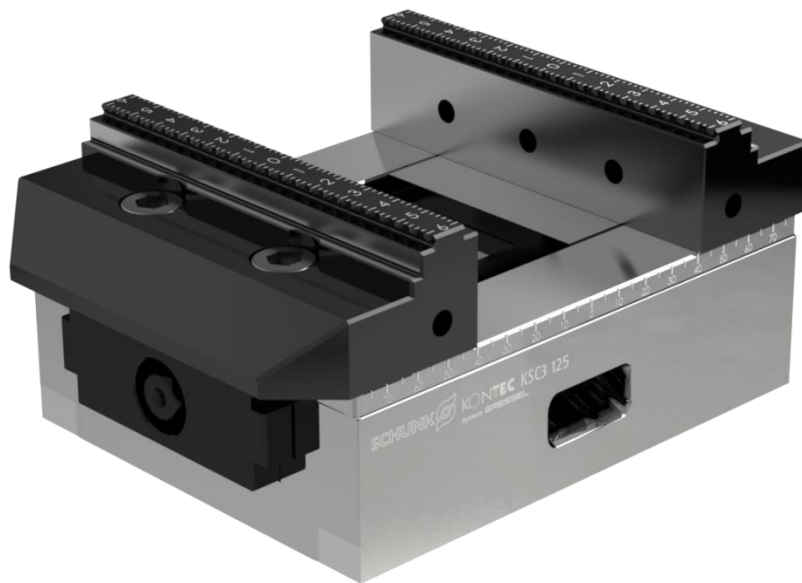


Montage- und Betriebsanleitung Installation- and operating instruction

Zentrischspanner Centric vise

KSC3



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1 User information

1.1 Purpose of document, validity

These instructions are an integral part of the product supply 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 injuries (permanent disability) will result.
	Warning: Indicates a potentially dangerous situation. If the information is ignored, it is possible that death or serious injuries (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 injuries will result.
Indication on useful tips or for preventing material damage	
	Note: Indicates general information, useful tips for users and work recommendations which, however, do not have an 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	
	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.

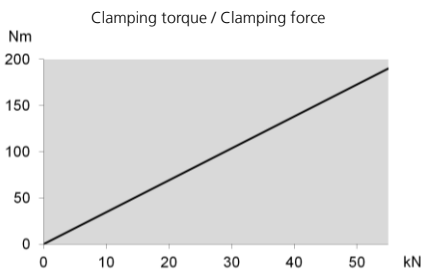
2 General safety instructions

2.1 Intended use

The clamping device may only be used in accordance with the technical data. The clamping device 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
KSC3 80	90 Nm	25 kN
KSC3 125	100 Nm	35 kN
KSC3 160	175 Nm	50 kN



Exposure to loads in excess of the max. pull-in torque results in damage to the spindle.

Weight:

KSC3 80	L-130	without system jaws:	3.0 kg
KSC3 80	L-190	without system jaws:	4.5 kg
KSC3 125	L-160	without system jaws:	6.4 kg
KSC3 125	L-235	without system jaws:	9.5 kg
KSC3 125	L-300	without system jaws:	12.5 kg
KSC3 160	L-280	without system jaws:	25.0 kg
KSC3 160	L-480	without system jaws:	35.0 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 foreseeable misapplication

- Clamping device used on rotating systems.
- Clamping widely protruding workpieces.
- Clamping of heavy workpieces in vertical position without an additional safeguard to prevent the workpiece falling out during loading and unloading.

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.

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.

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 chips! 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.
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2.8 Warranty

The warranty period is 24 months from the date of delivery, the warranty applies subject to being used as intended and to the following conditions:

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

Any parts in contact with workpieces are not covered by the warranty.

Warranty – Maximum service life

24 months or 50'000 clamping cycles

3 Description of the clamping device

The KSC3 has been designed for centric clamping of raw parts and finished workpieces. The force is generated mechanically and the power gear ratio is linear across the whole clamping range.

