

# Montage- und Betriebsanleitung Installation- and operating instruction

## Maschinenschraubstock Machine vice

**gripos**



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# 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 features

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


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

<b>WARNING</b> 	
	<p><b>Indicates a potentially dangerous situation.</b> 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

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

### Important for preventing more extensive material damage (alternative)

<b>CAUTION</b>	
	<p><b>Indicates a potentially dangerous situation.</b> If the information is ignored, material damage will result.</p> <p>... 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

Type	max. clamping force
gripos 100	30 kN
gripos 125	40 kN
gripos 160	40 kN

#### Weight:

gripos 100 Standard: 19.5 kg

gripos 125 Standard: 35.0 kg

gripos 160 Standard: 70.0 kg

**For further data, please see the current catalogue >> GRESSEL Clamping Technology <<**

### 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 item 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

This clamping device has been constructed in accordance with the state-of-the-art of technology and the recognised safety rules.



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 jaws are insufficiently tightened!

For further information, refer to section 4 "Operation".



### 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 carriage.

When clamping 100 mm above the base plate, 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

<b>WARNING</b> 	
	<p><b>Risk of eye injury through ejected, hot fragments!</b>  <b>Ejected hot fragments can lead to serious eye injury.</b>  <b>The regulations for safety at work and the prevention of accidents always have to be observed when working with the machine.</b>  <b>Personal protection equipment must be worn at all times, in particular safety boots, gloves and safety goggles.</b></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 and wear parts 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

gripos has been designed for clamping raw parts and finished workpieces.

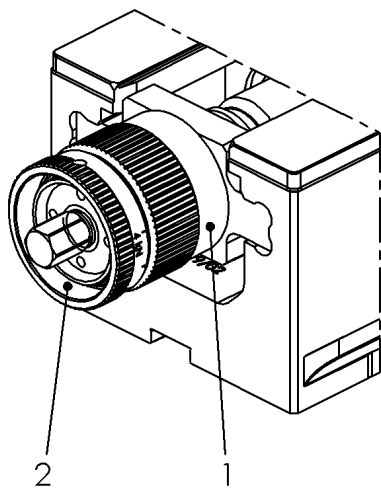
A wide range of accessories ensures the versatility of the equipment.

The clamping force is generated purely mechanically via a mechanical force cassette and a spindle assembly. A setting ring is used for settings of 4 to 30 respectively 40 kN. The set clamping force is achieved by turning the clamping lever by 160°.

Mounting and removing the gripos is quick and easy.

#### 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) (the lock will audibly engage)

- 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

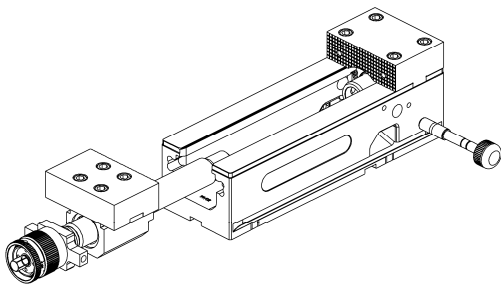
- Turn the clamping lever to the left; this will reduce the clamping force and then open the closing range.
- Ensure that the clamping lever comes to a stop at the left-hand stop.

**Important: always keep a firm hold on the clamping lever handle while operating it.**





### 3.1.4 Removing the spindle assembly

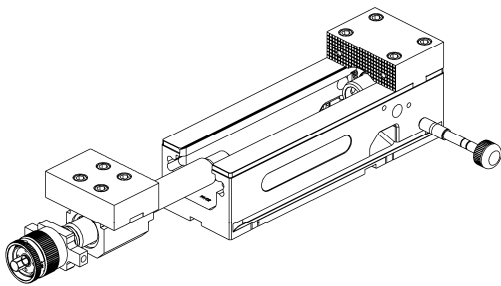


- Use the clamping lever to move the hexagonal head of the spindle to the left-hand stop and adjust the clamping width to min. 30 mm.
- Remove the knurled pin (pos. 120) from the clamping lever and turn it into the thread of the coupling bolt (pos. 70) through the hole in the base plate and pull the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



**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 to the right by 90°. After that you can remove the bolt using the disassembly tool.**

### 3.1.5 Fitting the spindle assembly



- Insert the spindle assembly into the base plate.
- 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 bolt.
- Use tool to insert coupling bolt in lateral hole.
- Check whether the locking of the bolt in the pull rod can be felt.
- The marking at the knurled pin (pos. 120) must be flush with the side surface of the base plate. (this varies according to the size of the machine)
- Visual check from above.
- Remove the knurled pin and turn on to the clamping lever.



### 3.1.6 Changing jaws

- Release screws and remove the jaws.
- Clean and oil the contact surfaces, e.g. using MOTOREX Supergliss 68 K lubricant to ISO VG 68.
- Insert the jaws and tighten crosswise using original screws.
- Use 60 Nm to tighten jaws of widths 100 and 125 and use 150 Nm for 160 jaws.

