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TOOL HOLDERS & ACCESSORIES

Cat. No. 07

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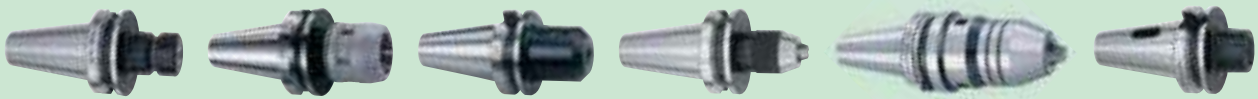
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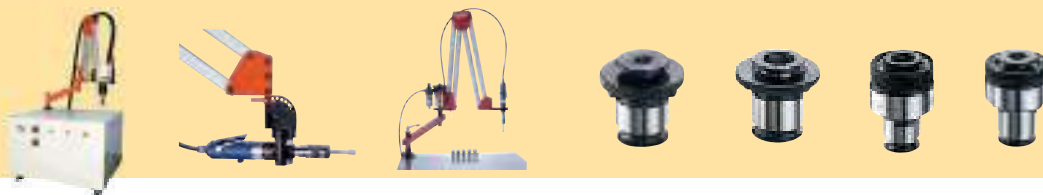
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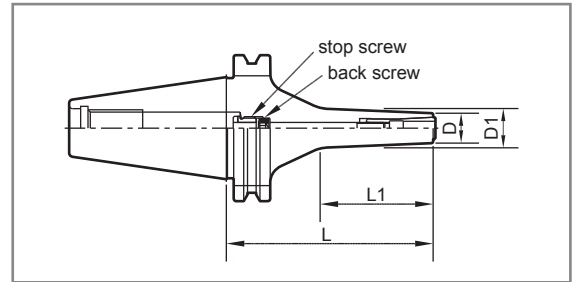
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DIN 69871 SK40

Features:

- Runout: <math><5\mu\text{m}</math>(4xD)
- Smallest outside diameter $\varnothing 13$
- Max speed: 20,000 r.p.m.; G2.5.
- Collet chuck designed without nut and with inner-holding collet. This can have strong stiffness rigidity and high stability.

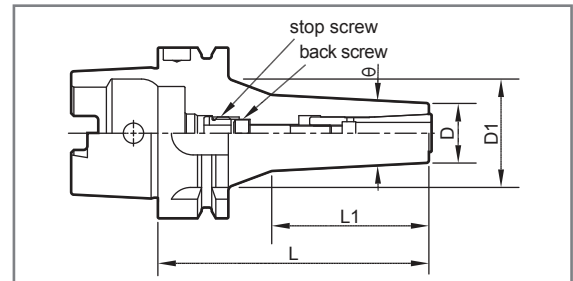


Ordering Code	Type of Holder	L	L1	$\varnothing D$	D1	Max r.p.m.	Hexagon Key	Back Screw	Stop Screw
0-342090-202	SK40-DC6-60	60	25	13	16	20,000	0-301940-642	M5 * L40	OP-M10
-204	SK40-DC6-90	90	48	13	18	20,000		M5 * L40	OP-M10
-206	SK40-DC6-120	120	62	13	19	20,000	0-301940-644	M5 * L40	OP-M10
-208	SK40-DC6-150	150	88	13	22	20,000		M5 * L95	OP-M10

DIN 69893 HSK form A

Features:

- Runout: <math><5\mu\text{m}</math>(4xD)
- Smallest outside diameter $\varnothing 13$
- Max speed: 30,000 r.p.m.; G2.5.
- Collet chuck designed without nut and with inner-holding collet. This can have strong stiffness rigidity and high stability.



Ordering Code	Type of Holder	Gripping Range	L	L1	$\varnothing D$	D1	Θ	Max r.p.m.	Hexagon Key	Back Screw	Stop Screw
0-306090-202	HSK63A-DC6-75	2~6	75	34	13	--	6°	30,000	0-301940-642	M5 * L20	OP-M10
-204	HSK63A-DC6-95	2~6	95	45	13	46	6°	30,000		M5 * L20	OP-M10
-206	HSK63A-DC6-120	2~6	120	53	13	48	6°	30,000		M5 * L40	OP-M10
-208	HSK63A-DC6-150	2~6	150	80	13	45	6°	30,000	0-301940-644	M5 * L80	OP-M10
-302	HSK63A-DC8-100	3~8	100	58	22	48	6°	30,000	0-301940-653	M6 * L25	OP-M12
-402	HSK63A-DC10-110	3~10	110	55	28	48	--	30,000	0-301940-663	M8 * L30	OP-M16
-502	HSK63A-DC12-120	3~12	120	55	34	50	--	30,000	0-301940-683	M10 * L35	OP-M18

MAS/BT(JIS B 6339)

Features:

- Runout: <math>< 5\mu\text{m}</math>(4xD)
- Smallest outside diameter $\phi 13$
- Max speed: 30,000 r.p.m.; G2.5.
- Collet chuck designed without nut and with inner-holding collet. This can have strong stiffness rigidity and high stability.



Fig.1

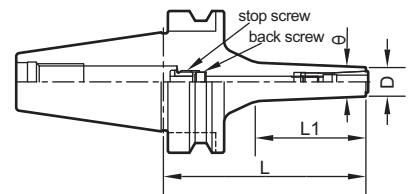
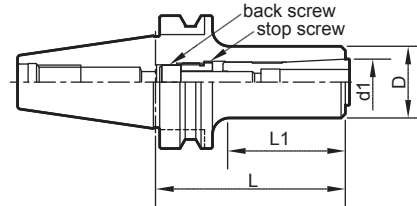


Fig.2

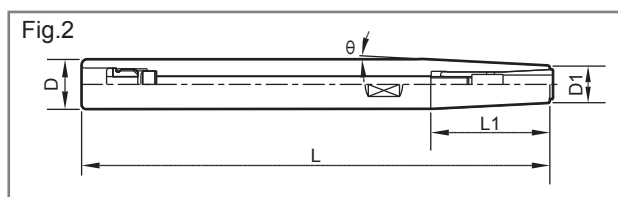
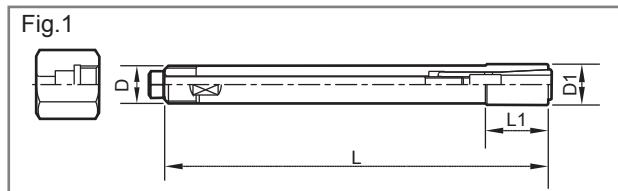


Ordering Code	Type of Holder	Gripping Range	L	L1	ϕD	θ	Fig	Collet	Max r.p.m.	Hexagon Key	Back Screw	Stop Screw
0-330090-202	BT30-DC6-60	2~6	60	26	13	3°	1	DC6	30,000	0-301940-642	M5 * L40	OP-M10
-204	DC6-90	2~6	90	50	13	3°	1	DC6	30,000		M5 * L40	OP-M10
-502	DC12-70	3~12	70	45	34	--	2	DC12	30,000	0-301940-683	M10 * L35	OP-M18
0-340090-202	BT40-DC6-60	2~6	60	26	13	3°	1	DC6	30,000	0-301940-642	M5 * L40	OP-M10
-204	DC6-90	2~6	90	45	13	3°	1	DC6	30,000		M5 * L40	OP-M10
-206	DC6-120	2~6	120	60	13	3°	1	DC6	30,000	0-301940-644	M5 * L40	OP-M10
-208	DC6-150	2~6	150	76	13	3°	1	DC6	30,000		M5 * L90	OP-M10
-302	DC8-90	3~8	90	53	22	3°	1	DC8	30,000	0-301940-653	M6 * L25	OP-M12
-304	DC8-120	3~8	120	65	22	3°	1	DC8	30,000		M6 * L25	OP-M12
-402	DC10-90	3~10	90	51	28	--	2	DC10	30,000	0-301940-663	M8 * L30	OP-M16
-404	DC10-120	3~10	120	60	28	--	2	DC10	30,000		M8 * L30	OP-M16
-502	DC12-70	3~12	70	35	34	3°	2	DC12	30,000	0-301940-683	M10 * L35	OP-M18
-504	DC12-90	3~12	90	55	34	--	2	DC12	30,000		M10 * L35	OP-M18
-506	DC12-120	3~12	120	85	34	--	2	DC12	30,000		M10 * L35	OP-M18
-508	DC12-150	3~12	150	90	34	--	2	DC12	30,000		M10 * L35	OP-M18
0-350090-402	BT50-DC10-110	3~10	110	57	28	--	2	DC10	20,000	0-301940-663	M8 * L30	OP-M16
-404	DC10-150	3~10	150	75	28	--	2	DC10	20,000	0-301940-664	M8 * L30	OP-M16
-502	DC12-110	3~12	110	57	34	--	2	DC12	20,000	0-301940-683	M10 * L35	OP-M18
-504	DC12-150	3~12	150	70	34	--	2	DC12	20,000	0-301940-684	M10 * L35	OP-M18

Extension Adaptor

Features:

- Slim collet chuck designed without nut can get the smallest outside diameter of $\varnothing 8.6\text{mm}$. This can achieve the best effect on extended processing depth.
- Varies lengths of slim chuck provides different choices, the longest chuck is up to 300mm.



Ordering Code	Type of Holder	Fig	d	L	L1	$\varnothing D$	D1	θ	Collet	Hexagon Key	Back Screw	Stop Screw	Stop Nut
0-329090-102	ST10-DC4-90	1	2~4	90	14.32	10	9	2°	DC4	0-301940~632	M4 * L70	--	TP-M8
-112	ST12-DC4-120	2	2~4	120	38	12	8.6	3°	DC4	0-301940~632	M4 * L85	OP-M8	--
0-329090-212	ST12-DC6-120	1	2~6	120	40	12	13	--	DC6	0-301940~642	M5 * L95	--	TP-M12
-222	ST16-DC6-150	2	2~6	150	38	16	13	3°	DC6		M5 * L100	OP-M10	--
-232	ST20-DC6-200	2	2~6	200	70	20	13	3°	DC6		M5 * L100	OP-M10	--
-242	ST25-DC6-250	2	2~6	250	115	25	13	3°	DC6	0-301940~643	M5 * L100	OP-M10	--
0-329090-312	ST20-DC8-150	2	3~8	150	28	20	19	2°	DC8	0-301940~652	M6 * L72	OP-M12	--
-322	ST20-DC8-200	2	3~8	200	28	20	19	2°	DC8		M6 * L120	OP-M12	--
0-329090-412	ST25-DC10-150	2	3~10	150	28	25	24	2°	DC10	0-301940~662	M8 * L80	OP-M16	--
-422	ST25-DC10-200	2	3~10	200	28	25	24	2°	DC10		M8 * L100	OP-M16	--
-432	ST25-DC10-250	2	3~10	250	28	25	24	2°	DC10		M8 * L150	OP-M16	--
0-329090-512	ST32-DC12-200	2	3~12	200	57	32	30	2°	DC12	0-301940~682	M10 * L120	OP-M18	--
-522	ST32-DC12-250	2	3~12	250	57	32	30	2°	DC12		M10 * L150	OP-M18	--
-532	ST32-DC12-300	2	3~12	300	57	32	30	2°	DC12		M10 * L150	OP-M18	--

always better

Extension Adaptor



Fig.2
Two Holders

Fig.1
One Holder

DC 4

Ordering Code	Type of Holder	Fig	Contains			
			Collet Chuck	Collet	Opener	Hexagon Key
0-329090-1123	SST12-DC4-120	1	ST12-DC4-120	DC4-2E x 1pc DC4-3E x 1pc DC4-4E x 1pc	0-301940~002	0-301940~632
-4123	SST10-DC4-90	1	ST10-DC4-90			
-5123	SST1012-DC4	2	ST10-DC4-90 ST12-DC4-120			

DC 6

Ordering Code	Type of Holder	Fig	Contains			
			Collet Chuck	Collet	Opener	Hexagon Key
0-329090-0223	SST12-DC6-120	1	ST12-DC6-120	DC6-3E x 1pc DC6-4E x 1pc DC6-6E x 1pc	0-301940~002	0-301940~642
-1223	SST16-DC6-150	1	ST16-DC6-150			0-301940~642
-2223	SST20-DC6-200	1	ST20-DC6-200			0-301940~642
-3223	SST25-DC6-250	1	ST25-DC6-250			0-301940~643
-4223	SST1216-DC6	2	ST12-DC6-120 ST16-DC6-150			0-301940~642
-5223	SST2025-DC6	2	ST20-DC6-200 ST25-DC6-250			0-301940~642 0-301940~643

DC 8

Ordering Code	Type of Holder	Fig	Contains			
			Collet Chuck	Collet	Opener	Hexagon Key
0-329090-1323	SST20-DC8-150	1	ST20-DC8-150	DC8-3E x 1pc DC8-4E x 1pc DC8-6E x 1pc DC8-8E x 1pc	0-301940~002	0-301940~652
-2323	SST20-DC8-200	1	ST20-DC8-200			

DC 10

Ordering Code	Type of Holder	Fig	Contains			
			Collet Chuck	Collet	Opener	Hexagon Key
0-329090-1423	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	0-301940~002	0-301940~662
-2423	SST25-DC10-200	1	ST25-DC10-200			
-3423	SST25-DC10-250	1	ST25-DC10-250			

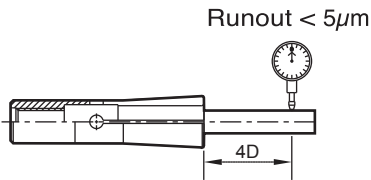
DC 12

Ordering Code	Type of Holder	Fig	Contains			
			Collet Chuck	Collet	Opener	Hexagon Key
0-329090-1523	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	0-301940~927	0-301940~682
-2523	SST32-DC12-250	1	ST32-DC12-250			
-3523	SST32-DC12-300	1	ST32-DC12-300			

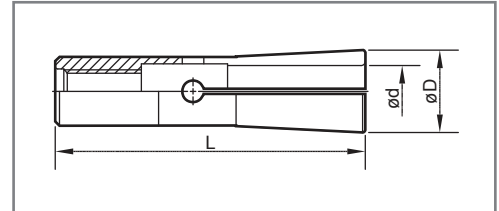
DC-E Collet

Features:

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



Type	DC4	DC6	DC8	DC10	DC12
D	7	9.6	15	19.1	22
L	31	36	45	52	60



DC4		DC6		DC8		DC10		DC12	
Ordering Code	Size (mm)	Ordering Code	Size (mm)	Ordering Code	Size (mm)	Ordering Code	Size (mm)	Ordering Code	Size (mm)
0-300090-102	2.0	0-300090-203	3.0	0-300090-303	3.0	0-300090-403	3.0	0-300090-503	3.0
0-300090-103	3.0	0-300090-204	4.0	0-300090-304	4.0	0-300090-404	4.0	0-300090-504	4.0
0-300090-104	4.0	0-300090-206	6.0	0-300090-306	6.0	0-300090-406	6.0	0-300090-506	6.0
				0-300090-308	8.0	0-300090-408	8.0	0-300090-508	8.0
						0-300090-410	10.0	0-300090-510	10.0
								0-300090-512	12.0

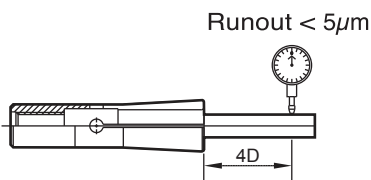
Size: DC4, DC6 diameter 3.175 is available on request.

Order example: 300090-102 DC4-2E

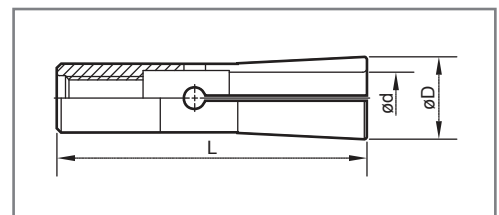
DC Collet

Features:

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



Type	DC6
D	9.8
L	36



DC6			
Ordering Code	Size (mm)	Ordering Code	Size (mm)
0-300092-200	2	0-300092-425	4.25
-225	2.25	-450	4.5
-250	2.5	-475	4.75
-275	2.75	-500	5
-300	3	-525	5.25
-325	3.25	-550	5.5
-350	3.5	-575	5.75
-375	3.75	-600	6
-400	4		



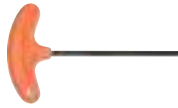
Ordering Code	Type	ød	Quantity
0-300090-0405	SDC10E-5	3, 4, 6, 8, 10	5pcs
-0506	SDC12E-6	3, 4, 6, 8, 10, 12	6pcs
-0217	SDC6-17	2~6	17pcs

Opener



Ordering Code
0-301940-002

Hexagon Key



Ordering Code	mm	L
0-301940-632	3	100
-642	4	100
-643	4	150
-652	5	100
-662	6	100
-682	8	100

Back Screw



Ordering Code	Type	Thread	L
0-301940-0460	M4 * L60	M4	60
-0485	M4 * L85	M4	85
-0555	M5 * L55	M5	55
-0595	M5 * L95	M5	95
-05100	M5 * L100	M5	100
-0670	M6 * L70	M6	70
-06120	M6 * L120	M6	120
-0880	M8 * L80	M8	80
-08100	M8 * L100	M8	100
-08150	M8 * L150	M8	150
-10120	M10 * L120	M10	120
-10150	M10 * L150	M10	150

Stop Screw



Ordering Code	Type	Thread
0-301940-OPM8	OP-M8	M8(L)
-OPM10	OP-M10	M10(L)
-OPM12	OP-M12	M12(L)
-OPM16	OP-M16	M16(L)
-OPM18	OP-M18	M18(L)

Thread of stop screw is left-hand thread.

Stop Nut

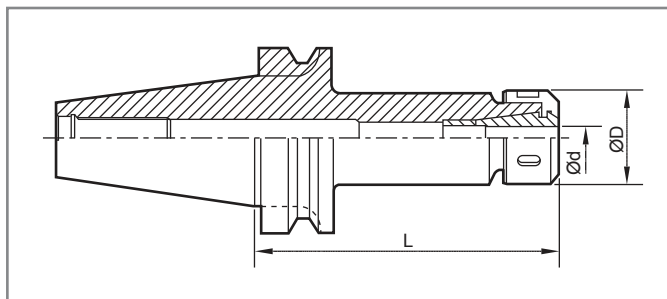


Ordering Code	Type	Thread
0-301940-TPM8	TP-M8	M8(L)
-TPM12A	TP-M12A	M12(L)
-TPM12	TP-M12	M12(L)

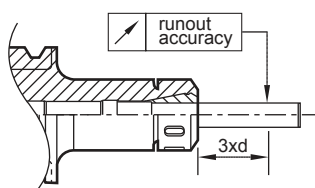
Thread of stop nut is left-hand thread.

High Precision Collet Chuck-LT series

The LT spring collet chuck is special designed for LT high precision collets. 3 degree taper is for high clamping force. The chuck nut is symmetrical to the rotating center for increasing running at higher spindle speed.



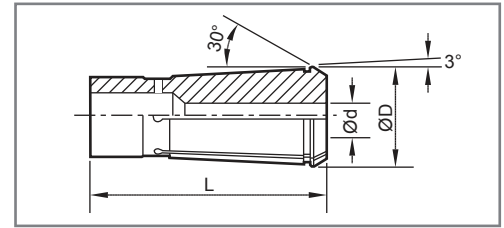
- Pre-balanced for high speed:
 BT30- 30000 r.p.m. G2.5
 BT40- 20000 r.p.m. G2.5
 BT50- 10000 r.p.m. G2.5
- High concentricity accuracy:
 0.004 mm at 3xd – LT6, LT10
 0.005 mm at 3xd – LT16
 0.006 mm at 3xd – LT 25



Taper Shank	Ordering Code	Type of Holder	L	D	d
BT30	330180-202	BT30-LT6-70	70	20	3-6
	-204	BT30-LT6-100	100	20	3-6
	-302	BT30-LT10-70	70	34	2-10
	-304	BT30-LT10-100	100	34	2-10
	-402	BT30-LT16-70	70	46	4-16
	-404	BT30-LT16-100	100	46	4-16
	-502	BT30-LT25-70	70	56	12-25
BT40	340180-202	BT40-LT6-70	70	20	3-6
	-204	BT40-LT6-100	100	20	3-6
	-302	BT40-LT10-70	70	34	2-10
	-304	BT40-LT10-100	100	34	2-10
	-306	BT40-LT10-125	125	34	2-10
	-308	BT40-LT10-150	150	34	2-10
	-402	BT40-LT16-70	70	46	4-16
	-404	BT40-LT16-100	100	46	4-16
	-406	BT40-LT16-125	125	46	4-16
	-408	BT40-LT16-150	150	46	4-16
	-504	BT40-LT25-100	100	56	12-25
	-506	BT40-LT25-125	125	56	12-25
	-508	BT40-LT25-150	150	56	12-25
BT50	350180-304	BT50-LT10-100	100	34	2-10
	-306	BT50-LT10-125	125	34	2-10
	-308	BT50-LT10-150	150	34	2-10
	-404	BT50-LT16-100	100	46	4-16
	-406	BT50-LT16-125	125	46	4-16
	-408	BT50-LT16-150	150	46	4-16
	-504	BT50-LT25-100	100	56	12-25
	-506	BT50-LT25-125	125	56	12-25
-508	BT50-LT25-150	150	56	12-25	

High Precision Spring Collets-LT series

- Special diameter for clamping tap and drill for pre-bore of tapping is available on request.



Ordering Code	Type	d	L	D	Runout Accuracy
300180-203~206	LT6	3, 4, 5, 6	40.6	12.1	0.004
300180-303~310	LT10	3, 4, 5, 6, 7, 8, 9, 10	46.5	17.3	0.004
300180-404~416	LT16	4, 6, 8, 10, 12, 16	60	26.4	0.005
300180-512~525	LT25	12, 16, 20, 25	70	33.3	0.006

LT Collet Chuck Nuts

CNR Type

Cylindrical shape for running at high speed, ring-type spanner is required.

CN Type

Economical type, hook spanner is required, for regular application.

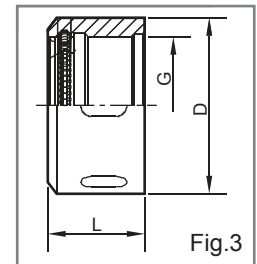
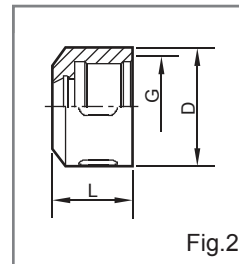
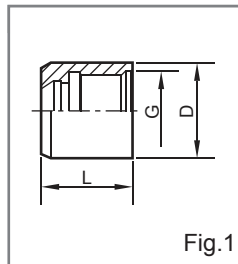
CNK Type

With bearing type ring, higher clamping force for heavy cutting, hook spanner is required.

CNR

CN

CNK



Ordering Code	Fig.	Type	L	D	d	G
301180-202	1	CNR-LT6	19	20	18	M16X1.0P
-302	2	CN-LT10	30	34	24	M25X1.25P
-304	1	CNR-LT10	30	35	24	M25X1.25P
-402	2	CN-LT16	27	46	32	M36X1.5P
-502	3	CNK-LT25	32	58	50	M47X1.5P

Spanner

Hook type:

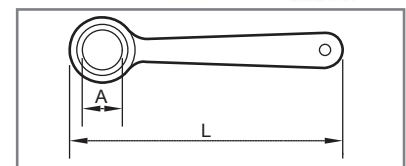
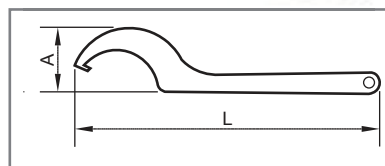
For CN and CNK Type nuts, made of hardened steel.

Ring type:

For clamping CNR type nut, LT06 and LT10. The clamping mechanism is ratchet bearing.

