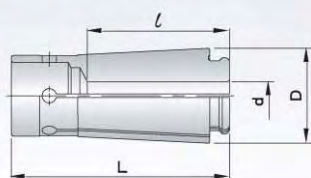


Order Code	L	L1	D	Collet	Nut	Spanner	Max rpm
HSK63A-HEC12B-80	80	54	42	HEC12	CN-HEC12B	SP-HEC12B	30,000

spanner must be ordered separately

HEC Collet

- When put end mill into collet must reach length "l" to get best performance.
- Runout: $< 5 \mu m$ ($4 \times D$)



Runout $< 5 \mu m$



Order Code	d	l	D	L
HEC12-3	3	15	20	46
4	4	20		
5	5	25		
6	6	30		
8	8	34		
10	10	34		
12	12	34		



HEC Nut-B Type



Order Code
CN-HEC12B

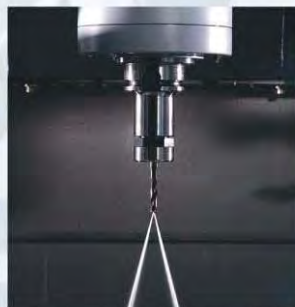
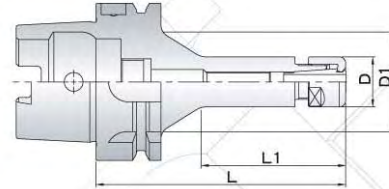
HEC Spanner-B Type



Order Code
SP-HEC12B

SD Plus Chuck

- SD collet designed with angle 8° smaller than ER Collet 16°. Gripping Torque raises 2 times.
- Without use any tools on insert collet into nut and take off collet from nut.



F Type Collet



E & D Type Collet

Order Code	Gripping Range	L	L1	D	D1	Nut	Spanner	Stop Screw	Max rpm
HSK63A-SD6-70	2~6	70	44	20	--	CN-SD6	30194-917	--	20,000
SD6-100	2~6	100	58	20	40	CN-SD6	30194-917	--	20,000
SD10-70	3~10	70	44	29	--	CN-SD10	30194-925	ASG-12/ASG-12H	20,000
SD10-100	3~10	100	74	29	--	CN-SD10	30194-925	ASG-12/ASG-12H	20,000
SD16-100	3~16	100	74	41	--	CN-SD16	30194-936	ASG-18/ASG-18H	15,000
SD20-100	4~20	100	74	50	--	CN-SD20	30194-702	ASG-22/ASG-22H	15,000
SD25-100	6~25	100	74	55	--	CN-SD25	30194-703	ASG-28/ASG-28H	15,000

spanner and stop screw must be ordered separately

Nut

Spanner

Stop Screw

Fig.1



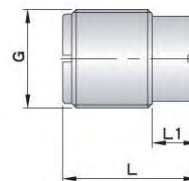
Fig.2



Fig.1



Fig.2



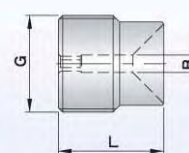
Order Code	L	L1	Holder System
ASG-12	25	10	SD10
ASG-18	30	10	SD16
ASG-22	30	10	SD20
ASG-28	30	10	SD25

thread of stop screw is leftward

Stop Screw with coolant hole

Order Code	Fig	outside dia.
CN-SD6	1	20
CN-SD10	1	29
CN-SD16	1	41
CN-SD20	2	50
CN-SD25	2	55

Order Code	Fig	Type
30194-917	1	SP-SD6
30194-925	1	SP-SD10
30194-936	1	SP-SD16/HEC12
30194-702	2	SP-SD20
30194-703	2	SD-SD25



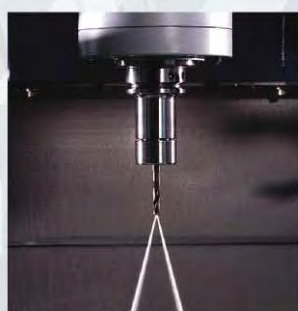
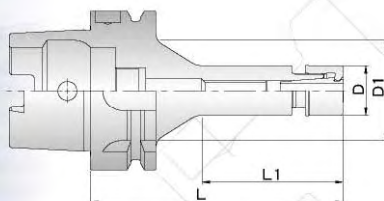
Order Code	L	Spanner(B)	Holder System
ASG-12H	20	3	SD10
ASG-18H	20	4	SD16
ASG-22H	24	4	SD20
ASG-28H	30	4	SD25

thread of stop screw is leftward

SD Plus Chuck - AM TYPE

A

- SD collet designed with angle 8° smaller than ER Collet 16°. Gripping Torque raises 2 times.
- Without use any tools on insert collet into nut and take off collet from nut.



F Type Collet



E & D Type Collet

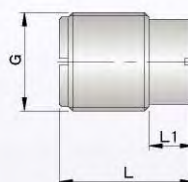
Order Code	Gripping Range	L	L1	D	D1	Nut	Spanner	Stop Screw	Max rpm
HSK63A-SD10-70AM	3~10	70	44	29	--	CN-SD10AM	SP-SR30	ASG-12/ASG-12H	30,000
SD10-100AM	3~10	100	74	29	--	CN-SD10AM	SP-SR30	ASG-12/ASG-12H	30,000
SD16-100AM	3~16	100	74	41	--	CN-SD16AM	SP-SR42	ASG-18/ASG-18H	30,000

spanner and stop screw must be ordered separately

Nut-AM Type

Spanner-AM Type

Stop Screw



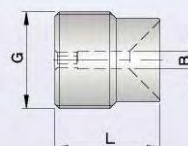
Order Code	L	L1	Holder System
ASG-12	25	10	SD10
ASG-18	30	10	SD16

thread of stop screw is leftward

Stop Screw with coolant hole

Order Code	outside dia.
CN-SD10AM	30
CN-SD16AM	42

Order Code	interior dia.
SP-SR30	30
SP-SR42	42



Order Code	L	Spanner(B)	Holder System
ASG-12H	20	3	SD10
ASG-18H	20	4	SD16

thread of stop screw is leftward

Collet SD, SD-E and SD-F

A

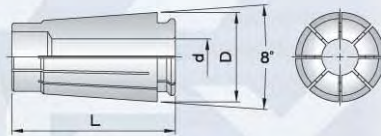
SD Collet

- Gripping range is 0.25mm for collets below 3mm. Collets larger than 3mm, the gripping range is 0.5mm.
- Collets with 5 series, can grip drills, taps, reamers and end mills between 1.75mm-25mm.



Collet level	Runout
AA	3μm
A	7μm

Please specify accuracy level "AA" or "A" when ordering collets.



Order Code		D	L
Collet series	ød		
SD6-	2, 2.25, 2.5, 2.75, 3, 3.5, 4, 4.5, 5, 5.5, 6	10.55	25
SD10-	2, 2.25, 2.5, 2.75, 3, 3.5, 4, 4.5, 5, 5.5, 6 6.5, 7, 7.5, 8, 8.5, 9, 9.5, 10	15.60	30
SD16-	4, 4.5, 5, 5.5, 6, 6.5, 7, 7.5, 8, 8.5, 9 9.5, 10, 10.5, 11, 11.5, 12, 12.5, 13, 13.5 14, 14.5, 15, 15.5, 16	24.6	45

order example : SD10-6 AA 2pcs



Set of SD Collet

Order Code	Collet	Quantity
SSD6-11	ø2~ø6	11 pcs
SSD10-19	ø2~ø10	19 pcs
SSD16-25	ø4~ø16	25 pcs

SD-E Collet (for end mill)

- Gripping torque of SD-E collets is 20% more than SD Collets. Can reach high stability during milling.

Order Code		D	L
Collet series	ød		
SD6-	3E, 4E, 6E	10.55	25
SD10-	3E, 3.175E, 4E, 6E, 8E, 10E	15.6	30
SD16-	3E, 4E, 6E, 8E, 10E, 12E, 16E	24.6	45
SD20-	4E, 6E, 8E, 10E, 12E, 16E, 20E	30	50
SD25-	6E, 8E, 10E, 12E, 16E, 20E, 25E	35.6	57

order example : SD10-6E AA 2pcs



Set of SD-E Collet

Order Code	Collet	Quantity
SSD10E-5	3, 4, 6, 8, 10	5 pcs
SSD16E-7	3, 4, 6, 8, 10, 12, 16	7 pcs
SSD20E-7	4, 6, 8, 10, 12, 16, 20	7 pcs
SSD25E-7	6, 8, 10, 12, 16, 20, 25	7 pcs

SD-F Collet (for coolant supply)

- SD-F collet provide through-coolant capability.
- Collant will out through center of tools.

Order Code		D	L
Collet series	ød		
SD10-	3F, 4F, 6F, 8F, 10F	15.6	30
SD16-	6F, 8F, 10F, 12F, 16F	24.6	45

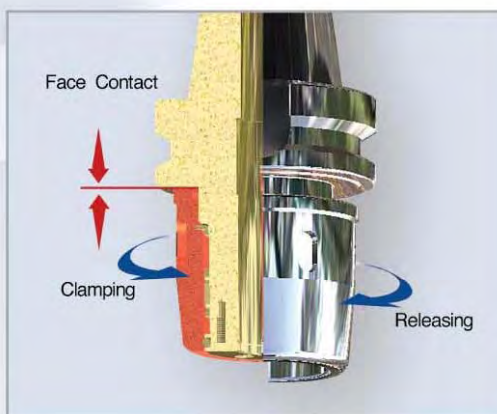
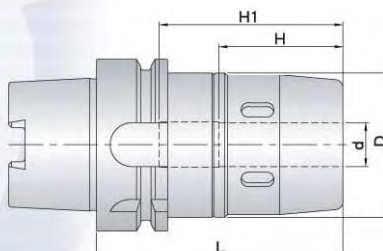
order example : SD10-6F 2pcs

HPC High-Speed Powergrip Chuck

--needle roller bearing inside

Best choice for holding end mill!

- Runout : $< 5 \mu\text{m}$ ($4 \times D$)
- Max speed : 30,000 r.p.m, G2.5
- Design by needle roller bearing, it can bring powerful clamping force.
- For arriving the best effective cutting result, no collet is better.
- HPC chuck uses best steel materials with sub-zero treatment.



Order Code	L	D	d	H	H1	Spanner	Max rpm
HSK63A-HPC12-85	85	43	12	43	60	30194-702	30,000
HPC16-90	90	53	16	43	60	30194-703	30,000
HPC20-105	105	57	20	47	75	30194-703	30,000
HPC25-110	110	62	25	57	80	30194-704	30,000

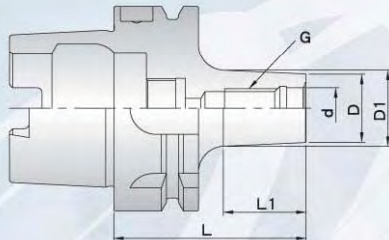
Remark : H = min tool length / H1 = max tool length

Spanner



Order Code	Type
30194-702	SP-HPC12
30194-703	SP-HPC16/SP-HPC-20
30194-704	SP-HPC25

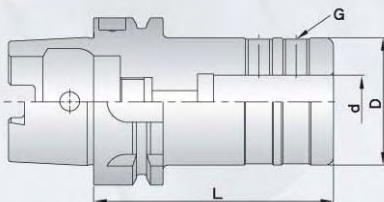
Screw Fit Adaptor



Order Code	L	L1	D	D1	d	G
HSK63A-AT8-25	59	25	13	15	8.5	M8
AT8-50	84	50	13	23	8.5	M8
AT10-25	59	25	18	20	10.5	M10
AT10-50	84	50	18	25	10.5	M10
AT12-25	59	25	21	24	12.5	M12
AT12-50	84	50	21	25.6	12.5	M12
AT12-75	109	75	21	27.8	12.5	M12
AT16-25	59	25	29	33	17	M16
AT16-50	84	50	29	33.4	17	M16
AT16-75	109	75	29	34	17	M16
AT16-100	134	100	29	39	17	M16



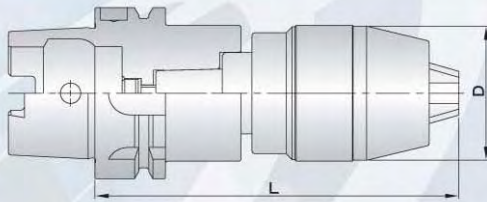
Side Lock Adaptor



Order Code	L	d	D	G
HSK63A-TSL20-90	90	20	48	M10 x 2
TSL25-90	90	25	48	M10 x 2
TSL32-90	90	32	63	M16 x 2



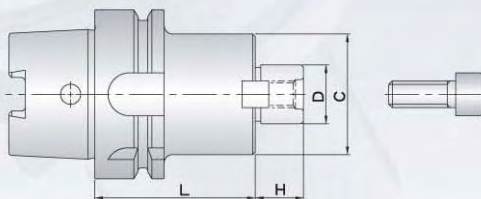
Drill Chuck Adaptor



Order Code	Range	L	
		min	max
HSK63A-KPU08-110	0-8	106	113
KPU13-130	1-13	125	132



Face Mill Arbor

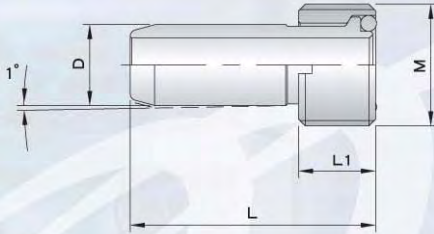


Order Code	D(h6)	L	C	H
HSK63A-FMC22-60	22	60	45	18
FMC27-60	27	60	60	20



A

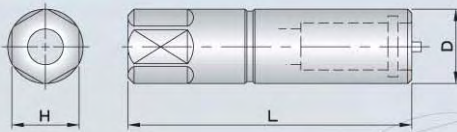
Coolant Supply Unit



Order Code	L1	L2	D	M
HSK63A-M18	36	11.4	12	M18 P1.5



Coolant Supply Unit Wrench

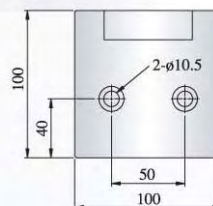


Order Code	L	D	H
HSK63A-T17	72	19	17



Tool Locking Fixture-for holding outside Diameter(D)

Order Code	D	Holder Type
HL-HSK40	40	HSK40A / HSK40E
HL-HSK50	50	HSK50A / HSK50E NSK30
HL-HSK63	63	HSK63A / HSK63E HSK63F
HL-NBT30	46	NBT30
HL-BT30	46	BT30
HL-BT40	63	BT40



HEC High-Speed E Chuck - AM TYPE

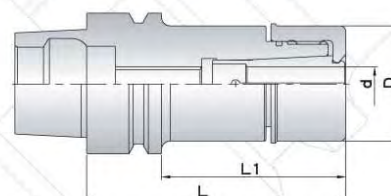
Best choice for holding end mill!