### 3.1.7 Cover sheets

Cover sheets are not mandatory because the spindle does not turn during the clamping process.

A set of cover sheets is supplied for additional protection.

Select the appropriate sheet sizes suitable for the clamping range and engage in the V-groove in the base plate or, with gripes 160, slide in from the rear and engage in the nut.

For larger clamping ranges it is possible to combine several sheets. The cover sheets can be removed by gripping from below and pulling upwards or by removing the spindle assembly.

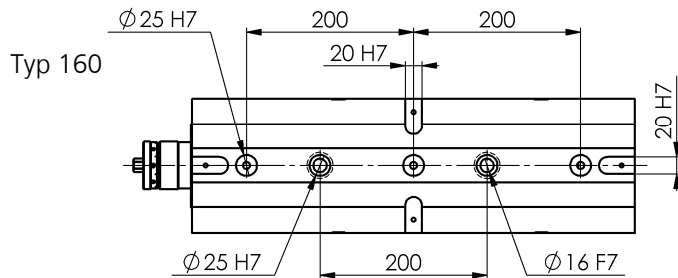
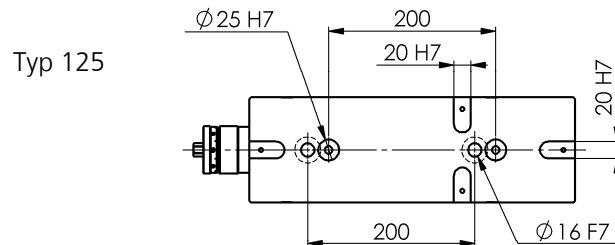
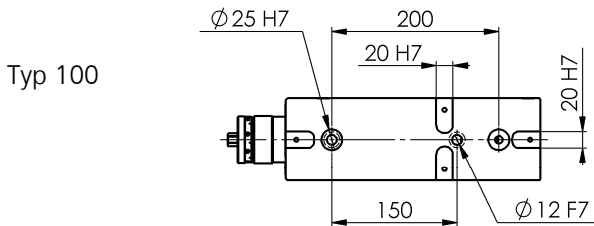
### 3.2 Fuction

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

The clamping range depends on the type of jaws and the size of model.

## 4 Operation (standard operation)

### 4.1 Clamping / aligning

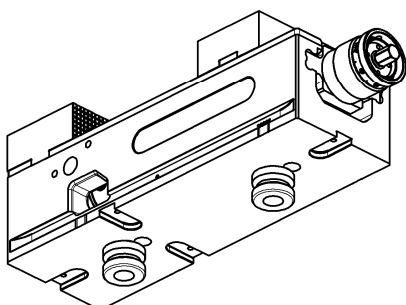
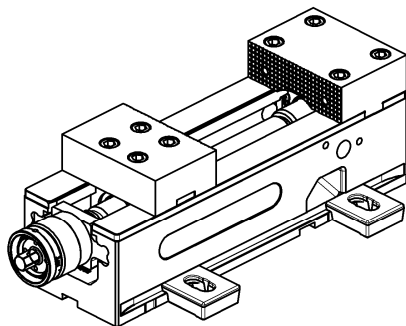


Alignment through precision slot nuts on the slot table with 20 H7 longitudinal / cross slots in the base plate or on the grid plate with two fitting screws through Ø12 F7 or Ø16 F7 positioning holes.

Items are clamped with bolts through the base plate or laterally with clamping claws.

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

The gripo can also be produced at the factory with customer-specific positioning and fixing holes as well as with location recesses for various commonly available zero point clamping systems.



The base plate is fitted with an interface for attaching the clamping bolt for the mechanical gredoc quick-change palleting system.

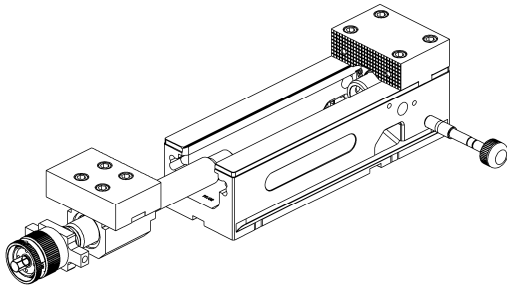
## 4.2 Jaw range

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

## 5 Servicing, cleaning, maintenance

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

### 5.1 General cleaning / lubrication



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

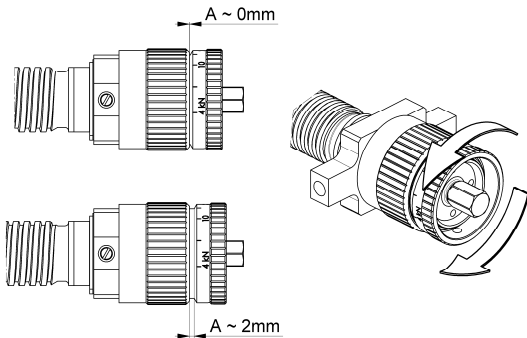


## 6 Troubleshooting, eliminating faults

### 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

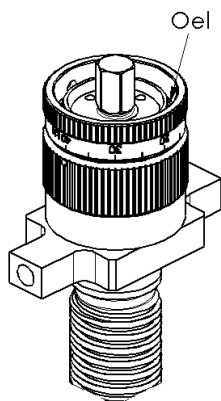
- Remove the spindle assembly.
- Clean the guides of base plate and spindle nut.
- Insert the spindle assembly.
- Re-attempt clamping.
- If necessary, contact your Gressel representative in view of replacing the clamping cassette or spindle assembly.

