

# HYDRAULIC CHUCKS

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## Operating instructions for Hydraulic chucks

# Technical information and advantages

### Clamping standard tool shanks to DIN 6535 in hydraulic chucks

Direct clamping  
of tool preferred  
run-out  $\leq 0.003$  mm

**Form HA**  $\varnothing 6 \dots 20$  mm



**Form HA**  $\varnothing 25 \dots 32$  mm



**Form HB**  $\varnothing 6 \dots 20$  mm



Clamping of tool shank  
only with reduction bushes  
run-out  $\leq 0.005$  mm

**Form HB**  $\varnothing 25 \dots 32$  mm



**Form HE**  $\varnothing 6 \dots 20$  mm



**Form HE**  $\varnothing 25 \dots 32$  mm



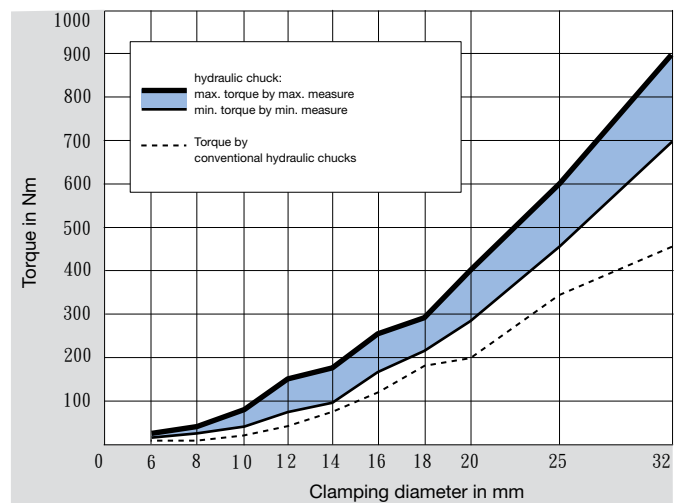
#### General notes:

Our hydraulic chucks must not be operated with motor-driven tools (impulse screwdrivers or similar). The hexagonal key should not exceed the key size over its entire length, this largely prevents excessive torque being transferred. We recommend the hexagon clamping key. A tightening moment of 10 Nm must not be exceeded.

Hydraulic chucks are suitable for clamping rotary symmetrical tools or workpieces. Straight shank tools without drive flats may be clamped up to  $\varnothing 32$  mm, but also shanks according to DIN 6535 form HA and HB up to  $\varnothing 20$  mm without reduction bushes. The given values in the table below are not to be exceeded. If the inserted length is less than the given minimum insertion depth or other tool shanks than specified above are applied, lower accuracy and breakage may occur!

Above all it is the high revolutions with High-Speed-Cutting operations that puts special demands on the tool holder. The clamping of the tool in a hydraulic chuck is, therefore, especially significant. Stock has developed a hydraulic chuck that offers reliable and powerful clamping with higher torque figures, guaranteeing excellent tool clamping in the tool holder.

Combined with precise concentricity (max. 3  $\mu\text{m}$  deviation from concentricity), a very fast and simple tool change as well as the vibration cushioning effect of the pressure chamber, the new hydraulic chuck can tackle the most demanding of machining tasks. The result is optimal tool life and excellent surface qualities or dimensional accuracy of the workpiece respectively.



Considerably higher:  
The clamping force of Stock's new HSK-A hydraulic chuck in comparison to conventional chucks.