- Collets specially designed for end mills. Long type collets with small angle enhance the stiffness rigidity and clamping force on end mills.
- Without use any tools on insert collet into nut and take off collet from nut.
- Nuts have precision processing after heat treatment can improve the balance value. During high speed cutting will not caused vibration.
- The unique design of HEC collet chuck is that coolant can spurt out from the collet slot.
- Runout : $<5 \mu\text{m}$ ($4 \times D$)



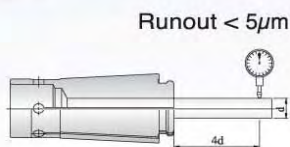
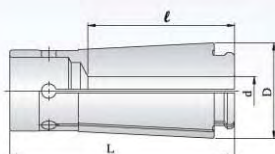
Order Code	Gripping Range	L	L1	D	Max rpm
HSK40E-HEC8-55AM	3~8	55	35	30	40,000
HEC8-70AM	3~8	70	50	30	40,000
HEC12-75AM	3~12	75	55	42	40,000
HSK50E-HEC8-60AM	3~8	60	34	30	30,000
HEC8-80AM	3~8	80	54	30	30,000
HEC12-70AM	3~12	70	44	42	30,000
HEC12-90AM	3~12	90	64	42	30,000

spanner and stop screw must be ordered separately



HEC Collet

- Runout : $<5 \mu\text{m}$ ($4 \times D$)
- When put end mill into collet must reach length " ℓ " to get best performance.



Order Code	d	ℓ	L	D
HEC8-3	3	15	35	15.6
4	4	20		
5	5	25		
6	6	25		
8	8	25	46	20
HEC12-3	3	15		
4	4	20		
5	5	25		
6	6	30		
8	8	34		
10	10	34		
12	12	34		



HEC Nut-AM Type



Order Code	outside dia.
CN-HEC8AM	30
CN-HEC12AM	42

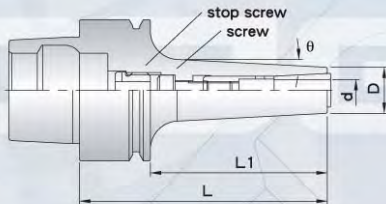
HEC Spanner-AM Type



Order Code	interior dia.
SP-SR30	30
SP-SR42	42

DC Slim Chuck

- Runout : $<5 \mu\text{m}$ ($4 \times D$)
- Smallest outside diameter in the world : $\varnothing 13$
(Collet inside diameter $\varnothing 1.75 \sim \varnothing 6$)
- Max speed : 40,000 rpm; G2.5.
- Collet chuck designed without nut and with inner-holding collet. This can have strong stiffness rigidity and high stability.



Order Code	Gripping Range	L	L1	D	θ	Spanner	Screw	Stop Screw	Max rpm
HSK40E-DC6-70	2~6	70	50	13	6°	30194~642(M4)	M5L16	OP-M10	40,000
DC8-80	3~8	80	60	20	6°	30194~653(M5)	M6L25	OP-M12	40,000
HSK50E-DC6-75	2~6	75	49	13	6°	30194~642(M4)	M5L20	OP-M10	30,000
DC8-80	3~8	80	54	20	6°	30194~653(M5)	M6L25	OP-M12	30,000
DC10-95	3~10	95	69	28	6°	30194~663(M6)	M8L30	OP-M16	30,000

Spanner

Screw

Stop Screw



Order Code	mm	L
30194-642	4	100
-653	5	150
-663	6	150

Order Code	Thread	L
M5L16	M5	16
M5L25	M5	25
M6L25	M6	25
M8L30	M8	30

Order Code	Thread
OP-M10	M10(L)
OP-M12	M12(L)
OP-M16	M16(L)

thread of stop screw is leftward

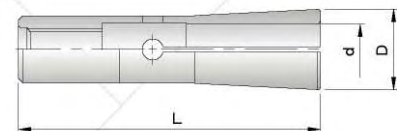
DC-E Collet (for end mill)

- The design of DC-E collets is emphasized on increase the clamping force of end mills.



Set of DC-E Collets

Order Code	φd	Quantity
SDC10E-5	3, 4, 6, 8, 10	5 pcs



Order Code		L	φD
Collet series	φd		
DC6-	3E, 3.175E, 4E, 6E, 6.35E	36	9.6
DC8-	3E, 4E, 6E, 8E	45	15
DC10-	3E, 4E, 6E, 8E, 10E	52	19.1

order example : DC6-3E 2pcs

DC Collet

- DC6 collets can clamp any type of drills, reamers and taps below φ6mm.
- Gripping range of each type of collets is 0.25mm.



Order Code		L	D
Collet series	φd		
DC6-	2, 2.25, 2.5, 2.75, 3, 3.25 3.5, 3.75, 4, 4.25, 4.5, 4.75 5, 5.25, 5.5, 5.75, 6	36	9.8

order example : DC6-4 2pcs

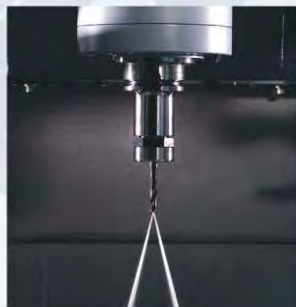
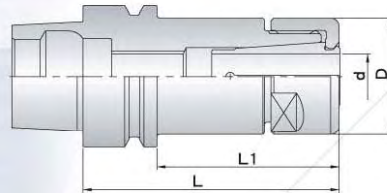


Set of DC6 Collets

Order Code	Collets	Quantity
SDC6-17	2~6	17 pcs

SD Plus Chuck

- SD collet designed with angle 8° smaller than ER Collet 16°. Gripping Torque raises 2 times.
- Without use any tools on insert collet into nut and take off collet from nut.
- Max speed : 30,000 rpm; G2.5



F Type Collet



E & D Type Collet

Order Code	Gripping Range	L	L1	D	Max rpm	Nut	Spanner	Stop Screw
HSK40E-SD6-60	2~6	60	40	20	30,000	CN-SD6	30194-917	—
SD10-70	2~10	70	50	29	30,000	CN-SD10	30194-925	ASG-12/ASG-12H
SD16-90	3~16	90	70	41	30,000	CN-SD16	30194-936	ASG-18/ASG-18H
HSK50E-SD10-70	2~10	70	44	29	20,000	CN-SD10	30194-925	ASG-12/ASG-12H
SD16-90	3~16	90	64	41	20,000	CN-SD16	30194-936	ASG-18/ASG-18H

spanner and stop screw must be ordered separately

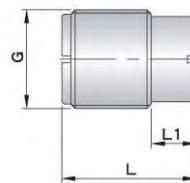
Nut



Spanner



Stop Screw



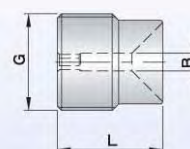
Order Code	L	L1	Holder System
ASG-12	25	10	SD10
ASG-18	30	10	SD16

thread of stop screw is leftward

Stop Screw with coolant hole

Order Code	outside dia.
CN-SD6	20
CN-SD10	29
CN-SD16	41

Order Code	Type
30194-917	SP-SD6
30194-925	SP-SD10
30194-936	SP-SD16/HEC12

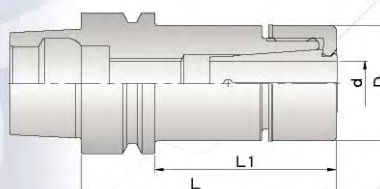


Order Code	L	Spanner(B)	Holder System
ASG-12H	20	3	SD10
ASG-18H	20	4	SD16

thread of stop screw is leftward

SD Plus Chuck - AM TYPE

- SD collet designed with angle 8° smaller than ER Collet 16°. Gripping Torque raises 2 times.
- Without use any tools on insert collet into nut and take off collet from nut.
- Max speed : 40,000 rpm; G2.5



F Type Collet



E & D Type Collet

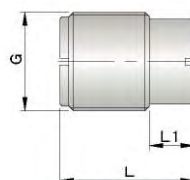
Order Code	Gripping Range	L	L1	D	Max rpm	Nut	Spanner	Stop Screw
HSK40E-SD10-70AM	2~10	70	50	29	40,000	CN-SD10AM	SP-SR30	ASG-12/ASG-12H
SD16-90AM	3~16	90	70	41	40,000	CN-SD16AM	SP-SR42	ASG-18/ASG-18H
HSK50E-SD10-70AM	2~10	70	44	29	30,000	CN-SD10AM	SP-SR30	ASG-12/ASG-12H
SD16-90AM	3~16	90	64	41	30,000	CN-SD16AM	SP-SR42	ASG-18/ASG-18H

spanner and stop screw must be ordered separately

Nut-AM Type

Spanner-AM Type

Stop Screw



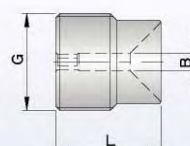
Order Code	L	L1	Holder System
ASG-12	25	10	SD10
ASG-18	30	10	SD16

thread of stop screw is leftward

Stop Screw with coolant hole

Order Code	outside dia.
CN-SD10AM	30
CN-SD16AM	42

Order Code	interior dia.
SP-SR30	30
SP-SR42	42



Order Code	L	Spanner(B)	Holder System
ASG-12H	20	3	SD10
ASG-18H	20	4	SD16

thread of stop screw is leftward

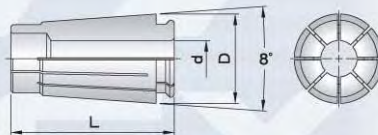
SD Collet

- Gripping range is 0.25mm for collets below 3mm. Collets larger than 3mm, the gripping range is 0.5mm.
- Collets with 5 series, can grip drills, taps, reamers and end mills between 1.75mm-25mm.



Collet level	Runout
AA	3 μ m
A	7 μ m

Please specify accuracy level "AA" or "A" when ordering collets.



Order Code		D	L
Collet series	ϕd		
SD6-	2, 2.25, 2.5, 2.75, 3, 3.5, 4, 4.5, 5, 5.5, 6	10.55	25
SD10-	2, 2.25, 2.5, 2.75, 3, 3.5, 4, 4.5, 5, 5.5, 6, 6.5, 7, 7.5, 8, 8.5, 9, 9.5, 10	15.60	30
SD16-	4, 4.5, 5, 5.5, 6, 6.5, 7, 7.5, 8, 8.5, 9, 9.5, 10, 10.5, 11, 11.5, 12, 12.5, 13, 13.5, 14, 14.5, 15, 15.5, 16	24.6	45

order example : SD10-6 AA 2pcs



Set of SD Collet

Order Code	Collet	Quantity
SSD6-11	$\phi 2 \sim \phi 6$	11 pcs
SSD10-19	$\phi 2 \sim \phi 10$	19 pcs
SSD16-25	$\phi 4 \sim \phi 16$	25 pcs

SD-E Collet (for end mill)

- Gripping torque of SD-E Collets is 20% more than SD Collets.
- Can reach high stability during milling.

Order Code		D	L
Collet series	ϕd		
SD6-	3E, 4E, 6E	10.55	25
SD10-	3E, 3.175E, 4E, 6E, 8E, 10E	15.60	30
SD16-	3E, 4E, 6E, 8E, 10E, 12E, 16E	24.6	45

order example : SD10-6E AA 2pcs



Set of SD-E Collet

Order Code	Collet	Quantity
SSD10E-5	3, 4, 6, 8, 10	5 pcs
SSD16E-7	3, 4, 6, 8, 10, 12, 16	7 pcs

SD-F Collet (for coolant supply)

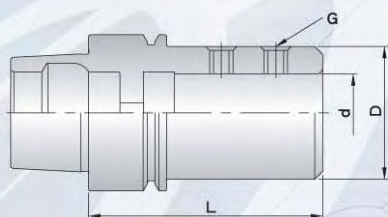
- SD-F collet provide through-coolant capability
- Collant will out through center of tools

Order Code		D	L
Collet series	ϕd		
SD10-	3F, 4F, 6F, 8F, 10F	15.6	30
SD16-	6F, 8F, 10F, 12F, 16F	24.6	45

order example : SD10-6F 2pcs



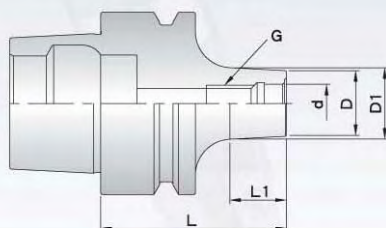
Sidelock Holder --for 3D-taster



Order Code	D	d	L	G
HSK40E-ASL20-60	34	20	60	M6 x 2
HSK50E-ASL20-60	40	20	60	M6 x 2



Screw Fit Adaptor



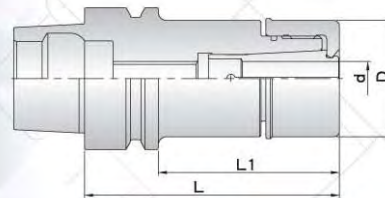
Order Code	L	L1	D	D1	d	G
HSK50E-AT8-25	59	25	13	15	8.5	M8
AT10-25	59	25	18	20	10.5	M10



HEC High-Speed E Chuck -AM TYPE

Best choice for holding end mill !

- Collets specially designed for end mills. Long type collets with small angle enhance the stiffness rigidity and clamping force on end mills.
- Without use any tools on insert collet into nut and take off collet from nut.
- Nuts have precision processing after heat treatment can improve the balance value. During high speed cutting will not caused vibration.
- The unique design of HEC Collet chuck is that coolant can spurt out from the collet slot.
- Runout : $< 5 \mu m (4 \times D)$

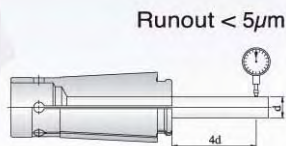
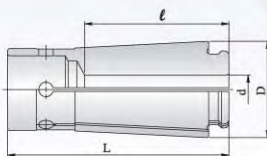


Order Code	Gripping Range	L	L1	D	Max rpm	Nut	Spanner
HSK63F-HEC8-75AM	3~8	75	49	30	40,000	CN-HEC8AM	SP-SR30
HEC12-75AM	3~12	75	49	42	40,000	CN-HEC12AM	SP-SR42

spanner and stop screw must be ordered separately

HEC Collet

- Runout : $< 5 \mu m (4 \times D)$
- When put end mill into collet must reach length " l " to get best performance.



Order Code	d	l	L	D
HEC8-3	3	15		
4	4	20		
5	5	25	35	15.6
6	6	25		
8	8	25		
HEC12-3	3	15		
4	4	20		
5	5	25	46	20
6	6	30		
8	8	34		
10	10	34		
12	12	34		



HEC Nut-AM Type

HEC Spanner-AM Type



Order Code	outside dia.
CN-HEC8AM	30
CN-HEC12AM	42



Order Code	interior dia.
SP-SR30	30
SP-SR42	42



BT MAS BT (JIS B 6339)

NBT BT30 Holder Without Keyway



www.kojex.com.tw

DC Slim Chuck

- Runout : $<5 \mu\text{m}$ ($4 \times D$)
- Smallest outside diameter in the world : $\phi 13$
(Collet inside diameter $\phi 1.75 \sim \phi 6$)
- Max speed : 30,000 rpm; G2.5.
- Collet chuck designed without nut and with inner-holding collet. This can have strong stiffness rigidity and high stability.

