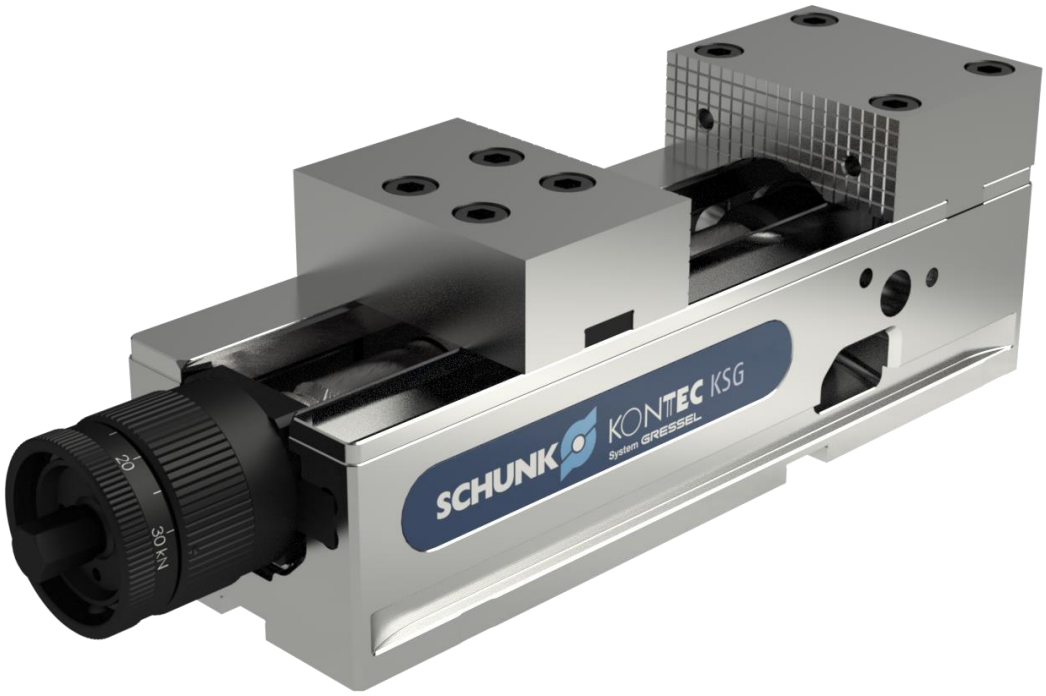
Montage- und Betriebsanleitung
Installation- and operating instruction

Maschinenschraubstock
Machine vice

KSG



H.-D. SCHUNK GmbH & Co.
Spanntechnik KG
Lothringer Strasse 23
D-88512 Mengen

Table of contents:

1 User information

1.1 Purpose of document

These instructions are an integral part of the product supplied and contain important information for the safe installation, commissioning, operation, servicing and maintenance. These instructions must be read before using the product and must be observed during operation, in particular the "General safety instructions" section.

1.2 Illustration of safety features

DANGER	
	**Indicates imminent danger. If the information is ignored, death or serious injury (permanent disability) will result.**

WARNING	
	**Indicates a potentially dangerous situation. If the information is ignored, it is possible that death or serious injury (permanent disability) will result.**

WARNING	
	**Indicates a potentially dangerous situation. If the information is ignored, it is possible that material damage and light to medium injury will result.**

NOTE	
	**Indicates general information, useful tips for users and work recommendations which do not impact on the health and safety of operators. … underscores useful tips and recommendations as well as information for efficient and trouble-free operation.**

CAUTION	
	**Indicates a potentially dangerous situation. If the information is ignored, material damage will result. … points out a potentially dangerous situation that can lead to material damage if it is not avoided.**

2 General safety instructions

2.1 Intended use

The clamping device may only be used in accordance with the technical data and has been designed for stationary application on milling machines in an industrial environment.
Using the device in accordance with the intended purpose includes compliance with the commissioning, installation and operating instructions, and with the environmental and service conditions as provided by the manufacturer.
The manufacturer accepts no liability for damage resulting from non-intended use.

2.1.1 Technical data

Version	max. clamping force
KSG 100	30 kN
KSG 125	40 kN
KSG 160	40 kN

Weight:

KSG 100 with standard reversible jaw: 19.5 kg
KSG 125 with standard reversible jaw: 35.0 kg
KSG 160 with standard reversible jaw: 70.0 kg

For further data, please see homepage >> schunk.com <<

2.2 Reasonably foreseeable misapplication

Any application that is not in accordance with the "Intended use" or exceeds such intended use is considered not in accordance with the regulations, and is forbidden.
Any other use of the device is subject to confirmation from the manufacturer.

Examples of forseeable misapplication

- Clamping device used on rotating systems.
- Clamping widely protruding workpieces.
- Clamping workpieces with a weight of over 20 kg in vertical position without an additional protection against the workpiece falling out as a protective measure for the operator.

2.2.1 Alterations and modifications

In the case of unauthorised alterations and modifications of the clamping device, the manufacturer's liability ceases and any warranty is voided.

2.2.2 Spare and wear parts and auxiliary material

Only use original parts or parts approved by the manufacturer.
Using spare and wear parts by third party manufacturers may lead to risk.

2.3 Residual risk

The user is responsible for applying the correct workpiece clamping.
New clampings have to be carefully checked by qualified personnel with relevant training.
One always needs to allow for the risk that the workpiece may slip or be dislodged, even when the clamping device is functioning correctly; this is due to the different geometries to be clamped, contact surfaces, clamping friction values, processing force, wrong manipulation of the milling machine etc.
Protective devices are to be attached to the processing machine that will protect the operator from any tool or workpiece parts that may be ejected.
It is mandatory that operators and others in the proximity of the processing machine wear protective goggles.
The Do not use methods of operation that impair the function and operational safety.

2.3.1 Jaw change

Damage may result if system jaws are insufficiently tightened.

