

Operation guide



TYPE	HSK - Automatic clamping system	HSK - SUPER-LOCK	HSK - Manual clamping set	Lubritool® lubrication device
	Tool clamping system			
Interface	HSK	HSK	HSK	HSK
Actuation				-
Energy store				-
Page	8007	8014	8018	8022



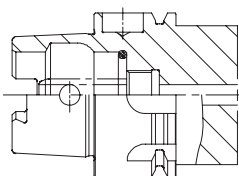
TYPE	SK - Automatic clamping system	F-senso spindle	Built-in clamping head RESK	Clamping heads SPK
	Tool clamping system	Clamping force measuring device	For machine components	Pallet clamping
Interface	SK	suitable for HSK, SK and SPK	universal interface	SPK taper
Actuation		-		
Energy store		-		
Page	8026	8032	8036	8040



Designs

Positive taper lock for automatic tool change

Form A / T



Positive taper lock (version A)

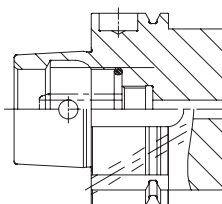
Automatically-changeable tool adapter, torque transmission on positive taper lock, small square face with gripping channel.

Applications:

Machine tools (e.g. lathes, drilling and milling machines), high speed range, conventional material machining, torque transmission via milled driver within the spindle adapter.

Design T analog to design A, but limited backlash of the driver.

Form B



Positive taper lock (version B)

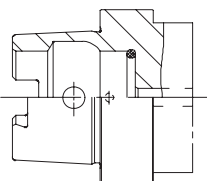
Automatically-changeable tool adapter, torque transmission on collar via grooves, large square face with gripping channel.

Applications:

Machine tools (e.g. lathes, drilling and milling machines), medium speed range, heavy-duty material machining, torque transmission via driver keys, suitable for heavy-duty material machining (cutter heads).

Positive taper lock for manual tool change

Form C



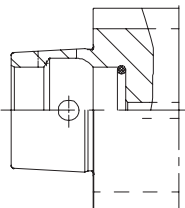
Positive taper lock (version C)

Manually-changeable tool adapter, torque transmission on positive taper lock, small square face without gripping channel.

Applications:

Machine tools (e.g. lathes, drilling and milling machines), high speed range, conventional material machining, torque transmission via milled driver within the spindle adapter.

Form D



Positive taper lock (version D)

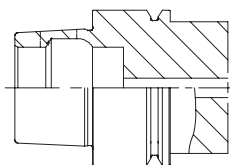
Manually-changeable tool adapter, torque transmission on collar via grooves, large square face without gripping channel.

Applications:

Machine tools (e.g. lathes, drilling and milling machines), medium speed range, heavy-duty material machining, torque transmission via driver keys, suitable for heavy-duty material machining (cutter heads).

Positive taper lock for automatic tool change and for high speeds (HSC)

Form E



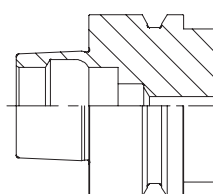
Positive taper lock (version E)

Automatically-changeable tool adapter, torque transmission via collar and spherical surface, small square face with gripping channel.

Applications:

Machine tools (e.g. lathes, drilling and grinding machines), extremely high speed range (depending on diameter size), grinding work, wood machining, suitable for HSC, utilised for minimal material removal.

Form F



Positive taper lock (version F)

Automatically-changeable tool adapter, torque transmission via collar and spherical surface, large square face with gripping channel.

Applications:

Machine tools (e.g. lathes, drilling and grinding machines), extremely high speed range (depending on diameter size), grinding work, wood machining, suitable for HSC, utilised for minimal material removal.



CONVINCING ACROSS THE BOARD

- ⊕ - 27 % shorter installation length of clamping set for lower space requirement
- ⊕ - 27 % shorter distance of plane face to clamping shoulder for compact force flow
- ⊕ - 33 % lower spring force required for clamping
- ⊕ + 39 % higher clamping force for safe and reliable clamping of the tools

- ⊕ Standard DLC coating for longer service life
- ⊕ Simple and fast installation of clamping sets
- ⊕ Safe release and ejection due to forced guidance of clamping segments without additional spring elements
- ⊕ Lower wear of the spindle due to the loss of sliding at the clamping shoulder

(Compared to the usual clamping systems of size HSK-A 63)

