



TANDEM® KSH3

**Hydraulic powerhouses of
the third generation**

Hand in hand for tomorrow

Compact, hydraulically actuated powerhouses for series production

TANDEM KSH3 stands for powerful, hydraulically actuated clamping force blocks, which are mainly used in series production where hydraulics are available at the machine. Patented monitoring of the base jaw position via dynamic pressure or the possibility of air control through the jaw are only two of the additional features that have been included in the new generation. A few innovations have been integrated especially in terms of automation.



Advantages – Your benefits

- + Large range of different versions**
Therefore ensuring highest flexibility with the largest and most powerful standard range of hydraulic clamping force blocks
- + Patented monitoring of the base jaw position via dynamic pressure**
Know whether the vise is open or clamped
- + Workpiece presence control through the base jaw**
Enables automated loading of the clamping force block
- + Precision wedge hook clamping force block for top-quality demands**
Allows excellent machining results
- + Square design with ideal external contour**
Ideal for 6-sided machining in two set-ups with the best lateral accessibility
- + High degree of efficiency of the wedge hook system**
Process-reliable clamping due to high clamping forces
- + Base jaws with tongue and groove or fine serration as standard**
High flexibility of system jaws
- + Optimal jaw support due to the use of a very long base jaw guidance**
Allows high clamping forces at a long service life
- + All sides of the functional parts are hardened and ground**
Ensures a long service life

Function KSH3

The power is transferred from the axially adjustable hydraulic cylinder to the slightly longer base jaws with the help of the diagonal pull at the wedge hook. For the KSH3 and KSH3-LH variants, the force generates a synchronous jaw movement to the clamping center. For the KSH3-F variant, the force generates a movement in direction to the fixed jaw.

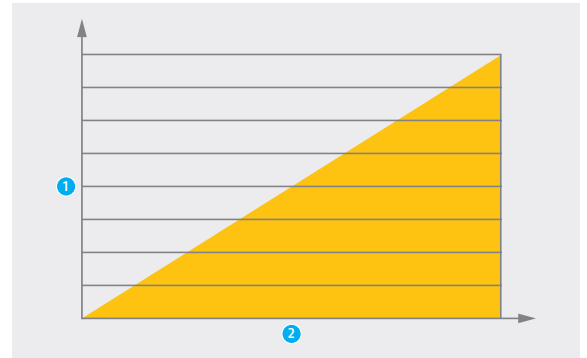


- 1 Wedge hook drive**
Offers constantly high clamping forces in operation
- 2 Hardened and extremely rigid base body**
Therefore a longer service life at highest precision.
Even with maximum clamping force
- 3 Innovative greasing system**
For enhanced efficiency and constant clamping force
- 4 Long jaw guidance**
Offers optimal support for O.D.- and I.D. clamping
- 5 Low height design**
Expands your machine's workspace
- 6 Improved design which is insensitive to dirt**
By means of targeted sealing
- 7 Standard jaw interface**
For the use of standard jaws from SCHUNK
- 8 Ideal outside contour**
For best accessibility and optimal chip fall
- 9 Control of the clamping force block**
From the side or bottom as desired
- 10 Piston guided in the body**
For absorption of the machining forces along the guideway
- 11 Greasing channels in the cover plate**
Enable bottom greasing via a central greasing system
- 12 Fitting screws available as an option**
For positioning the clamping device with high repetition precision

Clamping force depending on the actuation pressure

The clamping force increases in direct proportion to the increase in actuation pressure. The minimum hydraulic pressure should not drop below 10 bar during this process.

- ① Clamping force
- ② Actuation pressure



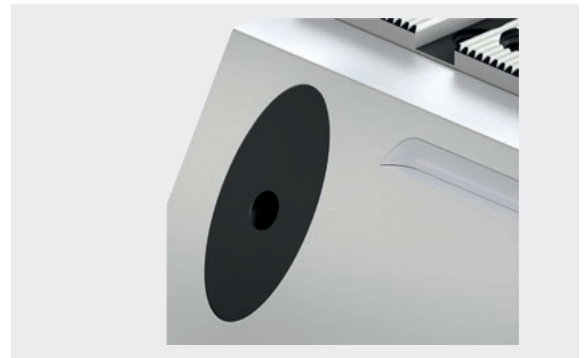
Chip-repellent design

The special design of the base jaw and cover strip prevents chips becoming permanently lodged. During the clamping process, the chips are pushed from the base jaw by the incline of the cover strip.



Cover plugs for the mounting screws

All four mounting screws are sealed with anodized aluminum plugs. Chip build-up is therefore completely eliminated in advance.