3.1 Function

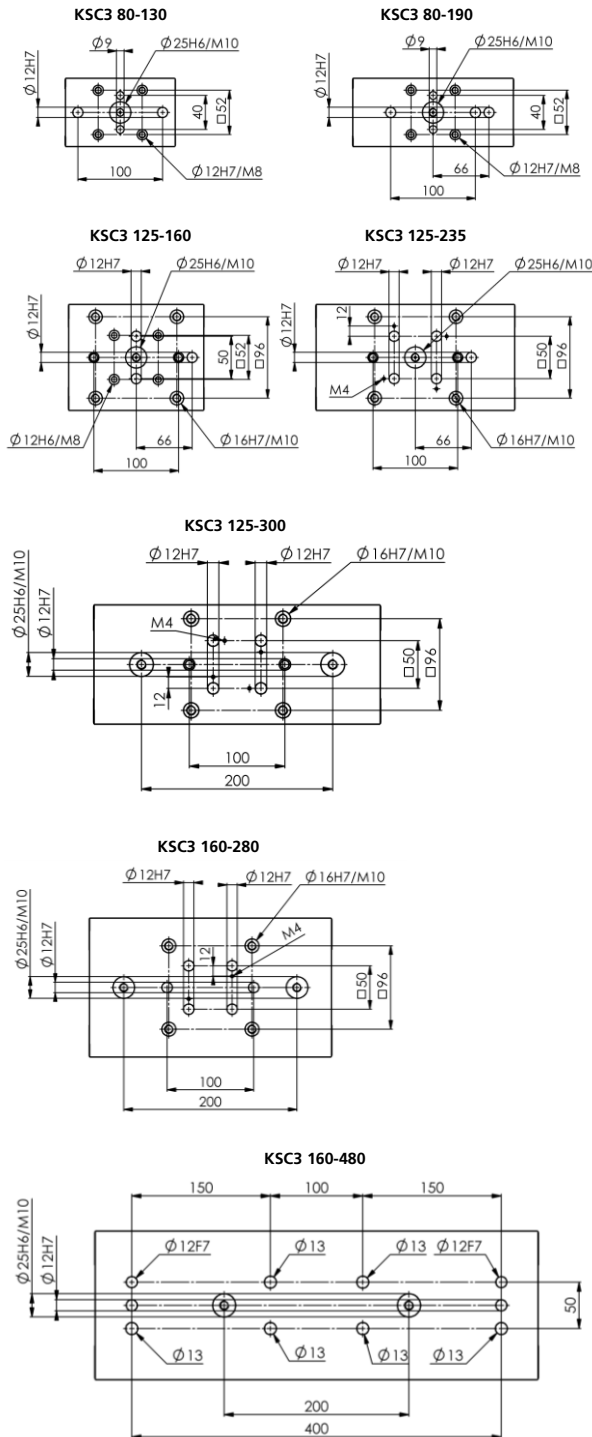
The KSC3 is a direct vise with a mechanical drive via a capsuled thread. The force is generated directly and without a force amplifier. Both jaws and carriages close respectively open synchronously and are symmetrical with respect to the position holes in the base plate. The vise is also suitable for workpiece clamping from the inside to the outside.

4 Operation (standard operation)

4.1 Clamping / aligning

Important:

When using the Schunk quick-change palleting system, only the clamping pins VERO-S SPA 40-K (ID: 0432369), SPB 40-K (ID: 0432370) with short screw and the indexing bolt VERO-S IXB V1-K (ID: 0432371) may be used.



Important:

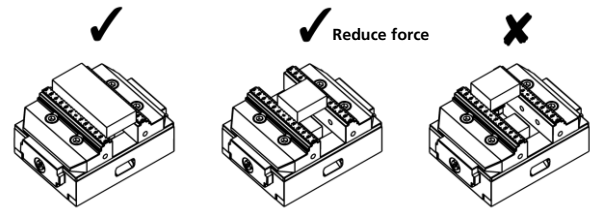
All tolerances are without nickel layer of 5 μ m per surface.



4.2 Jaw change

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

4.3 Clamping



Important:

The clamping force must be adapted to the jaw width / workpiece width.



4.4 Jaw change

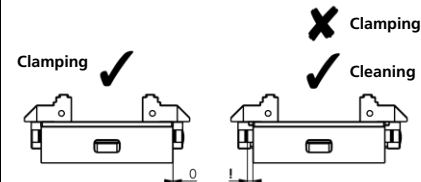
- Release cylinder screws and remove the jaws.
- Clean and oil the contact surfaces, e.g. with MOTOREX Supergliss 68 K to ISO VG 68.
- Changing the jaws or moving them in the carriages, tightened the cylinder screw to the prescribed torque:

KSC3 80	50 Nm
KSC3 125	60 Nm
KSC3 160	140 Nm

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

4.5 Maximum carriages opening

The clamping range depends on the type of vise and the selected system respectively top jaws. There is therefore a marking on the carriages when the maximum opening of the carriages is reached. If this range is exceeded, one leaves the encapsulated area and contamination can occur under the carriages and in the bearing area due to chips penetrating.



Workpiece clamping outside the specified markings can lead to workpiece loss and damage the vise.



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.

For cleaning under the carriages, the KSC3 80, KSC3 125-160 and KSC3 160-280 vises can be opened above the maximum and flushed.

This is not possible with all others because the slides are secured with a circlip or snap ring.

Clean and oil the running surfaces and guides of the vise regularly, e.g. with MOTOREX Supergliss 68 K to ISO VG 68.

The KSC3 160 has a lubrication nipple in the carriage groove. It is recommended that a lubrication nipple be applied monthly. The carriages must be completely closed.

