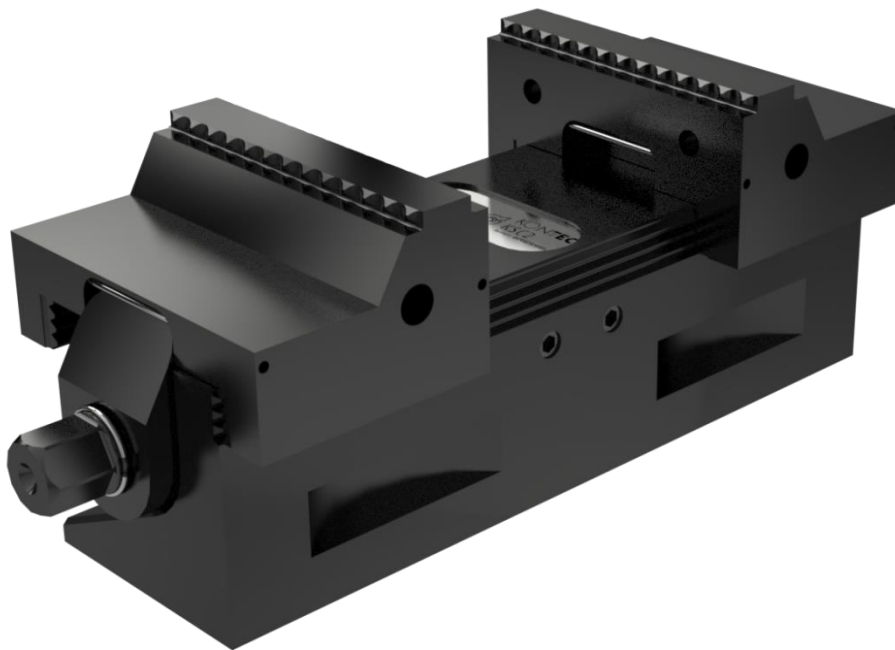


Montage- und Betriebsanleitung Installation- and operating instruction

Zentrischspanner Centric vice

KSC2



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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 	
	<p>Indicates imminent danger. If the information is ignored, death or serious injury (permanent disability) will result.</p>


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

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

Information on useful tips or for preventing material damage

NOTE	
	<p>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.</p>

Important for preventing more extensive material damage

CAUTION	
	<p>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.</p>

2 General safety instructions

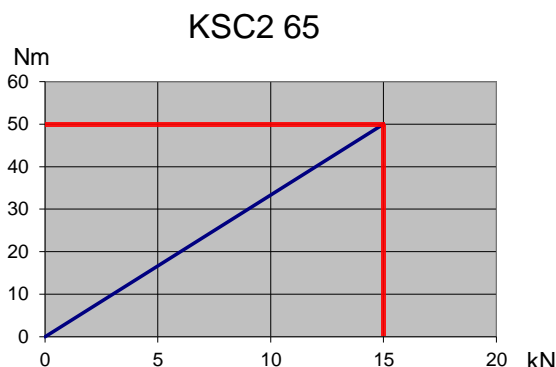
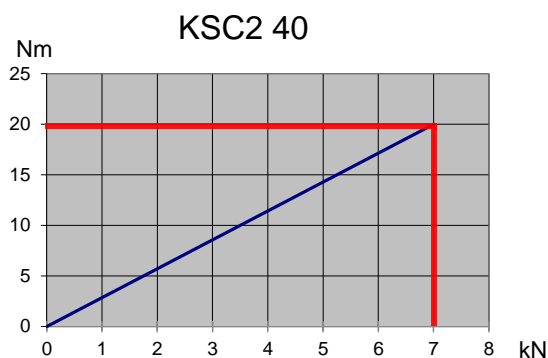
2.1 Intended use

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:

Version	max. torque	max. clamping force
KSC2 40	20 Nm	7 kN
KSC2 65	50 Nm	15 kN



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



Weight:

KSC2 40: 0.8 kg

KSC2 65: 2.9 kg

For further data, please see the catalogue >> Schunk stationary Workholding <<

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 workpieces with a weight of over 20 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.

