

A close-up photograph of a red plastic component, likely a parallel guide, with a brass-colored pin inserted into it.

PARALLEL GUIDES

Operating instructions

Edition 09/2016

CL / CP / 311

Article numbers:
30892DE-AA

1 TABLE OF CONTENTS

1	Table of contents	2
2	Contact addresses	4
2.1.	Address of manufacturer	4
2.2.	Service and ordering of spare parts	4
3	Safety	5
3.1.	General information on safety	5
3.2.	Safety symbols	6
3.3.	Start-up	7
3.4.	Selecting the location	7
3.5.	Operating safety instructions	8
3.6.	Safety instructions for cleaning	9
3.7.	Handling chemical substances and coolant/lubricants	9
3.8.	Cleaning agent	10
3.9.	Putting out of operation	10
3.10.	Use in accordance with the instructions (intended use)	10
4	Description / Overview	11
4.1.	Description	11
4.2.	Possible combinations	12
5	Equipment configuration	13
5.1.	Parallel guides	13
5.1.1.	CL (Contact Line)	13
5.1.2.	CP (Contact Point)	14
5.1.3.	Parallel guide 311 (only for band saw EXAKT 311)	15
5.2.	Control electronics / Motor control	16
5.2.1.	CP controller	16
6	Installation	17
6.1.	Assembling parallel guide 300/310	17
6.2.	Assembling parallel guide 311	18
6.3.	Assembling the feed weights	20
6.4.	Electrical connection	21
7	Operation	22
7.1.	Operating the CP controller	22
7.1.1.	Starting the pendulum motion	22
7.1.2.	Stopping the pendulum motion	23
7.1.3.	Switching on and off the cutting band	23
7.2.	Establish idling mode	24
7.3.	Replacing the sample holder	25

7.4.	Attaching a sample	26
7.5.	Rough adjustment of the cutting plane	27
7.6.	Precise adjustment of the cutting plane	28
7.7.	Setting the cutting depth	29
7.8.	Cutting in CP mode	30
8	Care and maintenance	31
8.1.	Care and maintenance plan	31
8.2.	Daily cleaning	32
8.3.	Weekly cleaning	33
8.4.	Oil the linear guide bearing and the guide axles	34
9	Remedying malfunctions	35
9.1.	Fault table	35
9.2.	Faulty cutting results	36
10	Spare parts and accessories	38
10.1.	Ordering spare parts	38
10.2.	Spare parts for parallel guide 300 / 310	39
10.3.	Spare parts for tailstock CP 300 / 310	41
10.4.	Controller for parallel guide 300 / 310	43
10.5.	Tools for parallel guide 300 / 310	44
11	Index	45
12	Appendix	47
12.1.	Warranty conditions	47

2 CONTACT ADDRESSES

2.1. ADDRESS OF MANUFACTURER

EXAKT Advanced Technologies GmbH
Robert-Koch-Straße 5
22851 Norderstedt
Germany

Phone: +49 40 529 560 - 0

Fax: +49 40 524 9959

Email: info@exakt.de

<http://www.exakt.de>

2.2. SERVICE AND ORDERING OF SPARE PARTS

If you have service inquiries or want to order spare parts, please contact the specialist dealer from which you have ordered the device.



Use the order form in the *Spare parts and accessories* chapter to order spare parts.

3 SAFETY

3.1. GENERAL INFORMATION ON SAFETY

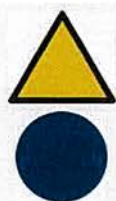
Each person who is assigned to the installation, start-up, operation and maintenance of the device and its associated components has to have fully read and understood these instructions, and especially the Safety chapter. Instruction may have to be provided taking into consideration the professional qualification of the respective persons.

Explanation of the symbols in these instructions:



DANGER

Indicates an extremely dangerous situation. Ignoring this instruction results in lethal or severe, irreversible injuries.



WARNING

Indicates an extremely dangerous situation. Ignoring this instruction may result in lethal or severe, irreversible injuries.








CAUTION

Indicates risk of material damage. Ignoring this instruction may result in damage to property.



Here you will find important background information and explanations within a current context, or status information within a sequence of actions

3.2. SAFETY SYMBOLS

Symbol	Meaning
	Warning of cutting injuries
	Warning of electrical voltage
	Warning of general and non-categorized dangers
	Warning before automatic start-up
	Warning of toxic substances
	Pull the mains plug
	Wear protective goggles

3.3. START-UP

Always observe all safety instructions for your own safety.

Before starting up the device, the operator must be convinced that all safety conditions are met.

Observe the pertinent accident prevention regulations and other generally acknowledged safety and occupational health regulations.



WARNING

A parallel guide that is not completely laid on can drop from the tank and cause injuries.

When assembling, make sure that the parallel guide is fully lying on the bearing surfaces.

3.4. SELECTING THE LOCATION

The parallel guides must only be mounted onto their intended band saws (see Chapter *Description*). Mount securely and horizontally.

CAUTION

Do not place any objects on the parallel guide.

3.5. OPERATING SAFETY INSTRUCTIONS

Refrain from any activity that:

- > causes risks to life and limb of the user or of any other person,
- > impairs the device or any other material assets,
- > impairs the safety and function of the device,
- > does not observe the listed safety instructions.

The device must only be maintained and repaired by persons that have been assigned with these tasks and that have been instructed on the associated risks and dangers, and who are appropriately qualified.



WARNING

Keep the working area during operation closed and only open it to remedy malfunctions and for maintenance work.

Immediately re-attach any missing safety equipment and covers immediately after conclusion of work.



DANGER

Always pull the mains plug when working on live connections.

Carelessness can result in electric shock.



Observe the following when performing maintenance at electrical systems:

1. Disconnect the device.
2. Secure the device from being switched back on.
3. Check for absence of power.
4. Earth and short circuit.
5. Cover any adjacent live parts and secure the danger area.

3.6. SAFETY INSTRUCTIONS FOR CLEANING



⚠ WARNING

Pull the mains plug on the device before cleaning.

Unintentional switch-on of the device during cleaning work may result in dangerous injuries to the fingers.

Pull the mains plug on the device before cleaning, or disconnect it from the mains.



CAUTION

Never spray the parallel guide with water to clean it, or clean it with a high-pressure cleaner.

3.7. HANDLING CHEMICAL SUBSTANCES AND COOLANT/LUBRICANTS

When handling oil, grease and other chemical substances, observe the respective safety data sheets and instructions for disposal of the respective manufacturer, as well as all local safety requirements.



⚠ WARNING

A low quantity of aerosol arises when using cutting oils or emulsions.



Make sure this is correctly suctioned off and wear protective goggles.

- > If you come into contact with toxic, infectious or radioactive material, the required safety measures must be taken for the respective application.
- > Disinfect the device each time before repairs or maintenance.

3.8. CLEANING AGENT

When using cleaning agents, observe the respective safety data sheets and instructions for disposal of the respective manufacturer, as well as all local safety requirements.



WARNING

There is an increased risk of explosion when using explosive or highly flammable cleaning agents.

Do not use any explosive or highly flammable cleaning agents!

3.9. PUTTING OUT OF OPERATION



WARNING

Depending on how it was used, the device may be contaminated, e.g. by biological or toxic substances.

Clean and/or disinfect the device before its disposal or before returning it. Enclose the decontamination certificate with the device.

3.10. USE IN ACCORDANCE WITH THE INSTRUCTIONS (INTENDED USE)

The device must be used solely as described in the *Description* chapter with the components delivered and approved by EXAKT.

Any use which goes beyond these limits is not regarded as the intended use.

The manufacturer does not accept any responsibility for damage resulting from this; the user/operator himself accepts the full risk in this case.

4 DESCRIPTION / OVERVIEW

4.1. DESCRIPTION

The precision parallel guides must only be used together with EXAKT Diamond Band Saws.

The parallel guides allow the user to fix samples in place with the most varied range of sample holders or a vacuum plate, and therefore to guide the sample very precisely parallel to the cutting band of band saws.

A basic difference is made between two methods for these variations:

- > **Contact Line (CL)**
- > **Contact Point (CP)**

In the **CL** version there is a cutting line throughout the entire cutting area.

Parallel guides with the **CP** version are fitted with a moving sleeve controlled by a step motor. The step motor sets the sleeve – and therefore the sample – into a pendulum motion. This pendulum motion reduces the contact length between the cutting band and the sample to be cut to a “point” = Contact Point = CP. This results in a high specific advance force with simultaneous low overall feeding forces. The pendulum motion of the sleeve (sample) can be preset at various angles (approx. 14°, 28°, 56°). Additionally, the pendulum speed can be adjusted from “0” up to a maximum value. When the pendulum motion is switched off, the drive motor acts like a brake for the pendulum motion (step motor). This is sometimes required to separate bones with fresh tissue or bone marrow, where a pendulum motion is not desirable.

4.2. POSSIBLE COMBINATIONS

The parallel guides can be used as shown in the following table:

	Exakt 300	Exakt 310	Exakt 311
Parallel guides that can be used			
CL	X	X	X*--
CP	X	X	X*
Parallel guide 311 (large bench)	--	--	X

*Option: Conversion kit to parallel guide for E311



When ordering parallel guides, always indicate the type of band saws used because there are different sizes of parallel guides.