2.3.2 Notes on clamping technology

The operator is responsible for ensuring that the clamping geometry and clamping forces are suitable for the intended processing.
The clamping forces can only be achieved if the clamping device functions correctly and the workpiece is correctly held in the device.
Regular servicing and cleaning in accordance with the operating instructions is mandatory
In order to ensure correct function.
When clamping thin-walled elastic workpieces, e.g. tubes or packages, it is possible that the clamping force is significantly reduced due to yielding of the workpiece.
When clamping with a high degree of force, the clamping force is significantly reduced due to the increased frictional forces in the slider.
When clamping 100 mm above the base body, the loss of clamping force is approx. 40%.

2.4 Duties of the organisation in charge

The organisation in charge of the device undertakes to only allow operatives to work on the device:

- who are familiar with the basic health and safety regulations and regulations for the prevention of accidents.
- who have completed appropriate induction for working with the machine.
- who have read and understood these operating instructions.

The requirements of the EC Directive 2007/30/EC on the use of work machinery must be complied with.

2.5 Operator duties

All persons who have been instructed to work with the machine undertake to:

- observe the basic regulations for health and safety and for the prevention of accidents.
- read and understand the section on safety and the safety instructions in these operating instructions prior to working with the machine, and to observe these instructions.

2.6 Operator qualification

The installation, initial setup, fault analysis and periodic monitoring have to be carried out by competent personnel with the relevant qualifications.

2.7 Personal protective equipment

WARNING	
	**Ejected hot fragments can lead to serious eye injury.** **The regulations for safety at work and the prevention of accidents always have to be observed when working with the machine.** **Personal protection equipment must be worn at all times, in particular safety boots, gloves and safety goggles.**

2.8 Warranty

Warranty	24 months
Maximum service life	50‘000 clamping cycles

The warranty period is valid from the date of delivery ex-works, provided the machine is used as intended and subject to the following conditions:

- Compliance with the concurrent documents.
- Observance of environmental and work conditions.
- Observance of the specified servicing and lubrication intervals.
- Observance of the maximum service life.

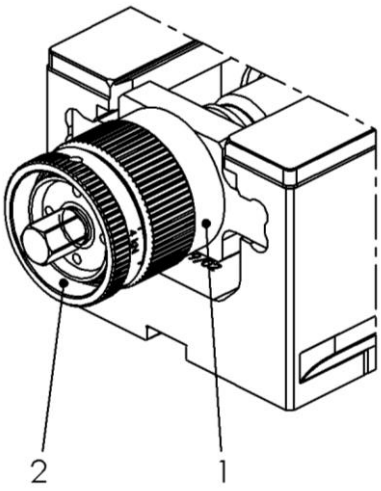
Parts in contact with the workpiece are not covered by the warranty.

3 Description

The KSG has been designed for clamping unprocessed and finished workpieces.
A setting ring is used for adjusted the force and the clamping force is achieved by turning the clamping lever by 160°.

3.1 Applications

3.1.1 Adjusting the clamping range



- Use the clamping lever to position the hexagon head of the spindle to the left stop.
- Adjust the clamping width with the knurled knob. (1)
- Move the movable jaw to the workpiece so that there is no play.

Serial production

Turn the knurled knob three to four increments backwards to create a gap of max. 2 mm to the workpiece.

This means that the jaw opening is within the max. closing range.

One-off production

For one-off production a gap is not mandatory. By pre-tensioning the workpiece manually using the knurled knob, both the pre-tension and the final force are increased.

3.1.2 Clamping

- Use the setting ring (2) to set the required clamping force.
- Before clamping the workpiece, ensure that the vice is fixed and the clamping range adjusted correctly.
- Move the clamping lever to the 10 o'clock position.
- By turning the clamping lever to the right by max. 90°, the moving jaw is moved to the workpiece.
- As the clamping lever is turned further by max. 70° the clamping force builds up. (more force is needed to move the clamping lever as the force builds up)
- When the clamping lever noticeably reaches the end stop, clamping has been completed and the clamping force has been mechanically secured.

3.1.3 Releasing

- Turn the clamping lever to the left; this will reduce the clamping force and then open the closing range.
- Ensure that the clamping lever comes to a stop at the left-hand stop.

Important:

Always keep a firm hold on the clamping lever handle while operating it.

3.1.4 Changing jaws

- Release cylinder screws and remove the jaws.
- Clean and oil the contact surfaces, e.g. with MOTOREX Supergliss 68 K.
- Insert the jaws and tighten crosswise using cylinder screws with 60 Nm the jaws of widths 100 respectively 125 and 150 Nm for 160 jaws.

3.1.5 Cover sheets

Cover sheets are not mandatory because the spindle does not turn during the clamping process and can be purchased as an accessory from the manufacturer.

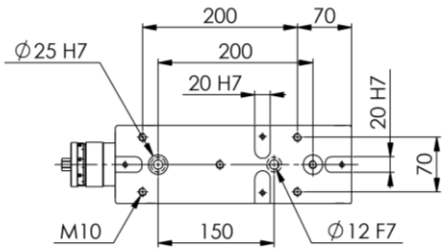
3.2 Fuction

The KSG is a quick-release vice with a mechanical driven by a sealed spindle assembly.
The clamping force is generated mechanically via a force cassette and a spindle assembly.

4 Operation

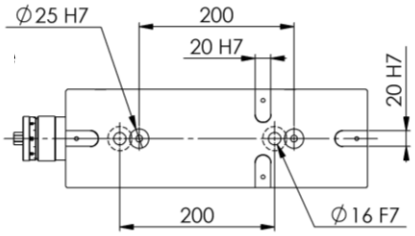
4.1 Aligning / Fastening

Typ 100



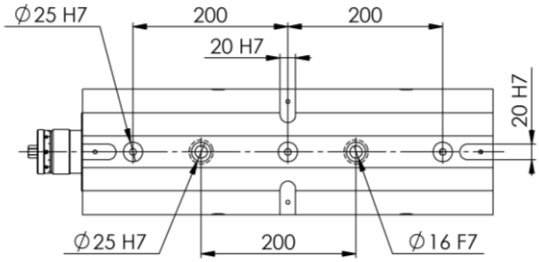
Alignment with precision slot nuts on the T-slot machine table and longitudinal respectively cross slots 20 H7 in the base body.
Fastening with cylinder screws through the base body.

