GRIP
PERFECT

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www.gripkorea.com

GRIP HYDRO-LINE

HYDRO-LINE

Precision Hydraulic Expansion Toolholding System

Product Catalogue

GRIP
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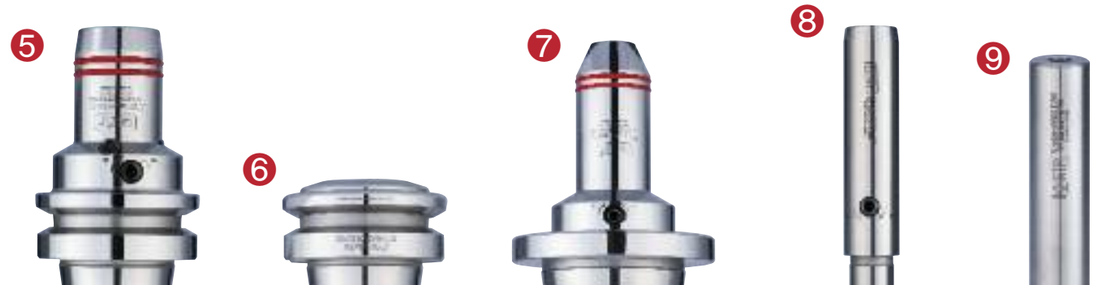
HYDRO-LINE Overview

Tooling System	Interfaces: HSK	BT	SK	CYL	Technical Characteristics: Run-Out Accuracy	Damping	Radial Rigidity	Torque	Repeat Accuracy	Flexibility	Chipping Processes: Milling	Drilling	Reaming	Thread Milling
HYDRO MICRON	HSK-A 32,40,50,63,100 HSK-C 32,40,50,63 HSK-E 32,40,50	JIS-BT 30,40,50	JIS-BT 30,40,50		●	●	▲	▲	●	●	▲	●	●	▲
HYDRO POWER	HSK-A 63,100	JIS-BT 30,40,50	SK 30,40,50		●	●	●	●	●	●	●	●	●	●
HYDRO SLIM	HSK-A 63	JIS-BT 40	SK 40		▲	●	○	▲	●	●	○	●	●	○
HYDRO PRESET	HSK-A 40,50,63,100	JIS-BT 30,40,50	SK 30,40,50		●	●	▲	▲	●	●	▲	●	●	▲
HYDRO ZERO FIT	HSK-A 63,100	JIS-BT 40,50	SK 40,50		●	●	▲	▲	●	●	▲	●	●	▲
HYDRO VS		JIS-BT 40,50	SK 40,50		●	●	●	▲	●	●	●	●	●	●
HYDRO GRIND		VBT 50			▲	●	○	▲	●	●	○	○	○	○
HYDRO EXTENSION				ST	▲	●	○	▲	●	●	○	●	●	●
HYDRO SWISS TURN				ST	●	●	○	▲	●	●	○	●	●	●

● Most Suitable ▲ Less Suitable ○ Suitable

INDEX		HSK-A					HSK-C				HSK-E		BT				SK		VBT	ST
		A32	A40	A50	A63	A100	C32	C40	C50	C63	E40	E50	BT30	BT40	BT50	SK30	SK40	SK50	VBT50	ST
HYDRO-MICRON	page	14	14	14	14	15	17	17	17	18	19	19	22	24	26	30	30	31		
HYDRO-POWER	page				36	37							40	40	41		44	45		
HYDRO-SLIM	page				49									51			53			
HYDRO-PRESET	page		57	57	58	59							61	61	61	63	63	63		
HYDRO-ZERO FIT	page				67	67								69	69		71	71		
HYDRO-VS	page													75	75		77	77		
HYDRO-GRIND	page																		81	
HYDRO-EXTENSION	page																			85
HYDRO-SWISS TURN	page																			88

1. **HYDRO-MICRON** The standard. Various use. Optimal performance.
2. **HYDRO-POWER** Compact, Powerful gripping force. Torque up to 900Nm, for maximum volume machining.
3. **HYDRO-SLIM** Slim and high-precision. Optimized interfering contours.
4. **HYDRO-PRESET** Radial length adjustment for micron accuracy in tool-presetting.
5. **HYDRO-ZERO FIT** 0.000 mm run-out accuracy.
6. **HYDRO-VS** Compact, very short type. For machine room space.
7. **HYDRO-GRIND** Flexible, for all leading tool grinding machines.
8. **HYDRO-EXTENSION** Long and slim design. Connection holder.
9. **HYDRO-SWISS TURN** Precision, automatic lathe solution.



INDEX

HYDRO-LINE Overview

GRIP HYDRO-LINE OF HIGH QUALITY AND PRECISION

PROFESSIONALISM

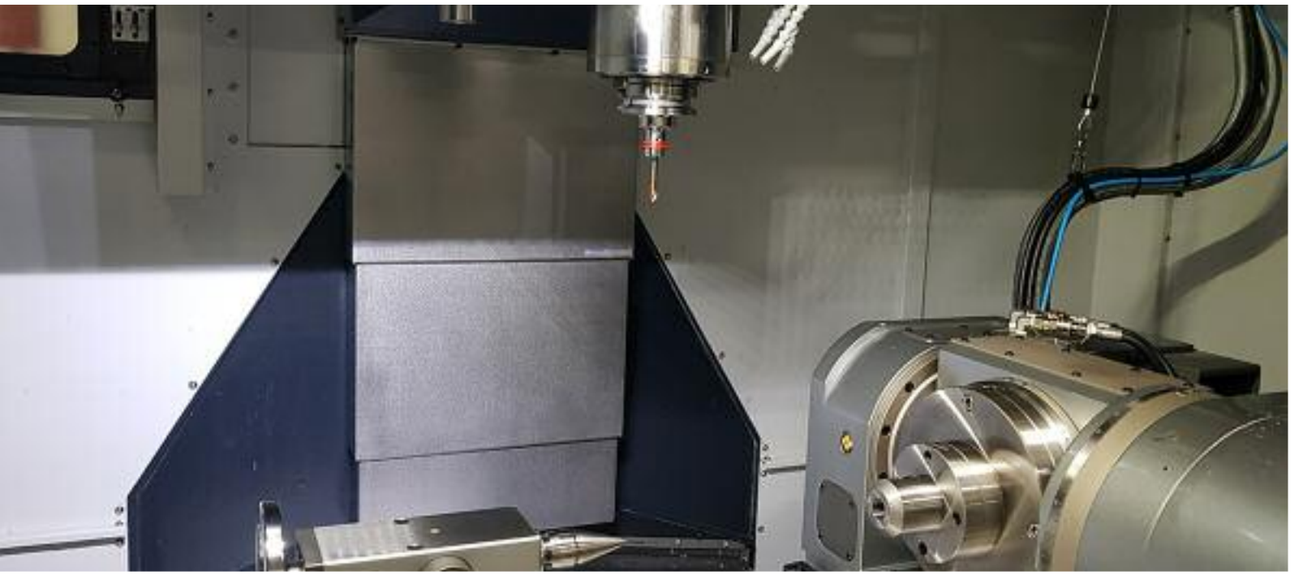
-GRIP is a team by professionals from all walks of life.

GRIP manufactures and distributes high-precision toolholding systems worldwide. The GRIP, headquartered in Seoul, South Korea, specialized in hydro-line for the metal cutting production process. Our products perfectly fit together in the field of automotive, aerospace, medical engineering, watchmaking, telecommunications, and in the die and mold industry.

GRIP TO PERFECT

-GRIP works for your fulfillment.

GRIP's first priority is providing optimal solutions for every demand of each specific application. Our goals are helping GRIP customers to improve quality of their products and helping them to meet the finest end result with our high-quality products. In order to achieve our goals, GRIP always focuses on being in close contact with our customers to recognize market needs and reflecting the demands based upon our expert knowledge, know-how, and experiences. GRIP sincerely believes that the GRIP will help you to be perfect.



The Best HYDRO-LINE
- Applicable for Milling, Drilling, and Reamers Work

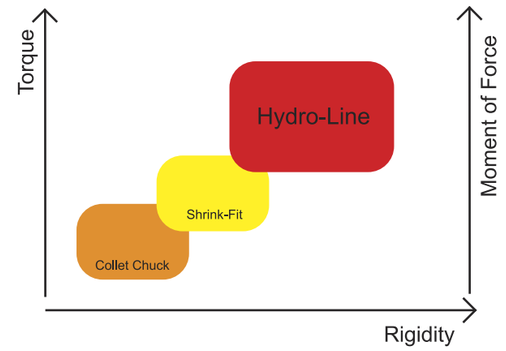
Advancement Stiffness.
More processing conditions are satisfied.
Advanced surface roughness.

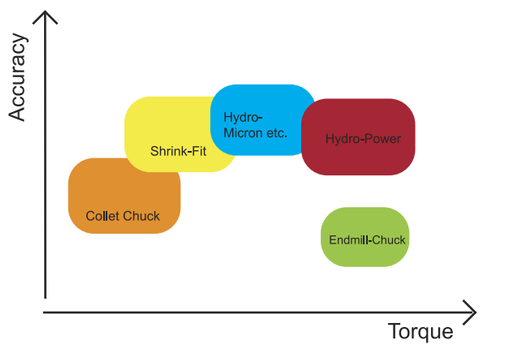
Advanced Hydraulic Clamping
Tool life improvement up to 50 %.
Improved roughness of processed products.

G2.5 at 25.000RPM Balance of Quality
Increase productivity with high cutting speed.

Easy Clamping / Unclamping
Reliable, consistent clamping.
No over torque.
No required torque wrench.

Various Usability
Reduce inventory amount of toolholder,
minimum cost, maximum usability.





HYDRO-LINE Basic Structure

Tool Holder Shank Type Combination
- Mounted on various mechanical equipment
  various kind of shank can be used.
- More than 80% taper constant guaranteed(AT3)

Piston and Clamping Screw in The Sealing Structure
- Repeat for thousands of iterations(endurance).
- Maximum clamping force by a small force(6~10NM).
- Easy clamping.

Two Anti-Slip Rings
- Anti-slip ring prevents sliding accident.

Internal Diameter Groove Design
- Tool tightening, Internal diameter groove design make it to remove any foreign substances remaining on the surface of the tool, ensure high power clamping at any moment.
- Response various tool shank by using a sleeve.

Tool Length Adjuster
- Easily adjust to the exposed tool by thread adjustment.
- Response all production internal coolant.

Toolholder Comparison Table

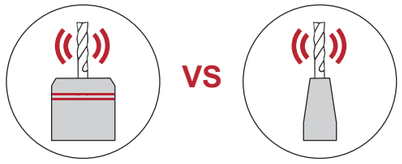
Based upon a test result which compared different types of toolholder, all toolholders excluding Hydraulic chuck generally occur at least 10㎛ of the run-out and their tool life is reduced 50 %. To be specific, in the case of side-lock chuck, collet chuck, and milling chuck, the range of run-out of their holders usually increases compared to the range of Hydraulic chuck. Further, while the Shrink-Fit chuck would be able to have same range of run-out with Hydraulic Chuck, its clamping process is complicated.

COMPARISON TABLE

System Comparison	Tool Life			Concept		Total Score
	Precision	Balance	Damping	Flexibility	Accessories	
SIDE-LOCK CHUCK	○	○	○	○	○	○
COLLET CHUCK	○	●	○	●	●	○
SHRINK-FIT CHUCK	●	●	○	○	○	○
MILLING CHUCK	○	○	○	●	●	○
HYDRAULIC CHUCK	●	●	●	●	●	●

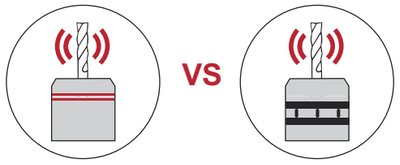
●GREAT ○ POOR

Hydraulic Chuck with Product Comparison



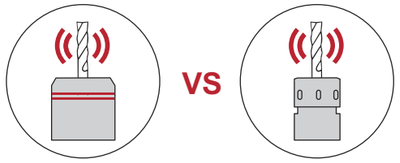
Hydraulic Chuck **Shrink Fit Chuck**

- The design of hydraulic chuck generally provides superior stiffness than a shrink-fit holder.
- Remove bore of influence to the tolerance of shank for a coherent combination.
- Damping properties of hydraulic chuck extend tool life.
- G2.5 at 25000rpm high balance, positive influence to tools and machine spindles.
- Cost effective because no expensive heatting device is required.
- Reduce inventory amount of toolholder by using sleeve.



Hydraulic Chuck **Milling Chuck**

- Hydraulic chuck similar torque to milling chuck.
- Slim design compared to milling chuck.
- Damping properties of hydraulic chuck extend tool life.
- G2.5 at 25000rpm high balance, positive influence to tools and machine spindles.
- Fewer parts than the milling chuck.
- Easy to custom production.
- Consistent clamping force by stop function of the clamping screw.
- Easy clamping / unclamping by T-wrench.



Hydraulic Chuck **Collet Chuck**

- Run-out of collet chuck is easlly changed according to what and how to Combinate, but hydraulic chuck always keep the same run-out accuracy.
- Clamping force up to four times.
- Damping properties of hydraulic chuck extend tool life.
- G2.5 at 25000rpm high balance, positive influence to tools and machine spindles.
- No required torque wrench.
- Provide a coolant function without special parts or accessories.
- Easy clamping / unclamping by T-wrench.

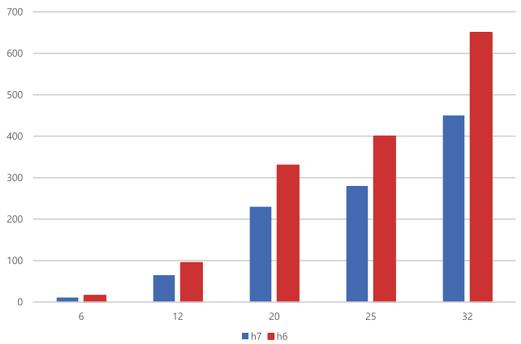
HYDRO-LINE Clamping Force Test Data

▶ Direct part combining tool shank standard of clamping force

Ø6	16Nm	Ø16	185Nm
Ø8	23Nm	Ø18	240Nm
Ø10	45Nm	Ø20	330Nm
Ø12	95Nm	Ø25	400Nm
Ø14	110Nm	Ø32	650Nm

[Nm]

▶ Comparison table of clamping force per tool shank



*Recommend to use tool of h6 tolerance for optimal accuracy and machinability, can be to use tool of h7 tolerance but, it make reduction of clamping force.

▶Comparative clamping force of the direct part combining tool shank and slevee of an exclusive use

Tool Shank Diameter

Holder Inner Diameter	Ø12	Ø20	Ø32
Ø12	95		
Ø20	110	330	
Ø32	160	270	650

[Nm]

***If use a slevee of an exclusive use, it make reduction of clamping force.**

HYDRO-MICRON

Perfect Run-Out Accuracy

GRIP Hydro-Micron is the best choice for reliable and consistent clamping with maximum holding force. It is ideally suitable for various applications such as milling, reaming, boring, chamfering, thread milling, tapping, or in high-speed machining.

*3Dx3micron run-out accuracy for optimal work

*Powerful clamping force

*Vibration damping properties of tool life

*Versatile clamping range due to intermediate sleeves

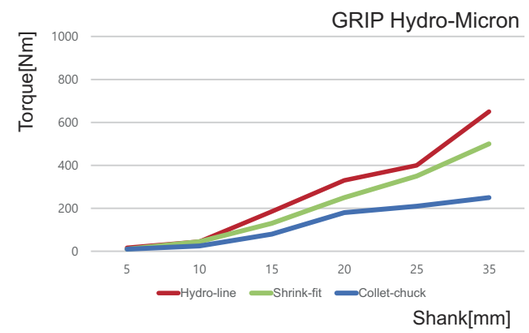
*Exact axial length adjustment

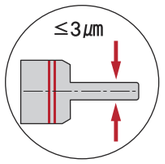
*Fine-balance G2.5 at 25,000rpm

*Provide a coolant function without special parts or accessories

*Easy, handy setting of tool and change

Hydro-Micron Torque Test Data

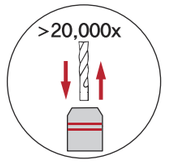




Total system run-out
TIR at ≤3 ㎛ 3 x D.

Excellent vibration damping.

Tool ready for use in less than 10 seconds.



Maximum clamping force and low runout, even after 20,000 tool changes.

HYDRO MICRON

HSK Taper Hydraulic Toolholder

It is designed for rotating applications. All GRIP HSK Taper hydraulic toolholders are suitable for high-speed applications where consistent performance is key.

DIN 69893/ ISO 12164

Features and Benefits

Run-out system TIR ≤3㎛

Hydraulic system consists of hydro-line. All components together ensure best run-out and accuracy.

Balancing

100% balanced to G2.5 at 25,000 rpm.

Surface finish max. Ra 0.25

Achieve high clamping force and high transferable torque.

Vibration damping

Hydraulic toolholders offer a good vibration damping to sustain a high surface finish and can prevent cutting force alterations.

Matched tooling system for best fit

For highest precision and best result the entire machining system counts. Therefore our components are carefully matched for optimum fit and accuracy. This guarantees the best run-out and balance.

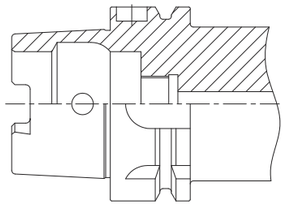
ID chip hole (only HSK form A)

In accordance with DIN 69873 for 10mm diameter. Available on request.

Advices

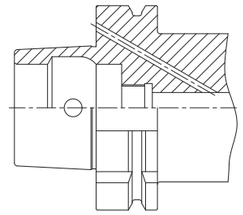
For all HSK-A and HSK-E form hydraulic toolholders a range of coolant tubes(CT) is available. For CT part numbers please refer to page100.

HSK Form and Their Key Characteristics



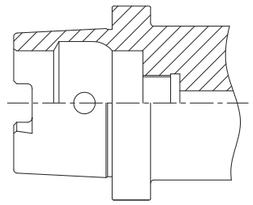
HSK Form A

» Standard type for machining centers and milling machines.
» For automatic tool change.
» Coolant supply through center via coolant tube.
» Drive keys at the end of HSK taper.
» Hole for data carrier DIN STD 69873 in the flange is available on request.



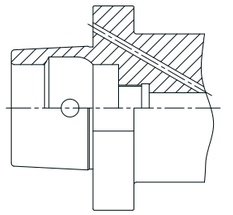
HSK Form B

» For machining centers, milling and turning machines.
» With enlarged flange size for higher radial rigidity.
» For automatic tool change.
» Coolant supply through the flange.
» Drive keys at the flange.



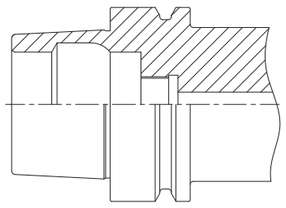
HSK Form C

» For transfer lines, special machines and modular tooling system.
» For manual tool change.
» Drive keys at the end of HSK taper.



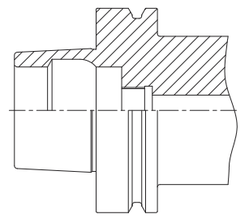
HSK Form D

» For special machines.
» With enlarged flange size for higher radial rigidity.
» For automatic tool change.
» Coolant supply through the flange.
» Drive keys at the flange.



HSK Form E

» For high-speed applications.
» For automatic tool change.
» Coolant supply through center via coolant tube.
» Without any drive keys for absolute symmetry.



HSK Form F

» For high-speed applications.
» For automatic tool change.
» With enlarged flange size for higher radial rigidity.
» Without any drive keys for absolute symmetry.