Hook Type

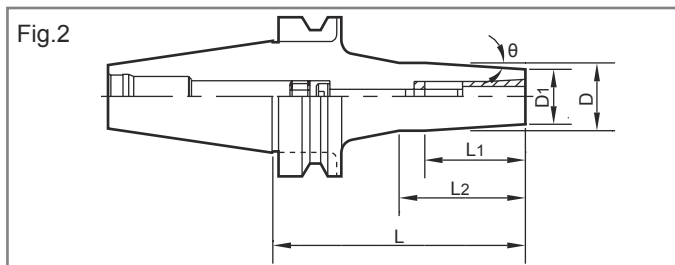
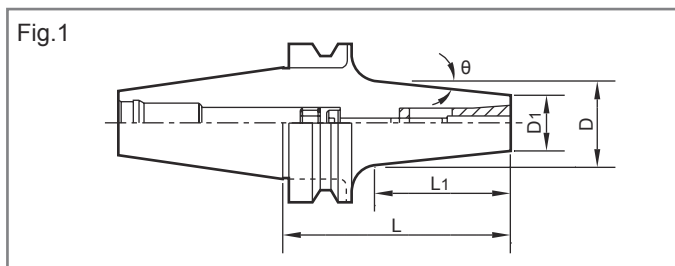
Ring Type



Ordering Code	Fig.	Type	A	L	For Nut
301180-312	Hook Type	SP-LT10	36	190	CN
-412	Hook Type	SP-LT16	22	235	CN
-512	Hook Type	SP-LT25	47	259	CNK
-212	Ring Type	SPB-LT6	20	160	CNR
-314	Ring Type	SPB-LT10	35	200	CNR

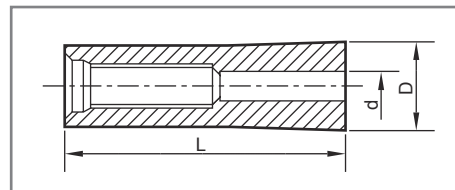
High Precision Collet Chuck-LB series

- The spring chuck is made of high alloy steel, sub-zero treatment for stable size and hardness, fully precision ground for high accuracy clamping.
- The collet chucks are pre-balanced for high speed:
 BT30- 30000 r.p.m. G2.5
 BT40- 20000 r.p.m. G2.5
 BT50- 10000 r.p.m. G2.5



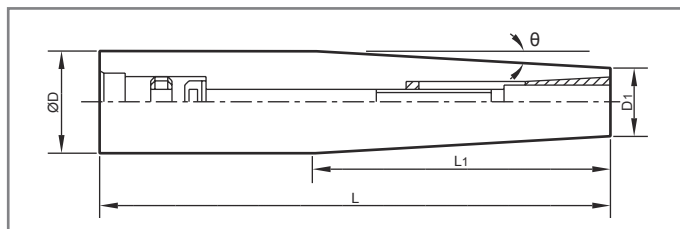
Taper Shank	Ordering Code	Type of Holder	Fig.	L	L1	D	D1	θ	Collet
BT30	330140-202H	BT30-LB6-70(H)	1	70	35	19	16	2°	LB06-3-6
	-202	BT30-LB6-70	1	70	35	17.5	14	3°	
	-204	BT30-LB6-100	2	100	50	17.5	14	2°	
BT30	330140-502	BT30-LB12-75	2	75	52	34	34	-	LB12-04~12
BT40	340140-202	BT40-LB6-70	1	70	35	17.5	14	3°	LB06-3-6
	-204	BT40-LB6-100	2	100	50	20	14	3°	
	-206	BT40-LB6-125	2	125	70	20	14	2°	
	-208	BT40-LB6-150	2	150	70	20	14	2°	
BT40	340140-502	BT40-LB12-75	2	75	40	40	34	4°	LB12-04~12
	-504	BT40-LB12-100	2	100	67	40	34	3°	
	-506	BT40-LB12-125	1	125	90	40	34	2°	
	-508	BT40-LB12-150	1	150	115	40	34	1°	
BT50	350140-204	BT50-LB6-100	1	100	50	20	14	3°	LB06-3-6
	-206	BT50-LB6-125	2	125	70	20	14	2°	
	-208	BT50-LB6-150	2	150	70	20	14	2°	

High Precision Spring Collets-LB series



Ordering Code	Type	d	L	D
300140-203	LB6	3	38	10
300140-204	LB6	4	38	10
300140-205	LB6	5	38	10
300140-206	LB6	6	38	10
300140-504	LB12	4	64	22
300140-506	LB12	6	64	22
300140-508	LB12	8	64	22
300140-510	LB12	10	64	22
300140-512	LB12	12	64	22

LB Cylindrical shank

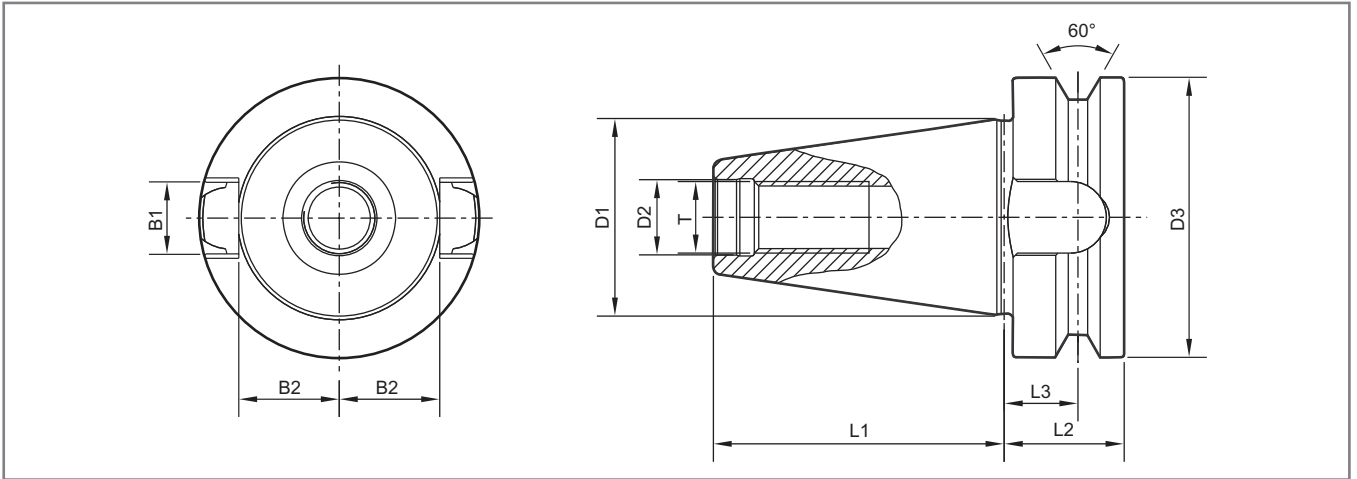


Ordering Code	Type of Holder	L	L1	D	D1	θ
329140-202	C16-LB6-150	150	30	16	14	2°
-302	C20-LB6-200	200	70	20	14	2°
-402	C25-LB6-250	250	100	25	14	3°

Specifications of JIS B6339 BT30, BT40, BT50

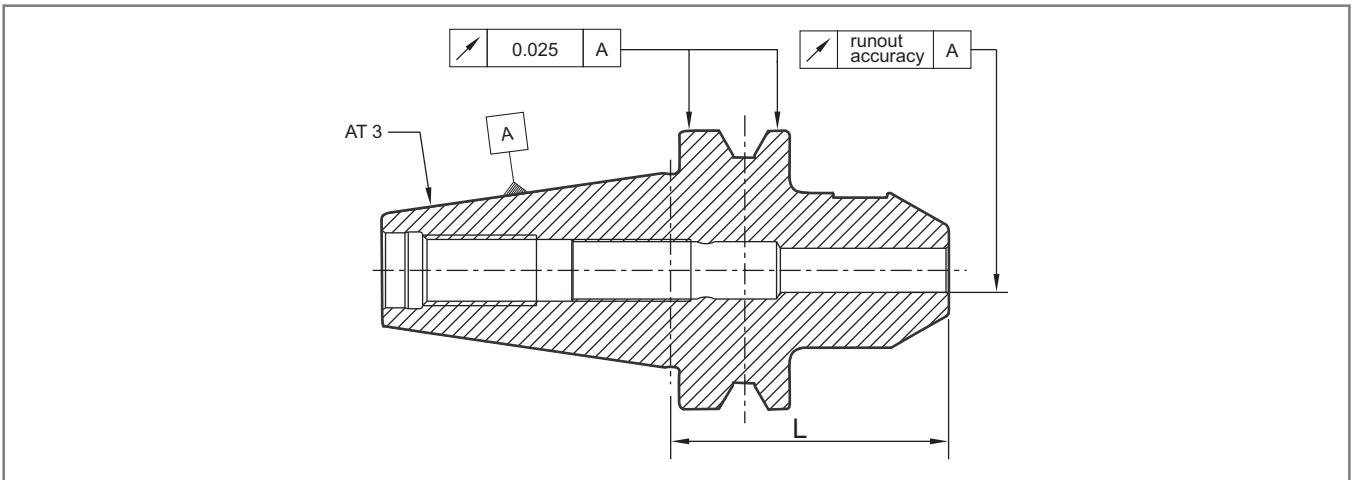
Features:

- Toolholders case-hardened 60 – 2 HRC
- Tensile strength in the core at least 950 N/mm²
- Taper in tolerance quality AT 3



Length [mm]	D1	D2	D3	L1	L2	L3	T	B1	B2
BT30	31.75	12.5	46	48.4	22	20	M12	16.1	16.3
BT40	44.45	17	63	65.4	27	25	M16	16.1	22.6
BT50	69.75	25	100	101.8	38	35	M24	25.7	35.4

Runout Accuracy

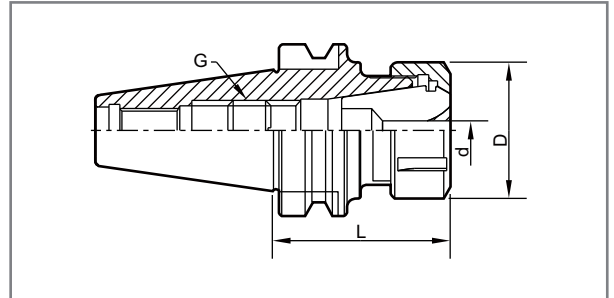


Gage length	L < 160	L ≥ 160
max. runout tolerance in mm		
Shrink fit chuck	0.003	0.004
Collet chuck ER	0.003	0.004
KCH spring collet chuck	0.003	0.005
Side lock holder	0.003	0.004
Collet chuck OZ	0.003	0.004
Face mill arbor	0.006	0.006
Combination shell end mill arbor	0.006	0.006
Morse taper adapter	0.008	-
Jacob drill chuck adapter	0.005	-
NC drill chuck	0.050	-
Power drill chuck	0.050	-

ER Spring Collet Chuck

Features:

- The most popular collet chucks. One chuck can be used for end mills, drills, reamers and taps.
- Thread of the spring collet chuck and internal taper are precision ground. Thread of clamping nut is hardened and turned for achieving high clamping power.
- Backup screw is not included, please order as optional item.
- Chuck body is pre-balanced G6.3/8000 r.p.m. (standard grade)



- Higher pre-balanced grade is available on request, the additional charge is needed.

Optional Pre. balanced	
G2.5	18000 r.p.m.
G2.5	25000 r.p.m.

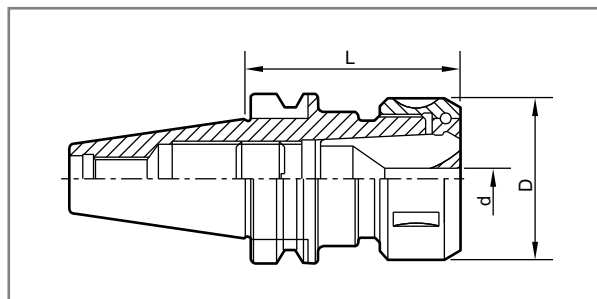


Taper Shank	Ordering Code	Type of Holder	L	D	d	Backup Screw G
BT30	330100-302	BT30-ER16-70	70	28	0.5-10	M10x1.5
	-402	-ER20-70	70	34	1-13	M12x1.75
	-602	-ER32-60	60	50	2-20	M12x1.75
	-702	-ER40-80	80	63	3-26	M12x1.75
BT40	340100-302	BT40-ER16-70	70	28	0.5-10	M10x1.5
	-304	-ER16-100	100			
	-402	-ER20-70	70	34	1-13	M14x2.0
	-404	-ER20-100	100			
	-501	-ER25-70	70	42	1-16	M12x1.75
	-504	-ER25-100	100			
	-506	-ER25-150	150			
	-602	-ER32-70	70	50	2-20	M16x2.0
	-604	-ER32-100	100			
-702	-ER40-80	80	63	3-26	M16x2.0	
BT50	350100-302	BT50-ER16-100	100	28	0.5-10	M10x1.5
	-304	-ER16-150	150			
	-402	-ER20-100	100	34	1-13	M12x1.75
	-404	-ER20-150	150			
	-502	-ER25-100	100	42	1-16	M16x2.0
	-504	-ER25-150	150			
	-602	-ER32-100	100			
	-604	-ER32-150	150	50	2-20	M20x2.5
	-606	-ER32-200	200			
	-702	-ER40-80	80	63	3-26	M20x2.5
	-704	-ER40-100	100			
	-706	-ER40-150	150			
	-708	-ER40-200	200			

OZ Spring Collet Chuck

Features:

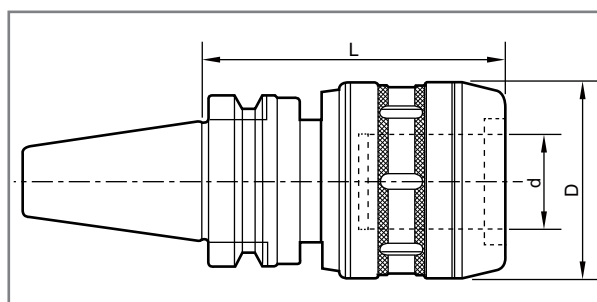
- Supplied with backup screw and clamp nut.
- Spanner is optional.
- Please refer to page 40 for OZ collets.



Taper Shank	Ordering Code	Type of Holder	L	D	d
BT40	340110-252	BT40-OZ25-80	80	60	6-25
	-322	-OZ32-90	90	78	6-32
BT50	350110-252	BT50-OZ25-90	90	60	6-25
	-322	-OZ32-100	100	78	6-32

KCH Spring Collet Chuck

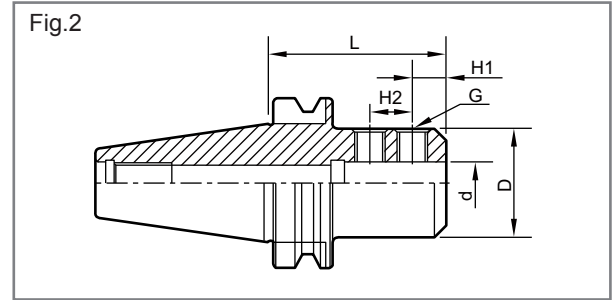
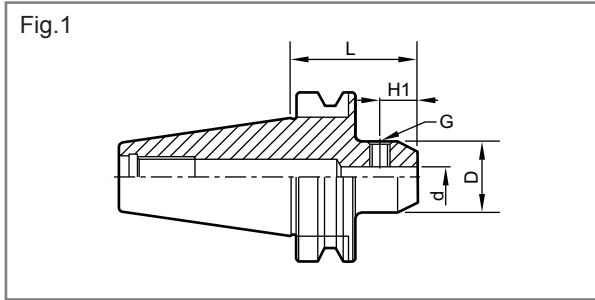
- Supplied with a spanner.
- Please refer to page 43 for KCH collets.
- DIN 69871 type chuck, see page 26.



Taper Shank	Ordering Code	Type of Holder	Clamping Range	L	D	d	Collet
BT30	330150-202	BT30-KCH20-80	Ø6 - Ø20	80	54	20	C20
BT40	340150-202	BT40-KCH20-75	Ø6 - Ø20	75	54	20	
	-204	-KCH20-105	Ø6 - Ø20	105	54	20	
	-206	-KCH20-135	Ø6 - Ø20	135	54	20	
	-402	BT40-KCH32-105	Ø6 - Ø32	105	68	32	
	-404	-KCH32-135	Ø6 - Ø32	135	68	32	
BT50	350150-204	BT50-KCH20-105	Ø6 - Ø20	105	54	20	C20
	-206	-KCH20-135	Ø6 - Ø20	135	54	20	
	-208	-KCH20-165	Ø6 - Ø20	165	54	20	
	-402	BT50-KCH32-105	Ø6 - Ø32	105	68	32	C32
	-404	-KCH32-135	Ø6 - Ø32	135	68	32	
	-406	-KCH32-165	Ø6 - Ø32	165	68	32	
	-602	BT50-KCH42-105	Ø6 - Ø42	105	87	42	

Side Lock Holder
Features:

- For clamping the End Mill with DIN 1835 Form B shank.
- The End Mill Holders are supplied with set screws which are made according to DIN 1835 B-M14x16.

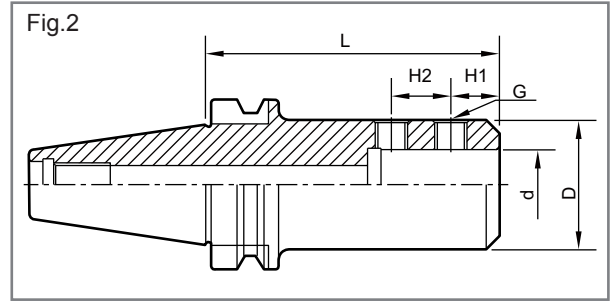
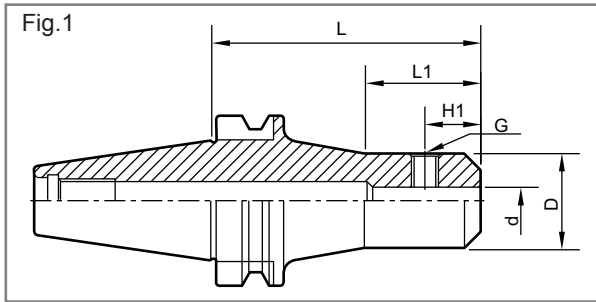


Taper Shank	Ordering Code	Type of Holder	Fig.	d	L	D	H1	H2	G
BT30	330160-062	BT30-SL6-60	1	6	60	25	18	-	M6
	-082	-SL8-60		8		28	18		M8
	-102	-SL10-60		10		35	20		M10
	-122	-SL12-60		12		42	22.5		M12
	-161	-SL16-70		16		48	24		M14
	-202	-SL20-75		20		52	25		M16
BT40	340160-062	BT40-SL6-75	1	6	75	25	18	-	M6
	-082	-SL8-75		8		28	18		M8
	-102	-SL10-75		10		35	20		M10
	-122	-SL12-75		12		42	22.5		M12
	-162	-SL16-75		16		48	24		M14
	-202	-SL20-75		20		52	25		M16
	-252	-SL25-90	2	25	90	60	24	25	M16
	-322	-SL32-90		32				28	M16
BT50	350160-062	BT50-SL6-105	1	6	105	25	18	-	M6
	-082	-SL8-105		8		28	18		M8
	-102	-SL10-105		10		35	20		M10
	-122	-SL12-105		12		42	22.5		M12
	-162	-SL16-105		16		48	24		M14
	-202	-SL20-105		20		52	25		M16
	-252	-SL25-105	2	25	105	60	24	25	M16
	-322	-SL32-105		32				28	M20
	-402	-SL40-120		40				120	
	-422	-SL42-120		42					30

Side Lock Holder

Features:

- Extra-length extension design.
- For clamping the End Mill with DIN 1835 Form B shank.
- The End Mill Holders are supplied with set screws which are made according to DIN 1835 B-M14x16.



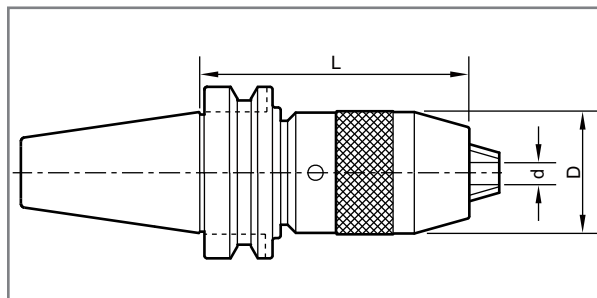
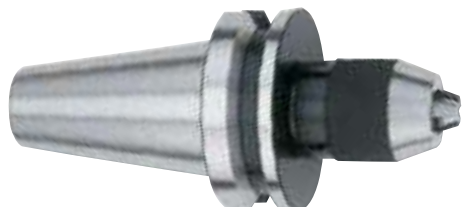
Taper Shank	Ordering Code	Type of Holder	Fig.	dh6	L	D	H1	H2	G
BT40	340160-066	BT40-SL6-120	1	6	120	25	18	-	M6
	-086	-SL8-120		8		28			
	-106	-SL10-120		10		35	20		
	-126	-SL12-120		12		42	22.5		
BT50	350160-126	BT50-SL12-150	1	12	150	42	22.5	-	M12
	-166	-SL16-150		16		48	24		
	-206	-SL20-150	2	20	200	52	25	-	M16
	-207	-SL20-200							
	-256	-SL25-150	25	150	200	60	24	25	M16
	-257	-SL25-200							
	-258	-SL25-250	32	150	200	72	28	28	M20
	-326	-SL32-150							
	-327	-SL32-200	42	200	200	80	30	32	M20
	-328	-SL32-250							
	-427	-SL42-200							

- Low stock item.

NC Drill Chuck

Features:

- Supplied with a spanner.

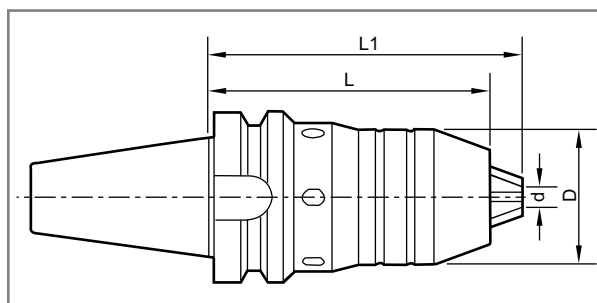


Taper Shank	Ordering Code	Type of Holder	d Capacity	D	L
BT30	330190-103	BT30-APU08-90	0-8	36.6	90
	-202	-APU13-105	1-13	51.5	105
BT40	340190-102	BT40-APU08-90	0-8	36.3	90
	-202	-APU13-90	1-13	51.5	90
	-302	-APU16-115	3-16	58	115
BT50	350190-202	BT50-APU13-125	1-13	51.5	125
	-302	-APU16-135	3-16	58	135

Power Drill Chuck

Features:

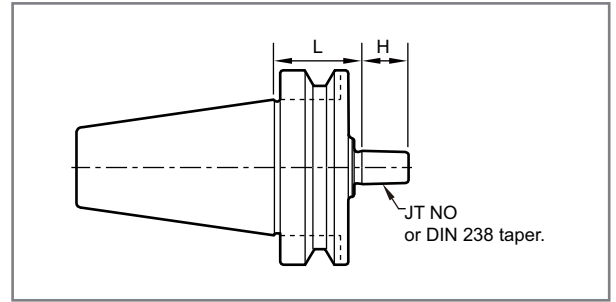
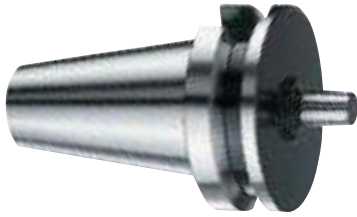
- For Clockwise and Counter clockwise rotation of cutting tools.
- High clamping power, high accuracy.
- Supplied with a spanner.