5 EQUIPMENT CONFIGURATION

5.1. PARALLEL GUIDES

5.1.1.CL (CONTACT LINE)

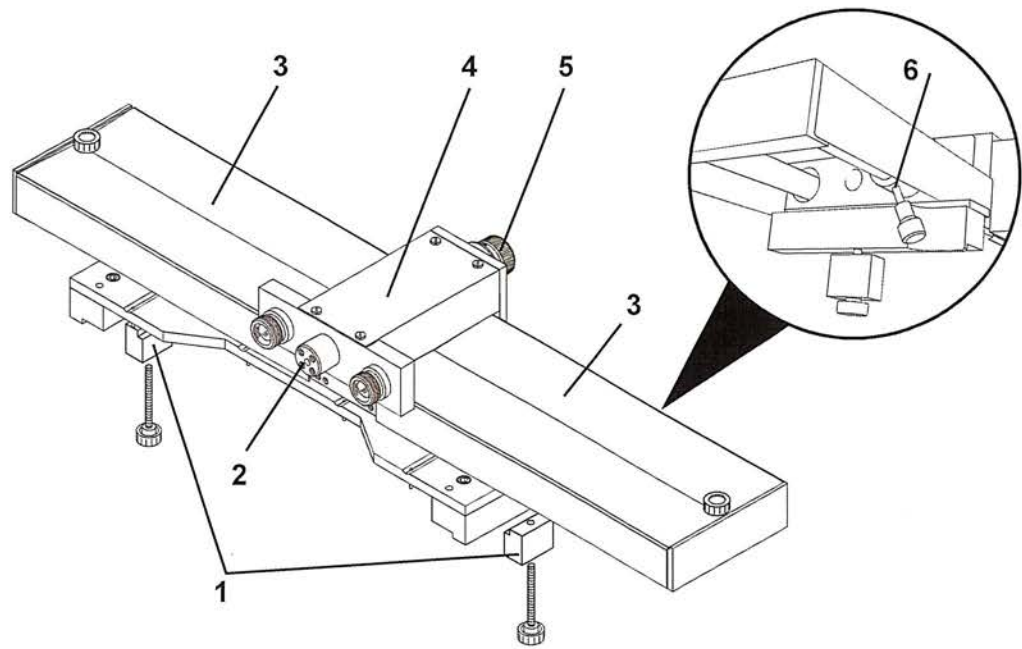


Fig. 1: Parallel guide: CL (Contact Line)

1. Clamp with knurled screw
2. Sleeve for sample parallel vices, vacuum plates and other sample holders
3. Sheet metal cover with guide axis underneath
4. Tailstock with tool holder
5. Setting wheel for positioning the sample in the direction of the cutting band. 1 turn (360°) = $100\mu\text{m}$ Position the sample to the diamond cutting band
6. Adjusting ring with knurled screw

5.1.2.CP (CONTACT POINT)

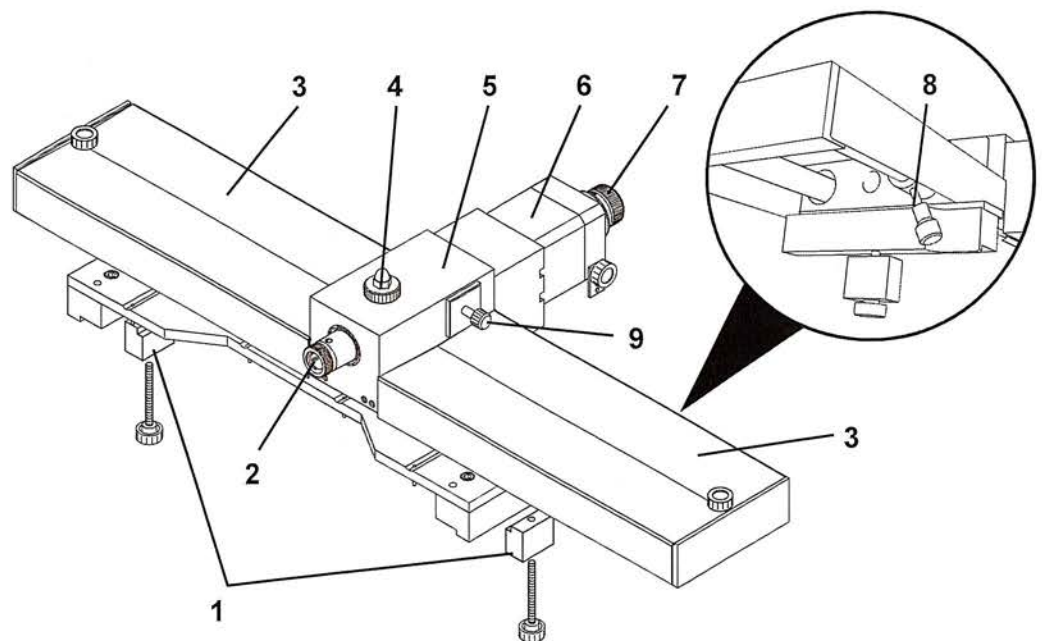


Fig. 2: Parallel guide: CP (Contact Point)

1. Clamp with knurled screw
2. Sleeve for sample parallel vices, vacuum plates and other sample holders
3. Sheet metal cover with guide axis underneath
4. Friction damper, dampens the vibrations from the step motor to the sleeve
5. Tailstock with tool holder
6. Step motor with drive for the pendulum motion (CP)
7. Setting wheel
 - With sleeve coupling open: 1 turn (360°) = 100µm Position the sample to the diamond cutting band
 - With sleeve coupling closed: 1 turn (360°) = 36° Rotary movement of the sleeve or sample
8. Adjusting ring with knurled screw
9. Cover of the sleeve coupling with clamping screw underneath for clamping and opening the sleeve coupling

5.1.3. PARALLEL GUIDE 311 (ONLY FOR BAND SAW EXAKT 311)

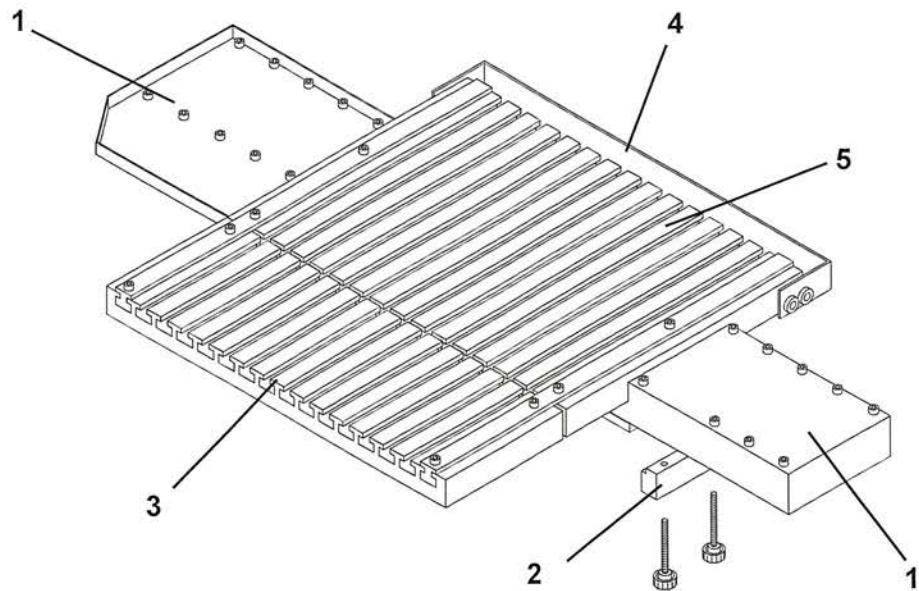


Fig. 3: Parallel guide: 311

1. Sheet metal cover with guide axis work bench underneath
2. Clamp with knurled screw
3. Front work bench
4. Runoff plates
5. Base unit

5.2. CONTROL ELECTRONICS / MOTOR CONTROL

Two control electronics are used, depending on the cutting technology or parallel guide used.