Typ 125

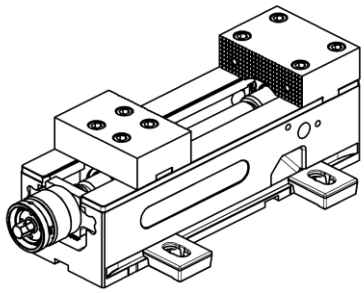


On the grid plate with two fitting screws through the positioning holes Ø12 F7 or Ø16 F7.

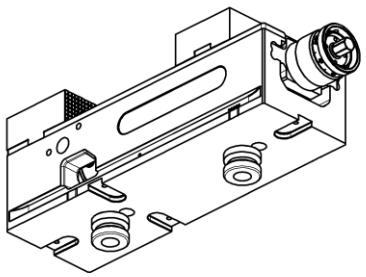
Typ 160



For particularly accurate alignment, use a measuring instrument for the fixed jaw.



Fastening with clamping claws.



Locating holes Ø25 H7 to attaching the clamping pins for NSE3 and GFD quick-change pallet systems.
(Only type 125 and 160)

For the KSG 100 is an additional base plane required to assembly the NSE3 or GFD quick-change pallet systems.

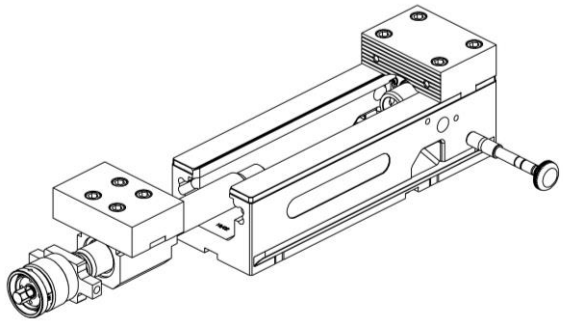
4.2 Jaw range

The reliable function of the clamping device is significantly affected by the selection of the correct top jaws.

5 Servicing, cleaning and maintenance

The KSG does not require special servicing since heavily used parts are protected against soiling.

Cleaning / Lubrication



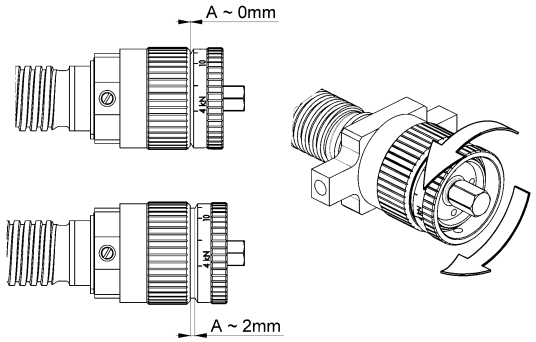
- Remove the spindle assembly.
- Do not remove any other parts.
- Clean the base body and spindle assembly.
- Lubricate the guide components and spindle weekly in the case of heavy use, lubricate twice a week.

6 Troubleshooting / Eliminating faults

Vice is hard to operate

Dismantle, clean and the damaged surfaces must be carefully levelled off with a honing stone.

Setting ring does not move



Variation 1:
Setting ring has been turned in too far
Gap A is approx. 0 mm. To release the setting ring, turn it anti-clockwise.

Variation 2:
Setting ring has been turned out too far
Gap A is approx. 2 mm. To release the setting ring, turn it clockwise.

Insufficient clamping force

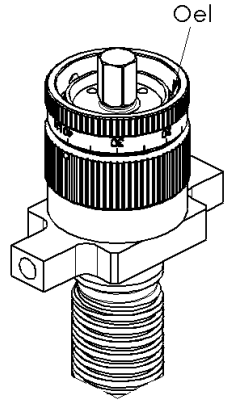
- Remove the spindle assembly.
- Clean the guides of base body and spindle nut.
- Insert the spindle assembly.
- Re-attempt clamping.
- If necessary, replace the mechanical force cassette or spindle assembly.

Important:

Do not disassemble the mechanical force cassette and spindle assembly as this will void your guarantee.

The clamping force setting changes of its own accord

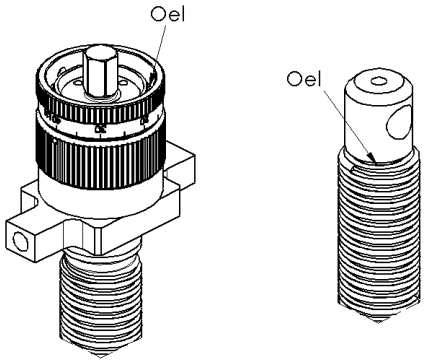
If this happens during clamping or releasing, there is increased friction of the seal in the knurled knob. The cause is that the sealing ring under the setting ring has swollen due to the effect of the cooling liquid, soiling or similar.



- Remove the spindle assembly.
- Hold the spindle assembly with the knurled knob in a vertical position.
- Lubricate the area between the setting ring and the bearing bush with thin lubricating oil.
  Turn the setting ring back and forth several times.
  If necessary, replacing the spindle assembly.

The closing range of the mechanical force cassette changes of its own accord

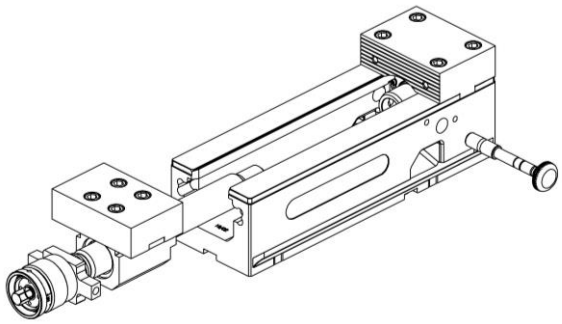
If this occurs when setting the clamping range, there is likely to be increased friction in the seal area of the knurled knob between pull rod and spindle (the seal under the setting ring has swollen due to cooling liquid, soiling or sim.).