**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

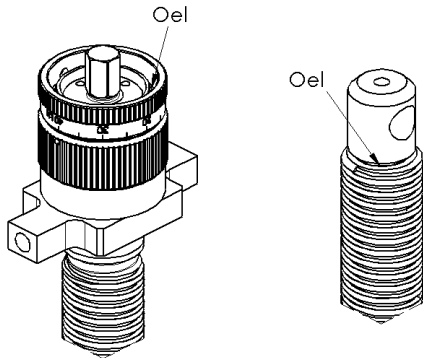
If this happens during clamping or releasing, there is increased friction of the seal in the knurled knob. The cause is that the sealing ring under the setting ring has swollen due to the effect of the cooling liquid, soiling or similar.



- 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, contact your Gressel representative in view of 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, turn the pull rod back and forth several times; if necessary, contact your Gressel representative in view of replacing the spindle assembly.

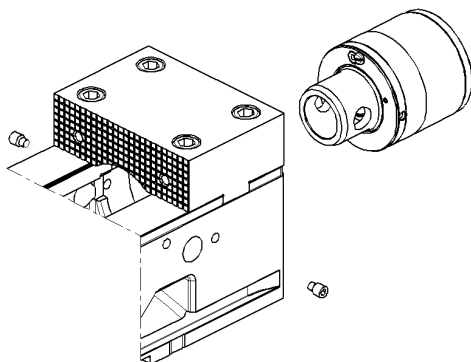
## Replacing the mechanical force cassette

### Removing the cassette

- Remove the spindle assembly. (see page 35)
- Turn out the threaded pins (pos. 140) on the left and right from the base plate and slide out the mechanical force cassette to the rear.

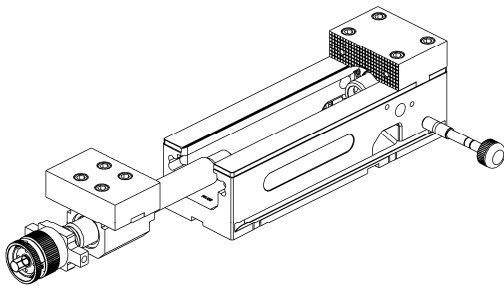
### Fitting the cassette

- Insert the mechanical force cassette and align the hole for the coupling bolt as horizontal as possible. (Align the position of the bolt locking screw so that it is at the top)
- Align the lateral hole in the mechanical force cassette housing (pos. 50) through the left-hand or right-hand thread in the base plate 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 plate.



## 7 Removing and replacing parts

### 7.1 Removal



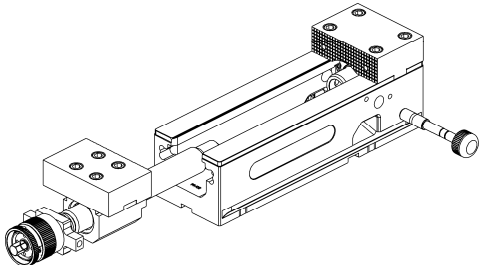
- Use the clamping lever to move the hexagonal head of the spindle to the left-hand stop and adjust the clamping width to min. 30 mm
- Remove the knurled pin (pos. 120) from the clamping lever and turn it into the thread of the coupling bolt (pos. 70) through the hole in the base plate and pull the coupling bolt out



**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 bolt can be removed using the removal tool.**

### 7.2 Installation

Apply sufficient lubrication during installation.