5.2.1. CP CONTROLLER

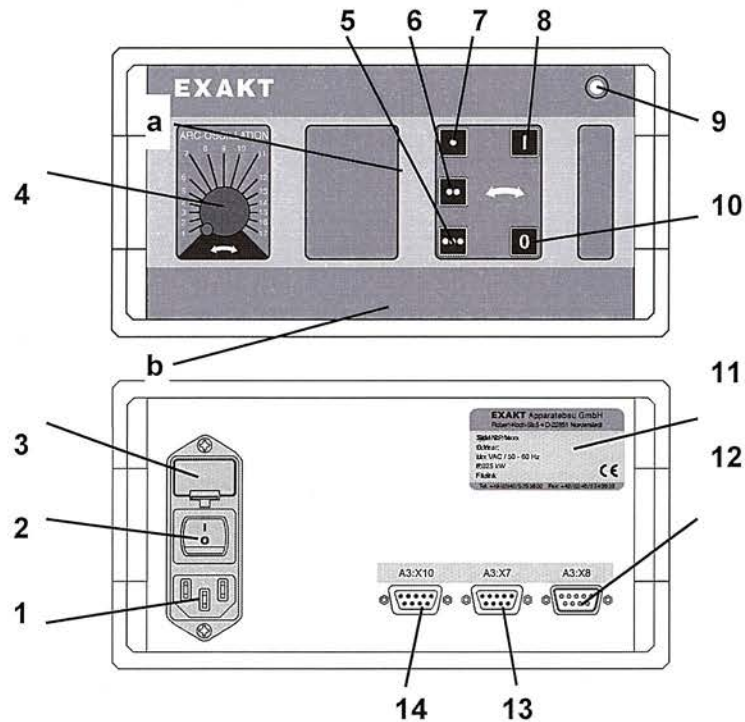


Fig. 4: CP controller

- | | |
|--|---|
| 1. Socket for main cable | 8. Pendulum motion -On- |
| 2. Main switch | 9. Operation indicator |
| 3. Fuse holder | 10. Pendulum motion -Off- |
| 4. Button for speed and pendulum motion | 11. Type plate |
| 5. Pendulum action $56^\circ (\pm 28^\circ)$ | 12. Socket for CAN-Bus (idle) |
| 6. Pendulum action $28^\circ (\pm 14^\circ)$ | 13. Socket for sensors |
| 7. Pendulum action $14^\circ (\pm 7^\circ)$ | 14. Socket for step motor cable (pendulum motion) |

6 INSTALLATION

6.1. ASSEMBLING PARALLEL GUIDE 300/310

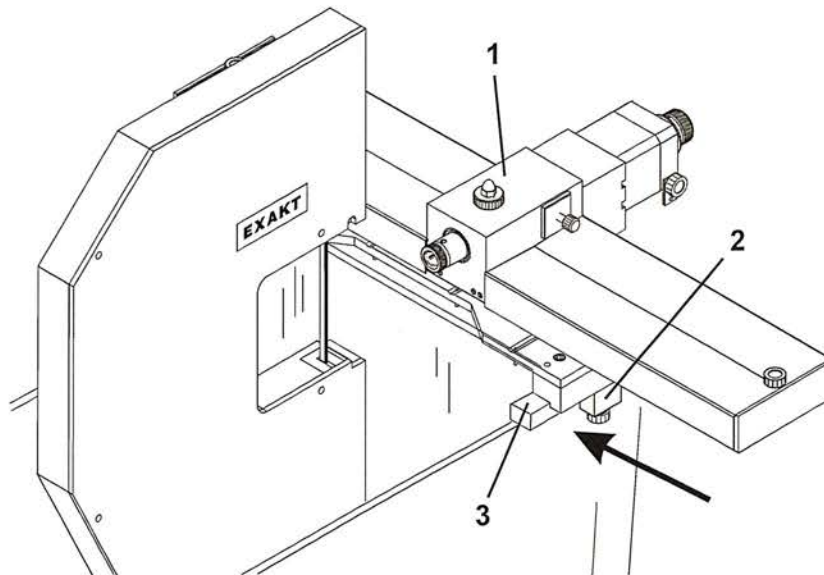


Fig. 5: Assembly



! WARNING

A parallel guide that is not completely laid on can drop from the tank and cause injuries.

When assembling, make sure that the parallel guide is fully lying on the bearing surfaces.

1. Clean the bearing surfaces (3, both sides) for the parallel guide at the tank.
2. Apply a thin layer of grease to the bearing surfaces.
3. Lay the parallel guide (1) onto the bearing surfaces.
4. Screw on the clamp holder (2), but do not tighten.
5. Align the parallel guide roughly on the bearing surfaces to the cutting band by moving it in the longitudinal direction.
6. Press the parallel guide in the cutting direction against the bearing surfaces (see arrow) until the stop bar is flush on the support border.
7. Tighten the clamp holder.
8. Once more make sure that the stop bar is flush on the support border.

6.2. ASSEMBLING PARALLEL GUIDE 311

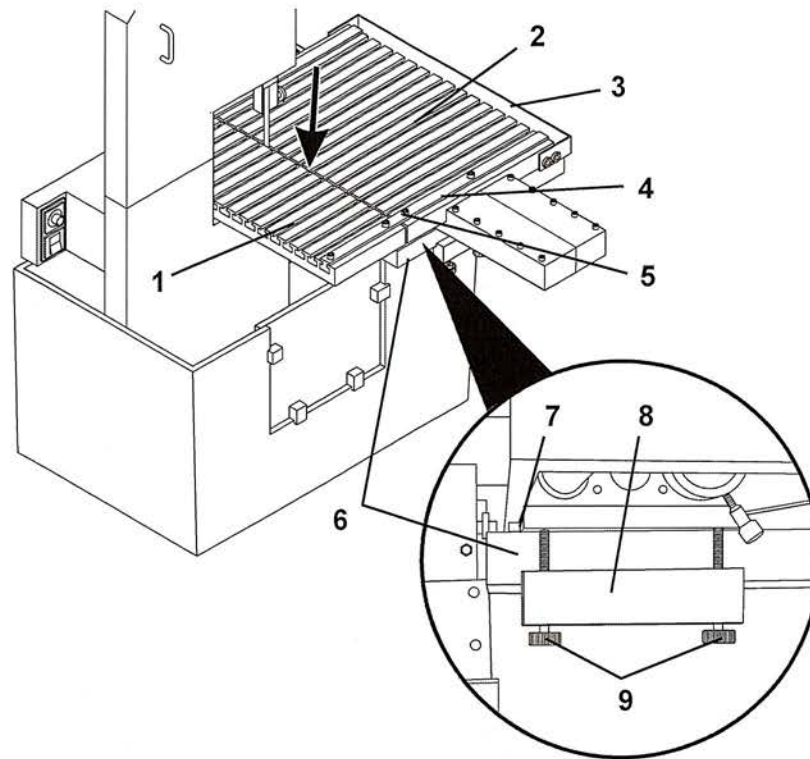


Fig. 6: Assembling parallel guide 311



WARNING

A parallel guide that is not completely laid on can drop from the tank and cause injuries.

When assembling, make sure that the parallel guide is fully lying on the bearing surfaces.

Parallel guide 311 can only be mounted onto band saw 311. It is forbidden to mount it onto other band saws,

1. Clean the bearing surfaces (6) for the parallel guide at the tank.
2. Apply a thin layer of grease to the bearing surfaces (6).
3. Place the base unit (2) with the base plate onto the bearing surfaces of the tank.
4. Screw on the clamp holder (8) with the knurled screws (9), but do not yet tighten.
5. Push the base unit against the stop pins (7).
6. Tighten the clamp holder (8).
7. Once more make sure that the base unit is flush on the stop pins (7).
8. Push the T-slot clamping bar (4) into the base unit.
9. Carefully place the loose bench unit (1) onto the base unit (2).
10. Push the T-slot clamping bar (4) into the loose bench unit.
11. Push the loose bench unit so that there is a parallel gap (see arrow) for the cutting band.
12. Tighten the clamping screws (5) of the T-slot clamping bar.
13. Attach the runoff plates (3) to the parallel guide.

6.3. ASSEMBLING THE FEED WEIGHTS

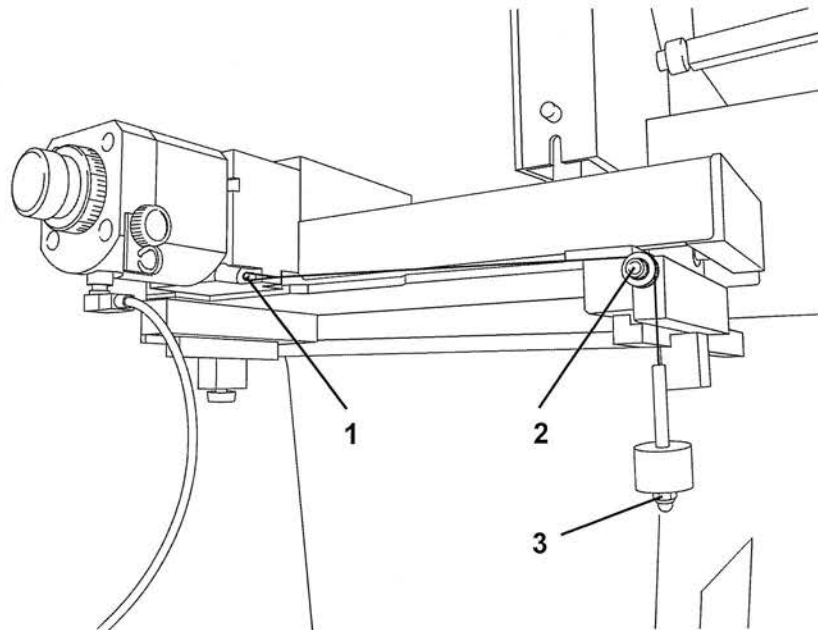


Fig. 7: Feed weights (example: CP Version)

1. Hook the cord of the feed weight holder into the bolt (1).
- > The bolt is at the following location, depending on the version:
 - Step motor (CP version)
 - Tailstock (CL version)
 - Base plate (311)
2. Lay the cord over the deflection roller (2).
3. Hook the required weights into the feed weight holder (3).