Alignment edge

An alignment edge is recessed into the side of the clamping force block. It extends parallel to the jaw guidance and enables an exact alignment of the vises to the machine table.



Coolant drainage holes

All clamping force blocks are equipped with two coolant drainage holes. That allows coolant that penetrates to be drained to the outside. The drainage holes are sealed with a sintered filter to prevent entry of chips.



Greasing system

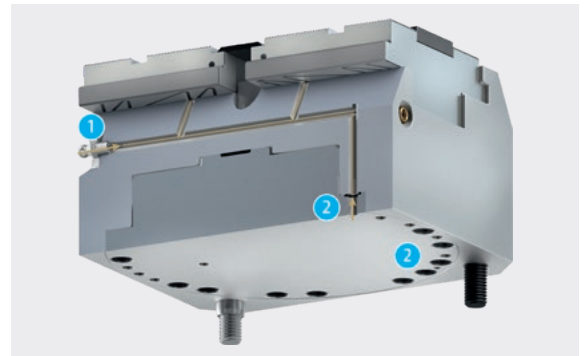
All clamping force blocks are equipped with a dual greasing system.

1 Manual lubrication

A grease gun is used to supply all friction surfaces (jaw guidance, piston guidance, and diagonal pull) evenly.

2 Central lubrication

The connections on the base side are used to supply all friction surfaces (jaw guidance, piston guidance and diagonal pull) evenly with grease. Several vises can be greased at the same time by means of the base plate.



Console plates

Console plates offer several options for mounting the clamping force blocks on the machine table. To minimize the set-up time the clamping force blocks can be placed on the VERO-S NSE3 quick-change pallet modules with anti-rotation protection using the existing VERO-S interface. Alternatively, they can be mounted on the machine table or dividing heads using cylindrical clamps or T-nuts.

1 Mounting via quick-change pallet system

2 Mounting via cylindrical clamps

3 Mounting via T-nuts

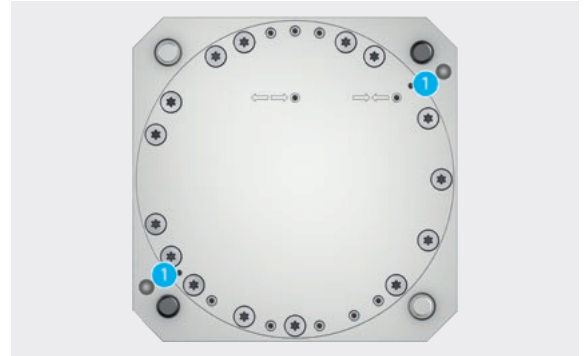


Standardized equipment versions

Jig-produced positioning bores (-Z)

In order to position several clamping force blocks very accurately, jig-produced positioning bores are integrated in the Z-version. The jig-produced positioning bores ensure a positioning accuracy of ± 0.01 mm to the clamp center when changing the clamping force block.

1 Positioning bore



Pneumatic monitoring (-PM)

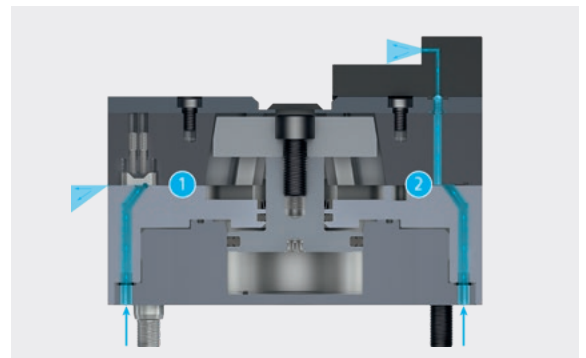
The PM version of the TANDEM3 generation includes several features. The base jaw positions can be queried via dynamic pressure. Transfer via the base jaw enables compressed air to be fed through into the system jaws. In this way, a workpiece presence control or cleaning of the clamping surfaces can be done by the customer.

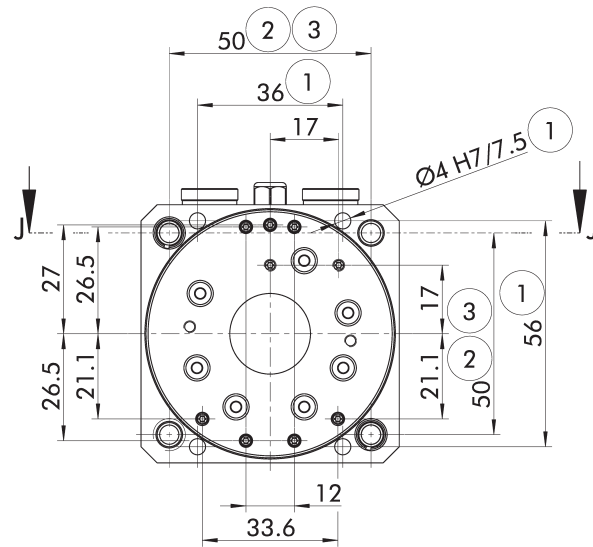
1 Patented monitoring of the base jaw position