- Remove the spindle assembly.
- Hold the spindle assembly with the knurled knob in a vertical position.
- Lubricate the area between the setting ring and the bearing bush with thin lubricating oil.
- Turn the spindle assembly and lubricate the gap between the pull rod and the end of the spindle with thin lubricating oil.
- Hold the spindle assembly in place with the spindle and turn the pull rod back and forth several times.
  If necessary, replacing the spindle assembly.

7 Removing / Assembly

Removing



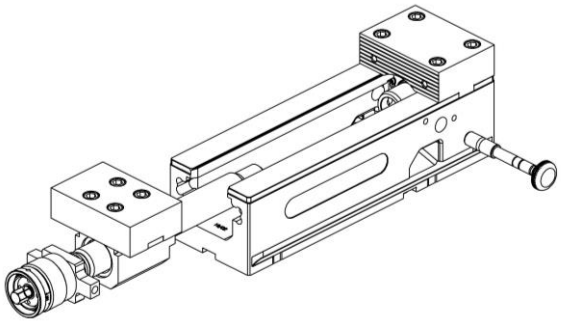
- Use the clamping lever to move the hexagonal head of the spindle to the left-hand stop and adjust the clamping width to min. 30 mm.
- Remove the knurled pin (pos. 120) from the clamping lever and turn it into the thread of the coupling bolt (pos. 70) through the hole in the base body and pull the coupling bolt out.
- The spindle assembly can now be pulled out for cleaning or releasing the base body.

Note:

It is also possible to remove the coupling bolt in vertical position. To do that the fixed jaw has to be removed and the coupling bolt has to be brought into the vertical position by turning the clamping lever by 90°. Now the coupling bolt can be removed using the removal tool.

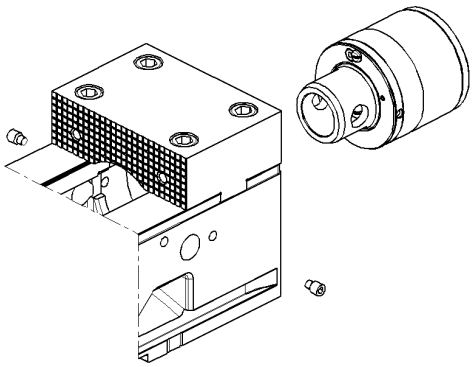
Assembly

Apply sufficient lubrication during installation.



- Insert the spindle assembly into the base body.
- Turn the knurled knob in order to ensure that the holes in the mechanical force cassette and the spindle assembly are lined up for inserting the coupling bolt.
- Use tool to insert coupling bolt in lateral hole.
- Ensure you feel that the coupling bolt has engaged.
- The marking at the knurled pin (pos. 120) must be flush with the side surface of the base body. (this varies according to the size of the machine)
- Visual check from above.
- Remove the knurled pin and turn on to the clamping lever.

Replacing the force cassette



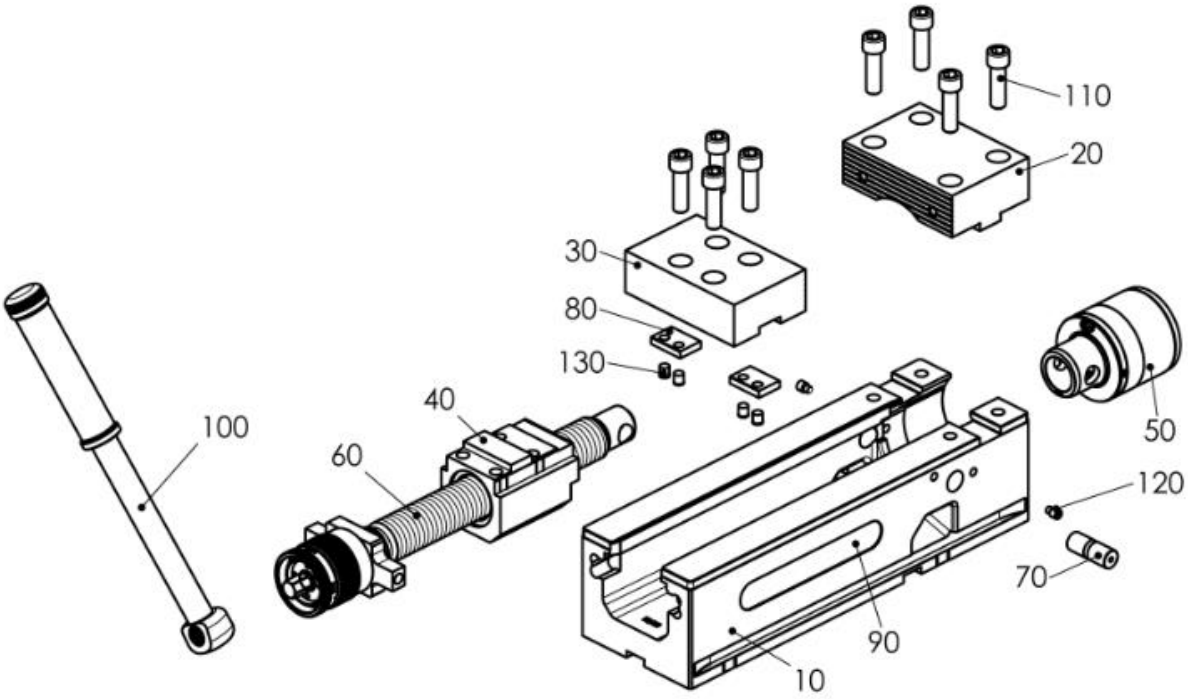
Removal

- Remove the spindle assembly.
- Turn out the threaded pins (pos. 140) on the left and right from the base body and slide out the mechanical force cassette to the rear.