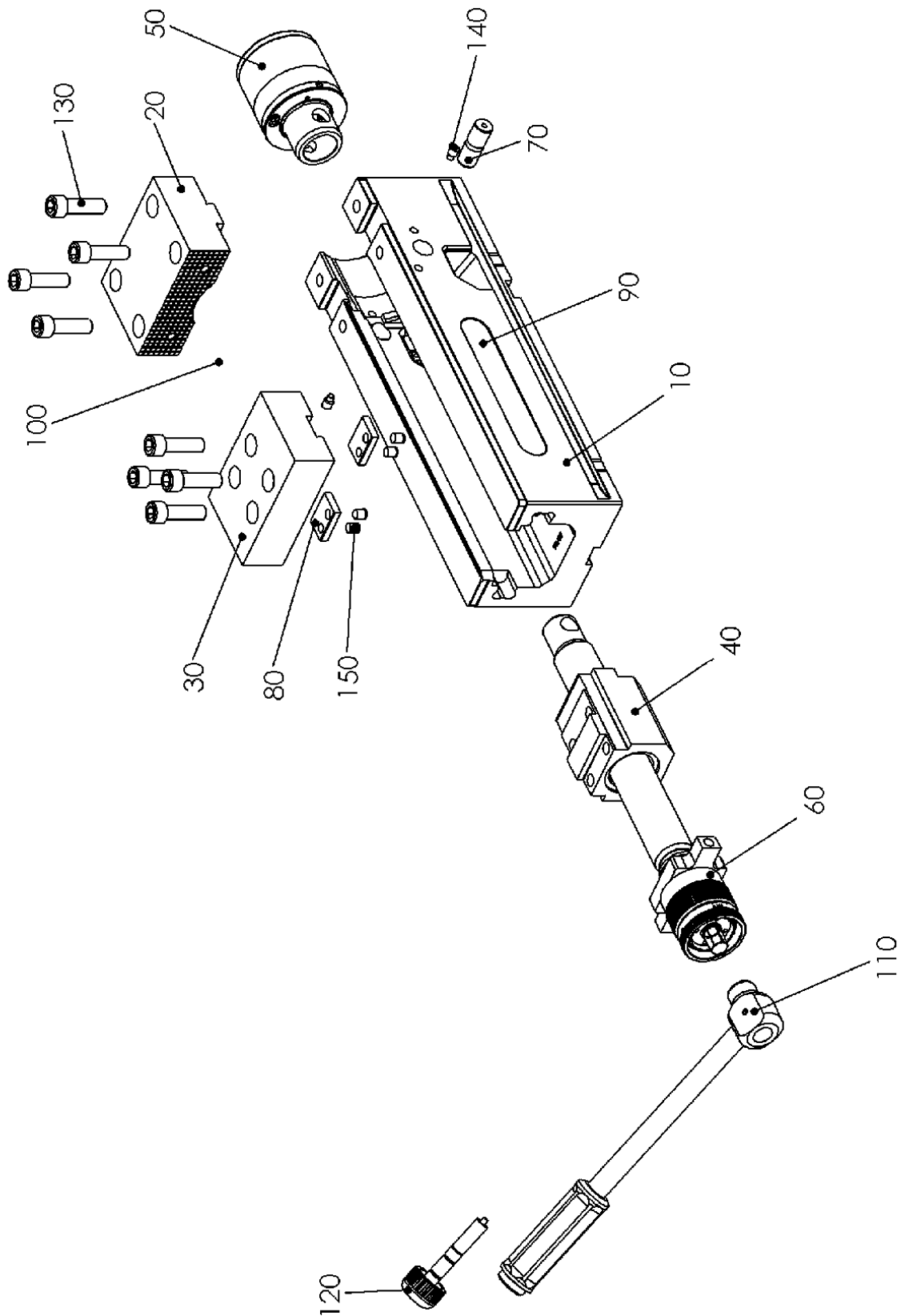


- Insert the spindle assembly into the base plate.
- Turn the knurled knob in order to ensure that the holes in the mechanical force cassette and the spindle assembly are lined up for inserting the bolt.
- Use tool to insert coupling bolt in lateral hole.
- Ensure you feel that the bolt has engaged.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



## 8 Appendix

### 8.1 Assembly drawing



## 8.2 Parts list

Position	Art. No.	Designation	Number
10	GPS.100.002.11 <i>GPA.125.002.11</i> <u>GPH.160.015.11</u>	Base plate	1
20	GPA.100.040.11 <i>GPA.125.040.11</i> <u>GPA.160.040.11</u>	Standard reversible jaw, fixed	1
30	GPA.100.041.02 <i>GPA.125.041.02</i> <u>GPA.160.041.02</u>	Standard reversible jaw, movable	1
40	GPS.100.007.11 <i>GPS.125.007.11</i> <u>GPH.160.005.11</u>	Spindle nut	1
50	GPS.100.062.01 <i>GPS.125.062.01</i> <u>GPS.160.062.01</u>	Mechanical force cassette	1
60	GPS.100.061.02 <i>GPS.125.061.02</i> <u>GPS.160.061.01</u>	Spindle assembly	1
70	GPS.100.020.11 <i>GPS.125.020.11</i> <u>GPS.125.020.11</u>	Coupling bolt	1
80	GPS.100.040.11 <i>GPS.125.040.11</i> <u>GPS.160.040.11</u>	Protection plate for movable jaw	2
90	GPS.125.028.12	Type plate	2
100	GPA.100.025.01 <i>GPA.125.025.01</i> <u>GPA.160.025.01</u>	Cover sheets, 1 set	1
110	GPS.125.070.03	Clamping lever, for gripes	1
120	GPS.125.077.02	Knurled pin	1
130	XNN.10311.471 <i>XNN.10311.523</i> <u>XNN.10301.625</u>	M10 x 35 12.9 int. hex. cylinder screw <i>M12 x 40 12.9 int. hex. cylinder screw</i> <u>M16 x 50 int. hex. cylinder screw</u>	8
140	XNN.10707.409	Int. hex. threaded pin, ZA M8 x 12	2
150	XNN.90000.080 <i>XNN.90000.080</i> <u>XNN.90000.060</u>	Spring-loaded pressure piece	4 4 <u>8</u>

Positions in plain font are used for gripes 100

*Positions in italic font are used for gripes 125*

Positions in underscored font are used for gripes 160



## 9 gripo-R (swivel plates)

### 9.1 Function

Slanted and curved items can be securely clamped with 4-point clamping using the 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 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 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.