CAUTION

In general, try to select the smallest possible feed weight for an optimum cutting result and a long service life.

6.4. ELECTRICAL CONNECTION

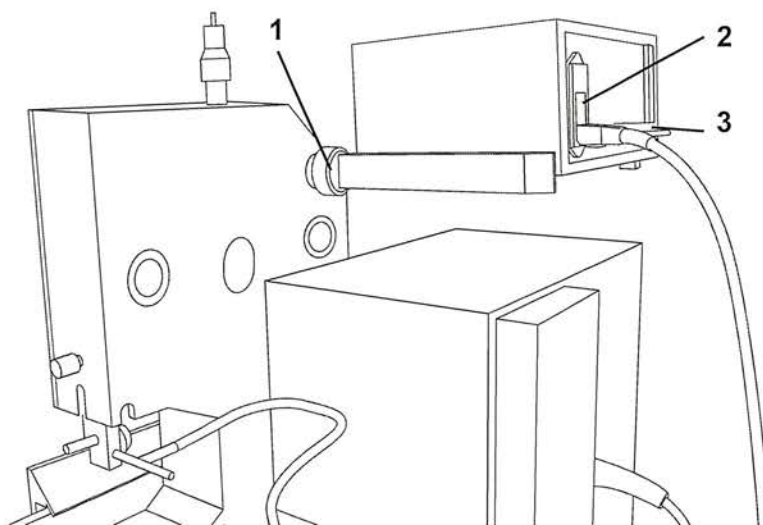


Fig. 8: Description

1. Before connecting the controller, set the main switch at the rear (2) to "0".
2. Screw on the control electronics at the threaded bolt (1) using the supplied hook wrench.
3. Connect the step motor cable for constant feed and pendulum motion to the corresponding sockets at the rear of the controller (3) (see Chap. **Fehler! Verweisquelle konnte nicht gefunden werden.**).
4. Connect the cable for the path sensor (only V-version) to the rear of the controller (3) (see Chap. **Fehler! Verweisquelle konnte nicht gefunden werden.**).
5. When controlling the band motor via the "V control electronics", connect the cable for the band motor to the rear of the controller (see Chap. **Fehler! erweisquelle konnte nicht gefunden werden.**).
6. Make sure that the cable does not impair the freedom of movement of the parallel guide.

7 OPERATION

7.1. OPERATING THE CP CONTROLLER

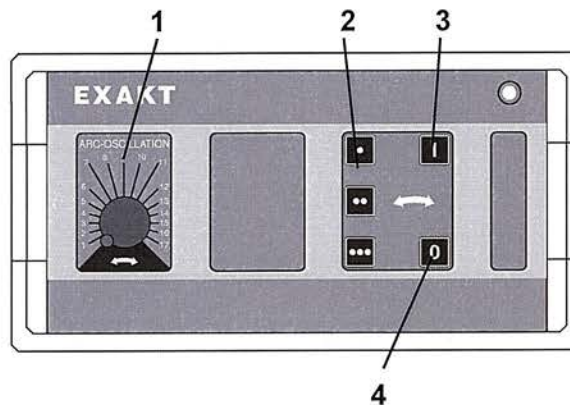


Fig. 9: CP controller

7.1.1. STARTING THE PENDULUM MOTION

1. Switch on the main switch at the rear of the controller.
2. Press the I button.
3. Adjust the pendulum speed with the rotary knob.
 - Left stop: Pendulum motion = 0, the step motor acts as a brake.
 - Right stop: Max. pendulum motion
4. Adjust the pendulum angle using one of the three buttons (2).



Pendulum action $14^\circ (\pm 7^\circ)$



Pendulum action $28^\circ (\pm 14^\circ)$



Pendulum action $56^\circ (\pm 28^\circ)$

7.1.2.STOPPING THE PENDULUM MOTION

1. Press the **O** button.
2. Adjust the pendulum speed with the rotary knob to max. This suppresses the brake function of the step motor and the next sample can be positioned faster using the setting wheel.

7.1.3.SWITCHING ON AND OFF THE CUTTING BAND



This function is not available if the controller is retrofitted

1. Switch on the main switch at the rear of the controller.
2. Press the **I** button (5).
3. Adjust the cutting band speed with the rotary knob (2).
 - Left stop: Min. speed
 - Right stop: Max. speed
4. Switch off the cutting band by pressing the **O** button (6).

7.2. ESTABLISH IDLING MODE

CAUTION

Idling mode should always be established for the following work:

- > After all work run with the parallel guide.
- > When clamping on and off a sample.
- > Each time before replacing the sample.
- > Each time before working with the parallel guide if the condition of the parallel guide is unknown, e.g. change in personnel.

CAUTION

The parallel guide can be damaged when working with the parallel guide outside of idling mode.

Always run fitting and assembly work when in idle mode, see Chapter: 7.2.

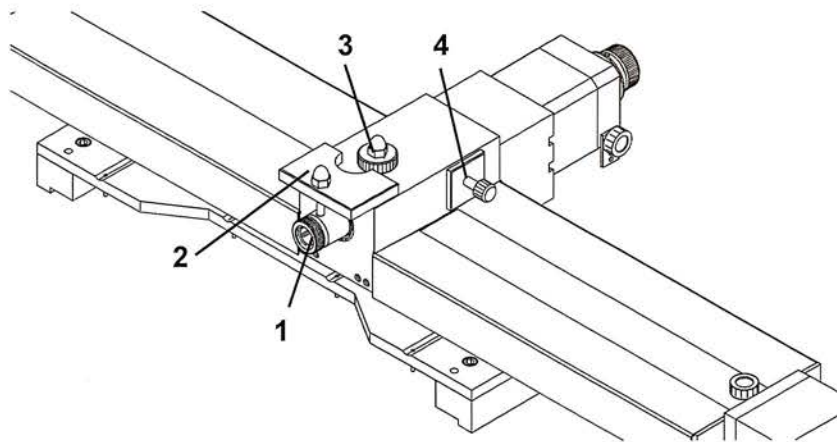


Fig. 10: Sleeve

1. Set the main switch of the controller at the rear to "0".
2. Remove the sleeve lock (2).
3. Loosen the friction damper (3) until there is no more friction.
 - **Only loosen – do not unscrew!**
4. Remove the cover for the sleeve coupling (4).
5. Release the inside sleeve coupling. If the screw cannot be seen, turn the sleeve (1) until the screw is seen in the window.
6. Re-insert the cover for the sleeve coupling (4).

7.3. REPLACING THE SAMPLE HOLDER



WARNING

If the sample holder is replaced when sawing is in progress, there is a risk of the operator being cut on contact with the cutting band.

Establish idling mode every time before replacing the sample holder, see Chapter 7.2.

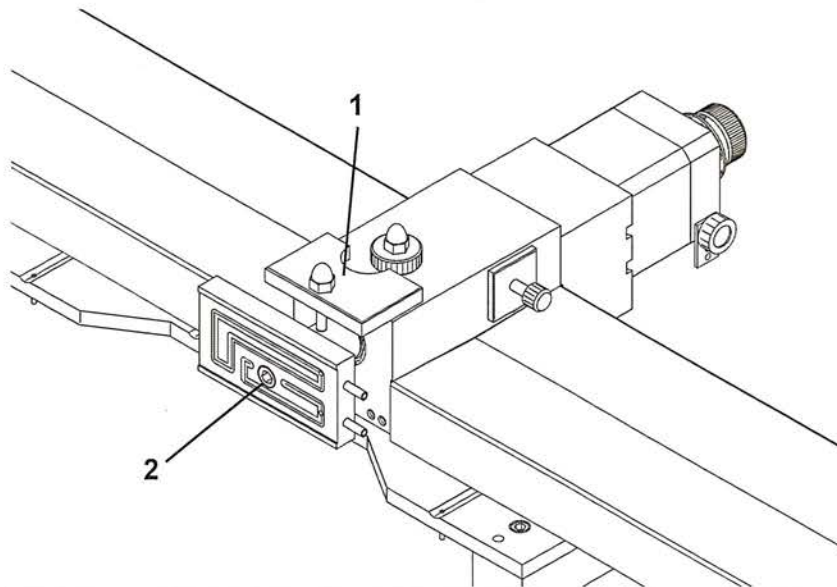


Fig. 11: Sample holder, example: Vacuum plate

1. Insert the sleeve lock (1).
2. Replace the sample holder.
 - > Parallel vices: Fix in place with lock nut and hook wrench!
 - > Vacuum plates: Fix to the sleeve with Allen screw (2).
 - The abutting surface of the sleeve and the bearing surface of the vacuum plate must be clean.
 - Secure the vacuum hose to the motor housing with a plastic screw.
 - Check the connection to the water trap.
 - The vacuum hose must not impair the freedom of movement of the parallel guide.
 - > 90° cutting device: Fix to the sleeve with Allen screw.
 - The abutting surface of the sleeve and the bearing surface of the cutting device must be clean.

7.4. ATTACHING A SAMPLE



! WARNING

If the sample is replaced when sawing is in progress, there is a risk of the operator being cut on contact with the cutting band.

Establish idling mode every time before replacing the sample.

