



TANDEM® KSH3-S

**Hydraulic powerhouses with
compensating function**

Compact, hydraulically actuated powerhouses with compensation function to reduce vibrations and deformations on long workpieces

TANDEM KSH3-S from SCHUNK stand for high-performance, hydraulically actuated clamping force blocks with compensation function. The vises have a "floating" piston that enables jaw compensation of ± 0.5 mm. This makes them ideal for clamping long workpieces in particular, as well as minimizing vibrations and deformations. All KSH3-S vises are 100% compatible with the KSH3 vises meaning they are fully interchangeable.



Advantages – Your benefits

- + **Compensation function**
Enables axial jaw compensation and thus compensating clamping for long workpieces
- + **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 and fine serration as a dual interface 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-S

The force is transferred from the axially adjustable hydraulic cylinder to the base jaws with the help of the diagonal pull on the wedge hook, and generates a synchronous jaw movement towards the clamping center. A "floating" piston enables axial jaw compensation of ± 0.5 mm.

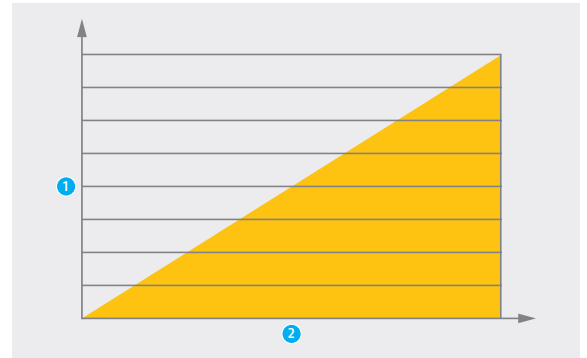


- 1 Wedge hook drive**
Offers constantly high clamping forces in operation
- 2 Floating piston**
Enables axial jaw compensation of ± 0.5 mm
- 3 Hardened and extremely rigid base body**
Therefore a longer service life at highest precision. Even with maximum clamping force
- 4 Innovative greasing system**
For enhanced efficiency and constant clamping force
- 5 Long jaw guidance**
Offers optimal support for O.D.- and I.D. clamping
- 6 Low height design**
Expands your machine's workspace
- 7 Improved design which is insensitive to dirt**
By means of targeted sealing
- 8 Standard jaw interface**
For the use of standard jaws from SCHUNK
- 9 Ideal outside contour**
For best accessibility and optimal chip fall
- 10 Control of the clamping force block**
From the side or bottom as desired
- 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



Coolant drainage holes

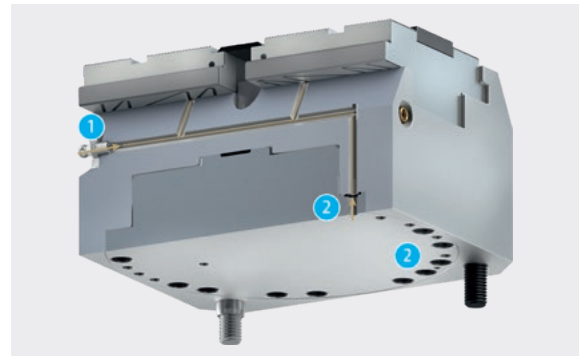
All clamping force blocks are equipped with two coolant drainage holes. That allows coolant that penetrates to be drained to the outside. The drainage holes are sealed with a sintered filter to prevent entry of chips.