Taper Shank	Ordering Code	Type of Holder	d Capacity	D	L	L1
BT30	330192-102	BT30-SPH08-83	0-8	37.5	83	92/83
	-202	-SPH13-102	0-13	50	102	115/102
BT40	340192-102	BT40-SPH08-87	0-8	37.5	87	96/87
	-202	-SPH13-102	0-13	50	102	115/102
	-302	-SPH16-108.5	3-16	57	108.5	121.5/108.5
BT50	350192-102	BT50-SPH08-98	0-8	37.5	98	106/98
	-202	-SPH13-115.5	0-13	50	115.5	126.2/115.5
	-302	-SPH16-119.5	3-16	57	119.5	132.2/119.5

Drill Chuck Adaptor

- JACOBS taper and DIN 238 taper

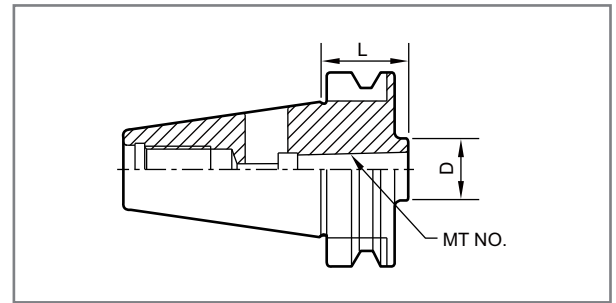


Taper Shank	Ordering Code	Type of Holder	Taper No.	H	L
BT30	330200-602	BT30-JTA6-45	JT6	24	45
BT40	340200-602	BT40-JTA6-45	JT6	24	45
BT50	350200-602	BT50-JTA6-45	JT6	24	45
	-604	-JTA6-105	JT6	24	105

Morse Taper Adaptor

Features:

- For adapting drills with Morse Taper Shank (DIN 228 Form B).

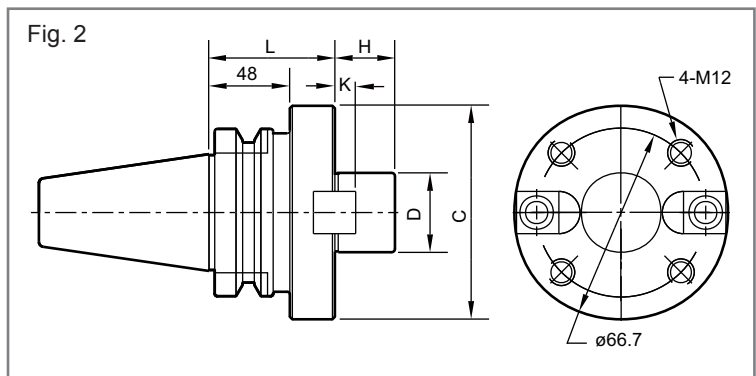
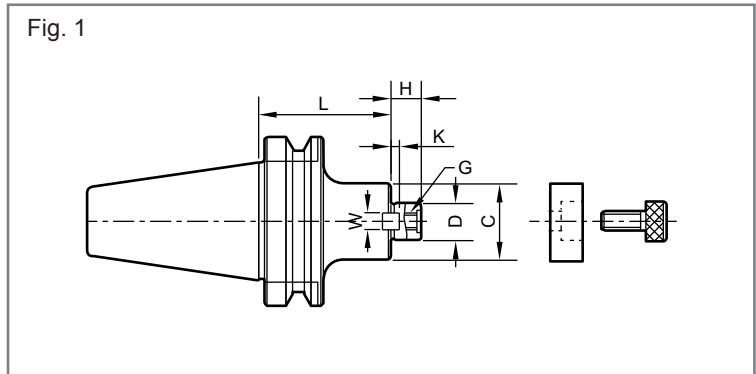


Taper Shank	Ordering Code	Type of Holder	MT No.	L	D
BT30	330210-102	BT30-MTA1-45	1	45	25
	-202	-MTA2-60	2	60	32
	-302	-MTA3-80	3	80	40
BT40	340210-102	BT40-MTA1-45	1	45	25
	-104	-MTA1-120		120	
	-202	-MTA2-45	2	45	32
	-204	-MTA2-120		120	
	-302	-MTA3-75	3	75	40
	-304	-MTA3-135		135	
BT50	-402	-MTA4-90	4	90	50
	350210-102	BT50-MTA1-45	1	45	25
	-104	-MTA1-120		120	
	-106	-MTA1-180		180	
	-202	-MTA2-45	2	45	32
	-204	-MTA2-135		135	
	-206	-MTA2-180		180	
	-302	-MTA3-60	3	60	40
	-304	-MTA3-150		150	
	-306	-MTA3-180		180	
	-402	-MTA4-75	4	75	50
	-404	-MTA4-180		180	
-502	-MTA5-105	5	105	65	
-504	-MTA5-210		210		

- MTB adapter is available on request.

Face Mill Arbor
Features:

- All arbors are supplied with drive key and clamp screw.
- For Inch bore Face Milling Cutters.



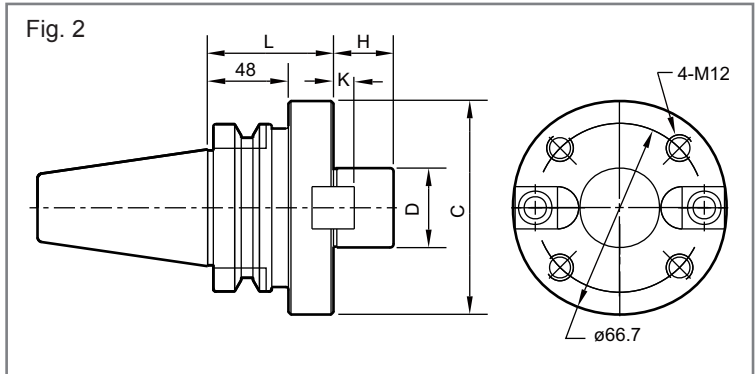
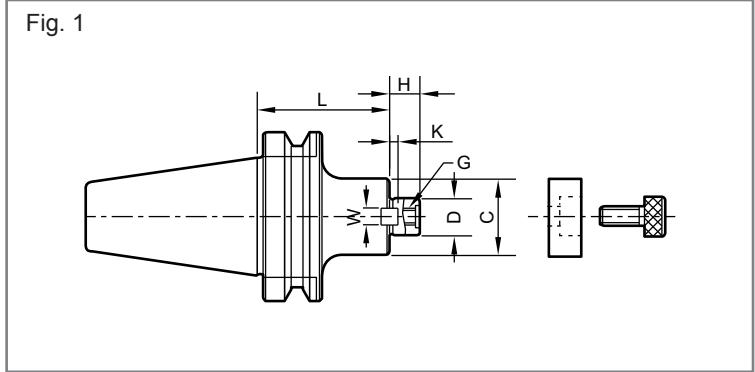
Taper Shank	Dia. of Cutter	D	Oredring Code	Type of Holder	Fig.	C	H	W	G	L	
BT30	Ø76	25.4	330300-302	BT30-FMA25.4-45	1	45				45	
	Ø76	25.4	-304	-FMA25.4-60						60	
BT40	Ø76	25.4	340300-302	BT40-FMA25.4-45	1	55	20	9.5	M12	45	
	Ø76	25.4	-304	-FMA25.4-60	2					60	
	Ø76	25.4	-306	-FMA25.4-105		105					
	Ø102	31.75	-402	-FMA31.75-45	1	60	22	12.7		45	
	Ø102	31.75	-404	-FMA31.75-75	75						
	Ø102	31.75	-406	-FMA31.75-105	2	105					
	Ø127	38.1	-502	-FMA38.1-60	1	78	23	15.9	M16	60	
BT50	Ø76(80)	25.4	350300-302	BT50-FMA25.4-45	1	63	20	9.5	M12	45	
	Ø76(80)	25.4	-304	-FMA25.4-75						75	
	Ø76(80)	25.4	-306	-FMA25.4-105						105	
	Ø76(80)	25.4	-308	-FMA25.4-125	2	125					
	Ø100(102)	31.75	-402	-FMA31.75-45	1	70	22	12.7		45	
	Ø100(102)	31.75	-404	-FMA31.75-75						75	
	Ø100(102)	31.75	-406	-FMA31.75-105	2					105	
	Ø100(102)	31.75	-408	-FMA31.75-150						150	
	Ø125	38.1	-502	-FMA38.1-45	1	82	23	15.9	M16	45	
	Ø125	38.1	-504	-FMA38.1-75		80				75	
	Ø152	50.8	-602	-FMA50.8-45		95					45
	Ø152	50.8	-604	-FMA50.8-75							75

- Low stock item.

Face Mill Arbor

Features:

- All arbors are supplied with drive key and clamp screw.
- For Metric bore Face Milling Cutters.



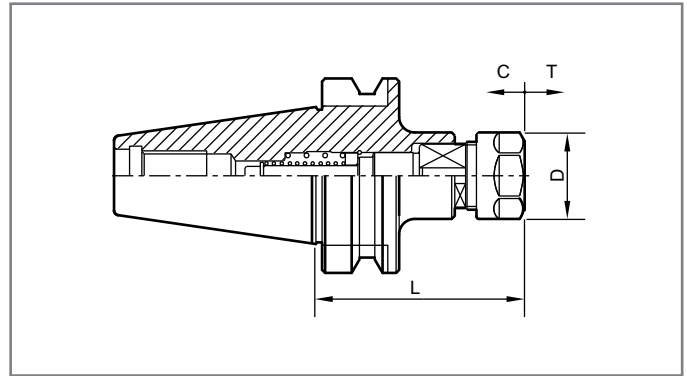
Taper Shank	Dia. of Cutter	D	Ordering Code	Type of Holder	Fig.	C	H	W	G	L
BT30	Ø50,Ø63	22	330310-202	BT30-FMB22-45	1	45	18	10	M10	45
	Ø80	27	-302	-FMB27-60		70	20	12	M12	60
BT40	Ø50,Ø63	22	340310-202	BT40-FMB22-60	1	45	18	10	M10	60
			-204	-FMB22-105						105
	Ø80	27	-302	-FMB27-60		60				
			-304	-FMB27-105		105				
Ø100	32	-402	-FMB32-60	85	22	14	M16	60		
BT50	Ø50,Ø63	22	350310-202	BT50-FMB22-60	1	45	18	10	M10	60
			-204	-FMB22-105						105
			-206	-FMB22-150						150
			-208	-FMB22-200						200
			-210	-FMB22-250						250
	Ø80	27	-302	-FMB27-60		60				
			-304	-FMB27-105		105				
			-305	-FMB27-125		125				
			-306	-FMB27-150		150				
	Ø100	32	-402	-FMB32-60		60				
			-404	-FMB32-105		105				
			-406	-FMB32-150		150				
	Ø125	40	-502	-FMB40-60		60				
			-504	-FMB40-105		105				
Ø160-360	60	-602	-FMB60-75	2	90	26	16	M20	75	

• Low stock item.

TER Tapping system

Features:

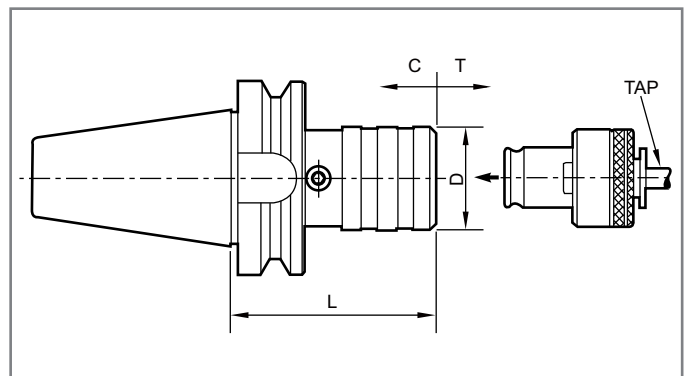
- For tapping on Machining Centers and CNC Milling Machine with or without rigid-tap function.



Taper Shank	Ordering Code	Type of Holder	Tapping Capacity	D	L	T	C
BT30	330290-302	BT30-TER16-75	M3-M10	28	75	8	4
	-402	-TER20-100	M4-M16	34	100		
BT40	340290-303	BT40-TER16-75	M3-M10	28	75	8	4
	-304	-TER16-100	M3-M12	28	100		
	-402	-TER20-80	M4-M16	34	80		
	-404	-TER20-100	M4-M16	34	100		
	-602	-TER32-100	M8-M27	50	100	10	
BT50	350290-302	BT50-TER16-100	M3-M12	28	100	8	4
	-304	-TER16-150	M3-M10	28	150		
	-402	-TER20-120	M4-M16	34	120		
	-404	-TER20-150	M4-M16	34	150	10	
	-602	-TER32-100	M8-M27	50	100		
	-604	-TER32-150	M8-M27	50	150		

THLK Quick Change Tapping System

- With length compensation on compression and extension.
- Please refer to page 57, 58 for tapping adapters.

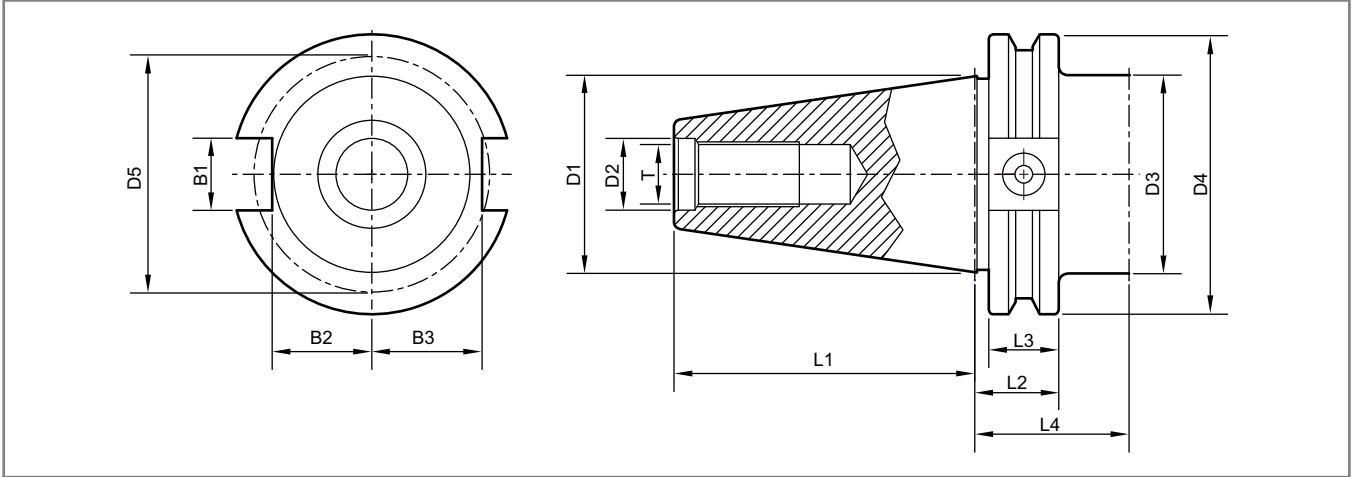


Taper Shank	Ordering Code	Type of Holder	Size of Tap Collet	Tapping Capacity	D	L	C	T
BT30	330710-102	BT30-THLK115	1	M3-M12	36	57	6	12
	-202	-THLK225	2	M8-M22	53	95	12.5	12.5
BT40	340710-102	BT40-THLK115	1	M3-M12	36	62	6	12
	-202	-THLK225	2	M8-M22	53	93.5	12.5	12.5
	-302	-THLK340	3	M16-38	78	164	20	20
BT50	350710-102	BT50-THLK115	1	M3-M12	36	71	6	12
	-202	-THLK225	2	M8-M22	53	102.5	12.5	12.5
	-302	-THLK340	3	M16-M38	78	142	20	20

Specifications of ANSI B5.50 (inch)

Features:

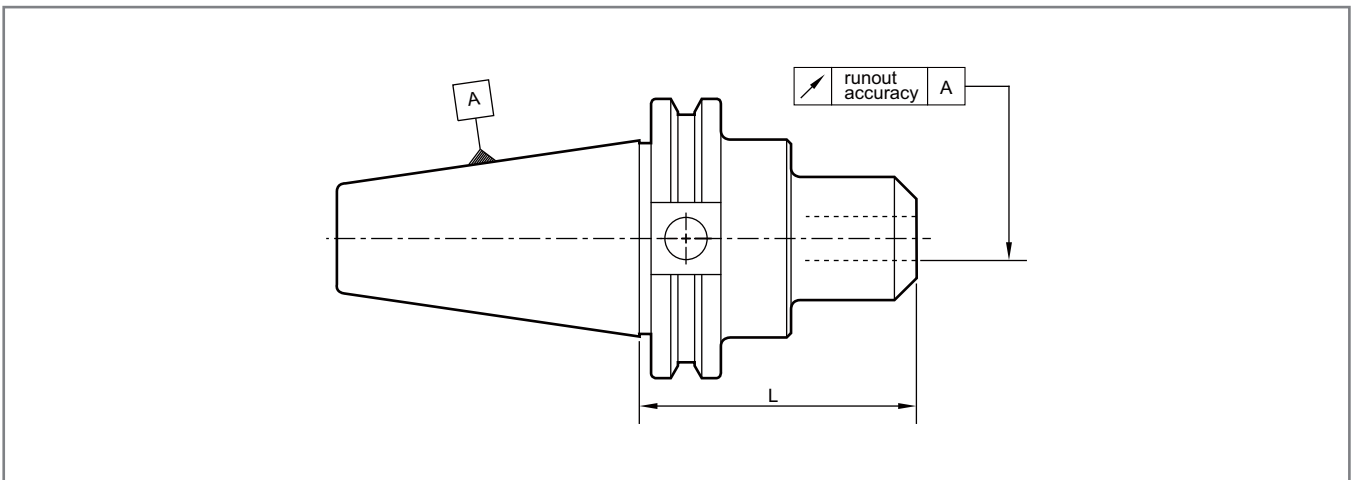
- Toolholders case-hardened 60 – 2 HRC
- Tensile strength in the core at least 950 N/mm²
- Taper in tolerance quality AT 3



INCH

Taper Size	D1	D2	D3 _{max.}	D4	D5	L1	L2	L3	L4 _{min.}	T	B1	B2	B3
CAT40	1.75	0.669	1.71	2.5	2.126	2.687	0.75	0.625	1.38	5/8"-11	0.646	0.89	0.894
CAT50	2.75	1.063	2.71	3.875	3.307	4.0	0.75	0.625	1.38	1"-8	1.02	1.39	1.484

Runout Accuracy

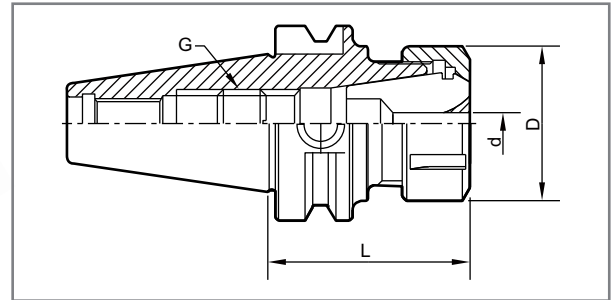


INCH

Gage Length A (inch)	L < 6.3"	L ≥ 6.3"
Collet chuck type ER	0.00012"	0.00016"
Face mill holder	0.00024"	0.00024"
Side lock holder	0.00012"	0.00016"

ER Collet Chuck
Features:

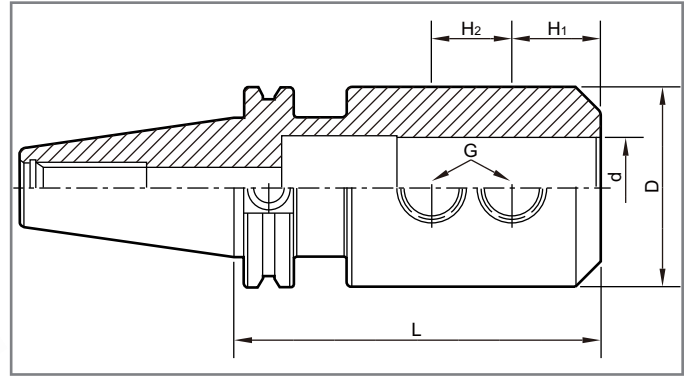
- The most popular collet chucks.
- One chuck can be used for end mills, drills, reamers and taps.
- Thread of the spring collet chuck and internal taper are precision ground.
- Thread of clamping nut is hardened and turned for achieving high clamping power.
- Back up screw is not included, please order as optional item.
- Pre-balanced G6.3 / 8000 r.p.m.


INCH

Taper Shank	Ordering Code	Type of Holder	L	D	d	G
CAT40	341100-3020	CAT40-ER16-2.76"	2.76"	1.102"	0.02"-0.40"	M10 x 1.5P
	-3040	-ER16-4"	4.00"			
	-4020	-ER20-2.76"	2.76"	1.339"	0.04"-0.51"	M12 x 1.75P
	-4040	-ER20-4"	4.00"			
	-5020	-ER25-2.76"	2.76"	1.654"	0.04"-0.63"	M16 x 2.0P
	-5040	-ER25-4"	4.00"			
	-6020	-ER32-2.76"	2.76"	1.969"	0.08"-0.79"	M16 x 2.0P
	-6040	-ER32-4"	4.00"			
	-7020	-ER40-3.15"	3.15"	2.480"	0.12"-1.02"	M20 x 2.0P
-7040	-ER40-4"	4.00"				
CAT50	351100-3020	CAT50-ER16-4"	4.00"	1.102"	0.02"-0.40"	M10 x 1.5P
	-3040	-ER16-6"	6.00"			
	-4020	-ER20-4"	4.00"	1.339"	0.04"-0.51"	M12 x 1.75P
	-4040	-ER20-6"	6.00"			
	-5020	-ER25-4"	4.00"	1.654"	0.04"-0.63"	M16 x 2.0P
	-5040	-ER25-6"	6.00"			
	-6020	-ER32-4"	4.00"	1.969"	0.08"-0.79"	M16 x 2.0P
	-6040	-ER32-6"	6.00"			
	-7020	-ER40-4"	4.00"	2.480"	0.12"-1.02"	M20 x 2.0P
-7040	-ER40-6"	6.00"				

Side Lock Holder

- Pre-balanced G6.3 / 8000 r.p.m.