Installation

- Insert the mechanical force cassette and align the hole for the coupling bolt as horizontal as possible.
- Align the lateral hole in the mechanical force cassette housing (pos. 50) through the left-hand or right-hand thread in the base body using a punch or similar.
- Turn in the threaded pin (pos. 140) from the opposite side until it securely engages in the hole of the housing.
- Turn in the second threaded pin (pos. 140) until it securely engages in the hole of the housing.
- Fit the spindle assembly and carry out a clamping test.
- While in clamped condition, tighten the threaded pins (pos. 140) again and then release again by approx. ¼ turn in order to avoid lateral tensioning of the base body.

8 Assembly drawing



8.1 Parts list

Position	Part. No.	Designation	Quantity
10	GPS.100.002.11 *GPS.125.002.11* GPH.160.015.11	Base body	1
20	GPA.100.040.11 *GPA.125.040.11* GPA.160.040.11	Standard reversible fixed jaw	1
30	GPA.100.041.02 *GPA.125.041.02* GPA.160.041.02	Standard reversible movable jaw	1
40	GPS.100.007.11 *GPS.125.007.11* GPH.160.005.11	Spindle nut	1
50	GPS.100.062.01 *GPS.125.062.01* GPS.160.062.01	Mechanical force cassette	1
60	GPS.100.061.02 *GPS.125.061.02* GPS.160.061.01	Spindle assembly	1
70	GPS.100.020.11 *GPS.125.020.11* GPS.125.020.11	Coupling bolt	1

Position	Part. No.	Designation	Quantity
80	GPS.100.040.11 *GPS.125.040.11* GPS.160.040.11	Protection plate for movable jaw	2
90	GPS.125.028.12	Type plate	2
100	GPS.125.070.03	Clamping lever	1
110	XNN.10311.471 *XNN.10311.523* XNN.10301.625	Internal hexagon cylinder screw M10x35 12.9 *Internal hexagon cylinder screw M12x40 12.9* Internal hexagon cylinder screw M16x50 8.8	8
120	XNN.10707.409	Internal hexagon threaded pin ZA M8x12	2
130	XNN.90000.080 *XNN.90000.080* XNN.90000.060	Spring-loaded pressure piece Ø8 *Spring-loaded pressure piece Ø8* Spring-loaded pressure piece Ø6	4 *4* 8

Positions in plain font are used for gripos 100
Positions in italic font are used for gripos 125
Positions in underscored font are used for gripos 160

9 Swivel and adapter plate

9.1 Function

Slanted and curved items can be securely clamped with 4-point clamping using the protected O-ring swivel plate system.
The swivel plate is pulled downwards during the clamping process due to its conical swivel plate bearings, so that the swivel plate is not likely to lift off.
With the 6-fold reversible jaw it is possible to cover numerous clamping solutions in a straightforward way. A total of six different clamping sides are available, at the four sides of the 6-fold reversible jaw as well as at two places with a convex "grip" profile.
It is also possible to carry out two-sided processing using the tungsten carbide coated side of the 6-fold reversible jaw.

Processing the first side

For unprocessed part clamping using the 6-fold reversible jaw, five different "grip" clamping sides are available with a clamping depth of 3, 8 and 18 mm.

Processing the second side

Clamping with the tungsten carbide coated side of the 6-fold reversible jaw.
It is important to take into account that during the first clamping process, the 6-fold reversible jaws can yield slightly until the play in the peg seating is eliminated.
The workpiece position must be measured, respectively the zero point should not be determined until after 3 to 5 power clampings.

Handling the demounted swivel plate

The conical swivel peg can be pulled out since it is only held in position by an O-ring in the counter direction. When handling the swivel plate, it should not be turned upside down since this could cause the peg to fall out.

9.2 Servicing, cleaning and maintenance

The upper shoulder of the swivel peg must be greased regularly.
Turn the swivel plate once a week so that the lubrication film can be rebuilt.
Lubrication of the swivel peg is recommended once a year.

9.3 Troubleshooting / Eliminating faults

Swivel plate is difficult to turn

- Disconnect the swivel plate and push the swivel peg from below out of the swivel plate.
- Check the vice guide and swivel plate surface for indentations or deformations. If necessary, re-grind the plate and the vice guide.
- Check the peg for soiling.
- Check that the O-rings are correctly positioned. The upper O-ring must make good contact.
- Lubricate the entire system with grease and reassemble.

9.4 Removing and replacing parts

- Release cylinder screws and remove the jaws.
- Clean and oil the contact surfaces, e.g. with MOTOREX Supergliss 68 K.
- Place the swivel- and adapter plate and tighten the cylinder screws to 50 Nm for the KSG 100 or KSG 125 and to 150 Nm for the KSG 160.

9.5 Fitting the 6-fold reversible jaws

- Determine the mounting positions of the 6-fold reversible jaws.
  The best clamping results are achieved when workpieces as far out as possible.
- Move the cover screws so that the selected clamping position is available.
- Position the 6-fold reversible jaws and loosely insert the cylinder screws.
- Turn the 6-fold reversible jaws to the required clamping surface and slightly pre-clamp the workpiece so that the clamping faces are parallel to the workpiece.
- Use a torque of 80 Nm to tighten the cylinder screws of the 6-fold reversible jaws.

Important:

When the clamping faces of the 6-fold reversible jaws are not aligned parallel to the workpiece surface it is possible that the 6-fold reversible jaw becomes loose through the clamping force.

10 KSG-5A

10.1 Function

Due to the higher tension, the workpiece can be better processed on a 5-axis machine. When clamping with high jaws, the clamping force is reduced by approx. 40% due to increased friction forces in the spindle nut.
This loss of grip can largely be compensated for by using "grip" stepped jaws.

10.2 Removing and replacing parts

Reversing the installation of the movable 5A support jaw

- Removing the spindle assembly.
- Remove the spindle assembly from the spindle nut (pos. 40) by turning.
- Turn the spindle assembly into the 5A support jaw.
- Installation the spindle assembly.