### 9.2 Servicing, cleaning, maintenance

See page 37

#### Lubricating the swivel peg

The upper shoulder of the swivel peg must be oiled regularly. The swivel bearing is protected by O-rings. 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.

## 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.
- Re-lubricate the entire system with grease and reassemble.

## 9.4 Removing and replacing parts

The gripo swivel plate system is compatible with all standard gripo vices with the same jaw width.

The installation can be reversed simply by exchanging jaws (see page 35).

### 9.4.1 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 M12 cylinder screws.
- Turn the 6-fold reversible jaws on to the required clamping faces; slightly pre-clamp the workpiece so that the clamping faces are parallel to, and touch, the workpiece.
- Use a torque of 80 Nm to tighten the M12 cylinder screws of the 6-fold reversible jaws.

**Attention: When the clamping faces of the 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.**



The gripo-R is equipped with the following components:

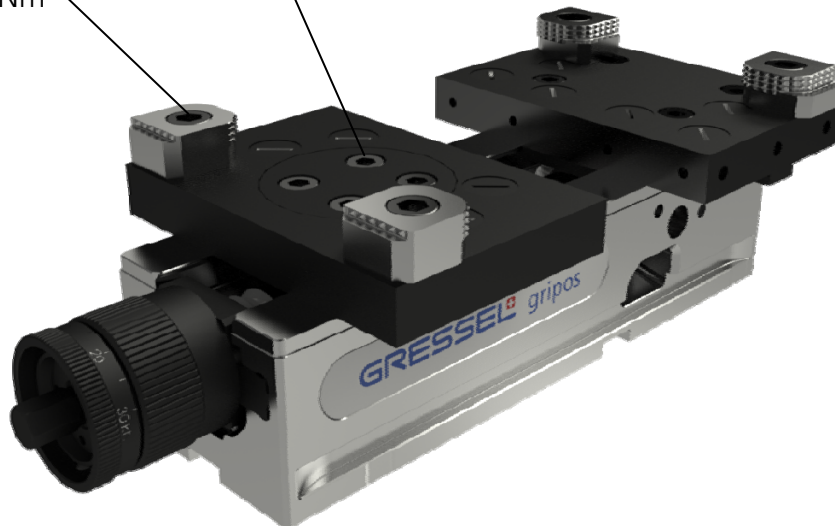
- 1 No. swivel plate incl. 6 locking bolts
- 1 No. adapter plate, fixed, incl. 6 locking bolts  
(without 6-fold reversible jaws)

The plates have been designed for use with 6-fold reversible jaws.  
Normally, workpieces are clamped with four 6-fold reversible jaws.

**The torque for tightening the M12 bolts of the 6-fold reversible jaw is 80 Nm**

60 Nm at gripo 100 / 125  
150 Nm at gripo 160

80 Nm



## 10 gripos-5A

### 10.1 Function

Due to the higher tension, the workpiece can be better processed on a 5-axis machine. The clamping range depends on the type of jaws and the size of model.

When clamping with high force, 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 Servicing, cleaning, maintenance

See page 37

### 10.3 Troubleshooting, eliminating faults

See pages 38 and 39

### 10.4 Removing and replacing parts

The gripos-5A system is compatible with all standard gripos vices with the same jaw width. The installation of the fixed 5A support jaw can be reversed by simply changing jaws (see page 35).

#### Reversing the installation of the movable 5A support jaw

- Removing the spindle assembly. (see page 35)
- Remove the spindle assembly from the spindle nut (pos. 40) by turning.
- Turn the spindle assembly into the 5A support jaw.
- Fitting the spindle assembly. (see page 35)

**Important: to change the gripos-TA to gripos standard, a spindle nut is Required (pos. 40).**



The gripos-5A is equipped with the following components:

- 1 No. 5A-VS support jaw, movable, with "grip" stepped jaw, 5 mm
- 1 No. 5A-VS support jaw, fixed, with "grip" stepped jaw, 5 mm



# 11 gripos hydraulic

## 11.1 Function

Instead of the mechanical clamping cassette and spindle assembly, a hydraulic cylinder with spring reset is fitted. 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.