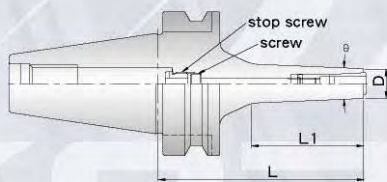


Fig.1

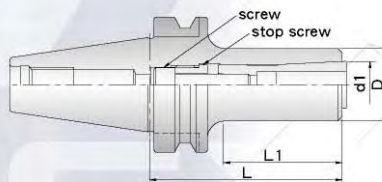


Fig.2



Order Code	Gripping Range	L	L1	D	θ	Fig	Collet	Spanner	Max rpm	Screw	Stop Screw
BT30-DC6-60	2~6	60	26	13	3°	1	DC6	30194~642(M4)	30,000	M5L40	OP-M10
DC6-90	2~6	90	50	13	3°	1	DC6	30194~642(M4)	30,000	M5L40	OP-M10
DC12-70	3~12	70	45	34	--	2	DC12	30194~683(M8)	30,000	M10L35	OP-M18
BT40-DC6-60	2~6	60	26	13	3°	1	DC6	30194~642(M4)	30,000	M5L40	OP-M10
DC6-90	2~6	90	45	13	3°	1	DC6	30194~642(M4)	30,000	M5L40	OP-M10
DC6-120	2~6	120	60	13	3°	1	DC6	30194~644(M4)	30,000	M5L40	OP-M10
DC6-150	2~6	150	76	13	3°	1	DC6	30194~644(M4)	30,000	M5L90	OP-M10
DC8-90	3~8	90	53	22	3°	1	DC8	30194~653(M5)	30,000	M6L25	OP-M12
DC8-120	3~8	120	65	22	3°	1	DC8	30194~653(M5)	30,000	M6L25	OP-M12
DC10-90	3~10	90	51	28	--	2	DC10	30194~663(M6)	30,000	M8L30	OP-M16
DC10-120	3~10	120	60	28	--	2	DC10	30194~663(M6)	30,000	M8L30	OP-M16
DC12-70	3~12	70	35	34	3°	2	DC12	30194~683(M8)	30,000	M10L35	OP-M18
DC12-90	3~12	90	55	34	--	2	DC12	30194~683(M8)	30,000	M10L35	OP-M18
DC12-120	3~12	120	85	34	--	2	DC12	30194~683(M8)	30,000	M10L35	OP-M18
DC12-150	3~12	150	90	34	--	2	DC12	30194~683(M8)	30,000	M10L35	OP-M18
BT50-DC10-110	3~10	110	57	28	--	2	DC10	30194~663(M6)	20,000	M8L30	OP-M16
DC10-150	3~10	150	75	28	--	2	DC10	30194~664(M6)	20,000	M8L30	OP-M16
DC12-110	3~12	110	57	34	--	2	DC12	30194~683(M8)	20,000	M10L35	OP-M18
DC12-150	3~12	150	70	34	--	2	DC12	30194~684(M8)	20,000	M10L35	OP-M18

Spanner



Order Code	mm	L
30194-642	4	100
-644	4	200
-653	5	150
-663	6	150
-664	6	200
-683	8	150
-684	8	200

Screw



Order Code	Thread	L
M5L40	M5	40
M5L90	M5	90
M6L25	M6	25
M8L30	M8	30
M10L35	M10	35

Stop Screw



Order Code	Thread
OP-M10	M10(L)
OP-M12	M12(L)
OP-M16	M16(L)
OP-M18	M18(L)

thread of stop screw is leftward

DC-E Collet (for end mill)

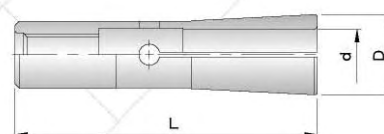
- The design of DC-E collets is emphasized on increase the clamping force of end mills.

Runout < 5μm



Set of DC-E Collets

Order Code	Ød	Quantity
SDC10E-5	3, 4, 6, 8, 10	5 pcs
SDC12E-6	3, 4, 6, 8, 10, 12	6 pcs



Order Code		L	ØD
Collet series	Ød		
DC6-	3E, 3.175E, 4E, 6E, 6.35E	36	9.6
DC8-	3E, 4E, 6E, 8E	45	15
DC10-	3E, 4E, 6E, 8E, 10E	52	19.1
DC12-	3E, 4E, 5E, 6E, 8E, 10E, 12E	60	22

order example : DC6-3E 2pcs

DC Collet

- DC6 collets can clamp any type of drills, reamers and taps below Ø6mm.
- Gripping range of each type of collets is 0.25mm.



Set of DC6 Collets

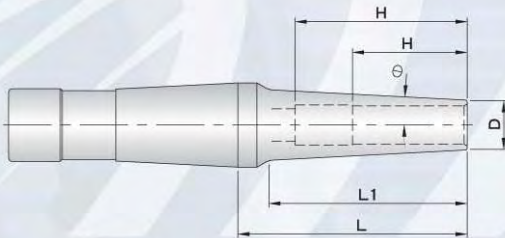
Order Code	Collets	Quantity
SDC6-17	2~6	17 pcs

Order Code		L	D
Collet series	Ød		
DC6-	2, 2.25, 2.5, 2.75, 3, 3.25 3.5, 3.75, 4, 4.25, 4.5, 4.75 5, 5.25, 5.5, 5.75, 6	36	9.8

order example : DC6-4 2pcs

BT

Shrink Fit Extensions



Order Code	d	D	L	L1	H	H1	θ	Chuck system
DC12-FA6-60	6	9	60	48	18	28	3°	DC12
FA8-60	8	11	60	50	24	36	3°	DC12
FA10-60	10	13	60	52	30	45	3°	DC12

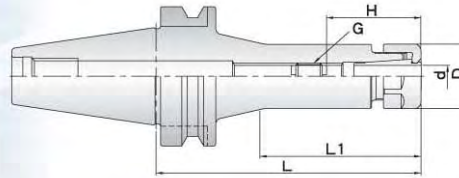


shrinkft fit machine



SD Plus Chuck

- SD collet designed with angle 8° smaller than ER Collet 16°. Gripping Torque raises 2 times.
- Without use any tools on insert collet into nut and take off collet from nut.
- Max speed : 15,000 rpm; G6.3



F Type Collet



E & D Type Collet



Order Code	Range(d)	L	L1	D	G	H	Nut	Spanner	Stop Screw
BT30-SD6-60	2~6	60	38	20	M8	25-48	CN-SD6	30194~917	--
SD6-90	2~6	90	50	20	M8	25-58	CN-SD6	30194~917	--
SD10-60	2~10	60	38	29	L-M10	30-52	CN-SD10	30194~925	ASG-12/ASG-12H
SD10-90	2~10	90	68	29	L-M10	30-72	CN-SD10	30194~925	ASG-12/ASG-12H
SD16-60	3~16	60	38	41	L-M18	45-58	CN-SD16	30194~936	ASG-18/ASG-18H
SD16-90	3~16	90	68	41	L-M18	45-58	CN-SD16	30194~936	ASG-18/ASG-18H
SD20-60	4~20	60	37	50	--	--	CN-SD20	30194~702	ASG-22/ASG-22H
SD25-80	6~25	80	37	55	--	--	CN-SD25	30194~703	ASG-28/ASG-28H
BT40-SD6-60	2~6	60	33	20	M8	25-65	CN-SD6	30194~917	--
SD6-90	2~6	90	50	20	M8	25-55	CN-SD6	30194~917	--
SD6-120	2~6	120	50	20	M8	25-65	CN-SD6	30194~917	--
SD10-60	2~10	60	33	29	L-M12	30-60	CN-SD10	30194~925	ASG-12/ASG-12H
SD10-90	2~10	90	63	29	L-M12	30-70	CN-SD10	30194~925	ASG-12/ASG-12H
SD10-120	2~10	120	70	29	L-M12	30-70	CN-SD10	30194~925	ASG-12/ASG-12H
SD10-150	2~10	150	88	29	L-M12	30-80	CN-SD10	30194~925	ASG-12/ASG-12H
SD16-60	3~16	60	33	41	L-M18	45-72	CN-SD16	30194~936	ASG-18/ASG-18H
SD16-90	3~16	90	63	41	L-M18	45-82	CN-SD16	30194~936	ASG-18/ASG-18H
SD16-120	3~16	120	93	41	L-M18	45-72	CN-SD16	30194~936	ASG-18/ASG-18H
SD16-150	3~16	150	123	41	L-M18	45-82	CN-SD16	30194~936	ASG-18/ASG-18H
SD20-60	4~20	60	33	50	L-M22	50-74	CN-SD20	30194~702	ASG-22/ASG-22H
SD20-90	4~20	90	63	50	L-M22	50-84	CN-SD20	30194~702	ASG-22/ASG-22H
SD20-120	4~20	120	93	50	L-M22	50-84	CN-SD20	30194~702	ASG-22/ASG-22H
SD20-150	4~20	150	123	50	L-M22	50-84	CN-SD20	30194~702	ASG-22/ASG-22H
SD25-80	6~25	80	53	55	L-M28	57-78	CN-SD25	30194~703	ASG-28/ASG-28H
SD25-120	6~25	120	93	55	L-M28	57-88	CN-SD25	30194~703	ASG-28/ASG-28H
BT50-SD6-100	2~6	100	50	20	M8	25-70	CN-SD6	30194~917	--
SD6-150	2~6	150	50	20	M8	25-90	CN-SD6	30194~917	--
SD10-100	2~10	100	62	29	L-M12	30-75	CN-SD10	30194~925	ASG-12/ASG-12H
SD10-150	2~10	150	70	29	L-M12	30-75	CN-SD10	30194~925	ASG-12/ASG-12H
SD16-100	3~16	100	62	41	L-M18	45-85	CN-SD16	30194~936	ASG-18/ASG-18H
SD16-150	3~16	150	112	41	L-M18	45-85	CN-SD16	30194~936	ASG-18/ASG-18H
SD16-200	3~16	200	162	41	L-M18	45-85	CN-SD16	30194~936	ASG-18/ASG-18H
SD20-100	4~20	100	62	50	L-M22	50-84	CN-SD20	30194~702	ASG-22/ASG-22H
SD20-150	4~20	150	112	50	L-M22	50-84	CN-SD20	30194~702	ASG-22/ASG-22H
SD20-200	4~20	200	162	50	L-M22	50-84	CN-SD20	30194~702	ASG-22/ASG-22H
SD25-100	6~25	100	62	55	L-M28	57-88	CN-SD25	30194~703	ASG-28/ASG-28H
SD25-150	6~25	150	112	55	L-M28	57-88	CN-SD25	30194~703	ASG-28/ASG-28H
SD25-200	6~25	200	162	55	L-M28	57-88	CN-SD25	30194~703	ASG-28/ASG-28H

spanner and stop screw must be ordered separately

BT

Nut of SD Plus Chuck

Clamping Nut

Order Code	Fig	outside dia.
CN-SD6	1	20
CNSD10	1	29
CN-SD16	1	41
CN-SD20	2	50
CN-SD25	2	55

Fig.1



Fig.2



Spanner

Order Code	Fig	Type
30194-917	1	SP-SD6
30194-925	1	SP-SD10
30194-936	1	SP-SD16/HEC12
30194-702	2	SP-SD20
30194-703	2	SP-SD25

Fig.1



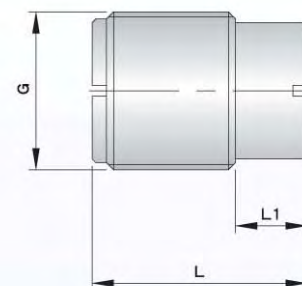
Fig.2



Stop Screw

Order Code	G	L	L1	Holder System
ASG-12	L-M12	25	10	SD10
ASG-18	L-M18	30	10	SD16
ASG-22	L-M22	30	10	SD20
ASG-28	L-M28	30	10	SD25

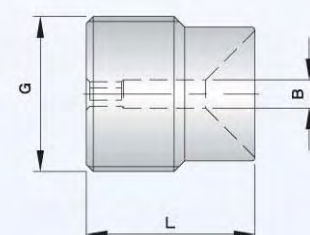
thread of stop screw is leftward



Stop Screw with coolant hole

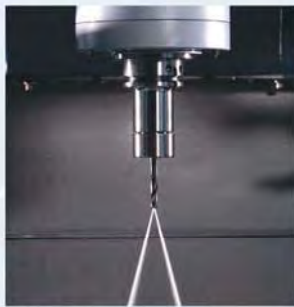
Order Code	G	L	Spanner(B)	Holder System
ASG-12H	L-M12	20	3	SD10
ASG-18H	L-M18	20	4	SD16
ASG-22H	L-M22	24	4	SD20
ASG-28H	L-M28	30	4	SD25

thread of stop screw is leftward



SD Plus Chuck - AM TYPE

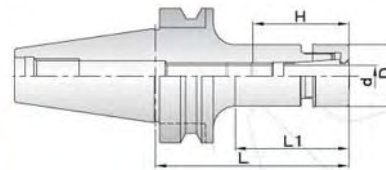
- SD collet designed with angle 8° smaller than ER Collet 16°. Gripping Torque raises 2 times.
- Without use any tools on insert collet into nut and take off collet from nut.



F Type Collet



E & D Type Collet



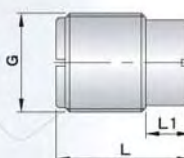
Order Code	Range(d)	L	L1	D	min H	max H	Nut	Spanner	Stop Screw	max rpm
BT30-SD10-60AM	2~10	60	38	30	30	52	CN-SD10AM	SP-SR30	ASG-12/ASG-12H	30,000
SD10-90AM	2~10	90	68	30	30	72	CN-SD10AM	SP-SR30	ASG-12/ASG-12H	30,000
SD16-60AM	3~16	60	38	42	45	58	CN-SD16AM	SP-SR42	ASG-18/ASG-18H	30,000
SD16-90AM	3~16	90	68	42	45	58	CN-SD16AM	SP-SR42	ASG-18/ASG-18H	30,000
BT40-SD10-60AM	2~10	60	33	30	30	60	CN-SD10AM	SP-SR30	ASG-12/ASG-12H	30,000
SD10-90AM	2~10	90	63	30	30	70	CN-SD10AM	SP-SR30	ASG-12/ASG-12H	30,000
SD10-120AM	2~10	120	70	30	30	70	CN-SD10AM	SP-SR30	ASG-12/ASG-12H	30,000
SD10-150AM	2~10	150	88	30	30	80	CN-SD10AM	SP-SR30	ASG-12/ASG-12H	30,000
SD16-60AM	3~16	60	33	42	45	72	CN-SD16AM	SP-SR42	ASG-18/ASG-18H	30,000
SD16-90AM	3~16	90	63	42	45	72	CN-SD16AM	SP-SR42	ASG-18/ASG-18H	30,000
SD16-120AM	3~16	120	93	42	45	82	CN-SD16AM	SP-SR42	ASG-18/ASG-18H	30,000
SD16-150AM	3~16	150	123	42	45	82	CN-SD16AM	SP-SR42	ASG-18/ASG-18H	30,000
BT50-SD10-100AM	2~10	100	62	30	30	75	CN-SD10AM	SP-SR30	ASG-12/ASG-12H	20,000
SD10-150AM	2~10	150	70	30	30	75	CN-SD10AM	SP-SR30	ASG-12/ASG-12H	20,000
SD16-100AM	3~16	100	62	42	45	85	CN-SD16AM	SP-SR42	ASG-18/ASG-18H	20,000
SD16-150AM	3~16	150	112	42	45	85	CN-SD16AM	SP-SR42	ASG-18/ASG-18H	20,000
SD16-200AM	3~16	200	162	42	45	85	CN-SD16AM	SP-SR42	ASG-18/ASG-18H	20,000

spanner and stop screw must be ordered separately

Nut-AM Type

Spanner-AM Type

Stop Screw



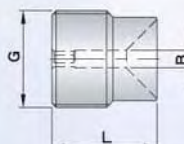
Order Code	L	L1	Holder System
ASG-12	25	10	SD10
ASG-18	30	10	SD16

thread of stop screw is leftward

Stop Screw with coolant hole

Order Code	outside dia.
CN-SD10AM	30
CN-SD16AM	42

Order Code	interior dia.
SP-SR30	30
SP-SR42	42



Order Code	L	Spanner(B)	Holder System
ASG-12H	20	3	SD10
ASG-18H	20	4	SD16

thread of stop screw is leftward

BT

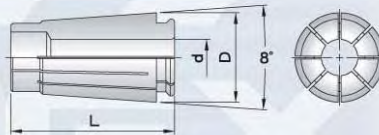
SD Collet

- Gripping range is 0.25mm for collets below 3mm. Collets larger than 3mm, the gripping range is 0.5mm.
- Collets with 5 series, can grip drills, taps, reamers and end mills between 1.75mm-25mm.