Do not use methods of operation that impair the function and operational safety.



2.3.1 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 	
	<p>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.</p>

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

Period of warranty	24 months
Maximum service life [clamping cycles]	50,000

3 Description of the clamping device

The KSC2 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

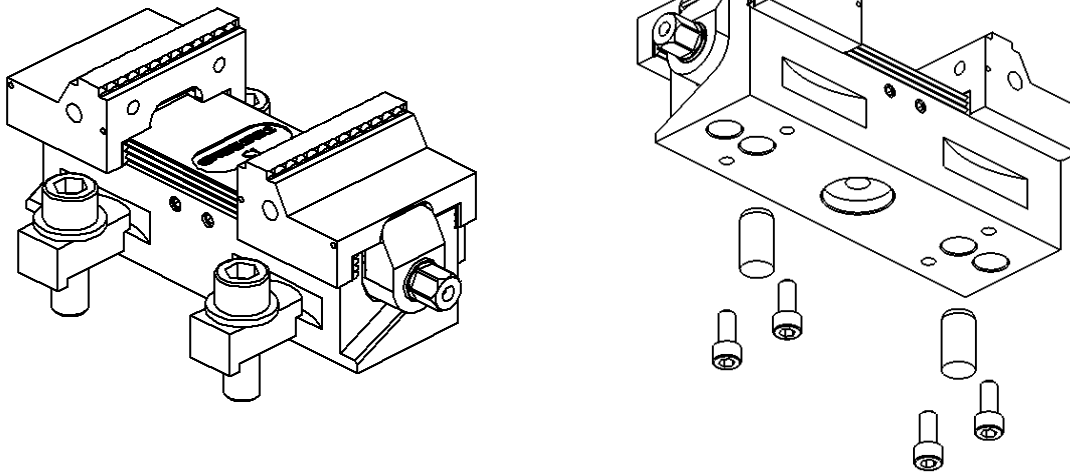
The KSC2 is a direct clamping device. The mechanical drive functions via a spindle. The force is generated directly in a linear manner, without a force amplifier.

Both system jaws and carriages close respectively open synchronously and are symmetrical with respect to the position holes in the base plate.

With the quick-change system it is not possible to clamp from the inside against the outside.

4 Operation (standard operation)

4.1 Clamping / aligning



The basic versions include two positioning holes $\varnothing 12$ H7 (KSC2 65) and $\varnothing 8$ H7 (KSC2 40), which can be used to position the KSC2 65 on grid plates with 50 mm division and the KSC2 40 on grid plates with 30 mm division, and on T-slot tables.

The KSC2 is attached from above using four cylinder screws and clamping claws or from below using four screws M6.

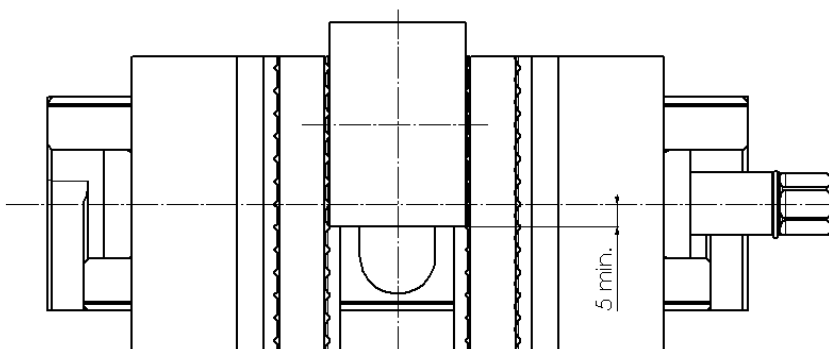
The base plate is fitted with an interface to attaching the clamping pin for the VERO-S quick-change palleting system and the indexing pin.

Important:

- The KSC2 40 have not an interface for the VERO-S quick-change palleting system.
- The cylinder screw for VERO-S is too long and must be shortened to max. 42 mm.