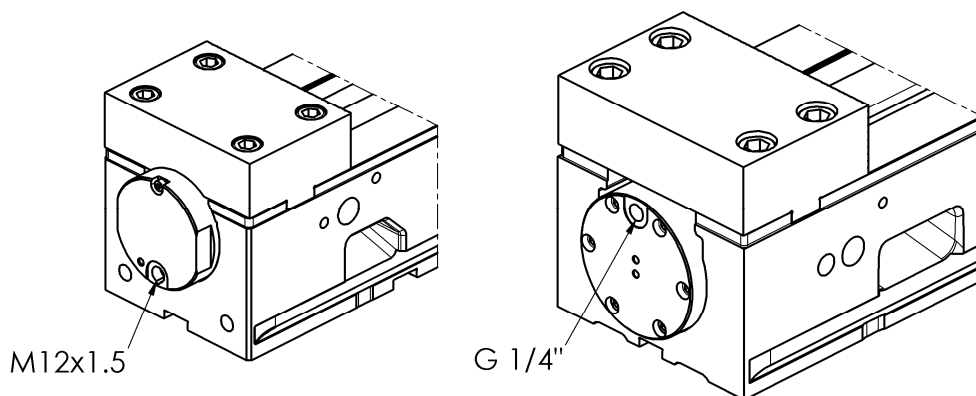
The required clamping force is achieved via hydraulic pressure, without clamping lever.

The force is set via an external pressure controller (supplied by others) in accordance with the diagram.

Hydraulic-Interface:

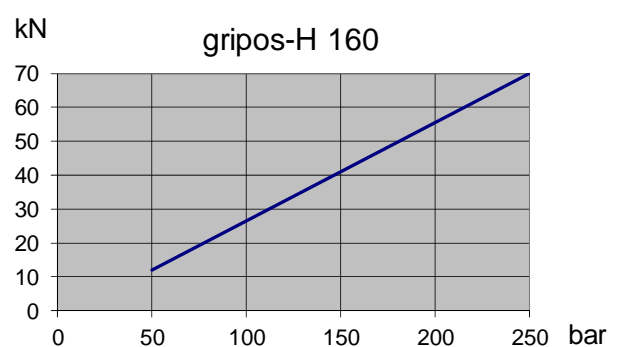
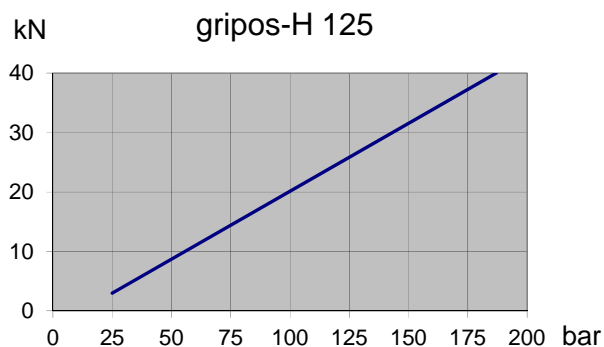
gripes 125-H

gripes 160-H



## 11.2 Technical data

Type	max. clamping force	max. clamping stroke	Oil-volume (by max. stroke)	Clamping time for a flow rate of e.g. 3.6l/min.	
				One vice	Two vices
gripes 125-H	40 kN	5 mm	13 cm <sup>3</sup>	ca. 0.25 sec.	ca. 0.5 sec.
gripes 160-H	70 kN	6 mm	21 cm <sup>3</sup>	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 Servicing, cleaning, maintenance

See page 37

### 11.4 Troubleshooting, eliminating faults

See pages 38 and 39

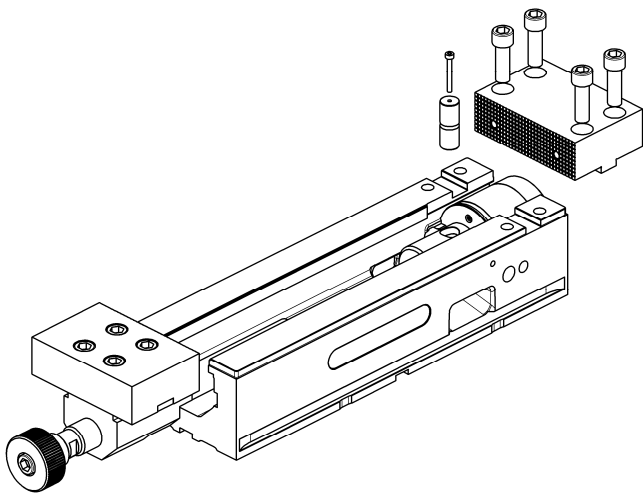
### 11.5 Removing and replacing parts

The hydraulic cylinder and spindle assemblies are compatible with all gripos standard 125 and 160.

The installation can be reversed simply by exchanging the parts (see pages 35 and 39).

#### Exception:

gripos 160-H, Remove or Fitting the Spindle assembly



- Remove the fix jaw.
- Remove the coupling bolt with M5 screw.
- The spindle assembly can be pulled out.
- Install in the reverse order.
- For the screw M16, use 150 Nm to tighten jaws.



#### 11.5.1 Standard fitments for gripos hydraulic

The gripos hydraulic is equipped with the following components:

- 1 No. hydraulic cylinder
- 1 No. spindle assembly for hydraulic clamping set



## 11.6 Risks of hydraulic system

Hydraulic systems operate at high pressures. Do not attempt any manipulation when the system is under pressure!