Open and closed via dynamic pressure

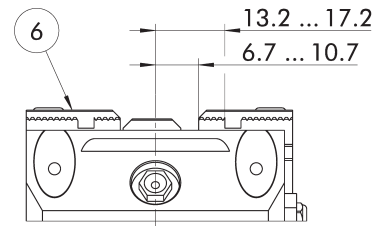
2 Air transfer in the system jaw

For workpiece presence control or cleaning of the clamping surfaces by the customer

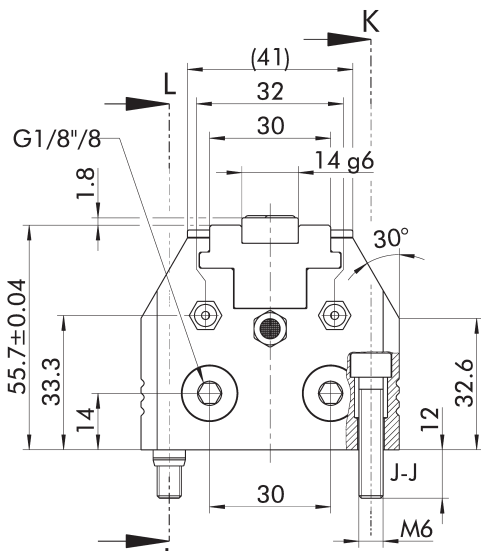
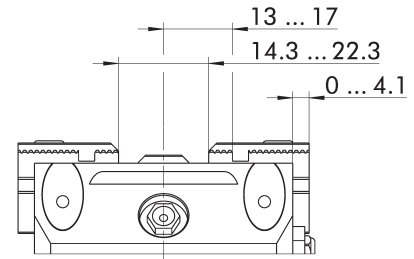




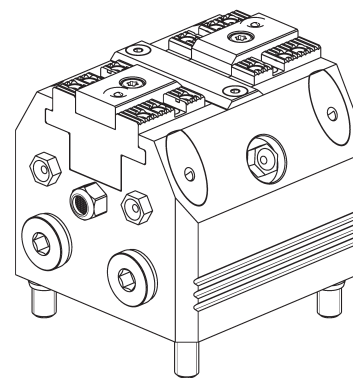
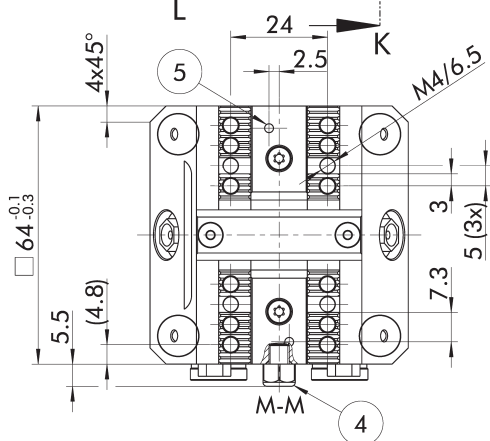
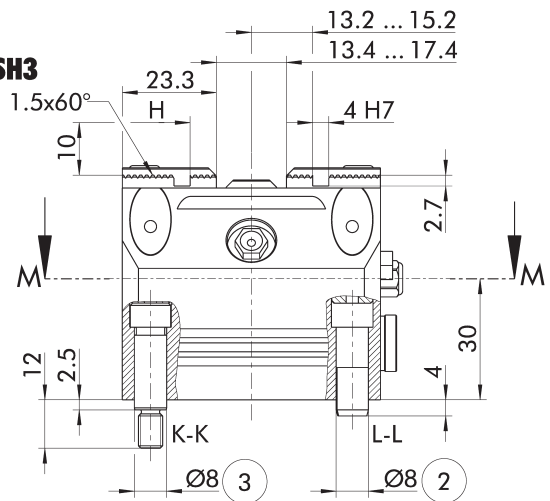
KSH3-F



KSH3-LH



KSH3



Subject to technical changes.