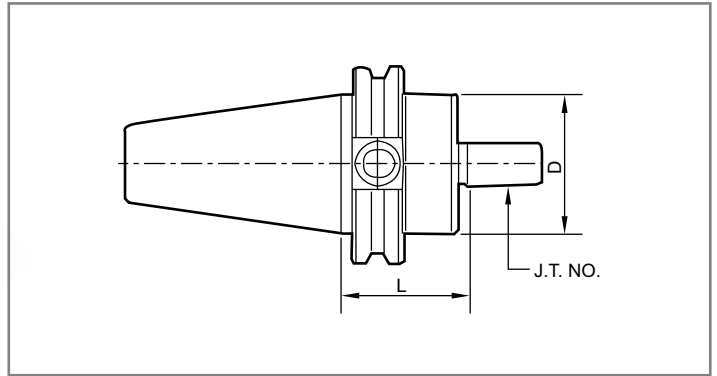


INCH

Taper Shank	Ordering Code	Type of Holder	d	L	D	H1	H2	G
CAT40	341160-0420	CAT40-SL 1/4"- 3"	1/4"	3.00"	0.78"	0.630"	-	1/4-28
	-0520	-SL 5/16"- 3"	5/16"	3.00"	0.88"	0.630"	-	5/16-24
	-0620	-SL 3/8"- 3"	3/8"	3.00"	1.00"	0.750"	-	3/8-24
	-0820	-SL 1/2"- 3"	1/2"	3.00"	1.25"	0.875"	-	7/16-20
	-1020	-SL 5/8"- 3"	5/8"	3.00"	1.50"	0.937"	0.875"	1/2-20
	-1220	-SL 3/4"- 3"	3/4"	3.00"	1.75"	1.000"	1"	5/8-18
	-1620	-SL 1"- 4"	1"	4.00"	2.00"	1.125"	1"	3/4-16
	-1820	-SL 1"-1/4"- 4.6"	1-1/4"	4.60"	2.50"	1.125"	-	3/4-16
CAT50	351160-0620	CAT50-SL 3/8"- 4"	3/8"	4.00"	1.00"	0.781"	-	3/8-24
	-0820	-SL 1/2"- 4"	1/2"	4.00"	1.25"	0.875"	-	7/16-20
	-1020	-SL 5/8"- 4"	5/8"	4.00"	1.50"	0.937"	-	1/2-20
	-1220	-SL 3/4"- 4"	3/4"	4.00"	1.75"	1.000"	-	5/8-18
	-1620	-SL 1"- 4"	1"	4.00"	2.00"	1.125"	1"	3/4-16
	-1820	-SL 1"-1/4"- 4"	1-1/4"	4.00"	2.50"	1.125"	1"	3/4-16

Jacob Drill Chuck Adaptor

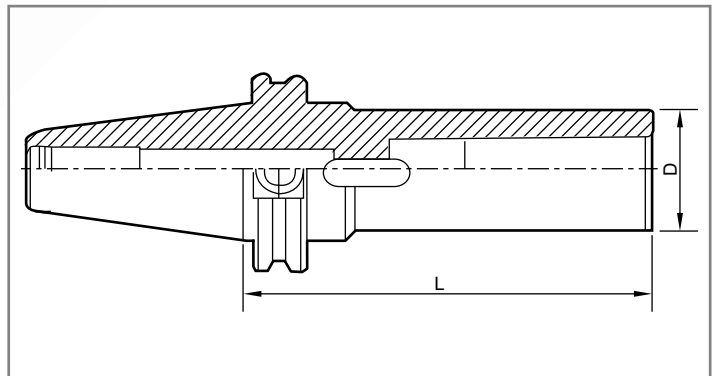
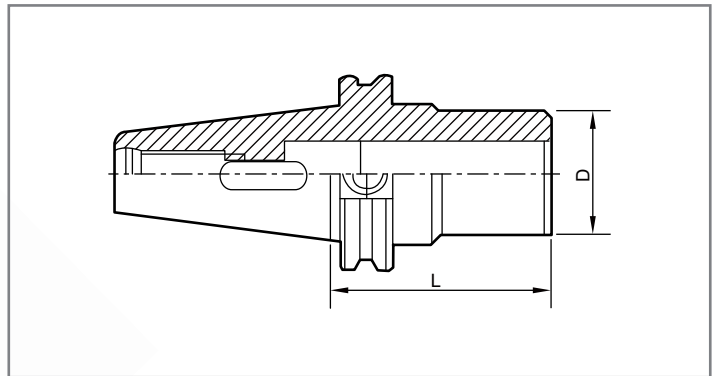
- Pre-balanced G6.3 / 8000 r.p.m.


INCH

Taper Shank	Ordering Code	Type of Holder	Taper No.	L	D
CAT40	341200-220	CAT40-JTA2-1.57"	JT2	1.57"	1.75"
	-620	-JTA6-1.57"	JT6	1.57"	
	-3320	-JTA33-1.57"	JT33	1.57"	
CAT50	351200-220	CAT50-JTA2-1.57"	JT2	1.57"	2.75"
	-620	-JTA6-1.57"	JT6	1.57"	
	-3320	-JTA33-1.57"	JT33		

Morse Taper Adaptor

- Concentricity is 0.015mm.

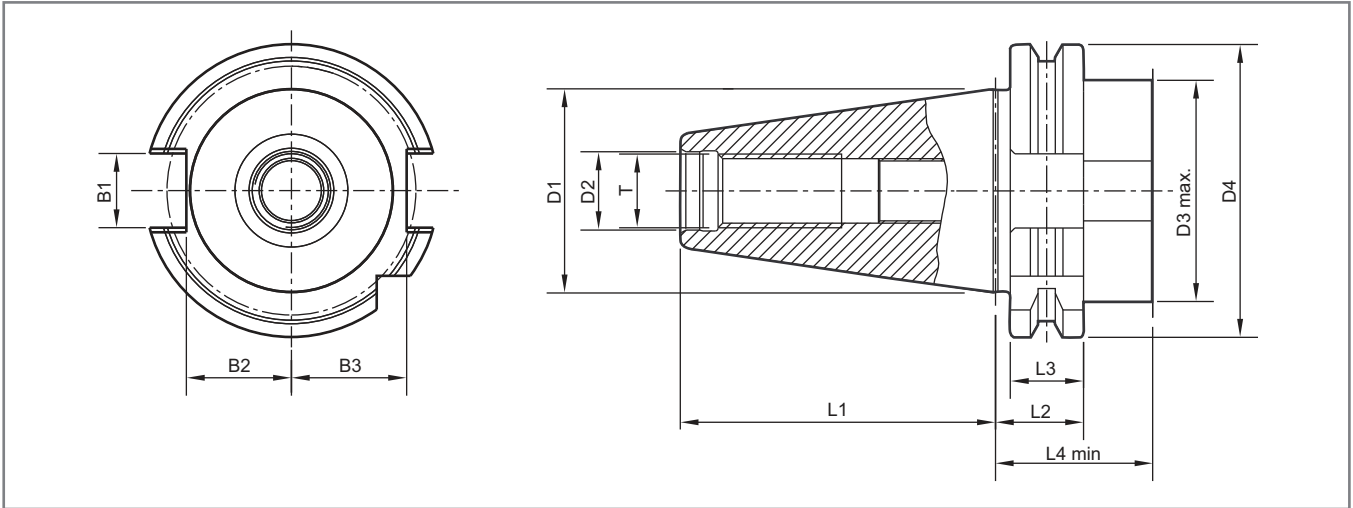

INCH

Taper Shank	Ordering Code	Type of Holder	MT No.	L	D
CAT40	341210-102	CAT40-MTA1-1.60"	1	1.60"	1.00"
	-202	-MTA2-2.00"	2	2.00"	1.25"
	-302	-MTA3-2.75"	3	2.75"	1.55"
	-402	-MTA4-3.75"	4	3.75"	1.75"
CAT50	351210-102	CAT50-MTA1-2.00"	1	2.00"	1.00"
	-202	-MTA2-2.00"	2	2.00"	1.25"
	-302	-MTA3-2.50"	2	2.50"	1.55"
	-402	-MTA4-3.30"	3	3.30"	1.75"
	-502	-MTA5-4.10"	4	4.10"	2.48"

Specifications of DIN 69871-1

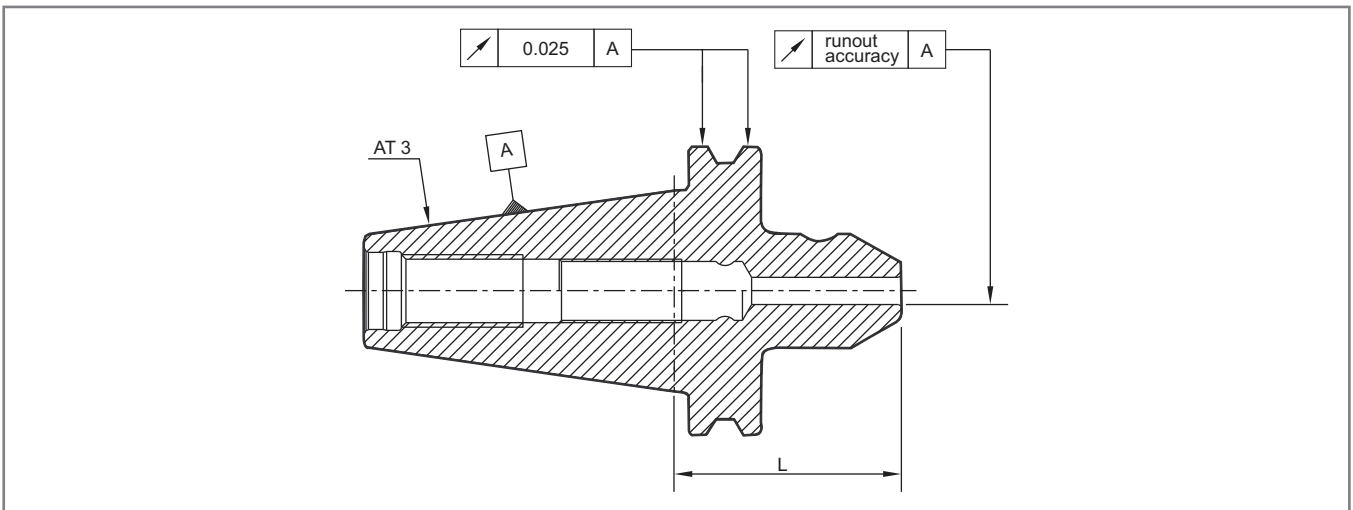
Features:

- Toolholders case-hardened 60 – 2 HRC
- Tensile strength in the core at least 950 N/mm²
- Taper in tolerance quality AT 3, DIN 2080.
- Form AD: interior coolant supply through centre (form AD), form B is optional on request.



Taper Shank	D1	D2	D3 _{max.}	D4	L1	L2	L3	L4 _{min.}	T	B1	B2	B3
SK40	44.45	17	48	63.55	68.4	19.1	15.9	35	M16	16.1	22.8	25
SK50	69.85	25	78	97.5	101.75	19.1	15.9	35.1	M24	25.7	35.5	37.7

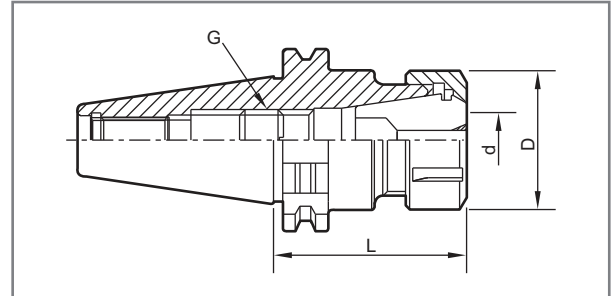
Runout Accuracy



Gage length	L < 160
max. runout tolerance in mm	
Collet chuck ER	0.003
KCH spring collet chuck	0.003
Side lock holder	0.003
Collet chuck OZ	0.003
Face mill arbor	0.006
Adapter for morse taper	0.008
Drill chuck adapter	0.005
NC drill chuck	0.060

ER Spring Collet Chuck
Features:

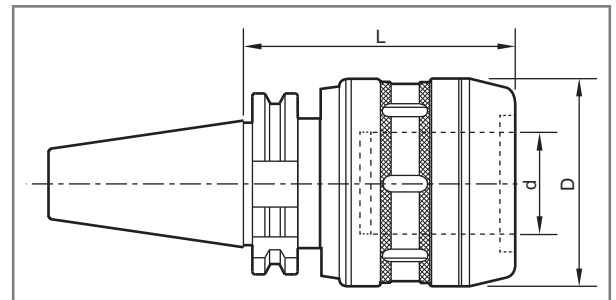
- The most popular collet chucks, one chuck can be used for end mills, drills, reamers and taps.
- Thread of the spring collet chuck and internal taper are precise ground.
- Supplied with standard clamp nut, backup screw is optional.
- Pre-balanced G6.3 / 8000 r.p.m. (standard grade)
- Higher pre-balanced grade are on request, additional charge is needed.



Taper Shank	Ordering Code	Type of Holder	L	D	d	G
SK40	342100-302	SK40-ER16-70	70	28	0.5-10	M10x1.5
	-304	-ER16-100	100			
	-402	-ER20-100	100	34	1-13	M12x1.75
	-502	-ER25-100	100	42	1-16	M16x2.0
	-602	-ER32-100	100	50	2-20	
	-702	-ER40-100	100	63	3-26	
SK50	352100-302	SK50-ER16-100	100	28	0.5-10	M10x1.5
	-402	-ER20-100	100	34	1-13	M12x1.75
	-502	-ER25-100	100	42	1-16	M12x1.75
	-602	-ER32-100	100	50	2-20	M16x2.0
	-702	-ER40-100	100	63	3-26	

KCH Spring Collet Chuck
Features:

- Supplied with a spanner.
- Please refer to page 43 for KCH collets.

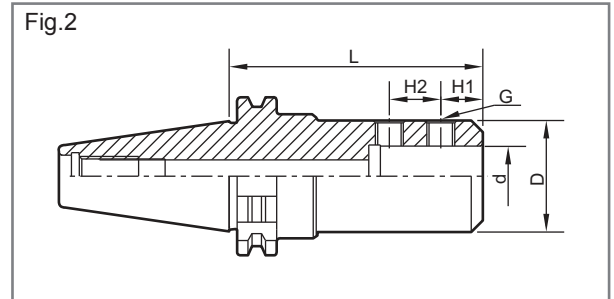
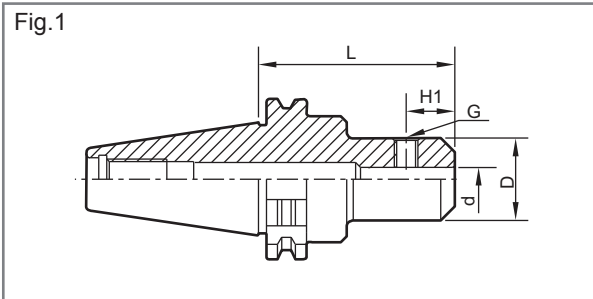


Taper Shank	Ordering Code	Type of holder	Clamping Range	L	D	d	Collet
SK40	342150-202	SK40-KCH20-80	Ø6-Ø20	80	54	20	C20
	342150-402	-KCH32-105	Ø6-Ø32	105		32	C32
SK50	352150-401	SK50-KCH32-100	Ø6-Ø32	100		32	C32
	352150-602	-KCH42-105	Ø6-Ø42	105		40	C42

Side Lock Holder

Features:

- According to DIN 6359 for End Mills with shank of DIN1835 Form B.
- Set screw is included.

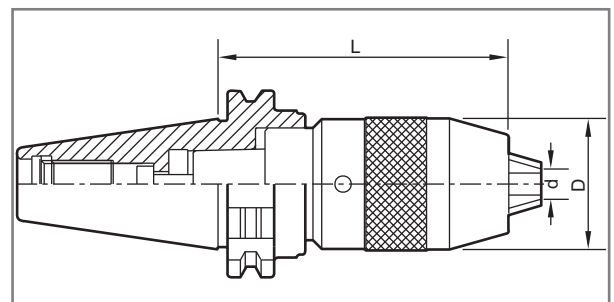


Taper Shank	Ordering Code	Type of Holder	Fig.	L	d	D	H1	H2	G		
SK40	342160-062	SK40-SL6-50	1	50	6	25	18	-	M 6		
	-082	-SL8-50			8	28			M 8		
	-102	-SL10-50			10	35			M10		
	-122	-SL12-50			12	42			22.5	M12	
	-162	-SL16-63	2	63	16	48	24	-	M14		
	-202	-SL20-63			20		25		M16		
	-252	-SL25-100			25		60		24	25	M16
	-322	-SL32-100			32		72		28	M20	
SK50	352160-122	SK50-SL12-63	1	63	12	42	22.5	-	M12		
	-162	-SL16-63			16	48	24		M14		
	-202	-SL20-63			20	52	25		M16		
	-252	-SL25-80	2	80	25	60	24	25	M16		
	-322	-SL32-100			100	32	72	28	M20		
	-402	-SL40-100			100	40	80	30		32	

NC Drill Chuck

Features:

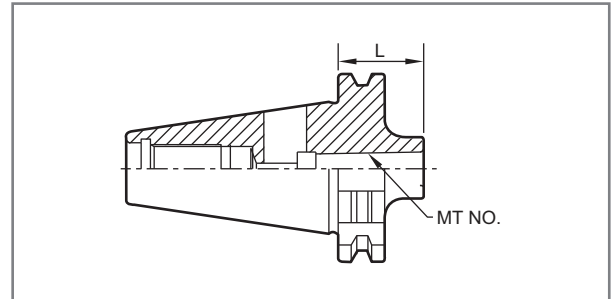
- Supplied with a spanner.



Taper Shank	Ordering Code	Type of Holder	d Capacity	D	L
SK40	342190-082	SK40-APU08-80	0-8	36.3	80
	-132	-APU13-100	1-13	51.5	100
SK50	352190-162	SK50-APU16-110	3-16	58	110

Morse Taper Adaptor
Features:

- For tools with morse taper shank according to DIN 228 form B.

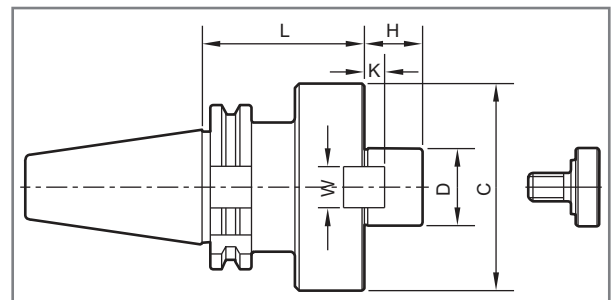


Taper Shank	Ordering Code	Type of Holder	MT No.	D	L	G
SK40	342210-102	SK40-MT1-45	1	25	45	M6
	-202	-MT2-50	2	32	50	M10
	-302	-MT3-70	3	40	70	M12
	-402	-MT4-95	4	48	95	M16

- Low stock item.

Face Mill Arbor
Features:

- Supplied with arbor screw and driving key.
- D tolerance : h6



Taper Shank	Ordering Code	Type of Holder	D	L	C	H	K	W
SK40	342300-201	SK40-FMB22-40	22	40	47	18	5	10
	-302	-FMB27-55	27	55	58	20	6	12
	-402	-FMB32-60	32	60	66	22	7	14
	-502	-FMB40-60	40	60	80	25	8	16

- Low stock item.

Specifications of DIN 69893-1

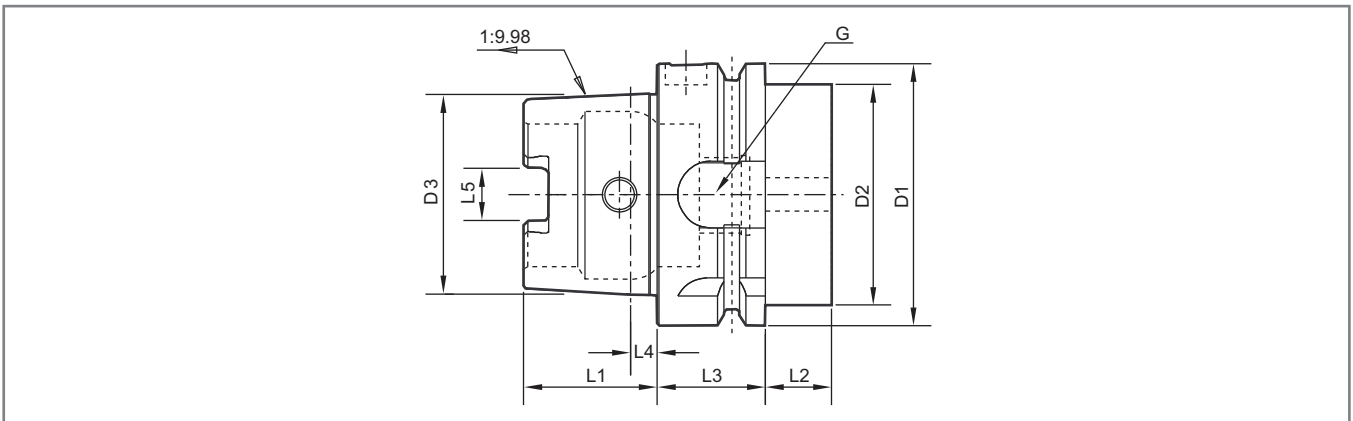
Features:

Compared to the steep taper, the HSK has the following advantages:

- High repetition accuracy when clamping tools into spindle
- Fix axial positioning by flat contact surface
- Suitable for high speed cutting
- No pull stud necessary

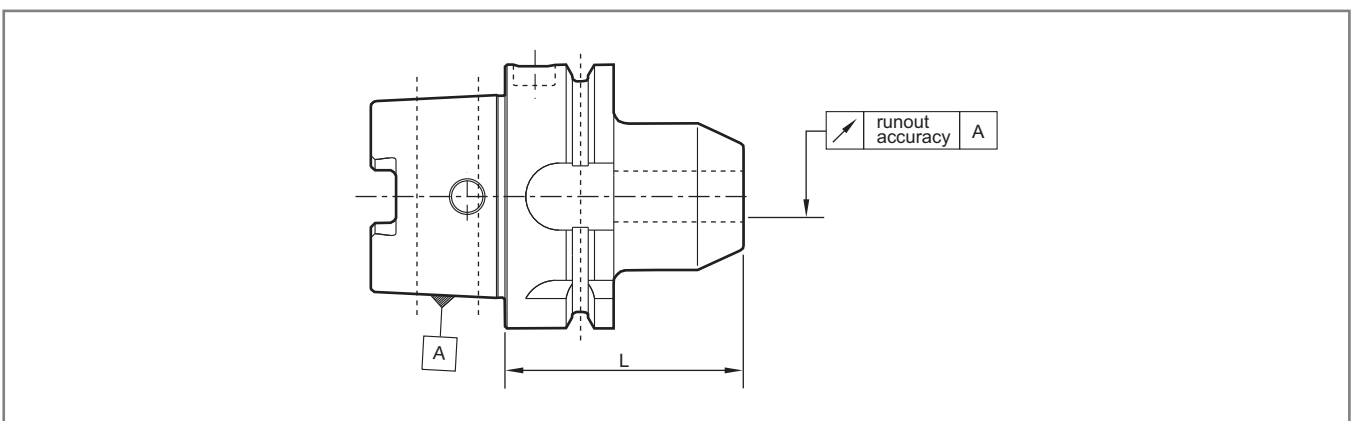
Material:

- Special case-hardening steel for highly stressed parts
- Surface hardness: 58° – 2° HRC
- Tensile strength in core min. 1000 N/mm²



Length [mm]	D1	D2 _{max.}	D3	L1	L2 _{min.}	L3	L4	L5	G
HSK-A/E 32	32	26	24.007	16	15	20	3.2	7.05	M10x1
-A/E 40	40	34	30.007	20	15	20	4	8.05	M12x1
-A/E 50	50	42	38.009	25	16	26	5	10.54	M16x1
-A/E 63	63	53	48.010	32	16	26	6.3	12.54	M18x1
-A/E 80	80	68	60.012	40	16	26	8	16.04	M20x1.5
-A/E 100	100	88	75.013	50	16	29	10	20.02	M24x1.5

Runout Accuracy

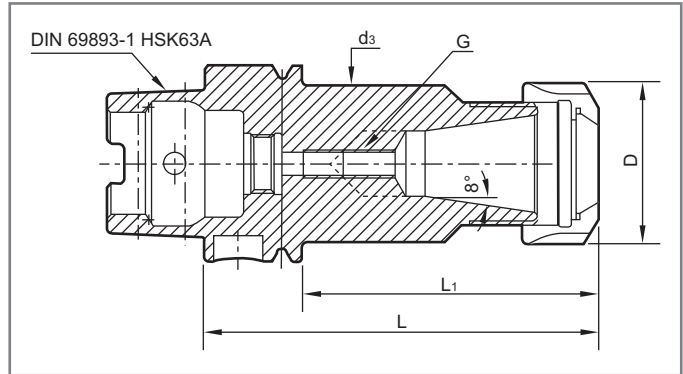


Gage length	L < 160
max. runout tolerance in mm	
Collet chuck ER	0.003
Side lock holder	0.003
Face mill arbor	0.005
Combination shell end mill arbor	0.005
NC drill chuck	0.050

ER Spring Collet Chuck DIN 69882-6:2005-06

Features:

- Spring collet chuck for ER spring collets.
- Thread of the spring collect chuck and internal taper are precision ground.
- Pre-balanced G2.5 / 10,000 r.p.m. as standard, and option for G2.5 / 20,000 r.p.m.
- Backup screw is not included; please order as optional item.