The KSC2 can also be produced at the factory with customer-specific positioning and fixing holes as well as with location recesses for various commonly available quick-change palleting systems.



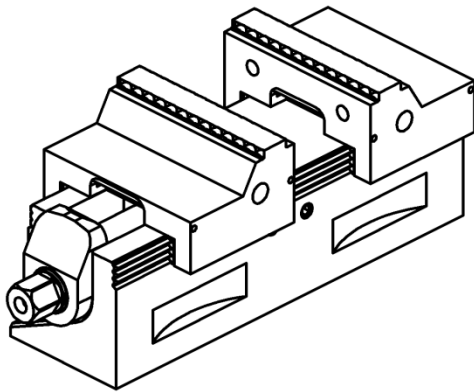
In order to ensure the correct function of the vice, the workpiece must be clamped at least 5 mm above the vice's symmetrical axis.



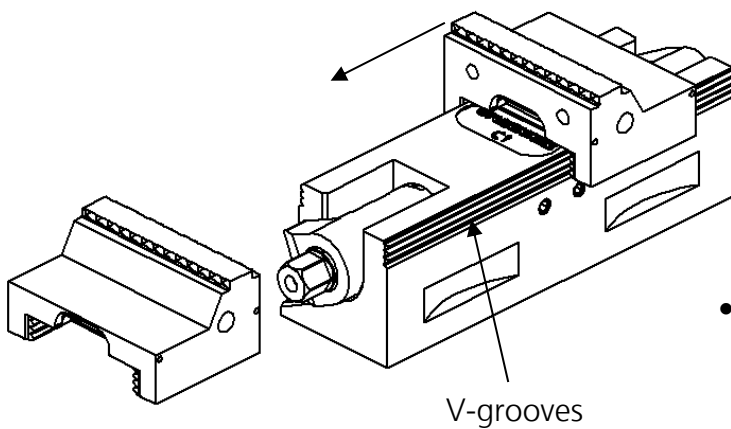
4.2 Jaw range

The reliable function of the clamping device is significantly affected by the selection of the correct top jaws. (On the KSC2 40 can not mounted the top jaws)

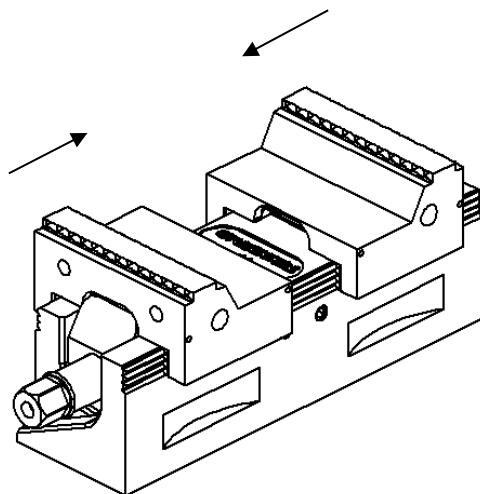
4.3 Jaw change



- Disengage both system jaws (pos. 20) from the drivers. (pos. 40 / 50)
- Open the vice until the drivers (pos. 40 / 50) can be moved to the side.



- Remove the first system jaw (pos. 20) from the base plate (pos. 10) on the operator side.



- Move the second system jaw (pos. 20) from the rear towards the operator side. (do not remove from the base plate)
- Slide the system jaw (pos. 20) that has already been removed back on to the base plate (pos. 10) at the rear of the vice.



When fitting the system jaws push them laterally against the threaded profile and ensure that all V-grooves are used.