Note:

To change the KSG-5A to KSG standard, a spindle nut is Required (pos. 40).

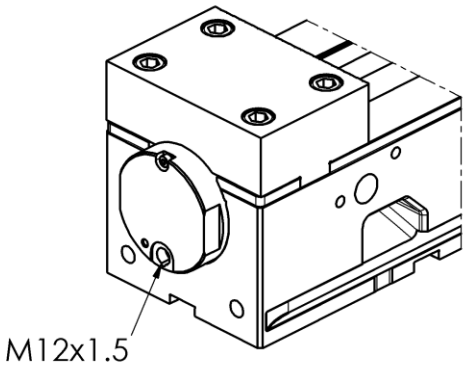
11 KSG hydraulic

11.1 Function

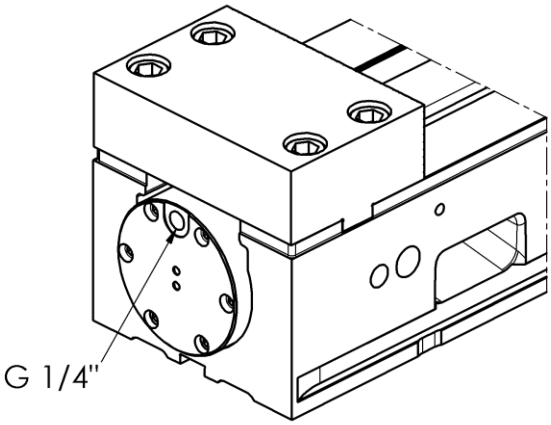
Instead of the mechanical force cassette and spindle assembly, a hydraulic cassette with spring reset is installed.
The power supply of the cylinder via a hydraulic unit with pressure regulator (supplied by other).
The customized spindle assembly is used to adjust the clamping opening and for transmitting force to the clamping jaw.
The required clamping force is achieved via hydraulic pressure, without clamping lever.
The clamping force is generated hydraulically and the clamping force transmission is linear across the whole clamping range.

Hydraulic-Interface:

KSG 125-H

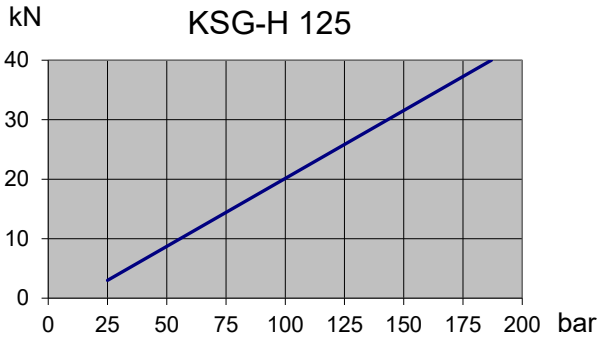


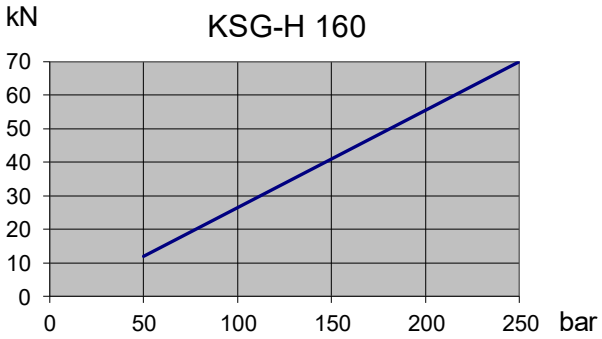
KSG 160-H



11.2 Technical data

Version	max. clamping force	max. clamping stroke	Oil-volume (by max. stroke)	Clamping time for aflow rate of e.g. 3.6l/min.	
				One vice	Two vices
KSG 125-H	40 kN	5 mm	13 cm^3	ca. 0.25 sec.	ca. 0.5 sec.
KSG 160-H	70 kN	6 mm	21 cm^3	ca. 0.35 sec.	ca. 0.70 sec.





Recommended operating medium:

Hydraulic oil HLP 15 – HLP 46

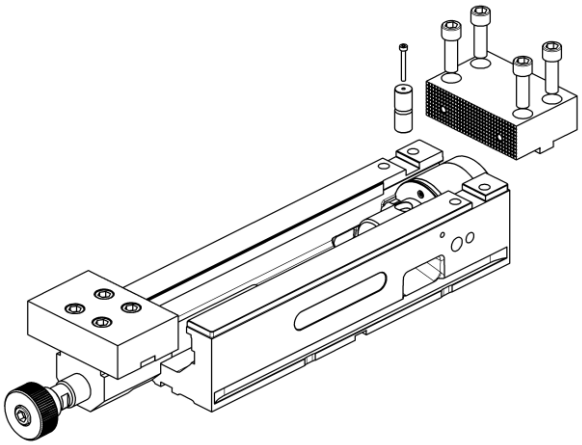
Important:

The hydraulic supply hose must be vented before connecting it to the vice.
Once the hose is connected, carry out some clamping actions without workpieces.

11.3 Removing and replacing parts

The hydraulic cylinder and spindle assemblies are compatible with all KSG standard 125 and 160.
The installation can be reversed simply by exchanging the parts.

Remove or installation the spindle assembly of the KSG 160-H



- Remove the fix jaw.
- Remove the coupling bolt with screw M5.
- The spindle assembly can be pulled out.
- Install in the reverse order.
- Tighten the cylinder screw with150 Nm.

11.4 Risks of hydraulic system

Do not any manipulation when the system is under pressure.

Risk of fingers being caught during clamping

Set the clamping range such that the distance between the jaws is approx. 1 – 2 mm larger than the workpiece, this means that the gap is so small that fingers cannot be trapped.
Do not operate the vice with a gap between the workpiece and the jaws on either side that is large enough for fingers to be trapped in order to avoid accidents when the vice clamps the workpiece.
Choose a width between jaws that is clearly larger or clearly smaller.
When producing purpose-made jaws or when using aluminium jaws, it is important to avoid ridges that could present a trapping risk.