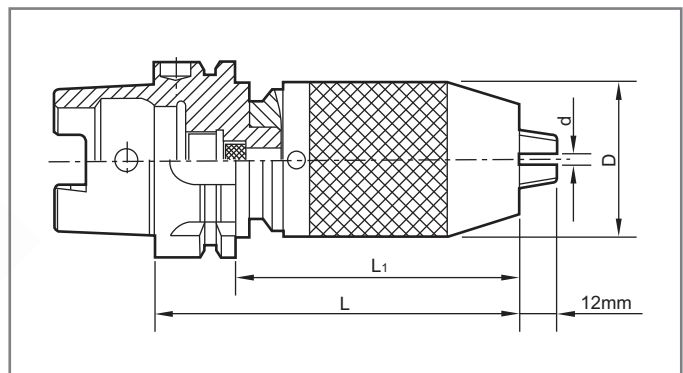


Order Code	Type	d	L	D	L1	Collet	d3 MAX.	Backup Screw G
4250100-302	HSK63A-ER16A-80	0.5-10	80	28	54	ER16	53	M10 X 1.5P
-304	-ER16A-100		100		74			
-306	-ER16A-120		120		94			
-402	-ER20A-80	2-13	80	34	54	ER20		M12 X 1.75P
-404	-ER20A-100		100		74			
-502	-ER25-80	1-16	80	42	54	ER25		M16 X 2.0P
-504	-ER25-100		100		74			
-602	-ER32-80	2-20	80	50	54	ER32		M16 X 2.0P
-604	-ER32-100		100		74			
-606	-ER32-145		145		119			
-702	-ER40-80	3-26	80	63	54	ER40	M20 X 2.0P	
-704	-ER40-100		100		74			

NC Drill Chuck

Features:

- Pre-balance G6.3 / 8,000 r.p.m.

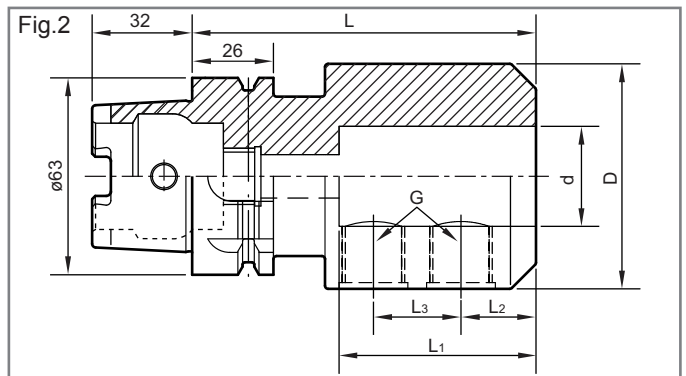
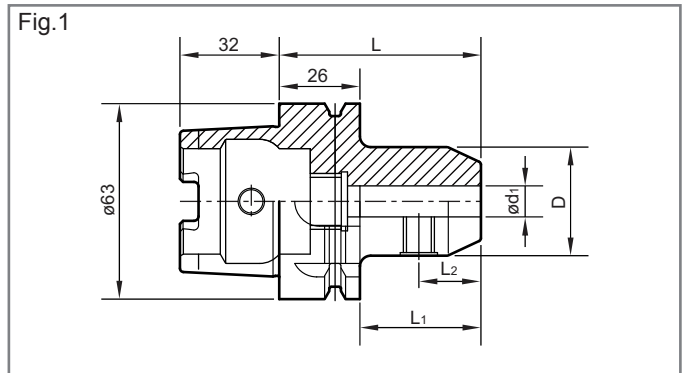


Order Code	Type	d	L	D	L1
4250190-202	HSK 63A-SPU13-110	1-13	110	50	84

Side Lock Holder DIN 69882-4:2005-06

Features:

- The tool holder with hollow taper shanks according to DIN69893-1.
- For clamping end mills shank of DIN 1835-B, maximum tolerance of the shank is h7, according to DIN69882-4.
- Tolerance of the bore d_1 is H5.
- Pre-balanced according to G2.5 / 10,000 r.p.m. as standard, and option for G2.5 / 20,000 r.p.m.

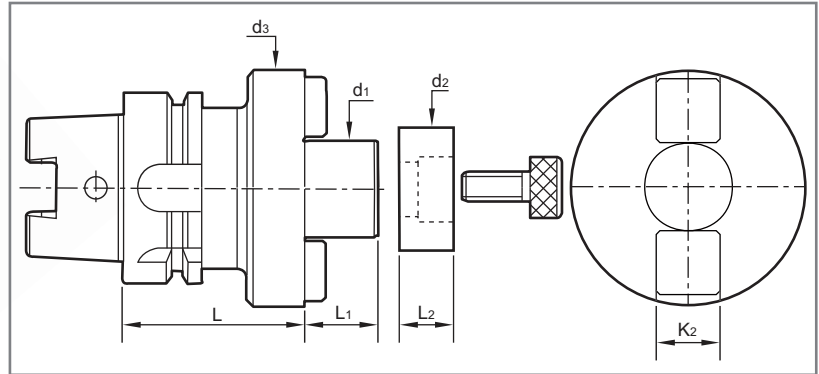


Order Code	Type	Fig.	d	L	D	L1	L2	L3	G
4250160-062	HSK 63A-SLN06-65	1	6	65	25	39	18	-	M6 X 1.0P
-082	-SLN08-65		8	65	28	39	18	-	M8 X 1.25P
-102	-SLN10-65		10	65	35	39	20	-	M10 X 1.5P
-122	-SLN12-80		12	80	42	54	22.5	-	M12 X 1.75P
-142	-SLN14-80		14	80	44	54	22.5	-	M12 X 1.75P
-162	-SLN16-80		16	80	48	54	24	-	M14 X 2.0P
-182	-SLN18-80		18	80	50	54	24	-	M14 X 2.0P
-202	-SLN20-80		20	80	52	54	25	-	M16 X 2.0P
-252	-SLN25-110		2	25	110	65	84	24	25
-322	-SLN32-110	32		110	72	84	24	28	M20 X 2.0P

Face Mill Arbor DIN 69882-3:2005-06

Features:

- d1 tolerance : h6.
- Pre-balance G6.3 / 8,000 r.p.m.

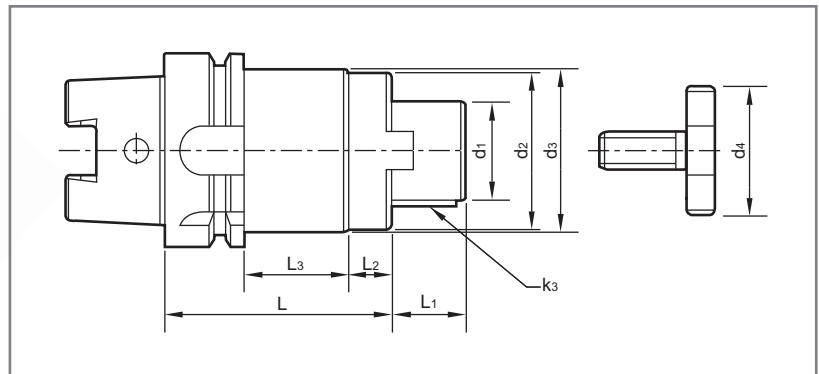


Order Code	Type	d1	L	L1	L2	d2	d3	K2
4250310-102	HSK 63A-FMB16-50	16	50	17	-	-	40	8
-202	-FMB22-50	22	50	19	14	26	48	10
-302	-FMB27-60	27	60	21	16	31.5	60	12
-402	-FMB32-60	32	60	24	16	41	78	14
-502	-FMB40-60	40	60	27	20.5	48	89	16

Combination Shell end mill arbor DIN 69882-2

Features:

- For clamping shell end mill DIN841 and DIN1880 as well as milling cutter DIN842 and DIN1830 according to DIN6358.
- Shank included removable ring, nut and spanner.
- Can purchase removable ring, nut, & spanner separately.
- Pre-balance G6.3 / 8,000 r.p.m.

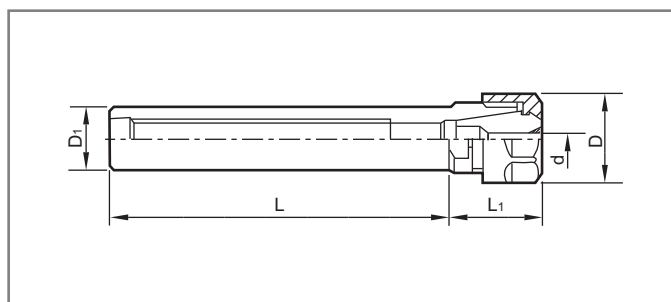


Order Code	Type	d1	L	L1	L2	L3	d2	d3	d4	K3
4250340-102	HSK 63A-CSR16-60	16	60	17	10	24	32	53	20	4
-202	-CSR22-60	22	60	19	12	22	40		28	6
-302	-CSR27-60	27	60	21	12	22	46		35	7
-402	-CSR32-60	32	60	24	14	20	55		42	8
-502	-CSR40-70	40	70	27	14	30	68		52	10

Cylindrical Shank Extension bar

Features:

- All short version L=50 are designed with side lock flat.

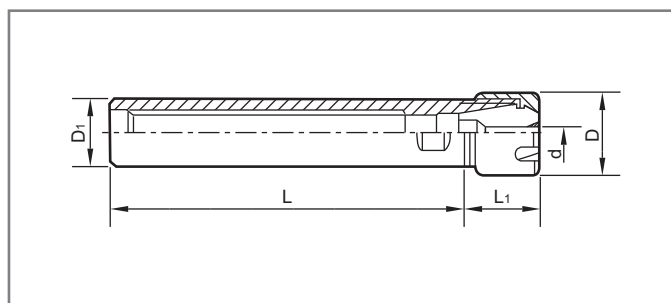


D1	Ordering Code	Type of Holder	L	L1	D	d	Collets
16	329100-2120	SL16-ER11-50(flat)	50	21	19	0.5-7	ER11
	-2140	BC16-ER11-100	100				
20	-3220	SL20-ER16-50(flat)	50	30	28	0.5-10	ER16
	-3240	BC20-ER16-100	100				
	-3260	-ER16-150	150				
25	-3320	SL25-ER16-50(flat)	50	36	34	2-13	ER20
	-3340	-ER16-100(flat)	100				
	-3360	BC25-ER16-150	150				
20	-4220	SL20-ER20-50(flat)	50	36	34	2-13	ER20
	-4240	BC20-ER20-100	100				
	-4260	-ER20-150	150				
25	-4320	SL25-ER20-50(flat)	50	36	34	2-13	ER20
	-4340	-ER20-100(flat)	100				
	-4360	BC25-ER20-150	150				

Cylindrical Shank Extension bar-mini

Features:

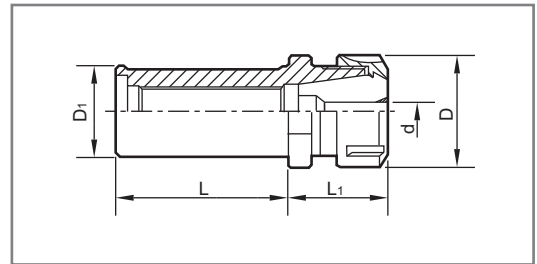
- Supplied with mini type clamping nut.
- All short version L=50 are designed with side lock flat.



D1	Ordering Code	Type of Holder	L	L1	D	d	Collets
16	329100-2122	SL16-ER11M-50(flat)	50	22	16	0.5-7	ER11
	-2142	BC16-ER11M-100	100				
	-3142	-ER16M-100	100				
20	-3222	SL20-ER16M-50(flat)	50	32	22	0.5-10	ER16
	-3242	BC20-ER16M-100	100				
25	-3262	-ER16M-150	150	35	28	2-13	ER20
	-3342	BC25-ER16M-100	100				
20	-3362	-ER16M-150	150	35	28	2-13	ER20
	-4222	SL20-ER20M-50(flat)	50				
	-4242	BC20-ER20M-100	100				
25	-4262	-ER20M-150	150	35	28	2-13	ER20
	-4342	BC25-ER20M-100	50				
25	-4362	-ER20M-150	150				

Cylindrical Shank

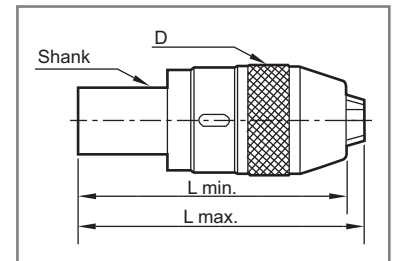
- With Cylindrical and side-lock flat types.



D1	Ordering Code	Type of Holder	L	L1	D	d	Collets
20	328100-5240	BC20-ER25-100	100	46	42	0.5-10	ER25
	-5260	-ER25-150	150				
25	-5320	SL25-ER25-100(flat)	100				
	-5340	BC25-ER25-150	150				
32	-5420	SL32-ER25-60(flat)	60	54	50	2-20	ER32
25	-6320	SL25-ER32-80(flat)	80				
32	-6440	SL32-ER32-100(flat)	100				
	-6460	BC32-ER32-150	150				
1"	-6720	BC1"-ER32-3"	3"	55	63	3-26	ER40
32	-7420	SL32-ER40-100(flat)	100				
40	-7520	SL40-ER40-100(flat)	100				
1 1/4"	-7920	BC 1-1/4"-ER40-3"	3"				

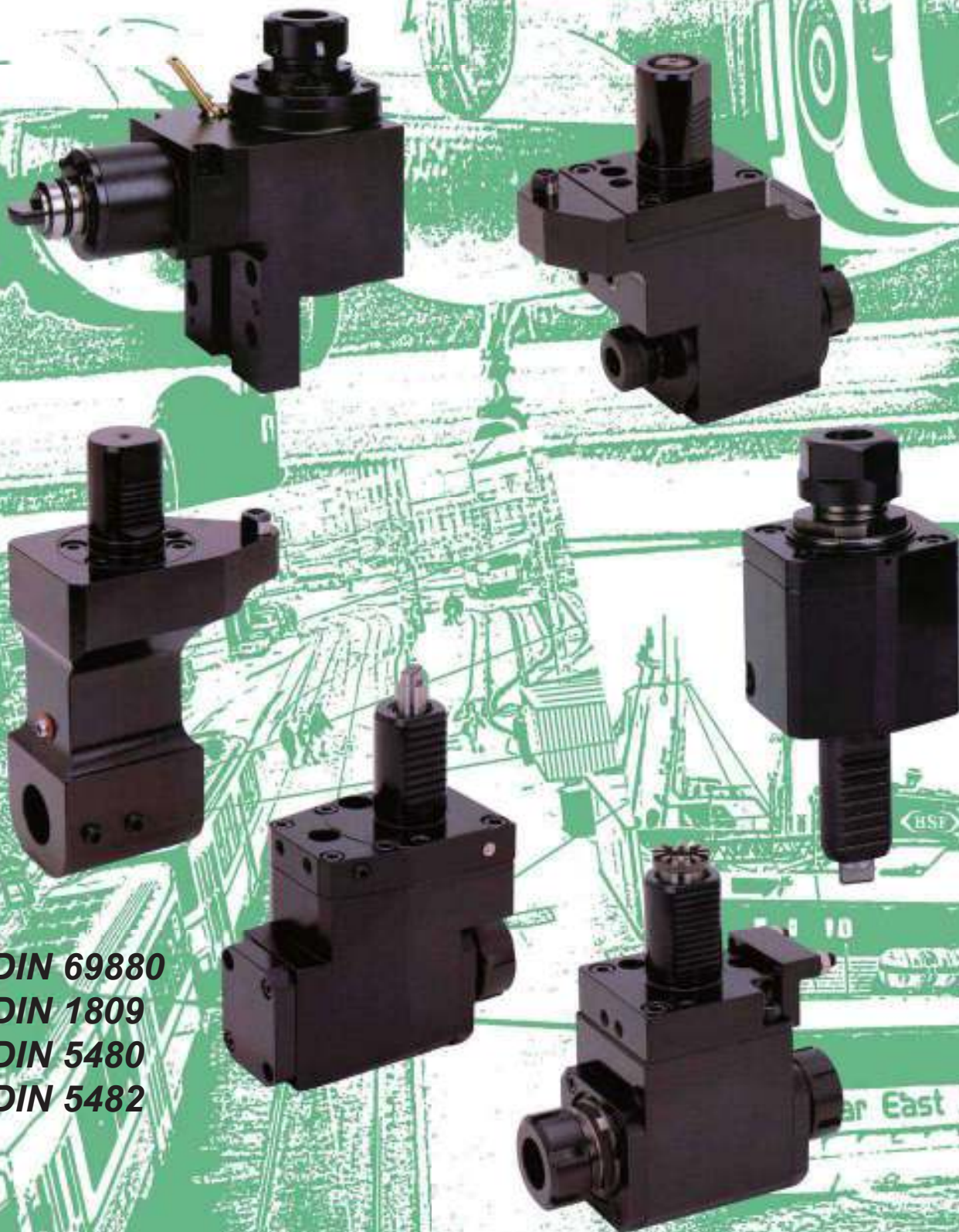
Taper and Cylindrical Shank Keyless Drill Chucks

- Integrated Keyless Drill Chuck
- Cylindrical shank, Morse Taper Shank and R8
- Morse taper shank is according to DIN 228 From B.



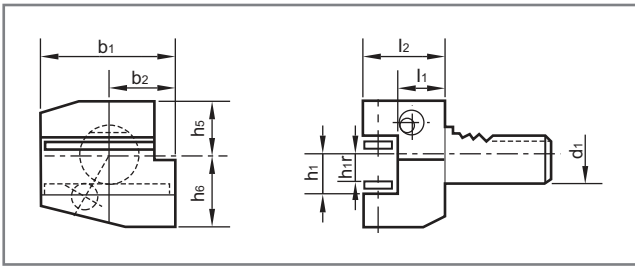
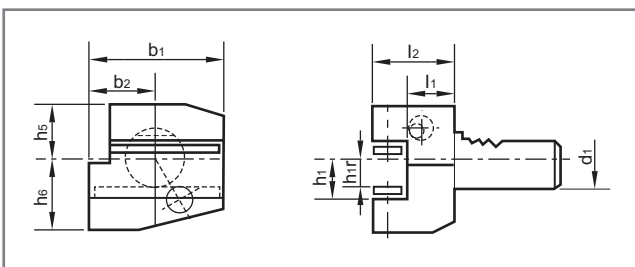
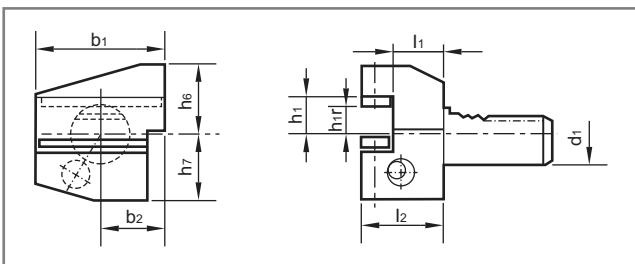
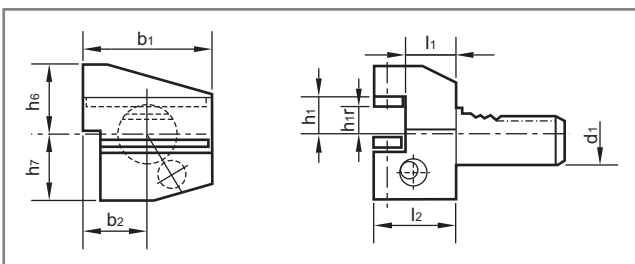
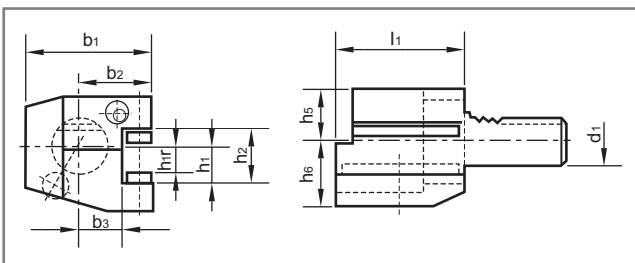
Shank	Ordering Code	Type of Holder	Clamping Range	D	Lmin.	Lmax.
MT2	362190-102	MT2-INT 8	0 - 8	35	149	157
	-202	-INT13	0 - 13	50.5	172	184
MT3	363190-202	MT3-INT13	0 - 13	50.5	190	201
	-302	-INT16	3 - 16	56	194	207
MT4	364190-202	MT4-INT13	0 - 13	50.5	216	227
	-302	-INT16	3 - 16	56	219	232
BC20	329190-201	BC20-INT 8	0 - 8	35	133	141
	-202	-INT13	0 - 13	50.5	153	164
BC25	-252	BC25-INT13	0 - 13	50.5	163	174
	-253	-INT16	3 - 16	56	162	175
BC32	-322	BC32-INT13	0 - 13	50.5	173	185
	-323	-INT16	3 - 16	56	184	197
R8	359190-202	R8-INT13	0 - 13	50.5	196	207
	-302	-INT16	3 - 16	56	198	211

Various VDI toolholder are available on request.



DIN 69880
DIN 1809
DIN 5480
DIN 5482

- Cylindrical shank in according to DIN ISO 10889-2:2006-01, which was DIN 69880-3:1995-05

FORM B1

FORM B2

FORM B3

FORM B4

FORM C1


*Hardness HRC58±2°

All functional surfaces are ground and supplied with coolant nozzle.

DIN ISO 10889-3:2006-01

Form B1 for external turning Radial, right hand, short

VDI size	30	40
Ordering Code	B1-30 X 20	B1-40 X 25
h ₁ /h _{1r}	20/16	25/20
b ₁ /b ₂	70/35	85/42.5
h ₅ /h ₆	28/38	32.5/48
l ₁ /l ₂	22/40	22/44

DIN ISO 10889-3:2006-01

Form B2 for external turning Radial, right hand, short

VDI size	30	40
Ordering Code	B2-30 X 20	B2-40 X 25
h ₁ /h _{1r}	20/16	25/20
b ₁ /b ₂	70/35	85/42.5
h ₅ /h ₆	28/38	32.5/48
l ₁ /l ₂	22/40	22/44

DIN ISO 10889-3:2006-01

Form B3 Radial, right hand, short

VDI size	30	40
Ordering Code	B3-30 X 20	B3-40 X 25
h ₁ /h _{1r}	20/16	25/20
b ₁ /b ₂	70/35	85/42.5
h ₆ /h ₇	38/35	48/42.5
l ₁ /l ₂	22/40	22/44

DIN ISO 10889-3:2006-01

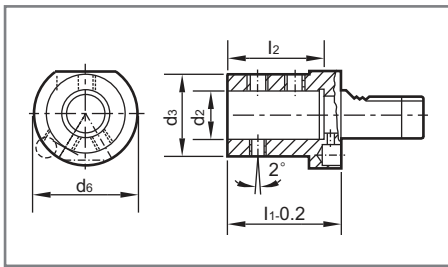
Form B4 Radial, right hand, short

VDI size	30	40
Ordering Code	B4-30 X 20	B4-40 X 25
h ₁ /h _{1r}	20/16	25/20
b ₁ /b ₂	70/35	85/42.5
h ₆ /h ₇	38/35	48/42.5
l ₁ /l ₂	22/40	22/44

DIN ISO 10889-4:2006-01

Form C1 Axial, right hand For face turning.