HYDRO-MICRON
HSK-A

HSK-A
DIN 69893
ISO 12164

Type		D1	D2	D3	D4	L1	L2	L3	L4	L5	L6	G
		Dimensions[mm]										
HSK-A32												
HSK-A32/GMR6/80	○	6	28	40	25	80	37	10	30	4	23.5	M5
HSK-A32/GMR8/80	○	8	30	40	27	80	37	10	30	4	23.5	M6
HSK-A32/GMR10/85	○	10	32	40	29	85	42	10	35	4	28.5	M6
HSK-A32/GMR12/90	○	12	34	40	31	90	47	10	40	4	33.5	M6
HSK-A40												
HSK-A40/GMR6/70	▲	6	28	33.5	25	70	37	10	36	4	23.5	M5
HSK-A40/GMR8/70	▲	8	30	33.5	27	70	37	10	36	4	23.5	M6
HSK-A40/GMR10/75	▲	10	32	33.5	29	75	42	10	42	4	28.5	M6
HSK-A40/GMR12/80	●	12	33.5	33.5	31	80	47	10	48	4	33.5	M6
HSK-A50												
HSK-A50/GMR6/70	▲	6	28	40	25	70	37	10	28	4	23.5	M5
HSK-A50/GMR8/70	▲	8	30	40	27	70	37	10	28	4	23.5	M6
HSK-A50/GMR10/75	▲	10	32	40	29	75	42	10	34	4	28.5	M6
HSK-A50/GMR12/85	●	12	34	40	31	85	47	10	44	4	33.5	M6
HSK-A50/GMR14/85	○	14	36	40	33	85	47	10	44	4	33.5	M6
HSK-A50/GMR16/90	▲	16	38	60	35	90	52	10	30	4	38.5	M6
HSK-A50/GMR18/90	○	18	41	60	38	90	52	10	30	4	38.5	M6
HSK-A50/GMR20/90	●	20	43	60	40	90	52	10	30	4	38.5	M6
HSK-A63												
HSK-A63/GMR6/70	●	6	28	50	25	70	37	10	24	4	23.5	M5
HSK-A63/GMR8/70	●	8	30	50	27	70	37	10	24	4	23.5	M6
HSK-A63/GMR10/80	●	10	32	50	29	80	42	10	35	4	28.5	M6
HSK-A63/GMR12/85	●	12	34	50	31	85	47	10	40	4	33.5	M6
HSK-A63/GMR14/85	●	14	36	50	33	85	47	10	40	4	33.5	M6
HSK-A63/GMR16/90	●	16	38	50	35	90	52	10	46	4	38.5	M8
HSK-A63/GMR18/90	●	18	41	50	38	90	52	10	47	4	38.5	M8
HSK-A63/GMR20/90	●	20	43	50	40	90	52	10	48	4	38.5	M8
HSK-A63/GMR25/120	●	25	57	63	53	120	61	10	59	4	45	M16
HSK-A63/GMR32/125	●	32	63	75	58	125	65	10	63	4	48	M16

Availability: ● stock ▲ short lead time ○ on request

»Tool shank quality h6
»Bore for data carrier as an option (page.101)
»T-wrench is ordered separately (page.101)
»Hydro-sleeve is ordered separately (page.94~97)
»Center through coolant system
»Additional sizes and special designs available on request

HSK-A Hydro-Micron

HSK-A
DIN 69893
ISO 12164

Type		D1	D2	D3	D4	L1	L2	L3	L4	L5	L6	G
		Dimensions[mm]										
HSK-A100												
HSK-A100/GMR6/75	▲	6	28	50	25	75	37	10	26	4	23.5	M5
HSK-A100/GMR8/75	▲	8	30	50	27	75	37	10	26	4	23.5	M6
HSK-A100/GMR10/90	▲	10	32	50	29	90	42	10	42	4	28.5	M6
HSK-A100/GMR12/95	●	12	34	50	31	95	47	10	47	4	33.5	M6
HSK-A100/GMR14/95	▲	14	36	50	33	95	47	10	47	4	33.5	M6
HSK-A100/GMR16/100	▲	16	38	50	35	100	52	10	53	4	38.5	M8
HSK-A100/GMR18/100	▲	18	41	50	38	100	52	10	53	4	38.5	M8
HSK-A100/GMR20/105	●	20	43	50	40	105	52	10	59	4	38.5	M8
HSK-A100/GMR25/110	▲	25	57	63	53	110	61	10	62	4	45	M8
HSK-A100/GMR32/110	●	32	63	75	58	110	65	10	62	4	48	M8

Availability: ● stock ▲ short lead time ○ on request

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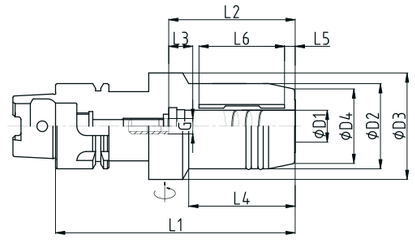
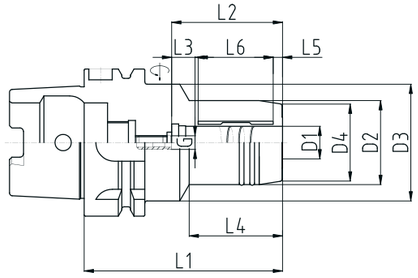
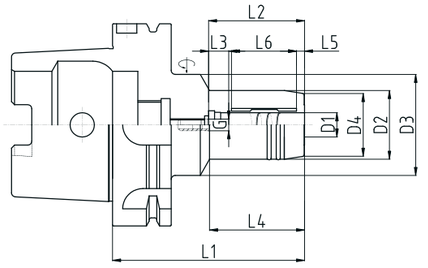


HSK-A32



HSK-A40/A50/A63



HSK-A100

HYDRO-MICRON

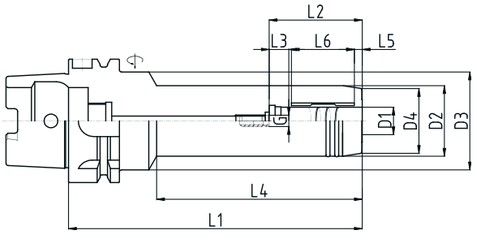
HSK-A Long Type

HSK-A
DIN 69893
ISO 12164

Type		D1	D2	D3	D4	L1	L2	L3	L4	L5	L6	G
		Dimensions[mm]										
HSK-A63												
HSK-A63/GMR6/150	●	6	28	50	25	150	37	10	103	4	23.5	M5
HSK-A63/GMR8/150	●	8	30	50	27	150	37	10	104	4	23.5	M6
HSK-A63/GMR10/150	●	10	32	50	29	150	42	10	104	4	28.5	M6
HSK-A63/GMR12/150	●	12	34	50	31	150	47	10	105	4	33.5	M6
HSK-A63/GMR14/150	○	14	36	50	33	150	47	10	105	4	33.5	M6
HSK-A63/GMR16/150	○	16	38	50	35	150	52	10	106	4	38.5	M8
HSK-A63/GMR18/150	○	18	41	50	38	150	52	10	107	4	38.5	M8
HSK-A63/GMR20/150	●	20	43	50	40	150	52	10	108	4	38.5	M8
HSK-A63												
HSK-A63/GMR6/200	○	6	28	50	25	200	37	10	103	4	23.5	M5
HSK-A63/GMR8/200	○	8	30	50	27	200	37	10	104	4	23.5	M6
HSK-A63/GMR10/200	○	10	32	50	29	200	42	10	104	4	28.5	M6
HSK-A63/GMR12/200	○	12	34	50	31	200	47	10	105	4	33.5	M6
HSK-A63/GMR14/200	○	14	36	50	33	200	47	10	105	4	33.5	M6
HSK-A63/GMR16/200	○	16	38	50	35	200	52	10	106	4	38.5	M8
HSK-A63/GMR18/200	○	18	41	50	38	200	52	10	107	4	38.5	M8
HSK-A63/GMR20/200	○	20	43	50	40	200	52	10	108	4	38.5	M8

Availability: ● stock ▲ short lead time ○ on request

»Tool shank quality h6
»Bore for data carrier as an option (page.101)
»T-wrench is ordered separately (page.101)
»Hydro-sleeve is ordered separately (page.94~97)
»Center through coolant system
»Additional sizes and special designs available on request



HSK-A63(LONG)

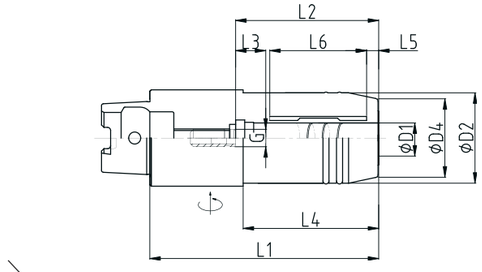
HSK-C Hydro-Micron

HSK-C
DIN 69893
ISO 12164

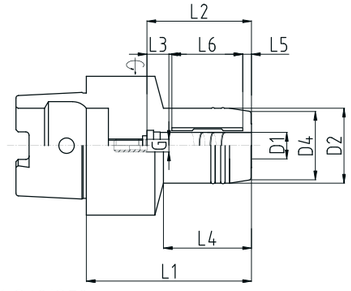
Type		D1	D2	D3	D4	L1	L2	L3	L4	L5	L6	G
		Dimensions[mm]										
HSK-C32												
HSK-C32/GMR6/65	○	6	28	-	25	65	37	10	34	4	23.5	M5
HSK-C32/GMR8/70	○	8	30	-	27	70	37	10	39	4	23.5	M6
HSK-C32/GMR10/75	○	10	32	-	29	75	42	10	44	4	28.5	M6
HSK-C32/GMR12/80	▲	12	32	-	29	80	47	10	49	4	33.5	M6
HSK-C40												
HSK-C40/GMR6/60	▲	6	28	-	25	60	37	10	35	4	23.5	M5
HSK-C40/GMR8/60	▲	8	30	-	27	60	37	10	36	4	23.5	M6
HSK-C40/GMR10/65	▲	10	32	-	29	65	42	10	41	4	28.5	M6
HSK-C40/GMR12/70	▲	12	34	-	31	70	47	10	47	4	33.5	M6
HSK-C50												
HSK-C50/GMR6/60	▲	6	28	-	25	60	37	10	30	4	23.5	M5
HSK-C50/GMR8/60	▲	8	30	-	27	60	37	10	30	4	23.5	M6
HSK-C50/GMR10/65	▲	10	32	-	29	65	42	10	35	4	28.5	M6
HSK-C50/GMR12/75	●	12	34	-	31	75	47	10	44	4	33.5	M6
HSK-C50/GMR14/75	○	14	36	-	33	75	47	10	46	4	33.5	M6
HSK-C50/GMR16/80	▲	16	38	-	35	80	52	10	51	4	38.5	M8
HSK-C50/GMR18/80	○	18	41	-	38	80	52	10	51	4	38.5	M8
HSK-C50/GMR20/80	●	20	43	-	40	80	52	10	52	4	38.5	M8

Availability: ● stock ▲ short lead time ○ on request

»Tool shank quality h6
»T-wrench is ordered separately (page.101)
»Hydro-sleeve is ordered separately (page.94~97)
»Center through coolant system
»Additional sizes and special designs available on request



HSK-C32



HSK-C40/C50

HYDRO-MICRON

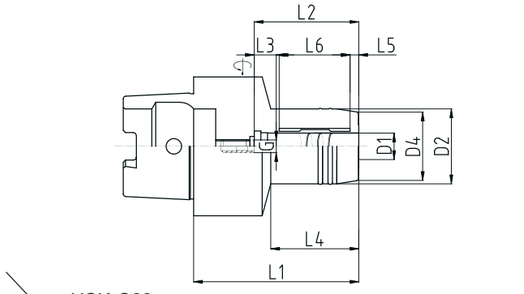
HSK-C

HSK-C
DIN 69893
ISO 12164

Type		Dimensions[mm] D1	D2	D3	D4	L1	L2	L3	L4	L5	L6	G
HSK-C63												
HSK-C63/GMR6/60	▲	6	28	-	25	60	37	10	24	4	23.5	M5
HSK-C63/GMR8/60	▲	8	30	-	27	60	37	10	24	4	23.5	M6
HSK-C63/GMR10/65	▲	10	32	-	29	65	42	10	35	4	28.5	M6
HSK-C63/GMR12/75	▲	12	34	-	31	75	47	10	40	4	33.5	M6
HSK-C63/GMR14/75	○	14	36	-	33	75	47	10	40	4	33.5	M6
HSK-C63/GMR16/80	▲	16	38	-	35	80	52	10	46	4	38.5	M8
HSK-C63/GMR18/80	○	18	41	-	38	80	52	10	47	4	38.5	M8
HSK-C63/GMR20/80	●	20	43	-	40	80	52	10	48	4	38.5	M8
HSK-C63/GMR25/95	○	25	57	-	53	95	61	10	59	4	45	M16
HSK-C63/GMR32/100	○	32	63	-	58	100	65	10	-	4	48	M16

Availability: ● stock ▲ short lead time ○ on request

»Tool shank quality h6
»T-wrench is ordered separately (page.101)
»Hydro-sleeve is ordered separately (page.94~97)
»Center through coolant system
»Additional sizes and special designs available on request



HSK-C63

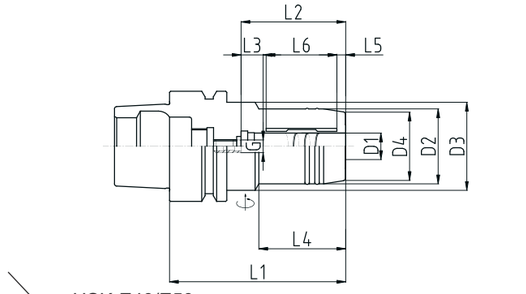
HSK-E Hydro-Micron

HSK-E
DIN 69893
ISO 12164

Type		Dimensions[mm] D1	D2	D3	D4	L1	L2	L3	L4	L5	L6	G
HSK-E40												
HSK-E40/GMR6/70	○	6	28	33.5	25	70	37	10	36	4	23.5	M5
HSK-E40/GMR8/70	○	8	30	33.5	27	70	37	10	36	4	23.5	M6
HSK-E40/GMR10/75	○	10	32	33.5	29	75	42	10	42	4	28.5	M6
HSK-E40/GMR12/80	▲	12	33.5	33.5	31	80	47	10	-	4	33.5	M6
HSK-E50												
HSK-E50/GMR6/70	▲	6	28	40	25	70	37	10	28	4	23.5	M5
HSK-E50/GMR8/70	▲	8	30	40	27	70	37	10	28	4	23.5	M6
HSK-E50/GMR10/75	▲	10	32	40	29	75	42	10	34	4	28.5	M6
HSK-E50/GMR12/85	▲	12	34	40	31	85	47	10	44	4	33.5	M6
HSK-E50/GMR16/90	▲	16	38	60	35	90	52	10	30	4	38.5	M6
HSK-E50/GMR20/90	▲	20	43	60	40	90	52	10	30	4	38.5	M6

Availability: ● stock ▲ short lead time ○ on request

»Tool shank quality h6
»T-wrench is ordered separately (page.101)
»Hydro-sleeve is ordered separately (page.94~97)
»Center through coolant system
»Additional sizes and special designs available on request



HSK-E40/E50

BT Interface

JIS-BT Taper Hydraulic Toolholder

It is universally suitable for various types of machining application. The BT taper hydraulic toolholders cater to different machining needs.

MAS 403/ JIS B 6339/ DIN ISO 7388-2

Features and Benefits

Run-out system TIR ≤3㎛

Our hydraulic system consists of hydro-line. All components together ensure best run-out and accuracy.

Balancing

100% balanced to G2.5 at 25,000 rpm.

Surface finish max. Ra 0.25

Achieve high clamping force and high transferable torque.

Vibration damping

Hydraulic toolholders offer a good vibration damping to sustain a high surface finish and can prevent cutting force alterations.

Taper accuracy AT3

Better spindle-to-holder fit and accuracy.

Applications
These hydraulic toolholders are designed for CNC-machining centers with an automatic tool changer. They are universally suitable for different machining applications. Their vibration dampening reduces spindle wear and extends tool life.

Balancing
Grip hydro-lines are balanced to G2.5 at 25,000 rpm

Cooling Options
All size hydraulic toolholders are for an internal coolant supply.

Matched Tooling System for Best Fit
For highest precision and best result, the entire machining system counts.
Therefore our components are carefully matched for optimum fit and accuracy.
This guarantees the best run-out and balance.

HYDRO-MICRON
JIS-BT

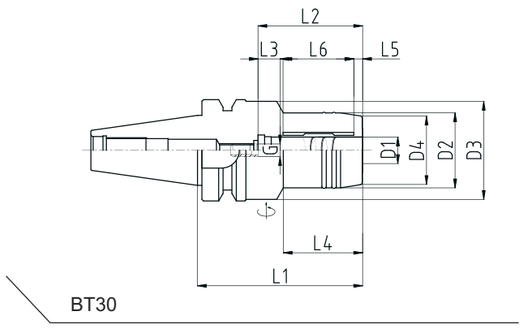
JIS-BT
MAS 403
JIS B 6339
DIN ISO **7388-2**

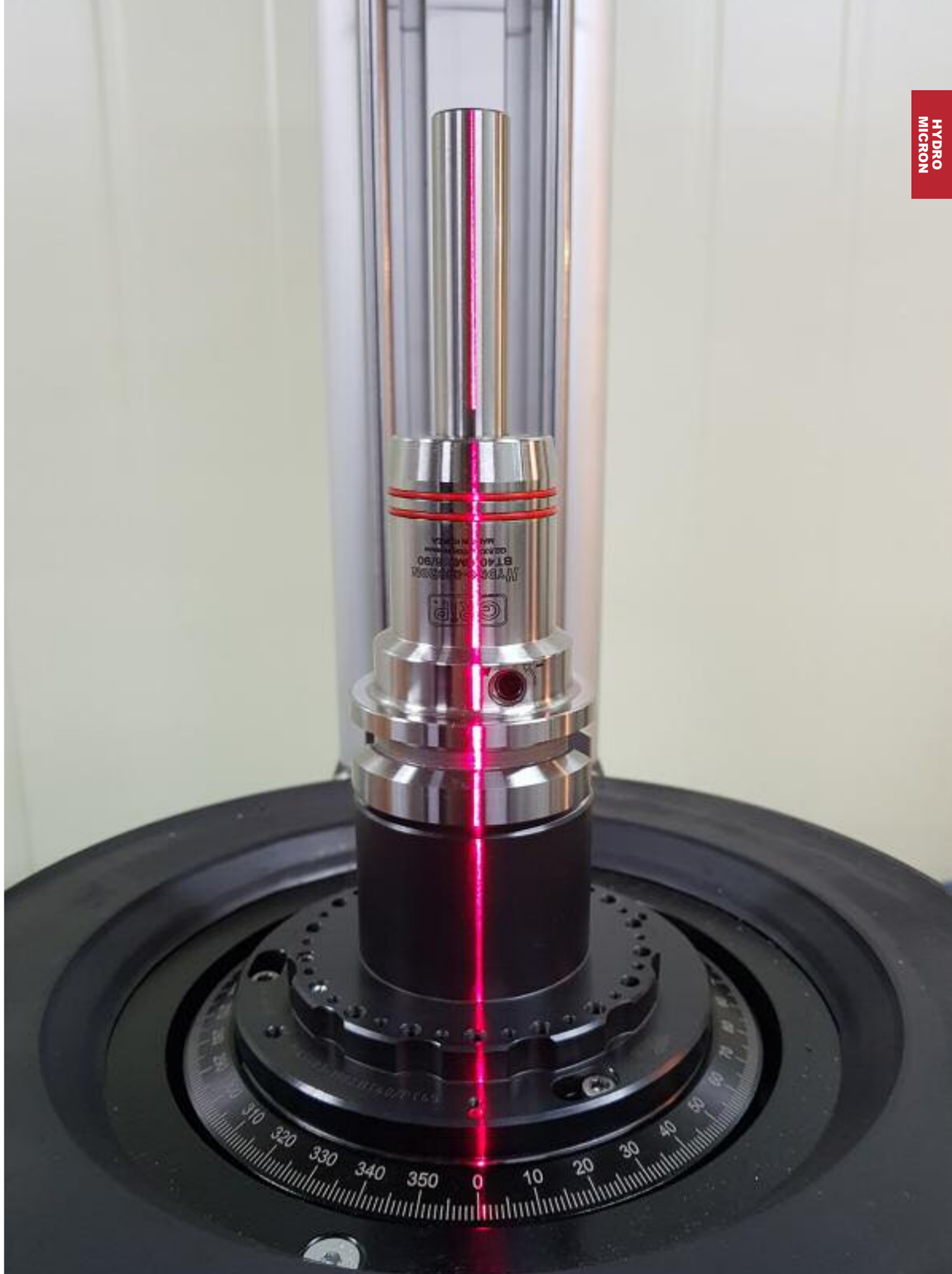
Dimensions[mm]

Type		D1	D2	D3	D4	L1	L2	L3	L4	L5	L6	G
BT30												
BT30/GMR6/70	●	6	28	44.5	25	70	37	10	28	4	23.5	M5
BT30/GMR8/70	●	8	30	44.5	27	70	37	10	28	4	23.5	M6
BT30/GMR10/75	●	10	32	44.5	29	75	42	10	36	4	28.5	M6
BT30/GMR12/75	●	12	34	44.5	31	75	47	10	36	4	33.5	M6
BT30/GMR14/85	●	14	36	44.5	33	85	47	10	44	4	33.5	M6
BT30/GMR16/90	●	16	38	44.5	35	90	52	10	48	4	38.5	M8
BT30/GMR18/90	●	18	41	44.5	38	90	52	10	48	4	38.5	M8
BT30/GMR20/90	●	20	43	44.5	40	90	52	10	48	4	38.5	M8

Availability: ● stock ▲ short lead time ○ on request

»Tool shank quality h6
»T-wrench is ordered separately (page.101)
»Hydro-sleeve is ordered separately (page.94~97)
»Center through coolant system
»Additional sizes and special designs available on request





HYDRO MICRON

HYDRO-MICRON
JIS-BT

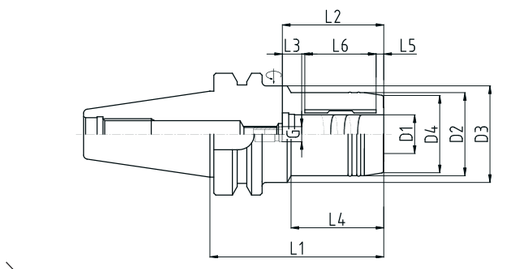
JIS-BT
MAS 403
JIS B 6339
DIN ISO 7388-2