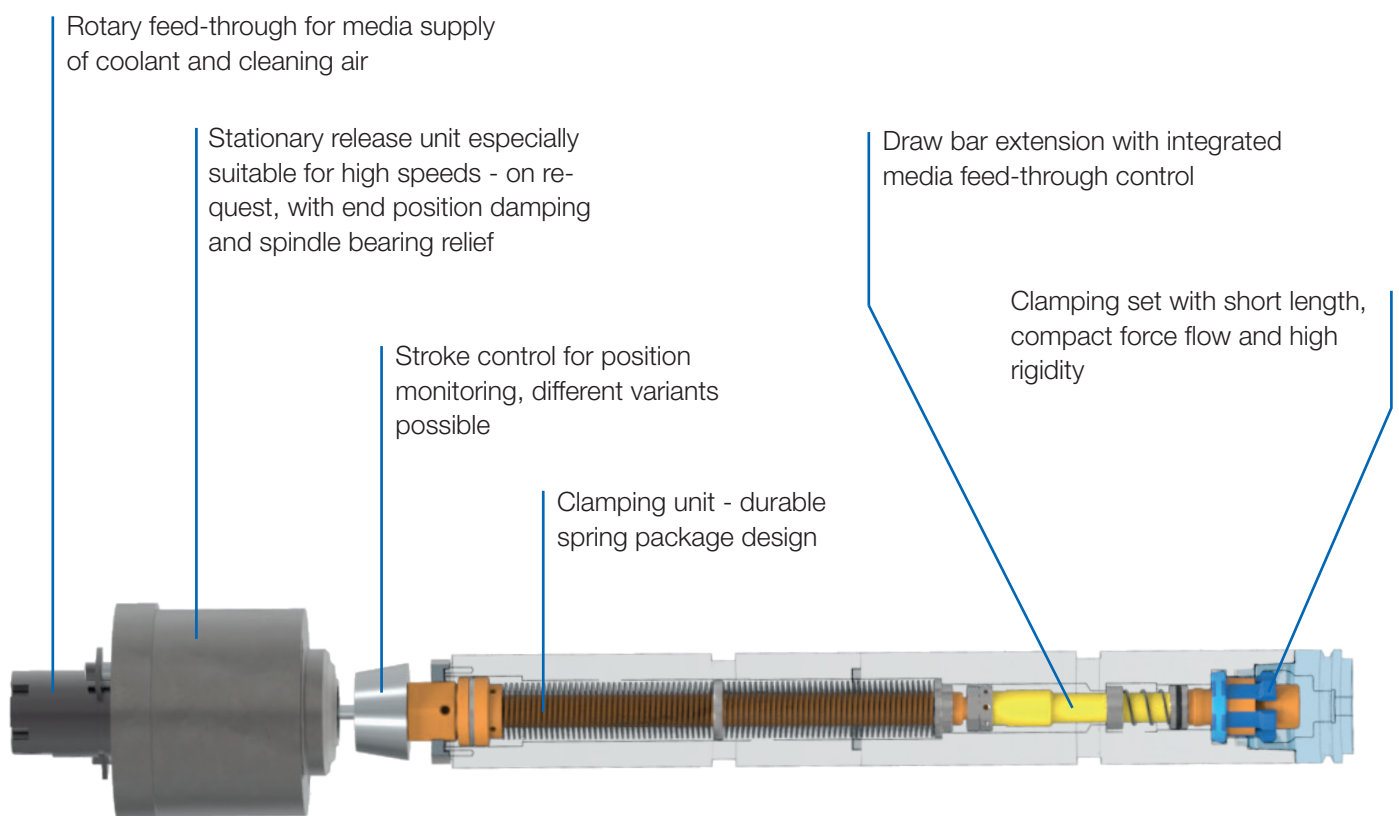


HSK - AUTOMATIC CLAMPING SYSTEM

Reliability, safety and long service life are the main requirements for a tool clamping system. It is also important for clamping systems to be able to be individually adapted to the customer requirements. Many years of experience as well as technical dominance in all areas allow RÖHM to meet these requirements exactly.

ADVANTAGES AT A GLANCE

- ⊕ Proven functional principle for safe clamping and release of the tools
- ⊕ 39 % higher clamping force than required in the standard
- ⊕ Individual adaptation to customer-specific requirements





Technical data

For automatic tool clamping system of positive taper lock tools HSK to DIN 69893

ADVANTAGES:

- ⊕ Steady clamping force due to the symmetric clamping surfaces of the clamping segments
- ⊕ Compact power flow resulting in high static and dynamic rigidity of the tool joint
- ⊕ High power amplification by transmission of the clamping set
- ⊕ Force controlled release of the collet
- ⊕ Automatic ejection of the tool by the clamping bolt during release
- ⊕ Sealed central coolant supply system
- ⊕ Perfect suitable to be built into the spindles of machine tools and machining centers

TECHNICAL FEATURES

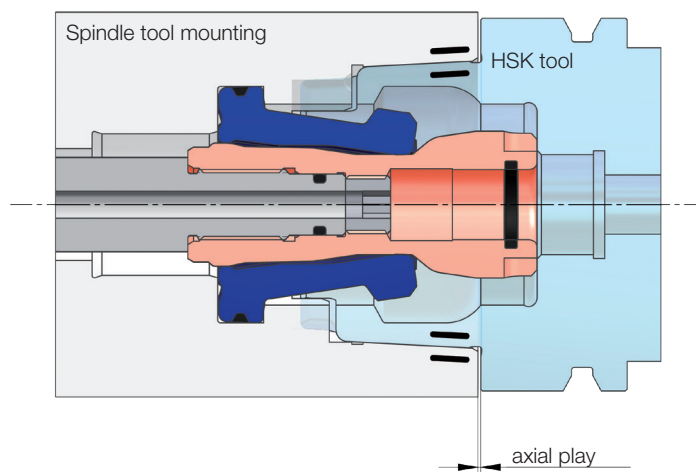
The advantages of the positive taper lock system originates in the combination of defined radial pretensioned taper and tool face stop. A safe transmission of the torque is achieved by the elastic deformation of the taper resulting in a gap-free connection with the tool. High interchanging and repeating accuracy is leading to increased production quality during the machining.

The clamping process is started by the springs and the movement is transmitted to the clamping set by the draw bar, in direction F_Z . The clamping segments of the collet are pushed to the outside by the clamping bolt. The clamping forces are multiple amplified by the angled arrangement of the contact areas. The produced axial forces F_A and radial forces F_R result in a pretension of the positive taper on the entire taper area and, the axial contact area. The proportion of the axial contact force is over 80 % of the total clamping force. This explains the importance of the size of the axial contact area concerning the critical load and rigidity of the taper and hollow shank joint.

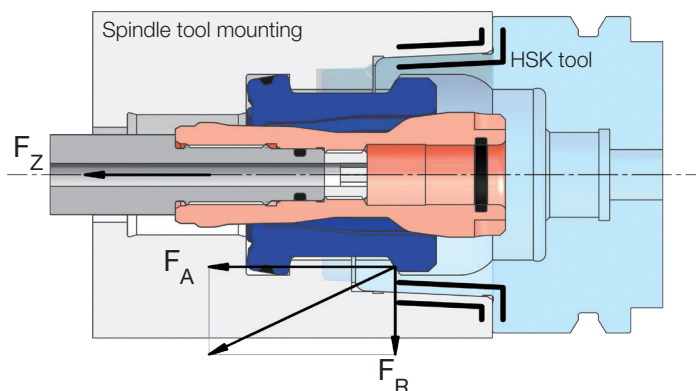
See also DIN 69893 - Hollow taper shanks types B, D and F. Hollow taper shanks types A and C have two additional positive drive grooves at the end of the taper which interlock with the tool mounting and produce a form-locking, orientated radial positioning.

During the release the tool will be positively unlocked and ejected from the tool spindle by the multifunctional clamping bolt and taper sleeve.

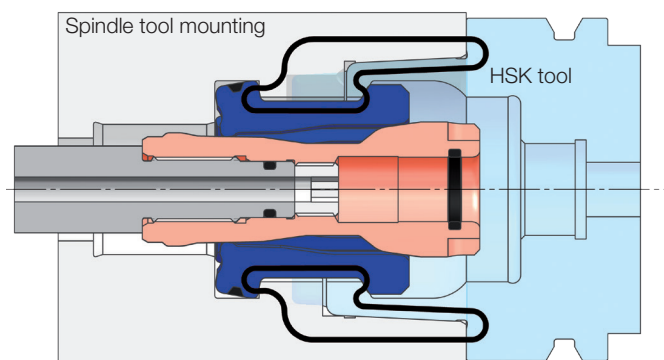
Joining position with locating surface



Clamping situation with locating surface



Clamping situation with compact power flow





HSK - Automatic clamping systems

Clamping set - Standard



APPLICATION

Clamping set for HSK clamping systems.

TYPE

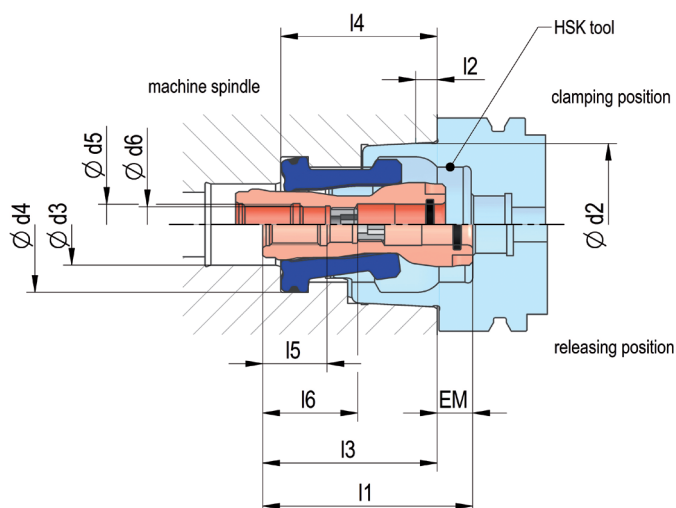
Standard version in compact design.

CUSTOMER BENEFITS

- ⊕ DLC coating guarantees a longer service life of the clamping set
- ⊕ Short length for compact force flow and high rigidity
- ⊕ High force amplification due to transmission in the clamping set
- ⊕ Safe clamping and unclamping of the tools

TECHNICAL FEATURES

- Connected collet segments simplify installation



C 15

Automatic HSK clamping set - Standard in compact design

Item No.	1037445	1037446	1037447	1037448	1037449	1037450	1037451	1037452
Size HSK-A/C/E/T	25	32	40	50	63	80	100	125
Size HSK-B/D/F	32	40	50	63	80	100	125	160
Total stroke	7	9	13	15	14	17	18	20
Pull-out stroke AM	0,2	0,3	0,5	0,5	0,5	0,5	0,8	0,8
Taper $\varnothing d_2$	19	24	30	38	48	60	75	95
d3	10	12	15	18	24	32	40	46
d4	17	21	25,5	32	40	50	63	80
d5	M4	M6x0,75	M8x1	M10x1	M12x1	M16x1,5	M20x1,5	M24x1,5
d6	4,2	6,5	6,4	8	10,5	14,3	17,5	20
l1	28,8	35,1	42,5	50	62	80	98,5	121,2
l2	2,5	3,2	4	5	6,3	8	10	12,5
l3	22,6	26,7	34	39,5	51,5	67	85,2	104,4
l4	20,3	24,5	31,9	37,2	46,2	59,7	73	96,9
l5	9,5	12,5	13	17	19	30	34,5	40
l6	2,5	3	20	26	28	42	51	60
Adjusting size EM	6,2	8,3	8,5	10,5	10,5	13	13,3	16,8
Draw bar pull kN	0,7	1	2	3	4	7,5	10	15
Clamping force kN	3,5	5	10	15	25	37,5	50	70
Max. application speed ¹⁾ min ⁻¹	70000	48000	36000	30000	24000	18000	14000	10000

¹⁾ Please note the speed diagram according to the corresponding clamping set datasheet



HSK - Automatic clamping systems

Clamping set - High Speed



APPLICATION

Clamping set suited for high speeds.

TYPE

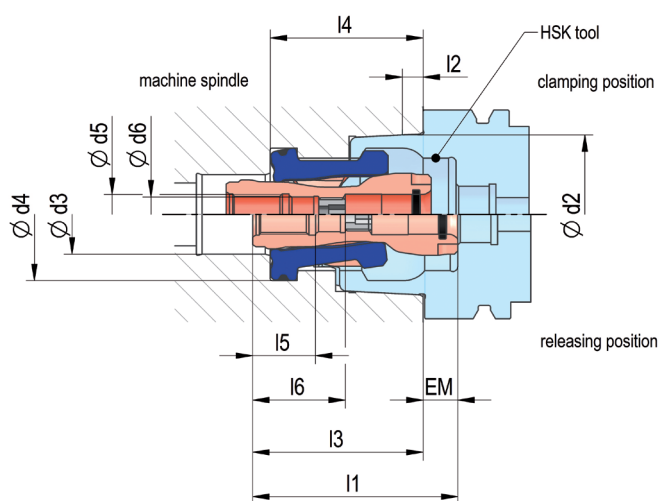
High Speed version for higher speeds due to exact guidance of the clamping segments.

CUSTOMER BENEFITS

- ③ DLC coating guarantees a longer service life of the clamping set
- ③ Short length for compact force flow and high rigidity
- ③ High force amplification due to transmission in the clamping set
- ③ Safe clamping and unclamping of the tools
- ③ High balancing quality maintained due to exact guidance of the collet chuck

TECHNICAL FEATURES

- Connected collet segments simplify installation



C 15

Automatic HSK clamping set High Speed, due to the exact guidance of the collet chuck segments, this clamping set is especially suitable for higher speeds

Item No.	594332	1035347	1011063	1037501	1015151	474917	462324
Size HSK-A/C/E/T	25	32	40	50	63	80	100
Size HSK-B/D/F	32	40	50	63	80	100	125
Total stroke	7	9	13	15	14	17	18
Pull-out stroke AM	0,2	0,3	0,5	0,5	0,5	0,5	0,8
Taper $\varnothing d_2$	19	24	30	38	48	60	75
d3	10	12	15	18	24	32	40
d4	17	21	25,5	32	40	50	63
d5	M4	M6x0,75	M8x1	M10x1	M12x1	M16x1,5	M20x1,5
d6	4,2	6,5	6,4	8	10,5	14,3	17,5
l1	28,8	35,1	42,5	50	62	80	98,5
l2	2,5	3,2	4	5	6,3	8	10
l3	22,6	26,7	34	39,5	51,5	67	85,2
l4	20,3	24,5	31,9	37,2	46,2	59,7	73
l5	9,5	12,5	13	17	19	30	34,5
l6	2,5	3	20	26	28	42	51
Adjusting size EM	6,2	8,3	8,5	10,5	10,5	13	13,3
Draw bar pull kN	0,7	1	2	3	4	7,5	10
Clamping force kN	3,5	5	10	15	25	37,5	50
Max. application speed ¹⁾ min ⁻¹	120000	80000	60000	50000	40000	30000	24000

¹⁾ Please note the speed diagram according to the corresponding clamping set datasheet



HSK - Automatic clamping systems

Assembly tool for HSK clamping sets



APPLICATION

For an easy, fast and save mounting of HSK clamping sets. Mounting of the collet into the spindle with only a few movements.

TYPE

Please check the suitability for your clamping set before ordering. You may find the information in the Manual.

CUSTOMER BENEFITS

- ③ Avoidance of damages at the clamping set and the spindle
- ③ Easy and save installation of the clamping set
- ③ User-friendly design

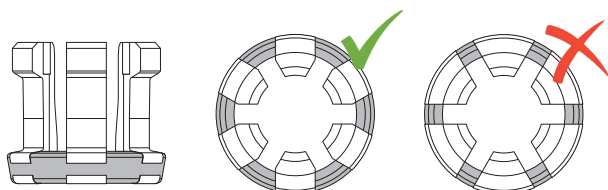
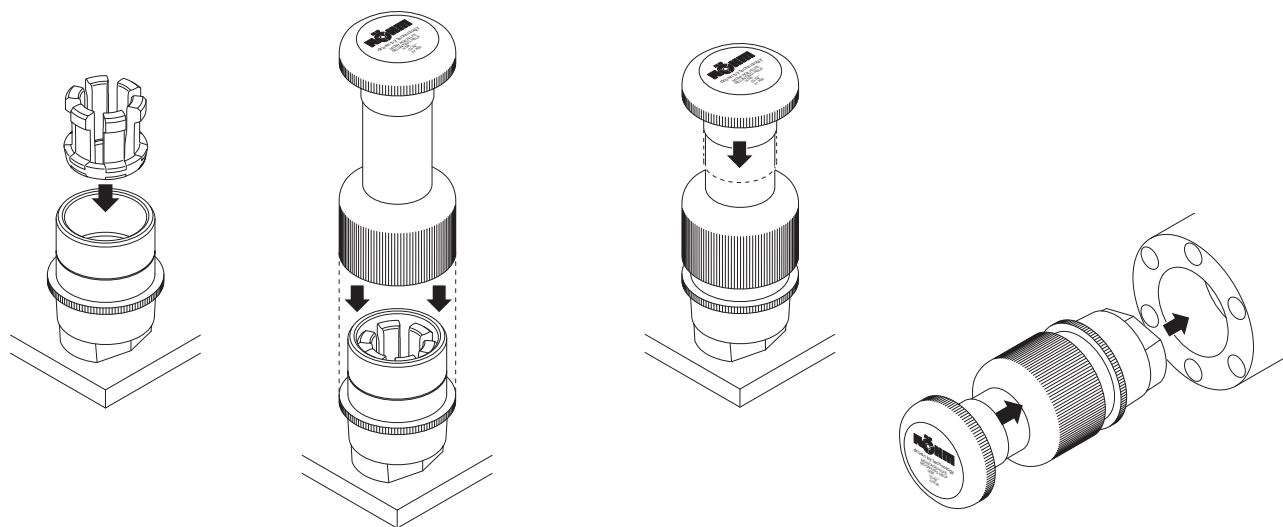
TECHNICAL FEATURES

- Available for all HSK sizes A 25 - 125
- Works with all HSK types A/C/E/T/B/D/F
- Fits for ROHM clamping sets with short and slim segments
- Special design for ROHM segment collets in „long“ design in size HSK-E-50/F-63

C 15

Assembly tool for HSK clamping sets

Item No.	1329030	1329025	1329015	1329001	1324230	1329020	1329010	1329035
Size HSK-A/C/E/T	25 (HSK E)	32	40	50	63	80	100	125
Size HSK-B/D/F	32	40	50	63	80	100	125	160





HSK - Automatic clamping systems

Clamping unit and draw bar extension



APPLICATION

Actuation unit for HSK clamping systems.

TYPE

Spring-actuated clamping unit with individually adapted draw bar extension.

CUSTOMER BENEFITS

- ⊕ Energy stored in the spring package
- ⊕ Slender design
- ⊕ Reliable function thanks to sturdy design

TECHNICAL FEATURES

- Clamping system is designed individually for the spindle



Stationary release unit



APPLICATION

Stationary release unit for tool clamping systems.

TYPE

Hydraulic or pneumatic design, stationary attachment.

CUSTOMER BENEFITS

- ⊕ Clamping system and release piston are separated from one another during the spindle rotation
- ⊕ No oil supply required in the rotating spindle part
- ⊕ Low-wear operation

TECHNICAL FEATURES

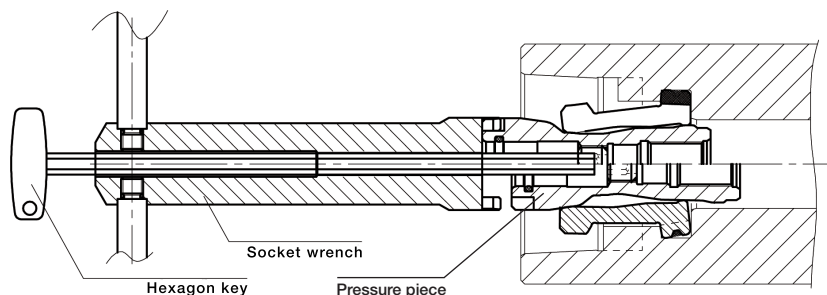
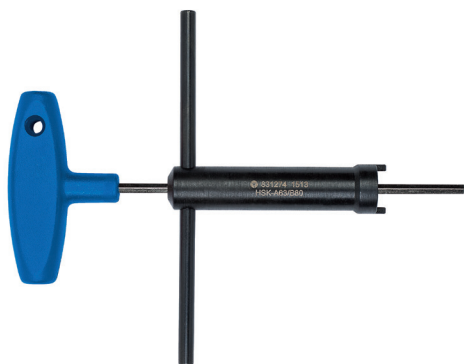
- Release system designed individually for the spindle





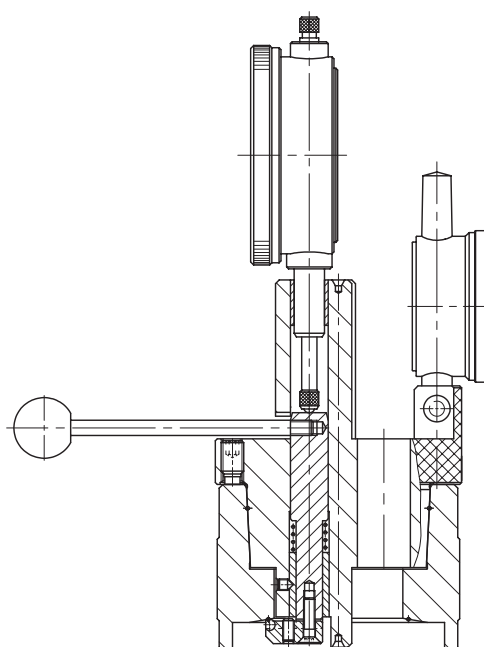
Accessories HSK - Automatic clamping systems

Accessories



C 15
Socket wrench for pressure piece screw-in assembly

Item No. Socket wrench	Size HSK-A/C/E/T	Size HSK-B/D/F	Item No. Hexagon wrench	L	SW
830252	32	40	830253	wrench	-
831296	40	50	863494	200	3
831291	50	63	367665	200	4
831274	63	80	844250	200	5
831289	80	100	756660	200	6
831434	100	125	381601	200	8
812550	125	160	698938	200	10



C 15
Measuring device for measuring the installation contour (clamping shoulder) for automatic HSK clamping sets

Item No.	1181005	1156601	1179168	1201360	1149877	1233614	1233553	1233615
Size HSK-A/C/E/T	25	32	40	50	63	80	100	125
Size HSK-B/D/F	32	40	50	63	80	100	125	160



50 % SHORTER LENGTH THAN CLAMPING SYSTEMS WITH SPRINGS

HSK clamping system with SUPER-LOCK



HSK clamping system with
spring package

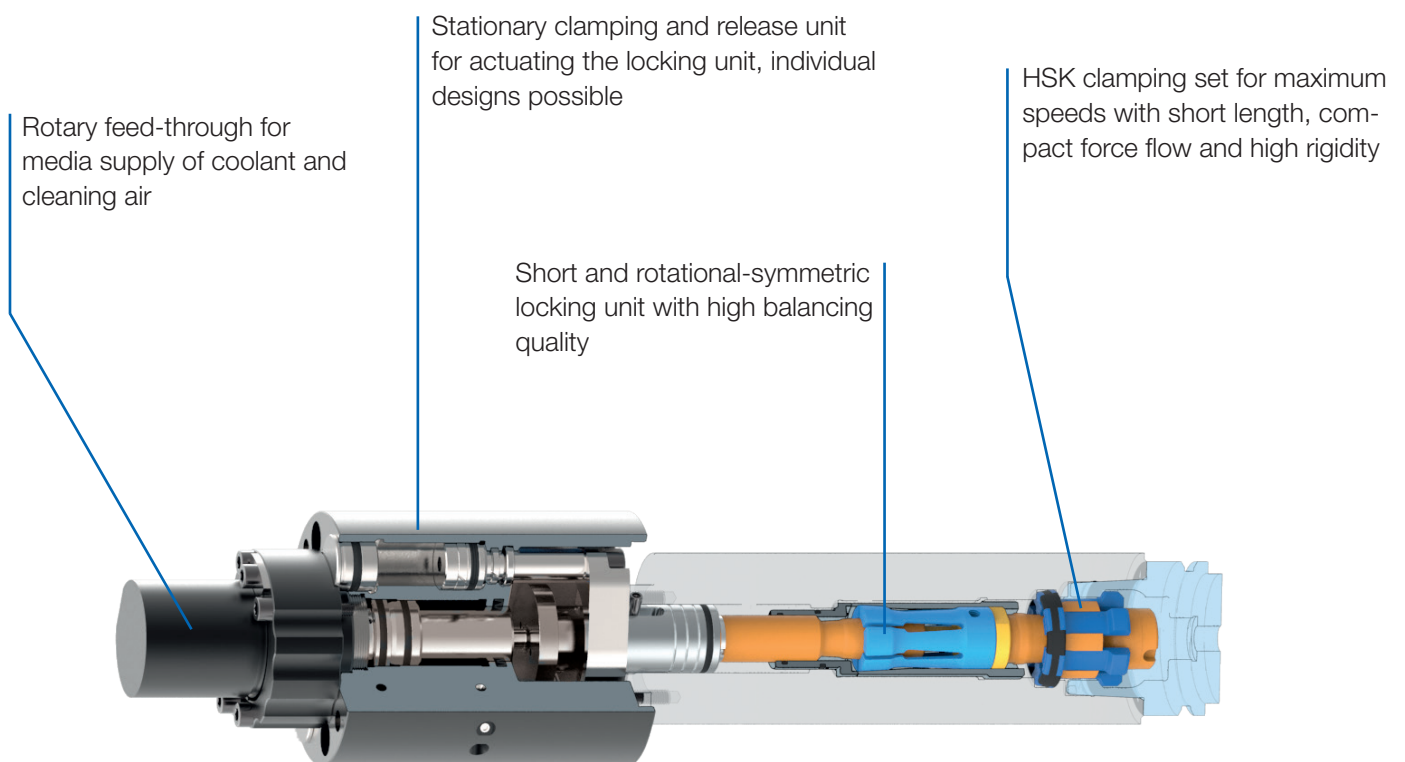


HSK - SUPER-LOCK

The trend toward modern milling machines involves two requirements with regard to the automatic clamping systems. In the area of High Speed Cutting (HSC), increasingly higher speeds and therefore higher balancing qualities are required. Due to higher machining forces during High Performance Cutting (HPC), interfaces must additionally be more rigid. SUPER-LOCK meets these requirements, and with an approx. 50 % shorter length as compared with conventional clamping systems with springs.

ADVANTAGES AT A GLANCE

- ⊕ Compact and extremely short design
- ⊕ Optimally suited for maximum speeds and machining forces
- ⊕ Lower force introduced into the spindle as compared to spring clamping systems



Clamping unit



APPLICATION

For HSK clamping systems.
Can be used universally, preferably for high speeds.

TYPE

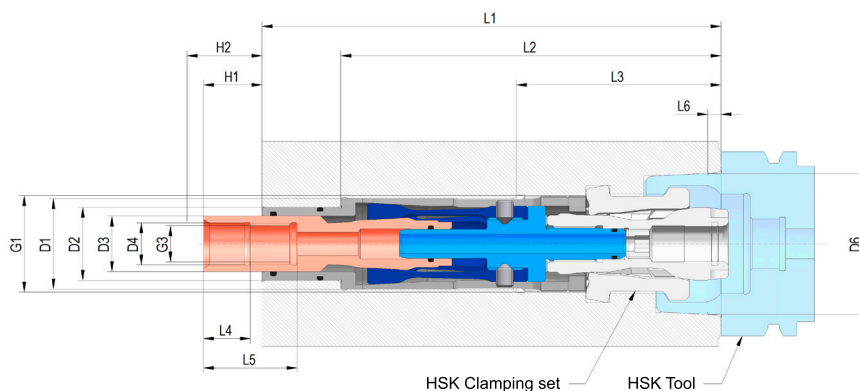
Locking unit for HSK clamping set.
HSK clamping set separately available.

CUSTOMER BENEFITS

- ⊕ Without springs - clamping force is maintained with self-locking
- ⊕ Short and compact design
- ⊕ Low force transmission during releasing

TECHNICAL FEATURES

- For actuation, a clamping and unclamping unit are required



C 15

Clamping unit SUPER-LOCK, self-locking mechanism without springs for automatic tool clamping

Item No.	1122572	1122574	1122718	1122725	1122569	1122731	1122581
Size HSK-A/C/E/T	25	32	40	50	63	80	100
Size HSK-B/D/F	32	40	50	63	80	100	125
D1	13,2	15,1	18,6	23,6	31	39	49
D2	11	12,5	16,4	20,4	25	31,2	40
D3	8	10	13	16	19	24	31
D4	6,2	8,2	10,3	12,5	14,4	17	21
D6	19	24	30	38	48	60	75
G1 mm	M14x0,5	M16x0,75	M20x1	M25x1	M33x1	M42x1,5	M52x2
G3	M6x0,75	M8x0,75	M10x1	M12x1,25	M14x1,5	M16x1,5	M20x2
H1 mm	10,8	13,6	17,8	19,9	20	27,3	30,8
H2	15,6	18,9	22,8	26,3	28	38,3	42,4
L1	71,4	83,5	106,4	127,7	157	201,3	262
L2	56	69	86	104	130	167	207
L3	32,25	36,7	45,9	57	70	88	110
L4	6,3	8	10	12,5	16	20	25
L5	12,5	16	20	25	32	40	50
L6	2,5	3,2	4	5	6,3	8	10
Clamping set	594332	1035347	1011063	1037501	1015151	474917	462324
Draw bar pull kN	0,7	1	2	3	4	7,5	10
Clamping force kN	3,5	5	10	15	25	37,5	50
Max. application speed ¹⁾ min ⁻¹	120000	80000	60000	50000	40000	30000	24000

¹⁾ Please note the speed diagram according to the corresponding clamping set datasheet



Notes



THE RIGHT FUNCTIONAL PRINCIPLE FOR EVERY APPLICATION



Clamping system with stationary release unit

Stationary release unit is disconnected from the rotating system during spindle rotation and is therefore especially suited for higher speeds.



Clamping system with integrated release hydraulic

Hydraulic release mechanics are attached/installed on the spindle shaft. No force acts on the spindle bearing during the tool change.

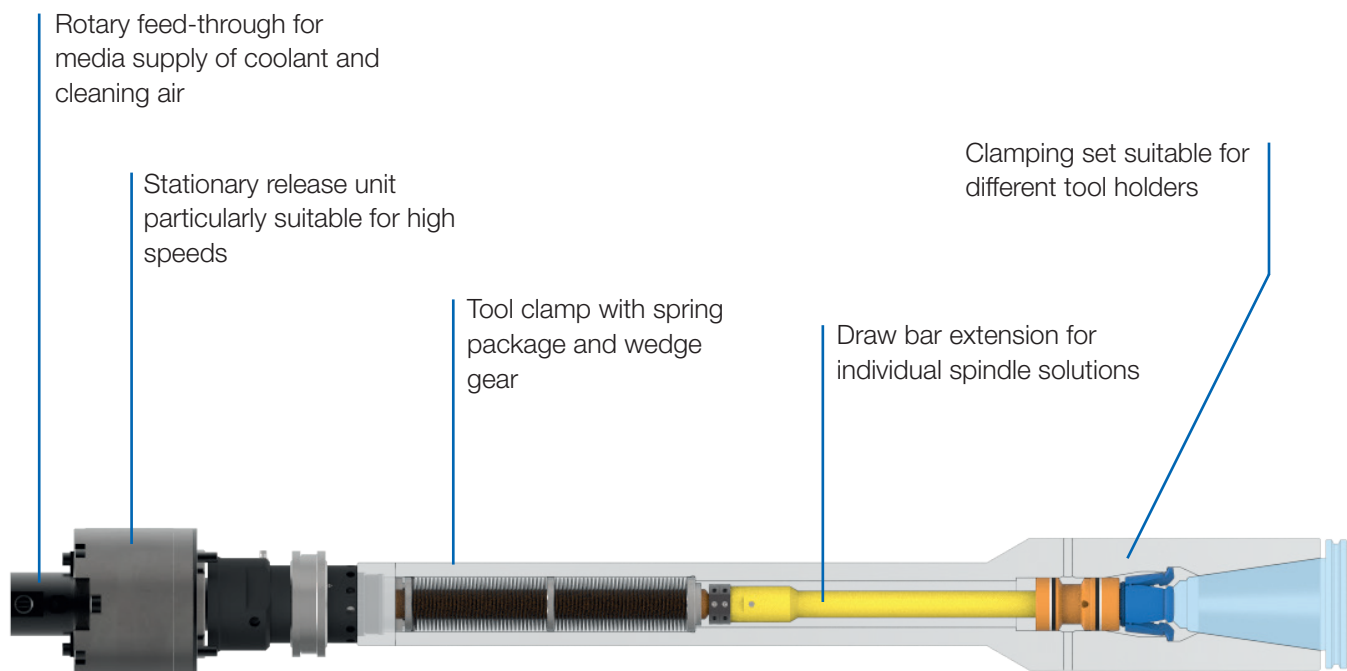


SK - AUTOMATIC TOOL CLAMPING SYSTEM

For the automatic clamping of steep-taper tools, reliability, safety and long service life are essential basic requirements. Particularly for machine tools with a rotating working spindle, high rotational frequencies and high clamping forces. Due to many years of experience in this area, RÖHM can specifically see to customized requirements, thereby meeting this requirement.