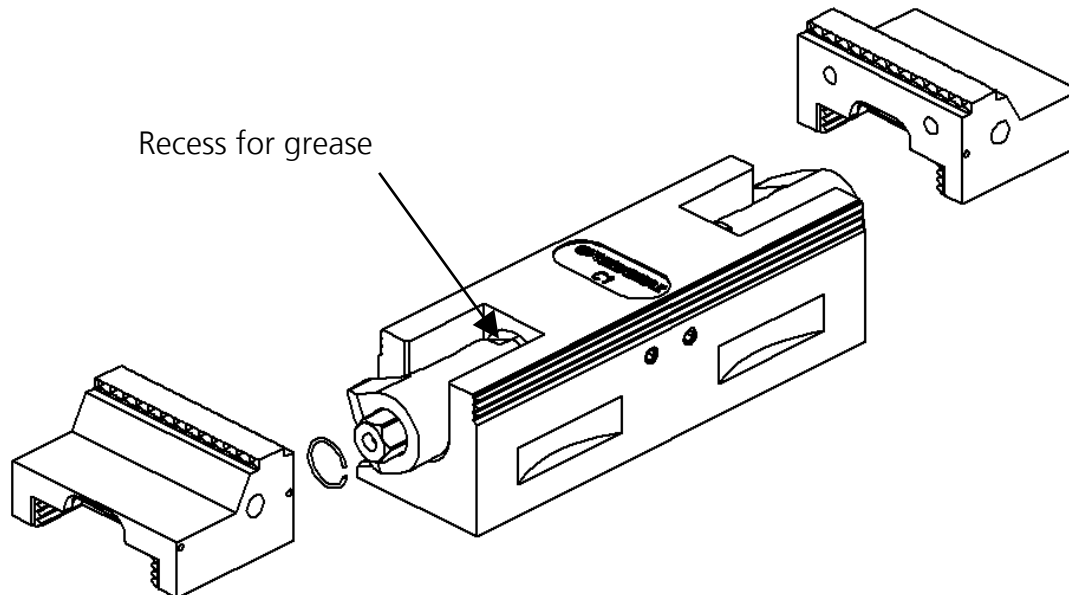
- Fold the drivers (pos. 40 / 50) back to the base plate guide so that the vice can be pushed back together.
- Close the vice once completely to enable the drivers to engage in the system jaws.

5 Servicing, cleaning and maintenance

No special servicing is required, the spindle unit is protected by the carriage construction. Lubricate the threaded profile and the contact surfaces regularly with machine oil, e.g. with MOTOREX Supergliss 68 K to ISO VG 68.

Dismantle the system jaw from time to time and lubricate the thread of the spindle with grease.

5.1 General cleaning / lubrication



- Disengage both system jaws (pos. 20) from the drivers. (pos. 40 / 50)
- Open the vice until the drivers (pos. 40 / 50) can be moved to the side.
- Remove the system jaws (pos. 20) from the base plate.
- Remove the circlip (pos. 120) - do not lose!
- Continue to open the vice until the spindle (pos. 30) can be seen through the greasing recess.
- Lubricate the thread through the greasing recess.
- Oil the contact surfaces.
- Re-assemble the unit. (see page 28)