Collet level	Runout
AA	3μm
A	7μm

Please specify accuracy level "AA" or "A" when ordering collets.



Order Code		D	L
Collet series	ød		
SD6-	2, 2.25, 2.5, 2.75, 3, 3.5, 4, 4.5, 5, 5.5, 6	10.55	25
SD10-	2, 2.25, 2.5, 2.75, 3, 3.5, 4, 4.5, 5, 5.5, 6 6.5, 7, 7.5, 8, 8.5, 9, 9.5, 10	15.60	30
SD16-	4, 4.5, 5, 5.5, 6, 6.5, 7, 7.5, 8, 8.5, 9 9.5, 10, 10.5, 11, 11.5, 12, 12.5, 13, 13.5 14, 14.5, 15, 15.5, 16	24.6	45

order example : SD10-6 AA 2pcs



Set of SD Collet

Order Code	Collet	Quantity
SSD6-11	ø2~ø6	11 pcs
SSD10-19	ø2~ø10	19 pcs
SSD16-25	ø4~ø16	25 pcs

SD-E Collet (for end mill)

- Gripping torque of SD-E collets is 20% more than SD Collets. Can reach high stability during milling.

Order Code		D	L
Collet series	ød		
SD6-	3E, 4E, 6E	10.55	25
SD10-	3E, 3.175E, 4E, 6E, 8E, 10E	15.6	30
SD16-	3E, 4E, 6E, 8E, 10E, 12E, 16E	24.6	45
SD20-	4E, 6E, 8E, 10E, 12E, 16E, 20E	30	50
SD25-	6E, 8E, 10E, 12E, 16E, 20E, 25E	35.6	57

order example : SD10-6E AA 2pcs



Set of SD-E Collet

Order Code	Collet	Quantity
SSD10E-5	3, 4, 6, 8, 10	5 pcs
SSD16E-7	3, 4, 6, 8, 10, 12, 16	7 pcs
SSD20E-7	4, 6, 8, 10, 12, 16, 20	7 pcs
SSD25E-7	6, 8, 10, 12, 16, 20, 25	7 pcs

SD-F Collet (for coolant supply)

- SD-F collet provide through-coolant capability.
- Collant will out through center of tools.

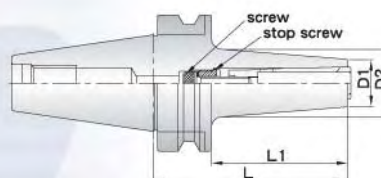
Order Code			
Collet series	ød	D	L
SD10-	3F, 4F, 6F, 8F, 10F	15.6	30
SD16-	6F, 8F, 10F, 12F, 16F	24.6	45

order example : SD10-6F 2pcs



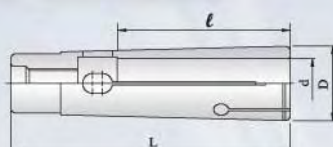
UC Gold Chuck

- Designed with inner-holding collet without nut can have strong stiffness rigidity and high stability.
- Suitable for end mills and reamer have the same shank diameter as end mills.
- Runout < 5 μ m (4xD)

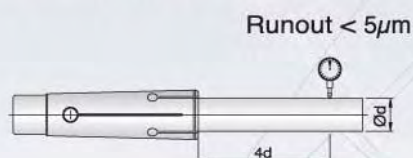


Order Code	L	L1	D2	D1	Max rpm	Collet	Spanner	Screw	Stop Screw
BT30-UC10-70	70	48	30	22	30,000	UC10	30194~653(M5)	M6L25	OP-M12
UC16-70	70	48	40	32	40,000	UC16	30194~663(M6)	M8L30	OP-M16
BT40-UC10-90	90	63	32	22	30,000	UC10	30194~653(M5)	M6L30	OP-M12A X 2
UC10-120	120	93	36	22	30,000	UC10	30194~653(M5)	M6L30	OP-M12A X 2
UC10-150	150	123	40	22	30,000	UC10	30194~654(M5)	M6L30	OP-M12A X 2
UC16-90	90	63	40	30	30,000	UC16	30194~663(M6)	M8L30	OP-M16
BT50-UC10-110	110	72	36	22	20,000	UC10	30194~654(M5)	M6L30	OP-M12A X 2
UC10-200	200	162	50	22	20,000	UC10	30194~655(M5)	M6L30	OP-M12A X 2
UC16-120	120	82	42	30	20,000	UC16	30194~664(M6)	M8L30	OP-M16A X 2

UC Collet



When put end mill into collet must reach length "L" to get best performance.



Order Code	d	L	D	L
UC10-3	3	15	15	56.5
4	4	20		
5	5	20		
6	6	25		
8	8	30		
10	10	35		
UC16-6	6	25	21	67
8	8	30		
10	10	35		
12	12	40		
14	14	42		
16	16	44		



Spanner

Screw

Stop Screw



Order Code	mm	L
30194-653	5	150
-654	5	200
-655	5	250
-663	6	150
-664	6	200



Order Code	Thread	L
M6L25	M6	25
M6L30	M6	30
M8L30	M8	30



Order Code	Type
OP-M12	--
OP-M12A	Hexagon socket
OP-M16	--
OP-M16A	Hexagon socket

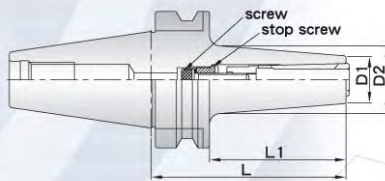
thread of stop screw is leftward

BT

UC Gold Chuck

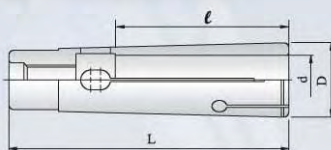
- extra-short / extra-strong

- Designed with inner-holding collet without nut can have strong stiffness rigidity and high stability.
- Suitable for end mills and reamer have the same shank diameter as end mills.
- Runout < 5 μ m (4xD)

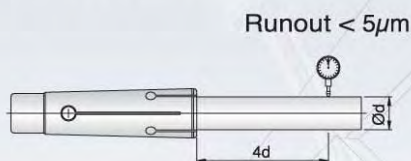


Order Code	L	L1	D2	D1	Max rpm	Collet	Spanner	Screw	Stop Screw
BT40-UC10-70	70	38	37.5	30	30,000	UC10	30194~653(M5)	M6L30	OP-M12A X 2
UC16-70	70	43	47.5	40	30,000	UC16	30194~663(M6)	M8L30	OP-M16

UC Collet



When put end mill into collet must reach length "L" to get best performance.



Order Code	d	ℓ	D	L
UC10-3	3	15	15	56.5
4	4	20		
5	5	20		
6	6	25		
8	8	30		
10	10	35		
UC16-6	6	25	21	67
8	8	30		
10	10	35		
12	12	40		
14	14	42		
16	16	44		



Spanner

Screw

Stop Screw



Order Code	mm	L
30194-653	5	150
-663	6	150

Order Code	Thread	L
M6L30	M6	30
M8L30	M8	30

Order Code	Type
OP-M12A	Hexagon socket
OP-M16	—

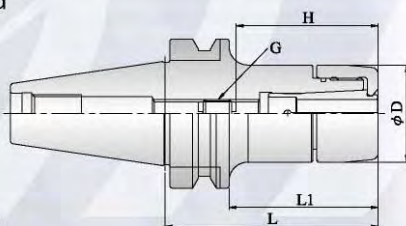
thread of stop screw is leftward



HEC High-Speed E Chuck - AM TYPE

Best choice for holding end mill !

- Collets specially designed for end mills. Long type collets with small angle enhance the stiffness rigidity and clamping force on end mills.
 - Without use any tools on insert collet into nut and take off collet from nut.
 - Nuts have precision processing after heat treatment can improve the balance value.
- During high speed cutting will not caused vibration.
- The unique design of HEC collet Chuck is that coolant can spurt out from the collet slot.
 - Runout : < 5 μ m (4xD)

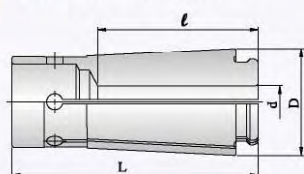


Order Code	L	L1	D	G	H	Max rpm	Collet	Spanner	Nut
BT30-HEC8-50	50	28	30	L-M10	32-46	30,000	HEC8	SP-SR30	CN-HEC8AM
HEC8-75	75	53	30	L-M10	32-64	30,000	HEC8	SP-SR30	CN-HEC8AM
HEC8-90	90	68	30	L-M10	32-64	30,000	HEC8	SP-SR30	CN-HEC8AM
HEC12-50	50	28	42	L-M12	40-55	30,000	HEC12	SP-SR42	CN-HEC12AM
HEC12-75	75	53	42	L-M12	40-80	30,000	HEC12	SP-SR42	CN-HEC12AM
BT40-HEC8-60	60	33	30	L-M10	32-70	30,000	HEC8	SP-SR30	CN-HEC8AM
HEC8-90	90	63	30	L-M10	32-70	30,000	HEC8	SP-SR30	CN-HEC8AM
HEC8-120	120	93	30	L-M10	32-70	30,000	HEC8	SP-SR30	CN-HEC8AM
HEC12-60	60	33	42	L-M12	40-70	30,000	HEC12	SP-SR42	CN-HEC12AM
HEC12-90	90	63	42	L-M12	40-80	30,000	HEC12	SP-SR42	CN-HEC12AM
HEC12-120	120	93	42	L-M12	40-80	30,000	HEC12	SP-SR42	CN-HEC12AM
BT50-HEC8-100	100	62	30	L-M10	32-65	20,000	HEC8	SP-SR30	CN-HEC8AM
HEC8-150	150	112	30	L-M10	32-75	20,000	HEC8	SP-SR30	CN-HEC8AM
HEC12-100	100	62	42	L-M12	40-75	20,000	HEC12	SP-SR42	CN-HEC12AM
HEC12-150	150	112	42	L-M12	40-85	20,000	HEC12	SP-SR42	CN-HEC12AM

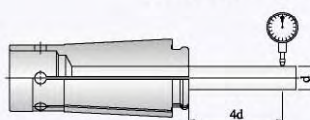
spanner and stop screw must be ordered separately

HEC Collet

- When put end mill into collet must reach length " ℓ " to get best performance.
- Runout : < 5 μ m (4xD)



Runout < 5 μ m



Order Code	d	ℓ	L	D
HEC8-3	3	15	35	15.6
4	4	20		
5	5	25		
6	6	25		
8	8	25	46	20
HEC12-3	3	15		
4	4	20		
5	5	25		
6	6	30		
8	8	34		
10	10	34		
12	12	34		



HEC Nut-AM Type



Order Code	outside dia.
CN-HEC8AM	30
CN-HEC12AM	42

HEC Spanner-AM Type



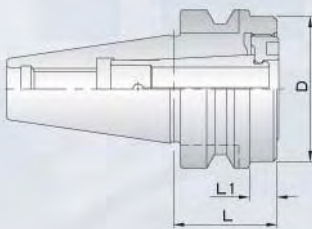
Order Code	interior dia.
SP-SR30	30
SP-SR42	42

BT

HEC High-Speed E Chuck - B TYPE - extra-short / extra-strong

Best choice for holding end mill !

- Collets specially designed for end mills. Long type collets with small angle enhance the stiffness rigidity and clamping force on end mills.
- Without use any tools on insert collet into nut and take off collet from nut.
- The unique design of HEC collet Chuck is that coolant can spurt out from the collet slot.
- Runout : $< 5 \mu\text{m}$ (4xD)

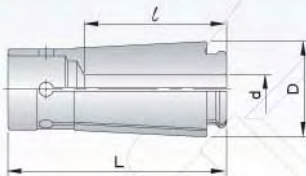


Order Code	L	L1	D	Collet	Nut	Spanner	Max rpm
BT30-HEC12B-30	30	8	42	HEC12	CN-HEC12B	SP-HEC12B	40,000
BT40-HEC12B-27	27	0	--	HEC12	CN-HEC12B	SP-HEC12B	40,000

spanner must be ordered separately

HEC Collet

- When put end mill into collet must reach length " l " to get best performance.
- Runout: $< 5 \mu\text{m}$ (4 x D)


Runout $< 5 \mu\text{m}$


Order Code	d	l	D	L
HEC12-3	3	15	20	46
4	4	20		
5	5	25		
6	6	30		
8	8	34		
10	10	34		
12	12	34		



HEC Nut-B Type


Order Code
CN-HEC12B

HEC Spanner-B Type

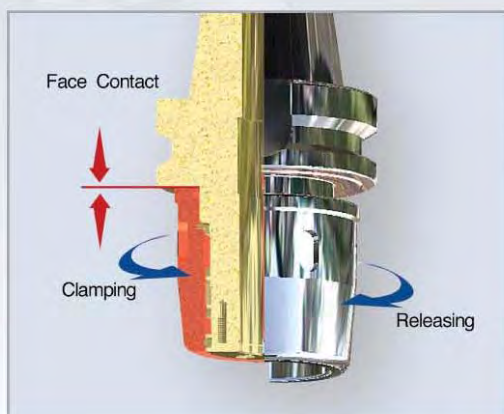
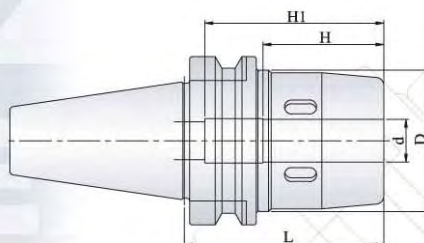

Order Code
SP-HEC12B

HPC High-Speed Powergrip Chuck

--needle roller bearing inside

Best choice for holding end mill !

- Runout : $< 5 \mu m (4 \times D)$
- Max speed : 30,000 r.p.m, G2.5
- Design by needle roller bearing, it can bring powerful clamping force.
- For arriving the best effective cutting result, no collet is better.
- HPC chuck uses best steel materials with sub-zero treatment.



Order Code	L	D	d	H	H1	Spanner	Max rpm
BT30-HPC12-80	80	43	12	43	60	30194-702	30,000
HPC16-90	90	53	16	43	76	30194-703	30,000
HPC20-90	90	57	20	47	90	30194-703	30,000
HPC25-100	100	63	25	57	90	30194-704	30,000
BT40-HPC12-85	85	43	12	43	60	30194-702	30,000
HPC16-90	90	53	16	43	76	30194-703	30,000
HPC20-90	90	57	20	47	90	30194-703	30,000
HPC25-95	95	63	25	57	90	30194-704	30,000
BT50-HPC12-100	100	43	12	43	170	30194-702	20,000
HPC12-150	150	43	12	43	220	30194-702	20,000
HPC16-100	100	53	16	43	170	30194-703	20,000
HPC16-150	150	53	16	43	220	30194-703	20,000
HPC20-100	100	57	20	47	170	30194-703	20,000
HPC20-150	150	57	20	47	220	30194-703	20,000
HPC25-105	105	63	25	57	90	30194-704	20,000
HPC25-150	150	63	25	57	90	30194-704	20,000

Remark : H = min tool length / H1 = max tool length

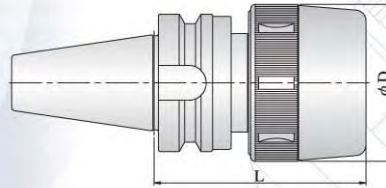
Spanner



Order Code	Type
30194-702	SP-HPC12
30194-703	SP-HPC16 / SP-HPC20
30194-704	SP-HPC25

KMC Powergrip Chuck

- Tool holder uses best steel materials with sub-zero treatment . These ensures the material stability and not transformed after long-term using. Collet chucks are with great wear-resistant ability.
- Inner hole uses thick-wall design. Thickness reaches 6mm and has strong ability of absorbed vibration. Cutters will not slip-out during heavy cutting.
- Particular needle bearing designed with special arrangement will lowest the locking resistance. Best design for heavy cutting, when holding tools easily have gripping torque over 2800Nm.
- Runout : $< 10 \mu m$.