ADVANTAGES AT A GLANCE

- ⊕ Safe clamping and release of the steep-taper tools by using proven components
- ⊕ High variant variety for a wide range of installation situations
- ⊕ Individual adaptation to customer-specific requirements





SK - Automatic clamping systems

SK clamping sets



APPLICATION

For the automatic clamping of steep-taper tools.

TYPE

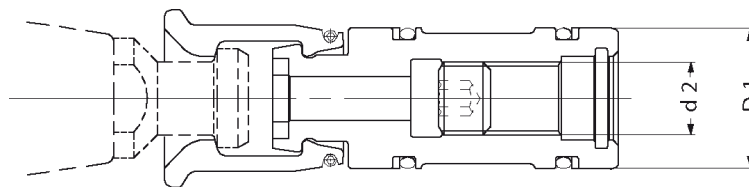
Available in different versions to match the respective tool.

CUSTOMER BENEFITS

- ⊕ Proven construction and high-quality processing
- ⊕ Safe clamping and unclamping of the tools

TECHNICAL FEATURES

- With internal coolant supply



C 15 Clamping sets type DIN 69871/72

Item no.	Design	D1	d 2	Pull-in force max. N
784481 ▲	SK 30	19	M10x1,5	7500
756340	SK 40	27	M14x1,5	15000
760391	SK 50	40	M16 x1,5	26000
760390 ▲	SK 60	52	M30x1,5	80000

Further designs available on request

C 15 Clamping sets type MAS BT 45°

Item no.	Design	D1	d 2	Pull-in force max. N
1070315 ▲	SK 30	19	M10x1,5	6000
861930 ▲	SK 40	27	M14x1,5	15000
795390 ▲	SK 50	40	M16x1,5	26000

Further designs available on request

C 15 Clamping sets type ANSI 5.50-78 „CAT“

Item no.	Design	D1	d 2	Pull-in force max. N
890828 ▲	SK 30	19	M10x1,5	6000
766334 ▲	SK 40	27	M14x1,5	15000
831393 ▲	SK 50	40	M16x1,5	26000

Further designs available on request



SK - Automatic tool clamping system

Clamping system with stationary release unit



APPLICATION

Suitable for SK spindles in higher speed range.

TYPE

Spring package with or without transmission gears and stationary release unit.

CUSTOMER BENEFITS

- ⌚ Slender design
- ⌚ No oil supply required in the rotating spindle part
- ⌚ Stationary release unit decoupled from spindle rotation, therefore low-wear

TECHNICAL FEATURES

- Release system designed individually for the spindle



Rotary feed-through for media supply of coolant and cleaning air

Stationary release unit particularly suitable for high speeds

Tool clamp with sturdy spring package

Individual draw bar extension for spindle length

Clamping set suitable for different tool holders





SK - Automatic tool clamping system

Clamping system with integrated release hydraulic



APPLICATION

For SK spindles with compact design.

TYPE

Spring package with transmission gear and installed release hydraulics.

CUSTOMER BENEFITS

- ⊕ No force acts on spindle bearing during the tool change
- ⊕ Compact design and high pull-in forces due to integrated wedge gear

TECHNICAL FEATURES

- Release system designed individually for the spindle



Rotary feed-through for media supply of coolant and cleaning air

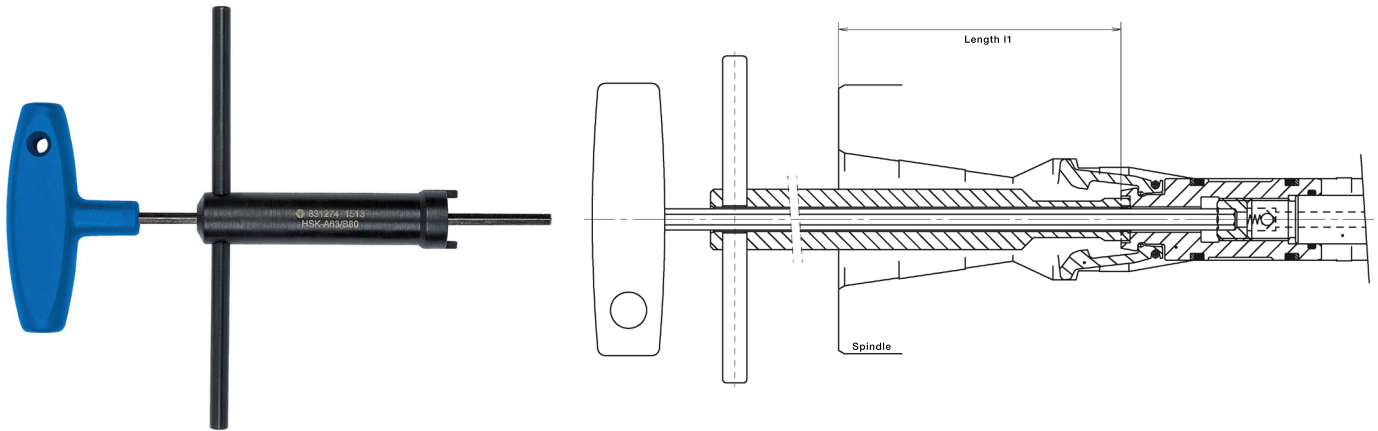
Tool clamp with spring package, wedge gear and hydraulic release mechanics

Clamping set suitable for different tool holders





Accessories



C 15
Socket wrench with through-hole

Item No. Socket wrench	Size	Item No. Hexagon wrench	Length l1 mm	Key width SW
772214	SK 30	367665	183	4
756393	SK 40	802094	350	6
756396	SK 40 (without through-hole)	-	-	-
760229	SK 50	769078	400	8
747337	SK 60	769078	400	8