Dimensions[mm]

Type		D1	D2	D3	D4	L1	L2	L3	L4	L5	L6	G
BT40												
BT40/GMR6/65	●	6	28	50	25	65	37	10	23	4	23.5	M5
BT40/GMR6/90	●	6	28	50	25	90	37	10	44	4	23.5	M5
BT40/GMR6/140	●	6	28	50	25	140	37	10	44	4	23.5	M5
BT40/GMR8/65	●	8	30	50	27	65	37	10	23	4	23.5	M6
BT40/GMR8/90	●	8	30	50	27	90	37	10	44	4	23.5	M6
BT40/GMR8/140	●	8	30	50	27	140	37	10	44	4	23.5	M6
BT40/GMR10/65	●	10	32	50	29	65	42	10	23	4	28.5	M6
BT40/GMR10/90	●	10	32	50	29	90	42	10	44	4	28.5	M6
BT40/GMR10/140	●	10	32	50	29	140	42	10	44	4	28.5	M6
BT40/GMR12/65	●	12	34	50	31	65	47	10	23	4	33.5	M6
BT40/GMR12/90	●	12	34	50	31	90	47	10	44	4	33.5	M6
BT40/GMR12/140	●	12	34	50	31	140	47	10	44	4	33.5	M6
BT40/GMR14/65	●	14	36	50	33	65	47	10	23	4	33.5	M6
BT40/GMR14/90	●	14	36	50	33	90	47	10	44	4	33.5	M6
BT40/GMR14/140	●	14	36	50	33	140	47	10	44	4	33.5	M6
BT40/GMR16/65	●	16	38	50	35	65	52	10	23	4	38.5	M8
BT40/GMR16/90	●	16	38	50	35	90	52	10	48	4	38.5	M8
BT40/GMR16/140	●	16	38	50	35	140	52	10	48	4	38.5	M8

Availability: ● stock ▲ short lead time ○ on request

»Tool shank quality h6
»T-wrench is ordered separately (page.101)
»Hydro-sleeve is ordered separately (page.94~97)
»Center through coolant system
»Additional sizes and special designs available on request



BT40

HYDRO MICRON

JIS-BT Hydro-Micron

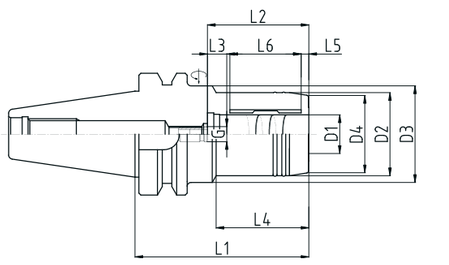
JIS-BT
MAS 403
JIS B 6339
DIN ISO 7388-2

Dimensions[mm]

Type		D1	D2	D3	D4	L1	L2	L3	L4	L5	L6	G
BT40												
BT40/GMR18/75	●	18	41	50	38	75	52	10	30	4	38.5	M8
BT40/GMR18/90	●	18	41	50	38	90	52	10	48	4	38.5	M8
BT40/GMR18/140	●	18	41	50	38	140	52	10	48	4	38.5	M8
BT40/GMR20/75	●	20	43	50	40	75	52	10	30	4	38.5	M8
BT40/GMR20/90	●	20	43	50	40	90	52	10	48	4	38.5	M8
BT40/GMR20/140	●	20	43	50	40	140	52	10	48	4	38.5	M8
BT40/GMR25/100	●	25	57	-	53	100	61	10	-	4	45	M16
BT40/GMR25/135	●	25	57	-	53	135	61	10	-	4	45	M16
BT40/GMR32/105	●	32	62	-	58	105	65	10	-	4	48	M16
BT40/GMR32/135	●	32	62	-	58	135	65	10	-	4	48	M16

Availability: ● stock ▲ short lead time ○ on request

»Tool shank quality h6
»T-wrench is ordered separately (page.101)
»Hydro-sleeve is ordered separately (page.94~97)
»Center through coolant system
»Additional sizes and special designs available on request



BT40

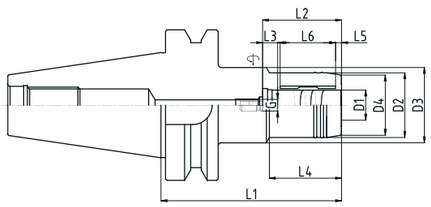
HYDRO-MICRON
JIS-BT

JIS-BT
MAS 403
JIS B 6339
DIN ISO 7388-2

Type		Dimensions[mm] D1	D2	D3	D4	L1	L2	L3	L4	L5	L6	G
BT50												
BT50/GMR6/90	●	6	28	50	25	90	37	10	32	4	23.5	M5
BT50/GMR6/120	●	6	28	50	25	120	37	10	44	4	23.5	M5
BT50/GMR6/140	●	6	28	50	25	140	37	10	44	4	23.5	M5
BT50/GMR8/90	●	8	30	50	27	90	37	10	32	4	23.5	M6
BT50/GMR8/120	●	8	30	50	27	120	37	10	44	4	23.5	M6
BT50/GMR8/140	●	8	30	50	27	140	37	10	44	4	23.5	M6
BT50/GMR10/90	●	10	32	50	29	90	42	10	32	4	28.5	M6
BT50/GMR10/120	●	10	32	50	29	120	42	10	44	4	28.5	M6
BT50/GMR10/140	●	10	32	50	29	140	42	10	44	4	28.5	M6
BT50/GMR12/90	●	12	34	50	31	90	47	10	32	4	33.5	M6
BT50/GMR12/120	●	12	34	50	31	120	47	10	44	4	33.5	M6
BT50/GMR12/140	●	12	34	50	31	140	47	10	44	4	33.5	M6
BT50/GMR14/90	●	14	36	50	33	90	47	10	32	4	33.5	M6
BT50/GMR14/120	●	14	36	50	33	120	47	10	44	4	33.5	M6
BT50/GMR14/140	●	14	36	50	33	140	47	10	44	4	33.5	M6
BT50/GMR16/90	●	16	38	50	35	90	52	10	32	4	38.5	M8
BT50/GMR16/120	●	16	38	50	35	120	52	10	48	4	38.5	M8
BT50/GMR16/140	●	16	38	50	35	140	52	10	48	4	38.5	M8

Availability: ● stock ▲ short lead time ○ on request

»Tool shank quality h6
»T-wrench is ordered separately (page.101)
»Hydro-sleeve is ordered separately (page.94~97)
»Center through coolant system
»Additional sizes and special designs available on request



BT50

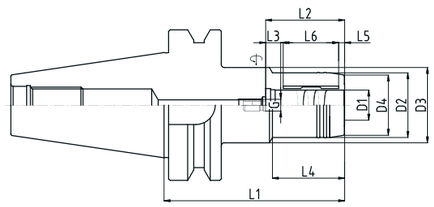
JIS-BT Hydro-Micron

JIS-BT
MAS 403
JIS B 6339
DIN ISO 7388-2

Type		Dimensions[mm] D1	D2	D3	D4	L1	L2	L3	L4	L5	L6	G
BT50												
BT50/GMR18/90	●	18	41	50	38	90	52	10	32	4	38.5	M8
BT50/GMR18/120	●	18	41	50	38	120	52	10	48	4	38.5	M8
BT50/GMR18/140	●	18	41	50	38	140	52	10	48	4	38.5	M8
BT50/GMR20/90	●	20	43	50	40	90	52	10	32	4	38.5	M8
BT50/GMR20/120	●	20	43	50	40	120	52	10	48	4	38.5	M8
BT50/GMR20/140	●	20	43	50	40	140	52	10	48	4	38.5	M8
BT50/GMR25/105	●	25	57	-	53	105	61	10	-	4	45	M16
BT50/GMR25/150	●	25	57	-	53	150	61	10	-	4	45	M16
BT50/GMR32/115	●	32	62	-	58	115	65	10	-	4	48	M16
BT50/GMR32/150	●	32	62	-	58	150	65	10	-	4	48	M16

Availability: ● stock ▲ short lead time ○ on request

»Tool shank quality h6
»T-wrench is ordered separately (page.101)
»Hydro-sleeve is ordered separately (page.94~97)
»Center through coolant system
»Additional sizes and special designs available on request



BT50

SK Taper Hydraulic Toolholder

It is universally suitable for various machining applications.

DIN 69871/ DIN ISO 7388-1

Features and Benefits

Run-out system TIR ≤3㎛

Our hydraulic system consists of hydro-line.
All components together ensure best
run-out and accuracy.

Balancing

100% balanced to G2.5 at 25,000 rpm.

Surface finish max. Ra 0.25

Achieve high clamping force and
high transferable torque.

Vibration damping

Hydraulic toolholders offer a good vibration
damping to sustain a high surface finish
and can prevent cutting force alterations.

Taper accuracy AT3

Better spindle-to-holder fit and accuracy.

ID chip hole

In accordance with DIN 69873 for 10mm diameter.
available on request.

SK
DIN 69871
DIN ISO **7388-1**

HYDRO MICRON

Applications
These hydraulic toolholders are designed for CNC-machining centers with an automatic tool changer. They are universally suitable for different machining applications. Their vibration dampening reduces spindle wear and extends tool life.

Balancing
Grip hydro-lines are balanced to G2.5 at 25,000 rpm

Cooling Options
All size hydraulic toolholders are for an internal coolant supply.

Matched Tooling System for Best Fit
For highest precision and best result, the entire machining system counts.
Therefore our components are carefully matched for optimum fit and accuracy.
This guarantees the best run-out and balance.

HYDRO-MICRON
SK

SK
DIN 69871
DIN ISO 7388-1

Type		D1	D2	D3	D4	L1	L2	L3	L4	L5	L6	G
		Dimensions[mm]										
SK-30												
SK30/GMR6/70	○	6	28	44.5	25	70	37	10	28	4	23.5	M5
SK30/GMR8/70	○	8	30	44.5	27	70	37	10	28	4	23.5	M6
SK30/GMR10/75	○	10	32	44.5	29	75	42	10	36	4	28.5	M6
SK30/GMR12/75	▲	12	34	44.5	31	75	47	10	36	4	33.5	M6
SK30/GMR16/90	○	16	38	44.5	35	90	52	10	48	4	38.5	M8
SK30/GMR20/90	●	20	43	44.5	40	90	52	10	48	4	38.5	M8
SK-40												
SK40/GMR6/80.5	▲	6	28	50	25	80.5	37	10	23	4	23.5	M5
SK40/GMR6/110	○	6	28	50	25	110	37	10	44	4	23.5	M5
SK40/GMR8/80.5	▲	8	30	50	27	80.5	37	10	23	4	23.5	M6
SK40/GMR8/110	○	8	30	50	27	110	37	10	44	4	23.5	M6
SK40/GMR10/80.5	▲	10	32	50	29	80.5	42	10	23	4	28.5	M6
SK40/GMR10/110	○	10	32	50	29	110	42	10	44	4	28.5	M6
SK40/GMR12/80.5	●	12	34	50	31	80.5	47	10	23	4	33.5	M6
SK40/GMR12/110	○	12	34	50	31	110	47	10	44	4	33.5	M6
SK40/GMR14/80.5	▲	14	36	50	33	80.5	47	10	30	4	33.5	M6
SK40/GMR14/110	○	14	36	50	33	110	47	10	44	4	33.5	M6
SK40/GMR16/80.5	▲	16	38	50	35	80.5	52	10	30	4	38.5	M8
SK40/GMR16/110	○	16	38	50	35	110	52	10	48	4	38.5	M8
SK40/GMR18/80.5	▲	18	41	50	38	80.5	52	10	30	4	38.5	M8
SK40/GMR18/110	○	18	41	50	38	110	52	10	48	4	38.5	M8
SK40/GMR20/80.5	●	20	43	50	40	80.5	52	10	30	4	38.5	M8
SK40/GMR20/110	▲	20	43	50	40	110	52	10	48	4	38.5	M8
SK40/GMR25/80.5	▲	25	57	66	53	80.5	61	10	26	4	45	M16
SK40/GMR32/80.5	▲	32	63	80	58	80.5	65	10	26	4	48	M16

Availability: ● stock ▲ short lead time ○ on request

»Tool shank quality h6
»Bore for data carrier as an option (page.101)
»T-wrench is ordered separately (page.101)
»Hydro-sleeve is ordered separately (page.94~97)
»Center through coolant system
»Additional sizes and special designs available on request

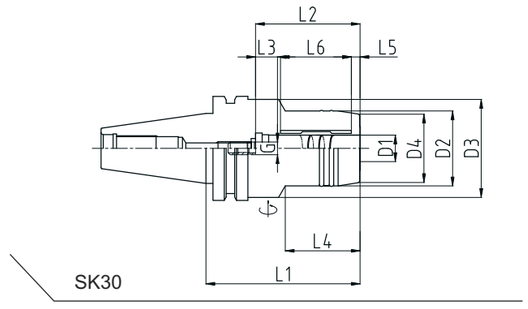
SK Hydro-Micron

SK
DIN 69871
DIN ISO 7388-1

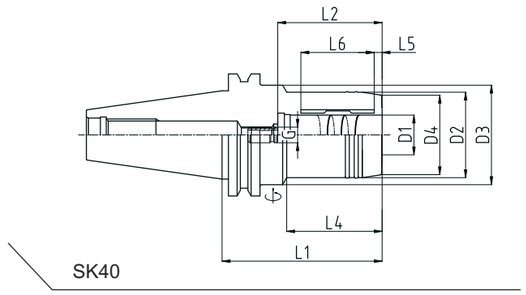
Type		D1	D2	D3	D4	L1	L2	L3	L4	L5	L6	G
		Dimensions[mm]										
SK50												
SK50/GMR12/90	●	12	34	50	31	90	47	10	47	4	33.5	M6
SK50/GMR12/140	▲	12	34	50	31	140	47	10	47	4	33.5	M6
SK50/GMR20/90	●	20	43	50	40	90	52	10	48	4	38.5	M8
SK50/GMR20/140	▲	20	43	50	40	140	52	10	48	4	38.5	M8
SK50/GMR32/115	▲	32	63	-	58	115	65	10	-	4	48	M16
SK50/GMR32/140	▲	32	63	-	58	140	65	10	-	4	48	M16

Availability: ● stock ▲ short lead time ○ on request

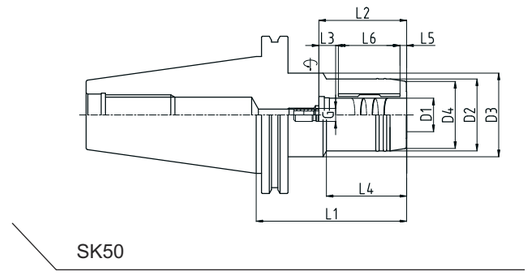
»Tool shank quality h6
»Bore for data carrier as an option (page.101)
»T-wrench is ordered separately (page.101)
»Hydro-sleeve is ordered separately (page.94~97)
»Center through coolant system
»Additional sizes and special designs available on request



SK30



SK40



SK50

HYDRO-POWER

Powerful Torque up to 900Nm High Performance

The Hydro-Power is designed for the highest rigidity. It is suitable for various milling work with the powerful gripping force.

Experience the best performance at a reasonable price!

*3Dx3 micron run-out accuracy for optimal work

*Perfect price / Performance ratio

*G2.5 at 25,000rpm high balance, positive influence to tools and machine spindles

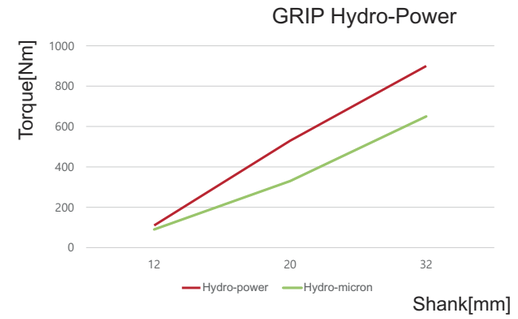
*Cost effective because no expensive heatting device is required

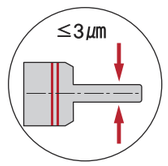
*For universal use in milling, reaming, boring, and thread milling

*Increased service tool life up to 40% lead to cost savings

*Easy, handy setting of tool and change

Hydro-Power Torque Test Data

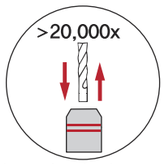




Total system run-out TIR at ≤3 ㎛ 3 x D.

Excellent vibration damping.

Tool ready for use in less than 10 seconds.



Maximum clamping force and low runout, even after 20,000 tool changes.

HSK Taper Hydraulic Toolholder

It is designed for rotating applications. All GRIP HSK Taper hydraulic toolholders are suitable for high-speed applications where consistent performance is key.

HYDRO POWER

DIN 69893/ ISO 12164

Features and Benefits

Run-out system TIR ≤3㎛

Hydraulic system consists of hydro-line. All components together ensure best run-out and accuracy.

Balancing

100% balanced to G2.5 at 25,000 rpm.

Surface finish max. Ra 0.25

Achieve high clamping force and high transferable torque.

Vibration damping

Hydraulic toolholders offer a good vibration damping to sustain a high surface finish and can prevent cutting force alterations.

Matched tooling system for best fit

For highest precision and best result the entire machining system counts. Therefore our components are carefully matched for optimum fit and accuracy. This guarantees the best run-out and balance.

ID chip hole (only HSK form A)

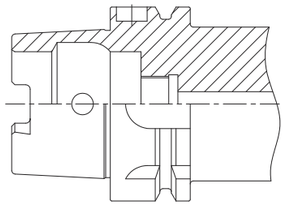
In accordance with DIN 69873 for 10mm diameter. Available on request.

Advices

For all HSK-A and HSK-E form hydraulic toolholders a range of coolant tubes(CT) is available. For CT part numbers please refer to page100.

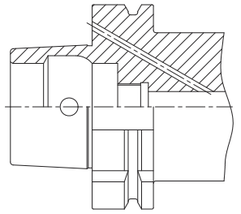
HYDRO POWER

HSK Form and Their Key Characteristics



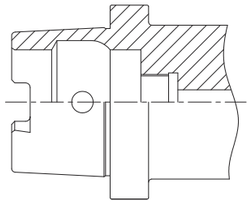
HSK Form A

» Standard type for machining centers and milling machines.
» For automatic tool change.
» Coolant supply through center via coolant tube.
» Drive keys at the end of HSK taper.
» Hole for data carrier DIN STD 69873 in the flange is available on request.



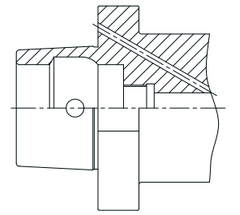
HSK Form B

» For machining centers, milling and turning machines.
» With enlarged flange size for higher radial rigidity.
» For automatic tool change.
» Coolant supply through the flange.
» Drive keys at the flange.



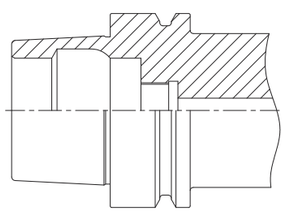
HSK Form C

» For transfer lines, special machines and modular tooling system.
» For manual tool change.
» Drive keys at the end of HSK taper.



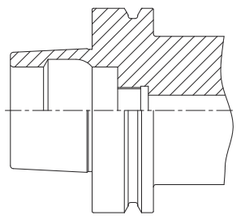
HSK Form D

» For special machines.
» With enlarged flange size for higher radial rigidity.
» For automatic tool change.
» Coolant supply through the flange.
» Drive keys at the flange.



HSK Form E

» For high-speed applications.
» For automatic tool change.
» Coolant supply through center via coolant tube.
» Without any drive keys for absolute symmetry.



HSK Form F

» For high-speed applications.
» For automatic tool change.
» With enlarged flange size for higher radial rigidity.
» Without any drive keys for absolute symmetry.