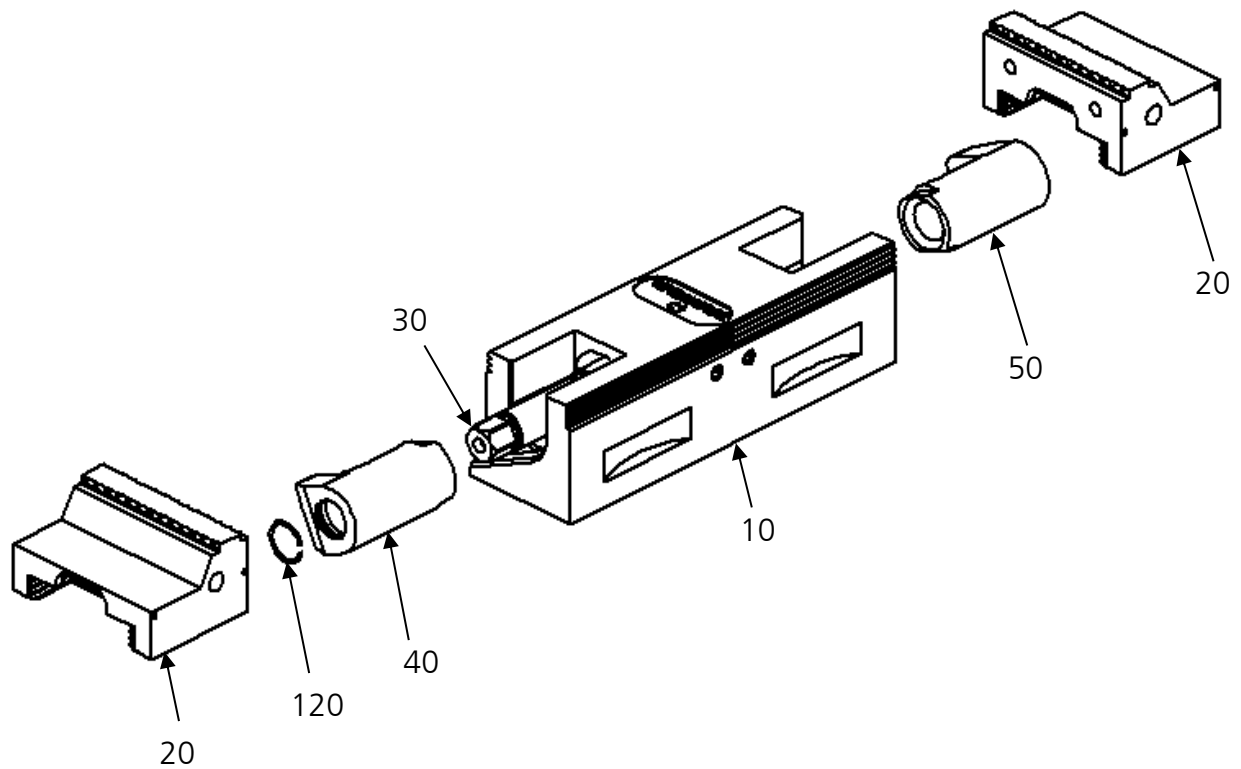
6 Troubleshooting, eliminating faults

Vice is hard to operate

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

7 Removing and replacing parts

7.1 Removal

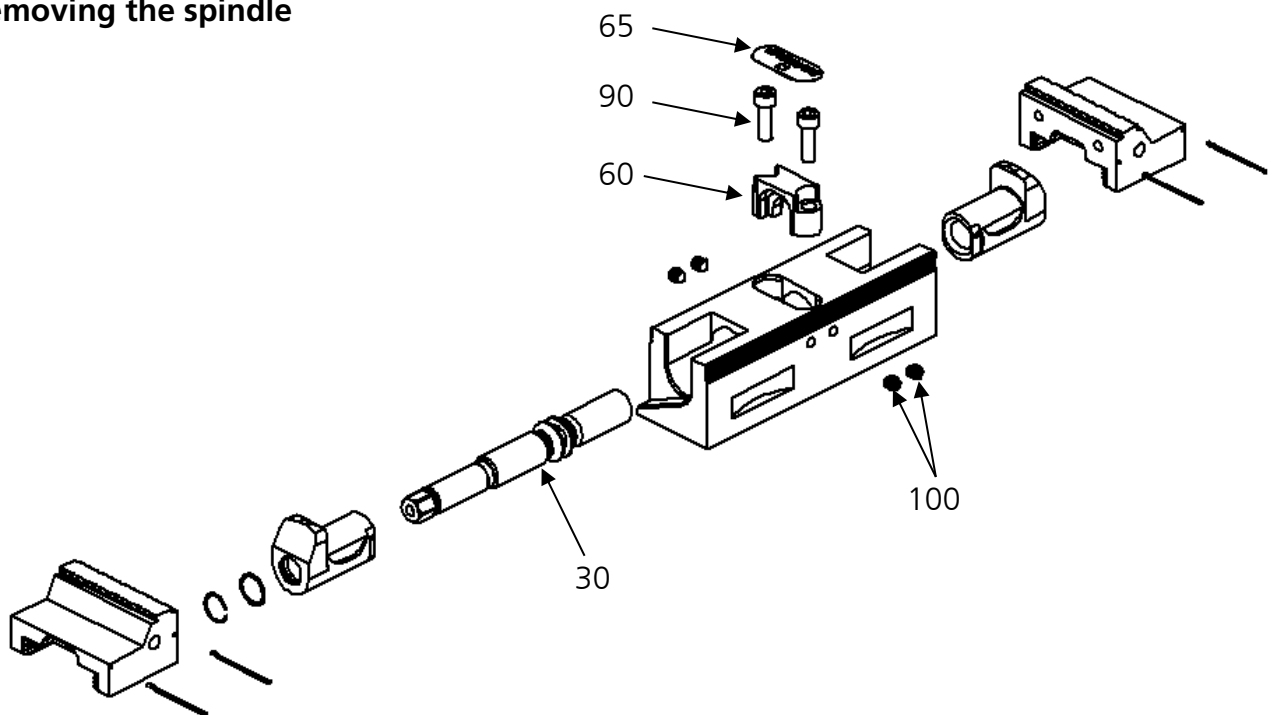


- Disengage both system jaws (pos. 20) from the drivers. (pos. 40 / 50)
- Open the vice until the drivers (pos. 40 / 50) can be moved to the side.
- Remove the system jaws (pos. 20) from the base plate. (pos. 10)
- Remove the circlip (pos. 120) if necessary and turn out the drivers. (pos. 40 / 50)



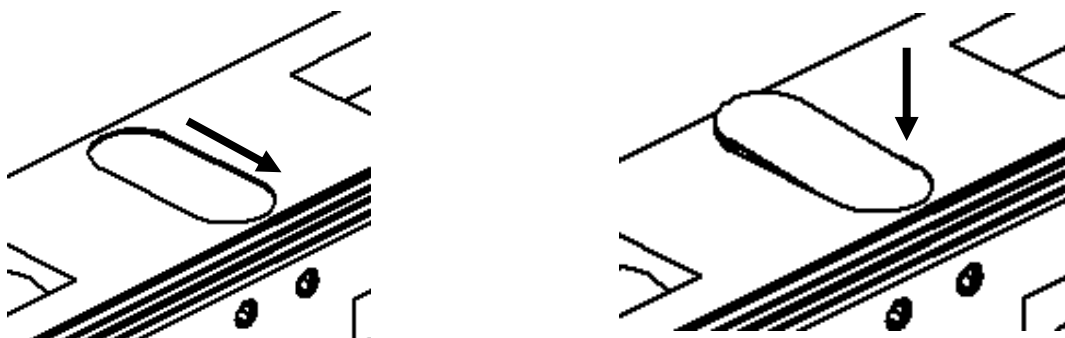
7.2 Complete dismantling

7.2.1 Removing the spindle



- Dismantling. (see page 26)