Order Code	L	D	Range
BT40-KMC32-90	90	72	6~32
KMC32-105	105	72	6~32
KMC32-120	120	72	6~32
BT50-KMC32-105	105	72	6~32
KMC32-150	150	72	6~32

spanner must be ordered separately

Set of KMC Powergrip Chuck

Order Code	Contains		
	Chuck	Collet	Spanner
SBT40-KMC32-90	BT40-KMC32-90	C32-6, 8, 10, 12, 16, 20, 25 / 7pcs	30194-705
KMC32-105	BT40-KMC32-105		30194-705
KMC32-120	BT40-KMC32-120		30194-705
SBT50-KMC32-105	BT50-KMC32-105		30194-705
KMC32-150	BT50-KMC32-150		30194-705



Cylindrical Collet



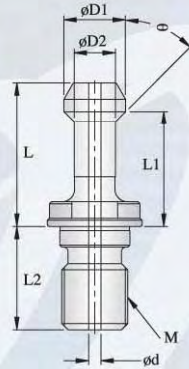
Order Code	d	D
C32-6	6	32
8	8	32
10	10	32
12	12	32
16	16	32
20	20	32
25	25	32

Spanner



Order Code	Type
30194-705	SP-KMC-32

Pull Studs



Order Code	Type	Shank	ØD1	ØD2	Ød	L	L1	L2	Ø	M	Remark
33000-100	P30T-1	BT30	11	7	--	23	18	20	45°	M12	MAS-I
200	P30T-2	BT30	11	7	--	23	18	20	60°	M12	MAS-II
34000-100	P40T-1	BT40	15	10	--	35	28	25	45°	M16	MAS-I
200	P40T-2	BT40	15	10	--	35	28	25	60°	M16	MAS-II
300	P40T-3	BT40	15	10	--	35	28	25	90°	M16	90°
1001	P40T-1H	BT40	15	10	3	35	28	25	45°	M16	Collant Hole
401	40PH(JIS6339)	BT40	19	14	7	29	23	25	75°	M16	JIS6339
1510	PYN40	BT40	18.8	12.45	7	19.11	14.03	25	45°	M16	MAZAK
35000-100	P50T-1	BT50	23	17	--	45	35	40	45°	M24	MAS-I
200	P50T-2	BT50	23	17	--	45	35	40	60°	M24	MAS-II
300	P50T-3	BT50	23	17	--	45	35	40	90°	M24	90°
1001	P50T-1H	BT50	23	17	8	45	35	40	45°	M24	Collant Hole
401	50PH(JIS6339)	BT50	28	21	10	34	25	40	75°	M24	JIS6339
1510	PYN50	BT50	28.96	20.83	10	25.2	17.58	40	45°	M24	MAZAK

Spanner For Pull Studs



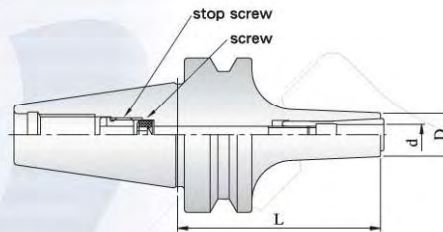
Order Code	Type of Pull Stud
SP-BT30-45	P30T-1
BT40-45	P40T-1
BT50-45	P50T-1



PAT. P

DC Slim Chuck

- Runout : $< 5 \mu\text{m}$ ($4 \times D$)
- Smallest outside diameter in the world : $\varnothing 13$ (Collet inside diameter $\varnothing 1.75 \sim \varnothing 6$)
- Max speed : 30,000 rpm; G2.5.
- Collet chuck designed without nut and with inner-holding collet. This can have strong stiffness rigidity and high stability.



Order Code	L	D	d	$\varnothing$	Max rpm	Spanner	Screw	Stop Screw
NBT30-DC6-60	60	13	2~6	6°	30,000	30194~642(M4)	M5L40	OP-M10
DC10-60	60	28	3~10	6°	30,000	30194~663(M6)	M8L30	OP-M16

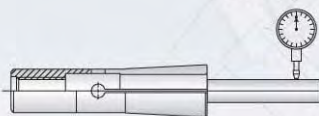
DC-E Collet

- The design of DC-E collets is emphasized on increase the clamping force of end mills.

Order Code		L	$\varnothing D$
Collet series	$\varnothing d$		
DC6-	3E, 3.175E, 4E, 6E, 6.35E	36	9.6
DC10-	3E, 4E, 6E, 8E, 10E	52	19.1

order example : DC6-3E 2pcs

Runout $< 5 \mu\text{m}$

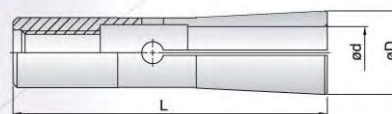


DC Collet

- DC6 collets can clamp any type of drills, reamers and taps below $\varnothing 6\text{mm}$.
- Gripping range of each type of collets is 0.25mm.

Order Code		L	$\varnothing D$
Collet series	$\varnothing d$		
DC6-	2, 2.25, 2.5, 2.75, 3, 3.25, 3.5, 3.75, 4, 4.25, 4.5, 4.75, 5, 5.25, 5.5, 5.75, 6	36	9.8

order example : DC6-3 2pcs



Spanner



Order Code	mm	L
30194-642	4	100
-663	6	150

Screw



Order Code	Thread	L
M5L40	M5	40
M8L30	M8	30

Stop Screw



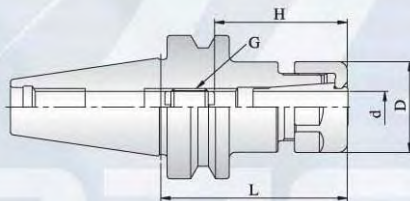
Order Code	Thread
OP-M10	M10(L)
OP-M16	M16(L)

thread of stop screw is leftward



SD Plus Chuck

- SD collet designed with angle 8° smaller than ER Collet 16°. Gripping Torque raises 2 times.
- Without use any tools on insert collet into nut and take off collet from nut.



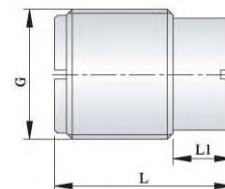
Order Code	L	G	H	d	D	Max rpm	Nut	Spanner	Stop Screw
NBT30-SD10-60	60	L-M12	30-49	2~10	29	30,000	CN-SD10	30194-925	ASG-12
SD10-90	90	L-M12	30-54	2~10	29	30,000	CN-SD10	30194-925	ASG-12
SD16-60	60	L-M18	40-58	3~16	41	30,000	CN-SD16	30194-936	ASG-18

spanner and stop screw must be ordered separately

Nut

Spanner

Stop Screw



Order Code	outside dia.
CN-SD10	29
CN-SD16	41

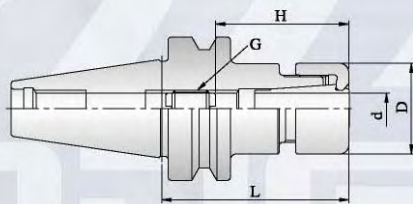
Order Code	Type
30194-925	SP-SD10
30194-936	SP-SD16/HEC12

Order Code	L	L1	Holder System
ASG-12	25	10	SD10
ASG-18	30	10	SD16

thread of stop screw is leftward

SD Plus Chuck - AM TYPE

- SD collet designed with angle 8° smaller than ER Collet 16°. Gripping Torque raises 2 times.
- Without use any tools on insert collet into nut and take off collet from nut.



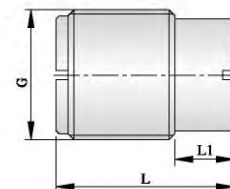
Order Code	L	G	H	d	D	Max rpm	Nut	Spanner	Stop Screw
NBT30-SD10-60AM	60	L-M12	30-49	2~10	30	30,000	CN-SD10AM	SP-SR30	ASG-12
SD10-90AM	90	L-M12	30-54	2~10	30	30,000	CN-SD10AM	SP-SR30	ASG-12
SD16-60AM	60	L-M18	40-58	3~16	42	30,000	CN-SD16AM	SP-SR42	ASG-18

spanner and stop screw must be ordered separately

Nut-AM Type

Spanner-AM Type

Stop Screw



Order Code	outside dia.
CN-SD10AM	30
CN-SD16AM	42

Order Code	interior dia
SP-SR30	30
SP-SR42	42

Order Code	L	L1	Holder System
ASG-12	25	10	SD10
ASG-18	30	10	SD16

thread of stop screw is leftward

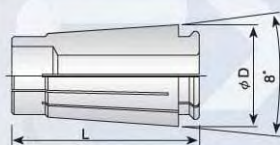


SD Collet

- Gripping range is 0.25mm for collets below 3mm. Collets larger than 3mm, the gripping range is 0.5mm.
- Collets with 5 series, can grip drills, taps, reamers and end mills between 1.75mm-25mm.

Collet level	Runout
AA	3 μ m
A	7 μ m

Please specify accuracy level "AA" or "A" when ordering collets.



Set of SD Collet

Order Code	Collet	Quantity
SSD10-19	ø2~ø10	19 pcs
SSD16-25	ø4~ø16	25 pcs

Order Code		D	L
Collet series	ød		
SD10-	2, 2.25, 2.5, 2.75, 3, 3.5, 4, 4.5, 5, 5.5, 6, 6.5, 7, 7.5, 8, 8.5, 9, 9.5, 10	15.6	30
SD16-	4, 4.5, 5, 5.5, 6, 6.5, 7, 7.5, 8, 8.5, 9, 9.5, 10, 10.5, 11, 11.5, 12, 12.5, 13, 13.5, 14, 14.5, 15, 15.5, 16	24.6	45

order example :SD10-6 AA 2pcs

SD-E Collet (for end mill)

- Gripping torque of SD-E Collets is 20% more than SD Collets. Can reach high stability during milling.

Order Code		D	L
Collet series	ød		
SD10-	3E, 3.175E, 4E, 6E, 8E, 10E	15.6	30
SD16-	3E, 4E, 6E, 8E, 10E, 12E, 16E	24.6	45

order example :SD10-6E AA 2pcs



Set of SD-E Collet

Order Code	Collet	Quantity
SSD10E-5	3, 4, 6, 8, 10	5 pcs
SSD16E-7	3, 4, 6, 8, 10, 12, 16	7 pcs



- SK DIN 69871 SK40
- NSK SK30 Holders Without Keyway
- ISO ISO25 Holders Without Keyway

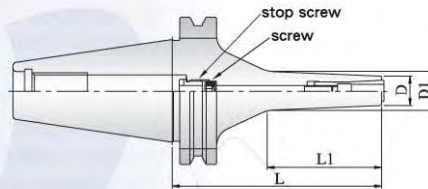


www.kojex.com.tw



DC Slim Chuck

- Runout : $< 5 \mu\text{m}$ (4 x D)
- Smallest outside diameter in the world : $\varnothing 13$
(Collet inside diameter $\varnothing 1.75 \sim \varnothing 6$)
- Max speed : 20,000rpm; G2.5.
- Collet chuck designed without nut and with inner-holding collet. This can have strong stiffness rigidity and high stability.



Order Code	L	L1	D	D1	Max rpm	Spanner	Screw	Stop Screw
SK40-DC6-60	60	25	13	16	20,000	30194~642(M4)	M5L40	OP-M10
DC6-90	90	48	13	18	20,000	30194~642(M4)	M5L40	OP-M10
DC6-120	120	62	13	19	20,000	30194~644(M4)	M5L40	OP-M10
DC6-150	150	88	13	22	20,000	30194~644(M4)	M5L95	OP-M10

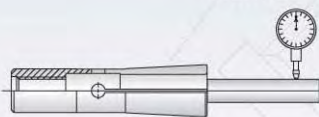
DC-E Collet

- The design of DC-E collets is emphasized on increase the clamping force of end mills.

Order Code		L	$\varnothing D$
Collet series	$\varnothing d$		
DC6-	3E, 3.175E, 4E, 6E, 6.35E	36	9.6

order example : DC6-3E 2pcs

Runout $< 5 \mu\text{m}$

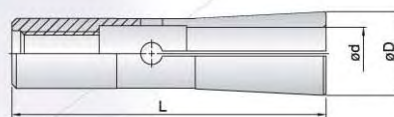


DC Collet

- DC6 collets can clamp any type of drills, reamers and taps below $\varnothing 6\text{mm}$.
- Gripping range of each type of collets is 0.25mm.

Order Code		L	$\varnothing D$
Collet series	$\varnothing d$		
DC6-	2, 2.25, 2.5, 2.75, 3, 3.25, 3.5, 3.75, 4, 4.25, 4.5, 4.75, 5, 5.25, 5.5, 5.75, 6	36	9.8

order example : DC6-3 2pcs



Spanner

Screw

Stop Screw



Order Code	mm	L
30194-642	4	100

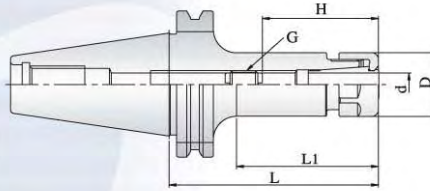
Order Code	Thread	L
M5L40	M5	40

Order Code	Thread
OP-M10	M10(L)

thread of stop screw is leftward

SD Plus Chuck

- SD collet designed with angle 8° smaller than ER Collet 16°. Gripping Torque raises 2 times.
- Without use any tools on insert collet into nut and take off collet from nut.
- Max speed : 15,000 rpm ; G 6.3



F Type Collet



E & D Type Collet

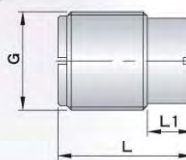
Order Code	Range(d)	L	L1	D	H	G	Nut	Spanner	Stop Screw
SK40-SD10-90	2~10	90	63	29	30-70	L-M12	CN-SD10	30194-925	ASG-12/ASG-12H
SD10-120	2~10	120	70	29	30-70	L-M12	CN-SD10	30194-925	ASG-12/ASG-12H
SD10-150	2~10	150	85	29	30-80	L-M12	CN-SD10	30194-925	ASG-12/ASG-12H
SD16-80	3~16	80	53	41	45-72	L-M18	CN-SD16	30194-936	ASG-18/ASG-18H
SD16-150	3~16	150	130	41	45-82	L-M18	CN-SD16	30194-936	ASG-18/ASG-18H

spanner and stop screw must be ordered separately

Nut

Spanner

Stop Screw



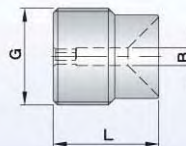
Order Code	L	L1	Holder System
ASG-12	25	10	SD10
ASG-18	30	10	SD16

thread of stop screw is leftward

Stop Screw with coolant hole

Order Code	outside dia.
CN-SD10	29
CN-SD16	41

Order Code	Type
30194-925	SP-SD10
30194-936	SP-SD16/HEC12



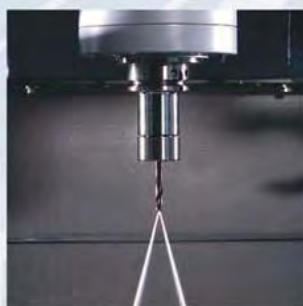
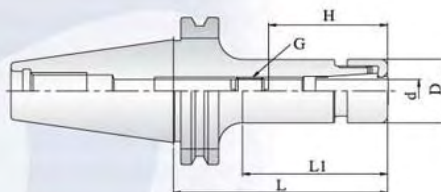
Order Code	L	Spanner(B)	Holder System
ASG-12H	20	3	SD10
ASG-18H	20	4	SD16

thread of stop screw is leftward

SD Plus Chuck - AM TYPE

■ SD collet designed angle 8° smaller than ER Collet 16°. Gripping Torque raises 2 times.