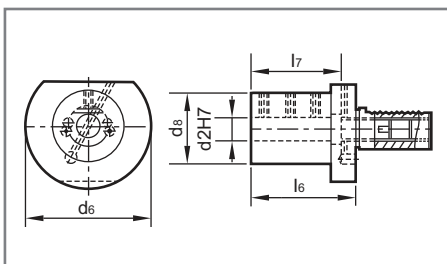
VDI size	30	40
Ordering Code	C1-30 X 20	C1-40 X 25
h ₁ /h _{1r}	20/16	25/20
b ₁ /b ₂ /b ₃	70/35/17	85/42.5/20.5
h ₂ /h ₅	29/28	34/32.5
h ₆ /l ₁	38/70	48/85

FORM E1


DIN ISO 10889-6:2006-01

Form E1 For drilling with side lock flat

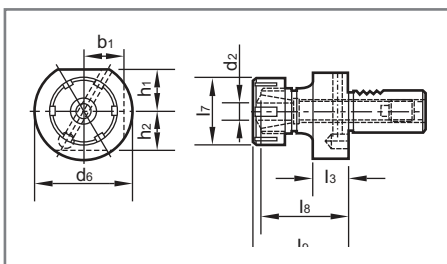
d2	20	25	32	40
VDI 30	E1-30 X 20	E1-30 X 25	E1-30 X 32	-
VDI 40	E1-40 X 20	E1-40 X 25	E1-40 X 32	E1-40 X 40
d3	40	45	52	60
l1/0.2	67	71/75	75	90
l2	54	59	63	73

FORM E2


DIN ISO 10889-6:2006-01

Form E2 For internal turning

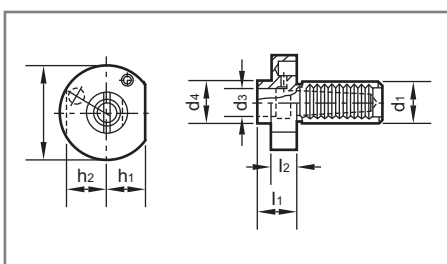
d2	16	20	25	32	40
VDI 30	E2-30 X 16	E2-30 X 20	E2-30 X 25	E2-30 X 32	-
VDI 40	E2-40 X 16	E2-40 X 20	E2-40 X 25	E2-40 X 32	E2-40 X 40
d8:VDI 30	55	58	62	68	-
VDI 40	56	56	62	72	83
l6:VDI 30	60	60	60	75	-
VDI 40	75	75	75	75	85
l7: VDI 30	51	51	51	63	-
VDI 40	61	61	61	61	75

FORM E4


DIN ISO 10889-6:2006-01

Form E4 For Drilling and Center Drills

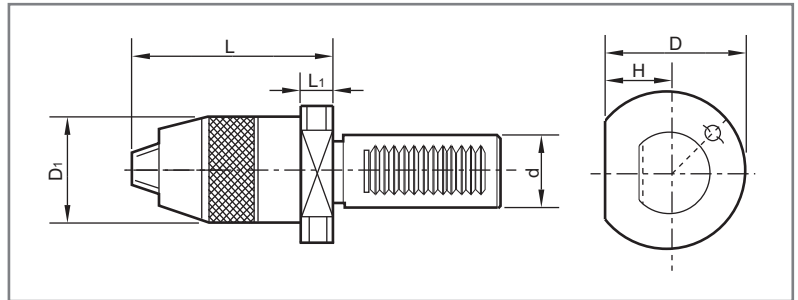
ER	25	32	40
Form E4 VDI 30	-	E4-30 X ER32	E4-30 X ER40
Form E4 VDI 40	-	E4-40 X ER32	E4-40 X ER40
d2 capacity	1-16	2-20	3-26
d6/d10:VDI 30	-	68/50	68/63
VDI 40	-	83/50	83/63
h1/l3/l9:VDI 30	-	28/22/55	28/26/75
VDI 40	-	32.5/22/75	32.5/22/75

FORM F


DIN ISO 10889-7:2006-01

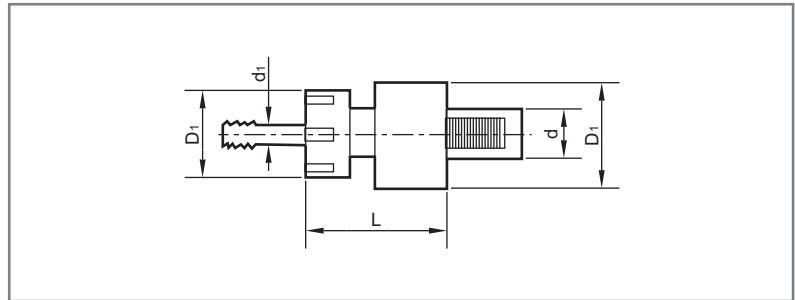
Form F For Morse Taper Drills

Morse Taper				
Form F VDI 30	F30-MT1	F30-MT2	F30-MT3	-
Form F VDI 40	-	F40-MT2	F40-MT3	F40-MT4
d3/d3/d4:VDI 30	68/12.065/52-	68/17.780/58	68/32.825/64	-
VDI 40	-	83/17.780/58	83/23.825/64	83/31.267/72
h1/h2/l1:VDI 30	28/30/25	28/30/42	28/30/66	-
VDI 40	-	32.5/-/34	32.5/-/58	32.5/-/78
l2:VDI 40	-	22	22	22

Keyless Drill Chuck


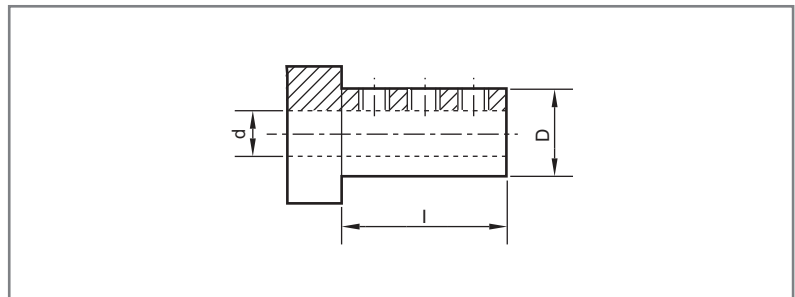
Capacity	1-13	3-16
VDI 30 VDI 40	chuck 30 X 13 chuck 40 x 13	- chuck 40 x 16
D/D1:VDI 30 VDI 40	68/51 83/51	- 83/58
H/L/L1:VDI 30 VDI 40	28/85/24 32.5/85/24	- 32.5/90/24

Tap Holder

 VDI Floating Tap Holder,
with extension and compression compensation


VDI Size	30	40
Ordering Code	TAP-30 X ER25	TAP-40 X ER25
Capacity	M3-M12	M3-M16
d1	1-16	1-16
D/D1	68/42	83/42
L	68	73

Reducing Sleeves

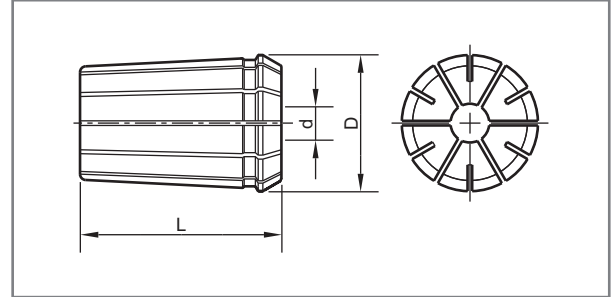
 for Reducing Clamping Diameter of
VDI Tool Holder, Form E2


	d							D	L
	8	10	12	16	20	25	32		
Ordering Code	Screw Type				Slot Type			25 32 40	50 60 75
	E25-8	E25-10	E25-12	E25-16	E25-20	-	-		
	E32-8	E32-10	E32-12	E32-16	E32-20	E32-25	-		
	E40-8	E40-10	E40-12	E40-16	E40-20	E40-25	E40-32		

OZ Spring Collets

Features:

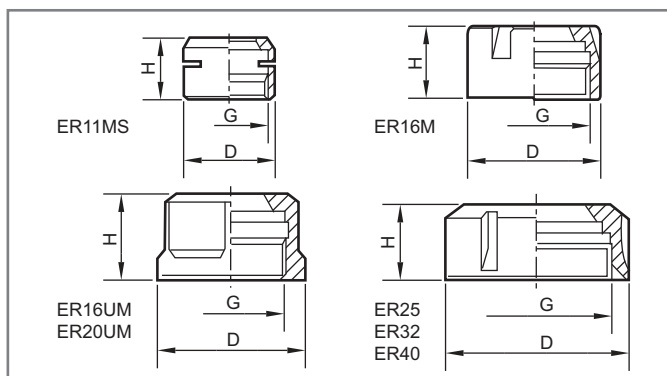
- Collets are made according to DIN ISO 10897:2006-01, form B*.
- OZ16 and inch sizes are available on request.



Ordering Code	Type of Holder	d	D	L
300110-206	Z25-6	6	35.05	52
-208	-8	8		
-210	-10	10		
-212	-12	12		
-216	-16	16		
-220	-20	20		
-225	-25	25		
300110-306	Z32-6	6	44	60
-308	-8	8		
-310	-10	10		
-312	-12	12		
-316	-16	16		
-320	-20	20		
-325	-25	25		
-332	-32	32		

always better

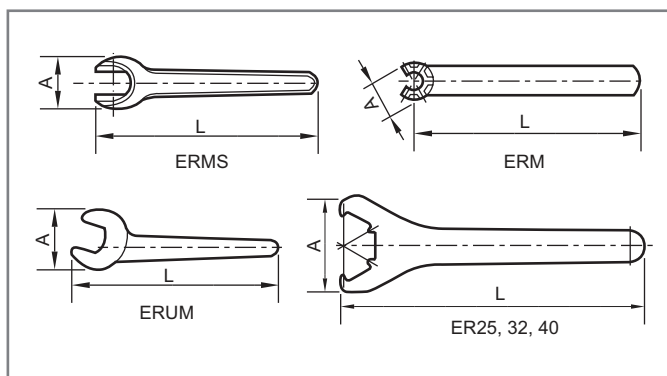
Clamping NUT



Ordering Code	Type	D	H	G
301100-200	CN-ER11MS	16	12	M13X0.75P
-204	-ER11M	16	12	M13X0.75P
-302	-ER16UM	28	18	M22X1.5P
-304	-ER16M	22	18	M19X1.0P
-402	-ER20UM	34	21	M25X1.5P
-404	-ER20M	28	19	M24X1.0P
-502	-ER25	42	20	M32X1.5P
-602	-ER32	50	23	M40X1.5P
-702	-ER40	63	25	M50X1.5P

Spanners

- Made by forged steel and hardened.



Ordering Code	Type	A	L
301100-210	SP-ER11MS	22	100
-214	-ER11M	17	95
-312	-ER16UM	44	140
-314	-ER16M	22.5	118
-412	-ER20UM	53	170
-414	-ER20M	28	130
-512	-ER25	65	210
-612	-ER32	75	250
-712	-ER40	90	290

Spring Collet Set

SPECIAL NOTE:

- Wooden box or wooden tray is not included, please order separately.



COLLET	Ordering Code	Dimensions Of Collets In Each Set	Total Number Of Collets
ER11	300100-0207	1, 2, 3, 4, 5, 6, 7	7 pcs.
	-0213	1, 1.5, 2, 2.5, 3, 3.5, 4, 4.5, 5, 5.5, 6, 6.5, 7	13 pcs.
ER16	-0308	3, 4, 5, 6, 7, 8, 9, 10	8 pcs.
	-0310	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	10 pcs.
ER20	-0410	4, 5, 6, 7, 8, 9, 10, 11, 12, 13	10 pcs.
	-0411	3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13	11 pcs.
	-0412	2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13	12 pcs.
ER25	-0507	4, 6, 8, 10, 12, 14, 16	7 pcs.
	-0515	2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16	15 pcs.
ER32	-0606	6, 8, 10, 12, 16, 20	6 pcs.
	-0618	3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20	18 pcs.
ER40	-0707	6, 8, 10, 12, 16, 20, 25	7 pcs.
	-0715	4, 5, 6, 8, 10, 12, 13, 15, 16, 18, 20, 21, 22, 25, 26	15 pcs.
	-0723	4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26	23 pcs.

Set of Collets and Chuck

- The complete collet chuck set is supplied with wooden box(or plastic box)and spanner.



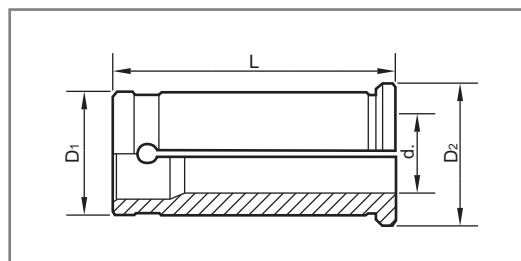
Collet	Ordering Code	Type	Collet Chuck	Collet set	Spanner
ER16	329100-0308	SBC20-ER16-100	329100-3240	300100-0308	301100-312
	-1308	-ER16-150	-3260		
ER20	-0410	SBC20-ER20-150	329100-4260	-0410	-412
ER32	333100-0606	SNT30-ER32-6	333100-602	-0606	-612
	-0618	-ER32-18		-0618	
	343100-0606	SNT40-ER32-6		343100-602	
ER40	-0618	-ER32-18	343100-702	-0618	-712
	-0707	SNT40-ER40-7		-0707	
ER32	-0723	-ER40-23	359100-602	-0723	-612
	359100-0606	SR8-ER32-6		-0606	
	-0618	-ER32-18		-0618	

High Precision Spring Collet

- Made with High Alloy steel, hardened and precision ground.
- Designed for clamping end mill holder with H7shank.
- For KCH high precision Collet Chuck.



Collet	D1	D2	L
C20	20	25	64
C25	25	31	60
C32	32	37	71
C42	42	48	80



Ordering Code	Collet Size d.	Ordering Code	Collet Size	Ordering Code	Collet Size d.	Ordering Code	Collet Size d.
300150-206	C20-6	300150-306	C25-6	300150-406	C32-6	300150-506	C42-6
-208	-8	-308	-8	-408	-8	-508	-8
-210	-10	-310	-10	-410	-10	-510	-10
-212	-12	-312	-12	-412	-12	-512	-12
-216	-16	-314	-14	-414	-14	-514	-14
		-316	-16	-416	-16	-516	-16
		-318	-18	-418	-18	-518	-18
		-320	-20	-420	-20	-520	-20
				-422	-22	-522	-22
				-425	-25	-525	-25
						-532	-32

Spanner for KCH High precision chuck

- The spanner is made with forged alloy steel, hardened and machined for securely clamping the KCH spring collet chucks.



Ordering Code	Type of spanner	Spring collet chuck
301150-202	SP-C20	KCH20
-402	-C32	KCH32
-602	-C42	KCH42

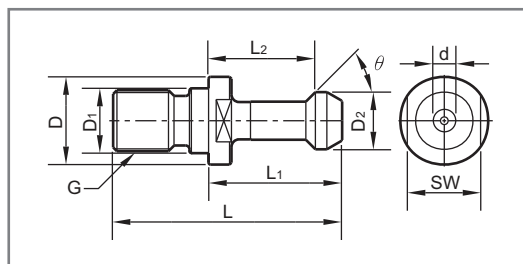
Milling Chuck Set

- for machining center and milling machine.
- Supplied with collets, spanner and wooden box.



Taper Shank	Ordering Code	Type of Holder	Contents
BT30	300150-3020	SBT30-KCH20	Collet Chuck: as type of holder. Collets: C20-Ø6,8,10,12,16 Spanner: 1 pc. Wooden box: 1 pc.
BT40	-4020	SBT40-KCH20	
	-4040	-KCH32	
NT40	-4440	SNT40-KCH32U	Collet Chuck: as type of holder.(standard length) Collets: C32 - Ø6,8,10,12,16,20,25 Spanner: 1 pc Wooden box: 1 pc.
DIN2080 SK40	-4340	-KCH32M	
NT50	-5440	SNT50-KCH32U	
DIN2080 SK50	-5340	-KCH32M	
BT50	-5040	SBT50-KCH32	
DIN 69871 SK40	-4240	SSK40-KCH32	
DIN 69871 SK50	-5240	SSK50-KCH32	

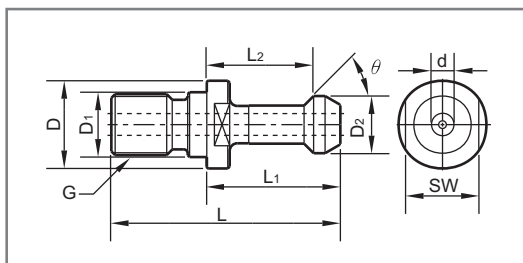
MAS P30/40/50



Ordering Code	Type of Pull Stud	L	L1	L2	D	D1	D2	θ	G	SW
330000-100	P30T-1	43	23	18	16.5	12.5	11	45°	M12	13
-200	-2							60°		
340000-100	P40T-1	60	35	28	23	17	15	45°	M16	19
-200	-2							60°		
-300	-3							90°		
350000-100	P50T-1	85	45	35	38	25	23	45°	M24	30
-200	-2							60°		
-300	-3							90°		

MAS P40/50

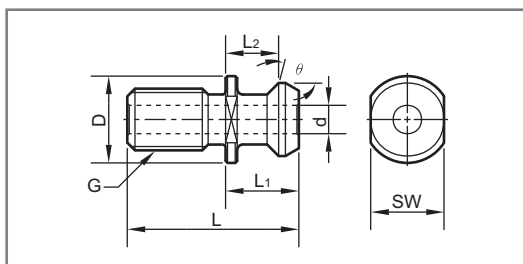
- With coolant hole.



Ordering Code	Type of Pull Stud	L	L1	L2	D	D1	θ	G	d	SW
340000-144	P40T-1H	60	35	28	23	17	45°	M16	4	19
-244	-2H						60°			
-344	-3H						90°			
350000-145	P50T-1H	85	45	35	38	25	45°	M24	5	30
-245	-2H						60°			
-345	-3H						90°			

ANSI B5.50

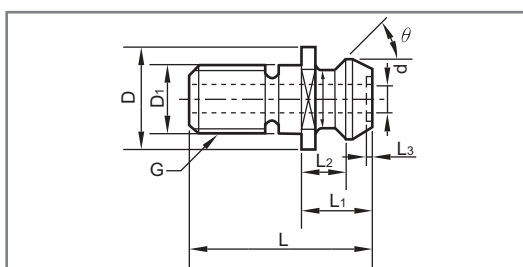
- ANSI/ASME B5.50-1985.
- For V-flange tool shanks for machining center with automatic tool changer.



Ordering Code	Type of Pull Stud	L	L1	L2	D	d	θ	G	SW
341000-501	ANSI B5.50-40	38.1	16.256	11.176	23.876	7.1	45°	5/8-11UNC	31.75
351000-501	-50	58.4	25.4	17.78	36.5	11.9	45°	1"-8UNC	19.05

MAZAK PULL STUDS

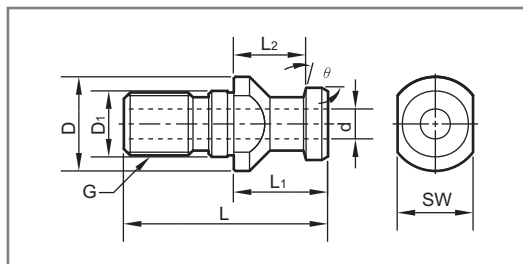
- With through hole for internal coolant.



Ordering Code	Type of Pull Stud	L	L1	L2	D	D1	d	θ	G
340000-601	MAZAK-BT40	44.1	19.1	14	22	17	7	45°	M16
340000-621	-CAT40	44.1	16.1	11	22	17	7	45°	M16
350000-601	-BT50	65.2	25.2	17.58	37	25	10	45°	M24

DIN 69872 Form A

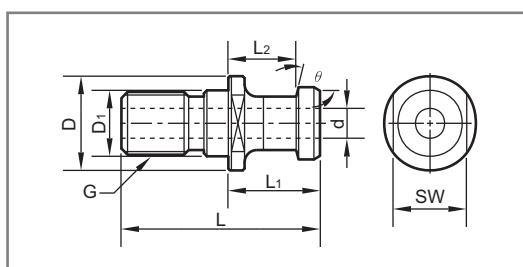
- With through hole for internal coolant.
- For DIN 69817 A tool holders.



Ordering Code	Type of Pull Stud	L	L1	L2	D	D1	d	θ	G	SW
330000-404	DIN 69872-A30	44	24	19	17	13	-	15°	M12	14
340000-404	-A40	54	26	20	23	17	7.0	15°	M16	19
350000-404	-A50	74	34	25	36	25	11.5	15°	M24	30

JIS B6339 P

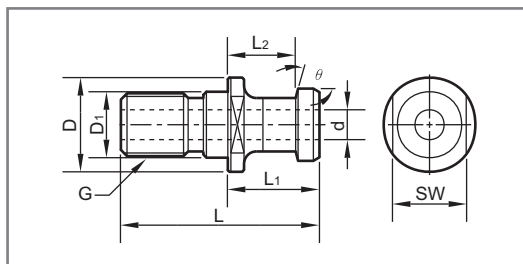
- For standard MAS BT tool holders, according to JIS B6339.
- With through hole for internal coolant.



Ordering Code	Type of Pull Stud	L	L1	L2	D	D1	d	θ	G	SW
330000-401J	JIS B6339-30P	43	23.4	18.4	16.5	12.5	4	15°	M12	13
340000-401J	-40P	54	29	23	23	17	7	15°	M16	19
350000-401J	-50P	74	34	25	38	25	10	15°	M24	30

JIS B6339 PA / ISO 7338 / 2-A

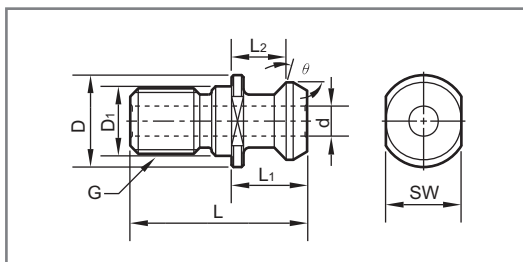
- According to JIS 6339-PA and same as ISO 7338 / 2-A and DIN69872 form A for DIN69871 form A tool holders.
- With through hole for internal coolant.



Ordering Code	Type of Pull Stud	L	L1	L2	D	D1	d	θ	G	SW
340000-404J	JIS B6339-40PA	54	26	20	23	17	7	15°	M16	19
350000-404J	-50PA	74	34	25	36	25	11.5	15°	M24	30

JIS B6339 PB / ISO 7338 / 2-B

- According to JIS 6339 PB and ISO 7338 / 2-B, for DIN69871 A tool holders.
- With through hole for internal coolant.



Ordering Code	Type of Pull Stud	L	L1	L2	D	D1	d	θ	G	SW
340000-403J	JIS B6339-40PB	44.5	16.4	11.15	22.5	17	7.35	45°	M16	18
350000-403J	-50PB	65.5	25.55	17.95	37	25	11.55	45°	M24	30

Made in Germany

always better



3D-TASTER

Forget your confusion about plus and minus. No matter from which direction you approach: the zero point is determined at the first attempt with constant and exact information on the difference value.

- High accuracy: $\pm 0.01\text{mm}$ (0.004").
- Generous overrun allowances: radial 12mm (0.47").
- Simple and exact radial run-out compensation.
- Electrically insulated contact point, therefore also suitable for EDM machines.
- Very sturdy, dial fully integrated into the metal housing.
- Active shock-protection.
- Splash proof.
- Predetermined breaching point at stylus prevents collision damages.

359550 3D-Taster	
Clamping shank	16mm, \varnothing h6
Accuracy	0.01mm (0.004")
Graduation of scale	0.01mm (0.004")
Total length (with standard stylus, without clamping shank)	134mm
Dial \varnothing	50mm (2")

Unmistakable values indicated by single-needle system with scales in different colours.

- Radial approach : black scale



1. The stylus touches the workpiece, the difference value spindle axis / workpiece edge can be read.



2. Zero position has been reached, spindle axis = workpiece edge: The NC-control can be set to "Zero".



3. Over travel is safe for the stylus.



Change stylus in seconds

- Easy precision screw in mechanism.

359505 standard stylus

HAFF & SCHNEIDER

Made in Germany

Digigraph 3D-Taster

Features:

- High precision and linearity.
 - Suitable for measuring components.
 - Capable of measuring over the entire working range.
- Independent of machine controls.
- Very easy to read due to combined display:
 - Graphic bar for dynamic travel information.
 - Digital display gives exact measured value.
- Convenient and simple run-out adjustment.
- Large working range in all directions (x, y, z : 7 mm).
- Compact metal body and long contact point.
- Shock-resistant and splash-proof.
- Predetermined breaking point.

Application:

Precision measuring device for milling and spark erosion machines. For determining component zero-points, measurement of lengths, bore centres and reference faces.