- Remove the cover plate. (pos. 65)
- Release threaded pins (pos. 100) on both sides.
- Remove cylinder screws. (pos. 90)
- Remove centring fork (pos. 60) - do not lose.
- The spindle (pos. 30) can now be pulled out.

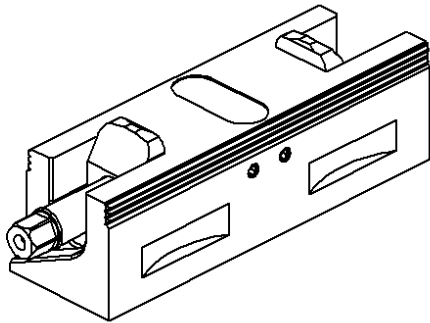
7.2.2 Removing the cover plate




- Slide the cover plate sideways into a rounded area.
- Push on the cover plate on the same side until it disengages from the lock.

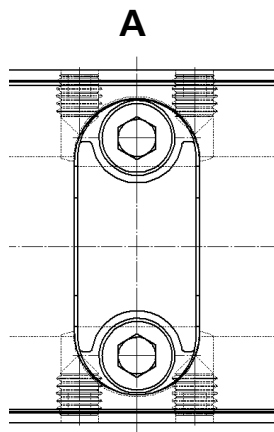
7.3 Assembly

Carry out assembly in the reverse order and the spindle unit must be sufficiently lubricated. The torque for tightening the cylinder screws (pos. 90) for fitting the centring fork is 9 Nm.