■ Without use any tools on insert collet into nut and take off collet from nut.



F Type Collet



E & D Type Collet

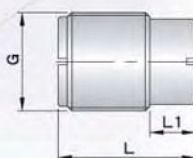
Order Code	Range(d)	L	L1	D	H	G	Nut	Spanner	Stop Screw	max rpm
SK40-SD10-90AM	2~10	90	63	30	30-70	L-M12	CN-SD10AM	SP-SR30	ASG-12/ASG-12H	20,000
SD10-120AM	2~10	120	75	30	30-70	L-M12	CN-SD10AM	SP-SR30	ASG-12/ASG-12H	20,000
SD10-150AM	2~10	150	80	30	30-80	L-M12	CN-SD10AM	SP-SR30	ASG-12/ASG-12H	20,000
SD16-80AM	3~16	80	53	42	45-72	L-M18	CN-SD16AM	SP-SR42	ASG-18/ASG-18H	20,000
SD16-150AM	3~16	150	130	42	45-82	L-M18	CN-SD16AM	SP-SR42	ASG-18/ASG-18H	20,000

spanner and stop screw must be ordered separately

Nut-AM Type

Spanner-AM Type

Stop Screw

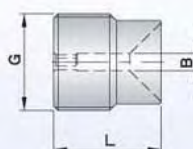


Order Code	L	L1	Holder System
ASG-12	25	10	SD10
ASG-18	30	10	SD16

thread of stop screw is leftward

Stop Screw with coolant hole

Order Code	outside dia.	Order Code	interior dia.
CN-SD10AM	30	SP-SR30	30
CN-SD16AM	42	SP-SR42	42



Order Code	L	Spanner(B)	Holder System
ASG-12H	20	3	SD10
ASG-18H	20	4	SD16

thread of stop screw is leftward

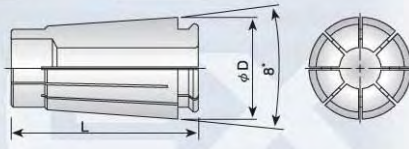
SD Collet

- Gripping range is 0.25mm for collets below 3mm. Collets larger than 3mm, the gripping range is 0.5mm.
- Collets with 5 series, can grip drills, taps, reamers and end mills between 1.75mm-25mm.



Collet level	Runout
AA	3 μ m
A	7 μ m

Please specify accuracy level "AA" or "A" when ordering collets.



Order Code		D	L
Collet series	ϕd		
SD10-	2, 2.25, 2.5, 2.75, 3, 3.5, 4, 4.5, 5, 5.5, 6, 6.5, 7, 7.5, 8, 8.5, 9, 9.5, 10	15.6	30
SD16-	4, 4.5, 5, 5.5, 6, 6.5, 7, 7.5, 8, 8.5, 9, 9.5, 10, 10.5, 11, 11.5, 12, 12.5, 13, 13.5, 14, 14.5, 15, 15.5, 16	24.6	45

order example : SD10-6 AA 2pcs



Set of SD Collet

Order Code	Collet	Quantity
SSD10-19	$\phi 2 \sim \phi 10$	19 pcs
SSD16-25	$\phi 4 \sim \phi 16$	25 pcs

SD-E Collet (for end mill)

- Gripping torque of SD-E Collets is 20% more than SD Collets. Can reach high stability during milling.

Order Code		D	L
Collet series	ϕd		
SD10-	3E, 3.175E, 4E, 6E, 8E, 10E	15.6	30
SD16-	3E, 4E, 6E, 8E, 10E, 12E, 16E	24.6	45

order example : SD10-6E AA 2pcs



Set of SD-E Collet

Order Code	Collet	Quantity
SSD10E-5	3, 4, 6, 8, 10	5 pcs
SSD16E-7	3, 4, 6, 8, 10, 12, 16	7 pcs

SD-F Collet (for coolant supply)

- SD-F collet provide through-coolant capability.
- Collant will out through center of tools.

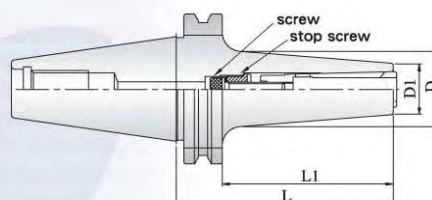
Order Code		D	L
Collet series	ϕd		
SD10-	6F, 8F, 10F	15.6	30
SD16-	6F, 8F, 10F, 12F, 16F	24.6	45

order example : SD10-6F 2pcs



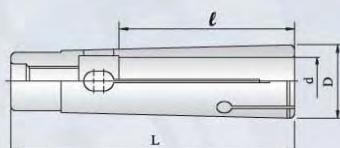
UC Gold Chuck

- Designed with inner-holding collet without nut can have strong stiffness rigidity and high stability.
- Suitable for end mills and reamer have the same shank diameter as end mills.
- Runout < 5 μ m (4 $\times$ D)



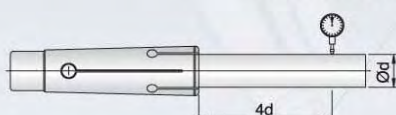
Order Code	L	L1	D	D1	Max rpm	Spanner	Screw	Stop Screw
SK40-UC10-90	90	55	32	22	20,000	30194~653(M5)	M6L30	OP-M12A X 2
UC10-120	120	85	36	22	20,000	30194~653(M5)	M6L30	OP-M12A X 2
UC10-150	150	115	40	22	20,000	30194~654(M5)	M6L30	OP-M12A X 2
UC16-90	90	55	40	30	20,000	30194~663(M6)	M8L30	OP-M16

UC Collet



When put end mill into collet must reach length "L" to get best performance.

Runout < 5 μ m



Order Code	d	L	D	L
UC10-3	3	15	15	56.5
4	4	20		
5	5	20		
6	6	25		
8	8	30		
10	10	35		
UC16-6	6	25	21	67
8	8	30		
10	10	35		
12	12	40		
14	14	42		
16	16	44		



Spanner

Screw

Stop Screw



Order Code	mm	L
30194-653	5	150
-654	5	200
-655	5	250
-663	6	150
-664	6	200



Order Code	Thread	L
M6L30	M6	30
M8L30	M8	30



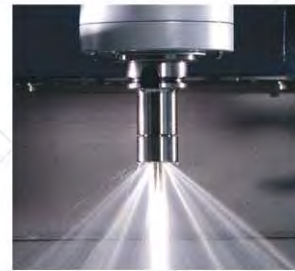
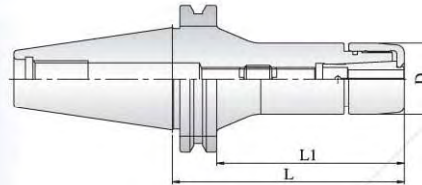
Order Code	Type
OP-M12A	Hexagon socket
OP-M16	--

thread of stop screw is leftward

HEC High-Speed E Chuck - AM TYPE

Best choice for holding end mill !

- Collets specially designed for end mills. Long type collets with small angle enhance the stiffness rigidity and clamping force on end mills.
- Without use any tools on insert collet into nut and take off collet from nut.
- Nuts have precision processing after heat treatment can improve the balance value. During high speed cutting will not caused vibration.
- The unique design of HEC collet Chuck is that coolant can spurt out from the collet slot.
- Runout: <5 μ m (4xD)

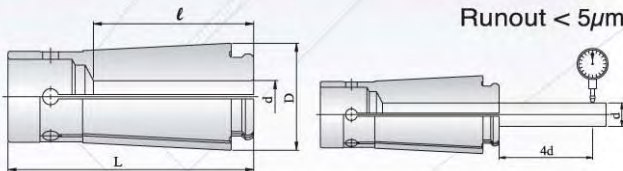


Order Code	L	L1	D	G	H	Max rpm	Spanner	Nut
SK40-HEC8-63AM	63	44	30	L-M10	32-70	20,000	SP-SR30	CN-HEC8AM
HEC8-100AM	100	81	30	L-M10	32-80	20,000	SP-SR30	CN-HEC8AM
HEC12-63AM	63	44	42	L-M12	40-70	20,000	SP-SR42	CN-HEC12AM
HEC12-100AM	100	81	42	L-M12	40-80	20,000	SP-SR42	CN-HEC12AM

spanner and stop screw must be ordered separately

HEC Collet

- When put end mill into collet must reach length " l " to get best performance.
- Runout: <5 μ m (4xD)



Order Code	d	l	L	D
HEC8-3	3	15	35	15.6
4	4	20		
5	5	25		
6	6	25		
8	8	25		
HEC12-3	3	15	46	20
4	4	20		
5	5	25		
6	6	30		
8	8	34		
10	10	34		
12	12	34		



HEC Nut-AM Type



Order Code	outside dia.
CN-HEC8AM	30
CN-HEC12AM	42

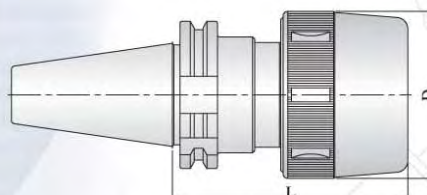
HEC Spanner-AM Type



Order Code	interior dia.
SP-SR30	30
SP-SR42	42

KMC Powergrip Chuck

- Tool holder uses best steel materials with sub-zero treatment . These ensures the material stability and not transformed after long-term using. Collet chucks are with great wear-resistant ability.
- Inner hole uses thick-wall design. Thickness reaches 6mm and has strong ability of absorbed vibration. Cutters will not slip-out during heavy cutting.
- Particular needle bearing designed with special arrangement will lowest the locking resistance. Best design for heavy cutting, when holding tools easily have gripping torque over 2800Nm.
- Runout: < 10 μ m.



Order Code	L	D	Range
SK40-KMC32-90	90	72	6~32

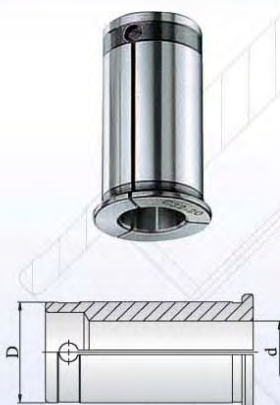
spanner must be ordered separately

Set of KMC Powergrip Chuck

Order Code	Contains		
	Chuck	Collet	Spanner
SSK40-KMC32-90	SK40-KMC32-90	C32-6, 8, 10, 12, 16, 20, 25 / 7pcs	30194-705



Cylindrical Collet



Order Code	d	D
C32-6	6	32
8	8	32
10	10	32
12	12	32
16	16	32
20	20	32
25	25	32

Spanner



Order Code	Type
30194-705	SP-KMC-32

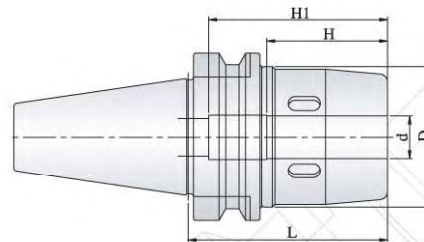
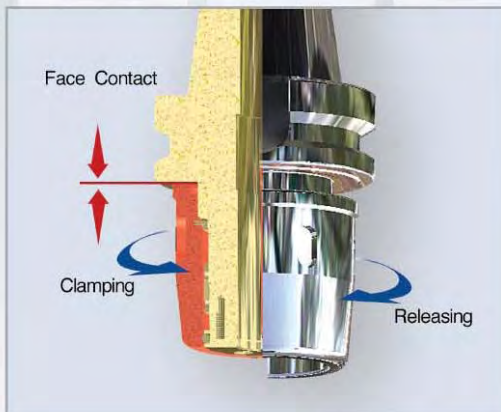
SK

HPC High-Speed Powergrip Chuck

--needle roller bearing inside

Best choice for holding end mill !

- Runout : $< 5 \mu\text{m}$ (4xD)
- Max speed : 20,000r.p.m, G2.5
- Design by needle roller bearing, it can bring powerful clamping force.
- For arriving the best effective cutting result, no collet is better.
- HPC chuck uses best steel materials with sub-zero treatment.



Order Code	L	D	d	H	H1	Spanner	Max rpm
SK40-HPC12-85	85	43	12	43	60	30194-702	20,000
HPC16-100	100	53	16	43	76	30194-703	20,000
HPC20-100	100	57	20	47	90	30194-703	20,000
HPC25-110	110	63	25	57	90	30194-704	20,000

Remark : H = min tool length / H1 = max tool length

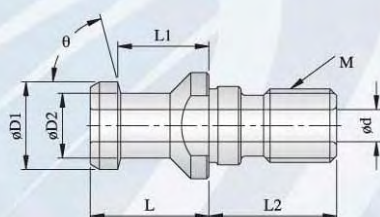
Spanner



Order Code	Type
30194-702	SP-HPC12
30194-703	SP-HPC16/SP-HPC20
30194-704	SP-HPC25



Pull Stud

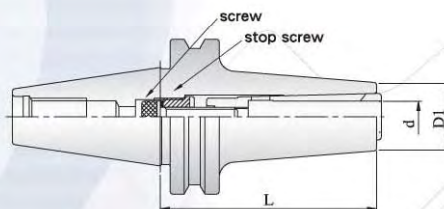


Order Code	Type	Shank	ØD1	ØD2	Ød	L	L1	L2	θ	M
33000-404	DIN69872-30	SK30	13	9	—	24	19	20	75°	M12
34000-404	DIN69872-40	SK40	19	14	7	26	20	28	75°	M16
35000-404	DIN69872-50	SK50	28	21	11.5	34	25	40	75°	M24



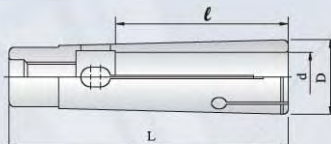
UC Gold Chuck

- Designed with inner-holding collet without nut can have strong stiffness rigidity and high stability.
- Suitable for end mills and reamer have the same shank diameter as end mills.
- Runout < 5 μ m (4 $\times$ D)

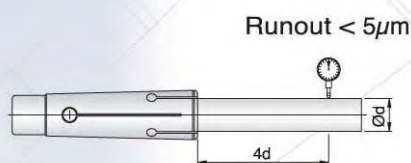


Order Code	L	d	D1	θ	Max rpm	Spanner	Screw	Stop Screw
NSK30-UC10-70	70	3~10	22	10°	30,000	30194~653(M5)	M6L30	OP-M12

UC Collet



When put end mill into collet must reach length "L" to get best performance.



Order Code	d	L	D	L
UC10-3	3	15	15	56.5
4	4	20		
5	5	20		
6	6	25		
8	8	30		
10	10	35		



Spanner



Order Code	mm	L
30194-653	5	150

Screw



Order Code	Thread	L
M6L30	M6	30

Stop Screw

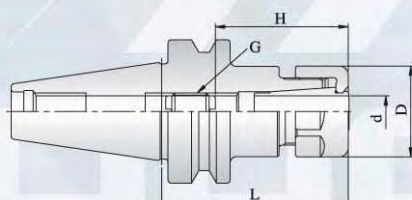


Order Code	Thread
OP-M12	M12(L)

thread of stop screw is leftward

SD Plus Chuck

- SD collet designed with angle 8° smaller than ER Collet 16°. Gripping Torque raises 2 times.
- Without use any tools on insert collet into nut and take off collet from nut.



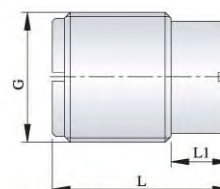
Order Code	L	G	H	d	D	Max rpm	Nut	Spanner	Stop Screw
NSK30-SD10-60	60	L-M12	30-52	2~10	29	30,000	CN-SD10	30194-925	ASG-12
SD16-60	60	L-M18	40-58	3~16	41	30,000	CN-SD16	30194-936	ASG-18

spanner and stop screw must be ordered separately

Nut

Spanner

Stop Screw



Order Code	outside dia.
CN-SD10	29
CN-SD16	41

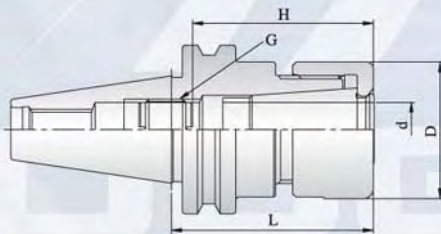
Order Code	Type
30194-925	SP-SD10
30194-936	SP-SD16/HEC12

Order Code	L	L1	Holder System
ASG-12	25	10	SD10
ASG-18	30	10	SD16

thread of stop screw is leftward

SD Plus Chuck - AM TYPE

- SD collet designed with angle 8° smaller than ER Collet 16°. Gripping Torque raises 2 times.
- Without use any tools on insert collet into nut and take off collet from nut.



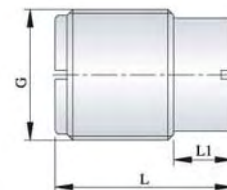
Order Code	L	G	H	d	D	Max rpm	Nut	Spanner	Stop Screw
NSK30-SD10-60AM	60	L-M12	30-49	2~10	30	30,000	CN-SD10AM	SP-SR30	ASG-12
SD16-60AM	60	L-M18	40-58	3~16	42	30,000	CN-SD16AM	SP-SR42	ASG-18

spanner and stop screw must be ordered separately

Nut-AM Type

Spanner-AM Type

Stop Screw



Order Code	outside dia.
CN-SD10AM	30
CN-SD16AM	42

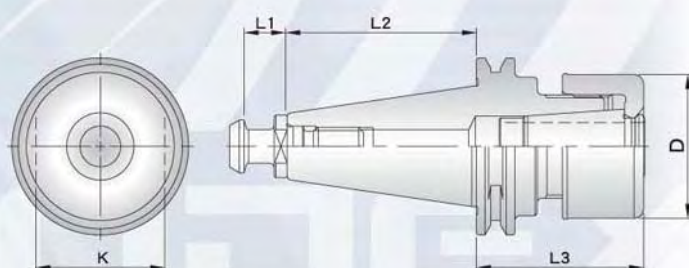
Order Code	interior dia
SP-SR30	30
SP-SR42	42

Order Code	L	L1	Holder System
ASG-12	25	10	SD10
ASG-18	30	10	SD16

thread of stop screw is leftward

SD Plus Chuck - AM TYPE

- SD collet designed with angle 8° smaller than ER Collet 16°. Gripping Torque raises 2 times.
- Without use any tools on insert collet into nut and take off collet from nut.



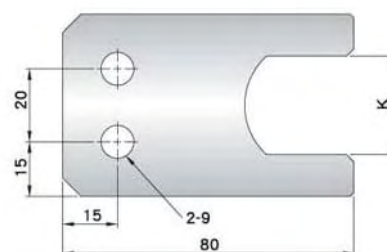
Order Code	L1	L2	L3	D	d	K	Max rpm	Remark
ISO25-SD10-35AM	9	39.7	35	30	2~10	27	30,000	Flange contact
ISO25T-SD10-35AM	9	41.1	35	30	2~10	27	30,000	No Flange contact

pull stud is included. spanner must be ordered separately.

Nut-AM Type

Spanner-AM Type

Fixture Plate



Order Code	outside dia.
CN-SD10AM	30

Order Code	interior dia
SP-SR30	30

Order Code	K
SP-ISO25	27

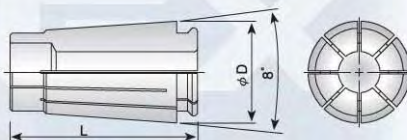
SD Collet

- Gripping range is 0.25mm for collets below 3mm. Collets larger than 3mm, the gripping range is 0.5mm.
- Collets with 5 series, can grip drills, taps, reamers and end mills between 1.75mm-25mm.



Collet level	Runout
AA	3 μ m
A	7 μ m

Please specify accuracy level "AA" or "A" when ordering collets.



Order Code		D	L
Collet series	ϕd		
SD10-	2, 2.25, 2.5, 2.75, 3, 3.5, 4, 4.5, 5, 5.5, 6 6.5, 7, 7.5, 8, 8.5, 9, 9.5, 10	15.6	30
SD16-	4, 4.5, 5, 5.5, 6, 6.5, 7, 7.5, 8, 8.5, 9 9.5, 10, 10.5, 11, 11.5, 12, 12.5, 13, 13.5 14, 14.5, 15, 15.5, 16	24.6	45

order example : SD10-6 AA 2pcs



Set of SD Collet

Order Code	Collet	Quantity
SSD10-19	$\phi 2 \sim \phi 10$	19 pcs
SSD16-25	$\phi 4 \sim \phi 16$	25 pcs

SD-E Collet (for end mill)

- Gripping torque of SD-E Collets is 20% more than SD Collets. Can reach high stability during milling.

Order Code		D	L
Collet series	ϕd		
SD10-	3E, 3.175E, 4E, 6E, 8E, 10E	15.6	30
SD16-	3E, 4E, 6E, 8E, 10E, 12E, 16E	24.6	45

order example : SD10-6E AA 2pcs



Set of SD-E Collet

Order Code	Collet	Quantity
SSD10E-5	3, 4, 6, 8, 10	5 pcs
SSD16E-7	3, 4, 6, 8, 10, 12, 16	7 pcs



- EA Extension Adaptor
- AC Accessories
- DD DATA of DIN69893 HSK



DC Slim Chuck

- Slim collet chuck designed without nut can get the smallest outside diameter of Ø8.6mm.

This can achieve the best effect on extended processing depth .

- Varies lengths of silm chuck provides different choices, the longest chuck is up to 300mm.



Fig.1

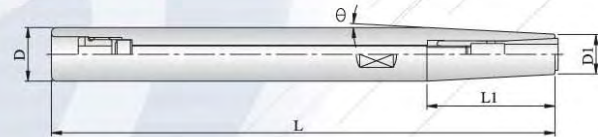


Fig.2

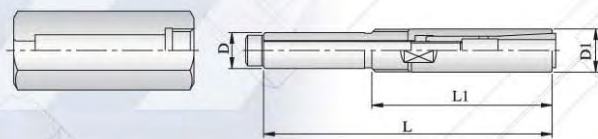


Fig.3



Order Code	Fig	d	L	L1	D	D1	θ	Collet	Spanner	Screw	Stop Screw	Stop Nut
ST08-DC4-80	1	2~4	80	16.5	8	8.6	--	DC4	30194~632(M3)	M4L60	--	TP-M8
ST12-DC4-120	2	2~4	120	38	12	8.6	3°	DC4	30194~632(M3)	M4L85	OP-M8	--
ST10-DC6-80	3	2~6	80	50	10	13	--	DC6	30194~642(M4)	M5L55	--	TP-M12A
ST12-DC6-120	1	2~6	120	40	12	13	--	DC6	30194~642(M4)	M5L95	--	TP-M12
ST16-DC6-150	2	2~6	150	38	16	13	3°	DC6	30194~642(M4)	M5L100	OP-M10	--
ST20-DC6-200	2	2~6	200	70	20	13	3°	DC6	30194~642(M4)	M5L100	OP-M10	--
ST25-DC6-250	2	2~6	250	115	25	13	3°	DC6	30194~643(M4)	M5L100	OP-M10	--
ST20-DC8-150	2	3~8	150	28	20	19	2°	DC8	30194~652(M5)	M6L72	OP-M12	--
ST20-DC8-200	2	3~8	200	28	20	19	2°	DC8	30194~652(M5)	M6L120	OP-M12	--
ST25-DC10-150	2	3~10	150	28	25	24	2°	DC10	30194~662(M6)	M8L80	OP-M16	--
ST25-DC10-200	2	3~10	200	28	25	24	2°	DC10	30194~662(M6)	M8L100	OP-M16	--
ST25-DC10-250	2	3~10	250	28	25	24	2°	DC10	30194~662(M6)	M8L150	OP-M16	--
ST32-DC12-200	2	3~12	200	57	32	30	2°	DC12	30194~682(M8)	M10L120	OP-M18	--
ST32-DC12-250	2	3~12	250	57	32	30	2°	DC12	30194~682(M8)	M10L150	OP-M18	--
ST32-DC12-300	2	3~12	300	57	32	30	2°	DC12	30194~682(M8)	M10L150	OP-M18	--

Spanner (A)

Spanner (B)

Screw

Stop Screw

Stop Nut



Order Code
30194-002

Order Code	mm	L
30194-632	3	100
30194-642	4	100
643	4	150
652	5	100
662	6	100
682	8	100

Order Code	Thread	L
M4L60	M4	60
M4L85	M4	85
M5L55	M5	55
M5L95	M5	95
M5L100	M5	100
M6L70	M6	70
M6L120	M6	120
M8L80	M8	80
M8L100	M8	100
M8L150	M8	150
M10L120	M10	150
M10L150	M10	150

Order Code	Thread
OP-M8	M8(L)
OP-M10	M10(L)
OP-M12	M12(L)
OP-M16	M16(L)
OP-M18	M18(L)

thread of stop screw is leftward

Order Code	Thread
TP-M8	M8(L)
TP-M12A	M12(L)
TP-M12	M12(L)

thread of stop nut is leftward

Set of DC Slim Chuck



Fig.2
Two Holders



Fig.1
One Holder

DC4

Order Code	Fig	Contains			
		Collent Chuck	Collet	Spanner(A)	Spanner(B)
SST08-DC4-80	1	ST08-DC4-80	DC4-2E x 1pc DC4-3E x 1pc DC4-4E x 1pc	30194~002	30194~632(M3)
SST12-DC4-120	1	ST12-DC4-120			
SST0812-DC4	2	ST08-DC4-80 ST12-DC4-120			

DC6

Order Code	Fig	Contains			
		Collent Chuck	Collet	Spanner(A)	Spanner(B)
SST12-DC6-120	1	ST12-DC6-120	DC6-3E x 1pc DC6-4E x 1pc DC6-6E x 1pc	30194~002	30194~642(M4)
SST16-DC6-150	1	ST16-DC6-150			30194~642(M4)
SST20-DC6-200	1	ST20-DC6-200			30194~642(M4)
SST25-DC6-250	1	ST25-DC6-250			30194~643(M4)
SST1216-DC6	2	ST12-DC6-120 ST16-DC6-150			30194~642(M4)
SST2025-DC6	2	ST20-DC6-200 ST25-DC6-250			30194~642(M4) 30194~643(M4)

DC8

Order Code	Fig	Contains			
		Collent Chuck	Collet	Spanner(A)	Spanner(B)
SST20-DC8-150	1	ST20-DC8-150	DC8-3E x 1pc DC8-4E x 1pc DC8-6E x 1pc DC8-8E x 1pc	30194~002	30194~652(M5)
SST20-DC8-200	1	ST20-DC8-200			

DC10

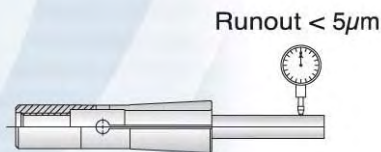
Order Code	Fig	Contains			
		Collent Chuck	Collet	Spanner(A)	Spanner(B)
SST25-DC10-150	1	ST25-DC10-150	DC10-3E x 1pc DC10-4E x 1pc DC10-6E x 1pc DC10-8E x 1pc DC10-10E x 1pc	30194~002	30194~662(M6)
SST25-DC10-200	1	ST25-DC10-200			
SST25-DC10-250	1	ST25-DC10-250			

DC12

Order Code	Fig	Contains			
		Collent Chuck	Collet	Spanner	Spanner(B)
SST32-DC12-200	1	ST32-DC12-200	DC12-3E x 1pc DC12-4E x 1pc DC12-6E x 1pc DC12-8E x 1pc DC12-10E x 1pc DC12-12E x 1pc	30194~927	30194~682(M8)
SST32-DC12-250	1	ST32-DC12-250			
SST32-DC12-300	1	ST32-DC12-300			

DC-E Collet

- The design of DC-E collets is emphasized on increase the clamping force of end mills.



Order Code		L	D
Collet series	φd		
DC4-	2E, 3E, 3.175E, 4E	31	7
DC6-	3E, 3.175E, 4E, 6E, 6.35E	36	9.6
DC8-	3E, 4E, 6E, 8E	45	15
DC10-	3E, 4E, 6E, 8E, 10E	52	19.1
DC12-	3E, 4E, 6E, 8E, 10E, 12E	60	22

order example : DC6-4E 2pcs



DC Collet

- DC6 collets can clamp any type of drills, reamers and taps below φ6mm.
- Gripping range of each type of collets is 0.25mm.

Order Code		L	D
Collet series	φd		
DC6-	2, 2.25, 2.5, 2.75, 3, 3.25	36	9.8
	3.5, 3.75, 4, 4.25, 4.5, 4.75		
	5, 5.25, 5.5, 5.75, 6		

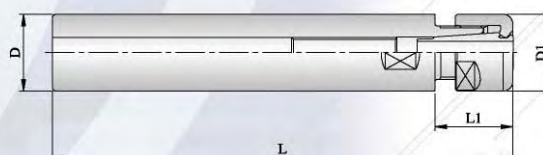
order example : DC6-4 2pcs



SD Plus Chuck

■ SD collet designed with angle 8° smaller than ER Collet 16°. Gripping Torque raises 2 times.

■ Without use any tools on insert collet into nut and take off collet from nut.



Order Code	L	L1	D	D1	Collet	Spanner	Nut
BC20-SD6-120	120	20	20	20	SD6	30194-917	CN-SD6
SD6-150	150	20	20	20	SD6	30194-917	CN-SD6
SD6-180	180	20	20	20	SD6	30194-917	CN-SD6
SD10-120	120	38	20	29	SD10	30194-925	CN-SD10
SD10-150	150	38	20	29	SD10	30194-925	CN-SD10
SD10-180	180	38	20	29	SD10	30194-925	CN-SD10

spanner must be ordered separately

Set of SD Plus Chuck

Order Code	Contains		
	Collet Chuck	Collet	Spanner
SBC20-SD6-120	BC20-SD6-120	SD6-3E, 4E, 6E 3pcs	30194~917
SD6-150	BC20-SD6-150	SD6-3E, 4E, 6E 3pcs	30194~917
SD6-180	BC20-SD6-180	SD6-3E, 4E, 6E 3pcs	30194~917
SD10-120	BC20-SD10-120	SD10-3E, 4E, 6E, 8E, 10E 5pcs	30194~925
SD10-150	BC20-SD10-150	SD10-3E, 4E, 6E, 8E, 10E 5pcs	30194~925
SD10-180	BC20-SD10-180	SD10-3E, 4E, 6E, 8E, 10E 5pcs	30194~925



Nut



Order Code	outside dia.
CN-SD6	20
CN-SD10	29

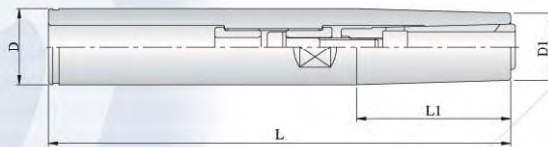
Spanner



Order Code	Type
30194-917	SP-SD6
30194-925	SP-SD10

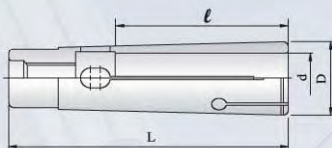
UC Gold Chuck

- Designed with inner-holding collet without nut can have strong stiffness rigidity and high stability.
- Suitable for end mills and reamer have the same shank diameter as end mills.



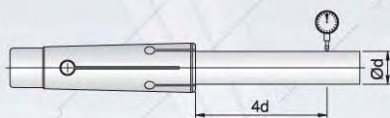
Order Code	L	L1	D	D1	Spanner	Screw	Stop Screw
BC25-UC10-150	150	50	25	22	30194~653(M5)	M6L30	OP-M12A X 2
UC10-200	200	50	25	22	30194~653(M5)	M6L30	OP-M12A X 2

UC Collet



When put end mill into collet must reach length "L" to get best performance.

Runout < 5μm



Order Code	d	ℓ	D	L
UC10-3	3	15	15	56.5
4	4	20		
5	5	20		
6	6	25		
8	8	30		
10	10	35		



Spanner (A)

Spanner (B)

Screw

Stop Screw



Order Code
30194-002

Order Code	mm	L
30194-653	5	150

Order Code	Thread	L
M6L30	M6	30

Order Code	Type
OP-M12A	Hexagon socket

thread of stop screw is leftward

Electronic Tool Length Setter

- Housing is made by stainless steel, 100% rustproof.
- Thanks to the power magnet is inserted at the bottom of the base, this setter can be used in horizontal and vertical position.

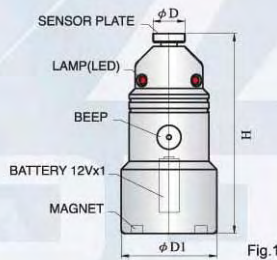


Fig.1

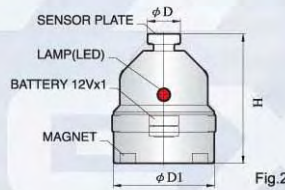


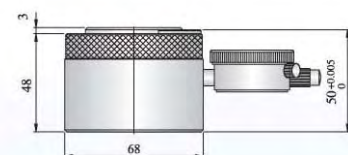
Fig.2

Order Code	Fig	ØD1	H	ØD	Battery	Beep
EZ-5000	2	40	50 ^{+0.005}	16	(LR44) 1.5V x 2	No
EZ-1001	1	48	100 ^{+0.005}	16	(23A) 12V x 1	Yes
EZ-2000	2	1.58"	2.00"	0.63"	(LR44) 1.5V x 2	No
EZ-4001	1	1.89"	4.00"	0.63"	(23A) 12V x 1	Yes



Z-Zero Setter

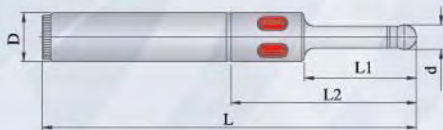
- For setting tool length on machining centers.
- Setting high: 50.00+0.005mm.
- Large measuring surface and easy to operate.
- Low spring force to avoid breakage of small end mill and drill.
- Easy to be calibrated by a ground parallel or gauge block.



Order Code	Height
Z-50	50 ^{+0.005}

Electronic Edge Finder - with LED and Beeper

- Concentricity of ball-probe and shank: 0.005mm.
- Spring loaded on ball-probe for preventing damage of probe.



Order Code	D	d	L	L1	L2
KEF-2010	20	10	153	46	76
KEF-3404	3/4"	0.4"	6.0"	1.8"	3"



Rotary - Edge Finder

- For setting work coordinate on machining centers and milling machine.
- Repeatability on X and Y axes within $2 \mu\text{m}$.
- Spindle runs about 500rpm.

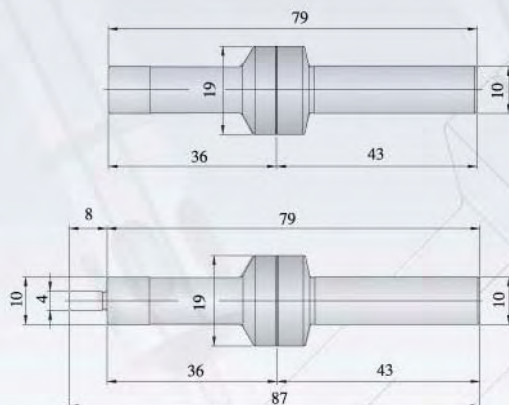


Fig.1

Fig.2

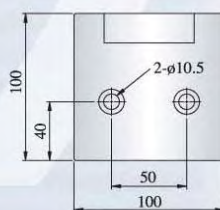
Order Code	Fig	Material	Hardness
CR301	1	Alloy steel	HRC60° ± 2°
CR303	2	Alloy steel	HRC60° ± 2°



Tool Locking Fixture

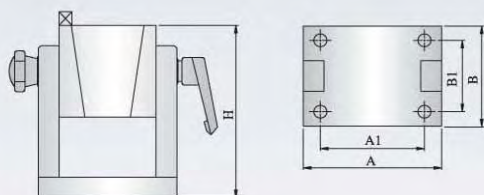
- for holding outside Diameter(D)

Order Code	D	Holder Type
HL-HSK40	40	HSK40A / HSK40E
HL-HSK50	50	HSK50A / HSK50E NSK30
HL-HSK63	63	HSK63A / HSK63E HSK63F
HL-NBT30	46	NBT30
HL-BT30	46	BT30
HL-BT40	63	BT40



Tool Locking Fixture

- Easy handling and low cost tool locking fixture on work bench for preparing tools for machining centers.
- Swivel in vertical and horizontal.



Order Code	Taper	H	A	A1	B	B1
TBS-30	ISO30	120	180	80	80	60
TBS-40	ISO40	130	180	80	80	60
TBS-50	ISO50	170	133	100	98	70



Technology & Humanity



KOJEX has the ability of design and manufactures high accuracy collets:
especially the one installed in High Speed Spindle (mainly used on cutting machines
doing drill and router on PCB).

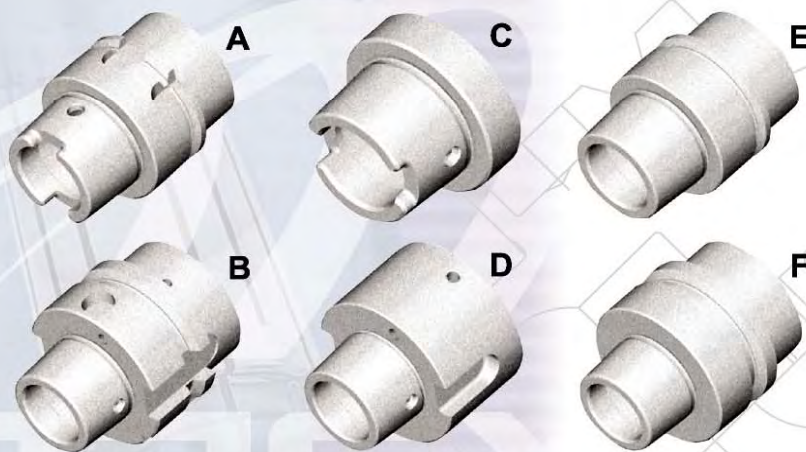


collets!
we are the experts

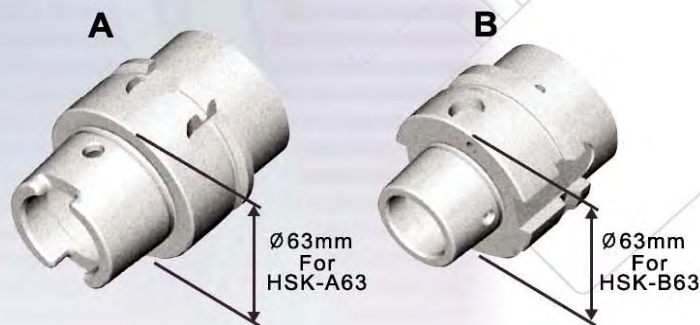
KOJEX already has many years professional experiences can help customer to design and make special collet.

Six Types Specific of DIN69893

An Overview Of Six Types Of HSK Shanks Per DIN 69893

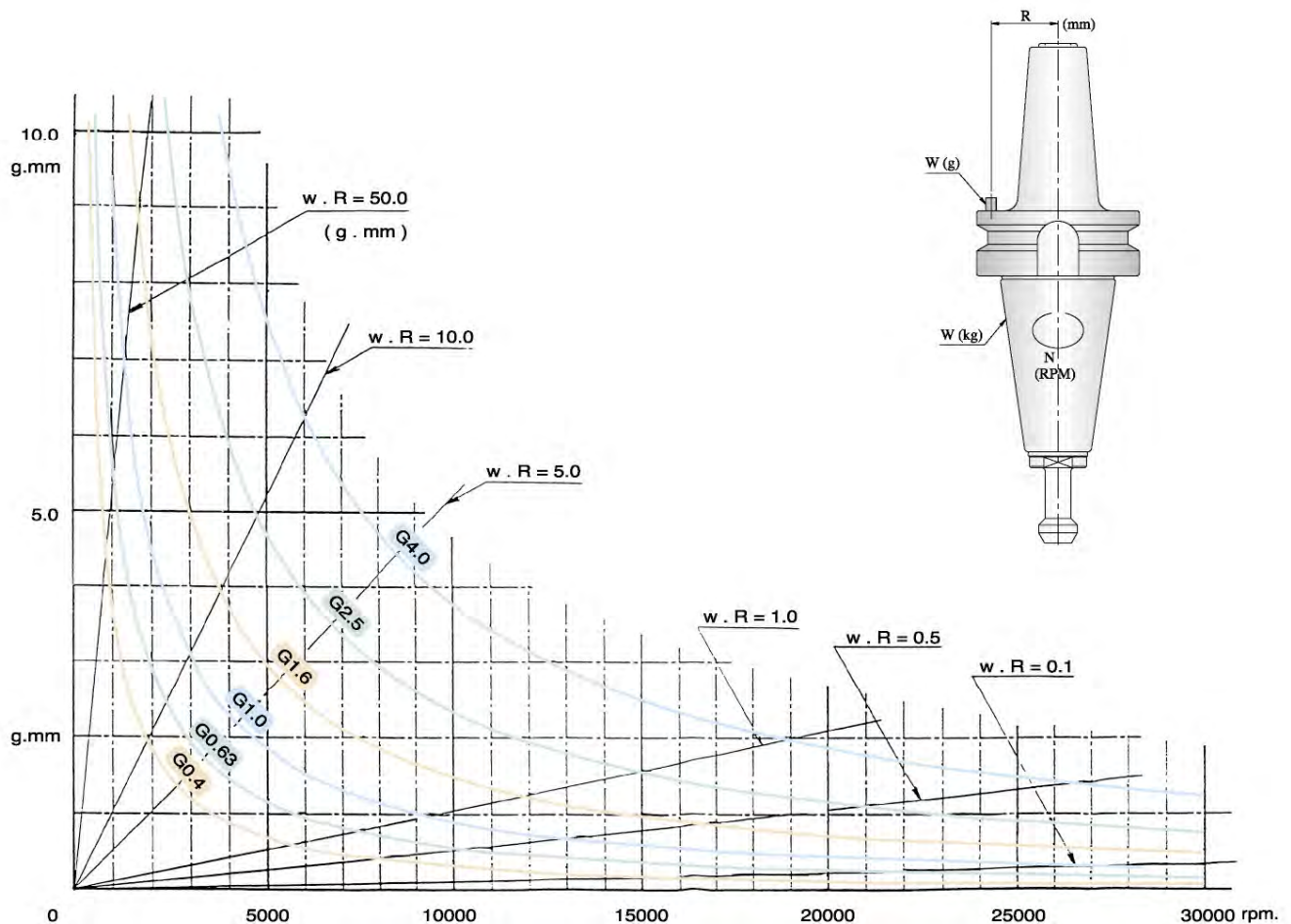


Designation Of HSK Shank Size



HSK	Typical Applications	25	32	40	50	63	80	100	125	160	DIN DOCUMENT
A	General machining , high bending loads and moderate torque , automatic tool change .		*	*	*	*	*	*	*	*	DIN 69893-1 DIN 69063-1
B	Stationary application , moderate bending loads , high torque , special applications , automatic tool change .			*	*	*	*	*	*	*	DIN 69893-2 DIN 69063-2
C	General machining , high bending loads and moderate torque , manual tool change (Ref.Type A) .		*	*	*	*	*	*			DIN 69893-1 DIN 69063-1
D	Stationary application , moderate bending loads , high torque , special applications , manual tool change(Ref.Type B) .			*	*	*	*	*	*		DIN 69893-2 DIN 69063-2
E	High speed application , light and fast spindles , low bending moments and torque , automatic tool change , easy balance .	*	*	*	*	*					DIN 69893-5 DIN 69063-5
F	Moderate speed application , machining of soft materials low bending moments and torque , automatic tool change , easy balance .				*	*	*				DIN 69893-6 DIN 69063-6

Balancing Figure



$$u = \frac{9549 \times G \times W}{N}$$

$$u = g . mm \quad W = 1.0kg \quad N = rpm.$$

rpm	G0.1	G0.4	G1.0	G1.6	G2.5	G4.0	G6.3	G10	G16	G25	G40
3,000	0.32	1.27	3.18	5.09	7.96	12.73	20.05	31.83	50.93	79.58	127.32
5,000	0.19	0.76	1.91	3.06	4.77	7.64	12.03	19.10	30.56	47.75	76.39
8,000	0.12	0.48	1.19	1.91	2.98	4.77	7.52	11.94	19.10	29.84	47.75
10,000	0.10	0.38	0.95	1.53	2.39	3.82	6.02	9.55	15.28	23.87	38.20
12,000	0.08	0.32	0.80	1.27	1.99	3.18	5.01	7.96	12.73	19.89	31.83
15,000	0.06	0.25	0.64	1.02	1.59	2.55	4.01	6.37	10.19	15.92	25.46
20,000	0.05	0.19	0.48	0.76	1.19	1.91	3.01	4.77	7.64	11.94	19.10
25,000	0.04	0.15	0.38	0.61	0.95	1.53	2.41	3.82	6.11	9.55	15.28
30,000	0.03	0.13	0.32	0.51	0.80	1.27	2.01	3.18	5.09	7.96	12.73
35,000	0.03	0.11	0.27	0.44	0.68	1.09	1.72	2.73	4.37	6.82	10.91
40,000	0.02	0.10	0.24	0.38	0.60	0.95	1.50	2.39	3.82	5.97	9.55
50,000	0.02	0.08	0.19	0.31	0.48	0.76	1.20	1.91	3.06	4.77	7.64