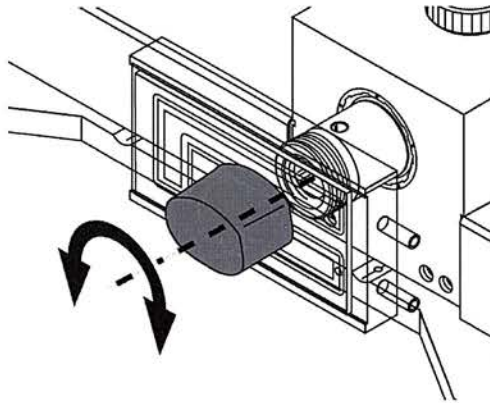


Fig. 12: Sample holder

7.5. ROUGH ADJUSTMENT OF THE CUTTING PLANE

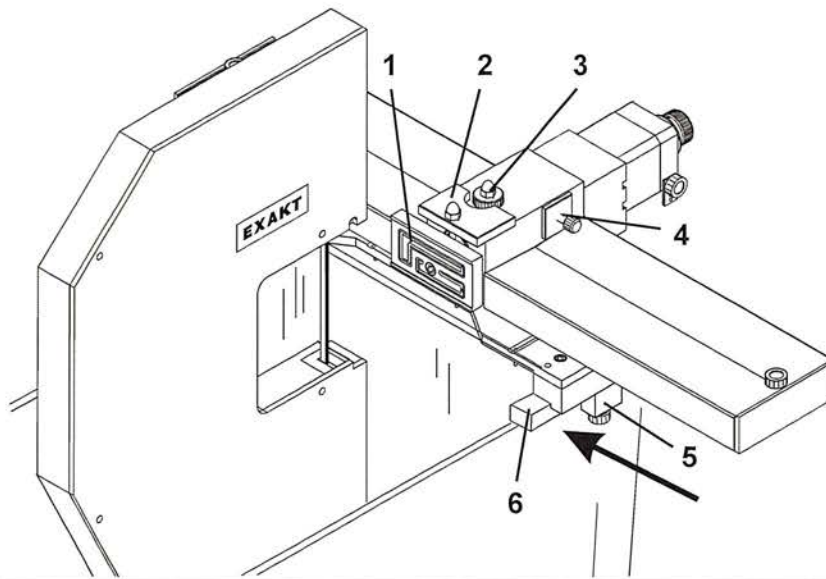


Fig. 13: Rough adjustment of the cutting plane

1. Tightly screw on the sleeve coupling (4) and insert the cover.
2. Remove the sleeve lock (2).
3. Tighten the friction damper (3).
4. Attach the sample to the sample holder (1).
5. Release the clamp holder (5) on the right and left.
6. Push the parallel guide onto the bearing surfaces of the tank (6) until the required position is reached relative to the cutting band.
7. Press the parallel guide in the cutting direction against the bearing surfaces (see arrow) until the stop bar is flush on the support border.
8. Tighten the clamp holder (5).
9. Once more make sure that the stop bar is flush on the support border to ensure a parallel cut.

7.6. PRECISE ADJUSTMENT OF THE CUTTING PLANE

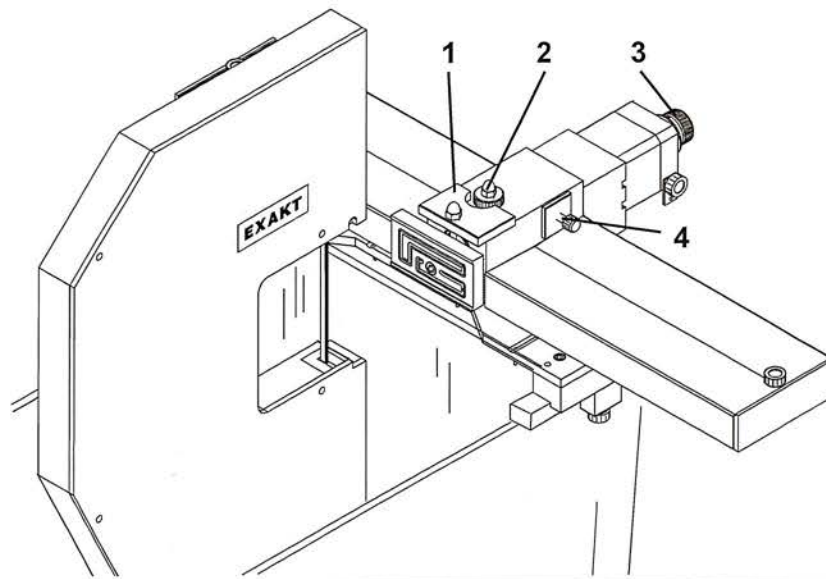


Fig. 14: Precise adjustment of the cutting plane

CAUTION

Never turn the setting wheel manually when the sleeve coupling is clamped and the sleeve lock is mounted at the same time.

1. Release the friction damper (2) but do not unscrew it completely.
2. Insert the sleeve lock (1).
3. Remove the cover (4) and release the sleeve coupling.
4. Position the sample with the setting wheel (3) in the required direction. 1 turn is 0.1 mm.
 - Observe the cutting loss by the cutting band when positioning.

CAUTION

When positioning, always turn the setting wheel in just one direction to eliminate back lash.

5. Tighten the sleeve coupling and insert the cover (4).
6. Remove the sleeve lock (1).
7. Tighten the friction damper (2).

7.7. SETTING THE CUTTING DEPTH

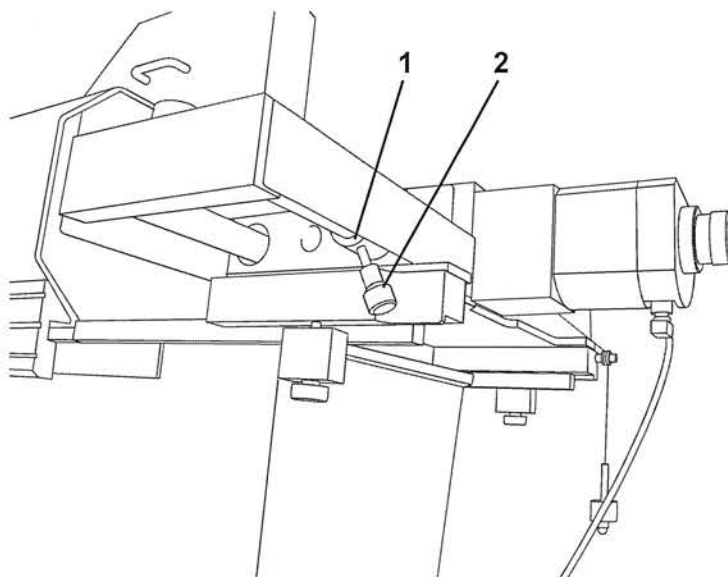


Fig. 15: Adjusting ring

The traveling distance can be limited or the parallel guide can be locked using the adjusting ring (1).

1. Release the knurled screw (2).
2. Adjust the adjusting ring (1) so that the cross cut can be made without any hindrance.
3. Re-tighten the knurled screw (2).

7.8. CUTTING IN CP MODE

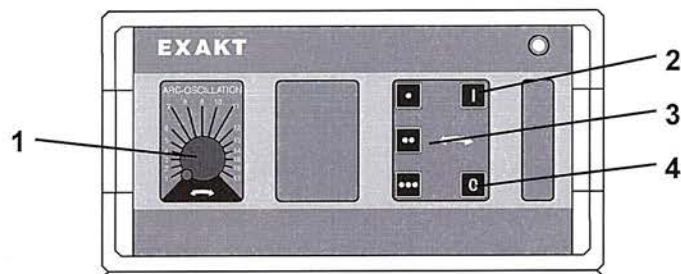


Fig. 16: CP controller

1. Switch on controller CP (rear)
2. Switch on the cooling circuit at the rear of the tank.
3. Press the I button (2).
4. Set the pendulum speed with the rotary knob (1) in the center position of the pendulum motion to 0.
5. Start cutting in CL mode (line contact).
6. Then switch to CP mode. Control the pendulum motion with the rotary knob (1).
- Recommended pendulum speed: Position 2-5
7. Set the required pendulum angle using buttons 1 – 3 (3).
- Recommended pendulum angle: smallest angle
8. Press the O button (4) after cutting to switch off the pendulum motion.
 - The pendulum motion stops in its starting position. This is necessary for the next positioning of the sample.

8 CARE AND MAINTENANCE

When correctly operated, EXAKT devices are very reliable and only require low maintenance.

To ensure this, the following care and maintenance work must be run in the specified time intervals as per the maintenance plan.



WARNING

You must read the *Safety* chapter before running care and maintenance work!

There is an increased risk of injury if the *Safety* chapter is ignored.

Maintenance must only be carried out by persons that have been assigned with this task and that have been instructed on the associated risks and dangers, and who are appropriately qualified.

- > You must disconnect the device from the mains before running care and maintenance work!
- > Contamination of the coolant may occur for certain applications.



It is recommended that the overall system be kept in a clean condition.