HYDRO-POWER
HSK-A

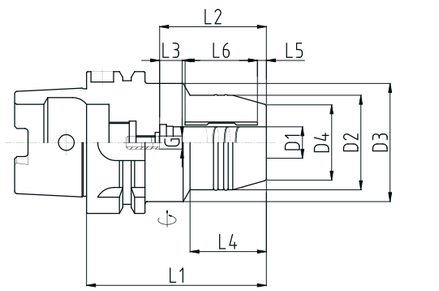
HSK-A
DIN 69893
ISO 12164

Dimensions[mm]

Type		D1	D2	D3	D4	L1	L2	L3	L4	L5	L6	G
HSK-A63												
HSK-A63/GPO12/80	●	12	42	52.5	33.5	80	47	10	34	4	33.5	M6
HSK-A63/GPO20/80	●	20	52.5	-	44	80	52	10	-	4	38.5	M8

Availability: ● stock ▲ short lead time ○ on request

»Tool shank quality h6
»Bore for data carrier as an option (page.101)
»T-wrench is ordered separately (page.101)
»Hydro-sleeve is ordered separately (page.94~97)
»Center through coolant system
»Additional sizes and special designs available on request



HSK-A63

HYDRO POWER

HSK-A Hydro-Power

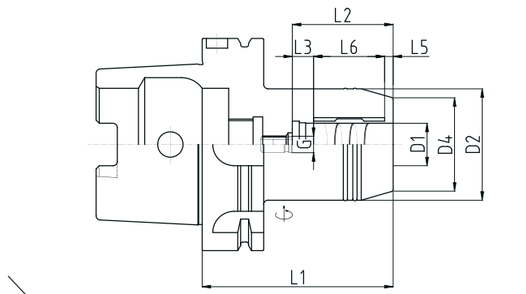
HSK-A
DIN 69893
ISO 12164

Dimensions[mm]

Type		D1	D2	D3	D4	L1	L2	L3	L4	L5	L6	G
HSK-A100												
HSK-A100/GPO20/90	●	20	52.5	-	44	90	52	10	-	4	38.5	M8
HSK-A100/GPO32/100	●	32	72	-	61.5	100	65	10	-	4	48	M8

Availability: ● stock ▲ short lead time ○ on request

»Tool shank quality h6
»Bore for data carrier as an option (page.101)
»T-wrench is ordered separately (page.101)
»Hydro-sleeve is ordered separately (page.94~97)
»Center through coolant system
»Additional sizes and special designs available on request



HSK-A100

JIS-BT Taper Hydraulic Toolholder

It is universally suitable for various types of machining application. The BT taper hydraulic toolholders cater to different machining needs.

MAS 403/ JIS B 6339/ DIN ISO 7388-2

Features and Benefits

Run-out system TIR ≤3µm

Our hydraulic system consists of hydro-line. All components together ensure best run-out and accuracy.

Balancing

100% balanced to G2.5 at 25,000 rpm.

Surface finish max. Ra 0.25

Achieve high clamping force and high transferable torque.

Vibration damping

Hydraulic toolholders offer a good vibration damping to sustain a high surface finish and can prevent cutting force alterations.

Taper accuracy AT3

Better spindle-to-holder fit and accuracy.

Applications
These hydraulic toolholders are designed for CNC-machining centers with an automatic tool changer. They are universally suitable for different machining applications. Their vibration dampening reduces spindle wear and extends tool life.

Balancing
Grip hydro-lines are balanced to G2.5 at 25,000 rpm

Cooling Options
All size hydraulic toolholders are for an internal coolant supply.

Matched Tooling System for Best Fit
For highest precision and best result, the entire machining system counts.
Therefore our components are carefully matched for optimum fit and accuracy.
This guarantees the best run-out and balance.

HYDRO-POWER
JIS-BT

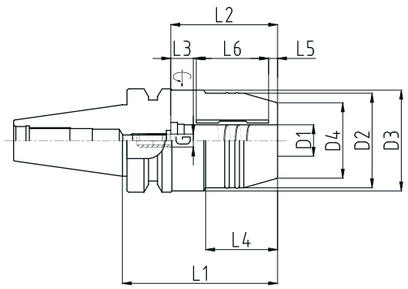
JIS-BT
MAS 403
JIS B 6339
DIN ISO 7388-2

Dimensions[mm]

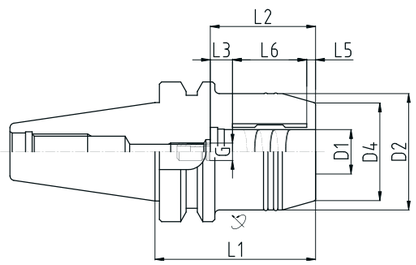
Type		D1	D2	D3	D4	L1	L2	L3	L4	L5	L6	G
BT30												
BT30/GPO12/69	●	12	42	44.5	33.5	69	47	10	32	4	33.5	M6
BT30/GPO20/90	●	20	42	44.5	38	90	52	10	50	4	38.5	M8
BT40												
BT40/GPO12/58	●	12	42	52.5	33.5	58	47	10	34	4	33.5	M6
BT40/GPO16/72.5	●	16	52.5	-	44	72.5	52	10	-	4	38.5	M8
BT40/GPO20/72.5	●	20	52.5	-	44	72.5	52	10	-	4	38.5	M8

Availability: ● stock ▲ short lead time ○ on request

»Tool shank quality h6
»T-wrench is ordered separately (page.101)
»Hydro-sleeve is ordered separately (page.94~97)
»Center through coolant system
»Additional sizes and special designs available on request



BT30



BT40

JIS-BT Hydro-Power

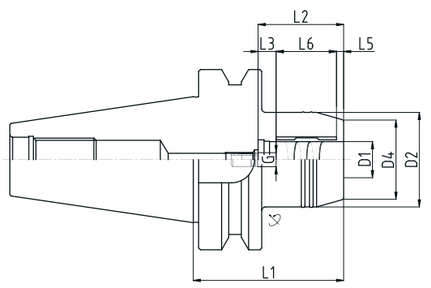
JIS-BT
MAS 403
JIS B 6339
DIN ISO 7388-2

Dimensions[mm]

Type		D1	D2	D3	D4	L1	L2	L3	L4	L5	L6	G
BT50												
BT50/GPO20/83.5	●	20	52.5	-	44	83.5	52	10	-	4	38.5	M8
BT50/GPO32/90	●	32	72	-	61.5	90	65	10	-	4	48	M16

Availability: ● stock ▲ short lead time ○ on request

»Tool shank quality h6
»T-wrench is ordered separately (page.101)
»Hydro-sleeve is ordered separately (page.94~97)
»Center through coolant system
»Additional sizes and special designs available on request



BT50

SK Taper Hydraulic Toolholder

It is universally suitable for various machining applications.

DIN 69871/ DIN ISO 7388-1

Features and Benefits

Run-out system TIR ≤3µm

Our hydraulic system consists of hydro-line. All components together ensure best run-out and accuracy.

Balancing

100% balanced to G2.5 at 25,000 rpm.

Surface finish max. Ra 0.25

Achieve high clamping force and high transferable torque.

Vibration damping

Hydraulic toolholders offer a good vibration damping to sustain a high surface finish and can prevent cutting force alterations.

Taper accuracy AT3

Better spindle-to-holder fit and accuracy.

ID chip hole

In accordance with DIN 69873 for 10mm diameter. available on request.

Applications
These hydraulic toolholders are designed for CNC-machining centers with an automatic tool changer. They are universally suitable for different machining applications. Their vibration dampening reduces spindle wear and extends tool life.

Balancing
Grip hydro-lines are balanced to G2.5 at 25,000 rpm

Cooling Options
All size hydraulic toolholders are for an internal coolant supply.

Matched Tooling System for Best Fit
For highest precision and best result, the entire machining system counts.
Therefore our components are carefully matched for optimum fit and accuracy.
This guarantees the best run-out and balance.

HYDRO-POWER

SK

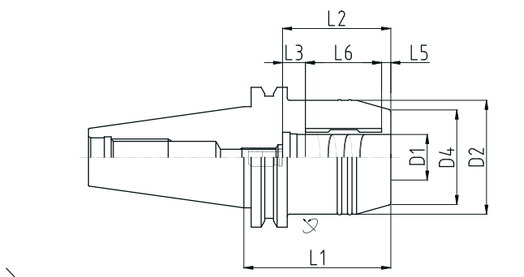
SK
DIN 69871
DIN ISO 7388-1

HYDRO POWER

Type		Dimensions[mm] D1	D2	D3	D4	L1	L2	L3	L4	L5	L6	G
SK40												
SK40/GPO12/50	▲	12	42	-	33.5	50	47	10	-	4	33.5	M6
SK40/GPO16/64.5	▲	16	49.5	-	41	64.5	52	10	-	4	38.5	M8
SK40/GPO20/64.5	▲	20	49.5	-	41	64.5	52	10	-	4	38.5	M8

Availability: ● stock ▲ short lead time ○ on request

»Tool shank quality h6
»Bore for data carrier as an option (page.101)
»T-wrench is ordered separately (page.101)
»Hydro-sleeve is ordered separately (page.94~97)
»Center through coolant system
»Additional sizes and special designs available on request



SK40

SK Hydro-Power

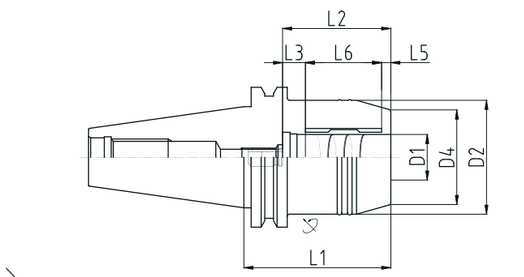
SK
DIN 69871
DIN ISO 7388-1

HYDRO POWER

Type		Dimensions[mm] D1	D2	D3	D4	L1	L2	L3	L4	L5	L6	G
SK50												
SK50/GPO20/64.5	▲	20	52.5	-	44	64.5	52	10	-	4	38.5	M8
SK50/GPO32/81	▲	32	72	-	61.5	81	65	10	-	4	48	M16

Availability: ● stock ▲ short lead time ○ on request

»Tool shank quality h6
»Bore for data carrier as an option (page.101)
»T-wrench is ordered separately (page.101)
»Hydro-sleeve is ordered separately (page.94~97)
»Center through coolant system
»Additional sizes and special designs available on request



SK50

HYDRO-SLIM

Slim and Accuracy

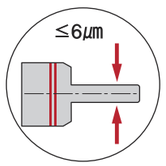
Hydro-Slim is for optimizing interfering contours product. It is designed to fit for the precision machining of narrow and depth place. Since the Hydro-Slim occurs the high stability and radial rigidity, it is ideally suitable to boring, reaming, and for finish milling machining.

*Optimized interfering contours, which results in excellent workpiece accessibility

*3Dx6 micron run-out accuracy for optimal work

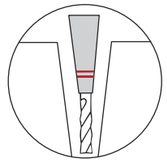
*Vibration damping properties of tool life

*Easy, handy setting of tool and change



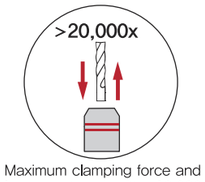
Total system run-out
TIR at ≤6 ㎛ 3 x D.

Excellent vibration damping.



Minimal outside dimensions:
long and slim design.

Tool ready for use in less
than 10 seconds.



Maximum clamping force and
low runout, even after 20,000 tool
changes.

HYDRO SLIM

HSK Taper Hydraulic Toolholder

It is designed for rotating applications. All GRIP HSK Taper hydraulic toolholders are suitable for high-speed applications where consistent performance is key.

DIN 69893/ ISO 12164

Features and Benefits

Run-out system TIR ≤3㎛

Hydraulic system consists of hydro-line.
All components together ensure best run-out and accuracy.

Balancing

100% balanced to G2.5 at 25,000 rpm.

Surface finish max. Ra 0.25

Achieve high clamping force and high transferable torque.

Vibration damping

Hydraulic toolholders offer a good vibration damping to sustain a high surface finish and can prevent cutting force alterations.

Matched tooling system for best fit

For highest precision and best result the entire machining system counts. Therefore our components are carefully matched for optimum fit and accuracy. This guarantees the best run-out and balance.

ID chip hole (only HSK form A)

In accordance with DIN 69873 for 10mm diameter. Available on request.

Advices

For all HSK-A and HSK-E form hydraulic toolholders a range of coolant tubes(CT) is available. For CT part numbers please refer to page100.

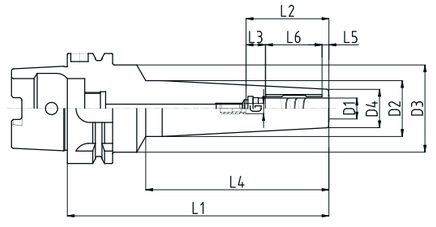
HYDRO-SLIM
HSK-A

HSK
DIN 69893
ISO 12164

Type		D1	D2	D3	D4	L1	L2	L3	L4	L5	L6	G
		Dimensions[mm]										
HSK-A63												
HSK-A63/GSL6/150	○	6	26	50	16	150	37	10	103	4	23.5	M5
HSK-A63/GSL8/150	○	8	28	50	18	150	37	10	104	4	23.5	M6
HSK-A63/GSL10/150	○	10	30	50	20	150	42	10	104	4	28.5	M6
HSK-A63/GSL12/150	○	12	32	50	22	150	47	10	105	4	33.5	M6
HSK-A63/GSL14/150	○	14	34	50	24	150	47	10	105	4	33.5	M6
HSK-A63/GSL16/150	○	16	36	50	26	150	52	10	106	4	38.5	M8
HSK-A63/GSL18/150	○	18	38	50	28	150	52	10	107	4	38.5	M8
HSK-A63/GSL20/150	○	20	40	50	30	150	52	10	108	4	38.5	M8

Availability: ● stock ▲ short lead time ○ on request

»Tool shank quality h6
»Bore for data carrier as an option (page.101)
»T-wrench is ordered separately (page.101)
»Hydro-sleeve is ordered separately (page.94~97)
»Center through coolant system
»Additional sizes and special designs available on request



HSK-63

JIS-BT Taper Hydraulic Toolholder

It is universally suitable for various types of machining application. The BT taper hydraulic toolholders cater to different machining needs.

MAS 403/ JIS B 6339/ DIN ISO 7388-2

Features and Benefits

Run-out system TIR ≤3㎛

Our hydraulic system consists of hydro-line. All components together ensure best run-out and accuracy.

Balancing

100% balanced to G2.5 at 25,000 rpm.

Surface finish max. Ra 0.25

Achieve high clamping force and high transferable torque.

Vibration damping

Hydraulic toolholders offer a good vibration damping to sustain a high surface finish and can prevent cutting force alterations.

Taper accuracy AT3

Better spindle-to-holder fit and accuracy.

HYDRO-SLIM
JIS-BT

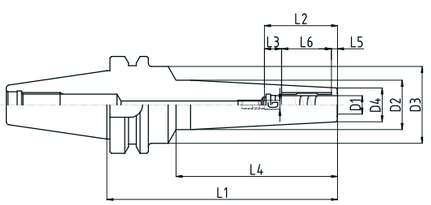
JIS-BT
MAS 403
JIS B 6339
DIN ISO **7388-2**

Dimensions[mm]

Type		D1	D2	D3	D4	L1	L2	L3	L4	L5	L6	G
BT40												
BT40/GSL6/150	○	6	26	50	16	150	37	10	103	4	23.5	M5
BT40/GSL8/150	○	8	28	50	18	150	37	10	104	4	23.5	M6
BT40/GSL10/150	○	10	30	50	20	150	42	10	104	4	28.5	M6
BT40/GSL12/150	○	12	32	50	22	150	47	10	105	4	33.5	M6
BT40/GSL14/150	○	14	34	50	24	150	47	10	105	4	33.5	M6
BT40/GSL16/150	○	16	36	50	26	150	52	10	106	4	38.5	M8
BT40/GSL18/150	○	18	38	50	28	150	52	10	107	4	38.5	M8
BT40/GSL20/150	○	20	40	50	30	150	52	10	108	4	38.5	M8

Availability: ● stock ▲ short lead time ○ on request

»Tool shank quality h6
»T-wrench is ordered separately (page.101)
»Hydro-sleeve is ordered separately (page.94~97)
»Center through coolant system
»Additional sizes and special designs available on request



BT-40

SK Taper Hydraulic Toolholder

It is universally suitable for various machining applications.

DIN 69871/ DIN ISO 7388-1

Features and Benefits

Run-out system TIR ≤3㎛

Our hydraulic system consists of hydro-line.
All components together ensure best
run-out and accuracy.

Balancing

100% balanced to G2.5 at 25,000 rpm.

Surface finish max. Ra 0.25

Achieve high clamping force and
high transferable torque.

Vibration damping

Hydraulic toolholders offer a good vibration
damping to sustain a high surface finish
and can prevent cutting force alterations.

Taper accuracy AT3

Better spindle-to-holder fit and accuracy.

ID chip hole

In accordance with DIN 69873 for 10mm diameter.
available on request.

HYDRO-SLIM
SK

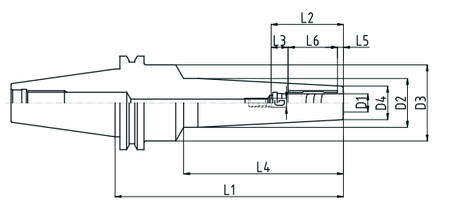
SK
DIN 69871
DIN ISO 7388-1

Dimensions[mm]

Type		D1	D2	D3	D4	L1	L2	L3	L4	L5	L6	G
SK40												
SK40/GSL6/150	○	6	26	50	16	150	37	10	103	4	23.5	M5
SK40/GSL8/150	○	8	28	50	18	150	37	10	104	4	23.5	M6
SK40/GSL10/150	○	10	30	50	20	150	42	10	104	4	28.5	M6
SK40/GSL12/150	○	12	32	50	22	150	47	10	105	4	33.5	M6
SK40/GSL14/150	○	14	34	50	24	150	47	10	105	4	33.5	M6
SK40/GSL16/150	○	16	36	50	26	150	52	10	106	4	38.5	M8
SK40/GSL18/150	○	18	38	50	28	150	52	10	107	4	38.5	M8
SK40/GSL20/150	○	20	40	50	30	150	52	10	108	4	38.5	M8

Availability: ● stock ▲ short lead time ○ on request

»Tool shank quality h6
»Bore for data carrier as an option (page.101)
»T-wrench is ordered separately (page.101)
»Hydro-sleeve is ordered separately (page.94~97)
»Center through coolant system
»Additional sizes and special designs available on request



SK-40

HYDRO-PRESET

Perfect Precise
Radial Length Adjustment for
Micron Precise Positioning

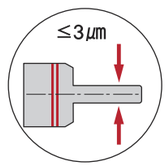
The design of Hydro-Preset provides you with micron precise positioning for the tool length. The Hydro-Preset enables you to adjust the exposed tool easily by thread adjustment. It is suitable for milling centers, multiple or twin spindle machines, drilling, reaming, milling, thread tapping, thread milling, and forming. It is radially operating adjustment mechanism for presetting the tool length with micron accuracy in seconds.

*Micron precise length adjustment of the machining tool

*3Dx3 micron run-out accuracy for optimal work

*10 mm adjustment travel for all clamping diameters

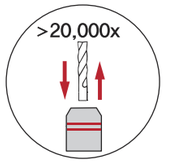
*Vibration damping properties of tool life



Total system run-out
TIR at ≤3 ㎛ 3 x D.

Excellent vibration damping.

Tool ready for use in less
than 10 seconds.



Maximum clamping force and
low runout, even after 20,000 tool
changes.

HYDRO PRESET

HSK Taper Hydraulic Toolholder

It is designed for rotating applications. All GRIP HSK Taper hydraulic toolholders are suitable for high-speed applications where consistent performance is key.

DIN 69893/ ISO 12164

Features and Benefits

Run-out system TIR ≤3㎛

Hydraulic system consists of hydro-line.
All components together ensure best run-out and accuracy.

Balancing

100% balanced to G2.5 at 25,000 rpm.

Surface finish max. Ra 0.25

Achieve high clamping force and high transferable torque.

Vibration damping

Hydraulic toolholders offer a good vibration damping to sustain a high surface finish and can prevent cutting force alterations.

Matched tooling system for best fit

For highest precision and best result the entire machining system counts. Therefore our components are carefully matched for optimum fit and accuracy. This guarantees the best run-out and balance.

ID chip hole (only HSK form A)

In accordance with DIN 69873 for 10mm diameter. Available on request.

Advices

For all HSK-A and HSK-E form hydraulic toolholders a range of coolant tubes(CT) is available. For CT part numbers please refer to page100.