359500 3D-Taster	
Shank	16 mm
Measuring accuracy	< 0.01 mm
Reading accuracy	0.005 mm
Displacement travel x, y, z respectively	7 mm
Dimensions (body) L/W/D	82/65/39 mm
Contact point free length	52 mm
Overall length (body and contact point)	134 mm
Adjustment travel	±0.4 mm
Weight	520 g

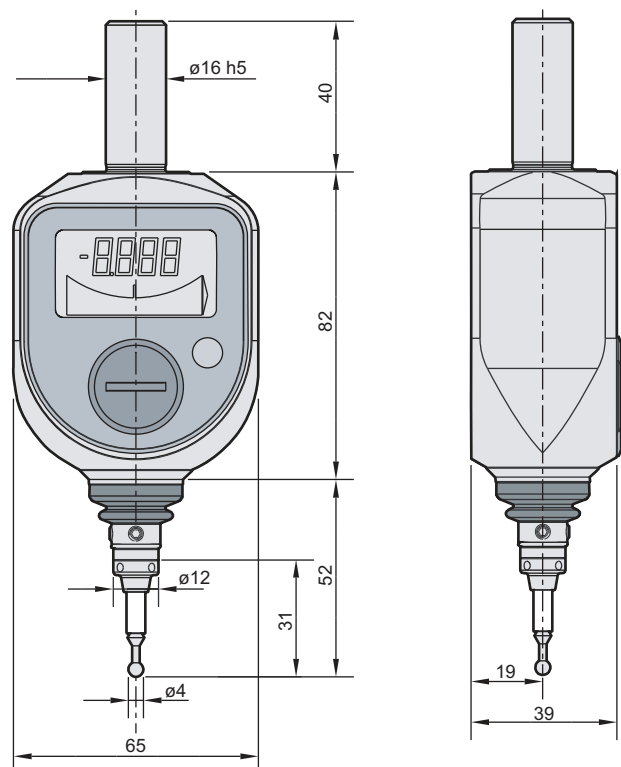
Optional Accessory:

- Special tool required to change stylus.



Stylus for Digigraph 3D-Taster:

359505 standard stylus

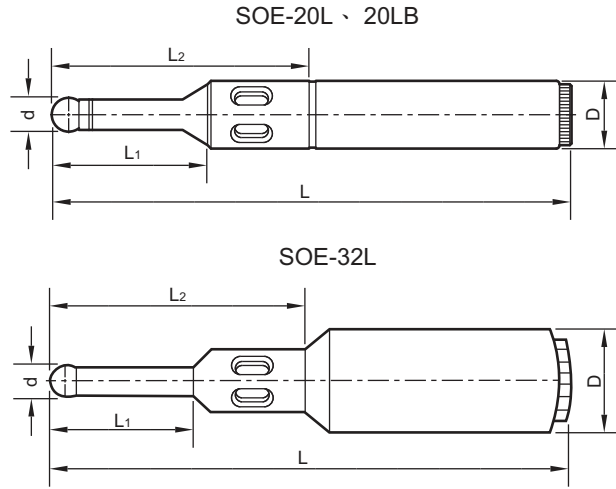
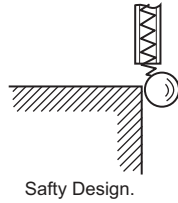


always better

Electronic Edge Finder

For Setting Work Coordinate on Machining Centers.
Diameter of probe: \varnothing 10 mm

- High Accuracy**
- Low Cost**
- Easy Handling**
- Safe**



Features:

- Accuracy of ball: ± 0.002 mm
- Concentricity of ball-probe and shank: 0.005 mm
- Spring loaded ball-probe for preventing damage of probe.

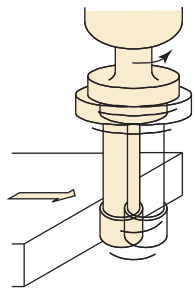
Ordering Code	Type	D	d	L	L1	L2	Beeper
302630-201	SOE-20L	20	10	158	46	77	X
-201B	-20LB	20	10	158	50	85	Beeper
-321	-32L	32	10	158	40	73	X

Rotary-Edge Finder

For Setting Work Coordinate on Machining Centers and Milling Machine.

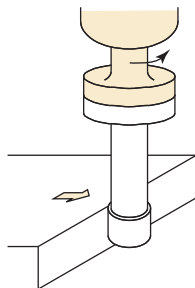
Ordering Code	Type	L	Shank	Probe
302630-301	REF-1010	82	10	10
-303	-1004	90	10	4

step1



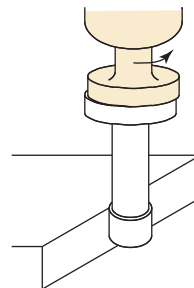
Spindle runs about 500 rpm.
Move spindle close to measuring surface.

step2



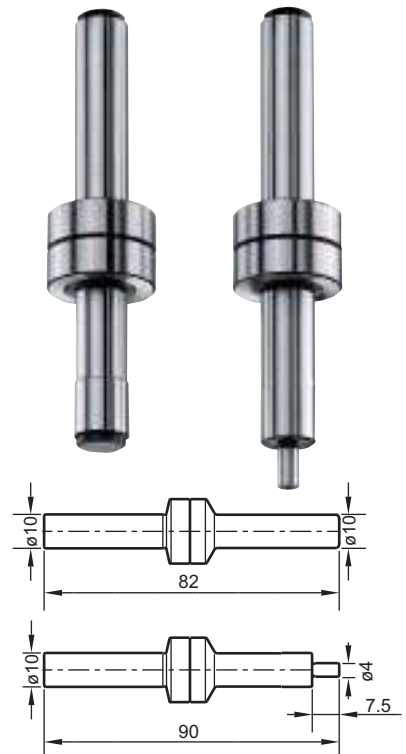
When measuring probe touches workpiece, it looks like one part.

step3



When the probe and shank are in alignment, probe will slide out of rotating center. Now, the center spindle is located 5mm away from measuring surface.

500rpm



Dial Gauge Tool Length Setter

Features:

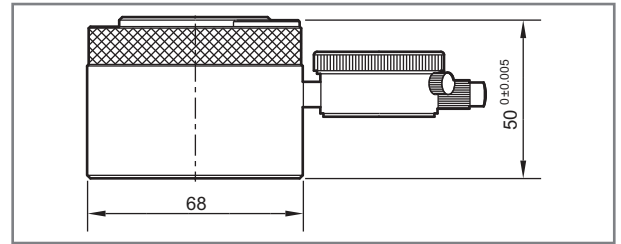
With dial gauge
 Model: LZ-50
 setting tool length on machining centers
 and milling machine.



Ordering Code	Type	Setting Height
302640-050	LZ-50	50mm

Features:

- Large measuring surface assures accuracy.
- Low spring force avoids breakage of small end mill and drills.
- It's easy to calibrate this setter by a ground parallel block.



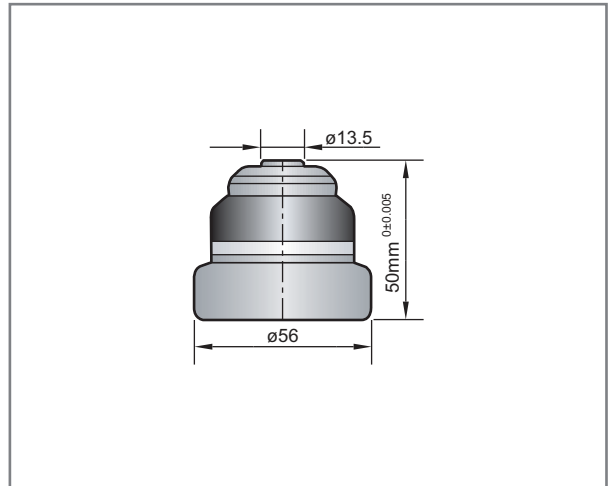
LED Tool Length Setter

Features:

- Accuracy: 0.005mm
- Visable LED lights up around the setter, operator friendly design.
- Integrated with magnet on the bottom of base, it can be used on horizontally or vertically.
- For setting tool length on machining center and CNC lathes as well.



With LED lights up measuring point.
 Model: ZOP-50(LTS-50)



Ordering Code	Type	Setting Height
302640-150	ZOP-50	50mm

Tool Looking Stand

Features:

- Set tools either horizontally or vertically simultaneously.
- Setting NC tooling easily and efficiently.
- Low cost and great value.

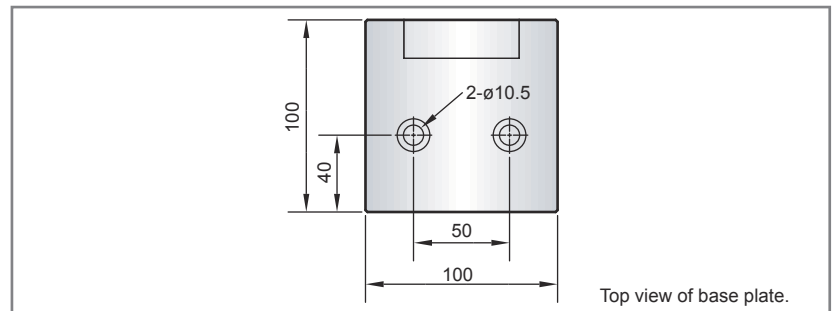


Ordering Code	Type	Taper
381020-130	TLS-30	BT30
-140	-40	BT40
-150	-50	BT50
382020-140	TLS-40-SK	SK40
-150	-50-SK	SK50

Tool Locking Fixture

Features:

- Easy handing and low cost tool locking fixture on work bench for preparing tools for machining centers.
- Swivel in vertical and horizontal.
- It is recommended to fix the base plate on the working bend.



Ordering Code	Type	Taper
381650-040	HL-HSK40	HSK40A / HSK40E
-050	HL-HSK50	HSK50A / HSK50E NSK30
-603	HL-HSK63	HSK63A / HSK63E HSK63F

TW Professional tool cart

Features:

- Push handle provided end walls are slotted to accept the universal bracket which in turn supports the tool holder pot (bench). 4 pairs of universal brackets are included.
- Fitted with 4 locking swivel castors.
- Good mobility and maneuverability are achieved.
- Strong steel sheet construction.



Basic Type

- Overall dimensions:
1002W x 650D x 830H mm
Gross Weight: 30kgs.

Item	TW-4B-30	TW-4B-40	TW-4B-50	TW-4B-63
Ordering Code	381030-30	381030-40	381030-50	381030-63
Capacity	32 TOOLS	28 TOOLS	20 TOOLS	18 TOOLS
Taper Shank	ISO/BT30	ISO/BT40	ISO/BT50	HSK63A

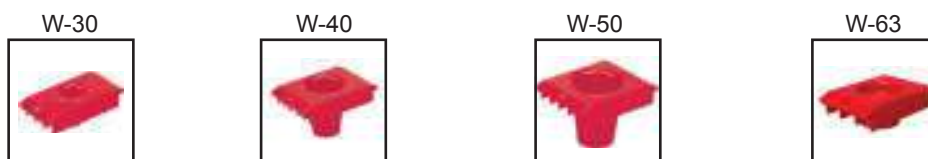
Tool Holder Tray set for TW-4B

- Handle bar, tray and plastic seats are included.
- Gross Weight: 2.2kgs.



Ordering Code	381030-304	381030-404	381030-504	381030-634
Storage	8 TOOLS	7 TOOLS	5 TOOLS	6 TOOLS
Taper Shank	ISO/BT30	ISO/BT40	ISO/BT50	HSK63A

Plastic Seat



Item	W-30	W-40	W-50	W-63
Ordering Code	381030-301	381030-401	381030-501	381030-6301
Dimensions mm	64W x 137D x 48H	74W x 137D x 63H	104W x 137D x 93H	84W x 137D x 49H
Taper Shank	ISO/BT30	ISO/BT40	ISO/BT50	HSK63A

Drawer Type - One Drawer

- Special design for space saving.
- Supplied with three tool tray and one drawer with locker.
- Dimensions
Overall sizes: 1002W x 650D x 830H mm
Gross Weight: 48kgs.



Item	TW-4B1D-30	TW-4B1D-40	TW-4B1D-50
Ordering Code	381032-301D	381032-401D	381032-501D
Capacity	24 TOOLS	21 TOOLS	15 TOOLS
Taper Shank	ISO/BT30	ISO/BT40	ISO/BT50

Drawer Type - Two Drawers

- Special design for space saving.
- Supplied with three tool tray and two drawers with locker.
- Dimensions
Overall sizes: 1002W x 650D x 830H mm
Gross Weight: 40kgs.



Item	TW-4B2D-30	TW-4B2D-40	TW-4B2D-50
Ordering Code	381033-302D	381033-402D	381033-502D
Capacity	24 TOOLS	21 TOOLS	15 TOOLS
Taper Shank	ISO/BT30	ISO/BT40	ISO/BT50

Hydraulic Tapping Machine
Standard Accessories:

- Hydraulic tapping spindle
- Parallel arm
- Table mounting column
- Choose any six pieces safety clutch tapping adapters
- Work Cart
- Electric Motor, Hydraulic Pump, Hydraulic Box
- Electric - Controlled Device
- Optional device : 90° and various degree tapping device



HM-22



HM-32



HM-42



HM-50

MODEL		HM-22	HM-32	HM-42	HM-50
For Tap		M3~M22	M4~M32	M4~M42	M8~M50
Speed (rpm)		0~400	0~550 / 0~105	0~400 / 0~75	0~150
Working Range	Rmax.(mm)	1600	1600	1600	1600
	Rmin.(mm)	200	200	200	200
Voltage		220/380 V, 50/60 Hz, 3-PHASE			
Electric Motor		3 HP	3 HP	3 HP	10 HP
Hydraulic Pressure		100 kgf/cm ²	100 kgf/cm ²	100 kgf/cm ²	140 kgf/cm ²
Weight N.W / G.W		300 / 400	300 / 400	300 / 400	450 / 550

Pneumatic Tapping Machine

Safe, rapid and efficient
Be able to solve all tapping problems.

Features:

- Rapid positioning and high machine speed increase productivity.
- Lower tap damage rate, high thread accuracy.
- Tap shall never break for tapping through-hole or blind-hole
- Tapping for heavier workpiece requires no positioning equipments nor movement, large work area.
- Lower machining cost than that by CNC machine, drilling tapping operation.
- Maximum drilling diameter: $\varnothing 6$ mm.
- Easy operation, no experience or strength required.



Special Accessories Of Tapping Machine

Universal inclination Spindle attachment.
90° and Various Degree Tapping Device

For AT12



For AT20



Type AT-I

AT-08/I
AT-12/I



AT-16/I



STANDARD ACCESSORIES:

- Pneumatic tapping spindle
- Parallel arm
- Table mounting column
- Pneumatic service unit
- Choose any six safety clutch tapping adapters.
(See page 57, 58)

Code	AT-08/ I	AT-12/ I	AT-16/ I
Capacity	M2~M8	M3~M12	M3~M16
Speed (rpm)	700	400	300
Work Range	Rmax. 1600mm , Rmin. 500 mm		
Weight (Kg)	20	20	25

Type AT-II

AT-08/II
AT-12/II



AT-16/II
AT-20/II



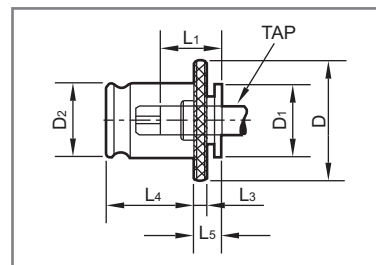
STANDARD ACCESSORIES:

- Pneumatic tapping spindle
- Parallel arm
- Table mounting column
- Pneumatic service unit
- Radial jib, increases arm reach by 500 mm.
(See page 57, 58)
- Choose any six safety clutch tapping adapters.

Code	AT-08/II	AT-12/ II	AT-16/ II	AT-22/ II
Capacity	M2~M8	M3~M12	M3~M16	M3~M22
Speed (rpm)	700	400	300	120/300
Work Range	Rmax. 1900 mm , Rmin. 200 mm			
Weight	21	21	23	27

Type TC●B

Without safety clutch

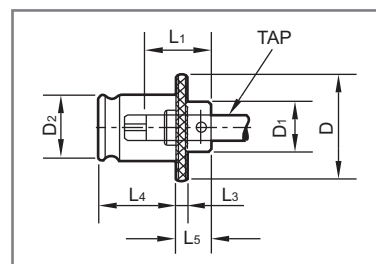

Code:30X700-1XXXX

Size	Ordering Code	Adapter size	D	D1	D2	L1	L3	L4	L5
TC0	300700-10XXX	0	22	12.5	13	15	4	19.5	7
TC1	-11XXX	1	30	19	19	17	4	21.5	7
TC2	-12XXX	2	48	30	31	30	5	35	11

• Please see next page for Tap code to get complete ordering code. Order example:300700-11012 TC1B/M4 JIS 5pcs.

Type TC●B(fix)

Without safety clutch

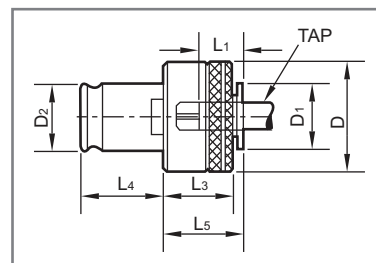

Code:30X700-2XXXX

Size	Ordering Code	Adapter size	D	D1	D2	L1	L3	L4	L5
TC0	300700-20XXX	0	22	12.5	13	15	4	19.5	12
TC1	-21XXX	1	30	19	19	17	4	21.5	12
TC2	-22XXX	2	48	30	31	30	5	35	16
TC3	-23XXX	3	70	47	48	(44)	6	55.5	19

• Please see next page for Tap code to get complete ordering code. Order example:303700-23026 TC3B(fix)/M12 ISO 5pcs.

Type TCS●B

With safety clutch

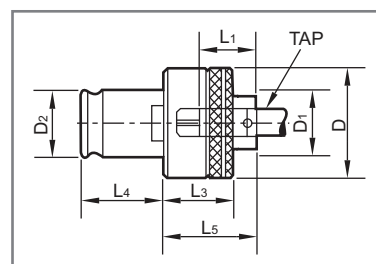

Code:30X700-3XXXX

Size	Ordering Code	Adapter size	D	D1	D2	L1	L3	L4	L5
TCS0B	300700-30XXX	0	23	12.5	13	15	20	19.5	21
TCS1B	-31XXX	1	32	19	19	17	25	21.5	25
TCS2B	-32XXX	2	50	30	31	30	31	35	33

• Please see next page for Tap code to get complete ordering code. Order example:304700-32038 TCS2B/M20 DIN 5pcs.

Type TCS●B(fix)

With safety clutch


Code:30X700-4XXXX

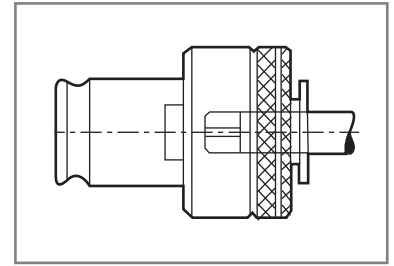
Size	Ordering Code	Adapter size	D	D1	D2	L1	L3	L4	L5
TCS0B	300700-40XXX	0	23	12.5	13	15	20	19.5	26
TCS1B	-41XXX	1	32	19	19	17	25	21.5	31
TCS2B	-42XXX	2	50	30	31	30	31	35	38
TCS3B	-43XXX	3	72	47	48	44	41	55.5	50

• Please see next page for Tap code to get complete ordering code. Order example:300700-43042 TCS 3B(fix)/M22 JIS 5pcs.

Ordering Code Table of TC Tap adapters

Ordering example:

- 300700-42026 TCS2B/M12(Fix) JIS 1pc.
- 303700-32026 TCS2B/M12 ISO 1pc.
- 304700-32026 TCS2B/M12 DIN 1pc.



JIS 300700-xx0xx

Code	Taps with JIS Shank	Dimensions	
	Metric	Dia. ø	Square
xx010	M3	4	3.2
xx012	M4 M4.5	5	4
xx014	M5 M5.5	5.5	4.5
xx016	M6	6	4.5
xx018		6.1	5
xx020	M8 M7	6.2	5
xx022	M10 M9	7	5.5
xx024	M11	8	6
xx026	M12	8.5	6.5
xx028		9	7
xx030	M14 M15	10.5	8
xx032		12	9
xx034	M16	12.5	10
xx036	M17	13	10
xx038	M18	14	11
xx040	M20	15	12
xx042	M22	17	13
xx044	M24 M25	19	15
xx046	M27 M26	20	15
xx048	M28	21	17
xx050		22	17
xx052	M30	23	17
xx054	M32	24	19
xx058	M33	25	19
xx060	M35 M34	26	21
xx062	M36 M38	28	21
xx064	M39 M40	30	23
xx066	M42	32	26
xx068	M45	35	26
xx070	M48	38	29

Dimensions of Tap Shank for Pipe Thread

xx072	PT 1/8"	8	6
xx074	PT 1/4"	11	9
xx076	PT 3/8"	14	11
xx078	PT 1/2"	18	14
xx080		19	15
xx082	PT3/4"	23	17
xx084		24	19
xx086	PT 1"	26	21
xx088		28	21
xx090	PT 1 1/4"	32	26
xx092	PT 1 3/8"	35	26
xx094	PT 1 1/2"	38	29

DIN 304700-xx0xx

Code	Taps with JIS Shank		Dimensions	
	DIN 352	DIN 371	Dia. ø	Square
xx010	M3	M3	3.5	2.7
xx012	M4	M4	4.5	3.4
xx014	M5	M5	6	4.9
xx016	M6	M6	6	4.9
xx018				
xx020	M8		6	4.9
xx022	M10		7	5.5
xx024		M8	8	6.2
xx026	M12		9	7
xx028		M10	10	8
xx030	M14		11	9
xx032				
xx034	M16	M12	12	9
xx036				
xx038	M18		14	11
xx040	M20		16	12
xx042	M22		18	14.5
xx044	M24		18	14.5
xx046	M27		20	16
xx048				
xx050				
xx052	M30		22	18
xx054				
xx058	M33		25	20
xx060				
xx062	M36		28	22
xx064	M39		32	24
xx066	M42		32	24
xx068	M45		36	29
xx070	M48		36	29

Dimensions of Tap Shank for Pipe Thread

xx072	G 1/8"	7	5.5
xx074	G 1/4"	11	9
xx076	G 3/8"	12	9
xx078	G 1/2"	16	12
xx080	G 5/8"	18	14.5
xx082	G 3/4"	20	16
xx084	G 7/8"	22	18
xx086	G 1"	25	20
xx088	G 1 1/8"	28	22
xx090	G 1 1/4"	32	24
xx092	G 1 3/8"	36	29
xx094	G 1 1/2"	36	29

ISO 303700-xx0xx

Code	Taps with JIS Shank	Dimensions	
	Metric	Dia. ø	Square
xx010	M3	2.24	1.8
xx012	M4 M3	3.15	2.5
xx014	M5 M4	4	3.15
xx016	M6	4.5	3.55
xx018	M5	5	4
xx020	M8 M6	6.3	5
xx022	M10 M8	8	6.3
xx024			
xx026	M12	9	7.1
xx028	M10	10	8
xx030	M14	11.2	9
xx032			
xx034	M16	12.5	10
xx036			
xx038	M18	14	11.2
xx040	M20	14	11.2
xx042	M22	16	12.5
xx044	M24	18	14
xx046	M27	20	16
xx048			
xx050			
xx052	M30	20	16
xx054			
xx058	M33	22.4	18
xx060			
xx062	M36	25	20
xx064	M39	28	22.4
xx066	M42	28	22.4
xx068	M45	31.5	25
xx070	M48	31.5	25

Design & Unique Construction

- Large jaw clamping capacity of AVL-160 is 275mm (10.8") and if both jaw plates set up at the rear part of jaw get on extra clamping capacity to 465 m/m (18").
- The height of jaw plates is 30% higher than that of other vises of same size.
- Chips covers protect leadscrew from damage.
- Thrust bearing eliminates friction and increases clamping pressure.