8.1. CARE AND MAINTENANCE PLAN

System	Schedule	Care and maintenance work
Clean without removing the covers	After each use	Always check for contamination and clean when necessary
Linear guide bearing and guide axles	1x per week or when the parallel guide has not been used for a longer time	Oil the linear guide bearing and the guide axles
Completely clean, removing the covers	1x per week or when the parallel guide has not been used for a longer time	

8.2. DAILY CLEANING



WARNING

Pull the mains plug on the device before cleaning.

Unintentional switch-on of the device during cleaning work may result in dangerous injuries to the fingers.



Pull the mains plug on the device before cleaning, or disconnect it from the mains.

CAUTION

Never spray the parallel guide with water to clean it, or clean it with a high-pressure cleaner.

Never completely place the parallel guide into the cleaning fluid for cleaning purposes.

Never apply cleaning fluid directly on electrical connectors or switch elements.

Clean the parallel guide with a clean, lint-free cloth previously treated with cleaning fluid.

Do not use any aggressive cleaning agent such as acetone or a nitro solution when cleaning the housing. The following cleaning agents have proven useful in practice:

- > Alcohol (up to 100%)
- > Cleaning solvent
- > Water with dishwashing liquid

Clean the parallel guide with a cloth after each use. The outside of the parallel guide must be cleaned sufficiently.

8.3. WEEKLY CLEANING

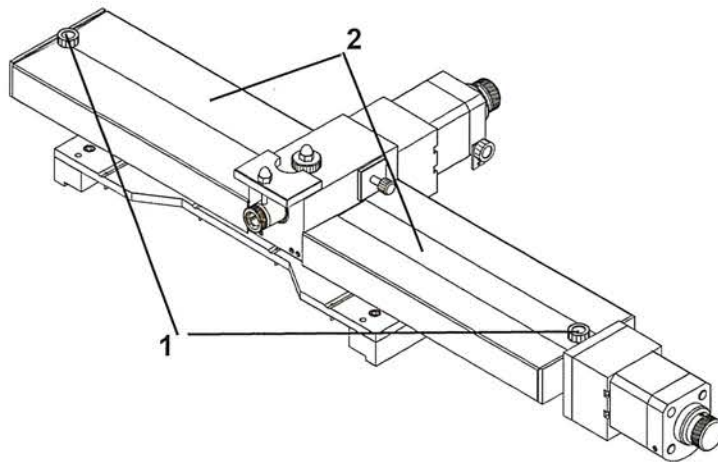


Fig. 17: Cover sheets

1. Release the knurled screws (1) and remove the cover sheets (2) of the parallel guide.
2. Now clean all open components as per Chapter **Fehler! Verweisquelle konnte nicht gefunden werden..**
3. Oil the linear guide bearing and the guide axles as per Chapter **Fehler! Verweisquelle konnte nicht gefunden werden..**
4. Place the cover sheets back on.

8.4. OIL THE LINEAR GUIDE BEARING AND THE GUIDE AXLES

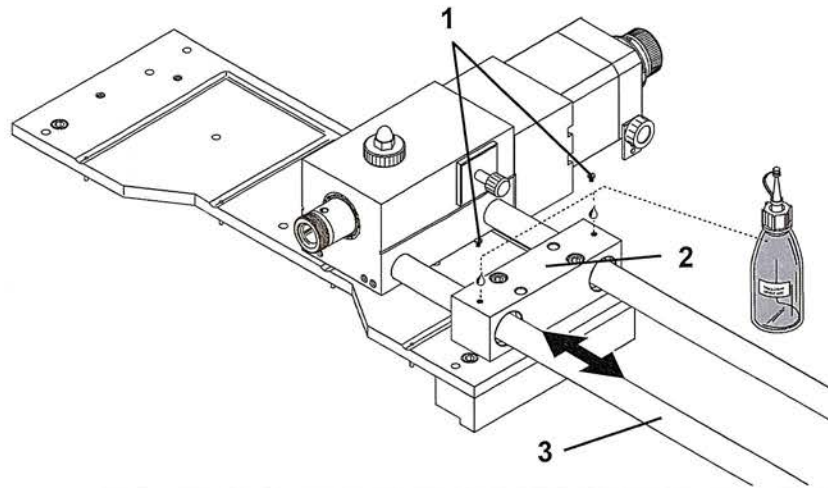


Fig. 18: Cover sheets

CAUTION

The use of incorrect lubricants results in destruction of the linear guide axles.

Only use the special oil approved by Exakt.

1. Release the knurled screws and remove the cover sheets.
2. Remove the cylinder screws (1), 2 per guide block.
3. Apply 2-3 drops of special oil in the bore holes of the bearing mounting (2).
4. Move the guide slides (3) to and fro slightly when oiling them in order to also oil the guide axles.
5. Screw the cylinder screws (1) back on.
6. Place the cover sheets back on and tighten them.

9 REMEDYING MALFUNCTIONS

9.1. FAULT TABLE

Description	Cause	Remedy
Operation display lamp does not light when the controller is switched on.	No power supply.	Check the power supply.
	Defective device fuse.	Replace the device fuse.
	Defective main switch.	Contact Service.
Sleeve pendulum movement does not function	Step motor cable not connected, or incorrectly connected.	Check the step motor cable
	Button for speed and pendulum motion at the left stop.	Adjust the speed accordingly.

9.2. FAULTY CUTTING RESULTS

Description	Cause	Remedy
Incorrect positioning of the sample with the graduated button, or thin layer is not parallel.	Positioning of the sample with the graduated button was done without previously releasing the friction damper. The bearing plate of the drive is thereby deformed and changes the positioning of the sleeve during the cutting process.	Before positioning the sample with the graduated button, you must release the friction damper!
	Sleeve coupling incorrectly tightened. As the sleeve coupling slips, the cutting plane of the sample moves while cutting.	Firmly tighten the sleeve coupling.
The sample bends significantly (during thin cuts).	Feed force is too high.	Reduce the feed weight.
	Excessive hydrodynamic forces in the cutting slit.	Reduce the band speed. Add dishwater liquid to the coolant (reduces the surface tension)
Thin layer implant rises up from the slide.	Feed force is too high.	Reduce the feed weight.
The cut deviates.	Bad or incorrect cooling.	Check the coolant feed.
	Cutting band incorrectly clamped in.	Check the run of the cutting band.
	Support rollers incorrectly adjusted.	Check the support rollers.
Curring band tears.	Cutting band is jammed.	Check the cutting band; clean or replace if necessary.
	Incorrect cutting parameter.	Check and reduce the feed weight or -speed if necessary.
	Operator damages the cutting band when pulling back the parallel guide.	Wait until the workpiece is removed from the cutting band far enough.

Description	Cause	Remedy
	Cutting bar runs into the ground of the support rollers.	Adjust the support rollers (300), or adjust the setting of the lower wheel (310/311).

10 SPARE PARTS AND ACCESSORIES

10.1. ORDERING SPARE PARTS

Use this chapter as a fax template to order spare parts. Enter all required data in the following table and send these pages with the ticked spare parts to your specialist dealer.

	Sender	Recipient	
Company			
Surname, first name			
Address			
City/Location			
Telephone			
Fax			
Name of device		Type	
Serial number		Date of purchase	

