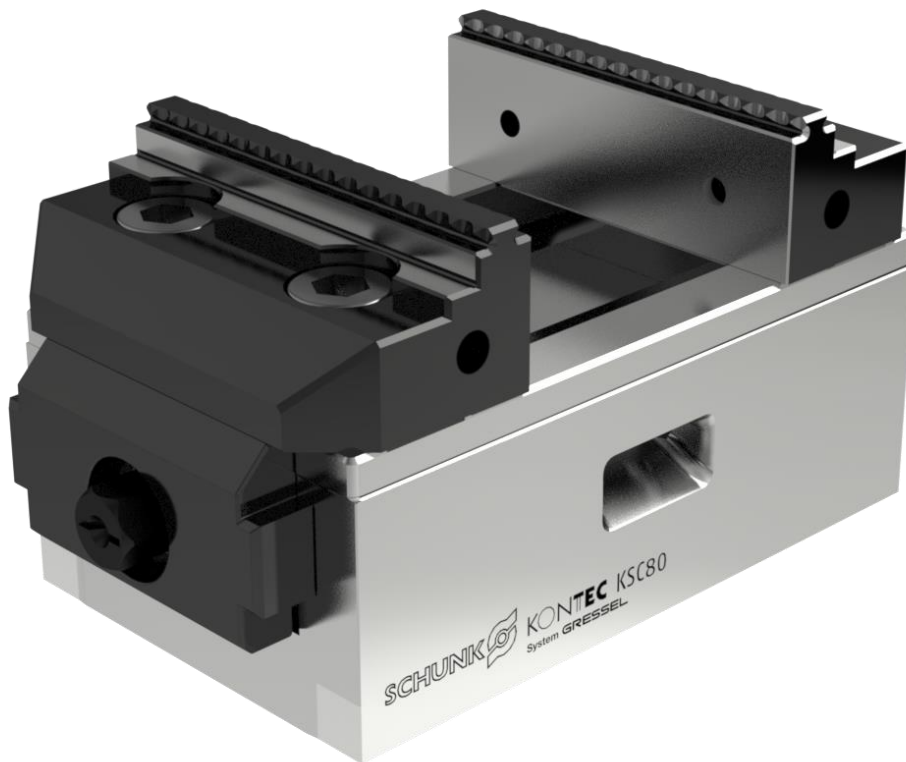


Montage- und Betriebsanleitung Installation- and operating instruction

Zentrischspanner Centric vice

KSC 80



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

Table of contents:



1	User information	16
1.1	Purpose of document, validity	16
1.2	Illustration of safety instructions	16
2	General safety instructions	17
2.1	Intended use	17
2.1.1	Technical data	17
2.2	Reasonably foreseeable misapplication	17
2.2.1	Alterations and modifications.....	17
2.2.2	Spare and wear parts and auxiliary material.....	17
2.3	Residual risk	18
2.3.1	Jaw change	18
2.3.2	Notes on clamping technology.....	18
2.4	Duties of the organisation in charge.....	18
2.5	Operator duties.....	19
2.6	Operator qualification	19
2.7	Personal protective equipment.....	19
2.8	Warranty	19
3	Description of the clamping device	20
3.1	Function.....	20
4	Operation (standard operation)	21
4.1	Clamping / aligning	21
4.2	Jaw range	21
4.3	Jaw change.....	22
4.4	Clamping range.....	22
5	Servicing, cleaning and maintenance	23
6	Troubleshooting, eliminating faults	23
6.1	Removal.....	23
6.2	Assembly	24
7	Assembly drawing	25
7.1	Parts list.....	25
8	Swivel and adapter plate	26
8.1	Function.....	26
8.2	Position of workpiece centrally with respect to the vice.....	26
8.3	Servicing, cleaning, maintenance	26
8.4	Troubleshooting, eliminating faults.....	26
8.5	Fitting the 6-fold reversible jaws.....	27
9	Aluminium jaws	27
10	Taking out of service	27



1 User information



1.1 Purpose of document, validity

Installation instructions with operating instructions for the clamping device stated on the cover. 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

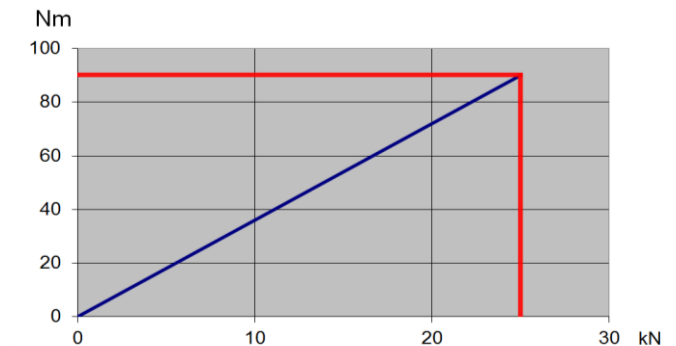
2.1 Intended use

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 data

Version	max. torque	max. clamping force
KSC 80 L-130	90 Nm	25 kN
KSC 80 L-190	90 Nm	25 kN



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



Weight:

KSC 80 L-130 without system jaws : 3.0 kg
 KSC 80 L-190 without system jaws: 4.5 kg

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

The declaration of conformity can be found in the appendix to these operating instructions.

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.

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 	
	<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 KSC The C2 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 KSC is a direct vice with a driven mechanically via a capsuled thread.

The force is generated directly in a linear manner, without a force amplifier.

The clamping forces depend on the torque.

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

The vice is also suitable for workpiece clamping from the inside to the outside.

4 Operation (standard operation)

4.1 Clamping / aligning

KSC 80 L-130 / L-190

The basic model includes the following interfaces:

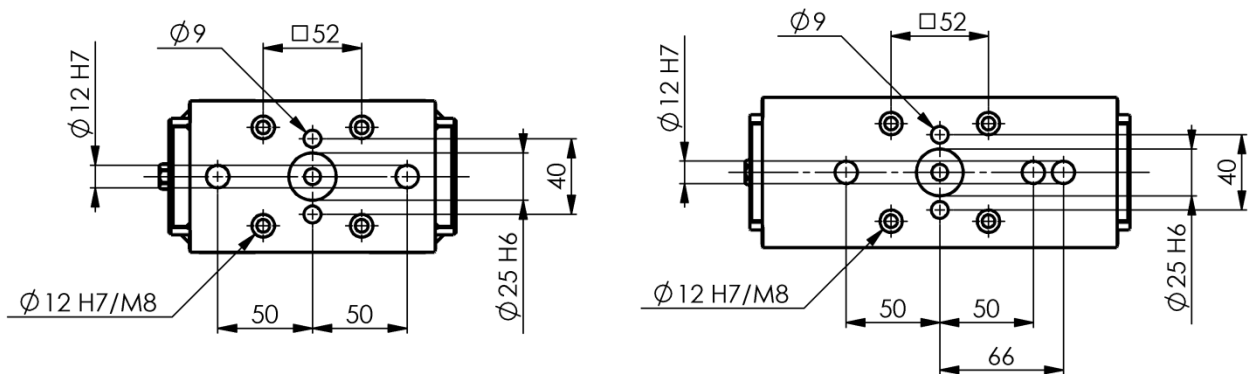
Fixing holes $\varnothing 9$ with distance 40 mm for cylinder screws M8.

Locating hole $\varnothing 25$ H6 and positioning hole $\varnothing 12$ H7 with distance 66 mm for the clamping pin and the indexing pin of the VERO-S quick change palleting system.

Important:

When using VERO-S clamping bolts, make sure that a shortened screw is used, otherwise the slide may be damaged. (See Schunk catalogue)

Locating holes $\varnothing 12$ H7/M8 for the Lang quick-change palleting system Quick Point 52x52.



The KSC 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.



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

4.2 Jaw range

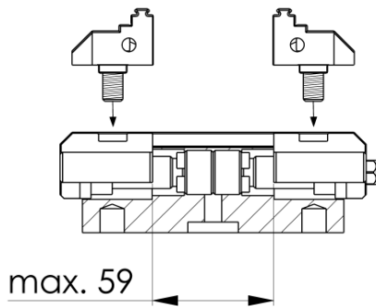
The reliable function of the clamping device is significantly affected by the selection of the correct top jaws.

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

4.3 Jaw change

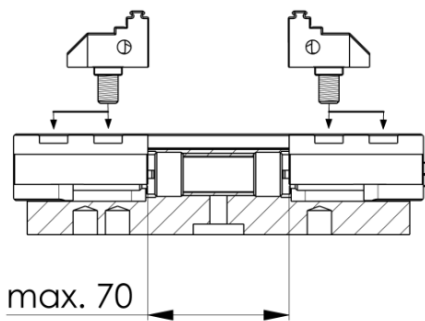
- Release cylinder screws and remove the jaws.
- Clean and oil the contact surfaces, e.g. with MOTOREX Supergliss 68 K to ISO VG 68.
- Changing the jaws or moving them in the carriages, tightened the cylinder screw with a torque of 50 Nm.

4.4 Clamping range



L-130

The adjustment distance of the clamping opening via the spindle is max. 59 mm.



L-190

Each of the carriages is fitted with two mounting positions for the system jaws.

The adjustment distance of the clamping opening via the spindle is max. 70 mm.

Depending on the size of the workpiece, the system jaws should be fitted into the most suitable carriage slots.

5 Servicing, cleaning and maintenance

A special servicing is not required, because the spindle unit is protected by the carriage construction.

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



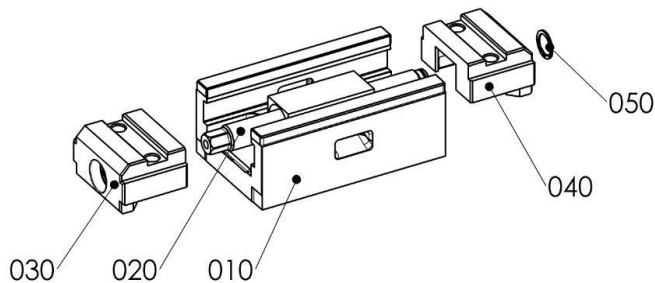
6 Troubleshooting, eliminating faults

Vice is hard to operate:

Remove the system jaws, clean the vice and damaged surfaces must be carefully levelled off with a honing stone.

If this does not result in an improvement of the function, the vice can be further dismantled in accordance with the description below.

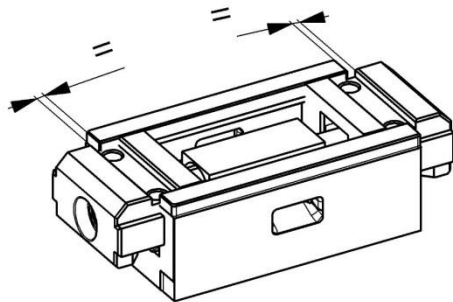
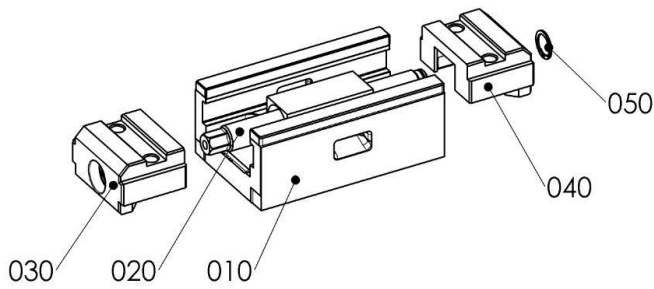
6.1 Removal



- Remove the V-Circlip (pos. 050) from the spindle (pos. 020).
- Move the carriages (pos. 030 and pos. 040) from the base body (pos. 010) by turning to the left to fully remove the spindle from the carriages.
- Clean the system completely, and reassemble.



6.2 Assembly



Important:

The high degree of precision of the KSC is achieved using a processing step while it is mounted. The components of different vices must not be interchanged. 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 body.



- 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 guides of the vice using e.g. with MOTOREX Supergliss 68 K to ISO VG 68.
- Insert both carriages (pos. 030 and pos. 040) into the base body (pos. 010) up to the start of the thread of the spindle (pos. 020).
- Insert the threads by turning the spindle to the right and pressing on both carriage ends at the same time.

Important:

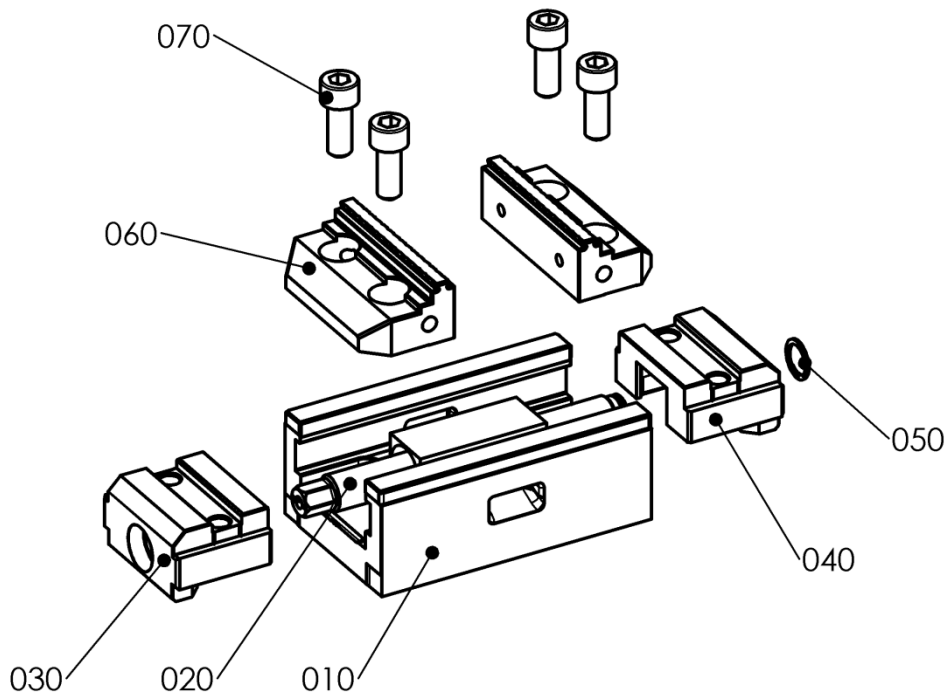
Both carriages must come together and engage in the threads at the same time. This is imperative in order to ensure the consistent central position of the system.

Checking the central position:

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

- Re-insert the circlip (pos. 050) into the groove of the spindle.

7 Assembly drawing



7.1 Parts list

Position	Part. No.	Designation	Quantity
010	CGM.080.101.82 <i>CGM.080.121.82</i>	Base body	1
020	CGM.080.104.11 <i>CGM.080.124.11</i>	Spindle	1
030	CGM.080.105.81 <i>CGM.080.125.81</i>	Carriage left	1
040	CGM.080.106.81 <i>CGM.080.126.81</i>	Carriage right	1
050	XNN.18605.140	V-Circlip Ø14	1
060	CGM.080.103.11	Standard reversible jaw	2
070	XNN.10311.466	Internal hexagon cylinder screw M10x25 12.9	4

Positions in plain font are used for KSC 80 L-130

Positions in italic font are used for KSC 80 L-190

Note:

Pos. 10 to 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 Swivel and adapter plate

8.1 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; this means 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 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 raw 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; 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.



8.2 Position of workpiece centrally with respect to the vice

It is not possible to clamp the workpiece centrally with respect to the base body symmetry.

8.3 Servicing, cleaning, maintenance

The upper shoulder of the swivel peg must be oiled regularly.

In order to ensure that the areas under stress remain well lubricated, the swivel plate should be turned around its entire axis once a week so that the lubrication film can be renewed.

Lubrication of the entire peg is recommended once a year.

8.4 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.

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

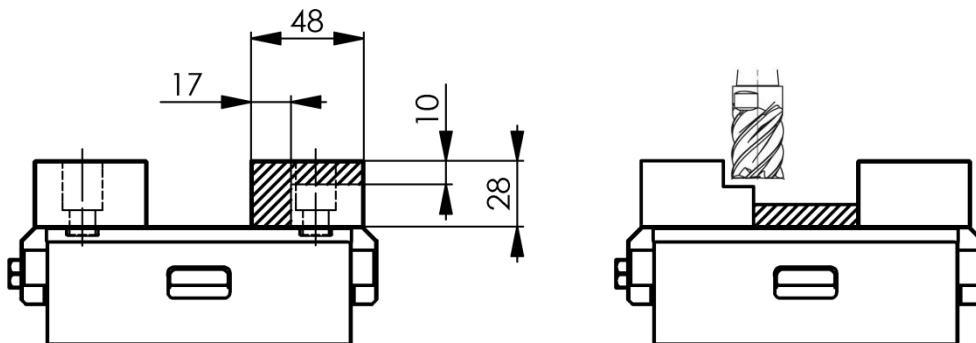


9 Aluminium jaws

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 be 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.



Permissible milling range



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.



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

Tel.: +49-7572-7614-0
Fax: +49-7572-7614-1099

info@de.schunk.com
schunk.com