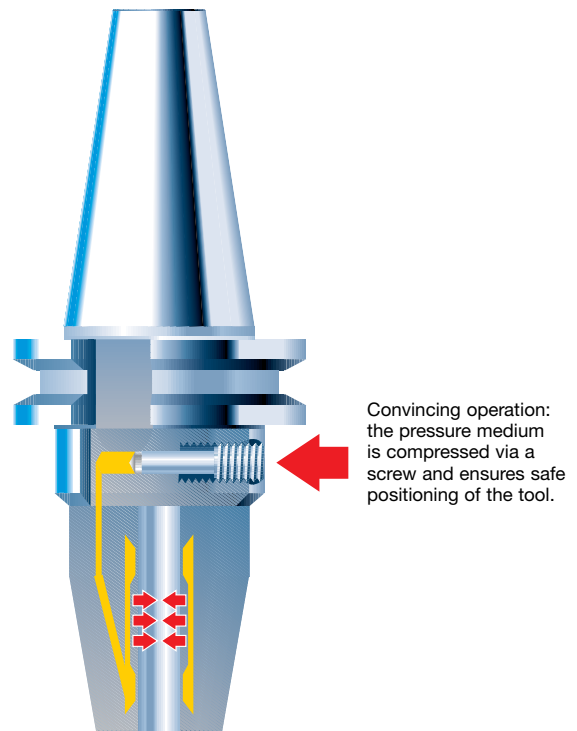
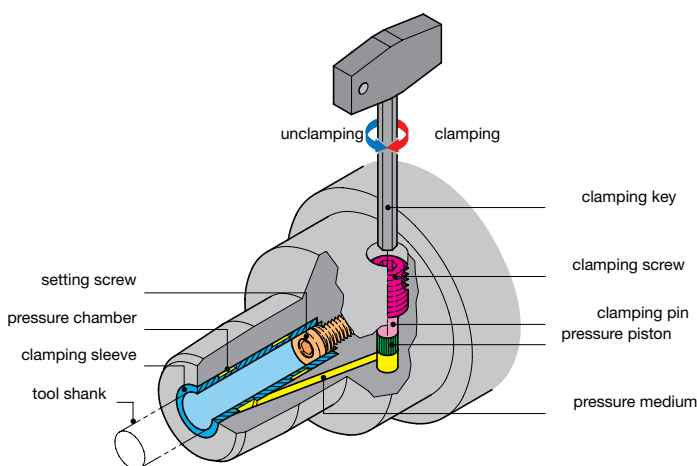
## Hydraulic chucks

### Technical information and advantages

Modern machining processes place heavy demands on tool holding. Hydraulic chucks provide excellent clamping characteristics combined with precise concentricity. Furthermore, they enable a simple and fast tool change, with the assistance of a special extraction key. Turning the pressure screw generates sufficient pressure in the pressure chamber resulting in an elastic deformation of the clamping bush, providing powerful tool clamping and precise concentricity. A safe and powerful fit is guaranteed. If reduction bushes are applied that are able to hold varying tool diameters, the tool application may be extended without problem. If such bushes are not applied, it is essential to observe the minimum clamping length!

#### A summary of the advantages:

- precise tool clamping with a maximum 3 µm deviation from concentricity
- transmission of high torque through (excellent clamping) optimised bush clamping system
- high speed compatibility (no centrifugal forces from clamping segments)
- precise concentricity, therefore excellent surface qualities and dimensional accuracy of the workpiece
- rapid tool change thanks to simple operation of the clamping screw
- optimal tool life
- hydraulic cushioning has vibration absorbing effect



for shank-Ø in mm	max. r.p.m. in 1/min	max. transferable rpm in Nm	min. insertion depth in mm	max. adjust- ment l <sub>3</sub> mm	max. rad. force F on chuck with 50 mm from the nose in N	operating temperature in °C	max. coolant pressure in bar
6 h <sub>6</sub>	50 000	20	27	10	225	20 - 50	80
8 h <sub>6</sub>	50 000	45	27	10	370	20 - 50	80
10 h <sub>6</sub>	50 000	90	31	10	540	20 - 50	80
12 h <sub>6</sub>	50 000	150	36	10	650	20 - 50	80
14 h <sub>6</sub>	50 000	185	36	10	900	20 - 50	80
16 h <sub>6</sub>	50 000	260	39	10	1410	20 - 50	80
18 h <sub>6</sub>	50 000	300	39	10	1580	20 - 50	80
20 h <sub>6</sub>	50 000	400	41	10	1860	20 - 50	80
25 h <sub>6</sub>	25 000	600	47	10	4400	20 - 50	80
32 h <sub>6</sub>	25 000	900	51	10	6500	20 - 50	80

## Technical information and advantages

Stock has considerably expanded its ISO taper and MAS-BT tool holder program. Naturally, the tool holders are of the usual high Stock quality. This means: ISO taper and MAS-BT tool holders are produced in a special, alloyed case hardened steel with a minimum tensile strength at the core of 900 N/mm<sup>2</sup>, hardened in a low distortion hardening process to HRC 58 at a case hardening depth of 0.8 to 1.0 mm. For reasons of longevity, the surface of the tool holder is subjected to an abrasive blasting process and protected against corrosion..

### Quality through precision

Stock's demand for highest precision also applies to tool holders. Therefore, ISO taper and MAS-BT chucks are precision ground: in the vicinity of the ISO taper to Ra ≤ 0.2, at the holder face to Ra ≤ 0.4. The taper tolerance is better than AT 3 with a measuring accuracy of ≤ 1 μm. Detailed information regarding the form and positional tolerances can be found for the individual tool holders on the respective pages in the catalogue. The tolerances of the holder bore and the spigot are approximately 2/3 of the DIN tolerance.

### Balancing

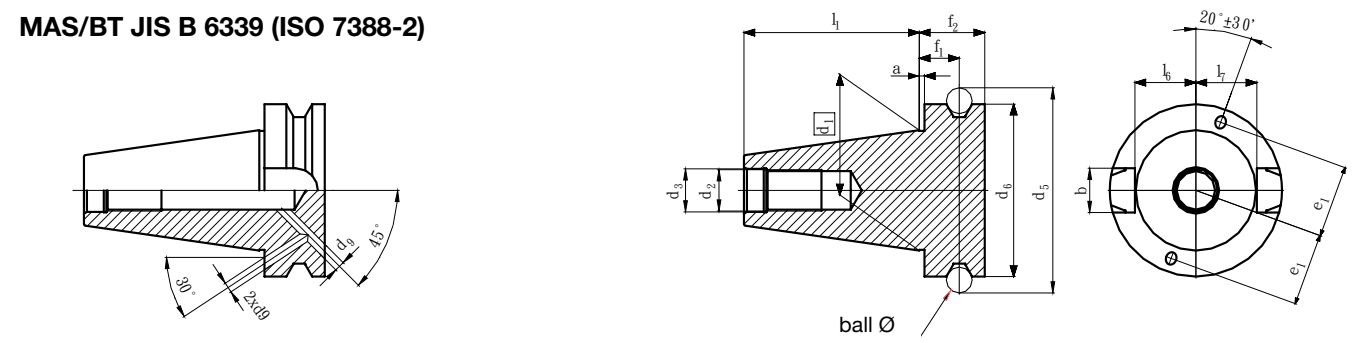
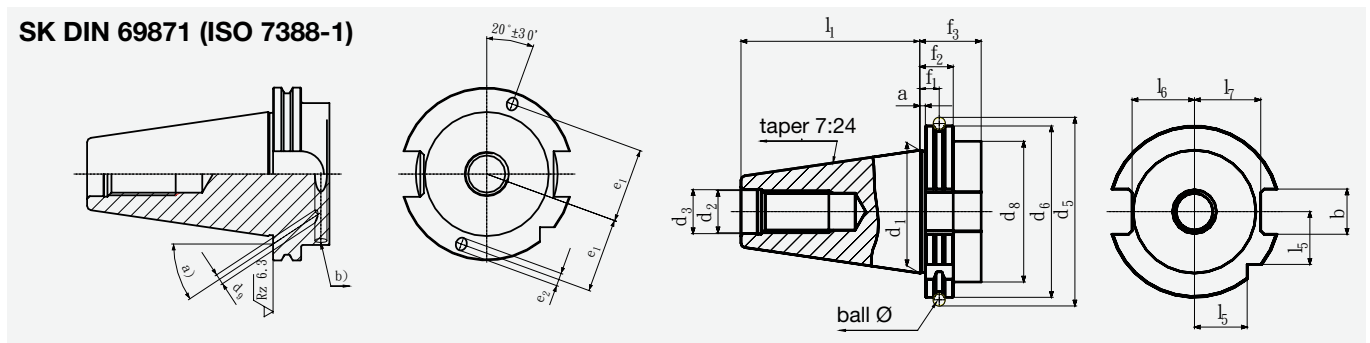
Tool holders suitable for increased speeds are generally pre-balanced. For this purpose, we have determined the imbalance and entered the balancing areas as well as balancing bores on the drawings. This levels out the imbalance to a large extent and up to approximately 8000 rev./min precision balancing is unnecessary. For higher revolutions, the pre-balanced tool holders must be precision balanced to G 6.3 or G 2.5 respectively.

### Type AD/B

ISO taper tool holders generally produced are type AD/B. Supplied is type AD, the coolant bores at the collar are sealed with screws.

### General dimensions and tolerances

The following dimensions apply to our ISO taper and MAS-BT tool holders:



ISO taper	a	ball-Ø	b	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>5</sub>	d <sub>6</sub>	d <sub>8</sub>	d <sub>9</sub>	e <sub>1</sub>	f <sub>1</sub>	f <sub>2</sub>	f <sub>3</sub>	l <sub>1</sub>	l <sub>5</sub>	l <sub>6</sub>	l <sub>7</sub>
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
SK30	3.2	7	16.1	31.75	M12	13	59.3	50.00	45	4	21	11.1	19.1	35	47.80	15.00	16.4	19.0
SK40	3.2	7	16.1	44.45	M16	17	72.3	63.55	50	4	27	11.1	19.1	35	68.40	18.5	22.8	25.0
SK50	3.2	7	25.7	69.85	M24	25	107.25	97.50	80	6	42	11.1	19.1	35	101.75	30.0	35.5	37.7
BT30	2.0	8	16.1	31.75	M12	12.5	56.03	46.00	-	-	-	13.6	22.0	-	48.40	-	16.3	16.3
BT40	2.0	10	16.1	44.45	M16	17	75.56	63.00	-	4	27	16.6	27.0	-	65.4	-	22.6	22.6
BT50	3.0	15	25.7	69.85	M24	25	118.89	100.00	-	5.4	42	23.2	38.0	-	101.8	-	35.4	35.4

## Hydraulic chucks

### Hydraulic chucks ISO

#### Catalog no. 78213

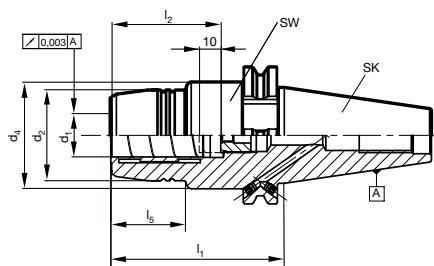
##### Product information

- ISO taper to DIN ISO 7388-1 form AD/AF
- form B supplied with threaded pins in bores
- balancing quality: G2.5 / 25,000 rev./min
- axial length setting
- for tool shank tolerance h6
- suitable for tools with internal cooling

##### Scope of delivery

- incl. adjustment screw
- incl. hexagon chuck key
- order pull studs separately

Standard	Stock std.
Shank	SK (ISO-taper)
Discount group	147



ISO-taper	for shank Ø d1	d2	d4	l1	l2	l5	SW	kg	Code no.
SK	mm	mm	mm	mm	mm	mm			
40	6.000	26.000	49.500	80.50	37.00	29.50	5.00	1.50	6.040
40	8.000	28.000	49.500	80.50	37.00	30.00	5.00	1.50	8.040
40	10.000	30.000	49.500	80.50	41.00	31.00	5.00	1.50	10.040
40	12.000	32.000	49.500	80.50	80.50	31.20	5.00	1.40	12.040
40	14.000	34.000	49.500	80.50	80.50	31.50	5.00	1.50	14.040
40	16.000	38.000	49.500	80.50	49.00	33.00	5.00	1.50	16.040
40	18.000	40.000	49.500	80.50	49.00	33.00	5.00	1.50	18.040
40	20.000	49.500	49.500	64.50	64.50		5.00	1.40	20.040
50	12.000	32.000	49.500	80.50	46.00	31.50	5.00	3.50	12.050
50	20.000	42.000	49.500	80.50	80.50	33.70	5.00	4.10	20.050
40	20.000	42.000	49.500	80.50	80.50	33.70	5.00	1.50	20.140
50	32.000	72.000	72.000	81.00	81.00		6.00	4.10	32.050

## Hydraulic chucks

### Reduction bushes

#### Catalog no. 78368

##### Product information

- for clamping smaller shank-Ø in hydraulic chucks
- clamping-Ø for tool shank tolerance h6
- closed endface, therefore leakproof up to 80 bar
- concentricity  $\leq 2 \mu\text{m}$
- with adjustable limit stop
- the application of reduction bushes makes it possible to increase the permissible transferable torque by approx. 25% in comparison to direct clamping

##### Scope of delivery

- incl. stop element
- special versions on request

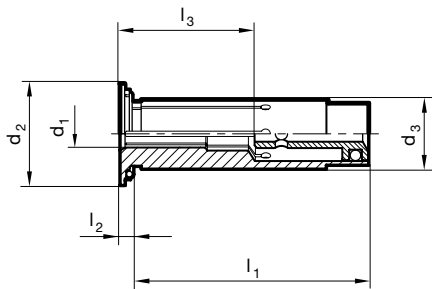
Standard

Stock std.

Shank

Discount group

114



for shank Ø d1	d3	d2	l1	l2	l3	Code no.
mm	mm	mm	mm	mm	mm	
3.000	12.000	16.500	45.00	2.00	26.50	3.012
3.000	20.000	24.000	50.50	2.00	28.50	3.020
4.000	12.000	16.500	45.00	2.00	26.50	4.012
4.000	20.000	24.000	50.50	2.00	28.50	4.020
6.000	12.000	16.500	45.00	2.00	34.50	6.012
6.000	20.000	24.000	50.50	2.00	37.50	6.020
6.000	32.000	35.500	60.50	3.00	35.50	6.032
8.000	12.000	16.500	45.00	2.00	34.50	8.012
8.000	20.000	24.000	50.50	2.00	37.50	8.020
8.000	32.000	35.500	60.50	3.00	35.50	8.032
10.000	20.000	24.000	50.50	2.00	42.50	10.020
10.000	32.000	35.500	60.50	3.00	40.50	10.032
12.000	20.000	24.000	50.50	2.00	47.50	12.020
12.000	32.000	35.500	60.50	3.00	42.50	12.032
14.000	20.000	24.000	50.50	2.00	47.50	14.020
14.000	32.000	35.500	60.50	3.00	42.50	14.032
16.000	20.000	24.100	50.50	2.00	47.50	16.020
16.000	32.000	35.500	60.50	3.00	50.50	16.032
18.000	32.000	35.500	60.50	3.00	50.50	18.032
20.000	32.000	35.500	60.50	3.00	50.50	20.032
25.000	32.000	35.500	60.50	3.00	58.50	25.032

## Hydraulic chucks

### Reduction bushes with peripheral cooling

#### Catalog no. 78369

##### Product information

- for clamping smaller shank-Ø in hydraulic chucks
- clamping-Ø for tool shank tolerance h6
- with coolant slots for peripheral cooling, therefore process and tool life improvement
- concentricity  $\leq 2 \mu\text{m}$
- with adjustable limit stop
- the application of reduction bushes makes it possible to increase the permissible transferable torque by approx. 25% in comparison to direct clamping

##### Scope of delivery

- incl. stop element
- special versions on request

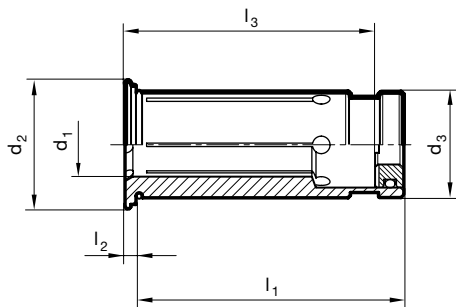
Standard

Stock std.

Shank

Discount group

114



for shank Ø d1	d3	d2	l1	l2	l3	Code no.
mm	mm	mm	mm	mm	mm	
3.000	12.000	16.500	45.00	2.00	26.50	3.012
3.000	20.000	24.000	50.50	2.00	28.50	3.020
4.000	12.000	16.500	45.00	2.00	26.50	4.012
4.000	20.000	24.000	50.50	2.00	28.50	4.020
6.000	12.000	16.500	45.00	2.00	34.50	6.012
6.000	20.000	24.000	50.50	2.00	37.50	6.020
6.000	32.000	35.500	60.50	3.00	35.50	6.032
8.000	12.000	16.500	45.00	2.00	34.50	8.012
8.000	20.000	24.000	50.50	2.00	37.50	8.020
8.000	32.000	35.500	60.50	3.00	35.50	8.032
10.000	20.000	24.000	50.50	2.00	42.50	10.020
10.000	32.000	35.500	60.50	3.00	40.50	10.032
12.000	20.000	24.000	50.50	2.00	47.50	12.020
12.000	32.000	35.500	60.50	3.00	42.50	12.032
14.000	20.000	24.000	50.50	2.00	47.50	14.020
14.000	32.000	35.500	60.50	3.00	42.50	14.032
16.000	20.000	24.100	50.50	2.00	47.50	16.020
16.000	32.000	35.500	60.50	3.00	50.50	16.032
18.000	32.000	35.500	60.50	3.00	50.50	18.032
20.000	32.000	35.500	60.50	3.00	50.50	20.032
25.000	32.000	35.500	60.50	3.00	58.50	25.032