HYDRO-PRESET
HSK-A

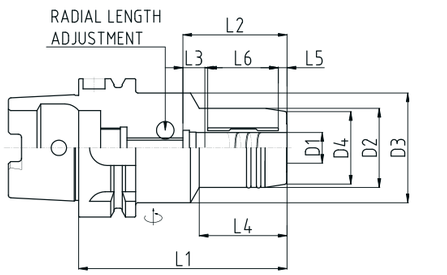
HSK
DIN 69893
ISO 12164

Dimensions[mm]

Type		D1	D2	D3	D4	L1	L2	L3	L4	L5	L6	G
HSK-A40												
HSK-A40/GPS6/80	○	6	28	33.5	25	80	37	10	36	4	23.5	-
HSK-A40/GPS8/80	○	8	30	33.5	27	80	37	10	36	4	23.5	-
HSK-A40/GPS10/85	○	10	32	33.5	29	85	42	10	42	4	28.5	-
HSK-A40/GPS12/90	○	12	33.5	33.5	31	90	47	10	48	4	33.5	-
HSK-A50												
HSK-A50/GPS6/80	▲	6	28	40	25	80	37	10	32	4	23.5	-
HSK-A50/GPS8/80	▲	8	30	40	27	80	37	10	33	4	23.5	-
HSK-A50/GPS10/85	▲	10	32	40	29	85	42	10	34	4	28.5	-
HSK-A50/GPS12/90	▲	12	34	40	31	90	47	10	40	4	33.5	-
HSK-A50/GPS14/90	○	14	36	40	33	90	47	10	40	4	33.5	-
HSK-A50/GPS16/95	▲	16	38	60	35	95	52	10	35	4	38.5	-
HSK-A50/GPS18/95	○	18	41	60	38	95	52	10	35	4	38.5	-
HSK-A50/GPS20/100	▲	20	43	60	40	100	52	10	40	4	38.5	-

Availability: ● stock ▲ short lead time ○ on request

»Tool shank quality h6
»Bore for data carrier as an option (page.101)
»T-wrench is ordered separately (page.101)
»Hydro-sleeve is ordered separately (page.94~97)
»Center through coolant system
»Additional sizes and special designs available on request
»With radial length adjustment



HSK-A40/A50

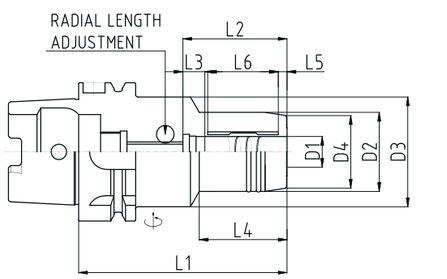
HYDRO-PRESET
HSK-A

HSK-A
DIN 69893
ISO **12164**

Type		Dimensions[mm] D1	D2	D3	D4	L1	L2	L3	L4	L5	L6	G
HSK-A63												
HSK-A63/GPS6/80	●	6	28	50	25	80	37	10	29	4	23.5	-
HSK-A63/GPS8/80	●	8	30	50	27	80	37	10	29	4	23.5	-
HSK-A63/GPS10/85	●	10	32	50	29	85	42	10	40	4	28.5	-
HSK-A63/GPS12/90	●	12	34	50	31	90	47	10	45	4	33.5	-
HSK-A63/GPS14/90	●	14	36	50	33	90	47	10	45	4	33.5	-
HSK-A63/GPS16/95	●	16	38	50	35	95	52	10	51	4	38.5	-
HSK-A63/GPS18/95	●	18	41	50	38	95	52	10	52	4	38.5	-
HSK-A63/GPS20/100	●	20	43	50	40	100	52	10	53	4	38.5	-
HSK-A63/GPS25/120	●	25	57	63	53	120	61	10	54	4	45	-
HSK-A63/GPS32/125	●	32	63	75	58	125	65	10	57	4	48	-

Availability: ● stock ▲ short lead time ○ on request

»Tool shank quality h6
»Bore for data carrier as an option (page.101)
»T-wrench is ordered separately (page.101)
»Hydro-sleeve is ordered separately (page.94~97)
»Center through coolant system
»Additional sizes and special designs available on request
»With radial length adjustment



HSK-A63

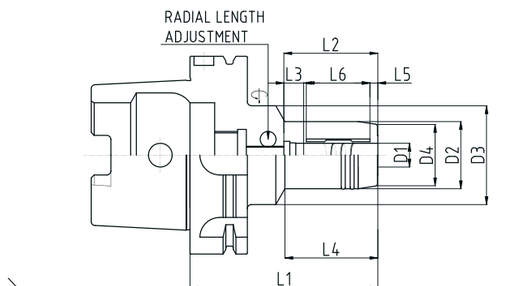
HSK-A Hydro-Preset

HSK-A
DIN 69893
ISO **12164**

Type		Dimensions[mm] D1	D2	D3	D4	L1	L2	L3	L4	L5	L6	G
HSK-A100												
HSK-A100/GPS6/85	○	6	28	50	25	85	37	10	33	4	23.5	-
HSK-A100/GPS8/85	○	8	30	50	27	85	37	10	33	4	23.5	-
HSK-A100/GPS10/90	○	10	32	50	29	90	42	10	42	4	28.5	-
HSK-A100/GPS12/95	▲	12	34	50	31	95	47	10	47	4	33.5	-
HSK-A100/GPS14/95	○	14	36	50	33	95	47	10	47	4	33.5	-
HSK-A100/GPS16/100	○	16	38	50	35	100	52	10	53	4	38.5	-
HSK-A100/GPS18/100	○	18	41	50	38	100	52	10	53	4	38.5	-
HSK-A100/GPS20/105	▲	20	43	50	40	105	52	10	59	4	38.5	-
HSK-A100/GPS25/115	○	25	57	63	53	115	61	10	62	4	45	-
HSK-A100/GPS32/120	▲	32	63	75	58	120	65	10	62	4	48	-

Availability: ● stock ▲ short lead time ○ on request

»Tool shank quality h6
»Bore for data carrier as an option (page.101)
»T-wrench is ordered separately (page.101)
»Hydro-sleeve is ordered separately (page.94~97)
»Center through coolant system
»Additional sizes and special designs available on request
»With radial length adjustment



HSK-A100

JIS-BT Taper Hydraulic Toolholder

It is universally suitable for various types of machining application. The BT taper hydraulic toolholders cater to different machining needs.

MAS 403/ JIS B 6339/ DIN ISO 7388-2

Features and Benefits

Run-out system TIR ≤3㎛

Our hydraulic system consists of hydro-line. All components together ensure best run-out and accuracy.

Balancing

100% balanced to G2.5 at 25,000 rpm.

Surface finish max. Ra 0.25

Achieve high clamping force and high transferable torque.

Vibration damping

Hydraulic toolholders offer a good vibration damping to sustain a high surface finish and can prevent cutting force alterations.

Taper accuracy AT3

Better spindle-to-holder fit and accuracy.

HYDRO-PRESET
JIS-BT

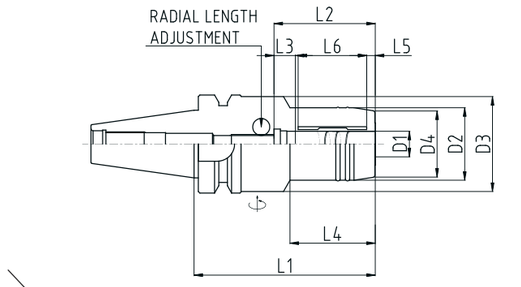
JIS-BT
MAS 403
JIS B 6339
DIN ISO **7388-2**

Dimensions[mm]

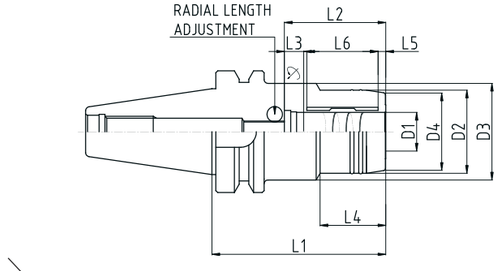
Type		D1	D2	D3	D4	L1	L2	L3	L4	L5	L6	G
BT30												
BT30/GPS12/85	▲	12	34	44.5	31	85	47	10	40	4	33.5	-
BT30/GPS20/85	●	20	43	44.5	40	85	52	10	44	4	38.5	-
BT40												
BT40/GPS12/90	▲	12	34	50	31	90	47	10	42	4	33.5	-
BT40/GPS20/90	●	20	43	50	40	90	52	10	48	4	38.5	-
BT50												
BT50/GPS12/95	▲	12	34	50	31	95	47	10	32	4	33.5	-
BT50/GPS20/100	▲	20	43	50	40	100	52	10	44	4	38.5	-
BT50/GPS32/115	▲	32	63	-	58	115	65	10	-	4	48	-

Availability: ● stock ▲ short lead time ○ on request

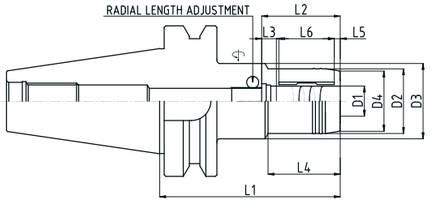
»Tool shank quality h6
»T-wrench is ordered separately (page.101)
»Hydro-sleeve is ordered separately (page.94~97)
»Center through coolant system
»Additional sizes and special designs available on request
»With radial length adjustment



BT30



BT40



BT50

SK Taper Hydraulic Toolholder

It is universally suitable for various machining applications.

DIN 69871/ DIN ISO 7388-1

Features and Benefits

Run-out system TIR ≤3㎛

Our hydraulic system consists of hydro-line.
All components together ensure best
run-out and accuracy.

Balancing

100% balanced to G2.5 at 25,000 rpm.

Surface finish max. Ra 0.25

Achieve high clamping force and
high transferable torque.

Vibration damping

Hydraulic toolholders offer a good vibration
damping to sustain a high surface finish
and can prevent cutting force alterations.

Taper accuracy AT3

Better spindle-to-holder fit and accuracy.

ID chip hole

In accordance with DIN 69873 for 10mm diameter.
available on request.

HYDRO-PRESET
SK

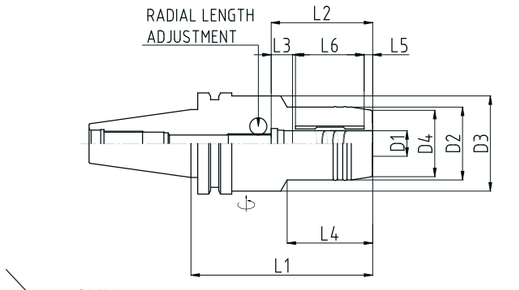
SK
DIN 69871
DIN ISO 7388-1

Dimensions[mm]

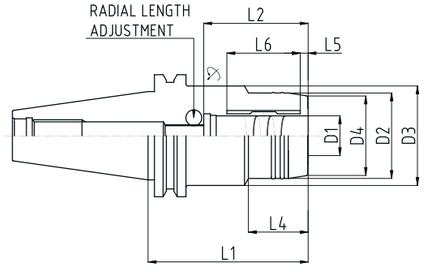
Type		D1	D2	D3	D4	L1	L2	L3	L4	L5	L6	G
SK30												
SK30/GPS12/85	▲	12	34	44.5	31	85	47	10	40	4	33.5	-
SK30/GPS20/85	●	20	43	44.5	40	85	52	10	44	4	38.5	-
SK40												
SK40/GPS12/80.5	▲	12	34	50	31	80.5	47	10	23	4	33.5	-
SK40/GPS20/80.5	●	20	43	50	40	80.5	52	10	30	4	38.5	-
SK50												
SK50/GPS12/80.5	▲	12	34	50	31	80.5	47	10	35	4	33.5	-
SK50/GPS20/80.5	▲	20	43	50	40	80.5	52	10	44	4	38.5	-
SK50/GPS32/115	▲	32	63	-	58	115	65	10	-	4	48	-

Availability: ● stock ▲ short lead time ○ on request

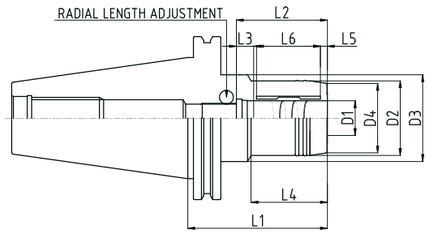
»Tool shank quality h6
»Bore for data carrier as an option (page.101)
»T-wrench is ordered separately (page.101)
»Hydro-sleeve is ordered separately (page.94~97)
»Center through coolant system
»Additional sizes and special designs available on request
»With radial length adjustment



SK30



SK40



SK50

HYDRO PRESET

HYDRO-ZERO FIT

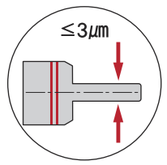
For the Best Accuracy

The Hydro-Zero Fit is designed for tight tolerances. It is suitable for boring, reaming, drilling, finishing, and the work required the perfect run-out accuracy. It helps you to minimize concentricity errors with tools, spindle mounts, and the spindles to be individually compensated.

*Constant run-out accuracy can be adjusted to 0.000 mm for optimum shape and positional tolerances

*Tool change in seconds with no peripheral equipment-clamping to a dead stop

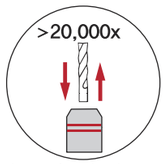
*Easy handling for precise setting of high-quality precision tools



Micron precise to 0.003mm

Excellent vibration damping.

Tool ready for use in less than 10 seconds.



Maximum clamping force and low runout, even after 20,000 tool changes.

HSK Taper Hydraulic Toolholder

It is designed for rotating applications. All GRIP HSK Taper hydraulic toolholders are suitable for high-speed applications where consistent performance is key.

DIN 69893/ ISO 12164

Features and Benefits

Run-out system TIR ≤3㎛

Hydraulic system consists of hydro-line.
All components together ensure best run-out and accuracy.

Balancing

100% balanced to G2.5 at 25,000 rpm.

Surface finish max. Ra 0.25

Achieve high clamping force and high transferable torque.

Vibration damping

Hydraulic toolholders offer a good vibration damping to sustain a high surface finish and can prevent cutting force alterations.

Matched tooling system for best fit

For highest precision and best result the entire machining system counts. Therefore our components are carefully matched for optimum fit and accuracy. This guarantees the best run-out and balance.

ID chip hole (only HSK form A)

In accordance with DIN 69873 for 10mm diameter. Available on request.

Advices

For all HSK-A and HSK-E form hydraulic toolholders a range of coolant tubes(CT) is available. For CT part numbers please refer to page100.

HYDRO-ZERO FIT
HSK-A

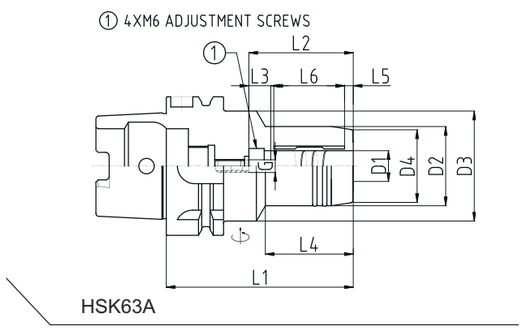
HSK-A
DIN 69893
ISO **12164**

Dimensions[mm]

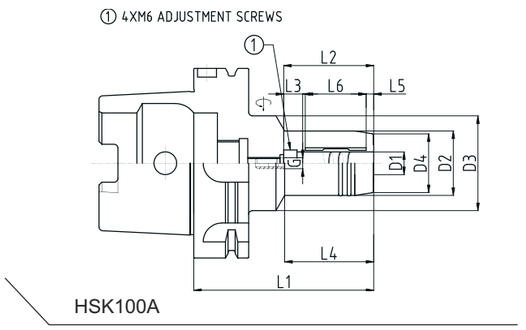
Type		D1	D2	D3	D4	L1	L2	L3	L4	L5	L6	G
HSK-A63												
HSK-A63/GZF12/85	▲	12	34	50	31	85	47	10	40	4	33.5	M6
HSK-A63/GZF20/90	●	20	43	50	40	90	52	10	48	4	38.5	M8
HSK-A63/GZF32/125	▲	32	63	75	58	125	65	10	63	4	48	M16
HSK-A100												
HSK-A100/GZF12/95	▲	12	34	50	31	95	47	10	47	4	33.5	M6
HSK-A100/GZF20/105	●	20	43	50	40	105	52	10	59	4	38.5	M8
HSK-A100/GZF32/110	▲	32	63	75	58	110	65	10	62	4	48	M16

Availability: ● stock ▲ short lead time ○ on request

»Tool shank quality h6
»Bore for data carrier as an option (page.101)
»T-wrench is ordered separately (page.101)
»Hydro-sleeve is ordered separately (page.94~97)
»Center through coolant system
»Additional sizes and special designs available on request



HSK63A



HSK100A

JIS-BT Taper Hydraulic Toolholder

It is universally suitable for various types of machining application. The BT taper hydraulic toolholders cater to different machining needs.

MAS 403/ JIS B 6339/ DIN ISO 7388-2

Features and Benefits

Run-out system TIR ≤3㎛

Our hydraulic system consists of hydro-line. All components together ensure best run-out and accuracy.

Balancing

100% balanced to G2.5 at 25,000 rpm.

Surface finish max. Ra 0.25

Achieve high clamping force and high transferable torque.

Vibration damping

Hydraulic toolholders offer a good vibration damping to sustain a high surface finish and can prevent cutting force alterations.

Taper accuracy AT3

Better spindle-to-holder fit and accuracy.

HYDRO-ZERO FIT
JIS-BT

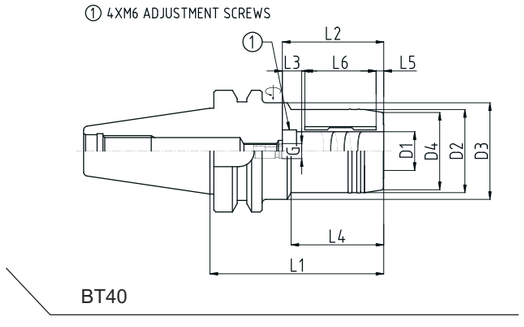
JIS-BT
MAS 403
JIS B 6339
DIN ISO **7388-2**

Dimensions[mm]

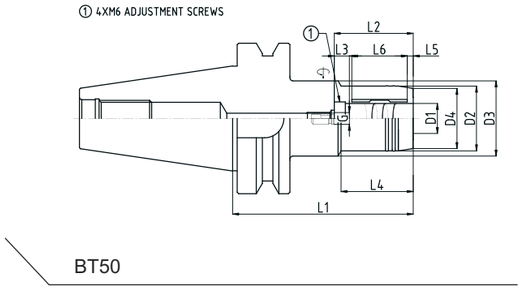
Type		D1	D2	D3	D4	L1	L2	L3	L4	L5	L6	G
BT40												
BT40/GZF12/90	▲	12	34	50	31	90	47	10	44	4	33.5	M6
BT40/GZF20/90	●	20	43	50	40	90	52	10	48	4	38.5	M8
BT50												
BT50/GZF12/90	▲	12	34	50	31	90	47	10	32	4	33.5	M6
BT50/GZF20/90	●	20	43	50	40	90	52	10	32	4	38.5	M8

Availability: ● stock ▲ short lead time ○ on request

»Tool shank quality h6
»T-wrench is ordered separately (page.101)
»Hydro-sleeve is ordered separately (page.94~97)
»Center through coolant system
»Additional sizes and special designs available on request



BT40



BT50

SK Taper Hydraulic Toolholder

It is universally suitable for various machining applications.

DIN 69871/ DIN ISO 7388-1

Features and Benefits

Run-out system TIR ≤3㎛

Our hydraulic system consists of hydro-line.
All components together ensure best
run-out and accuracy.

Balancing

100% balanced to G2.5 at 25,000 rpm.

Surface finish max. Ra 0.25

Achieve high clamping force and
high transferable torque.

Vibration damping

Hydraulic toolholders offer a good vibration
damping to sustain a high surface finish
and can prevent cutting force alterations.

Taper accuracy AT3

Better spindle-to-holder fit and accuracy.

ID chip hole

In accordance with DIN 69873 for 10mm diameter.
available on request.

HYDRO-ZERO FIT
SK

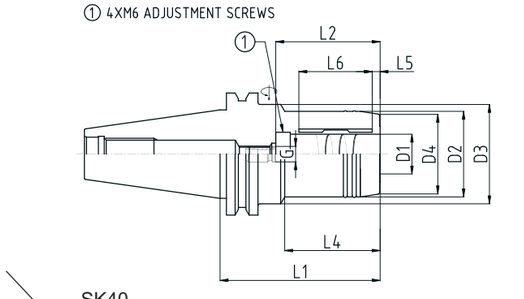
SK
DIN 69871
DIN ISO 7388-1

Dimensions[mm]

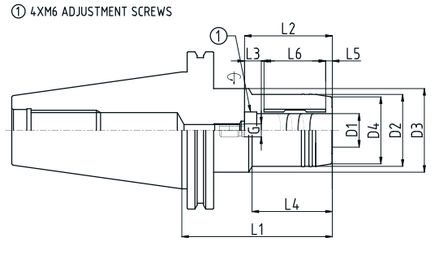
Type		D1	D2	D3	D4	L1	L2	L3	L4	L5	L6	G
SK40												
SK40/GZF12/80.5	▲	12	34	50	31	80.5	47	10	23	4	33.5	M6
SK40/GZF20/80.5	▲	20	43	50	40	80.5	52	10	30	4	38.5	M8
SK50												
SK50/GZF20/80.5	▲	20	43	50	40	80.5	52	10	34	4	38.5	M8

Availability: ● stock ▲ short lead time ○ on request

»Tool shank quality h6
»Bore for data carrier as an option (page.101)
»T-wrench is ordered separately (page.101)
»Hydro-sleeve is ordered separately (page.94~97)
»Center through coolant system
»Additional sizes and special designs available on request



SK40



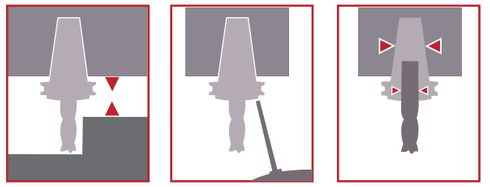
SK50

HYDRO VS

HYDRO-VS

Space Saving
The Most Powerful Hydro-Vs Yet

Hydro-Vs allows to maximize radial rigidity at high torques and to have additional space in the machine room. It is ideally suitable for machining large workpieces and for deep-hole drilling. Since the Hydro-Vs is mounted directly in the mounting taper and the mounting taper is supported in the spindle, it works well even when space in the machine room is tight.