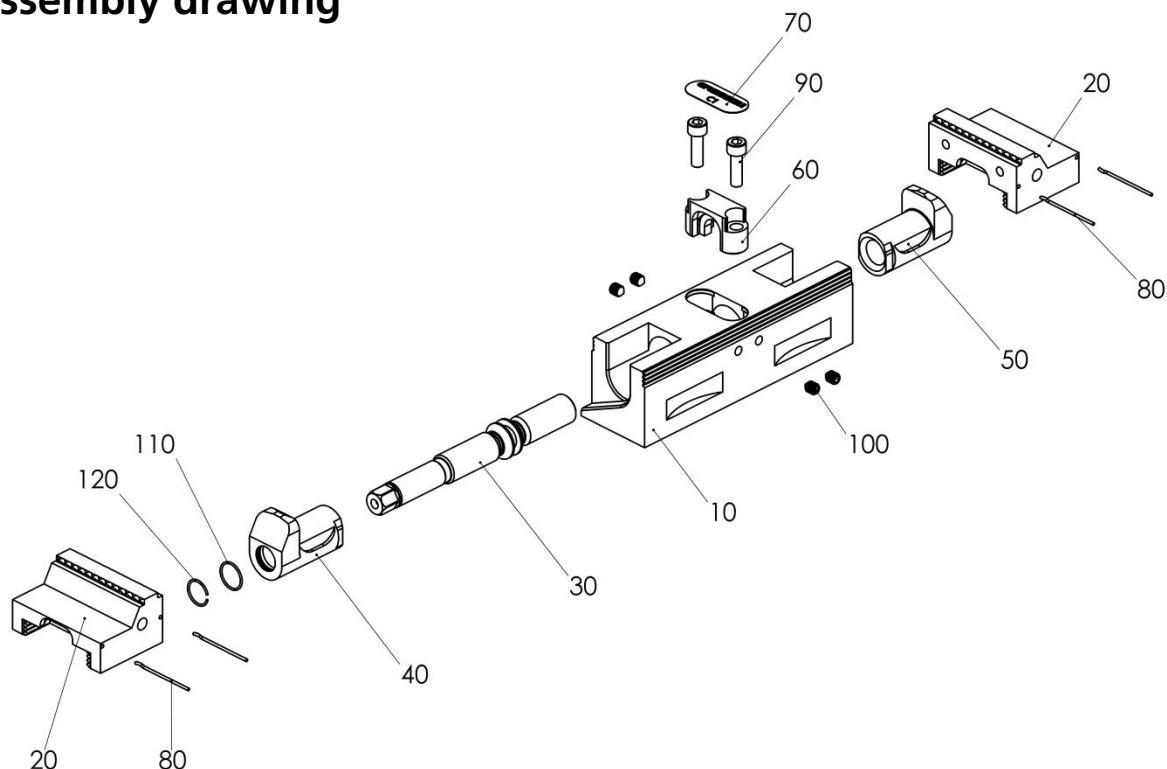
- Push the vice fully together so that you can check whether the drivers (pos. 40 / 50) are symmetrical with the base plate. (pos. 10) 
- When the drivers are symmetrical, the system jaws can be fitted.
- Should the drivers not be symmetrical with the base plate, the centre has to be re-adjusted.

7.4 Adjusting the centre



- Tighten both cylinder screws (pos. 90) with 9 Nm.
- Adjust the threaded pins (pos. 100) on the side such that the drivers (pos. 40 / 50) are symmetrical in relation to **A**.
When doing that it is important to ensure that the spindle (pos. 30) always moves freely. (Twisting of centring fork)
- When the centre has been adjusted, use screw lock "low strength" to glue the threaded pins in place.