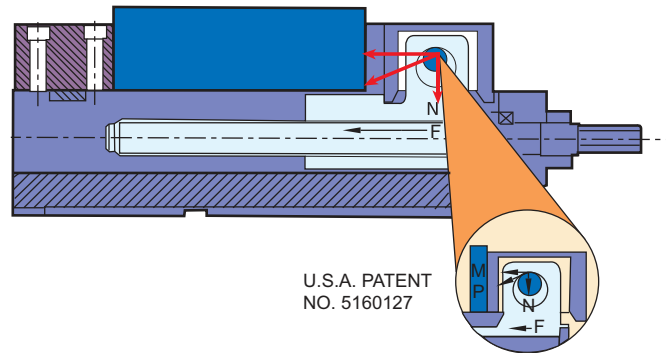
High & Excellent Rigidity

- The material is made of FCD. 55kg/cm² (80000 PSI) Ductile iron, and the slide ways are hardened to HRC45° minimum. The rigid construction prevents the base from distortion.

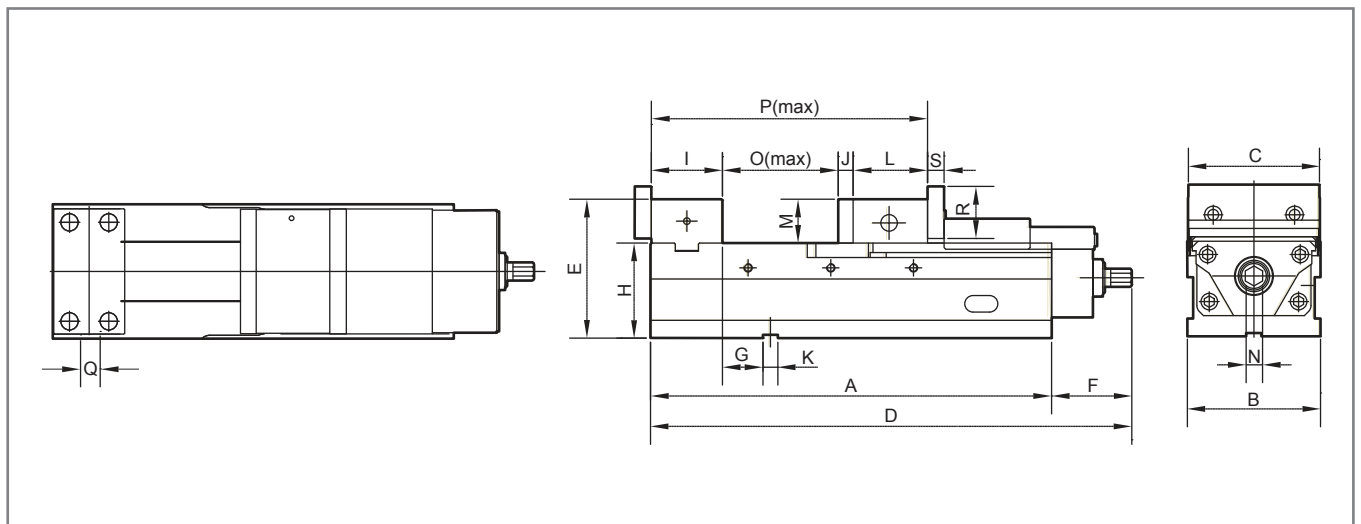
FEATURE: LOCKWELL® ANTI-LIFT MECHANISM

Lift can be controlled to the maximum of 0.015mm (0.0006") (see inspection specification)

- Clamping force and ANTI-LIFT mechanism features virtually eliminate any fixed jaw deflection and movable jaw lift.



U.S.A. PATENT NO. 5160127



Order No.	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	Weight
AVL-100G/HV	324	104	102	437	130	104	32	85	73	15	18	86.5	45	19	140	314.5	20	55	17	27 kg
AVL-125G/HV	390	127	124.7	480	153	105	57	100	78	15	18	87.5	53	19	201	381.5	22.5	63	20	43 kg
AVL-160G/HV	485	161	159.2	625	168	120	67	115	86	18	18	80	53	21	295	479	25	63	20	71 kg

* G: General, HV: Horizontal & Vertical.

High Clamping Power and Large Jaw Clamping Capacity

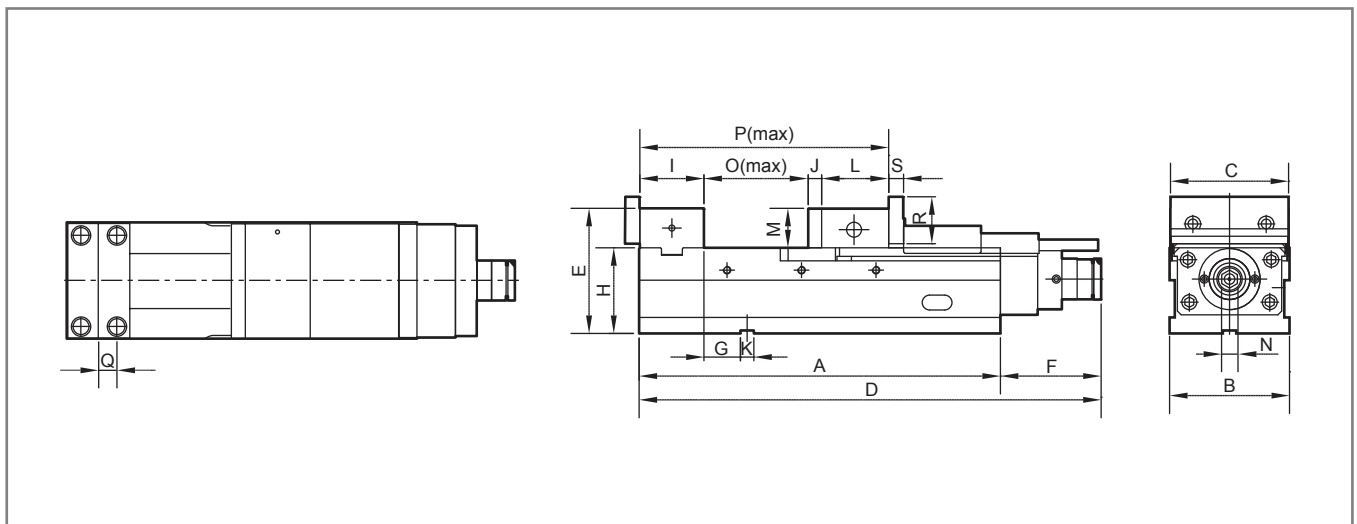
- Tons of pressure can be applied to the workpiece with minimum operator's effort. Using the new "LOCKWELL® POWER VISE", it can not release the workpiece until the operator manually releases it.
- "Mechanical Booster" provides a steady clamping force against shocks and vibrations during the operations, since it clamps the workpiece resiliently with an aid of the "disc-springs" mounted inside.
- Powerful AVQ-160 clamping force can be increased up to 5500kg; AVQ-125, 3500kg; AVQ-100, 3000kg.
- Clamping force freely adjusted with the guidance of graduation lines.



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The Characteristics of Match Type Machine VISE

- Can be used on Machining Center. Proceeding 2 to 3 workpieces at the same time, Reduces the processing time and difficulties.
- The whole vise is precisely ground and "H & L" tolerance is within $\pm 0.02/\text{mm}$ (± 0.008 "), therefore several vises can be lined up for production.



Order No.	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	Clamping Force	Weight
AVQ-100G/HV	324	104	102	428	130	104	32	85	73	15	18	86.5	45	14	140	314.5	20	55	17	46 KN	30 kg
AVQ-125G/HV	390	127	125	495	153	105	57	100	78	15	18	87.5	53	14	201	381.5	22.5	63	20	51 KN	46 kg
AVQ-160G/HV	485	161	159.5	605	168	120	67	115	86	18	18	80	53	14	295	479	25	63	20	57 KN	71 kg
AVQ-200G/HV	535	202	200	655	178	128	84	120	101	18	18	95	58	14	320	534	31	73	20	63 KN	100 kg

* G: General, HV: Horizontal & Vertical.



Design & Unique Construction

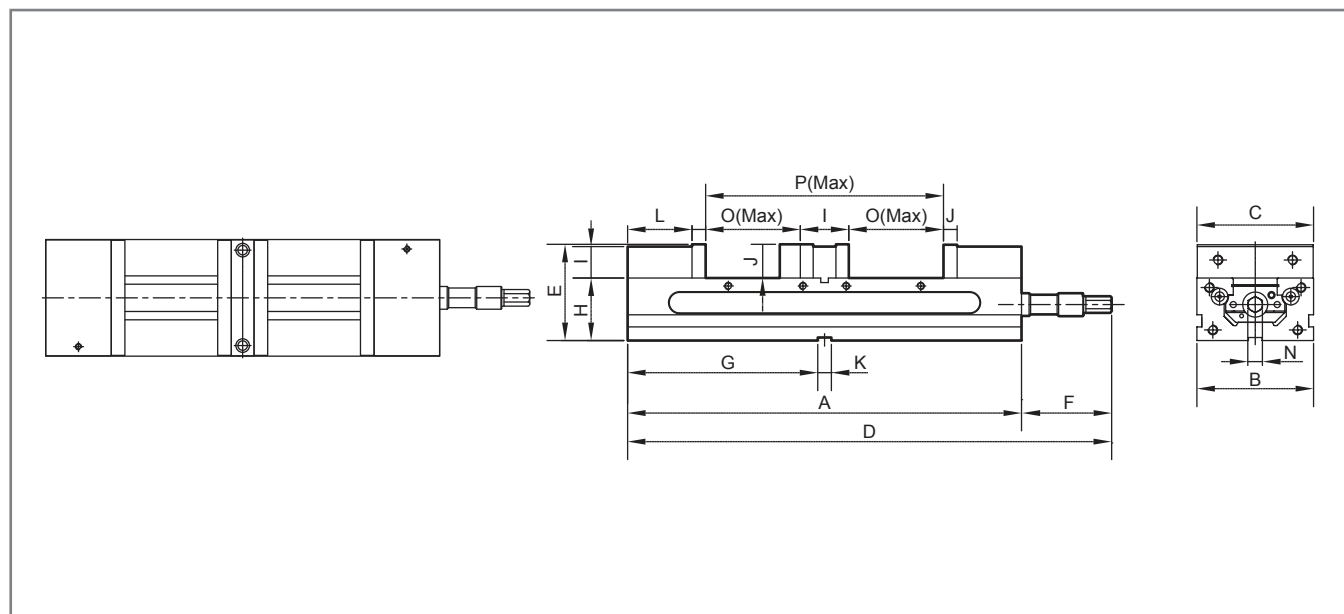
- Double station could clamp two dissimilar workpieces with same force at a time and provides 6 different clamping positions.
- Designed with combination of fixed and movable jaw to increase the efficiency and productivity of machine.
- Clamping Force Equalization (patented) ensures same clamping force to clamp two different size/shape workpieces and avoid deflection and lift.



High & Excellent Rigidity

- Rigid and tensile ductile iron FCD-60 (80,000PSI) vise body. Slide surface flame hardened to HS65° to maintain the accuracy. S50C jaw-plate has been Carburizing heat treated the hardness to HRC54°.

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Order No.	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Weight
TLD-40G/HV	405	104	103	459	96.5	54	193.5	63.5	55	15	18	69	38	14	90	235	20kg
TLD-60G/HV	520	154	153	536	124.05	16	251	82.55	66	18	18	86.5	44.5	19	125	316	52kg

* G: General, HV: Horizontal & Vertical.

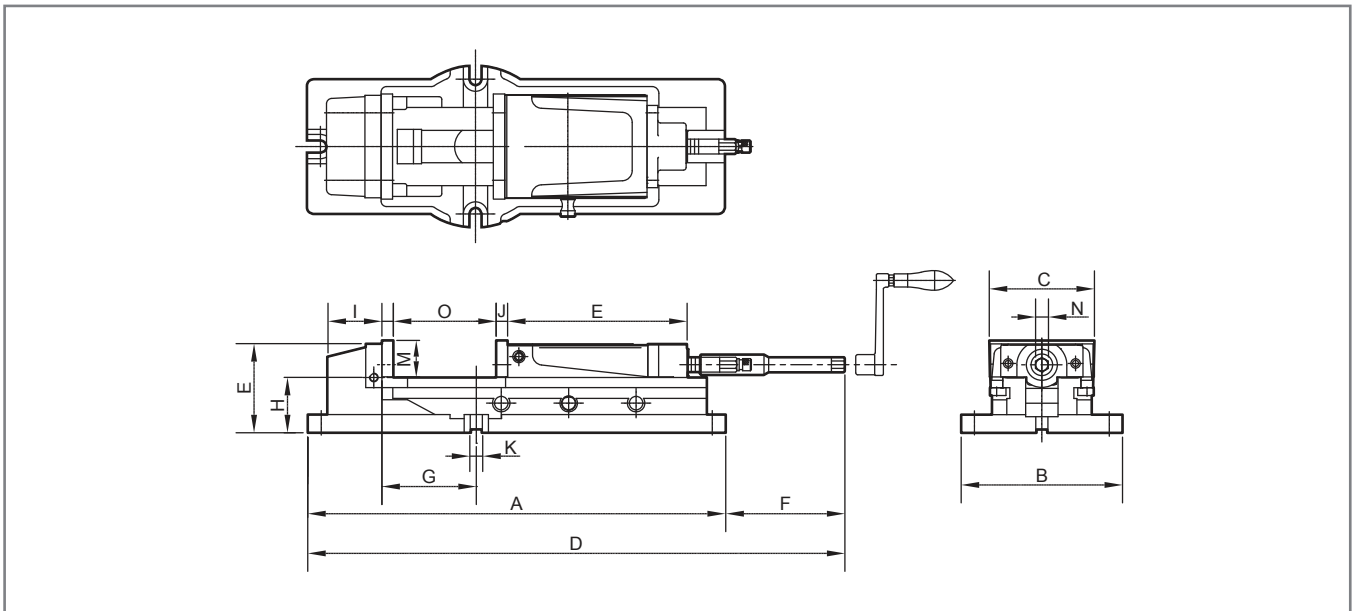
The Characteristics Of Hydraulic Vise

- Can be used on Machining Center. Processes 2 to 3 workpieces at the same time, Reduces the processing time and difficulties.
- Able to clamp various work pieces, easy to handle, saves time and reduces processing costs.



Hydraulic Booster System

Hydraulic Booster provides a steady clamping force against shocks and vibrations during the operations, since it fastens the work piece resiliently with an aid of the discsprings mounted inside.



Order No.	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	Clamping Force	Weight
HP-40	435	160	104	525	93	90	53	58	76	11	16	153	36	14	170	25 KN	18 kg
HP-50	538	185	130	670	117	132	82	72	82	15	16	175	46	19	220	35 KN	28 kg
HP-60	620	240	154	800	132	180	140	82	81	17	16	208	54	19	300	44 KN	40 kg
HP-80	700	280	206	900	160	200	118	100	101	21	18	245	62	19	300	66 KN	82 kg

New Design & Unique Construction

- MC Mechanical Long Power vise with large opening and Lockwell Anti-Lift Mechanism.
- Force Adjustable System (patented) makes the force setting easier & steadier, moreover, it has constant pressure function & over pressure protection.
- Patented Mechanical Booster is fully sealed against dust, chips and cutting fluid for extended life time.



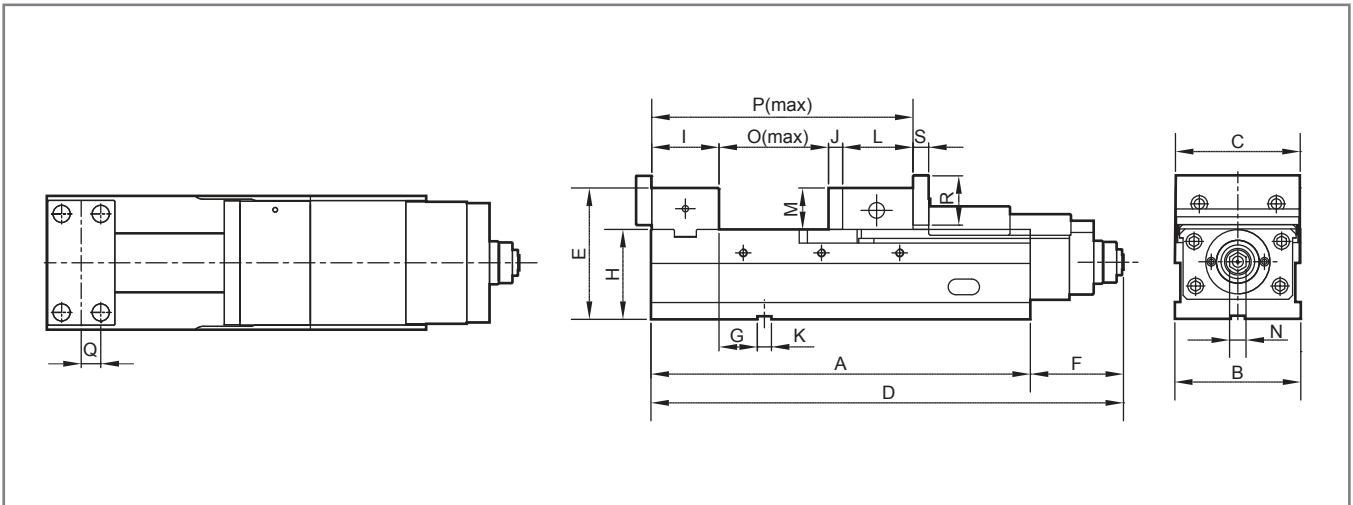
Max. Openly
-ALQ160:320
-ALQ200:345



High & Excellent Rigidity

- Unique Out-jaw design increase the clamping capacity.
- Rigid and tensile ductile iron FCD-60 (80,000PSI) vise body. Slide surface flame hardened to HS65° to maintain the accuracy. S50C jaw-plate has been Carburizing heat treated the hardness to HRC54°.
- Used for VMC & HMC.

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Order No.	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	Clamping Force	Weight
ALQ-100G/HV	324	104	102	434	130	110	32	85	73	15	18	86.5	45	14	140	314.5	20	55	17	36 KN	30 kg
ALQ-125G/HV	390	127	125	500	153	110	57	100	78	15	18	87.5	53	14	207.5	388	22.5	63	20	43 KN	46 kg
ALQ-160G/HV	515	161	159.5	635	168	120	67	115	86	18	18	80	53	19	320	514	25	63	20	57 KN	76 kg
ALQ-200G/HV	585	202	200	713	178	128	84	120	101	18	18	95	58	19	345	581.5	31	73	20	67 KN	108 kg

* G: General, HV: Horizontal & Vertical.

New Design & Unique Construction



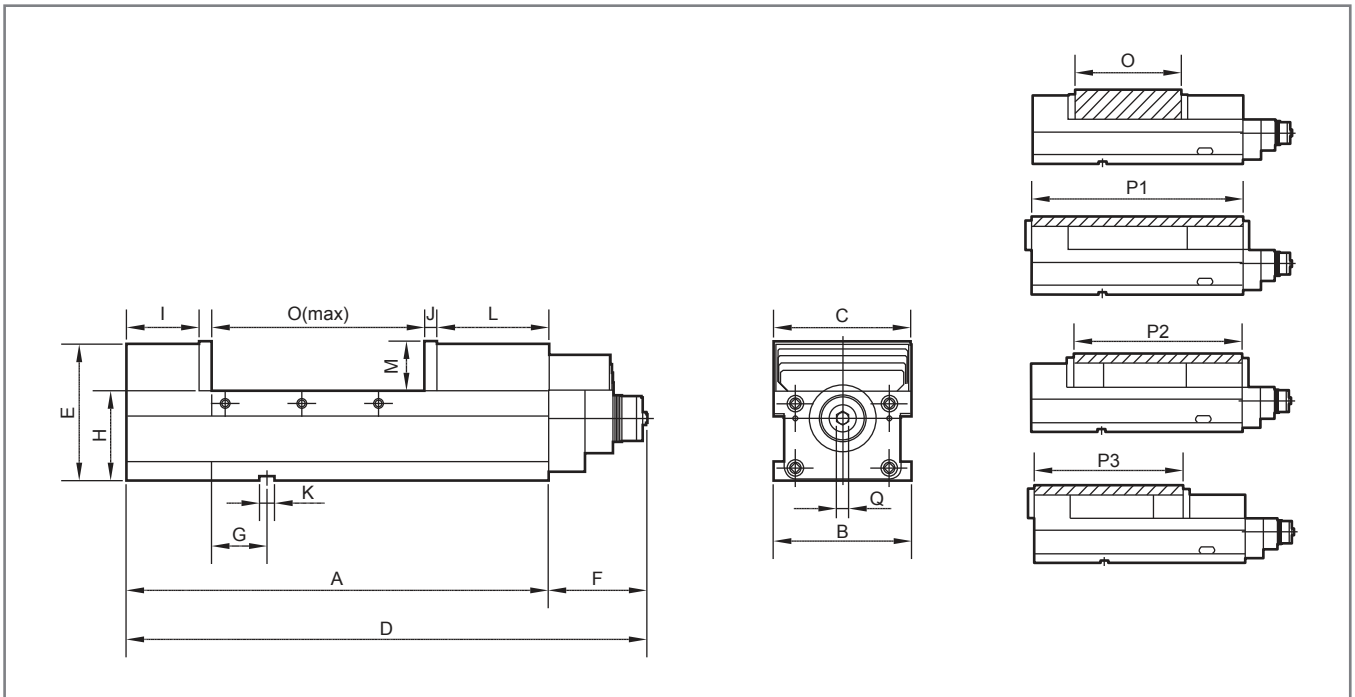
- Wellock MC Mechanical Power Vise is most suitable for VMC & HMC.
- Patented Force Adjustable System makes the force setting easier & steadier, moreover, it has constant pressure function & over pressure protection.
- Patented Mechanical Booster is fully sealed against dust, chips and cutting fluid for extended life time.
- Wellock Semi-spherical segment eliminate deflection and lift.

High & Excellent Rigidity

- Rigid and tensile ductile iron FCD-60 (80,000PSI) vise body. Slide surface flame hardened to HS65° to maintain the accuracy. S50C jaw-plate has been Carburizing heat treated the hardness to HRC54°.
- 4 different clamping positions.
- Unique design facilitates the evacuation of chips.

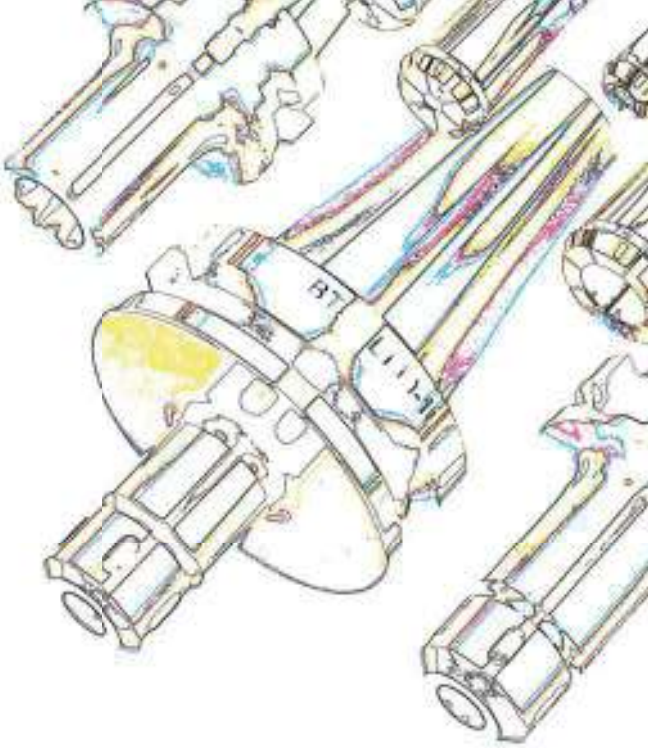


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Order No.	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P1	P2	P3	Clamping Force	Weight
AVM-160G/HV	495	161	160	610	160	115	65	105	85	15	18	130	58	19	250	250-480	250-370	250-330	57 KN	55 kg
AVM-200G/HV	580	201	200	708	170	128	85	110	90	18	18	150	63	19	290	290-550	290-430	290-370	67 KN	78 kg

* G: General, HV: Horizontal & Vertical.



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