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

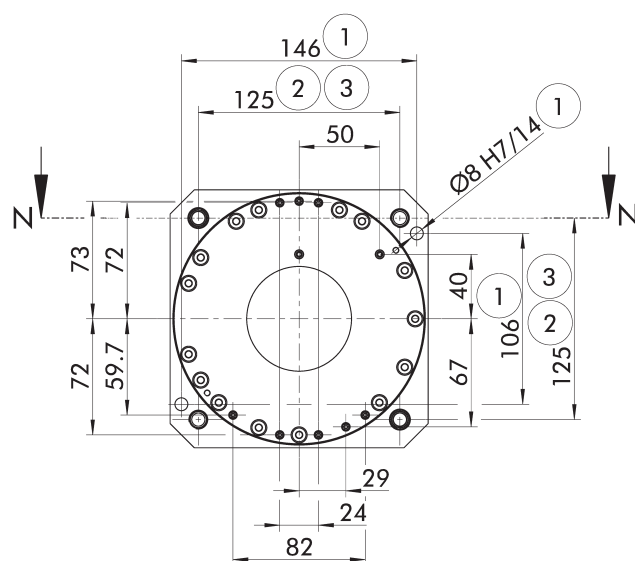


Application example

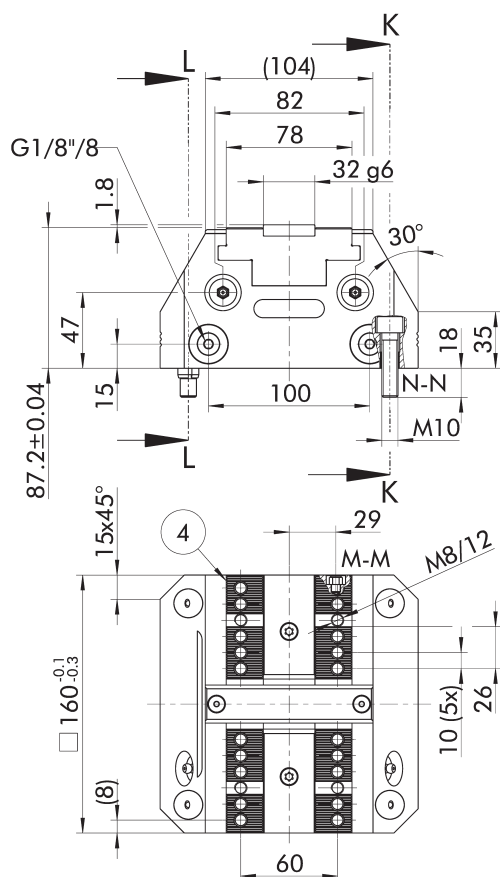
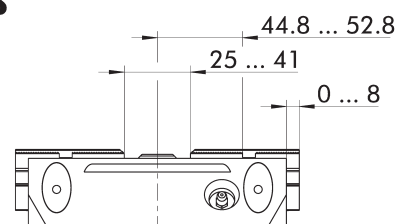


When clamping long workpieces, vibration and deformation of the workpiece may occur. To effectively counteract these vibrations and deformations, "compensating" clamping force blocks can be used between the outer clamping points. Due to the compensation, the system jaws contact the workpiece and hold it in position.

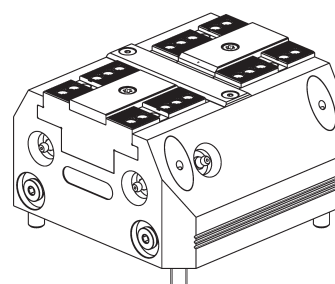
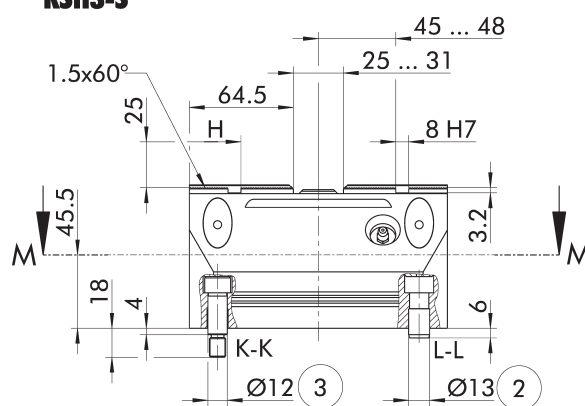
- 1 Clamping force block in standard version**
Clamping force blocks of standard design are used for the two outer clamping points.
- 2 Clamping force block in compensating design**
Clamping vises with compensation function are used for all internal clamping points to avoid deformation of the workpiece.
- 3 Maximum length compensation**
The value is ± 0.5 mm for all clamping force blocks.



KSH3-LH-S



KSH3-S



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

Technical data

Description	ID	Jig-produced positioning bores	Compensation function	Clamping force at max. operating pressure [kN]	Jaw compensation [mm]	Operating pressure [bar]
KSH3-S 160	1607264		●	45	±0.5	10 - 60
KSH3-S 160-Z	1607265	●	●	45	±0.5	10 - 60
KSH3-LH-S 160	1607266		●	40	±0.5	10 - 120
KSH3-LH-S 160-Z	1607268	●	●	40	±0.5	10 - 120

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.

Jaw compensation

Enables compensating clamping of long workpieces and a reduction in vibration and deformation.

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-S 160 ...	Standard stroke	3	60	0.01	100	1.5	14
KSH3-LH-S 160 ...	Long stroke (-LH)	8	60	0.01	100	1.5	14

System jaws

Supporting jaw TBA-D

Reversible supporting jaws with fine serration for mounting standard top jaws from SCHUNK.



Suitable for	Description	Interface	ID
KSH3-S 160	TBA-D 160	W-100-1	0402295

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-S 160	S3A-G5 160	1471168

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-S 160	S5A-G5 160	1471198

Top jaw blank STR

Top jaw blanks with fine serration for customer rework.



Suitable for	Description	ID
KSH3-S 160	STR 160	0402102

Top jaw blank STR-H

High top jaw blanks with fine serration for customer rework.



Suitable for	Description	ID
KSH3-S 160	STR-H 160	0402202

Top jaw blank KTR

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



Suitable for	Description	ID
KSH3-S 160	KTR 160	0402122

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-S 160	KTR-H 160	0402222

Top jaw blank STR-S

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



Suitable for	Description	ID
KSH3-S 160	STR-S 160	0402112

Swivel plate

Used – in combination with adapter plates and 6-way reversal jaws – to clamp bulky workpieces.



Suitable for	Description	Interface	ID
KSH3-S 160	KTP 160	W-38	1580334

Adapter plate

Used – in combination with swivel plates and 6-way reversal jaws – to clamp bulky workpieces.

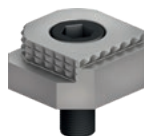


Suitable for	Description	Interface	ID
KSH3-S 160	KTA 160	W-38	1580335

Top jaws

6-way reversible jaws grip

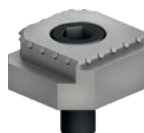
With five grip steps as well as a coated clamping face.



Description	Width mm	Height mm	Depth mm	Interface	ID
GBG-6W 38-38-18	38.5	18	38.2	W-38	0430803

6-way reversible jaw carbide grip

With five carbide grip steps as well as a smooth clamping face.



Description	Width mm	Height mm	Depth mm	Interface	ID
GBCG-6W 38-38-18	38.5	18	38.2	W-38	1395550

Jaw profiled

For increasing the friction between jaw and workpiece without clamping impressions.



Description	Width mm	Height mm	Depth mm	Interface	ID
GBD 100-35-10	100	35	10	W-100-1	1373346

Serrated jaw

For increasing the friction between jaw and workpiece with minimal clamping impressions.



Description	Width mm	Height mm	Depth mm	Interface	ID
GBC 100-35-11	100	35	11	W-100-1	1373267

Ground jaw

With a completely ground clamping face.



Description	Width mm	Height mm	Depth mm	Interface	ID
GBP 100-35-10	100	35	10	W-100-1	1373272

Soft jaw

Hardenable jaws for rework at the customer site, e.g. for incorporating contours or special shapes.



Description	Width mm	Height mm	Depth mm	Interface	ID
GBW 100-35-16	100	35	16	W-100-1	1373287

Stepped jaw

With ground step, 8 mm.



Description	Width mm	Height mm	Depth mm	Interface	ID
GBS 100-35-10-5	100	35	10	W-100-1	1373325

Stepped jaw

With coated step, 5 mm.



Description	Width mm	Height mm	Depth mm	Interface	ID
GBS-W 100-35-10-5	100	35	10	W-100-1	1395510

Stepped jaw

With grip step, 3 mm.
For embossed clamping of unhardened materials up to 22 HRC.



Description	Width mm	Height mm	Depth mm	Interface	ID
GBS-G3 100-35-10	100	35	10	W-100-1	1373330

Stepped jaw

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



Description	Width mm	Height mm	Depth mm	Interface	ID
GBS-G5 100-35-10	100	35	10	W-100-1	1373333

Stepped jaw

With grip step, 8 mm.
For embossed clamping of unhardened materials up to 22 HRC.



Description	Width mm	Height mm	Depth mm	Interface	ID
GBS-G8 100-35-10	100	35	10	W-100-1	1373337

Stepped jaw

With carbide grip step, 3 mm.
For embossed clamping of hardened materials up to 58 HRC.



Description	Width mm	Height mm	Depth mm	Interface	ID
GBS-CG3 100-35-10	100	35	10	W-100-1	1428440

Stepped jaw

With carbide grip step, 5 mm.
For embossed clamping of hardened materials up to 58 HRC.



Description	Width mm	Height mm	Depth mm	Interface	ID
GBS-CG5 100-35-12	100	35	12	W-100-1	1428441

Stepped jaw with T-slot

With grip step, 3 mm.
T-slot for mounting the positioning strip.



Description	Width mm	Height mm	Depth mm	Interface	ID
GBS-G3-T 100-35-17.5	100	35	17.5	W-100-1	0430242

Stepped jaw with T-slot

With grip step, 5 mm.
T-slot for mounting the positioning strip.



Description	Width mm	Height mm	Depth mm	Interface	ID
GBS-G5-T 100-35-17.5	100	35	17.5	W-100-1	0430241

Stepped jaw with T-slot

With grip step, 8 mm.
T-slot for mounting the positioning strip.



Description	Width mm	Height mm	Depth mm	Interface	ID
GBS-G8-T 100-35-17.5	100	35	17.5	W-100-1	0430240

Positioning bar

To suit all stepped jaws with T-slot.



Description	Width mm	Height mm	Depth mm	Interface	ID
GPL 100-32-13.5	100	32	13.5	W-100-1	0430246

Grip jaw

For embossed clamping of unhardened materials up to 22 HRC.



Description	Width mm	Height mm	Depth mm	Interface	ID
GBG 100-35-10	100	35	10	W-100-1	1373282

Prism jaw, ground

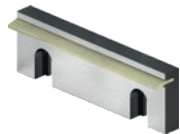
For precise clamping of round workpieces.
100 = Ø11 – Ø41 mm.
125 = Ø14 – Ø48 mm.
160 = Ø16 – Ø60 mm.



Description	Width mm	Height mm	Depth mm	Interface	ID
GVA 100-35-15.5	100	35	15.5	W-100-1	1373342

Spring leaf pull-down jaw

For an active jaw pull-down function with a light clamping impression on the workpiece for more precise machining results.



Description	Width mm	Height mm	Depth mm	Interface	ID
GFA 100-35-10	100	35	10	W-100-1	1373301

Spring plate pull-down jaw

For an active jaw pull-down function without clamping impressions on the workpiece for more precise machining results.



Description	Width mm	Height mm	Depth mm	Interface	ID
GFB 100-34-10	100	34	10	W-100-1	0430191

Precision pull-down jaw

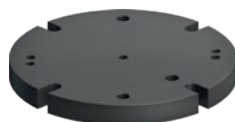
For an active jaw pull-down function without clamping impressions on the workpiece for more precise machining results.



Description	Width mm	Height mm	Depth mm	Interface	ID
GBN-P 100-35-25	100	35	25	W-100-1	0430146

Base plates**Consol plate**

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



Suitable for	Description	ID
KSH3-S 160	KSL3 160-1	1466121

Accessories

Clamping force tester

For measuring the jaw clamping force of stationary clamping devices.



Suitable for	Description	ID
KSH3-S 160	IFT SST Set	1475766

Clamping pins SPx

Clamping pin for positive connection with NSE3 clamping modules.



Suitable for	Description	ID
KSL3 160-1	SPA 40	0471151

Indexing pin

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



Suitable for	Description	ID
KSL3 160-1	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 160-1	BRR 50	0470020

Plate spring for pull-down jaw

Spare part for spring plate pull-down jaw



Suitable for	Description	ID
GFA 100-35-10	GFB 100	0430054

Grease

LINOMAX plus

High-performance grease as standard for regularly lubricating SCHUNK manual and power lathe chucks and steady rests.



Bundle	Description	ID
Cartridge	LINOMAX plus cartridge	1342585

LP 410

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



Bundle	Description	ID
Cartridge	LP 410 cartridge	0184213

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



H.-D. SCHUNK GmbH & Co.
Spanntechnik KG

Lothringer Str. 23
D-88512 Mengen
Tel. +49-7572-7614-1300
Fax +49-7572-7614-1039
CMM@de.schunk.com
schunk.com