10.2. SPARE PARTS FOR PARALLEL GUIDE 300 / 310

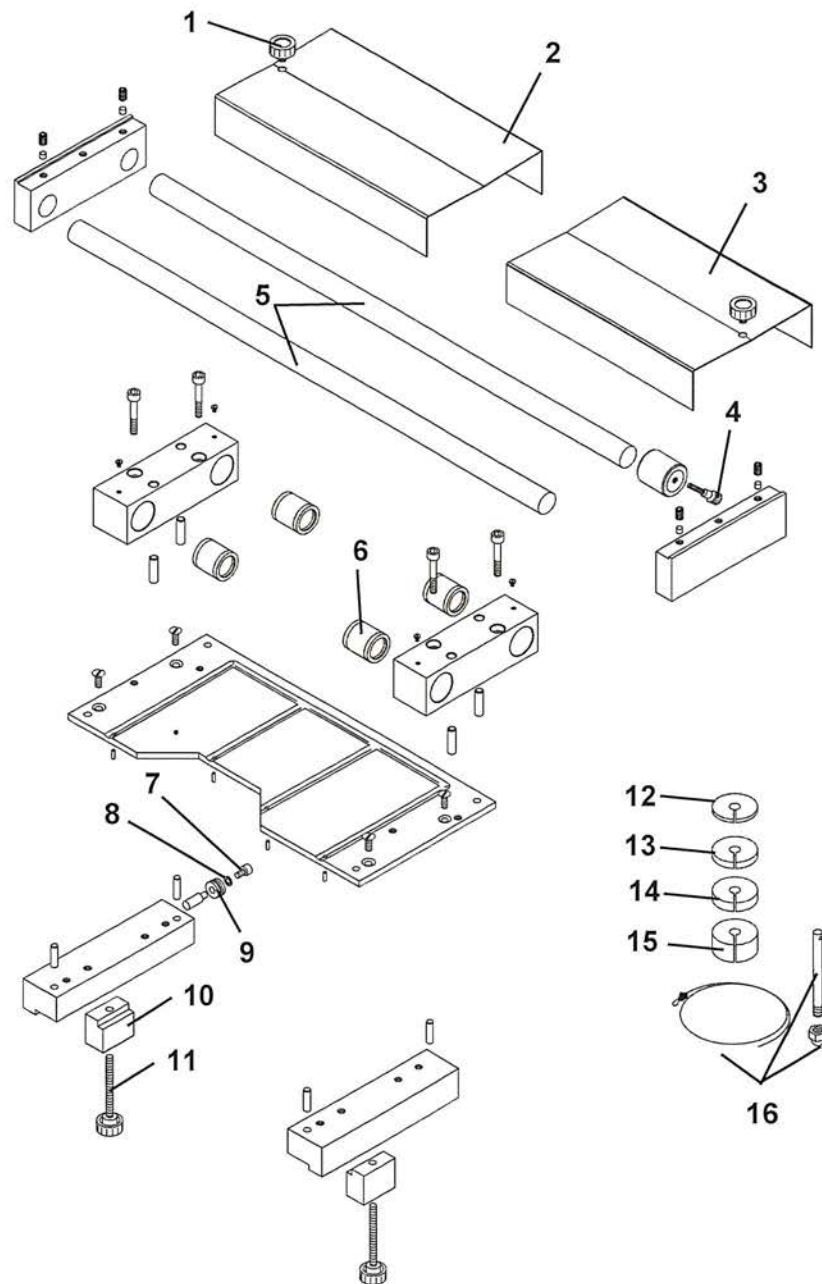


Fig. 19: Parallel guide 300 / 310

Pos.	Art. No.	Description	Quantity
1	31430	Rändelschraube M6 <i>Black knurled screw M6</i>	
2	31610	Blechabdeckung, lang (260 mm), Version 300 <i>Prot. metal cover, long (260mm)</i>	
	37420	Blechabdeckung, lang (355 mm), Version 310 <i>Protective cover, long (355mm)</i>	
3	31600	Blechabdeckung, kurz (260 mm), Version 300 <i>Prot. metal cover, short 230mm</i>	
	37410	Blechabdeckung, kurz (340 mm), Version 310 <i>Prot. met. cover, short(340mm)</i>	
4	37450	Rändelschraube, schwarz, M6 <i>Knurled screw, black, M6</i>	
10	31470	Winkelhalter Parallelführung <i>Fixation clamp parallel guide</i>	
11	31480	Rändelschraube für Winkelhalter <i>Knurled screw for fixation clamp (40mm)</i>	
12	31270	Gewicht mit Schlitz, 25 g 300 <i>Weight with slot, 25g 300</i>	
13	31280	Gewicht mit Schlitz, 50 g 300 <i>Weight with slot, 50g 300</i>	
14	37270	Gewicht mit Schlitz, 100 g 310/311 <i>Weight with slot, 100g 310/311</i>	
15	37280	Gewicht mit Schlitz, 200 g 310/311 <i>Weight with slot, 200g 310/311</i>	
16	31260	Halter für Vorschubgewichte 300 <i>Carrier for weights 300</i>	
	37260	Halter für Vorschubgewichte 310/311 <i>Carrier for weights 300</i>	

10.3. SPARE PARTS FOR TAILSTOCK CP 300 / 310

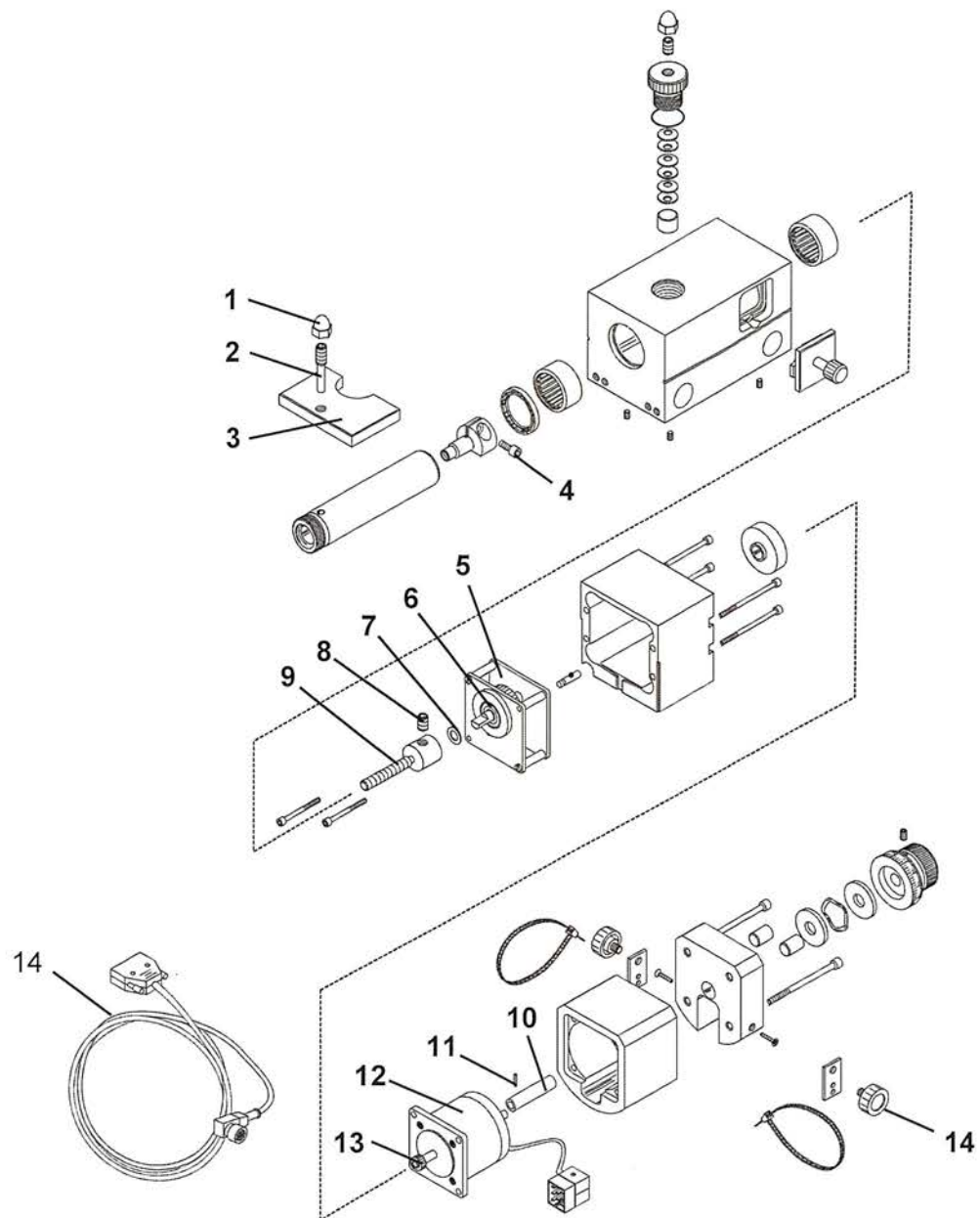


Fig. 20: Tailstock CP 300 / 310

Pos.	Art. No.	Description	Quantity
1-3	31690	Sleeve lock CP, compl.	
2	31760	Pin for sleeve lock	
4	31701	Clamping screw for sleeve coupling M5x12	
5-9	31711	Drive CP	
10-14	31720	Step motor CP, complete (round connector incl. controller connecting cable)	
14	31430	Knurled screw M6	

10.4. CONTROLLER FOR PARALLEL GUIDE 300 / 310

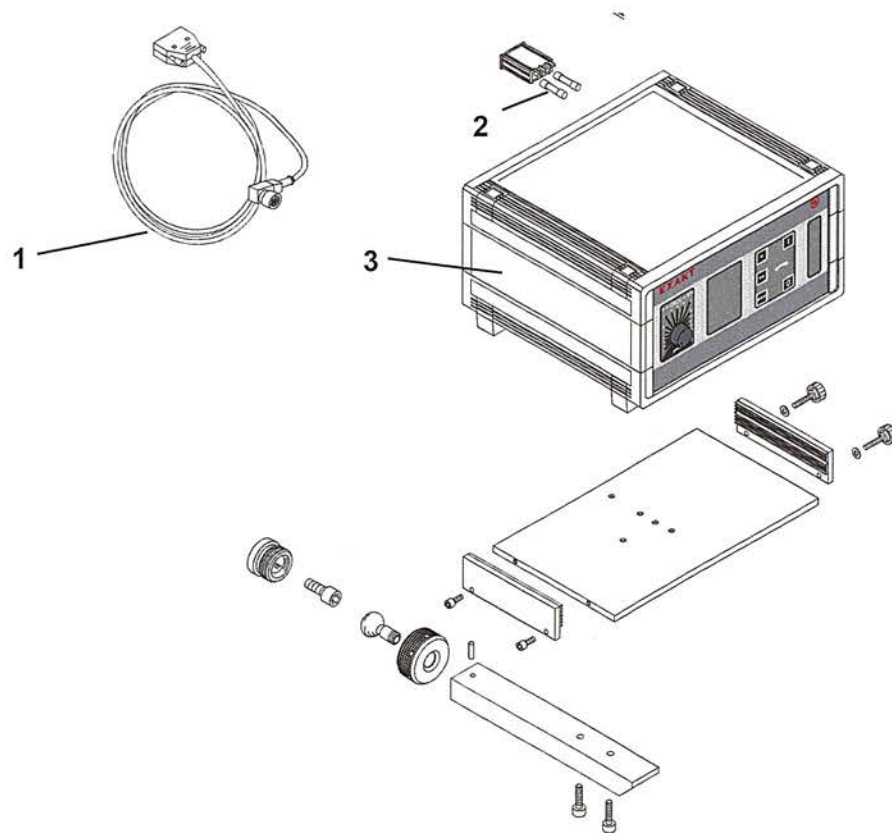


Fig. 21: Controller for parallel guide 300 / 310

Pos.	Art. No.	Description	Quantity
1	31850	Schrittmotorkabel <i>Step-motor cable (round plug)</i>	
2	40290	Gerätesicherung 3,15A/M (2 Stück) <i>Fine wire fuse 3.15 /M (2 pieces)</i>	
3	31810	CP-Steuerung 3031 CP/N <i>CP Control unit 3031 CP/N</i>	