8 Assembly drawing



8.1 Parts list

Positon	Part. No.	Designation	Quantity
10	CGM.065.101.11 <i>CGM.040.101.11</i>	Base plate	1
20	CGM.065.103.11 <i>CGM.040.103.11</i>	Standard reversible jaw	2
30	CGM.065.104.11 <i>CGM.040.104.11</i>	Spindle	1
40	CGM.065.105.11 <i>CGM.040.105.11</i>	Driver, operator side	1
50	CGM.065.106.11 <i>CGM.040.106.11</i>	Driver, rear side	1
60	CGM.065.108.11 <i>CGM.040.107.11</i>	Centring fork	1
70	CGM.065.115.11 <i>CGM.040.115.11</i>	Cover sheet	1
80	CGM.065.114.11 <i>CGM.040.109.11</i>	Clamping wire	4
90	XNN.10301.363 <i>XNN.10301.260</i>	Internal hexagon cylinder screw M6x20 Internal hexagon cylinder screw M4x14	2
100	XNN.10706.357 <i>XNN.10706.304</i>	Internal hexagon threaded pin SP M6x8 Internal hexagon threaded pin SP M4x6	4
110	XNN.61071.410 <i>XNN.61070.802</i>	O-ring NBR/70 14.00x1.00 O-ring NBR/70 8.00x1.00	1
120	XNN.18501.140 <i>XNN.18501.080</i>	Circlip Ø14 Circlip Ø8	1

The standard pos. are used for the KSC2 65
The pos. in italics are used for the KSC2 40

9 Soft steel jaws

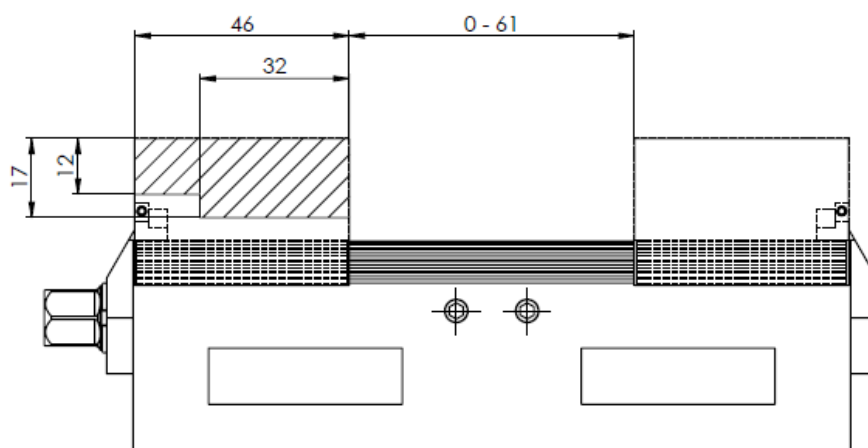
The KSC2 can be fitted with soft steel jaws.

9.1 Function

The soft steel jaw is moved on to the threaded profile in the base plate in the same way as the standard reversible jaw. The vice must be closed once completely so that the drivers engage in the system jaw.

To disassemble the jaw proceed in the same way as with the standard reversible jaw.

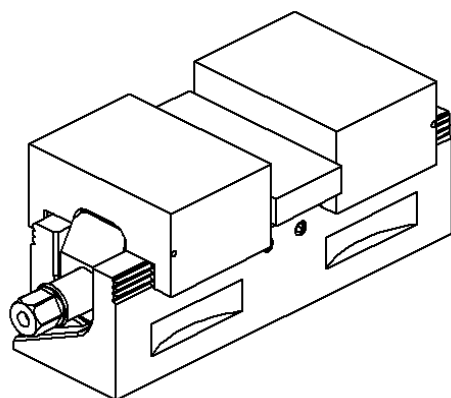
For the proper function of the steel jaws it is important to ensure that the material cross sections are adequate.



9.1.1 Cutting out the clamping shape

For cutting out the contour, the soft steel jaws have to be clamped in the KSC2.

- Place a distance piece into the planned jaw opening.
- Tighten the spindle with the intended torque.
- Cut out the contour.



In view of the fact that clamping may be carried out in different ways, the setting-up technician is responsible for ensuring that adequate clamping cross sections exist and that the workpiece is safely clamped.



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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