6 Troubleshooting, eliminating faults

Device is hard to operate

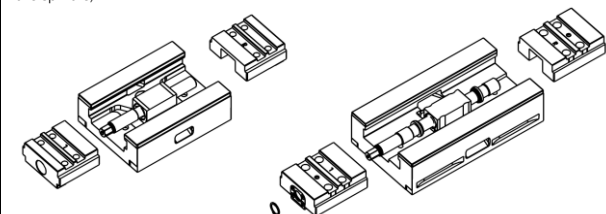
Disassemble system jaws and clean the entire devices. If this does not result in an improvement of the function, the device can be further dismantled in accordance with the description below.

6.1 Removal

The carriages can be completely removed from the base plate by turning the spindle to the left with a T20 Torx-Screwdriver.

On the KSC3 125-235, KSC3 125-300 and KSC3 160-480 must the circlip be removed from the spindle before.

The inner wipers are usually pulled out of the carriages and remain on the inside of the spindle. (If the wipers are pulled over the thread, they must be carefully returned to the inside of the spindle).



Important:

The high degree of precision of the KSC3 is achieved using a processing step while it is mounted.

The components of different vises must not be interchanged. Both carriages and the base plate must have the identical serial number. This is imperative in order to ensure the consistent central position of the system and the fitting of the guide between the carriages and base plate.

Further dismantling by the user is not permitted but can be carried out by the manufacturer or an authorised service agent.

Non-compliance with this rule invalidates the warranty.



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 vise using e.g. with MOTOREX Supergliss 68 K to ISO VG 68.
- Insert both carriages into the base plate up to the thread beginnings of the spindle.

Important:

Both carriages and the base plate must have the identical serial number.

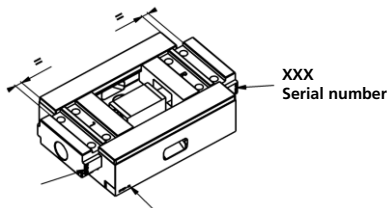
- Screw in the threads by turning the spindle clockwise and pressing on both carriages ends at the same time.

Important:

Both carriages must come together and engage in the threads at the same time. This is imperative in order to ensure the consistent central position of the system.

Checking the central position

The gap between the carriage slot and the end face of the base plate must be identical on both sides. If this is not the case, remove the carriages again and repeat the process.



- Finally, fully join the carriages together so that the inside wipers on the vises KSC3 125-300 and KSC3 160-480 are again pressed into the carriages via the spacer O-rings.
- If present, refit end stops.

Important:

The high degree of precision of the KSC3 is achieved using a processing step while it is mounted.

The components of different vises must not be interchanged.

Both carriages and the base plate must have the identical serial number.

This is imperative in order to ensure the consistent central position of the system and the fitting of the guide between the carriages and base plate.



7 Swivel and adapter plate

OP10: Clamping with grip clamping steps of 3, 8 or 18 mm.

OP20: Clamping on tungsten carbide coated side. When clamping the system jaws may yield slightly. The workpiece position must be measured.



7.1 Fitting the swivel and adapter plate

With the KSC3 80, KSC3 125-235 and KSC3 125-300 are the workpieces are clamped asymmetrically to the base plate.

Depending on the selected mounting position of the swivel plate and the 6-fold reversible jaws, a centric workpiece position is possible with the KSC3 125 L-160 and KSC3 160 in relation to the base plate.

For reasons of stability, the swivel plate with the bearing journal must not be inserted in the outermost sliding groove.

7.2 Fitting the 6-fold reversible jaws

- Determine the mounting positions of the 6-fold reversible jaws. The best clamping results are achieved when clamping parts 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 on to the required clamping faces and slightly Pre-clip the workpiece so that the clamping faces are parallel to, and touch, 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.



7.3 Troubleshooting, eliminating faults

Swivel plate is difficult to turn

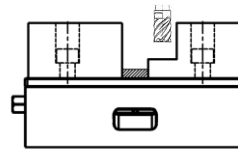
- Disconnect the swivel plate and push the swivel peg from below out of the swivel plate.
- Check the vise guide and swivel plate surface for indentations or deformations. If necessary, re-grind the plate and the vise guide.
- Check the peg for soiling.
- Check that the O-rings are correctly positioned.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

When handling, the swivel plate should not be turned upside down.



8 Aluminium jaws

The aluminium jaws are designed for producing workpiece-specific clamping contours. In order to achieve maximum precision of the contour, it is recommended that the contour milling is carried out with pre-clamping of the aluminium jaws. For this purpose, a narrow spacer piece can be clamped at the bottom and the pre-clamped aluminium jaws can then be milled to achieve the desired clamping contour.



Important:

Mill the system jaw to a maximum depth of the screw head. Ensure that the clamping cross-section is sufficient.



9 Service / Maintenance

Note:

It is not possible to supply spare parts for the carriage, base plate and spindle, 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.



10 Taking out of service

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



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