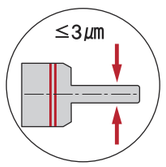
*Zero interfering contours when space is tight, optimal freedom of movement where working space is limited

*3Dx3 micron run-out accuracy for optimal work

*Can be ideally combined with hydro-extension

*Zero interfering contours when space is tight

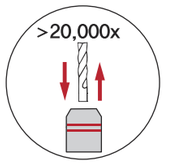
*Easy, handy setting of tool and change



Total system run-out
TIR at ≤3 ㎛ 3 x D.

Excellent vibration damping.

Tool ready for use in less than 10 seconds.



Maximum clamping force and low runout, even after 20,000 tool changes.

JIS-BT Taper Hydraulic Toolholder

It is universally suitable for various types of machining application. The BT taper hydraulic toolholders cater to different machining needs.

MAS 403/ JIS B 6339/ DIN ISO 7388-2

Features and Benefits

Run-out system TIR ≤3㎛

Our hydraulic system consists of hydro-line. All components together ensure best run-out and accuracy.

Balancing

100% balanced to G2.5 at 25,000 rpm.

Surface finish max. Ra 0.25

Achieve high clamping force and high transferable torque.

Vibration damping

Hydraulic toolholders offer a good vibration damping to sustain a high surface finish and can prevent cutting force alterations.

Taper accuracy AT3

Better spindle-to-holder fit and accuracy.

HYDRO-VS
JIS-BT

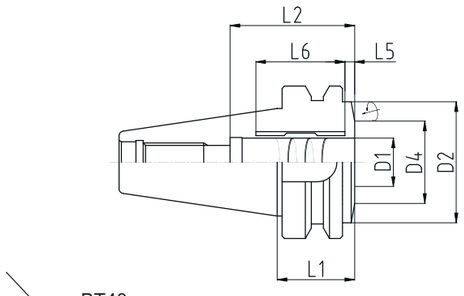
JIS-BT
MAS 403
JIS B 6339
DIN ISO 7388-2

Dimensions[mm]

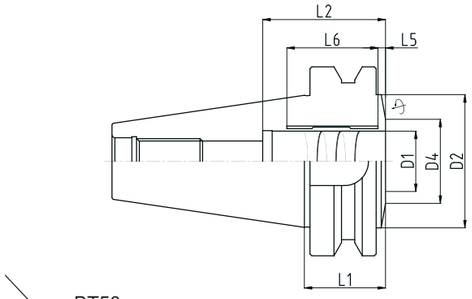
Type		D1	D2	D3	D4	L1	L2	L3	L4	L5	L6	G
BT40												
BT40/GVS20/32	●	20	50	-	34	32	52	-	-	4	38.5	-
BT50												
BT50/GVS32/43	●	32	70.5	-	44.5	43	65	-	-	4	48	-

Availability: ● stock ▲ short lead time ○ on request

»Tool shank quality h6
»T-wrench is ordered separately (page.101)
»Hydro-sleeve is ordered separately (page.94~97)
»Center through coolant system
»Additional sizes and special designs available on request



BT40



BT50

SK Taper Hydraulic Toolholder

It is universally suitable for various machining applications.

DIN 69871/ DIN ISO 7388-1

Features and Benefits

Run-out system TIR ≤3㎛

Our hydraulic system consists of hydro-line.
All components together ensure best
run-out and accuracy.

Balancing

100% balanced to G2.5 at 25,000 rpm.

Surface finish max. Ra 0.25

Achieve high clamping force and
high transferable torque.

Vibration damping

Hydraulic toolholders offer a good vibration
damping to sustain a high surface finish
and can prevent cutting force alterations.

Taper accuracy AT3

Better spindle-to-holder fit and accuracy.

ID chip hole

In accordance with DIN 69873 for 10mm diameter.
available on request.

HYDRO-VS
SK

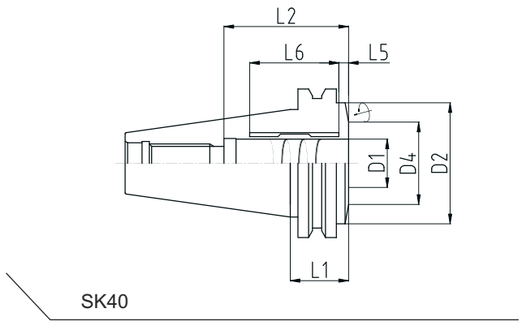
SK
DIN 69871
DIN ISO 7388-1

Dimensions[mm]

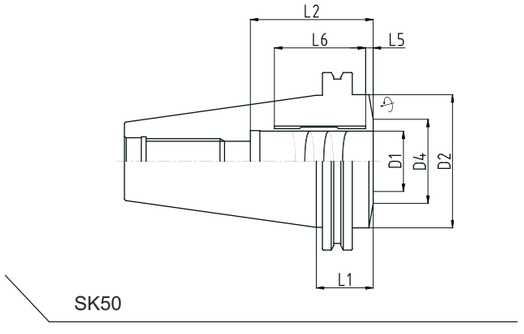
Type		D1	D2	D3	D4	L1	L2	L3	L4	L5	L6	G
SK40												
SK40/GVS20/24.6	▲	20	50	-	34	24.6	52	-	-	4	38.5	-
SK50												
SK50/GVS32/30.9	▲	32	70.5	-	44.5	30.9	65	-	-	4	48	-

Availability: ● stock ▲ short lead time ○ on request

»Tool shank quality h6
»Bore for data carrier as an option (page.101)
»T-wrench is ordered separately (page.101)
»Hydro-sleeve is ordered separately (page.94~97)
»Center through coolant system
»Additional sizes and special designs available on request



SK40



SK50

HYDRO VS

HYDRO-GRIND

Tool Grinding and Sharpening

Hydro-Grind for tool grinding and tool sharpening helps to improve the high run-out and repeat accuracy. It ensures that material is removed evenly during the grinding procedure. Also, the Hydro-Grind increases the process reliability for grinding and sharpening operations. It has an optimally adapted interfering contour for the grinding process in comparison to other hydraulic toolholders.

*Especially slim interfering contour for improved interference between grinding wheel

*Mounted on various mechanical equipment various kind of shank can be used for special tools with large shank lengths

*Optimal shape accuracy, surface quality, and run-out accuracy of the cutting edges of the tool ensures better chip flow and a more even cutting action

*Response various tool shank by using a sleeve

VBT50 Taper Hydraulic Toolholder

It is universally suitable for grinding machining applications.

MAS 403/ JIS B 6339/ DIN ISO 7388-2

Features and Benefits

Run-out system TIR ≤3㎛

Our hydraulic system consists of hydro-line. All components together ensure best run-out and accuracy.

Surface finish max. Ra 0.25

Achieve high clamping force and high transferable torque.

Vibration damping

Hydraulic toolholders offer a good vibration damping to sustain a high surface finish and can prevent cutting force alterations.

Taper accuracy AT3

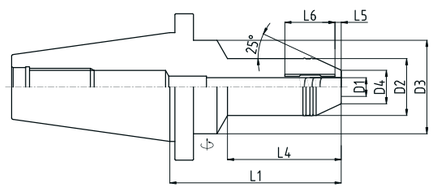
Better spindle-to-holder fit and accuracy.

Dimensions[mm]

Type		D1	D2	D3	D4	L1	L2	L3	L4	L5	L6	G
VBT50												
VBT50/GR6/110	▲	6	36	60	14	110	-	-	60	4	23.5	-
VBT50/GR8/110	▲	8	36	60	16	110	-	-	60	4	23.5	-
VBT50/GR10/110	▲	10	36	60	18	110	-	-	60	4	28.5	-
VBT50/GR12/110	●	12	36	60	20	110	-	-	60	4	33.5	-
VBT50/GR14/110	○	14	36	60	22	110	-	-	60	4	33.5	-
VBT50/GR16/110	▲	16	40	60	24	110	-	-	60	4	38.5	-
VBT50/GR18/110	○	18	42	60	27	110	-	-	60	4	38.5	-
VBT50/GR20/110	●	20	45	60	29	110	-	-	60	4	38.5	-
VBT50/GR25/110	▲	25	50	70	34	110	-	-	60	4	45	-
VBT50/GR32/110	●	32	55	70	42	110	-	-	60	4	48	-

Availability: ● stock ▲ short lead time ○ on request

»Tool shank quality h6
»T-wrench is ordered separately (page.101)
»Hydro-sleeve is ordered separately (page.94~97)
»Center through coolant system
»Additional sizes and special designs available on request



VBT50

HYDRO-EXTENSION

Long and Slim Design for Optimized Interfering Contours

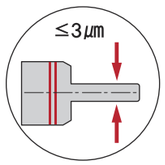
Hydro-Extension is designed for the precise machining of hard-to-reach areas.
It can be quickly clamped in every type of precision toolholder.
The Hydro-Extension with optimized interfering contours range of products allows you to save costs on the fabrication of expensive special tools.

*Clamping in seconds without peripheral equipment

*Suitable for nearly every precision toolholder,
commercially available shank types can be clamped

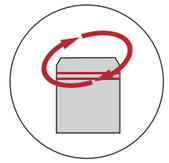
*Response various tool shank by using a sleeve

*Vibration damping properties of tool life



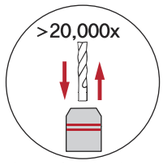
Total system run-out
TIR at ≤3 ㎛ 3 x D.

Excellent vibration damping.



Balanced by design.

Tool ready for use in less
than 10 seconds.



Maximum clamping force and
low runout, even after 20,000 tool
changes.

Cylindrical Shank Toolholder

It is straight connection holder.

CYL / ST

Features and Benefits

Run-out system TIR ≤3㎛

Our hydraulic system consists of hydro-line.
All components together ensure best
run-out and accuracy.

Balancing

100% balanced to G2.5 at 25,000 rpm.

Powerful clamping

Achieve high clamping force and
high transferable torque.

Vibration damping

Our hydraulic toolholders offer a good vibration
damping to sustain a high surface finish
and can prevent cutting force alterations.

Minimal outside dimensions

Slim design provides more machining flexibility.

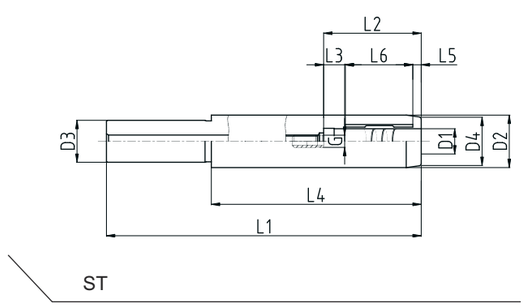
HYDRO-EXTENSION
ST

Dimensions[mm]

Type		D1	D2	D3	D4	L1	L2	L3	L4	L5	L6	G
ST												
ST20/GEX12/150	▲	12	25	20	23	150	47	10	100	4	33.5	M6
ST20/GEX20/150	▲	20	31.5	20	29	150	52	10	100	4	38.5	M8
ST32/GEX20/150	▲	20	31.5	32	29	150	52	10	100	4	38.5	M8
ST32/GEX20/200	▲	20	31.5	32	29	200	52	10	90	4	38.5	M8

Availability: ● stock ▲ short lead time ○ on request

»Tool shank quality h6
»T-wrench is ordered separately (page.101)
»Hydro-sleeve is ordered separately (page.94~97)
»Center through coolant system
»Additional sizes and special designs available on request



HYDRO-SWISS TURN

Easy, Compact, and Precise

Hydro-Swiss Turn is designed for CNC automatic lathes machines, such as Tornos, Citizen, Star, Tsugami, et cetera. GRIP have been trying to make the best holders for Swiss-type machines and GRIP invents the Hydro-Swiss Turn. Since the Hydro-Swiss Turn has unique and innovative design, straight shank type, it provides tremendous benefits. Especially, the Hydro-Swiss Turn shows better results on precision, holding forces, and stability aspects in comparison with ER collet system. It also allows you to replace inserts without any measuring or adjusting of axial and radial position. Consequently, the Hydro-Swiss Turn does not require to pick a holder out from gang when you change its inserts.

*Vibration damping properties of tool life

*Straight shank freely adjustable from any length

*High repetition accuracy.

*Best T.I.R

*High pressure coolant available

*Two types ①stopper bolt type ②pin type

*Easy, handy setting of tool and change

*Various line up

HYDRO-SWISS TURN

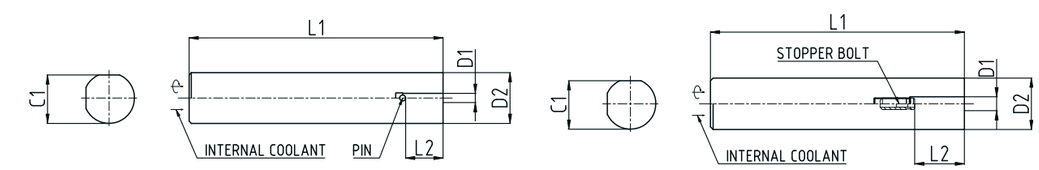
Swiss turn
CITIZEN

Citizen

Type		D1	D2	D3	D4	L1	L2	L3	L4	L5	C1	TYPE
		Dimensions[mm]										
ST19.05												
ST19.05/GST3/110	●	3	19.05	-	-	110	15.5	-	-	-	18	A
ST19.05/GST4/110	●	4	19.05	-	-	110	15.5	-	-	-	18	A
ST19.05/GST5/110	●	5	19.05	-	-	110	18.5	-	-	-	18	A
ST19.05/GST6/110	●	6	19.05	-	-	110	21.5	-	-	-	18	B
ST19.05/GST8/110	●	8	19.05	-	-	110	21.5	-	-	-	18	B
ST19.05/GST10/110	●	10	19.05	-	-	110	24	-	-	-	18	B
ST19.05												
ST19.05/GST3/60	●	3	19.05	-	-	60	15.5	-	-	-	18	A
ST19.05/GST4/60	●	4	19.05	-	-	60	15.5	-	-	-	18	A
ST19.05/GST5/60	●	5	19.05	-	-	60	18.5	-	-	-	18	A
ST19.05/GST6/60	●	6	19.05	-	-	60	21.5	-	-	-	18	A
ST19.05/GST8/60	●	8	19.05	-	-	60	21.5	-	-	-	18	A
ST19.05/GST10/60	●	10	19.05	-	-	60	24	-	-	-	18	A

Availability: ● stock ▲ short lead time ○ on request

»Tool shank quality h6
»T-wrench is ordered separately (page.101)
»Hydro-sleeve is ordered separately (page.94~97)
»Center through coolant system
»Additional sizes and special designs available on request



A TYPE B TYPE

HYDRO SWISS TURN

HYDRO-SWISS TURN

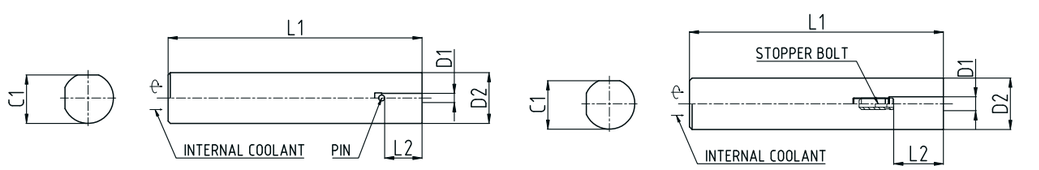
Swiss turn
STAR

star

Type		D1	D2	D3	D4	L1	L2	L3	L4	L5	C1	TYPE
		Dimensions[mm]										
ST16												
ST16/GST3/90	●	3	16	-	-	90	15.5	-	-	-	15	A
ST16/GST4/90	●	4	16	-	-	90	15.5	-	-	-	15	A
ST16/GST5/90	●	5	16	-	-	90	18.5	-	-	-	15	A
ST16/GST6/90	●	6	16	-	-	90	21.5	-	-	-	15	B
ST22												
ST22/GST3/110	●	3	22	-	-	110	15.5	-	-	-	21	A
ST22/GST4/110	●	4	22	-	-	110	15.5	-	-	-	21	A
ST22/GST5/110	●	5	22	-	-	110	18.5	-	-	-	21	A
ST22/GST6/110	●	6	22	-	-	110	21.5	-	-	-	21	B
ST22/GST8/110	●	8	22	-	-	110	21.5	-	-	-	21	B
ST22/GST10/110	●	10	22	-	-	110	31.5	-	-	-	21	B
ST32												
ST32/GST4/120	●	4	32	-	-	120	15.5	-	-	-	30	A
ST32/GST6/120	●	6	32	-	-	120	21.5	-	-	-	30	B
ST32/GST8/120	●	8	32	-	-	120	21.5	-	-	-	30	B
ST32/GST10/120	●	10	32	-	-	120	31.5	-	-	-	30	B
ST32/GST12/120	●	12	32	-	-	120	31.5	-	-	-	30	B

Availability: ● stock ▲ short lead time ○ on request

»Tool shank quality h6
»T-wrench is ordered separately (page.101)
»Hydro-sleeve is ordered separately (page.94~97)
»Center through coolant system
»Additional sizes and special designs available on request



A TYPE B TYPE

HYDRO SWISS TURN

HYDRO-SWISS TURN

Swiss turn
TSUGAMI

TSUGAMI

Type		Dimensions[mm] D1	D2	D3	D4	L1	L2	L3	L4	L5	C1	TYPE
ST16												
ST16/GST3/60	●	3	16	-	-	60	15.5	-	-	-	15	A
ST16/GST4/60	●	4	16	-	-	60	15.5	-	-	-	15	A
ST20												
ST20/GST3/110	●	3	20	-	-	110	15.5	-	-	-	19	A
ST20/GST4/110	●	4	20	-	-	110	15.5	-	-	-	19	A
ST20/GST5/110	●	5	20	-	-	110	18.5	-	-	-	19	A
ST20/GST6/110	●	6	20	-	-	110	21.5	-	-	-	19	B
ST20/GST8/110	●	8	20	-	-	110	21.5	-	-	-	19	B
ST20/GST10/110	●	10	20	-	-	110	31.5	-	-	-	19	B
ST22												
ST22/GST3/110	●	3	22	-	-	110	15.5	-	-	-	21	A
ST22/GST4/110	●	4	22	-	-	110	15.5	-	-	-	21	A
ST22/GST5/110	●	5	22	-	-	110	18.5	-	-	-	21	A
ST22/GST6/110	●	6	22	-	-	110	21.5	-	-	-	21	B
ST22/GST8/110	●	8	22	-	-	110	21.5	-	-	-	21	B
ST22/GST10/110	●	10	22	-	-	110	31.5	-	-	-	21	B
ST25												
ST25/GST3/110	●	3	25	-	-	110	15.5	-	-	-	24	A
ST25/GST4/110	●	4	25	-	-	110	15.5	-	-	-	24	A
ST25/GST5/110	●	5	25	-	-	110	18.5	-	-	-	24	A
ST25/GST6/110	●	6	25	-	-	110	21.5	-	-	-	24	B
ST25/GST8/110	●	8	25	-	-	110	21.5	-	-	-	24	B
ST25/GST10/110	●	10	25	-	-	110	31.5	-	-	-	24	B
ST32												
ST32/GST4/120	●	4	32	-	-	120	15.5	-	-	-	30	A
ST32/GST6/120	●	6	32	-	-	120	21.5	-	-	-	30	B
ST32/GST8/120	●	8	32	-	-	120	21.5	-	-	-	30	B
ST32/GST10/120	●	10	32	-	-	120	31.5	-	-	-	30	B
ST32/GST12/120	●	12	32	-	-	120	31.5	-	-	-	30	B

Availability: ● stock ▲ short lead time ○ on request

»Tool shank quality h6
»T-wrench is ordered separately (page.101)
»Hydro-sleeve is ordered separately (page.94~97)
»Center through coolant system
»Additional sizes and special designs available on request

HYDRO-SWISS TURN

Swiss turn
HANWHA

Hanwha

Type		Dimensions[mm] D1	D2	D3	D4	L1	L2	L3	L4	L5	C1	TYPE
ST25												
ST25/GST3/110	●	3	25	-	-	110	15.5	-	-	-	24	A
ST25/GST4/110	●	4	25	-	-	110	15.5	-	-	-	24	A
ST25/GST5/110	●	5	25	-	-	110	18.5	-	-	-	24	A
ST25/GST6/110	●	6	25	-	-	110	21.5	-	-	-	24	B
ST25/GST8/110	●	8	25	-	-	110	21.5	-	-	-	24	B
ST25/GST10/110	●	10	25	-	-	110	31.5	-	-	-	24	B
ST32												
ST32/GST4/120	●	4	32	-	-	120	15.5	-	-	-	30	A
ST32/GST6/120	●	6	32	-	-	120	21.5	-	-	-	30	B
ST32/GST8/120	●	8	32	-	-	120	21.5	-	-	-	30	B
ST32/GST10/120	●	10	32	-	-	120	26.5	-	-	-	30	B
ST32/GST12/120	●	12	32	-	-	120	31.5	-	-	-	30	B

