1 User information

1.1 Purpose of document, validity

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 instructions

⚠	**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.

Information on useful tips or for preventing material damage

ℹ	**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.

Important for preventing more extensive material damage (alternative)

❗	**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

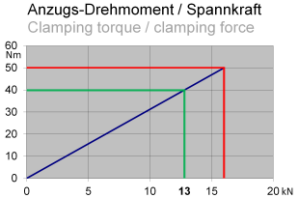
2.1 Intended use

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. torque	max. clamping force
KSC mini 70-80	50 Nm	16 kN
KSC mini 70-100	50 Nm	16 kN

Ideal working range up to 40 Nm = 13 kN



Exceeding the max. torque results in damage to the spindle. ❗

Weight:
KSC mini 70-80 without system jaws: 0.9 kg
KSC mini 70-100 without system jaws: 1.1 kg

For further data, please see the 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 5 kg in vertical position without an additional safeguard to prevent the workpiece falling out.

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 tension. ⚠
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 clamping device must not be used in any way that impairs its 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. ❗
We recommend that clamping be carried out with a torque wrench in order to achieve consistent clamping results. 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 carriages.

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: Risk of eye injury through ejected, hot fragments! 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

The warranty period is 24 months 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.

Warranty – Maximum service life
24 months or 50'000 clamping cycles

3 Description of the clamping device

The C2 has been designed for centric clamping of raw parts and finished workpieces.

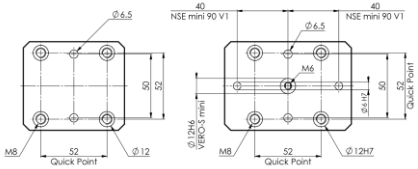
3.1 Function

The KSC mini is a direct vice with a driven manually via a thread.
The force is generated mechanical, directly in a linear manner, without a force amplifier. The clamping forces depend on the torque.
Both carriages close respectively open synchronously and are symmetrical with respect to the position holes in the tool body.

4 Operation (standard operation)

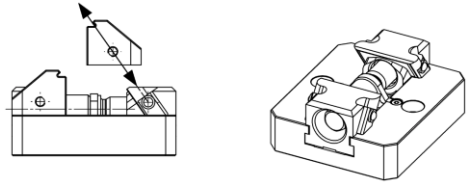
4.1 Clamping / aligning

KSC mini 70-80 KSC mini 70-100



4.2 Jaw change

The clamping device has a quick change system with integrated pull-down.
The system jaws are held down by two spring pressure pieces. To change the system jaws, they are pulled out diagonally to the middle.



4.3 Clamping range

The sliders and system jaws must not rise out of the base body during clamping. ❗
The maximum adjustment range is given by the length of the base body.

Failure to comply with this rule can result in insufficient workpiece clamping and hence to loss of workpieces and damage. ⚠

5 Servicing, cleaning and maintenance

Make sure that the sliding surface between the system jaws as well as the spindle is free of chips when adjusting the clamping range. ℹ

5.1 General cleaning / lubrication

Clean and oil the running surfaces, spindle and bearing of the vice regularly, e.g. with MOTOREX Supergliss 68 K to ISO VG 68. ℹ

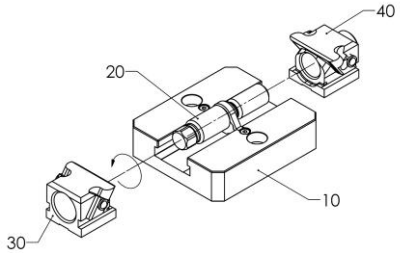
6 Troubleshooting, eliminating faults

Vice is hard to operate:

Disassemble system jaws and clean the entire clamp.
If this does not result in an improvement of the function, the vice can be further dismantled in accordance with the description below. ℹ

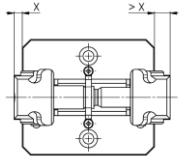
6.1 Removal

Unscrew the slides from the spindle and the base body by turning the spindle.



6.2 Installation

- Clean the system completely.
- Re-grease the thread of the spindle and at the carriages using e.g. EP high-performance grease, such as LAGERMEISTER WHS 2002, NLGI class 1-2
- Oil the running surfaces and bearing of the vice using e.g. with MOTOREX Supergliss 68 K to ISO VG 68.
- Insert both sliders (pos. 30 and 40) into the base body (pos. 10) up to the thread beginnings of the spindle (pos. 20) and check the slider positions X to the base body.

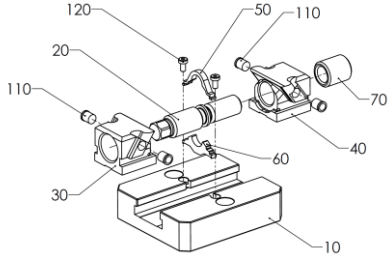


- Screw in the slider (pos. 30 or pos. 40) which is further outwards (> X) first with the spindle (pos. 20). As soon as both sliders have the same distance X to the base body, let the second slider be screwed in as well. Then screw in both sliders symmetrically.

Important: Here the two distances X to the base body must be checked and must be identical. This is the only way to ensure that the system's centre position remains constant. If this is not the case, remove the slide again and repeat the procedure. ❗

The centre on the KSC mini is adjusted and bonded during assembly using the threaded sleeve (pos. 70). Components of different clamps must not be interchanged. This is the only way to ensure a constant centre position.

7 Assembly drawing



7.1 Parts list

Position	Part. Nr.	Designation	Quantity
10	CGM.070.101.11 *CGM.070.111.11*	Tool body Basic	1
20	CGM.070.104.11 *CGM.070.114.11*	Spindle	1
30	CGM.070.105.11	Carriage operator side	1
40	CGM.070.106.11	Carriage rear side	1
50	CGM.070.109.11	Centric bearing top	1
60	CGM.070.108.11	Centric bearing below	1
70	CGM.070.107.11	Threaded sleeve	1
110	XNN.90000.060	Spring plunger	4
120	XNN.19000.056	Cylinder screw	2

Positions in plain font are used for KSC mini 70-80
Positions in italic font are used for KSC mini 70-100 ℹ

Note: Pos. 10 to pos. 40 cannot be supplied as individual spare parts as these are designed and fitted at the factory to work together. ❗

Repairs can be carried out by the manufacturer or an authorised service agent.

8 Taking out of service

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

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

Tel: +49-7572-7614-1300
Fax: +49-7572-7614-1099

customercentermengen@de.schunk.com
schunk.com