### Risk of fingers being caught during clamping

Hydraulic vices pose a risk of trapping!

Safe operation can only be guaranteed when the clamping width has been correctly set. 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 form 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; hoses must be regularly checked for wear.

### Important:

If the hydraulic system loses pressure or a hose is damaged, the clamping force reduces sharply. In order to achieve improved safety, we recommend that a switched non-return valve is fitted immediately before the clamping device.

Check the vice regularly for leakage.



## 12 Taking out of service

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



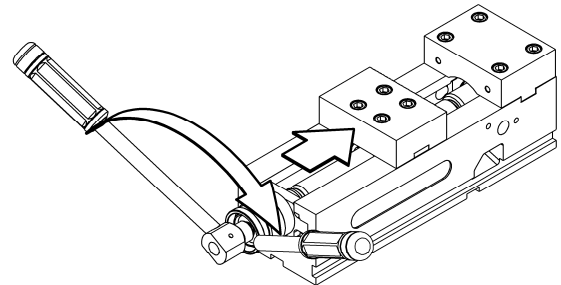
## 13 Zertifikat / Certificat

### Spannkkräfte 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. Anzugsmoment am Spannhebel / max. torque at clamping lever

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

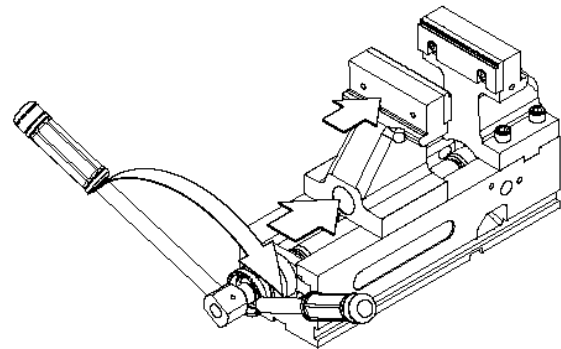


#### Max. Spannkraft (elektronisch gemessen) Max. clamping force (measured electric)

gripos 100:	F max. 30 ± 2 kN
gripos 125:	F max. 40 ± 2 kN
gripos 160:	F max. 40 ± 2 kN

gripos 100-5A:	F max. 18 ± 2 kN
gripos 125-5A:	F max. 24 ± 2 kN
gripos 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%)