- ① Z-variant ± 0.01 mm to clamping center
- ② Clamping sleeve ± 0.04 mm to clamping center
- ③ Fitting screw ± 0.02 mm to clamping center
- ④ Connection M5 for air purge
- ⑤ Air transfer in the system jaw for the workpiece presence control (see operating manual for top jaw dimensions)
- ⑥ Fixed jaw

Technical data

Description	ID	Jig-produced positioning bores	Pneumatic monitoring	Clamping force at max. operating pressure [kN]	Operating pressure [bar]
KSH3 64	1448271			4.5	10 - 60
KSH3 64-Z	1463152	●		4.5	10 - 60
KSH3 64-PM	1448280		●	4.5	10 - 60
KSH3 64-Z-PM	1463153	●	●	4.5	10 - 60
KSH3-LH 64	1463154			4.5	10 - 120
KSH3-LH 64-Z	1463155	●		4.5	10 - 120
KSH3-LH 64-PM	1448281		●	4.5	10 - 120
KSH3-LH 64-Z-PM	1463156	●	●	4.5	10 - 120
KSH3-F 64	1463157			4	10 - 60
KSH3-F 64-Z	1463158	●		4	10 - 60
KSH3-F 64-PM	1448282		●	4	10 - 60
KSH3-F 64-Z-PM	1463159	●	●	4	10 - 60

For a detailed description of the equipment versions listed above, see page 6.

Scope of delivery

Clamping force block, mounting screws for system jaws and clamping force block, cover plugs, fitting screws, clamping sleeves, operating manual

Notes

Definition clamping force

The clamping force is the arithmetic sum of the individual forces occurring at the jaws at distance "H" at maximum pressure.

General note

The specifications exclusively refer to the grease LP 410 used by SCHUNK.

Further technical data

Description	Stroke version	Stroke per jaw [mm]	Max. jaw height [mm]	Repeat accuracy [mm]	Oil consumption per double stroke [cm³]	Closing/opening time [s]	Weight [kg]
KSH3 64 ...	Standard stroke	2	60	0.01	10	0.5	1.5
KSH3-LH 64 ...	Long stroke (-LH)	4	60	0.01	10	0.5	1.5
KSH3-F 64 ...	With fixed jaw (-F)	4	60	0.01	10	0.5	1.5

System jaws

3-axis jaw grip S3A-G5

With grip step, 5 mm.
For embossed clamping of unhardened materials up to 22 HRC.



Suitable for	Description	ID
KSH3 64	S3A-G5 64	1471165

5-axis jaw grip S5A-G5

With grip step, 5 mm.
For embossed clamping of unhardened materials up to 22 HRC.



Suitable for	Description	ID
KSH3 64	S5A-G5 64	1471189

Top jaw blank STR

Top jaw blanks with fine serration for customer rework.



Suitable for	Description	ID
KSH3 64	STR 64	0402100

Top jaw blank STR-H

High top jaw blanks with fine serration for customer rework.



Suitable for	Description	ID
KSH3 64	STR-H 64	0402200

Top jaw blank KTR

Top jaw blanks with tongue and groove and preassembled mounting holes for customer rework.



Suitable for	Description	ID
KSH3 64	KTR 64	0402120

Top jaw blank KTR-H

High top jaw blanks with tongue and groove and preassembled mounting holes for customer rework.



Suitable for	Description	ID
KSH3 64	KTR-H 64	0402220

Top jaw blank STR-S

Top jaw blanks with fine serration and preassembled mounting groove for customer rework.



Suitable for	Description	ID
KSH3 64	STR-S 64	0402110

Base plates

Consol plate

For direct mounting on VERO-S or T-slot tables.



Suitable for	Description	ID
KSH3 64	KSL3 64-1	1466118

Accessories

Clamping force tester

For measuring the jaw clamping force of stationary clamping devices.



Suitable for	Description	ID
KSH3 64	IFT SST Set	1475766

Clamping pins SPx

Clamping pin for positive connection with NSE3 clamping modules.



Suitable for	Description	ID
KSL3 64-1	SPA 40	0471151

Grease

LP 410

High-performance grease as standard for regularly lubricating SCHUNK TANDEM clamping force blocks.



Bundle	Description	ID
Cartridge	LP 410 cartridge	0184213

Indexing pin

Used as an anti-rotation protection for VERO-S modules with anti-rotation protection V1.



Suitable for	Description	ID
KSL3 64-1	IXB V1	0471980

Cylindrical clamp blanks

For individual fastening of the clamping stations or console plates on all common machine table slot spacings



Suitable for	Description	ID
KSL3 64-1	BRR 50	0470020

Grease gun

Auxiliary tools for lubrication of all kinds of SCHUNK products. The grease gun can be used for cartridges of all types of SCHUNK grease.



Bundle	Description	ID
Cartridge	Grease gun	9900543



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