Availability: ● stock ▲ short lead time ○ on request

»Tool shank quality h6
»T-wrench is ordered separately (page.101)
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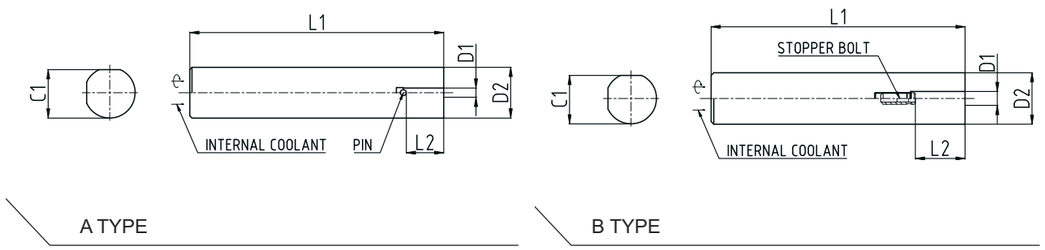

TORNOS

Type		Dimensions[mm] D1	D2	D3	D4	L1	L2	L3	L4	L5	C1	TYPE
ST16												
ST16/GST3/60	●	3	16	-	-	60	15.5	-	-	-	15	A
ST16/GST4/60	●	4	16	-	-	60	15.5	-	-	-	15	A
ST20												
ST20/GST3/110	●	3	20	-	-	110	15.5	-	-	-	19	A
ST20/GST4/110	●	4	20	-	-	110	15.5	-	-	-	19	A
ST20/GST5/110	●	5	20	-	-	110	18.5	-	-	-	19	A
ST20/GST6/110	●	6	20	-	-	110	21.5	-	-	-	19	B
ST20/GST8/110	●	8	20	-	-	110	21.5	-	-	-	19	B
ST20/GST10/110	●	10	20	-	-	110	24	-	-	-	19	B
ST25												
ST25/GST3/110	●	3	25	-	-	110	15.5	-	-	-	24	A
ST25/GST4/110	●	4	25	-	-	110	15.5	-	-	-	24	A
ST25/GST5/110	●	5	25	-	-	110	18.5	-	-	-	24	A
ST25/GST6/110	●	6	25	-	-	110	21.5	-	-	-	24	B
ST25/GST8/110	●	8	25	-	-	110	21.5	-	-	-	24	B
ST25/GST10/110	●	10	25	-	-	110	31.5	-	-	-	24	B

Availability: ● stock ▲ short lead time ○ on request

»Tool shank quality h6
»T-wrench is ordered separately (page.101)
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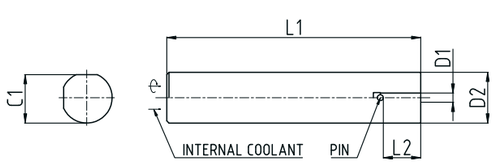
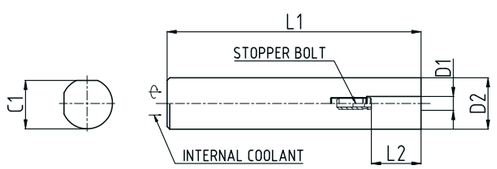


A TYPE



B TYPE

NOMURADS

Type		Dimensions[mm] D1	D2	D3	D4	L1	L2	L3	L4	L5	C1	TYPE
ST22												
ST22/GST3/110	●	3	22	-	-	110	15.5	-	-	-	21	A
ST22/GST4/110	●	4	22	-	-	110	15.5	-	-	-	21	A
ST22/GST5/110	●	5	22	-	-	110	18.5	-	-	-	21	A
ST22/GST6/110	●	6	22	-	-	110	21.5	-	-	-	21	B
ST22/GST8/110	●	8	22	-	-	110	21.5	-	-	-	21	B
ST22/GST10/110	●	10	22	-	-	110	31.5	-	-	-	21	B
ST32												
ST32/GST4/120	●	4	32	-	-	120	15.5	-	-	-	30	A
ST32/GST6/120	●	6	32	-	-	120	21.5	-	-	-	30	B
ST32/GST8/120	●	8	32	-	-	120	21.5	-	-	-	30	B
ST32/GST10/120	●	10	32	-	-	120	31.5	-	-	-	30	B
ST32/GST12/120	●	12	32	-	-	120	31.5	-	-	-	30	B

Availability: ● stock ▲ short lead time ○ on request

»Tool shank quality h6
»T-wrench is ordered separately (page.101)
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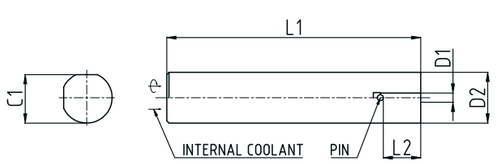

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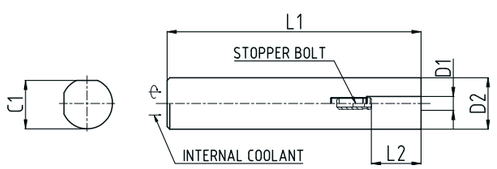


B TYPE

HYDRO-SLEEVE

Precise and Accurate

GRIP Hydraulic System approach ensures powerful clamping with a total system run-out holder and sleeve combined of less than three microns.

*Clamping in seconds without peripheral equipment

*Suitable for nearly every precision toolholder,
commercially available shank types can be clamped

*Response various tool shank by using a sleeve

*Vibration damping properties of tool life

Rely on The Powerful

Run-out system TIR ≤3㎛

Our hydraulic system consists of hydro-line.
All components together ensure best
run-out and accuracy.

Clamping of all h6 tool shanks

Cylindrical, WELDON, Whistle-Notch.

Clamping of all shank materials

Solid carbide and HSS tool shanks

Clamping diameters

3.0mm to 25.0mm

Vibration damping

Hydraulic toolholders offer a good vibration
damping to sustain a high surface finish
and can prevent cutting force alterations.

All items cooling system

Closed type allows internal coolant.

HYDRO-SLEEVE
OD

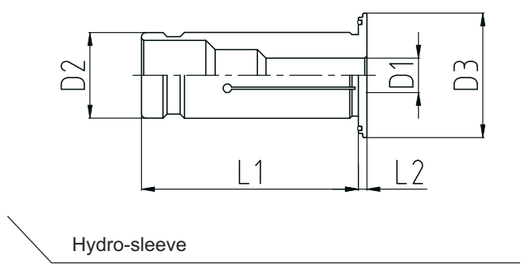
Type		Dimensions[mm] D1	D2	D3	D4	L1	L2	L3	L4	L5	L6	G
OD8												
OD8-3	●	3	8	12.5	-	35.5	2	-	-	-	-	-
OD8-4	●	4	8	12.5	-	35.5	2	-	-	-	-	-
OD8-5	●	5	8	12.5	-	35.5	2	-	-	-	-	-
OD8-6	●	6	8	12.5	-	35.5	2	-	-	-	-	-
OD12												
OD12-3	●	3	12	19	-	45	2	-	-	-	-	-
OD12-4	●	4	12	19	-	45	2	-	-	-	-	-
OD12-5	●	5	12	19	-	45	2	-	-	-	-	-
OD12-6	●	6	12	19	-	45	2	-	-	-	-	-
OD12-7	●	7	12	19	-	45	2	-	-	-	-	-
OD12-8	●	8	12	19	-	45	2	-	-	-	-	-
OD20												
OD20-3	●	3	20	27	-	50.5	2	-	-	-	-	-
OD20-4	●	4	20	27	-	50.5	2	-	-	-	-	-
OD20-5	●	5	20	27	-	50.5	2	-	-	-	-	-
OD20-6	●	6	20	27	-	50.5	2	-	-	-	-	-
OD20-7	●	7	20	27	-	50.5	2	-	-	-	-	-
OD20-8	●	8	20	27	-	50.5	2	-	-	-	-	-
OD20-9	●	9	20	27	-	50.5	2	-	-	-	-	-
OD20-10	●	10	20	27	-	50.5	2	-	-	-	-	-
OD20-11	●	11	20	27	-	50.5	2	-	-	-	-	-
OD20-12	●	12	20	27	-	50.5	2	-	-	-	-	-
OD20-13	●	13	20	27	-	50.5	2	-	-	-	-	-
OD20-14	●	14	20	27	-	50.5	2	-	-	-	-	-
OD20-15	●	15	20	27	-	50.5	2	-	-	-	-	-
OD20-16	●	16	20	27	-	50.5	2	-	-	-	-	-

Hydro-Sleeve OD

Type		Dimensions[mm] D1	D2	D3	D4	L1	L2	L3	L4	L5	L6	G
OD32												
OD32-6	●	6	32	39	-	60.5	3	-	-	-	-	-
OD32-8	●	8	32	39	-	60.5	3	-	-	-	-	-
OD32-10	●	10	32	39	-	60.5	3	-	-	-	-	-
OD32-12	●	12	32	39	-	60.5	3	-	-	-	-	-
OD32-14	●	14	32	39	-	60.5	3	-	-	-	-	-
OD32-16	●	16	32	39	-	60.5	3	-	-	-	-	-
OD32-18	●	18	32	39	-	60.5	3	-	-	-	-	-
OD32-20	●	20	32	39	-	60.5	3	-	-	-	-	-
OD32-25	●	25	32	39	-	60.5	3	-	-	-	-	-

Availability: ● stock ▲ short lead time ○ on request

»Tool shank quality h6
»Center through coolant system
»Additional sizes and special designs available on request



Accessories Contents

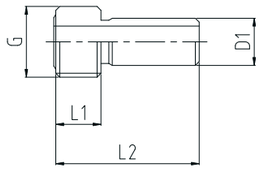
Coolant Tube

Coolant Tube is for optimum internal supply of HSK tools. It prevents spindle from being spoiled and rests the sealing system.

Dimensions[mm]

Type	For		D1	D2	D3	D4	L1	L2	L3	L4	L5	L6	G
CT													
CT40	HSK32	●	8.0	-	-	-	7.5	29.0	-	-	-	-	M12x1
CT50	HSK40	●	10.0	-	-	-	9.5	33.0	-	-	-	-	M16x1
CT63	HSK63	●	12.0	-	-	-	11.5	36.5	-	-	-	-	M18x1
CT100	HSK100	●	16.0	-	-	-	15.0	43.5	-	-	-	-	M24x1.5

Availability: ● stock ▲ short lead time ○ on request



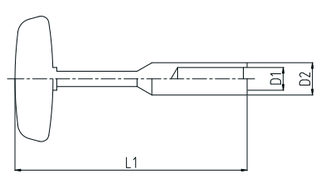
Coolant Tube

Coolant Tube Wrench

Dimensions[mm]

Type	For		D1	D2	D3	D4	L1	L2	L3	L4	L5	L6	G
CTR													
CTR40	HSK32	●	8.0	11.0	-	-	111.0	-	-	-	-	-	-
CTR50	HSK40	●	10.0	15.0	-	-	120.0	-	-	-	-	-	-
CTR63	HSK63	●	12.0	17.0	-	-	122.0	-	-	-	-	-	-
CTR100	HSK100	●	16.0	22.0	-	-	141.0	-	-	-	-	-	-

Availability: ● stock ▲ short lead time ○ on request



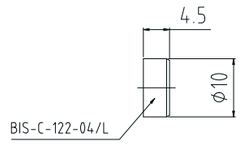
Coolant Tube Wrench

T-Wrench

T		⬢	length
T-2.5	●	2.5	100
T-3.0	●	3	100
T-4.0	●	4	100
T-5.0	●	5	100
T-6.0	●	6	100

Availability: ● stock ▲ short lead time ○ on request

Data Carrier



Data Carrier

Dimensions[mm]

DTC10	
Dimensions	10x4.5mm
Housing material	Poly-A
Storing capacity	511 Byte
Matching reading and writing head	BIS-C-300/302/305/306/325
Max. reading/writing head	2.5mm
Mode of installation	Flush mounted
Min./Max. ambient temperature	0 / -70°C
Min./Max. stocking temperature	0 / -70°C
Protection class as per DIN 40050	IP 67
Programming cycles	500000 (<70°C)
Read cycles	Unlimited

ACCESSORIES CONTENTS

Technical Information

Keep challenging for the most unique and innovative products

Shank Tolerance

Above	Below	Class of geomatrical tolerance zone of shafts													
		b9	c9	d8	d9	e7	e8	e9	f6	f7	f8	g5	g6	h5	h6
-	3	-140 -165	-60 -85	-20 -34	-20 -45	-14 -24	-14 -28	-14 -39	-6 -12	-6 -16	-6 -20	-2 -6	-2 -8	0 -4	0 -6
3	6	-140 -170	-70 -100	-30 -48	-30 -60	-20 -32	-20 -38	-20 -50	-10 -18	-10 -22	-10 -28	-4 -9	-4 -12	0 -5	0 -8
6	10	-150 -186	-80 -116	-40 -62	-40 -76	-25 -40	-25 -47	-25 -61	-13 -22	-13 -28	-13 -35	-5 -11	-5 -14	0 -6	0 -9
10	14	-150	-95	-50	-50	-32	-32	-32	-16	-16	-16	-6	-6	0	0
14	18	-193	-138	-77	-93	-50	-59	-75	-27	-34	-43	-14	-17	-8	-11
18	24	-160	-110	-65	-65	-40	-40	-40	-20	-20	-20	-7	-7	0	0
24	30	-212	-162	-98	-117	-61	-73	-92	-33	-41	-53	-16	-20	-9	-13
30	40	-170 -232	-120 -182	-80	-80	-50	-50	-50	-25	-25	-25	-9	-9	0	0
40	50	-180 -242	-130 -192	-119	-142	-75	-89	-112	-41	-50	-64	-20	-25	-11	-16
50	65	-190 -264	-140 -214	-100	-100	-60	-60	-60	-30	-30	-30	-10	-10	0	0
65	80	-200 -274	-150 -224	-146	-174	-90	-106	-134	-49	-60	-76	-23	-29	-13	-19
80	100	-220 -307	-170 -257	-120	-120	-72	-72	-72	-36	-36	-36	-12	-12	0	0
100	120	-240 -327	-180 -267	-174	-207	-107	-126	-159	-58	-71	-90	-27	-34	-15	-22
120	140	-260 -360	-200 -300	-145	-145	-85	-85	-85	-43	-43	-43	-14	-14	0	0
140	160	-280 -380	-210 -310	-208	-245	-125	-148	-185	-68	-83	-106	-32	-39	-18	-25
160	180	-310 -410	-230 -330												
180	200	-340 -455	-240 -355												
200	225	-380 -495	-260 -375	-170 -242	-170 -285	-100 -146	-100 -172	-100 -215	-50 -79	-50 -96	-50 -122	-15 -35	-15 -44	0 -20	0 -29
225	250	-420 -535	-280 -395												
250	280	-480 -610	-300 -430	-190	-190	-110	-110	-110	-56	-56	-56	-17	-17	0	0
280	315	-540 -670	-330 -460	.271	-320	-162	-191	-240	-88	-108	-137	-40	-49	-23	-32
315	355	-600 -740	-360 -500	-210	-210	-125	-125	-125	-62	-62	-62	-18	-18	0	0
355	400	-680 -820	-400 -540	-299	-350	-182	-214	-265	-98	-119	-151	-43	-54	-25	-36
400	450	-760 -915	-440 -595	-230	-230	-135	-135	-135	-68	-68	-68	-20	-20	0	0
450	500	-840 -995	-480 -635	-327	-385	-198	-232	-290	-108	-131	-165	-47	-60	-27	-40

Shank Tolerance

Class of geomatrical tolerance zone of shafts															
h7	h8	h9	js5	js6	js7	k5	k6	m5	m6	n6	p6	r6	s6	t6	u6	x6
0 -10	0 -14	0 -25	±2	±5	±5	+4 +0	+6 +0	+6 +2	+8 +2	+10 +4	+12 +6	+16 +10	+20 +14		+24 +18	+26 +20
0 -12	0 -18	0 -30	±2.5	±6	±6	+6 +1	+9 +1	+9 +4	+12 +4	+16 +18	+20 +12	+23 +15	+27 +19	-	+31 +23	+36 +28
0 -15	0 -22	0 -36	±3	±7	±7	+7 +1	+10 +1	+12 +6	+15 +6	+19 +10	+24 +15	+28 +19	+32 +23		+37 +28	+43 +34
0 -18	0 -27	0 -43	±4	±5.5	±9	+9 +1	+12 +1	+15 +7	+18 +7	+23 +12	+29 +18	+34 +23	+39 +28	-	+44 +33	+51 +40 +56
0 -21	0 -33	0 -52	±4.5	±6.5	±10	+11 +2	+15 +2	+17 +8	+21 +8	+28 +15	+35 +22	+41	+48 +35	- +54 +41	+54 +41 +61 +48	+45 +67 +28 +77 +64
0 -25	0 -39	0 -62	±5.5	±8	±12	+13 +2	+18 +2	+20 +9	+25 +9	+33 +17	+42 +26	+50 +34	+59 +43	+64 +48 +70 +54	+76 +60 +86 +70	-
0 -30	0 -46	0 -74	±6.5	±9.5	±15	+15 +2	+21 +2	+24 +11	+30 +11	+39 +20	+51 +32	+60 +41 +62 +43	+72 +53 +78 +59	+85 +66 +94 +75	+106 +87 +121 +102	-
0 -35	0 -54	0 -87	±7.5	±11	±17	+18 +3	+25 +3	+28 +13	+35 +13	+45 +23	+59 +37	+73 +51 +76 +54	+93 +71 +101 +79	+113 +91 +126 +104	+146 +124 +166 +144	-
0 -40	0 -63	0 -100	±9	±12.5	±20	+21 +3	+28 +3	+33 +15	+40 +15	+52 +27	+68 +43	+88 +63 +90 +65 +93 +68	+117 +92 +125 +100 +133 +108	+147 +122 +159 +134 +169 +146	-	-
0 -46	0 -72	0 -115	±10	±14.5	±23	+24 +4	+33 +4	+37 +17	+46 +17	+60 +31	+79 +50	+106 +77 +109 +80 +113 +84	+151 +122 +159 +130 +169 +140	-	-	-
0 -52	0 -81	0 -130	±11.5	±16	±26	+27 +4	+36 +4	+43 +20	+52 +20	+66 +34	+88 +56	+126 +94 +130 +98	-	-	-	-
0 -57	0 -89	0 -140	±12.5	±18	±28	+29 +4	+40 +4	+46 +21	+57 +21	+73 +37	+98 +62	+144 +108 +150 +114	-	-	-	-
0 -63	0 -97	0 -155	±13.5	±20	±31	+32 +5	+45 +5	+50 +23	+63 +23	+80 +40	+108 68	+166 +126 +172 +132	-	-	-	-

Hole Tolerance

Above	Below	Class of geomatrical tolerance zone of hole															
		B10	C9	C10	D8	D9	D10	E7	E8	E9	F6	F7	F8	G6	G7	H6	H7
-	3	+180 +140	+85 +60	+100 +60	+34 +20	+45 +20	+60 +20	+24 +14	+28 +14	+39 +14	+12 +6	+16 +6	+20 +6	+8 +2	+12 +2	+6 0	+10 0
3	6	+188 +140	+100 +70	+118 +70	+48 +30	+60 +30	+78 +30	+32 +20	+38 +20	+50 +20	+18 +10	+22 +10	+28 +10	+12 +4	+16 +4	+8 0	+12 0
6	10	+208 +150	+116 +80	+138 +80	+62 +40	+76 +40	+98 +40	+40 +25	+47 +25	+61 +25	+22 +13	+28 +13	+35 +13	+14 +5	+20 +5	+9 0	+15 0
10	14	+220 +150	+138 +95	+165 +95	+77 +50	+93 +50	+120 +50	+50 +32	+59 +32	+75 +32	+27 +16	+34 +16	+43 +16	+17 +6	+24 +6	+11 0	+18 0
14	18																
18	24	+244 +160	+162 +110	+194 +110	+98 +65	+117 +65	+149 +65	+61 +40	+73 +40	+92 +40	+33 +20	+41 +20	+53 +20	+20 +7	+28 +7	+13 0	+21 0
24	30																
30	40	+270 +170	+182 +120	+220 +120	+119 +80	+142 +80	+180 +80	+75 +50	+89 +50	+112 +50	+41 +25	+50 +25	+64 +25	+25 +9	+34 +9	+16 0	+25 0
40	50	+280 +180	+192 +130	+230 +130													
50	65	+310 +190	+214 +140	+260 +140	+146 +100	+174 +100	+220 +100	+90 +60	+106 +60	+134 +60	+49 +30	+60 +30	+76 +30	+29 +10	+40 +10	+19 0	+30 0
65	80	+320 +200	+224 +150	+270 +150													
80	100	+360 +220	+257 +170	+310 +170	+174 +120	+207 +120	+260 +120	+107 +72	+126 +72	+159 +72	+58 +36	+71 +36	+90 +36	+34 +12	+47 +12	+22 0	+35 0
100	120	+380 +240	+267 +180	+320 +180													
120	140	+420 +260	+300 +200	+360 +200	+208 +145	+245 +145	+305 +145	+125 +85	+148 +85	+185 +85	+68 +43	+83 +43	+106 +43	+39 +14	+54 +14	25 0	+40 0
140	160	+440 +280	+310 +210	+370 +210													
160	180	+470 +310	+330 +230	+390 +230													
180	200	+525 +340	+355 +240	+425 +240	+242 +170	+285 +170	+355 +170	+146 +100	+172 +100	+215 +100	+79 +50	+96 +50	+122 +50	+44 +15	+61 +15	+29 0	+46 0
200	225	+565 +380	+375 +260	+445 +260													
225	250	+605 +420	+395 +280	+465 +280													
250	280	+690 +480	+430 +300	+510 +300	+271 +190	+320 +190	+400 +190	+162 +110	+191 +110	+240 +110	+88 +56	+108 +56	+137 +56	+49 +17	+69 +17	+32 0	+52 0
280	315	-750 +540	+460 +330	+540 +330													
315	355	+830 +600	+500 +360	+590 +360	+299 +210	+350 +210	+440 +210	+182 +125	+214 +125	+265 +125	+98 +62	+119 +62	+151 +62	+54 +18	+75 +18	+36 0	+57 0
355	400	+910 +680	+540 +400	+630 +400													
400	450	+1010 +760	+595 +440	+690 +440	+327 +230	+385 +230	+480 +230	+198 +135	+232 +135	+290 +135	+108 +68	+131 +68	+165 +68	+60 +20	+83 +20	+40 0	+63 0
450	500	+1090 +840	+635 +480	+730 +480													

HOLE

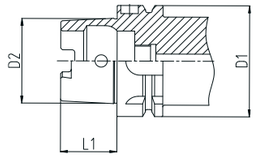
Hole Tolerance

THCHNICAL INFORMATION

Above	Below	Class of geomatrical tolerance zone of hole															
		H8	H9	H10	Js6	Js7	K6	K7	M6	M7	N6	N7	P6	P7	R7	S7	T7	U7	X7
-	3	+14 0	+25 0	+40 0	±3	±5	0 -6	0 -10	-2 -8	-2 -12	-4 -10	-4 -14	-6 -12	-6 -16	-10 -20	-14 -24	-	-18 -28	-20 -30
3	6	+18 0	+30 0	+48 0	±4	±6	+2 -6	+3 -9	-1 -9	0 -12	-5 -13	-4 -16	-9 -17	-8 -20	-11 -23	-15 -27	-	-19 -31	-24 -36
6	10	+22 0	+36 0	+58 0	±4.5	±7	+2 -7	+5 -10	-3 -12	0 -15	-7 -16	-4 -19	-12 -21	-9 -24	-13 -28	-17 -32	-	-22 -37	-28 -43
10	14	+27 0	+43 0	+70 0	±5.5	±9	+2 -9	+6 -12	-4 -15	0 18	-9 -20	-5 -23	-15 -26	-11 -29	-16 -34	-21 -39	-	-26 -44	-33 -51
14	18																		-38 -56
18	24	+33 0	+52 0	+84 0	±6.5	±10	+2 -11	+6 -15	-4 -17	0 -21	-11 -24	-7 -28	-18 -31	-14 -35	-20 -41	-27 -47	-	-33 -54	-46 -67
24	30																-33 -54	-40 -61	-56 -77
30	40	+39 0	+62 0	+100 0	±8	±12	+3 -13	+7 -18	-4 -20	0 -25	-12 -28	-8 -33	-21 -37	-17 -42	-25 -50	-34 -59	-39 -64	-51 -76	-
40	50																-45 -70	-61 -86	
50	65	+46 0	+74 0	+120 0	±9.5	±15	+4 -15	+9 -21	-5 -24	0 -30	-14 -33	-9 -39	-26 -45	-21 -51	-30 -60	-42 -72	-55 -85	-76 -106	-
65	80														-32 -62	-48 -78	-64 -94	-91 -121	
80	100	+54 0	+87 0	+140 0	±11	±17	+4 -18	+10 -25	-6 -28	0 -35	-16 -38	-10 -45	-30 -52	-24 -59	-38 -73	-58 -93	-78 -113	-111 -146	-
100	120														-41 -76	-66 -101	-91 -126	-131 -166	
120	140	+63 0	+100 0	+160 0	±12.5	±20	+4 -21	+12 -28	-8 -33	0 -40	-20 -45	-12 -52	-36 -61	-28 -68	-48 -88	-77 -117	-107 -147	-	-
140	160														-50 -90	-85 -125	-119 -159		
160	180														-53 -93	-93 -133	-131 -171		
180	200	+72 0	+115 0	+185 0	±14.5	±23	+5 -21	+13 -33	-8 -37	0 -46	-22 -51	-14 -60	-41 -70	-33 -79	-60 -106	-105 -151	-	-	-
200	225														-63 -109	-113 -159			
225	250														-67 -113	-123 -169			
250	280	+81 0	+130 0	+210 0	±16	±26	+5 -27	+16 -36	-9 -41	0 -52	-25 -57	-14 -66	-47 -79	-36 -88	-74 -126	-	-	-	-
280	315														-78 -130				
315	355	+89 0	+140 0	+230 0	±18	±28	+7 -29	+17 -40	-10 -46	0 -57	-26 -62	-16 -73	-51 -87	-41 -98	-87 -144	-	-	-	-
355	400														-93 -150				
400	450	+97 0	+155 0	+250 0	±20	±31	+8 -32	+18 -45	-10 -50	0 -63	-27 -67	-17 -80	-55 -95	-45 -108	-103 -166	-	-	-	-
450	500														-109 -172				

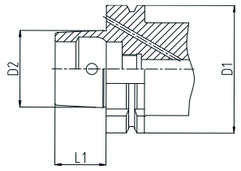
Technical Data

HSK
DIN 69893
ISO 12164



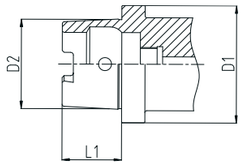
HSK-A	D1	D2	L1
32	32	24	16
40	40	30	20
50	50	38	25
63	63	48	32
80	80	60	40
100	100	75	50

HSK-A



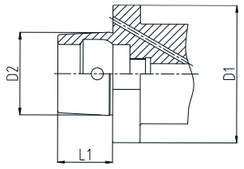
HSK-B	D1	D2	L1
-	-	-	-
40	40	24	16
50	50	30	20
63	63	38	25
80	80	48	32
100	100	60	40

HSK-B



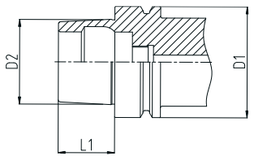
HSK-C	D1	D2	L1
32	32	24	16
40	40	30	20
50	50	38	25
63	63	48	32
80	80	60	40
100	100	75	50

HSK-C



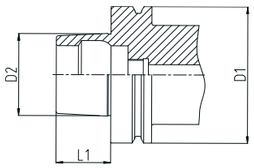
HSK-D	D1	D2	L1
-	-	-	-
40	40	24	16
50	50	30	20
63	63	38	25
80	80	48	32
100	100	60	40

HSK-D



HSK-E	D1	D2	L1
32	32	24	16
40	40	30	20
50	50	38	25
63	63	48	32
-	-	-	-

HSK-E



HSK-F	D1	D2	L1
-	-	-	-
-	-	-	-
50	50	30	20
63	63	38	25
80	80	48	32

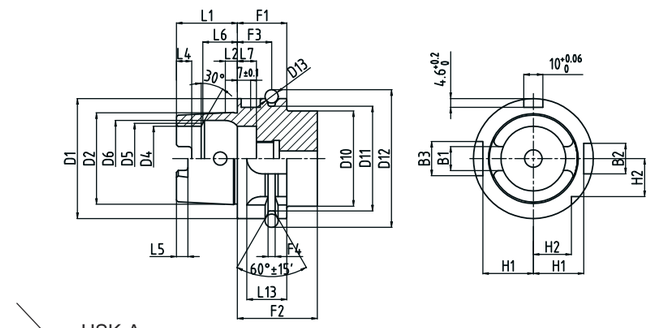
HSK-F

Technical Data

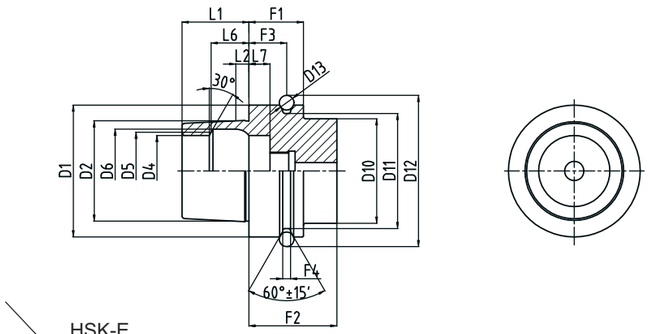
HSK-A
DIN 69893
ISO 12164

HSK-E
DIN 69893
ISO 12164

HSK	32	40	50	63	80	100
B1 ±0.04	7.05	8.05	10.54	12.54	16.04	20.02
B2 H10	7	9	12	16	18	20
B3 H10	9	11	14	18	20	22
D1 H10	32	40	50	63	80	100
D2	24 +0.007 +0.005	30 +0.007 +0.005	38 +0.009 +0.006	48 +0.011 +0.007	60 +0.013 +0.008	75 +0.015 +0.009
D4 H10	17	21	26	34	42	53
D5 H11	21	25.5	32	40	50	63
D6	19	23	29	37	46	58
D10 max	26	34	42	53	67	85
D11 0 -0.01	26.5	34.8	43	55	70	92
D12 0 -0.01	37	45	59.3	72.3	88.8	109.75
D13	4		7			
F1 0 -0.01	20		26			
F2 min	35		42			
F3 ±0.01	16		18			
F4 +0.15 0	2		3.75			
H1 0 -0.2	13	17	21	26.5	34	44
H2 0 -0.13	9.5	12	15.5	20	25	31.5
L1 0 -0.2	16	20	25	32	40	50
L2	3.2	4	5	6.3	8	10
L4 +0.2 0	5	6	7.5	10	12	15
L5 +0.2 0	3	3.5	4.5	6	8	10
L6 JS10	8.92	11.42	14.13	18.13	22.85	28.56
L7 0 -0.1	8		10	10	12.5	12.5
L13	12		19	21	22	24



HSK-A

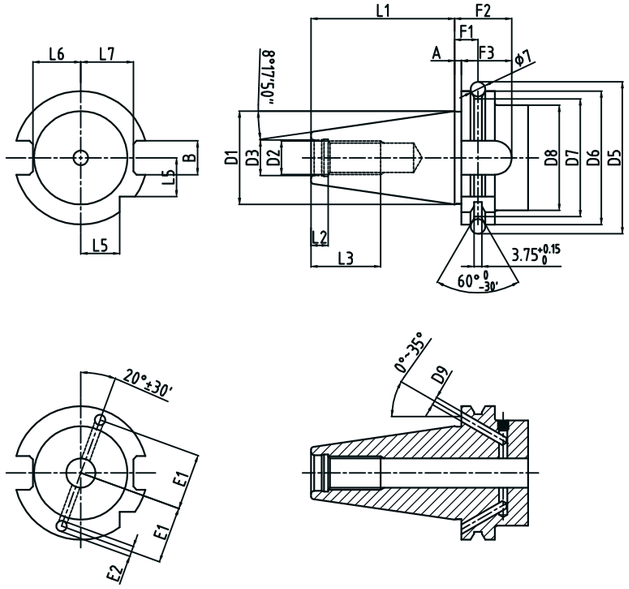


HSK-E

Technical Data

SK
DIN 69871
DIN ISO **7388-1**

ISO	30	40	45	50	60
A ±0.01			3.2		
B H12	16.1		19.3	25.7	
D1	31.75	44.45	57.15	69.85	107.96
D2	M12	M16	M20	M24	M30
D3 H7	13	17	21	25	32
D5 ±0.05	59.3	72.3	91.35	107.25	164.75
D6 $^{0}_{-0.1}$	50	63.55	82.55	97.50	155
D7 $^{0}_{-0.5}$	44.3	56.25	75.25	91.25	147.70
D8 max	45	50	63	80	130
D9	4		5	6	8
E1 ±0.1	21	27	35	42	66
E2 max	5		6	7	9.2
F1 ±0.1			11.1		
F2 min.	35				38
F3 $^{0}_{-0.1}$			19.1		
L1 $^{0}_{-0.3}$	47.8	68.4	82.7	101.75	161.80
L2 $^{+0.5}_{0}$	5.5	8.2	10	11.5	14
L3 min.	24	32	40	47	59
L5 $^{0}_{-0.3}$	15	18.5	24	30	49
L6 $^{0}_{-0.4}$	16.4	22.8	29.1	35.5	54.5
L7 $^{0}_{-0.4}$	19	25	31.3	37.7	59.3

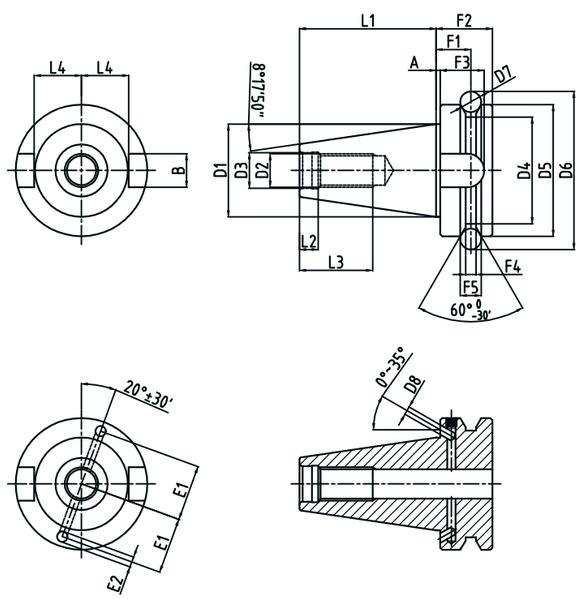


DIN 69871 A-B

Technical Data

JIS-BT
MAS 403
JIS B 6339
DIN ISO **7388-2**

ISO	30	35	40	45	50	60
A ±0.04		2			3	
B H12		16.1		19.3	25.7	25.7
D1	31.75	38.10	44.45	57.15	69.85	107.95
D2	M12		M16	M20	M24	M30
D3 H8	12.5		17	21	25	31
D4	38	43	53	73	85	135
D5 H8	46	53	63	85	100	155
D6	56.144	65.680	75.679	100.215	119.019	180.359
D7	8	10		12	15	20
D8		4		5	6	8
E1 ±0.1	21	23	27	35	42	66
E2 max		5		6	7	9.2
F1 ±0.01	13.6	14.6	16.6	21.2	23.2	28.2
F2	22	24	27	33	38	48
F3 min.	17	20	21	26	31	34
F4	4	5		6	7	11
F5 $^{+0.1}_{0}$	8	10		12	15	20
L1 ±0.2	48.4	56.4	65.4	82.8	101.8	161.8
L2 $^{+0.5}_{0}$	7		9	11	13	16
L3 min.	24		30	38	45	56
L4 $^{0}_{-0.2}$	16.3	19.6	22.6	29.1	35.4	60.1



MAS 403 BT A-B

Tap

Metric (M)

Tap Size	Drill Diameter	Tap Size	Drill Diameter	Tap Size	Drill Diameter	Tap Size	Drill Diameter
M1x0.25	0.75	M2.5x0.45	2.10	M9x1.25	7.80	M27x3	24.0
M1.1x0.25	0.85	M2.6x0.45	2.20	M10x1.5	8.50	M30x3.5	26.5
M1.2x0.25	0.95	M3x0.5	2.50	M11x1.5	9.50	M33x3.5	29.5
M1.4x0.3	1.10	M3.5x0.6	2.90	M12x1.75	10.3	M36x4	32.0
M1.6x0.35	1.25	M4x0.7	3.30	M14x2	12.0	M39x4	35.0
M1.7x0.35	1.35	M4.5x0.75	3.80	M16x2	14.0	M42x4.5	37.5
M1.8x0.35	1.45	M5x0.8	4.20	M18x2.5	15.5	M45x4.5	40.5
M2x0.4	1.60	M6x1.0	5.00	M20x2.5	17.5	M48x5	43.0
M2.2x0.45	1.75	M7x1.0	6.00	M22x2.5	19.5		
M2.3x0.4	1.90	M8x1.25	6.80	M24x3	21.0		

Metric fine (M)

Tap Size	Drill Diameter	Tap Size	Drill Diameter	Tap Size	Drill Diameter	Tap Size	Drill Diameter
M1x0.2	0.80	M11x1.0	10.0	M24x1.0	23.0	M38x1.5	36.5
M1.1x0.2	0.90	M11x0.75	10.3	M25x2.0	23.0	M39x3.0	36.0
M1.2x0.2	1.00	M12x1.5	10.5	M25x1.5	23.5	M39x2.0	37.0
M1.4x0.2	1.20	M12x1.25	10.8	M25x1.0	24.0	M39x1.5	37.5
M1.6x0.2	1.40	M12x1.0	11.0	M26x1.5	24.5	M40x3.0	37.0
M1.8x0.2	1.60	M14x1.5	12.5	M27x2.0	25.0	M40x2.0	38.0
M2x0.25	1.75	M14x1.0	13.0	M27x1.5	25.5	M40x2.5	38.5
M2.2x0.25	1.95	M15x1.5	13.5	M27x1.0	26.0	M40x1.5	38.0
M2.5x0.35	2.20	M15x1.0	14.0	M28x2.0	26.0	M42x1.0	39.0
M3x0.35	2.70	M16x1.5	14.5	M28x1.5	26.5	M42x2.0	40.0
M3.5x0.35	3.20	M16x1.0	15.0	M28x1.0	27.0	M42x1.5	40.5
M4x0.5	3.50	M17x1.5	15.5	M30x3.0	27.0	M45x1.0	41.0
M4.5x0.5	4.00	M17x1.0	16.0	M30x2.0	28.0	M45x3.0	42.0
M5x0.5	4.50	M18x2.0	16.0	M30x1.5	28.5	M45x2.0	43.0
M5.5x0.5	5.00	M18x1.5	16.5	M30x1.0	29.0	M45x1.5	43.5
M6x0.75	5.30	M18x1.0	17.5	M32x2.0	30.0	M48x1.0	44.0
M7x0.75	6.30	M20x2.0	18.0	M32x1.5	30.5	M48x2.0	45.0
M8x1.0	7.00	M20x1.5	18.5	M32x3.0	30.0	M48x1.5	46.0
M8x0.75	7.30	M20x1.0	19.0	M33x2.0	31.0	M48x3.0	46.5
M9x1.0	8.00	M22x2.0	20.0	M33x1.5	31.5	M50x3.0	47.0
M9x0.75	8.30	M22x1.5	20.5	M35x1.5	33.5	M50x2.0	48.0
M10x1.25	8.80	M22x1.0	21.0	M36x3.0	33.0	M50x1.5	48.5
M10x1.0	9.00	M24x2.0	22.0	M36x2.0	34.0		
M10x0.75	9.30	M24x1.5	22.5	M36x1.5	34.5		

TAP

Tap

(UNC)

Tap Size	Drill Diameter	Tap Size	Drill Diameter
NO.1-64 UNC	1.75	7/8-10 UNC	19.6
NO.2-56 UNC	1.86	1-9 UNC	22.5
NO.3-48 UNC	2.14	11/8-8 UNC	25.2
NO.4-40 UNC	2.36	11/4-7 UNC	28.4
NO.5-40 UNC	2.69	13/8-7 UNC	31.0
NO.6-32 UNC	2.86	11/2-6 UNC	34.2
NO.8-32 UNC	3.52	13/4-6 UNC	39.8
NO.10-24 UNC	3.91	2-5 UNC	45.3
NO.12-24 UNC	4.57	21/4-4 1/2 UNC	51.7
1/4-20 UNC	5.25	21/2-4 1/2 UNC	57.3
5/16-18 UNC	6.72	23/4-4 UNC	63.7
3/8-16 UNC	8.15	3-4 UNC	70.0
7/16-14 UNC	9.50	31/4-4 UNC	76.4
1/2-13 UNC	11.0	31/2-4 UNC	82.7
9/16-12 UNC	12.3	33/4-4 UNC	89.1
5/8-24 UNC	13.8	4-4 UNC	95.4
3/4-11 UNC	16.8	M20 x 2.0	18.0

(PF)

Tap Size	PF	reammer(use)	reammer(don't use)	PF
1/6-28	6.79	6.11	6.23	6.49
1/8-28	8.80	8.11	8.24	8.50
1/4-19	11.8	10.8	10.9	11.3
1/8-19	15.3	14.2	14.2	14.9
1/2-14	19.1	17.7	18.0	18.5
5/8-14	21.1			
3/4-14	24.6	23.1	23.3	24.0
7/8-14	28.3			
1-11	30.9	29.1	29.4	31.1
11/8-11	35.5			
11/4-11	39.5	37.5	38.0	38.8
11/2-11	45.4	43.4	43.8	44.5
13/4-11	51.4			
2-11	57.2	54.9	55.4	56.5
21/4-11	63.3			72.0
21/2-11	72.8	70.2	70.7	84.7

THCHNICAL INFORMATION

Imprint

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Please do not hesitate to contact us
if you have any enquiries or questions.

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