10.5. TOOLS FOR PARALLEL GUIDE 300 / 310

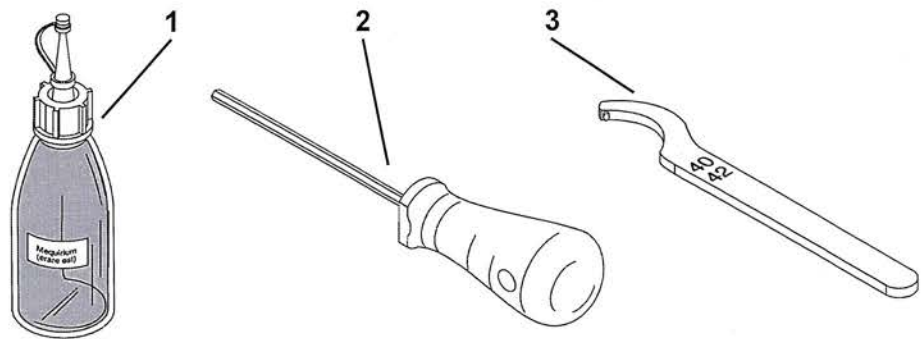


Fig. 22: Tools for parallel guide 300 / 310

Pos.	Art. No.	Description	Quantity
1	31910	Öl für Parallelführung / 100 ml <i>Oil for Parallel guide / 100ml</i>	
2	31930	Satz Inbus Schraubendreher <i>Set of Allen Keys</i>	
3	32290	Zapfenschlüssel <i>Pin spanner</i>	

11 INDEX

A

Address of manufacturer	4
Area of application	11
Assembling the feed weights	20
Assembling the parallel guides	17, 18

B

Bore oils/emulsions	9
---------------------------	---

C

Care and maintenance work	31
Cleaning	9, 32
Cleaning agent	10
Control electronics	16
CP controller	16
Cutting depth	29
Cutting in CP mode	30

D

Daily cleaning	32
Decontamination certificate	10
Description	11

E

Electrical connection	21
-----------------------------	----

F

Faults	35
Faulty cutting results	36
Function of the CP controller	22

G

General safety instructions	5
Guide axles	34

H

Handling chemical substances	9
Handling coolant/lubricants	9

I

Installation	17
--------------------	----

Installation location	7
-----------------------------	---

L

Linear guide bearing	34
----------------------------	----

O

Oil the guide axles	34
Oil the linear guide bearing	34
Ordering spare parts	4, 38

P

Parallel guide	
311	15
CL (Contact Line)	13
CP (Contact Point)	14
Possible combinations	12
Precise positioning of the parallel guide	
.....	28
Putting out of operation	10

R

Remedying faults	35
Rough positioning of the parallel guide	
.....	27

S

Safety instructions	8
Safety symbols	6
Selecting the location	7
Service inquires	4
Setting the cutting depth	29
Spare parts	
Controller for parallel guide 300 / 310	
.....	43
Parallel guide 300 / 310	39
Step motor 300 / 310	41
Starting the pendulum motion	22
Start-up	7
Stopping the pendulum motion	23
Switching off the cutting band	23
Switching on the cutting band	23

T

Tools for parallel guide 300 / 310..... 44

U

Use in accordance with the instructions
(intended use)..... 10

W

Warranty conditions 47

Weekly cleaning 33

12 APPENDIX

12.1. WARRANTY CONDITIONS

The manufacturer's guarantee is canceled if the equipment is used incorrectly by:

- > Non-observance of these operating instructions;
- > Use of non-qualified personnel;
- > Unauthorized modifications to the device and its components.

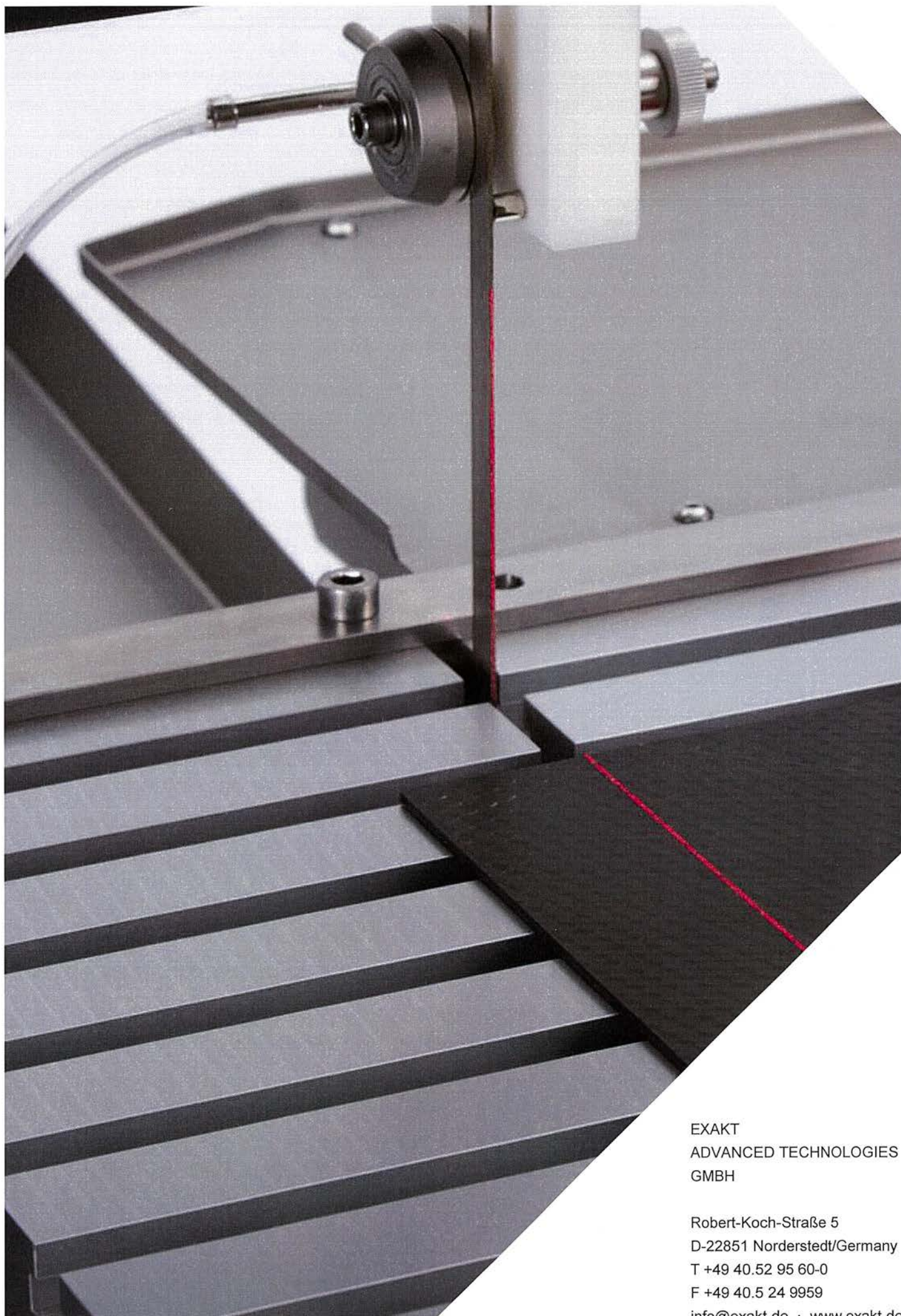
The manufacturer is not liable for any resulting damages.

CAUTION

Impairment of the function of the device by use of incorrect spare parts or lubricants; manufacturer's warranty is canceled!

Correct device function is not guaranteed if non-approved spare parts or lubricants are used, and the warranty is canceled.

Only use original spare parts and lubricants or spare parts and lubricants approved by EXAKT.



EXAKT
ADVANCED TECHNOLOGIES
GMBH

Robert-Koch-Straße 5
D-22851 Norderstedt/Germany
T +49 40.52 95 60-0
F +49 40.5 24 9959
info@exakt.de · www.exakt.de