Maintaining pressure during operation

It is possible that hydraulic cylinders have small leaks.
During milling work, the clamping device must be continuously supplied with hydraulic pressure from the hydraulic system in order to ensure that there is no loss of pressure due to leakage.
Hydraulic hoses must be protected against hot fragments and the hoses must be regularly checked for wear.

Important:

If the hydraulic sustem loses pressure or a hose is damaged, the clamping force reduces sharply.
To avoid pressure drops due to switching operations of neighbouring switching valves or due to system failure system failure of the hydraulics, we recommend at least installing a non-return valve befor the switching valve (P inlet).
Ideally, a pilot-operated check valve should be installed directly before the clamping device.
For pallet systems that are depressurized during changeover, we recommend using a pilot-operated check valve to prevent the clamp from opening when pressure is released.
The vise must be regularly checked for leaks.

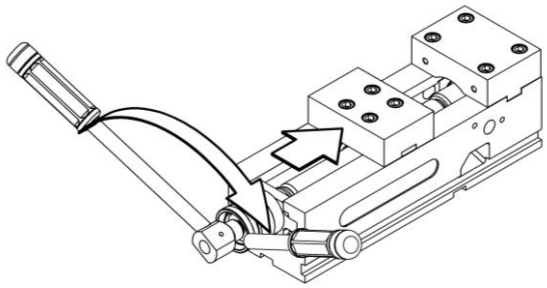
12 Taking out of service

The clamping device and all accessories can be disposed of as scrap metal without any risk.

13 Zertifikat / Certificat

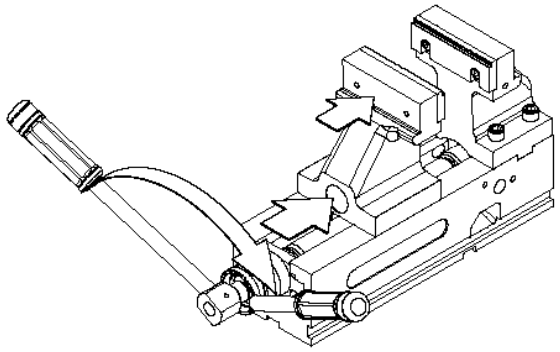
Spannkräfte und Anzugsmomente / Clamping forces and torque

Der Drehwinkel am Spannhebel beträgt für die Spannung ca. 160° (Zustellung und Spannhub)
The turning angle at the clamping lever for the tension is approx. 160°
(closing and clamping action)



Max. Anzugsment am Spannhebel
Max. torque at clamping lever

KSG 100:	M max. 37 ± 5 Nm
KSG 125:	M max. 57 ± 5 Nm
KSG 160:	M max. 62 ± 5 Nm



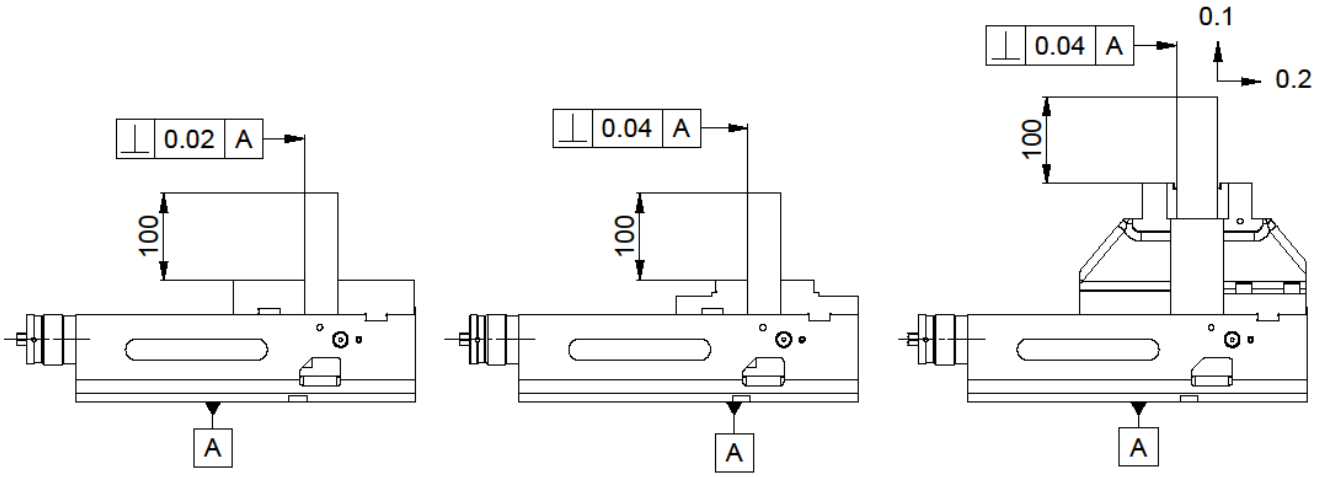
Max. Spannkraft (elektronisch gemessen)
Max. clamping force (measured electric)

KSG 100:	F max. 30 ± 2 kN
KSG 125:	F max. 40 ± 2 kN
KSG 160:	F max. 40 ± 2 kN
KSG 100-5A:	F max. 18 ± 2 kN
KSG 125-5A:	F max. 24 ± 2 kN
KSG 160-5A:	F max. 24 ± 2 kN

(Spannkraftverlust durch hohe Trägerbacken ca. 40%)
(loss of clamping force due to tall support jaws is approx. 40%)

Winkligkeit / Angles

Nachdem der Spanner mit Spannpratzen befestigt wurde wird bei max. Spannkraft die Rechtwinkligkeit der geschliffenen Spannfläche geprüft.
After the vice has been fixed with clamping claws, the perpendicularity of the ground clamping surface is determined at max. clamping force tested.