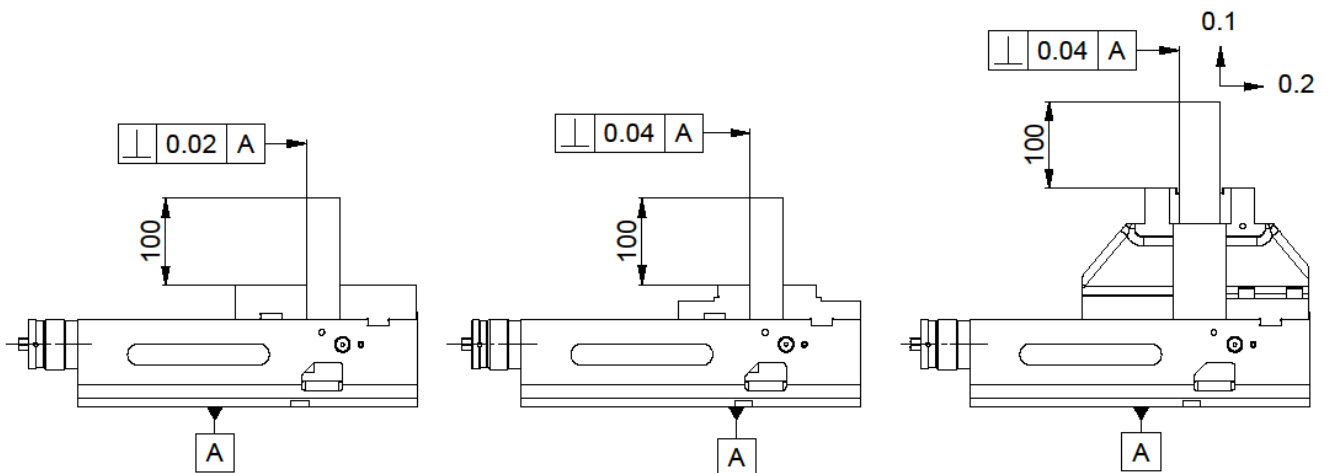




### 13.1 Winkligkeit / Angles

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: 0.02mm

Kombi-Wendebacken / Combi reversible jaws: 0.04mm

5-Achs-Trägerbacken / 5-axle support jaws: 0.04mm

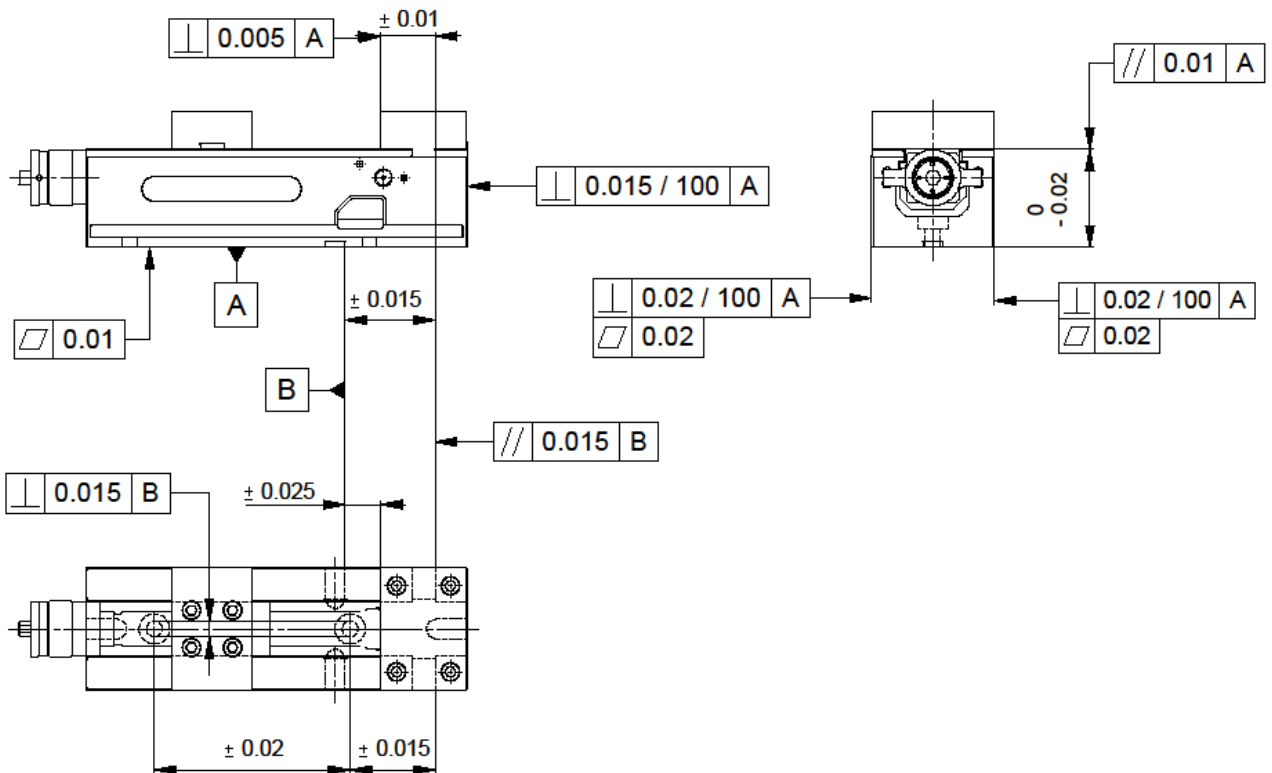
#### Werkstückabweichung nach Spannkraft-Aufbau bei der 5-Achs-Trägerbacke Workpiece deviation after build-up of clamping force with 5-axle support jaw

Vertikal / Vertical: max. 0.1mm

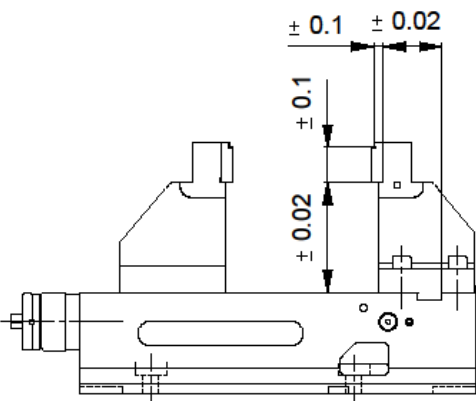
Horizontal / Horizontal: max. 0.2mm

### 13.2 Form- und Lagetoleranzen / Form and positional tolerances

#### gripos



#### gripos-5A



Montage / Kontrolle Installation / Check	Verpackung Packaging
Datum:	Datum:
Signatur:	Signatur:

## 14 Declaration of conformity

### **Declaration regarding the installation of incomplete machines (EC-RL 2006/42/EC)**

Hereby declares the manufacturer:

GRESSEL AG Clamping Technology, Schützenstrasse 25 CH-8355 Aadorf, Switzerland

that the following incomplete machine:

product designation:	Single vice
Type designation:	gripos
Year of manufacture:	2017 and subsequent

complies with the fundamental requirements of the machinery Directive (2006/42/EC):

Art. 5 II, 13. The technical documentation has been produced in accordance with Appendix VII B.

The manufacturer undertakes, upon request, to electronically transmit the special documents for the incomplete machine to individual Community state authorities.

The incomplete machine may not be commissioned until it has been ascertained that the machine, into which the incomplete machine is to be fitted, complies with the regulations of the machinery Directive (2006/42/EC).

Person responsible for the documentation: **Jörg Maier**

Aadorf, 22.11.2017



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