Winkelabweichung / Angle deviation

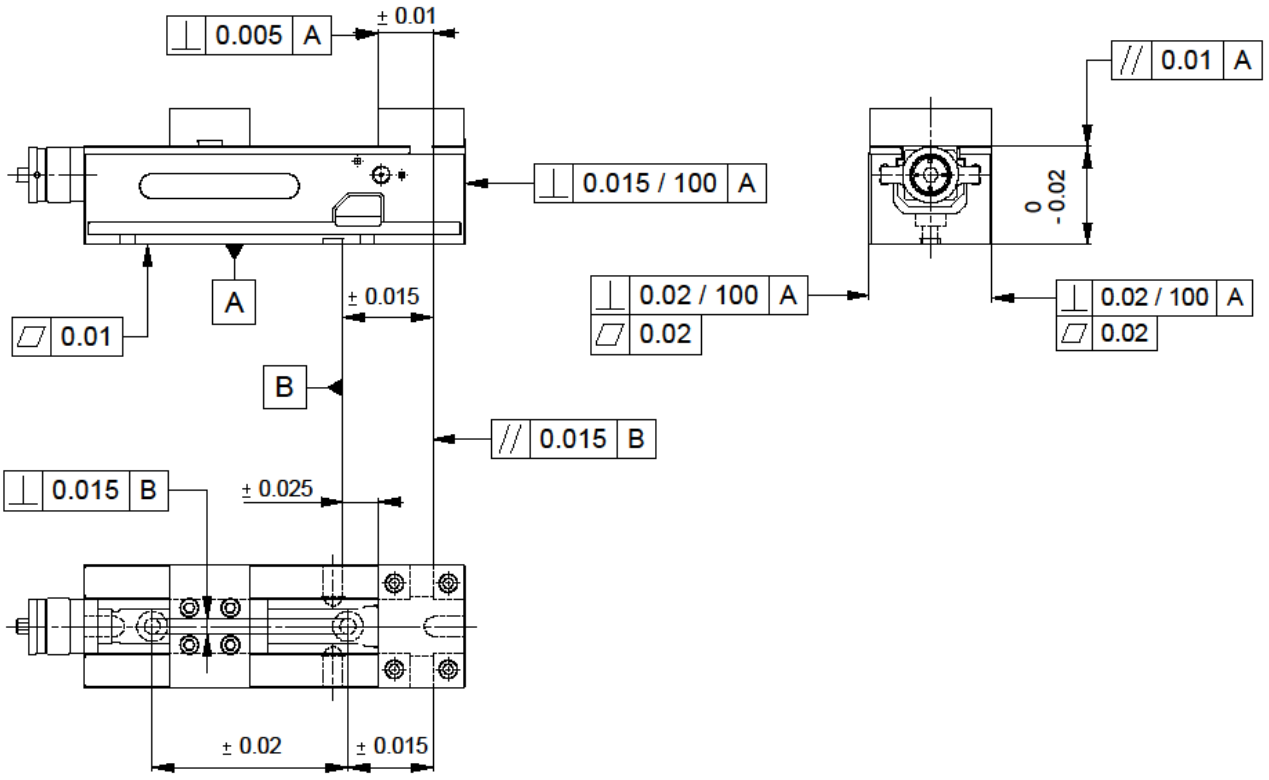
Standard-Wendebacken / Standard reversible jaws:	0.02 mm
Kombi-Wendebacken / Combi reversible jaws:	0.04 mm
5-Achs-Träerbacken / 5-axle support jaws:	0.04 mm

Werkstückabweichung nach Spannkraft-Aufbau bei der 5-Achs-Trägerbacke
Workpiece deviation after build-up of clamping force with 5-axle support jaw

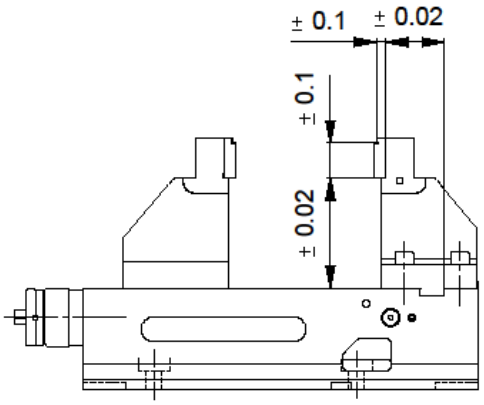
Vertikal / Vertical:	max. 0.1 mm
Horizontal / Horizontal:	max. 0.2 mm

Form- und Lagetoleranzen / Form and positional tolerances

KSG



KSG-5A



14 EC declaration of incorporation

In terms of the EC Machinery Directive 2006/42/EC, Annex II, Part B

Manufacturer H.-D. SCHUNK GmbH & Co.
Distributor Spanntechnik KG
Lothringer Str. 23
D-88512 Mengen

We hereby declare that the following product:

Product designation: Single vice, hydraulic
KSG-H 125, KSG-H 160
ID-Number: 0430312, 0430351, 0430317, 0430318

meets the applicable basic requirements of the **Machinery Directive (2006/42/EC)**.

The incomplete machine may not be put into operation until conformity of the machine into which the incomplete machine is to be installed with the provisions of the Machinery Directive (2006/42/EC) is confirmed.

Applied harmonized standards, especially:

EN ISO 12100:2011-03	Safety of machinery - General principles for design - Risk assessment and risk reduction
EN 62079:2001	Preparation of instructions - Structuring, content and presentation

The manufacturer agrees to forward on demand the special technical documents for the incomplete machine to state offices.

The special technical documents according to Annex VII, Part B, belonging to the incomplete machine have been created.
Person responsible for documentation: Mr. Alexander Koch,
Adress: see adress of the manufacturer

Mengen, September 2025 i.V. Alexander Koch; Director for Development / Design

H.-D. Schunk GmbH & Co.
Spanntechnik KG
Lothringer Strasse 23

D-88512 Mengen

Tel.: +49-7572-7614-1300
Fax: +49-7572-7614-1039

CMM@de.schunk.com
schunk.com

Montage / Kontrolle **Installation / Check**
Datum:
Signatur: