



THREE ROLLER MILL  
EXAKT 80E **PLUS<sup>+</sup>**  
Operating Instructions

Article number:  
27891EN



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## 2 CONTACT ADDRESSES

### 2.1. MANUFACTURER ADDRESS

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#### 2.1.1. IMPRINT

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### 2.2. SERVICE AND ORDERING SPARE PARTS

In case of service questions and for ordering spare parts, please contact the retailer by whom you purchased the unit.



For ordering spare parts, use the order form in chapter 18 Spare and wear parts.

### 3 INSTALLATION INFORMATION IN ADVANCE

The installation information in advance shall give you all information you need for preparing you site before the machine is delivered to you. It gives information how to handle and transport the machine, information for the setup site and electrical connection / preparation, etc.

For this, the relevant chapters in this operating instructions are shown in the table below:



We additionally recommend to read the entire operating instructions before the machine is delivered to you.

Especially when ordered option (article-no.)	Chapter
	4 Safety
	5.1 Intended use
	5.2 No release for work in potentially explosive atmosphere
	5.9.1 Type plate of the machine
	6 Technical data
	7.6 Safety marks
	8 Transport
	9.1 Setup site
	9.4 Connecting the electric supply
27106 & 27107 or 27108 & 27109	9.4.3 Connection variant 2: fixed connection with coded heavy duty connector
	9.5 Connecting the roller temperature control
27510	9.5.2 With pressureless cooling
27500	9.5.3 With pressure cooling

## 4 SAFETY



Link back to chapter 3 Installation information in advance

### 4.1. GENERAL INFORMATION CONCERNING SAFETY

Every persons appointed to install, commission, operate, maintain and service the unit and the associate components must have read and understood these instructions and in particular the chapter Safety.

If necessary, special training appropriate to the professional qualification of the persons in question shall be carried out.

Explanation of the symbols in these instruction:



#### **DANGER**

Indicates an exceptionally severe danger situation. Disregarding this note will cause lethal or severe irreversible injuries.



#### **WARNING**

Indicates an exceptionally severe danger situation. Disregarding this note can result in lethal or severe irreversible injuries.



#### **CAUTION**

Indicates a danger situation. Disregarding this note can cause light or medium injuries.

#### **NOTE**

Indicates risk of property damage. Disregarding this note can cause property damage.



Here you find important background information and explanations within the current context and status information within a sequence of action.

## 4.2. SAFETY SYMBOLS

Symbol	Meaning
	Warning of general and not categorized risks
	Warning of voltage
	Warning of rollers rotating reversely
	Danger of cuts
	Hot surface
	Suspended load
	Danger of hand injuries
	Danger of crushing
	Danger of tripping
	Warning of toxic substances
	Warning of explosive substances

Symbol	Meaning
	Use a spatula
	Wear safety gloves
	Wear foot protection
	Wear eye protection
	Wear protective clothing

	Wear protective apron / lab coat
	Disconnect machine from the mains
	Read operating instructions
	Reference to other documents

### 4.3. GRAPHICAL CONVENTIONS

Symbol	Meaning	
	<b>Tool</b>	This symbol indicates that a special tool or consumables are required.
•	<b>Bulleted list</b>	Properties of the unit or individual components are listed in bulleted lists.
1. >	<b>Operating sequence</b>	Operating sequences instruct you to perform something in a given sequence.
	<b>Disposal</b>	Notes for disposal of packaging materials, wear parts and defective unit parts.
	<b>Screwing tight</b>	<b>CW</b> Clockwise (tightening the screw)
		<b>CCW</b> Counterclockwise (undoing the screw)

## 4.4. COMMISSIONING

The unit housing contains information signs that additionally enable safe operation.

Observe all safety instructions without fail, observance serves your safety.

Prior to commissioning the unit, the operator must ensure that all safety-related conditions are met.

Adhere to the relevant accident prevention regulations as well as other generally accepted safety-related and occupational-medical regulations.

## 4.5. SELECTION OF LOCATION

The unit must be placed horizontally.

The installation location must ensure safe stand of the unit.

Place the unit on a fixed lab table that can bear the weight of the machine (see chapter 6 Technical data).

### NOTE

- > Do not place any items on the unit.
- > Before connecting the unit, check mains cable and power plug for damage.
- > Connect the unit to the connection voltage specified on the type plate.
- > Before connecting, compare the mains voltage to the unit voltage given on the type plate of the unit.
- > Only allow a trained electrician to connect the machine.

When selecting the location of installation, observe the corresponding safety notes and manufacturer specifications for the operating materials used and/or located in the surroundings of the unit.

## 4.6. SAFETY NOTES REGARDING OPERATION

Refrain from any operation that:

- > constitutes a danger for life and limb of the user or third parties,
- > implies impairment of the unit or other property,
- > impairs the safety and the functionality of the unit,
- > disregards the specified safety instructions.

Maintenance and upkeep of the machine is only allowed to be carried out by personnel trained and certified by EXAKT. These personnel must be familiar with the machine and instructed on its dangers as well as have the required qualification.



### **WARNING**

Keep the machine housing closed during operation and only open it to rectify functional faults and to perform maintenance tasks.

Missing safety devices and covers must be attached again immediately after finishing the work.



### **WARNING**

Danger of injury in the area of the rotating rollers for persons with long hair and/or wearing loose clothing, ties, scarves, jewelry, bracelets, etc., in particular at the product nip gap (gap 1)!

- > Always use suitable safety devices.
- > For all works, wear tight-fitting clothes and protect long hair by headgear.
- > Never wear ties, scarves, jewelry, bracelets, etc. for any work.



### **WARNING**

Danger of being pulled in by the rollers:

During operation, the rollers of the machine are driven.

This causes a danger of being pulled in.

- > When working at the machine, pay attention to your hands and fingers.
- > For cleaning, set up the cleaning plate and change into cleaning mode.
- > Only use the machine with the provided safety devices.
- > In routine operation, always work with the limiting jaws inserted to the correct working width (according to the selected safety device).
- > In routine operation, supply or remove product only with the spatula.
- > Only use one-part spatulas or riveted spatulas with long handle.
- > ALWAYS keep the spatula as far away as possible from gap 1 (nip gap roller 1 and roller 2).



### **WARNING**

Danger of scalding:



Danger of scalding or burns at the media and at hot machine parts when handling hot temperature control media.

- > Before handling temperature control media, let them cool down.
- > Wear safety gloves and protective clothing.



### **WARNING**

Danger of eye injuries due to rotating rollers or when handling product and cleaning agents



- > In general, wear eye protection
- > Wear suitable protective clothing



### **CAUTION**

Danger of cuts at the scraper knife.

- > During assembly and handling, always work with plastic knife protection or with knife protection for scraper socket.
- > When working with the scraper socket and scraper knife, wear suitable safety gloves.



### **CAUTION**

Danger arising from the substances to be processed:

The substances to be processed can cause health hazards.

- > Read the safety datasheets of the substances to be processed carefully.
- > Wear suitable protective clothing.



### **DANGER**

When working at live connections, disconnect the machine from the mains.



Inattentiveness can cause an electric shock.

When performing maintenance work at the electric system, observe the following issues:

1. Switch off the voltage of the unit.
2. Secure against being switched back on.
3. Check that it is de-energized.
4. Earth and short circuit.
5. Cover neighboring live parts and secure danger area.

## 4.7. SAFETY NOTES REGARDING CLEANING WORK



### **WARNING**

Danger of being pulled in by the rollers:

During operation, the rollers of the machine are driven.

This causes a danger of being pulled in.

- > When working at the machine, pay attention to your hands and fingers.
- > For cleaning, set up the cleaning plate and change into cleaning mode.
- > Only use the machine with the provided safety devices.



### **CAUTION**

Danger of cuts at the scraper knife.

- > During assembly and handling, always work with plastic knife protection or with knife protection for scraper socket.
- > When working with the scraper socket and scraper knife, wear suitable safety gloves.



### **CAUTION**

Danger arising from the substances to be processed:

The substances to be processed can cause health hazards.

- > Read the safety datasheets of the substances to be processed carefully.
- > Wear suitable protective clothing.



### **NOTE**

- > When using cleaning agents, provide sufficient ventilation.
- > Observe the safety data sheets of the substances to be processed.
- > Observe the disposal instructions by the respective manufacturers.
- > Observe local safety regulations.

## 4.8. HANDLING CHEMICAL SUBSTANCES AND COOLANTS/LUBRICANTS

When handling oil, grease and other chemical substances, observe the corresponding safety data sheets and disposal instructions by the respective manufacturers and take all local safety requirements into account.



### **CAUTION**

When handling chemical substances such as cleaning agents, cooling and temperature control media can cause hazards in case of contact with skin or eyes as well as inhalation.

Provide suitable exhaust and wear safety goggles, safety gloves and protective clothing.



## 4.9. CLEANING AGENTS

When using cleaning agents, observe the corresponding safety data sheets and disposal instructions by the respective manufacturers and take all local safety requirements into account.



### **WARNING**

Use of explosive or easily flammable cleaning agents constitutes an increased danger of explosion.

Do not use explosive or easily flammable cleaning agents!

## 5 PERFORMANCE SPECIFICATIONS

### 5.1. INTENDED USE



Link back to chapter 3 Installation information in advance

Intended use of this machine is only defined for the fields of industry, development, research and production for the quantities specified in the technical data. Any other use is considered improper.

The spectrum of applications reaches from food industry to nanotechnology.

The unit is suitable for processing products in cosmetics, paints, electronics, food, dental, ceramics, lubricants, adhesives, soap and special industries.

The intended use of the machine is the reduction of particle size and dispensation of agglomerates, in rare cases the reduction of the primary particle size.

Changes to the machine and its accessories are not permitted.

The machine is designed for operation by only one instructed person.

Only wear and spare parts approved by the manufacturer may be used.

Any use beyond the proper use specified above is considered improper. The manufacturer is not liable for personal injury or material damage resulting from use of the machine for other than the intended purpose.

## 5.2. NO RELEASE FOR WORK IN POTENTIALLY EXPLOSIVE ATMOSPHERE



Link back to chapter 3 Installation information in advance

The machine has not been designed for use in potentially explosive areas.

- > Do not operate the machine in potentially explosive atmosphere.
- > Do not process any potentially explosive products.
- > Do not use explosive operating materials or cleaning agents.

## 5.3. REASONABLY FORESEEABLE MISUSE

This includes misuse.

It is prohibited

- > To store installation materials, tools and other objects on the machine during operation.
- > To install spare parts or accessories not approved by the manufacturer.
- > To bypass components or functions of functional safety.
- > To dismount components of functional safety or to replace them by those not approved by the manufacturer.
- > To modify components.
- > To operate the machine beyond the specified service life.
- > To operate the machine in potentially explosive areas.
- > To disregard safety data sheets.

## 5.4. QUALIFICATION OF THE PERSONNEL

Unqualified personnel cannot recognize the machine's behavior and thus any risks arising from the machine; hence they are subject to increased hazard.

- > Appoint a responsible machine operator. Only hand out keys and passwords to the appointed personnel.
- > Only sufficiently qualified personnel must perform the tasks described in these operating instructions.
- > Make sure that the personnel meet the local laws and regulations for safe work.

## 5.5. TECHNICAL CONDITION

If the machine is in a bad technical condition, both good function and safety are at risk.

- > Use the machine in technically good condition only.
- > Observe the maintenance intervals.
- > Rectify any machine faults if the usual behavior of the machine changes.
- > Rectify faults immediately.
- > Do not modify the machine without manufacturer's approval.

## 5.6. PROTECTION AGAINST UNINTENTIONAL START

By attaching a padlock at the main switch you can secure the machine against unauthorized use.

## 5.7. SAFETY DEVICES

If safety devices do not function correctly, persons are at risk.

- > Make sure that all safety devices are functional before operating the machine.

## 5.8. SAFETY WARNING NOTES

If safety warning notes are unreadable, persons are at risk.

- > Do not remove or cover safety warning notes.
- > Replace unreadable safety warning notes.

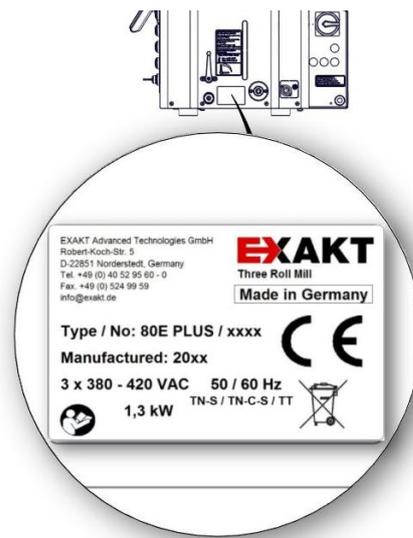
## 5.9. MARKING

### 5.9.1. TYPE PLATE OF THE MACHINE



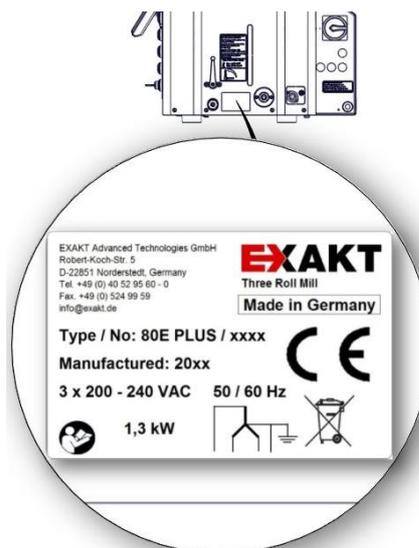
Link back to chapter 3 Installation information in advance

For identification purposes, the machine is equipped with an individual label:



Article number	Voltage	Description / Sign on type plate
27100	380-420VAC 50Hz  EU, (...)	Solidly grounded Wye 3 / N / PE (5 lines)  TN-S / TN-C-S / TT

Fig. 1: Type plate of the machine 380-420V – Solidly grounded Wye



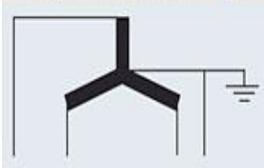
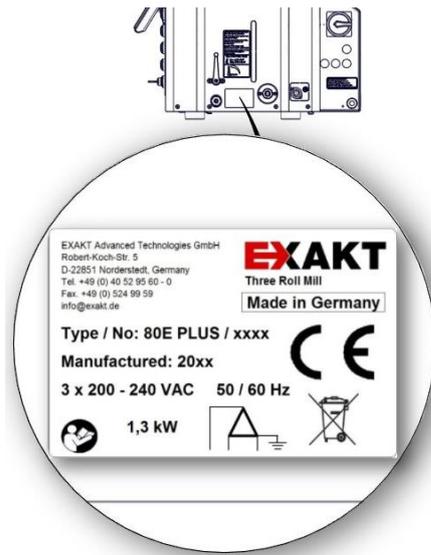
Article number	Voltage	Description / Sign on type plate
27101	200-240VAC 50-60Hz  USA, (CN)	Solidly grounded Wye 3 / PEN (4 lines)  

Fig. 2: Type plate of the machine 200-240V Solidly grounded Wye



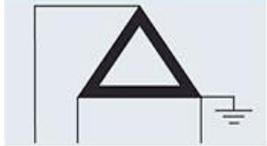
Article number	Voltage	Description / Sign on type plate
27105	200-240VAC 50-60Hz  Japan, (USA)	Corner grounded Delta (3 lines)  

Fig. 3: Type plate of the machine 200-240V – Corner grounded Delta

## NOTE

Danger of machine damage.

The specification for voltage, frequency, and power consumption can vary depending on the version.

Only the information on the original type plate are valid.

> Observe local safety regulations.

### 5.9.2. TYPE PLATE OF OPERATING UNIT

For identification purposes, the operating unit is equipped with an individual label:

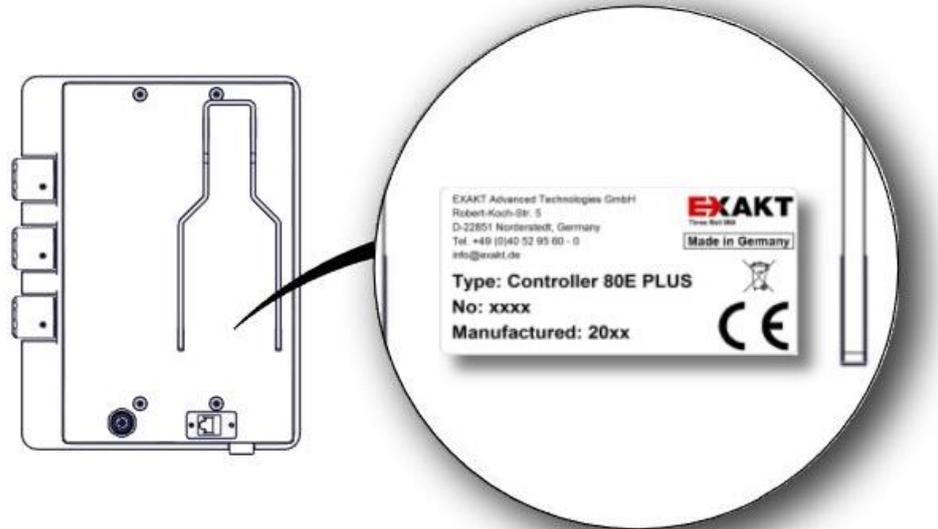


Fig. 4: Type plate of the operating unit



The type plate on the operating unit identifies **ONLY** the operating unit and not the machine! Observe the type plate of the machine.

## 6 TECHNICAL DATA



Link back to chapter 3 Installation information in advance

Description	Value	Unit
-------------	-------	------

### 6.1. ENVIRONMENT

Ambient temperature	10 .. 40	°C
	50 .. 95	°F
Relative humidity, non condensing	max. 85	%

### 6.2. OPERATING AND AUXILIARY MATERIALS

#### Cooling / tempering fluid (thermofluid)

Operation of the machine only with circulation cooling with a corrosion-protection/water mix.

Recommended corrosion protection:

Glystantin <sup>®</sup> G48 <sup>®</sup> , mixing ratio	1:4	% vol.
Medium temperature	10 .. 55	°C
	50 ..130	°F

#### Lubricant for plastic guides

Lubricant	Product-compatible liquid	
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#### Lubricant for toothed wheels

Grease recommendation	BP Energrease LS-EP 2
-----------------------	-----------------------

#### Lubricant for rotary transmission leadthrough (pressure cooling)

Grease recommendation (www.oks-germany.com)	OKS 432
--	---------

### 6.3. WEIGHTS

Machine net	120	kg
	265	lb
Machine wrapped	170	kg
	375	lb

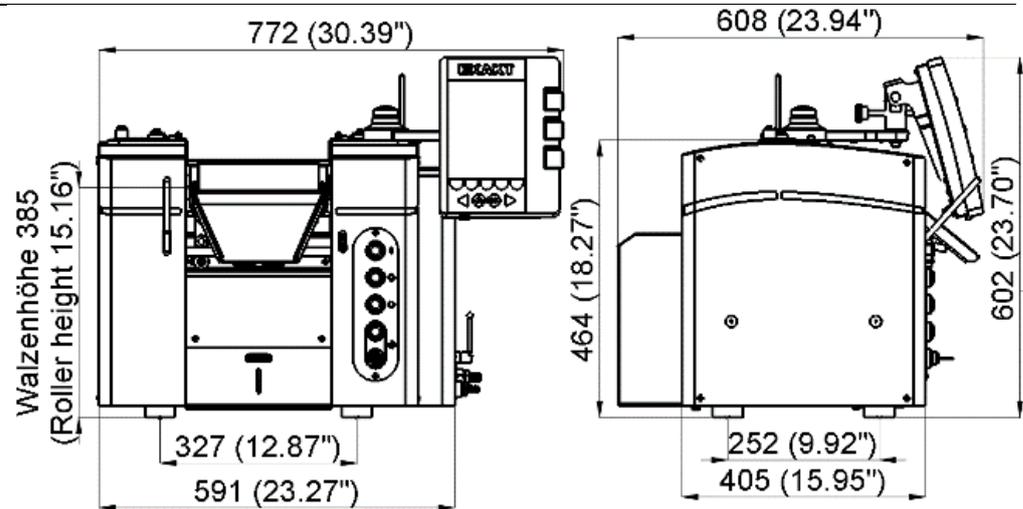
Description	Value	Unit
-------------	-------	------

### 6.4. AIRBORNE SOUND EMISSION

Measured values, with product, 300rpm

L <sub>pA</sub> emitted sound pressure level	72	dB(A)
--	----	-------

### 6.5. DIMENSIONS



### 6.6. DIMENSIONS CRATE

WxHxD	880x970x720	mm
	35x38x29	inch

### 6.7. ELECTRIC VALUES EU

3-phase mains connection

Voltage	380 .. 420	VAC
Control voltage	24	VDC
Frequency	48 .. 52	Hz
Max. power consumption	1300	W

### 6.8. ELECTRIC VALUES US

3-phase mains connection / solidly grounded

Voltage	200 .. 240	VAC
Control voltage	24	VDC
Frequency	57 .. 63	Hz
Max. power consumption	1300	W

### 6.9. ELECTRIC VALUES JAPAN

3-phase mains connection / corner grounded delta

Voltage	200 .. 240	VAC
---------	------------	-----

Description	Value	Unit
Control voltage	24	VDC
Frequency	48 .. 63	Hz
Max. power consumption	1300	W

### 6.10. IP PROTECTION

Ingress protection	IP32	
--------------------	------	--

### 6.11. ROLLER TEMPERATURE CONTROL

Max. pressure at: pressureless cooling	1.0 .. 4.0	bar
	14 .. 60	psi
Max. pressure at: pressure cooling	0.5 .. 2.0	bar
	7 .. 30	psi
Maximum temperature change of supply temperature in tempering process per hour	30	°C / h
	54	°F / h

### 6.12. ROLLERS

Diameter	80	mm
Useful lengths	85 / 170 / 200*)	mm
Temperature range	10 .. 55	°C
	50 .. 130	°F
Rotational speed, roller 3 – operating mode gap	30 .. 700	rpm
Rotational speed, roller 3 – operating mode force	30 .. 300	rpm
Rotational speed, roller 3 – operating mode cleaning	30 .. 200	rpm
Rotational speed, roller 3 – operating mode cleaning USA complies with ANSI® B65/NAPIM 177.1-2017.	30 .. 70	rpm

Roller force - working width 200mm*)	0 .. 22	N/mm
Roller force - working width 170mm	0 .. 26	N/mm
Roller force - working width 85mm	0 .. 26	N/mm
Gap widths gap operation Inc = increments	5 .. 180	Inc
Gap width gap 2 / mixing operation	~0.7	mm

\*) not for all types of rollers

## 7 UNIT DESCRIPTION

### 7.1. FUNCTIONAL PRINCIPLE

The machine disperses, de-agglomerates and homogenizes powdered material to liquid or highly viscous suspensions. At the same time the product is degassed.

The three rollers rotate reversely with various speeds in a speed ratio of approx. 1:3:9.

Roller 3 (**c**) has the highest speed.

The product is supplied into gap 1 (**a**) where it is pre-dispersed.

Then the product is supplied to gap 2 (**b**), where the final dispersion takes place.

The scraper knife (**d**) scrapes the product from roller 3 (**c**), and the product flows off via the scraper socket (**e**).

The fineness of the final product can be influenced by various gap settings, speed settings and the number of passes.

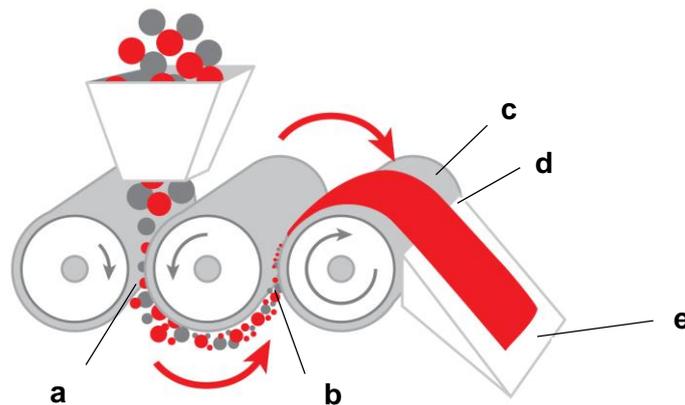


Fig. 5: Functional principle

## 7.2. OVERVIEW

### 7.2.1. SECTION VIEW

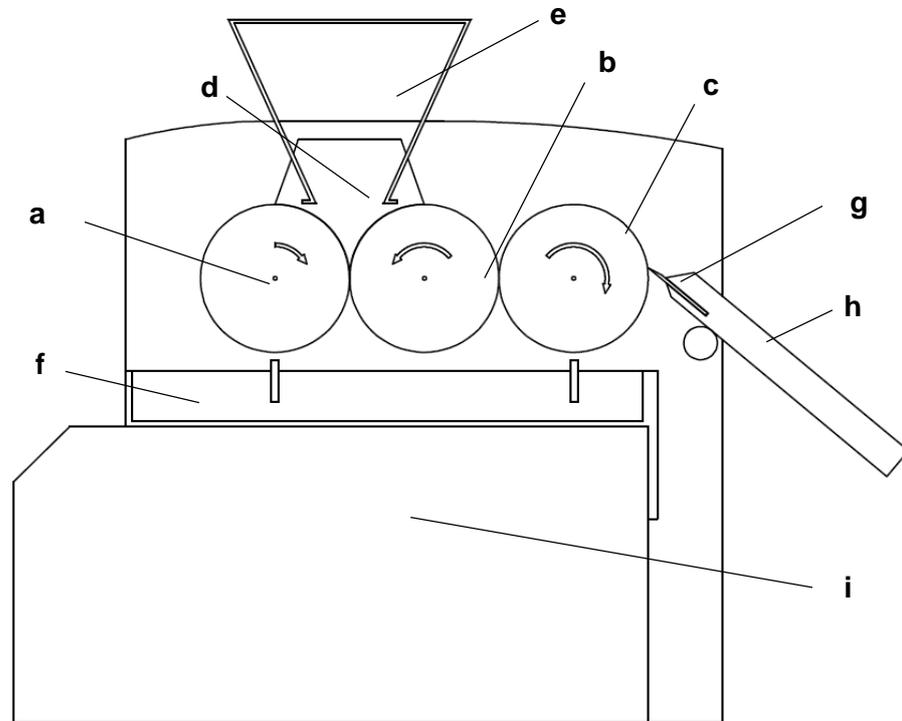


Fig. 6: Section view

- |   |   |   |                                       |
|---|---|---|---------------------------------------|
| a | Roller 1  | e | Safety device gap 1 (nip gap), divers |
| b | Roller 2  | f | Splash tray with safety guard         |
| c | Roller 3  | g | Scraper knives, various               |
| d | Plastic guides prevent an overflow of the product at the roller ends. | h | Scraper socket                        |
|   |   | i | Drive unit                            |

## 7.3. OPERATING MODES

### 7.3.1. CLEANING

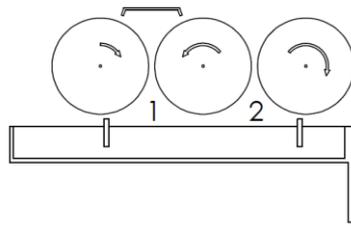


Fig. 7: Cleaning

- Scraper removed
- Cleaning guard mounted
- Plastic guides removed
- Rollers to max. gap value

### 7.3.2. MIXING

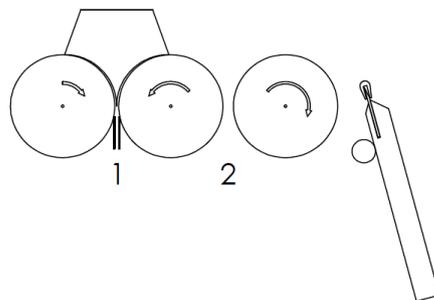


Fig. 8: Mixing

- Scraper swiveled off
- Gap 1 in gap mode
- Knife guard mounted
- Gap 2 < 0.7mm

### 7.3.3. GAP-GAP

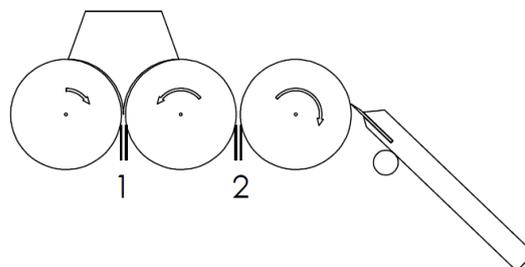


Fig. 9: Gap-Gap

- Scraper swiveled off
- Gap 1 in gap mode
- Gap 2 in gap mode

### 7.3.4. GAP-FORCE

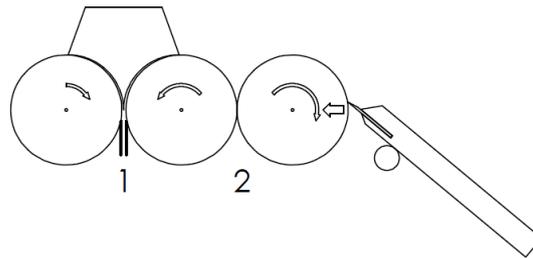


Fig. 10: Gap-Force

- Scraper swiveled off
- Gap 1 in gap mode
- Gap 2 in force mode

#### NOTE

Destruction or damage to the rollers.

Machine must **IN GENERAL** be operated with product because else dry run of the rollers causes damage or destruction of the rollers.

Force values set too high cause dry run and destruction of the rollers.

### 7.3.5. FORCE-FORCE

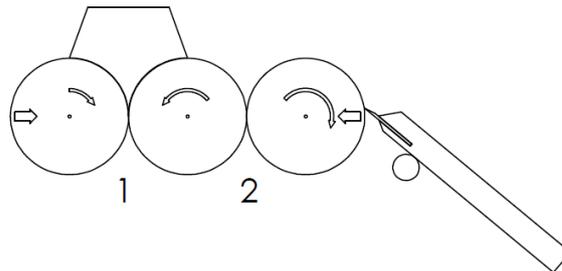


Fig. 11: Force-Force

- Scraper swiveled off
- Gap 1 in force mode
- Gap 2 in force mode

#### NOTE

Destruction or damage to the rollers.

Machine must **IN GENERAL** be operated with product because else dry run of the rollers causes damage or destruction of the rollers.

Force values set too high cause dry run and destruction of the rollers.

## 7.4. EMERGENCY STOP

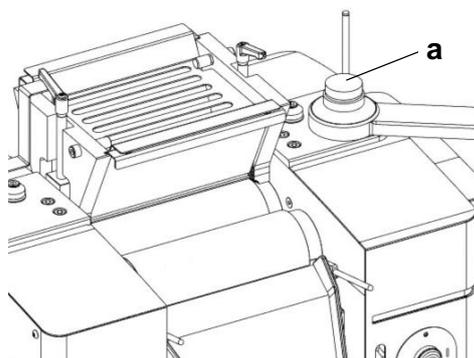


Fig. 12: Emergency stop button

a Emergency stop button

- Drive motor stops

- Gap values to maximum gap width

## 7.5. SAFETY DEVICES

The safety devices prevent direct access to pull-in points as far as possible. For operation of the machine, the following must always be mounted:

- Splash tray, safety sensor locked
- Cleaning guard or safety device nip gap (gap 1)

### 7.5.1. CLEANING

The cleaning guard prevents access to the nip gap. A separate safety sensor detects that the cleaning guard is set into place. The motor torque is reduced. The maximum roller speed is reduced.

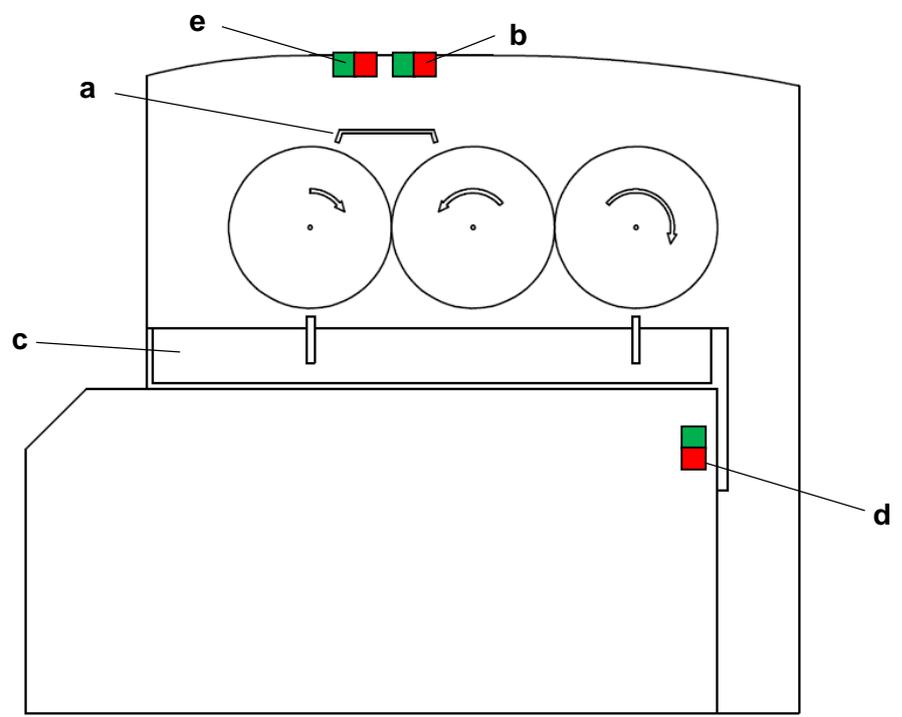


Fig. 13: Safety devices cleaning

- |   |                                |   |  |
|---|--------------------------------|---|--|
| a | Cleaning guard                 | e | Safety sensor, detects that cleaning guard has been selected |
| b | Safety sensor, nip gap (gap 1) |   |  |
| c | Splash tray with safety guard  |   |  |
| d | Safety sensor, splash tray     |   |  |
- 
- Safety devices are detected by safety sensors
  - Drive motor stops
  - Separate safety sensor, detects that cleaning has been selected
  - Gap values at maximum gap value

## 7.5.2. ROUTINE OPERATIONS

The various safety devices prevent access to the nip gap as far as possible.

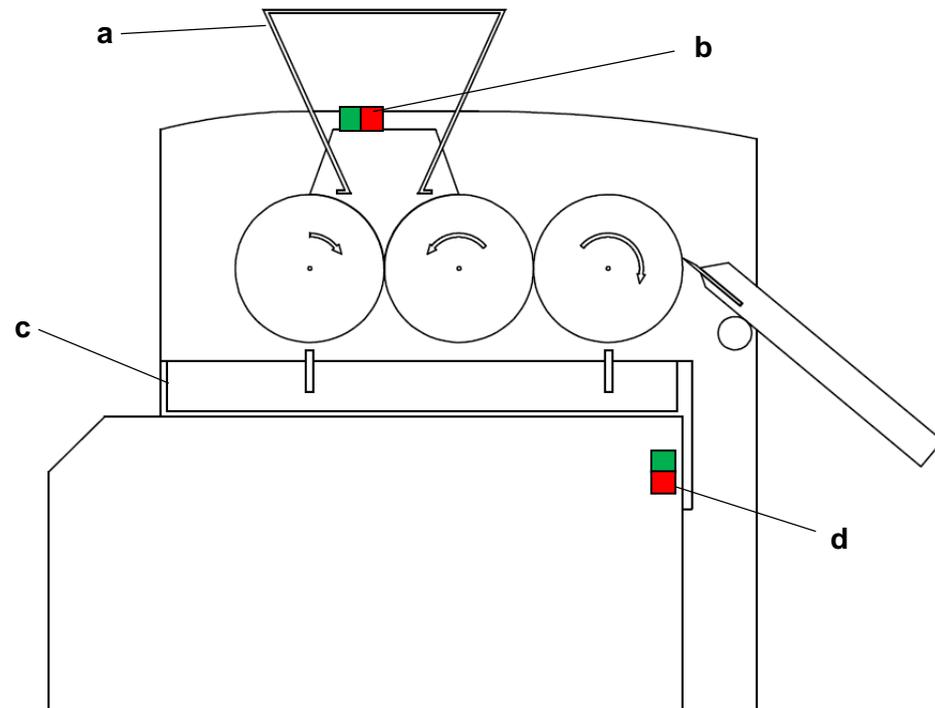


Fig. 14: Safety devices routine operations

a Safety device nip gap, various  
b Safety sensor, nip gap (gap 1)

c Splash tray with safety guard  
d Safety sensor, splash tray

- Safety devices are detected by safety sensors
- Drive motor stops
- Gap values at current gap value

## 7.6. SAFETY MARKS



Link back to chapter 3 Installation information in advance

### 7.6.1. DANGER OF CRUSHING

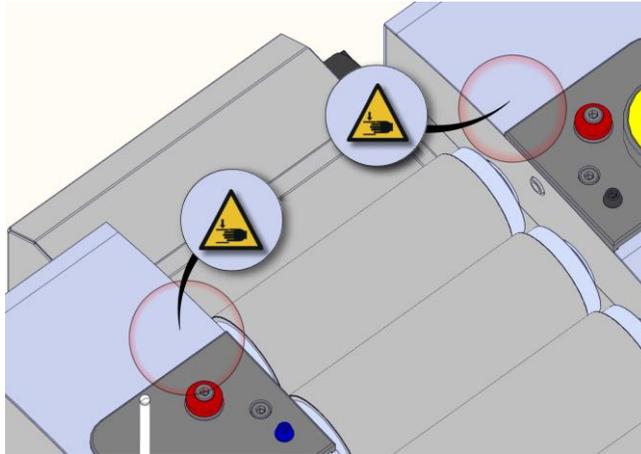


Fig. 15: Warning note - danger of being pulled in by rotating rollers



Danger of crushing if pulled in by rollers

### 7.6.2. DANGER OF CUTS

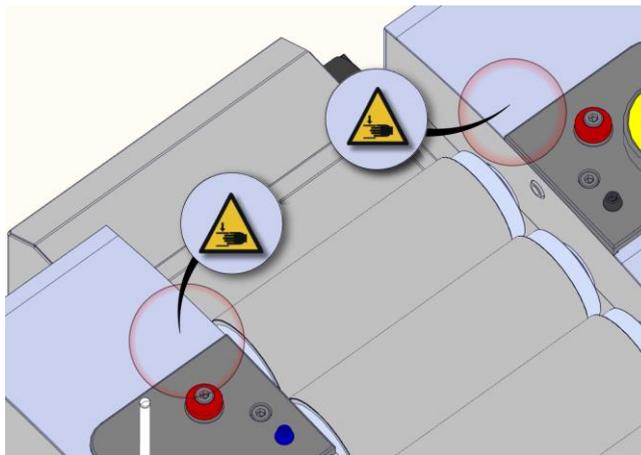


Fig. 16: Warning note danger of cuts at the scraper knife



Danger of cuts

### 7.6.3. VOLTAGE



Fig. 17: Warning note voltage

	Warning of voltage
---	--------------------

### 7.6.4. INCREASED LEAKAGE CURRENT

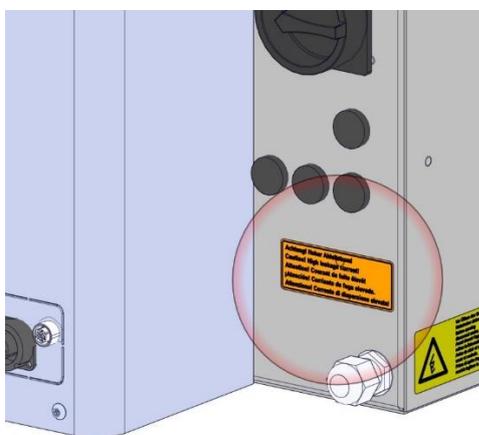


Fig. 18: Warning note increased leakage current

<p><b>Achtung! Hoher Ableitstrom!</b>  <b>Caution! High leakage current!</b>  <b>Atención! Corriente de fuga elevada.</b>  <b>Attenzione! Corrente di dispersione elevata!</b></p>	Warning of increased leakage current; fixed connection only!
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## 7.6.5. TEMPERING FLUID

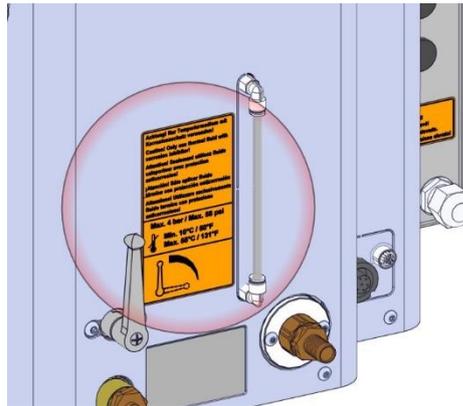


Fig. 19: Warning note tempering fluid

 <p><b>Achtung! Nur Temperiermedium mit Korrosionsschutz verwenden!</b> <b>Caution! Only use thermal fluid with corrosion inhibitor!</b> <b>Attention! Seulement utilisez fluide caloporteur avec protection anticorrosion!</b> <b>¡Atención! Sólo aplicar fluido térmico con protección anticorrosión.</b> <b>Attenzione! Utilizzare esclusivamente fluido termico con protezione anticorrosione!</b></p> <p><b>Max. 4 bar / Max. 58 psi</b></p> <p> <b>Min. 10°C / 50°F</b> <b>Max. 55°C / 131°F</b></p> 	<p>Use corrosion protection, minimum and maximum supply temperature, maximum media pressure</p>
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## 7.7. CONTROL ELEMENTS

### 7.7.1. FRONT SIDE

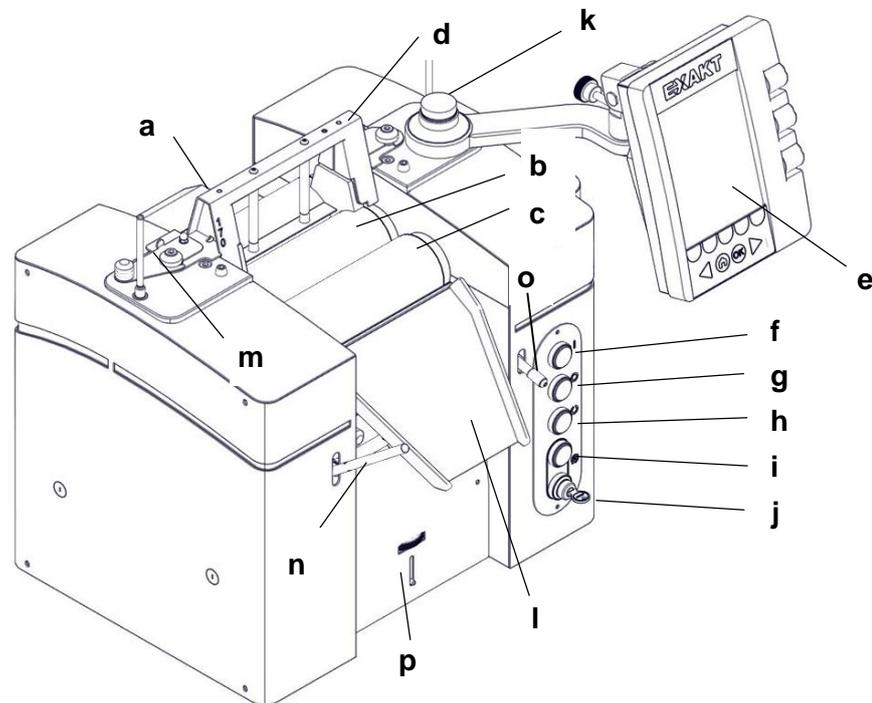


Fig. 20: Unit front side

- |   |  |   |  |
|---|--|---|--|
| a | Roller 1   | j | Key switch „Release Reverse“                       |
| b | Roller 2   | k | Emergency stop button,<br>locking                  |
| c | Roller 3   | l | Scraper socket, with scraper<br>knife, various     |
| d | Safety device nip gap, various   | m | Antenna stop switch,<br>2 pieces (Option)          |
| e | Operating unit   | n | Scraper lever, to swivel off the<br>scraper socket |
| f | Start button   | o | Locking lever, to lock in<br>swiveled off position |
| g | Stop button  | p | Setting dial for scraper force,<br>with scale      |
| h | Receipt safety button  |   |  |
| i | Start button reversing mode,<br>to reverse the rollers in case<br>of overload by a product with<br>excessive viscosity |   |  |

## 7.7.2. BACKSIDE

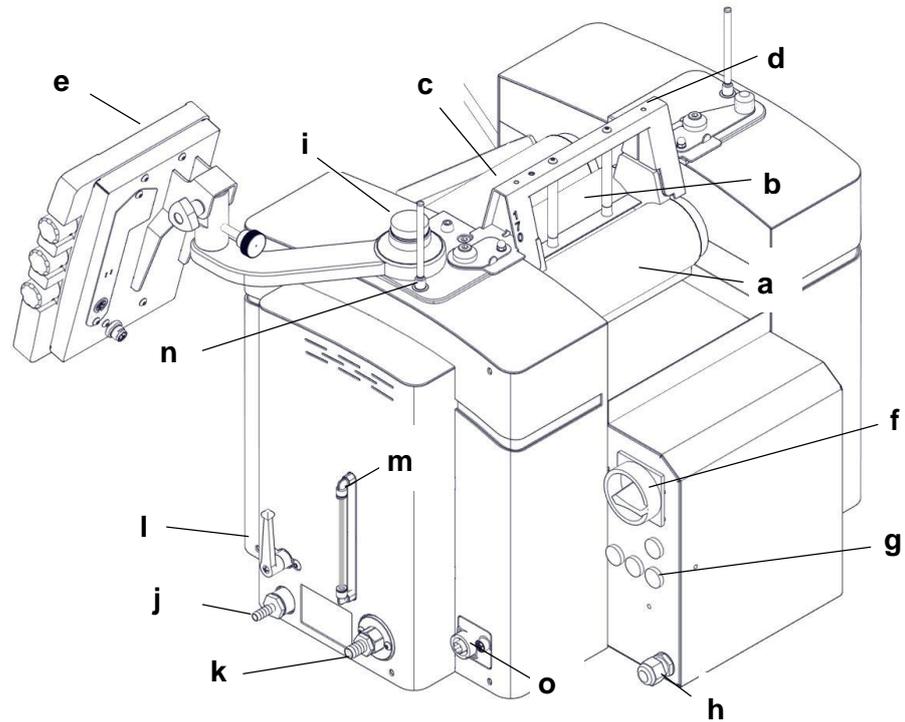


Fig. 21: Unit backside

- |   |  |   |  |
|---|--|---|--|
| a | Roller 1   | k | Connection for roller temperature control (return flow)        |
| b | Roller 2   | l | Locking cock inlet flow  |
| c | Roller 3   | m | Level indication return flow (only with pressure-free cooling) |
| d | Safety device nip gap, various                         | n | Antenna stop switch, 2 pieces                                  |
| e | Operating unit   | o | External interfaces (optional)                                 |
| f | Main switch ON/OFF, lockable                           |   |  |
| g | Fuses  |   |  |
| h | Power cable input                                      |   |  |
| i | Emergency stop button, locking                         |   |  |
| j | Connection for roller temperature control (inlet flow) |   |  |

## 7.8. ROLLER TEMPERATURE CONTROL

The roller temperature control enables cooling or heating of the rollers. 2 different temperature control systems are available.

- Pressureless cooling
- Pressure cooling



For the temperature control of the three roller mill 80E PLUS, EXAKT recommends using the cooling circulator bath thermostat by HUBER, model MPC-K6. The unit can be procured via EXAKT and is then delivered with tube connections matching the three roller mill and with optimum control configuration.

### NOTE

Danger of destruction of device components

It is mandatory to add **Glysantin<sup>®</sup> G48<sup>®</sup>** as corrosion protection to the water. Operation with water without corrosion protection is not permitted.

Three roller mills with pressure cooling (closed circulation loop) must never be run dry. Even if no temperature control of the rollers is required for the application, tempering fluid must circulate through the rollers. This is required to prevent damage to the rotary units or the rollers.

## 7.8.1. PRESSURELESS COOLING

### NOTE

Danger of destruction of device components

> Check coolant filling level during operation.

> If the filling level is steadily increasing in the green area or latest if it is too high as indicated by the red area, there is a risk that coolant will overflow within the machine.

Check coolant flow in the return flow for obstacles (kinks, cloggings, steady gradient), reduce inlet flow if necessary

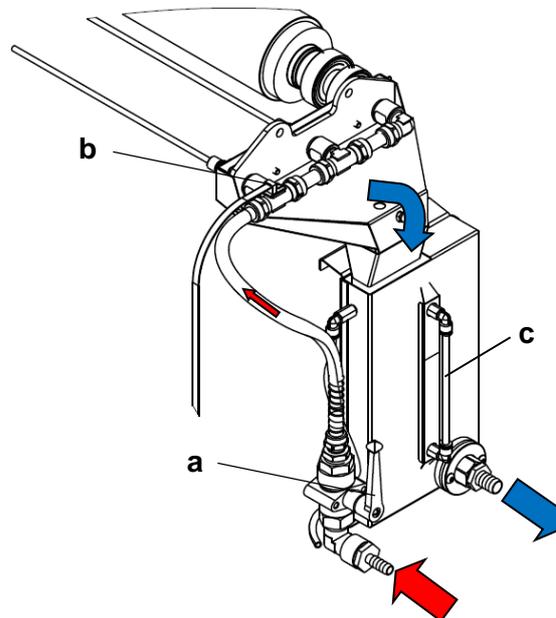


Fig. 22: Pressureless cooling, flowthrough direction

a Locking cock

b Temperature sensor (1x)

c Level indication return flow

trough

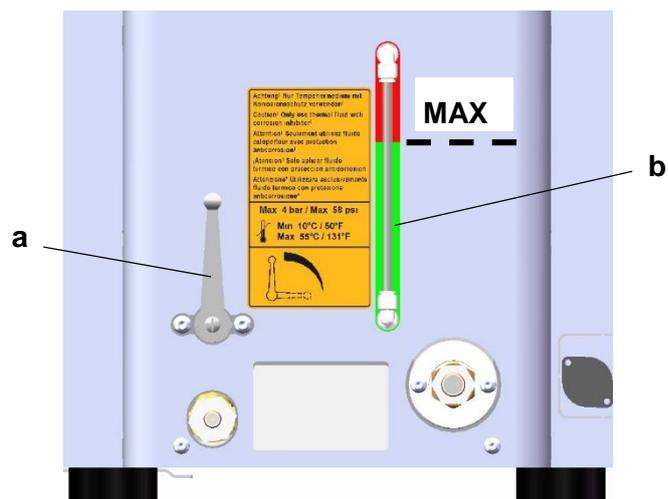


Fig. 23: Pressureless cooling, level indication return flow tank

a Locking cock

b Level indication return flow trough

## 7.8.2. PRESSURE COOLING

### NOTE

Danger of destroying the seals in the rotary units (b).

> With pressure cooling, **always** ensure coolant flow during operation.

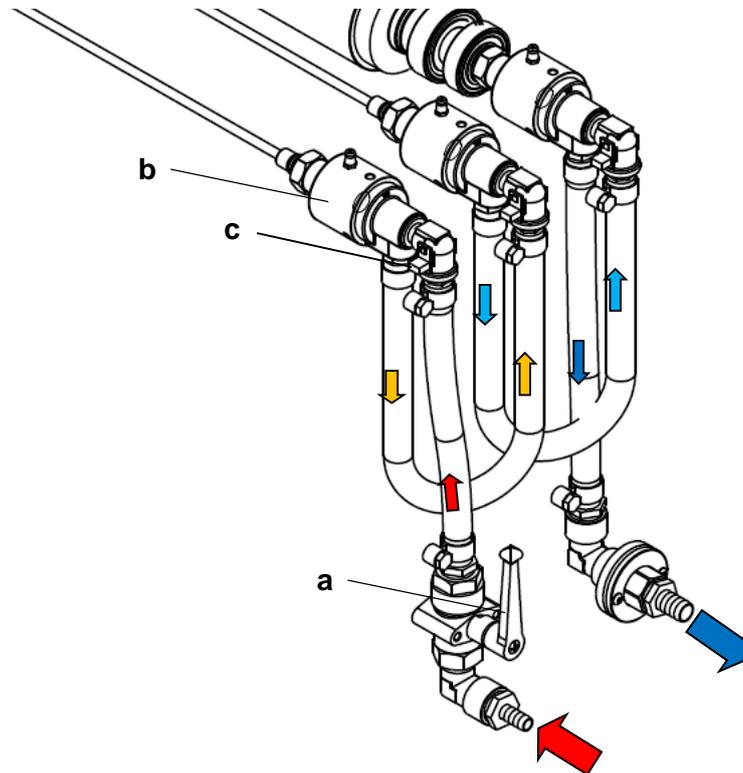


Fig. 24: Pressureless cooling, flow-through direction standard

a Locking cock

b Rotary unit (3x)

c Temperature sensor (3x)

- 3 temperature sensors for inlet flow temperature
- 1 temperature sensor for ambient temperature

- Flow-through direction can be reversed (optional)

## 7.9. SCRAPER SYSTEM

The scraper system consists of the scraper socket with exchangeable scraper knife (various materials) that is swiveled to roller 3 to scrape off the product.

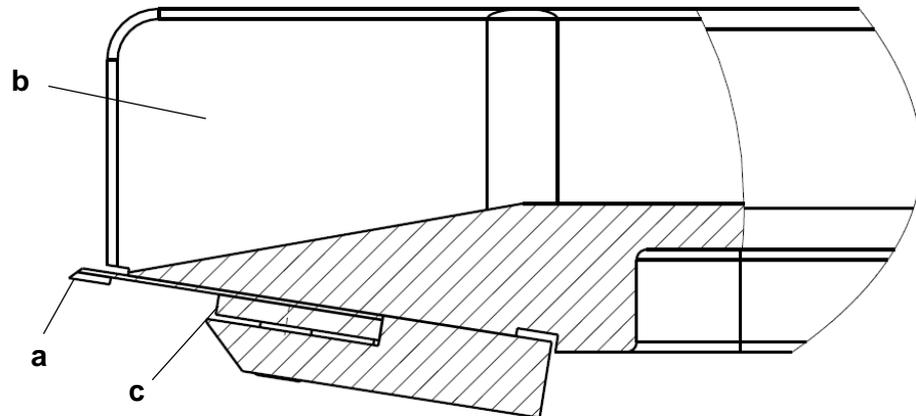


Fig. 25: Scraper socket with exchangeable scraper knife

- |                  |           |
|------------------|-----------|
| a Scraper knife  | c Adaptor |
| b Scraper socket |           |

## 7.10. LOAD TRAVERSE

The load traverse (a) serves for lifting for transport and for securing the machine in the packaging. The clevis (b) receive the lifting gear.

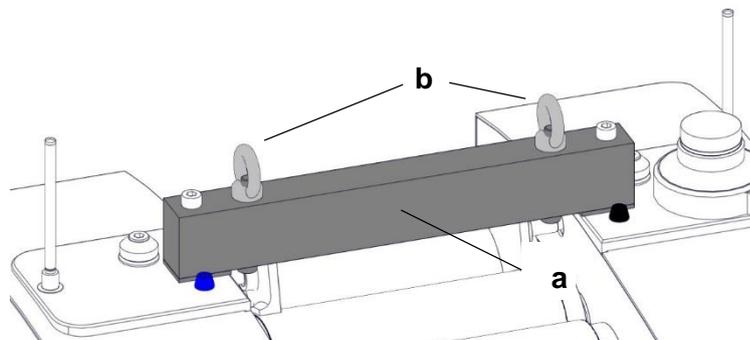
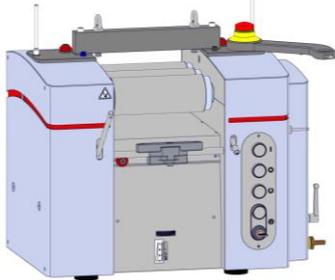
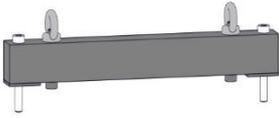
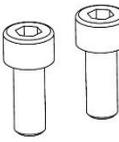
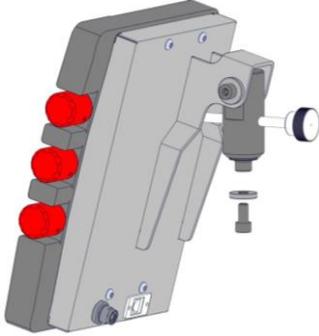
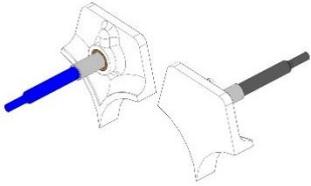
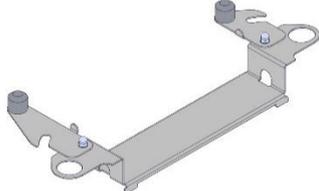
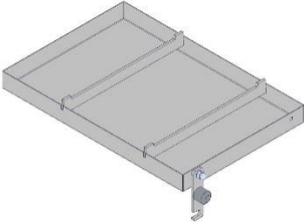
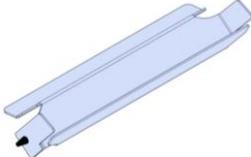
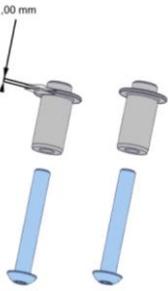
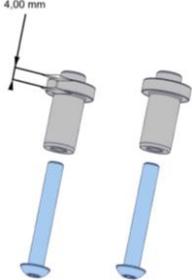
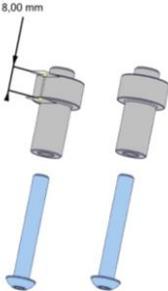


Fig. 26: Load traverse, mounted to the machine

- |                 |          |
|-----------------|----------|
| a Load traverse | b Clevis |
|-----------------|----------|

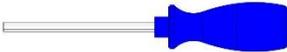
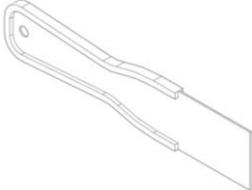
## 7.11. SCOPE OF DELIVERY

Symbol	Meaning
	<p>Base unit                      (roller material: either                      - hard chrome plated steel                      - tungsten carbide coated steel                      - aluminum oxide                      - silicon carbide)</p>
	<p>Load traverse (installed for delivery)                      (To lift the machine and to secure it in the transport box).                      Keep lifting gear after installation!</p>
	<p>Socket head screws M8x20                      (are required after removing the load traverse, see chapter 9.2 Dismounting the load traverse).</p>
	<p>Operating unit with holder</p>
	<p>Plastic guides (at customer's option)</p>
	<p>Cleaning guard</p>
	<p>Safety device nip gap, various - at customer's option, but at least one</p>

Symbol	Meaning
	Splash tray
	Scraper socket (with exchangeable scraper knife)
	Knife guard (to be placed onto scraper socket during handling, mounting, mixing operation)
	Scraper bolt 1mm for scraper angle 110 °
	Scraper bolt 4mm for scraper angle 115 ° (by default mounted in scraper socket)
	Scraper bolt 8mm for scraper angle 120 °
	Allen screwdriver 4 mm (for mounting the scraper knife and plastic guides working width 200 mm)



By default mounted in scraper socket

Symbol	Meaning
	Allen screwdriver 6 mm (for all safety devices)
	Petroleum jelly 100 ml
	Spatula
	Operating instructions
	Sheet with safety instructions

## 7.12. EQUIPMENT VARIANTS

Equipment variants	Description
Cooling / temperature control of the rollers	Pressureless cooling of the rollers (can be operated without coolant flow)
	Pressure cooling of the rollers via rotary units in every individual roller (always requires coolant flow)
Roller materials	Steel, hard chrome plated
	Steel, tungsten carbide coated
	Aluminum oxide
	Silicon carbide
Safety	Additional antenna stop buttons (2x)
Interfaces	External interfaces for EXAKT bus and optionally: Emergency stop button or Start-stop button
Electrical connection	Version with heavy duty connector (HARTING) as "pluggable" fixed connection

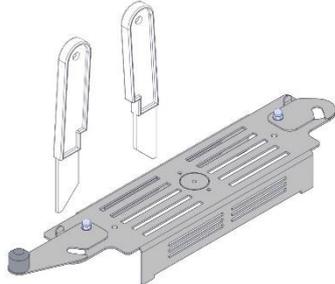
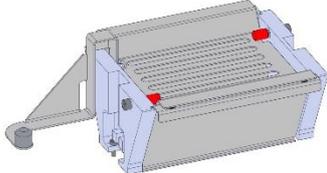
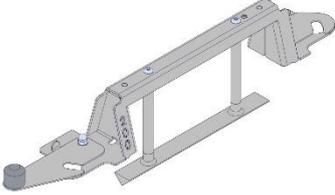
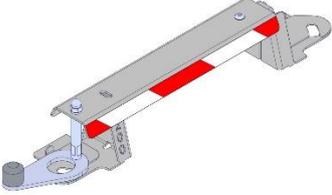
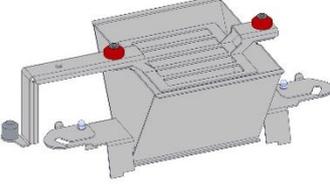
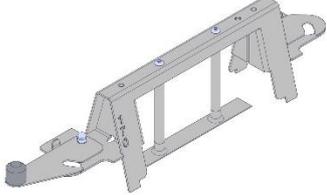
## 7.13. SAFETY DEVICES NIP GAP AND OPTIONAL ACCESSORIES

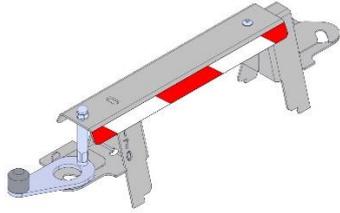
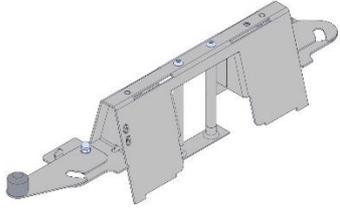
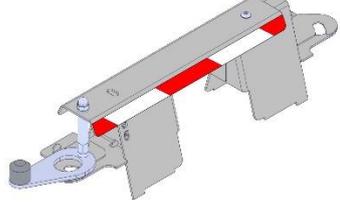
The following safety devices and options are available for the EXAKT 80E Plus.

The information in "mm" refer to the working width.

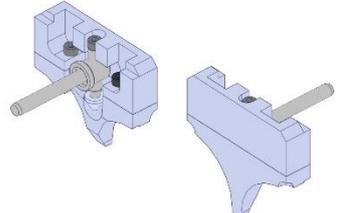
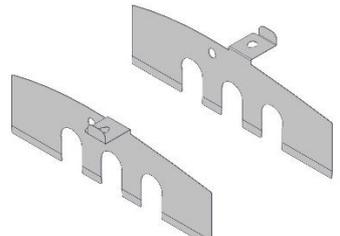
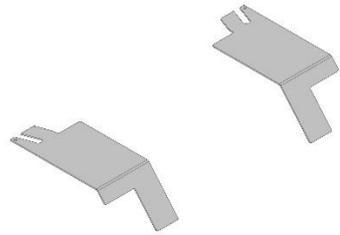
The machine is always delivered with at least one safety device:

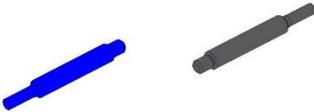
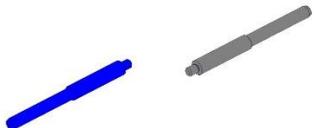
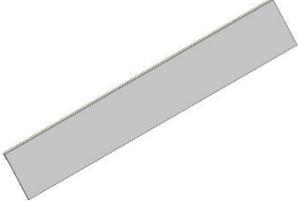
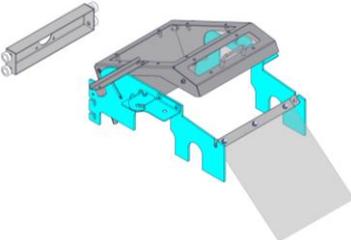
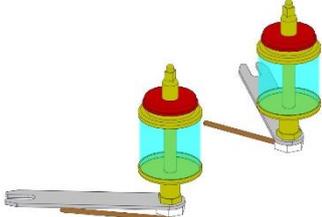
### 7.13.1.SAFETY DEVICES

Safety devices	Description
	Nip Cover
	Hopper 200 mm with plastic guides
	Pull-in protection 200 mm
	Safety bridge 200 mm, only for products that are hard to process!
	Hopper 170 mm
	Pull-in protection 170 mm

Safety devices	Description
	Safety bridge 170 mm, only for products that are hard to process!
	Pull-in protection 85 mm
	Safety bridge 85 mm, only for products that are hard to process!

### 7.13.2.OPTIONAL ACCESSORIES

Optional accessories	Description
	Plastic guides working width 200 mm
	Splash guard side plates, set (removable, for easy cleaning)
	Splash guard, set (for 200 mm working width)
 10x	Spring set guide shaft (for hopper 170 mm)

Optional accessories	Description
	<p>Guide shaft 170 mm, blue and black</p>
	<p>Guide shaft 85 mm, blue and black</p>
	<p>Scraper knife, various versions</p>
	<p>Scraper constriction 60 mm</p>
	<p>Roller cover with adapter for aspiration</p>
	<p>Solvent dispenser for guide lubrication, set (in some cases it is required to lubricate the plastic guides additionally against running dry)</p>
	<p>Protective cover</p>
	<p>Plastic spatula</p>

## 8 TRANSPORT



Link back to chapter 3 Installation information in advance

### 8.1. PACKAGING SYMBOLS



Transport the machine only with suitable lifting gear. Observe the total weight of the machine with packaging (see chapter 6 Technical data).

Transport the machine carefully!

#### NOTE

Danger of transport damage!

Upon delivery, the packaging is equipped with a position sensor (TILT sensor). Immediately at delivery by the carrier, check if the sensor is intact. If not, notify the carrier immediately and let the driver confirm this.

The transfer of risk from manufacturer to final customer takes place with leaving the factory premises of EXAKT / Germany.

#### NOTE

Danger of damaging machine components.

- > Do not lift or put down the machine jerkily!
- > Pay attention to the center of gravity!
- > Do not tilt the packaging! Pay attention to the UP symbols! TILT sensor!
- > Do not put down the machine outside of roofed buildings (protect from humidity).

Symbol	Meaning
	Up
	Keep dry
	Center of gravity

Symbol	Meaning
	Fragile
	Positions for lifting gear
	Positions for forklift forks
	The TILT sensor indicates whether the machine has been tilted during transport.

## 8.2. INTERMEDIATE STORAGE

- > Leave the machine in the packaging until it is installed
- > Protect the machine from outer influence (humidity, etc.)
- > Avoid temperature fluctuation, danger of corrosion due to condensation
- > Relative humidity max. 65 %
- > Antifreeze during transport and storage: Drain cooling lines completely.

## 8.3. UNCRATING



Cordless screwdriver, crosstip-bit,  
Additional person to help.

### NOTE

**Danger of transport damage!**

Upon delivery, the packaging is equipped with a position sensor (TILT sensor). Immediately at delivery by the carrier, check if the sensor is intact. If not, notify the carrier immediately and let the driver confirm this.

The transfer of risk from manufacturer to final customer takes place with leaving the factory premises of EXAKT / Germany.

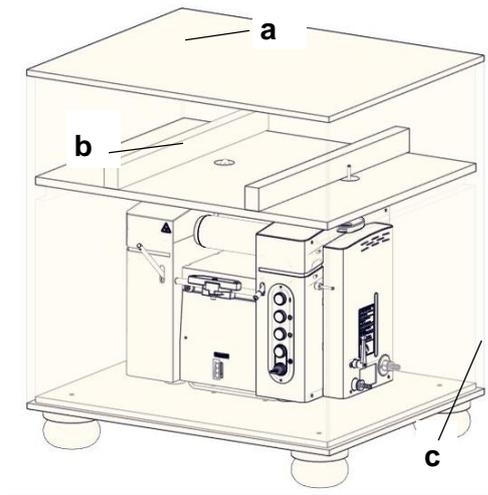


Abb. 27: Machine crate

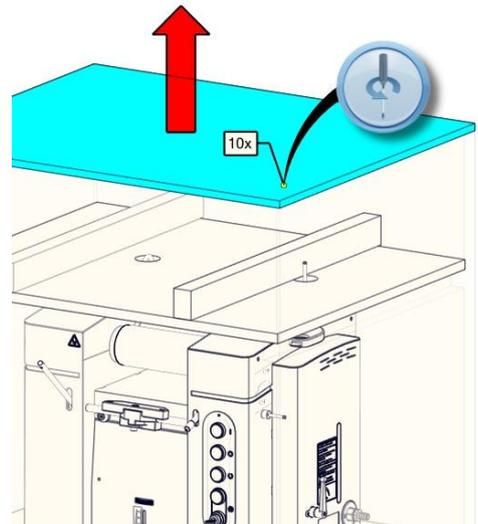


Abb. 28: Remove crate top cover

1. Unscrew the crate top cover (a), 10 screws.

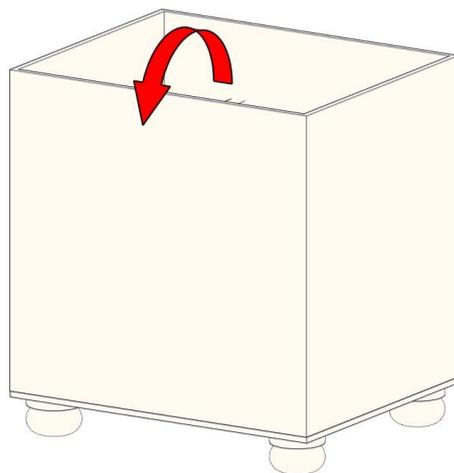


Abb. 29: Take out machine accessories

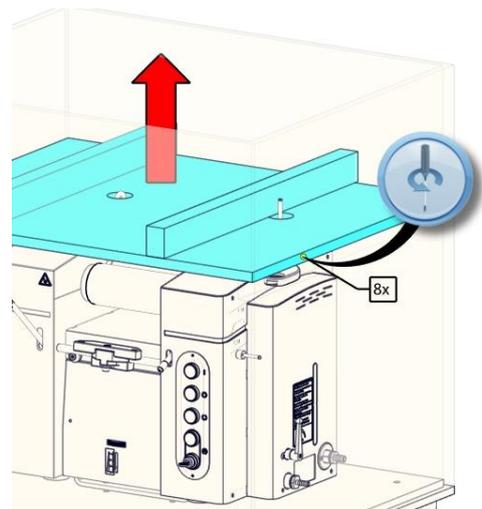


Abb. 30: Remove intermediate cover

2. Take out the machine accessories and store it at a safe place..
3. Unscrew the intermediate cover (b), 8 screws.
4. Remove the intermediate cover.

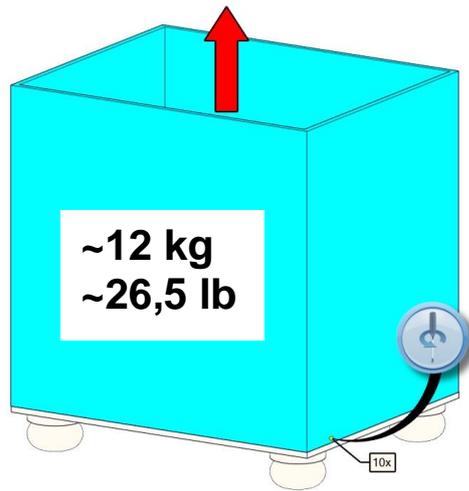


Abb. 31: Remove the screws and lift the crate outside frame

5. Remove the 10 screws for the crate outside frame (c).
6. Lift the crate outside frame securely to the top (2 persons).

### NOTE

Danger of component damage.

When lifting the crate outside frame (c), do not come in touch with the machine housing.

7. Remove the padding on the machine.

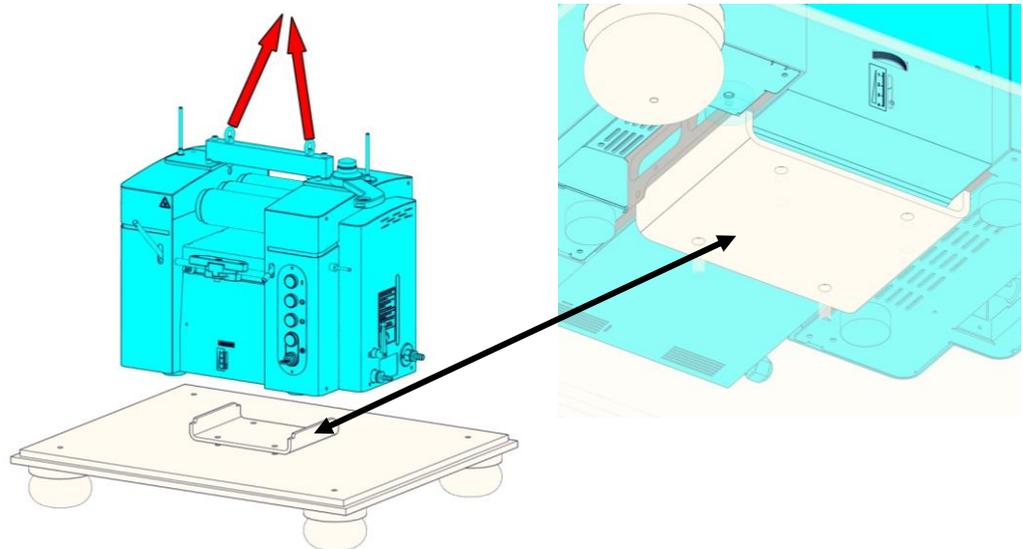


Abb. 32: Lift machine from crate base

Abb. 33: Crate pick-up plate for machine frame

8. Attach the suitable lifting rope at the load traverse and lift the machine with the suitable lifting gear from the crate base (see chapter 8.4 Instructions for lifting).

## 8.4. INSTRUCTIONS FOR LIFTING



### **WARNING**

Suspended load

Danger to life and limb



- > Only use functional lifting gear
- > Make sure that no persons are within the danger zone
- > Do not step under or stand under suspended load.
- > Wear protective footwear, protective gloves and head protection

### **NOTE**

Danger of damaging the rollers:

- > Do not drop heavy objects onto the rollers
- > Protect rollers from damage by sufficient padding.

### **NOTE**

Danger of damaging machine components.

- > Do not lift or put down the machine jerkily!
  - > Pay attention to the center of gravity!
  - > Do not tilt the packaging! Pay attention to the UP symbols! TILT sensor!
  - > Do not put down the machine outside of roofed buildings (protect from humidity).
- 
- > Lifting gear must be suitable for the load to be lifted (see chapter 6 Technical data).
  - > Lifting aids must be mounted correctly.
  - > Lifting aids must have a lifting capacity that is at least three times as high as the load to be lifted (see chapter 6 Technical data).
  - > Lifting aids must be in perfect condition.
  - > Lift machine only with the original load traverse provided by EXAKT.
  - > Take up the machine in the 2 heavy load clevis (a).

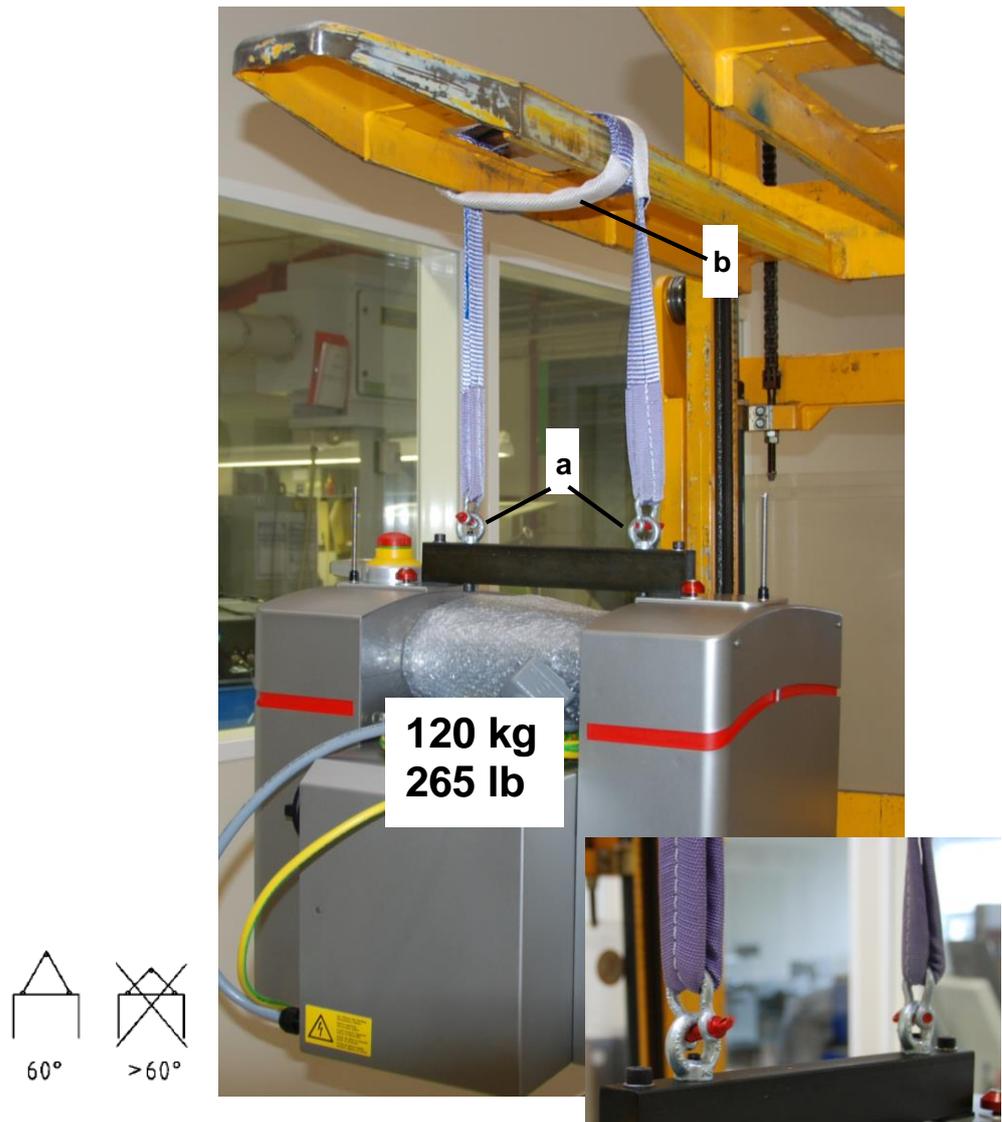


Fig. 34: Lifting the machine

- > The angle of the lifting rope must not exceed 60°!  
Secure the lifting rope against slipping out of place (e.g. loop around the fork of the fork lifter, see **b**)
- > Lift the machine as horizontal and jerk-free as possible.

### 8.4.1. MOVING THE MACHINE BY HAND

The machine can be moved by hand. For this purpose, recessed grips  are provided on the left and the right below the machine.

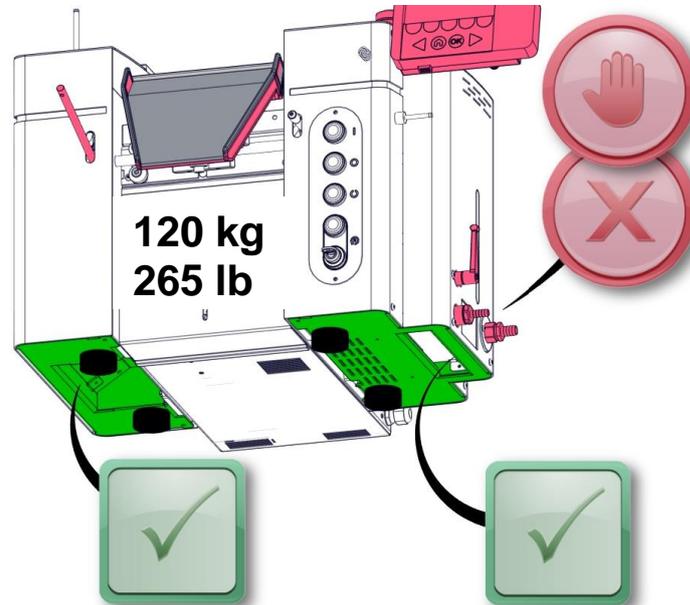


Fig. 35: Lifting the machine by hand

- > Lift the machines only by the recessed grips 
- > NEVER lift the machine via the attachment parts  such as operating unit, holder arm for operating unit, cooling connections, etc.!



#### CAUTION

Danger of crushing the hands

If the machine is moved by 2 persons, make sure to lift up simultaneously. If the machine is only lifted on one side, the other person is at risk of crushing.

## 9 INSTALLATION

### 9.1. SETUP SITE



Link back to chapter 3 Installation information in advance

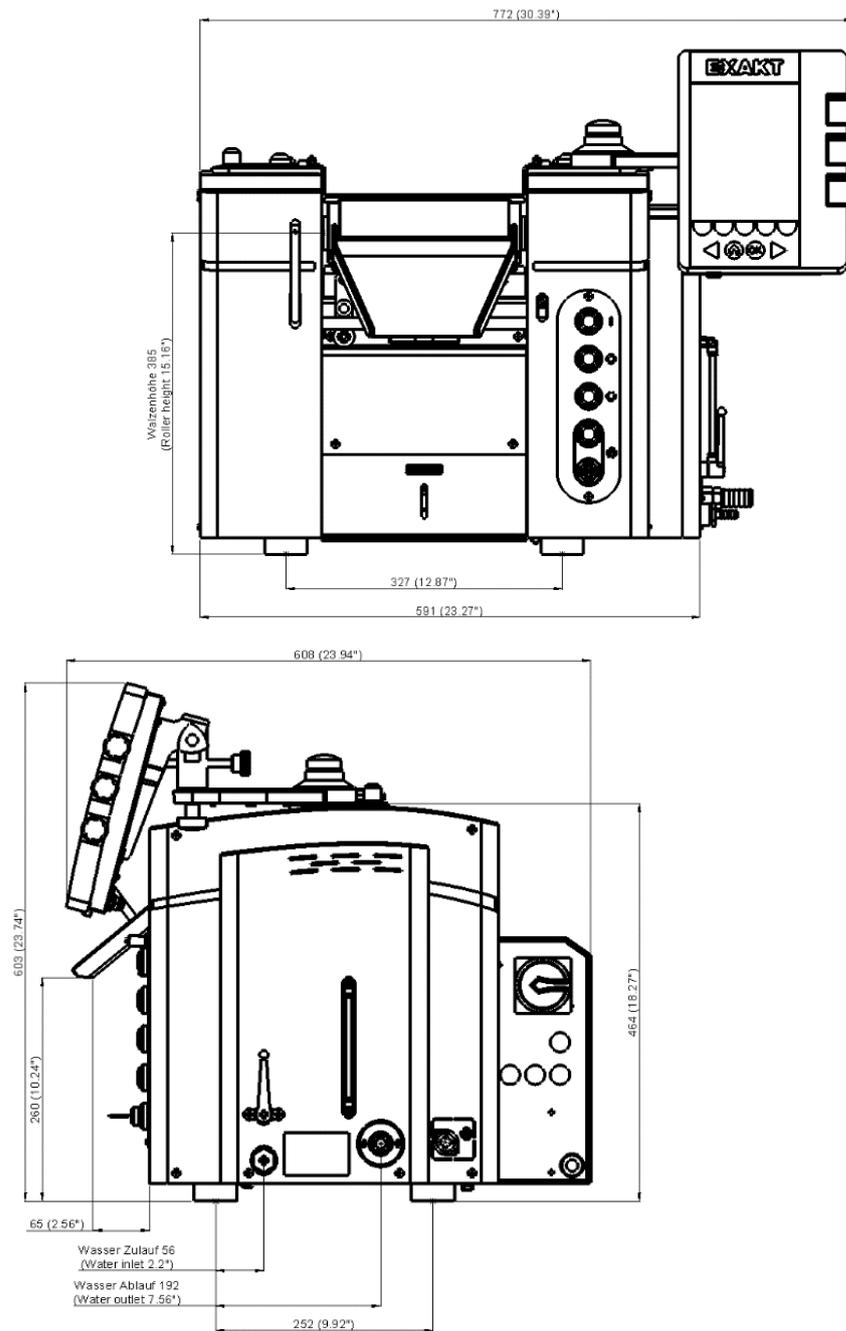
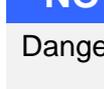
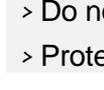


Fig. 36: Setup site and dimensions

- > Select a location with sufficient room at all sides for operation and cleaning
- > Distance to the walls at least 300mm to the left and right of the machine.  
Distance to the walls at the backside at least 30mm
- > Set up on flat and slip-free surface
- > Lab table with a bearing capacity of at least 150kg
- > The setup site must meet the specifications given in the safety data sheets of the substances to be processed, especially when working with highly volatile solvents.
- > Lift machine only with the original load handling equipment provided by EXAKT.
- > After installation, dismount load handling equipment and store safely.

<b>⚠ WARNING</b>	
	Suspended load
	Danger to life and limb
	Danger of crushing
	Impacts
	Tripping
	> Only use functional lifting gear.
	> Make sure that no persons are within the danger zone.
	> Do not step under or stand under suspended load.
	> Wear protective footwear, protective gloves and head protection.

## NOTE

Danger of damaging the rollers:

- > Do not drop heavy objects onto the rollers.
- > Protect rollers from damage by sufficient padding.

## 9.2. DISMOUNTING THE LOAD TRAVERSE



Allen screwdriver 6 mm

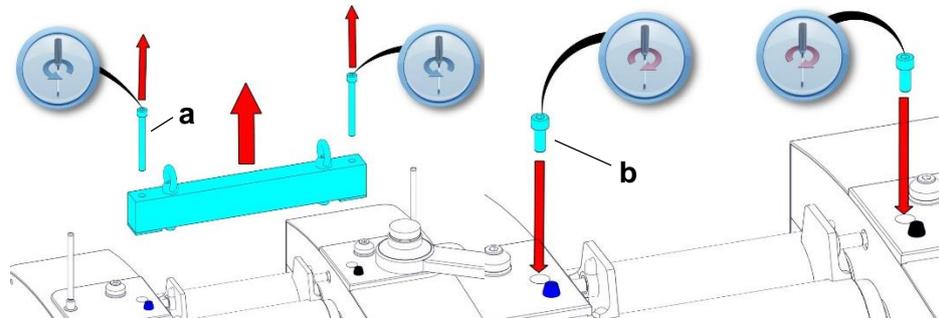


Fig. 37: Dismounting the load traverse

> After setup, dismount the load traverse.

1. Undo 2 Allen screws (a) and remove load traverse carefully. Do not damage the rollers in this step!
  2. Mount provided 2 Allen screws M8x20 (b)
- > Store load traverse with screws (a) for later transport!

### 9.3. MOUNTING AND ALIGNING THE OPERATING UNIT



Allen screwdriver 6 mm

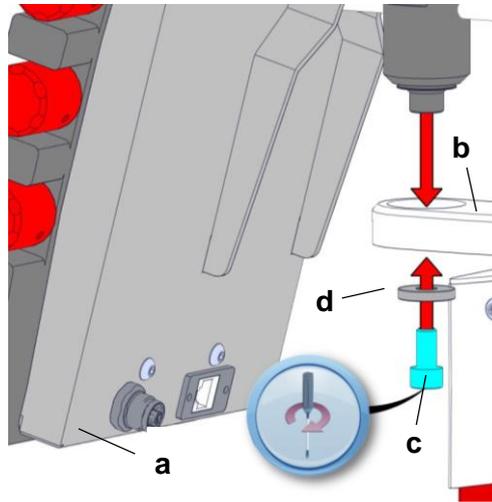


Fig. 38: Mounting the operating unit

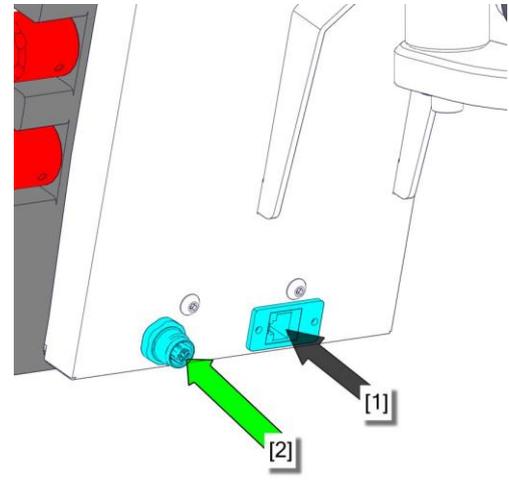


Fig. 39: Connecting the plug connections

1. Mount the operating unit (a) in the holder arm (b) with the screw (c) and the washer (d).
2. [1] Plug in network cable (black)
3. [2] Plug green cable onto the plug connector and secure with union nut.

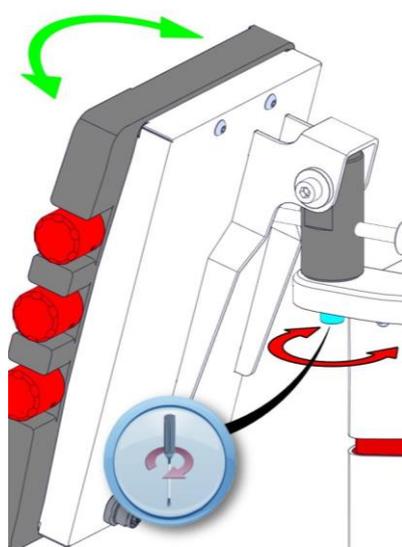


Fig. 40: Aligning the operating unit horizontally

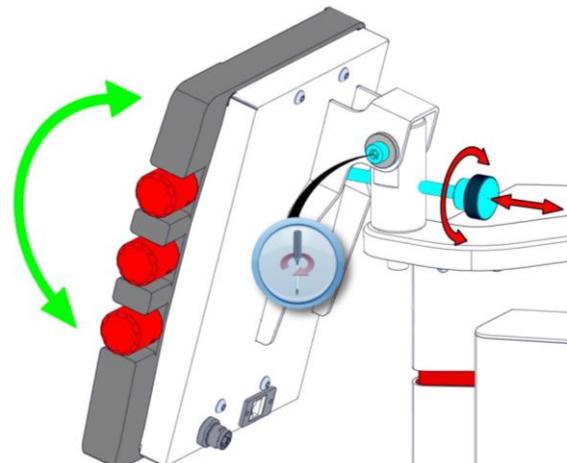


Fig. 41: Aligning the operating unit vertically

## 9.4. CONNECTING THE ELECTRIC SUPPLY



Link back to chapter 3 Installation information in advance



### **WARNING**

Danger of electric shock!

Incorrect mounting of the connecting cable can cause severe injury due to electric shock.

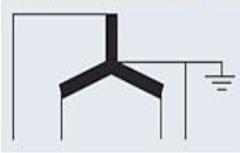
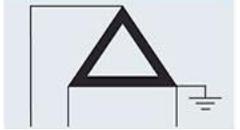
> Only allow a trained electrician to connect the machine.

The electrical installation of the unit must be done by specialized personnel who are qualified according to the local or legal requirements and regulations.

When connecting machines without frequency converter (progressive speed control), pay attention to the correct rotary field. These machines require a clockwise rotary field. Roller 3 (delivery roller) must rotate towards the scraper. Should that be not the case, check if the rotary field is correct and correct, if necessary.

Before connecting the unit, make sure that the local system is in perfect condition according to the legal requirements of the respective country.

### 9.4.1. NETWORK CONFIGURATION

Article number	Voltage	Description / Sign on type plate
27100	380-420VAC 50Hz <b>EU, (...)</b>	Solidly grounded Wye 3 / N / PE (5 lines) <b>TN-S / TN-C-S / TT</b>
27101	200-240VAC 50-60Hz <b>USA, (CN)</b>	Solidly grounded Wye 3 / PEN (4 lines) 
27105	200-240VAC 50-60Hz <b>Japan, (USA)</b>	Corner grounded Delta (3 lines) 

### 9.4.2. CONNECT VARIANT 1: FIXED CONNECTION

We recommend to select a fixed connection for the unit. This connection variant does not require a ground fault circuit interrupter and ensure proper operation.

Mains supply	Label (color)	
	400 V	200 V (USA, Jap.)
N (MP)	N (black)	<b>X</b>
L1	L1 (black)	
L2	L2 (black)	
L3	L3 (black)	
PE	none (green/yellow)	
PE rail	 <p>none (16 mm<sup>2</sup> green/yellow) Eye 8 mm</p>	

### 9.4.3. CONNECTION VARIANT 2: FIXED CONNECTION WITH CODED HEAVY DUTY CONNECTOR



Link back to chapter 3 Installation information in advance

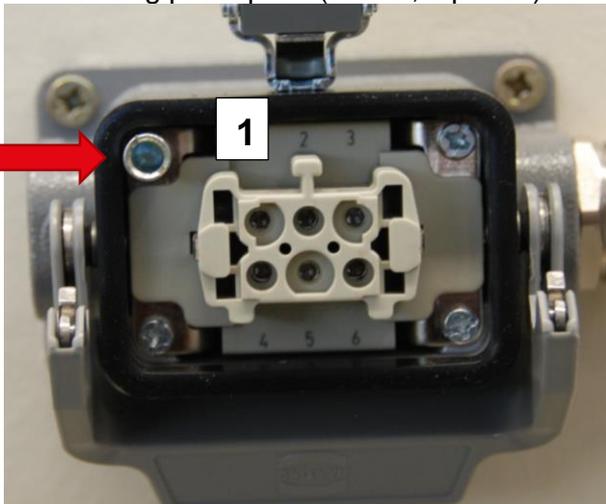
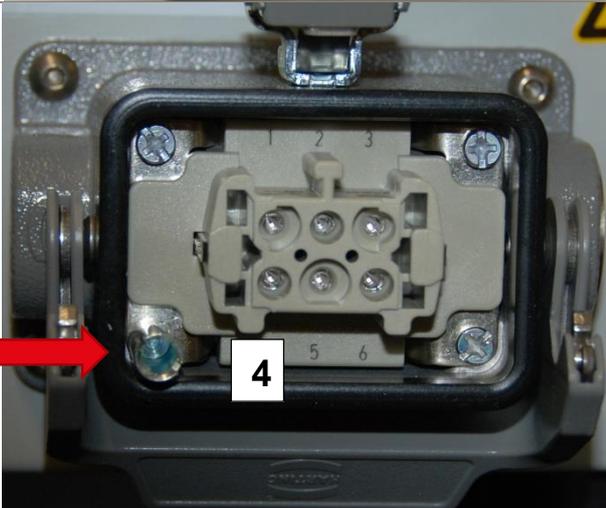
Upon request, EXAKT will deliver the machine with heavy duty connector HARTING type: Han 6x. This connection variant does not require a ground fault circuit interrupter and ensure proper operation.

A corresponding wall-mounting socket HARTING type: Han 6x with plug insert 6-poles will be provided which shall be connected as follows:

Mains supply	Label (color)	
	400 V	200 V (USA, Jap.)
N (MP)	<b>PIN 4</b>	<b>X</b>
L1	<b>PIN 1</b>	<b>PIN 4</b>
L2	<b>PIN 2</b>	<b>PIN 5</b>
L3	<b>PIN 3</b>	<b>PIN 6</b>
PE	<b>PE</b>	
PE rail	<div data-bbox="437 1339 727 1648" data-label="Image"> </div> <p>none (16 mm<sup>2</sup> green/yellow) Eye 8 mm</p>	



Fig. 42: Connection variant 2: fixed connection with coded heavy duty connector

<b>Coding HARTING socket / connector</b>	
400V	<p style="text-align: center;">Coding pin at pin 1 (socket, top view)</p> 
200V (USA, Jap)	 <p style="text-align: center;">Coding pin at pin 4 (socket, top view)</p>

#### 9.4.4. CONNECTION VARIANT 3: CONNECTION VIA THREE-POLES STANDARD PLUG (MIN. 15A)

If the unit is equipped with a three-pole standard connector (in Germany e.g. CEE plug 16A acc. to DIN EN 60309), an RCCB type B 30mA acc. to DIN EN 61008 must be installed in the system to be connected.

All-current sensitive RCCBs (alternating current, pulsating direct current and direct current) of type B react to all types of residual current. A typical application is the protection of circuits containing frequency converters. In all three roller mills with speed control (80S, 80E and all 120E models), frequency converters are used to adjust the speed.

**Note:** When switching off the unit, the intermediate circuit of the frequency converter discharges and the RCCB can potentially be triggered by mistake! Therefore we recommend to install a separate circuit with RCCB for this machine in that connection variant.



#### **WARNING**

When using RCCBs of type A, which are not designed for all types of residual currents, erroneous triggering can occur, or the DC voltage generated by the frequency converter causes a bias current making the RCCB lose its function!

Mains supply	Label (color)	
	400 V	200 V (USA, Jap.)
N (MP)	N (black)	<b>X</b>
L1	L1 (black)	
L2	L2 (black)	
L3	L3 (black)	
PE	none (green/yellow)	
PE rail	 <p>none (16 mm<sup>2</sup> green/yellow) Eye 8 mm</p>	

## 9.5. CONNECTING THE ROLLER TEMPERATURE CONTROL



Link back to chapter 3 Installation information in advance



Screwdriver, knife

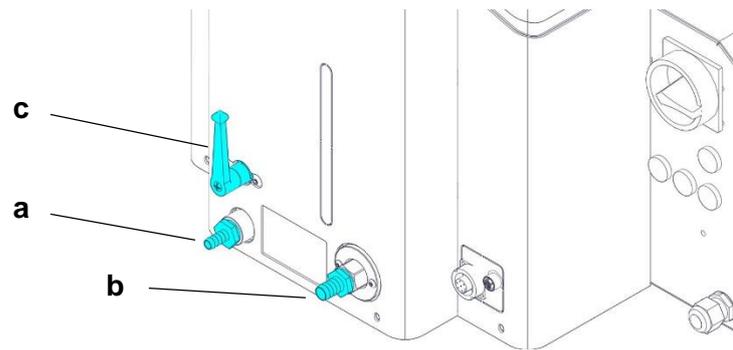


Fig. 43: Temperature control connections

- |                               |                           |
|-------------------------------|---------------------------|
| a Inlet flow nozzle OD 10 mm  | c Locking cock inlet flow |
| b Return flow nozzle OD 13 mm |                           |

1. Connect hose (ID10 mm) to the inlet flow nozzle (a) and secure with a hose clamp.
2. Connect return flow hose (ID 13 mm) to the discharge nozzle (b) and secure with a hose clamp.
3. Make sure that the hose runs with a steady gradient without windings directly to the temperature control unit to prevent overflow of the tempering fluid due to obstructed return flow.
4. Open locking cock half way (in Fig. shown completely open).

### 9.5.1. TEMPERATURE CONTROL UNIT



For the temperature control of the three roller mill 80E PLUS, EXAKT recommends using the cooling circulator bath thermostat by HUBER, model MPC-K6. The unit can be procured via EXAKT and is then delivered with tube connections matching the three roller mill and with optimum control configuration.

**NOTE**

Danger of roller damage: Using a tempering fluid without corrosion protection results in corrosion inside the rollers.

Observe the coolant specification (see chapter 6 Technical data).

**NOTE**

Danger of damaging the rollers:

5. Inlet flow temperature of the rollers **min. 10 °C (50 °F) to max. 55 °C (130 °F)**.

6. Maximum temperature change of supply temperature in temperature control process: **30 °C/h (54 °F/h) !**



- > Adjust the settings at the temperature control unit accordingly.
- > If necessary, program the maximum temperature limits to be set at the temperature control unit (see operating instructions of the temperature control unit).

- > Fill the temperature control unit with water and corrosion protection agent.
- > At the temperature control unit, set a bath temperature of approx. 20 °C.
- > Switch on the pump of the temperature control unit and check proper coolant flow after some minutes.
- > Switch off the pump.

### 9.5.2. WITH PRESSURELESS COOLING



Link back to chapter 3 Installation information in advance

**NOTE**

Danger of destruction of device components

- > Check coolant filling level during operation.
- > If the filling level is steadily increasing in the green area or latest if it is too high as indicated by the red area, there is a risk that coolant will overflow within the machine.
- > Check coolant flow in the return flow for obstacles (kinks, cloggings, steady gradient), reduce inlet flow if necessary.

### 9.5.3. WITH PRESSURE COOLING



Link back to chapter 3 Installation information in advance

#### NOTE

Danger of destroying the seals in the rotary units

> With pressure cooling, **always** ensure coolant flow during operation.

### 9.6. CHECKLIST INSTALLATION

No.	Description	
1	Load traverse dismounted. M8x20 screws are mounted.	
2	Electrical connection completed.	
3	Temperature control unit connected. All connections are tight.	
4	There are no foreign objects in or on the machine.	

## 10 SETUP



In this section, the following mounting and installation tasks are described for:

- Cleaning the machine housing
- Scraper knife and scraper
- Knife guard
- Splash tray
- Cleaning guard
- Plastic guide for working widths 85, 170, 200 mm
- Nip cover for working widths 85, 170, 200 mm
- Pull-in protection for working widths 85, 170, 200 mm
- Safety bridge for working widths 85, 170, 200 mm
- Hopper for working width 170 mm
- Hopper for working width 200 mm
- Splash guards
- Solvent dispenser

### 10.1. CLEANING THE MACHINE HOUSING



#### CAUTION

Solvent and product residue  
Skin irritation and breathing difficulties are possible.  
> Wear suitable protective clothing.



- > When using cleaning agents, provide sufficient ventilation.
- > Observe the safety data sheets of the substances to be processed.
- > Observe the disposal instructions by the respective manufacturers.
- > Observe local safety regulations.

1. Switch off the machine via the main switch.
  2. Do not clean housing parts with aggressive solvents.
  3. Clean electric cables and parts made of rubber or EPDM with a moist cloth.
- > Ensure proper disposal of the waste.

## 10.2. SCRAPER KNIFE TYPES

The different scraper knives can be combined with the various roller types as follows:

Scraper knife		Roller type			
		Hard chrome	Tungsten carbide	Al <sub>2</sub> O <sub>3</sub>	SIC
Art.-No.	Des.				
27320	Metal, ZrO <sub>2</sub> (hybrid knife) 218x0.35x30	✗	✓	✓	✓
27325	Solidknife ZrO <sub>2</sub> 218x0.63x25	✗	✓	✓	✓
27330	nickel-plated 218x0.35x30	✓	✗ <sup>*)</sup>	✗ <sup>*)</sup>	✗ <sup>*)</sup>
27350	hard chrome plated 218x0.35x30	✗	✓	✓	✓
27360	PVC, red 218x1x30	✓	✓	✓	✓
27370	Epoxy, yellow 218x1x30	✗	✓	✓	✓
27380	Ceramic, ZrO <sub>2</sub> 218x1,7x30	✗	✓	✓	✓
27390	Ceramic, Al <sub>2</sub> O <sub>3</sub> 218x1,7x30	✗	✓	✓	✓

<sup>\*)</sup> not recommended, increased wear

### NOTE

Avoid danger of premature wear due to incorrect scraper knife-roller type combination

> Pay attention to the combination!



27330 is marked with a 45°-chamfer (as distinct from 27350).

### 10.3. MOUNTING THE SCRAPER KNIFE



#### CAUTION

Danger of cuts at the scraper knife.



- > During assembly and handling, ALWAYS work with plastic knife protection or with knife protection for scraper socket.
- > When working with the scraper socket and scraper knife, wear suitable safety gloves.

#### NOTE

Ceramic scraper knife Danger of breakage

- > In particular with ceramic scraper knives, pay attention to careful handling.



Allen screwdriver 4 mm

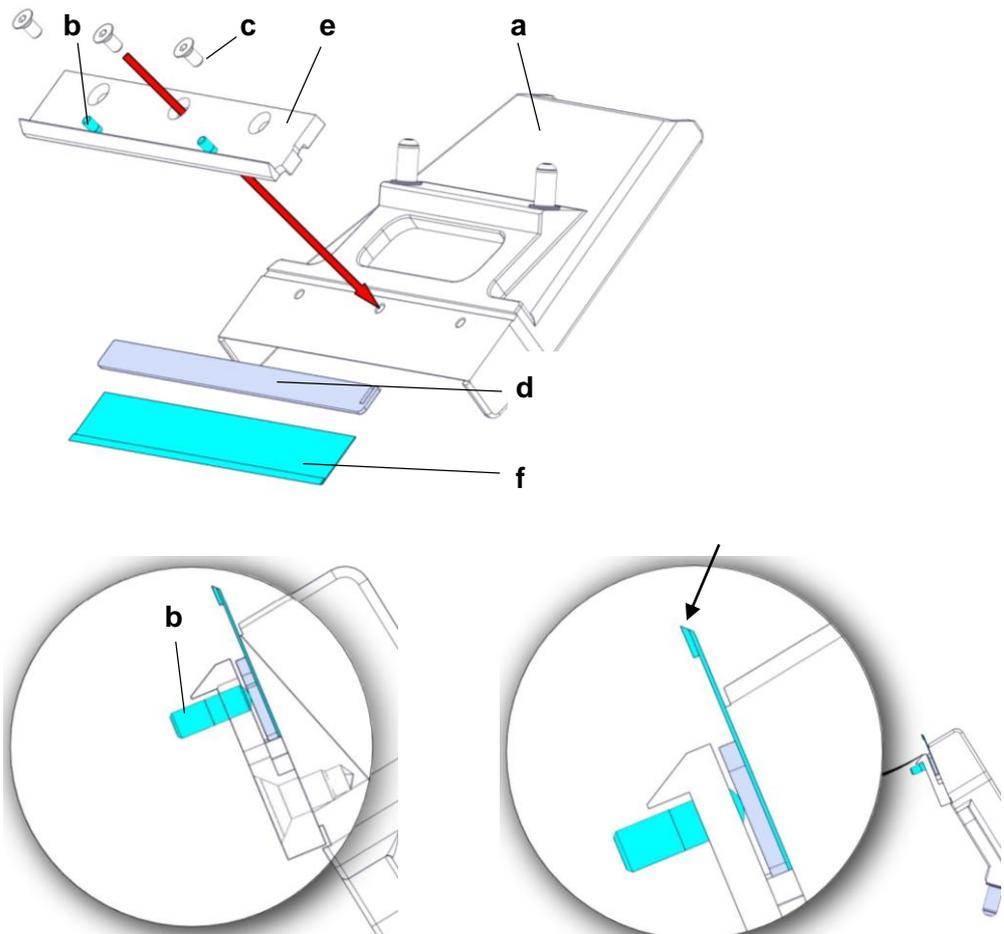
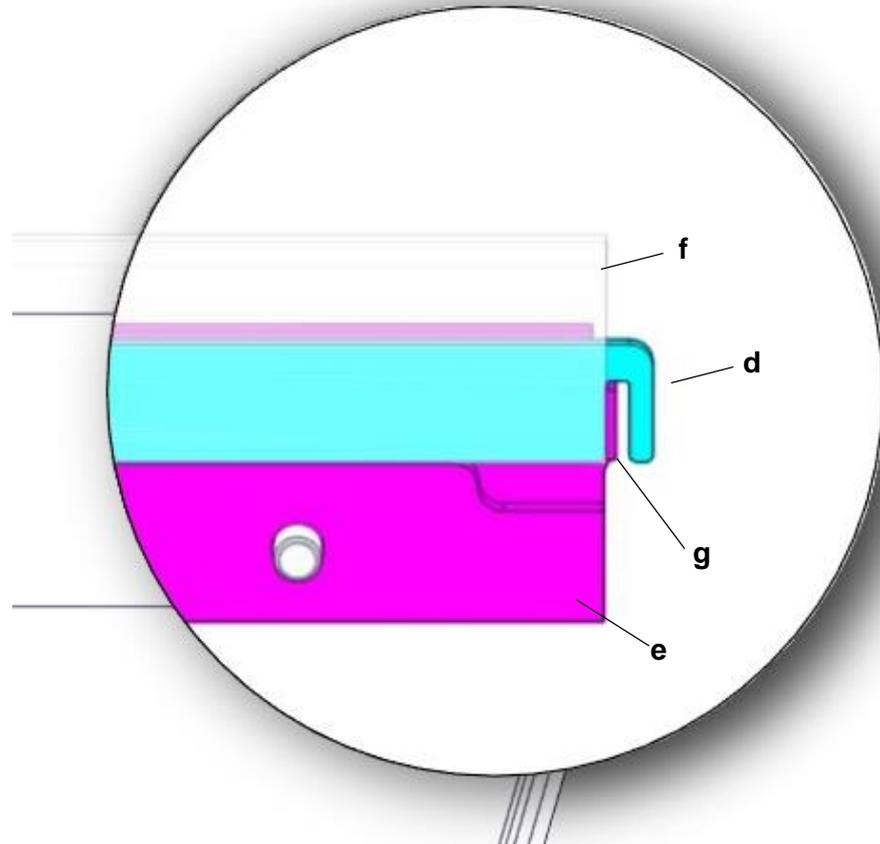


Fig. 44: Mounting the scraper knife

1. Before assembly, clean all parts.
2. Mount scraper bar (**e**) with 3 screws (**c**) to the scraper socket (**a**).
3. Loosen the clamping screws (**b**).
4. Insert scraper knife (**f**) (with plastic knife guard). Make sure that the sharp edge points forwards and the sharpened side of the knife edge points up, i.e. is visible. (see arrow in detail A).
5. Push scraper knife to the stop (**g**) of the scraper bar (on the right, viewed from the top).



6. Mount adaptor (**d**). Make sure that the groove of the adaptor sits in the stop of the scraper bar.
7. Tighten the clamping screws (**b**) ! **hand-tight** ! as required.
8. Before operation, remove the plastic knife guard and put on the knife guard for the scraper socket.

### 10.3.1.COMBINATION SCRAPER KNIFE – SCRAPER BAR - ADAPTOR

The different scraper knives (f) need different scraper bars (e) and adaptors (d).

Scraper knife (f)		Scraper bar (e)		Adaptor (d)
		Silver 27394	Black 27393	
Art.-No.	Des.			
27320	Metal, ZrO <sub>2</sub> (hybrid knife) 218x0.35x30	✓	✗	2 mm 27392
27325	Solidknife ZrO <sub>2</sub> 218x0.63x25	✗	✓	2 mm 27392
27330	nickel-plated 218x0.35x30	✓	✗	2 mm 27392
27350	hard chrome plated 218x0.35x30	✓	✗	2 mm 27392
27360	PVC, red 218x1x30	✓	✗	2 mm 27392
27370	Epoxy, yellow 218x1x30	✓	✗	2 mm 27392
27380	Ceramic, ZrO <sub>2</sub> 218x1,7x30	✓	✗	1mm 27391
27390	Ceramic, Al <sub>2</sub> O <sub>3</sub> 218x1,7x30	✓	✗	1mm 27391



27330 is marked with a 45°-chamfer (as distinct from 27350).

## 10.4. PUTTING ON THE KNIFE GUARD

The knife guard for the scraper socket protects from cuts during:

- > Removing the scraper socket and putting it into place
- > Storing the scraper socket
- > Mixing operation while the scraper is swiveled off

For rapid access, the knife guard can be fastened with magnets on the machine while it is not in use.



### ⚠ CAUTION

Danger of cuts at the scraper knife.



- > During assembly and handling, always work with plastic knife protection or with knife protection for scraper socket.
- > When working with the scraper socket and scraper knife, wear suitable safety gloves.

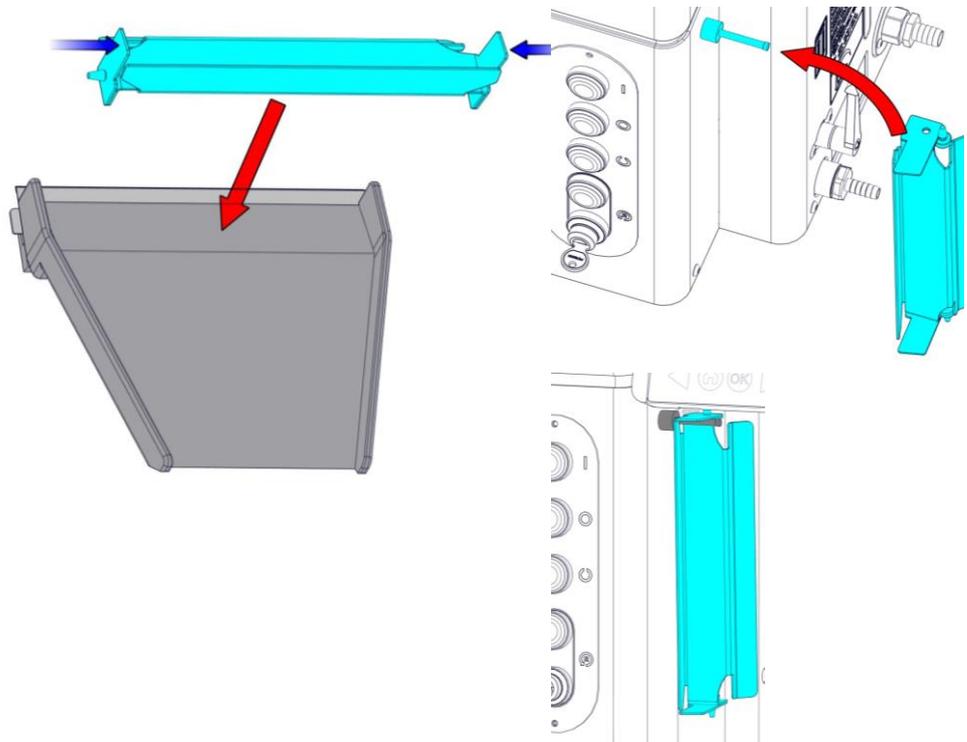


Fig. 45: Mounting knife guard for scraper socket

Fig. 46: Knife guard in „park position

1. Push knife guard over the scraper socket slightly bending open the clamping holder. While doing so, position the knife guard at the front edge of the scraper socket and push on completely.

## 10.5. ADJUSTING THE SCRAPER CONTACT PRESSURE

The contact pressure of the scraper system is generated by an adjustable tension spring. The tension spring is adjusted via the adjustment wheel (a). The hand (b) displays the value on a scale.

Low scale value = low contact pressure, high scale value = high contact pressure

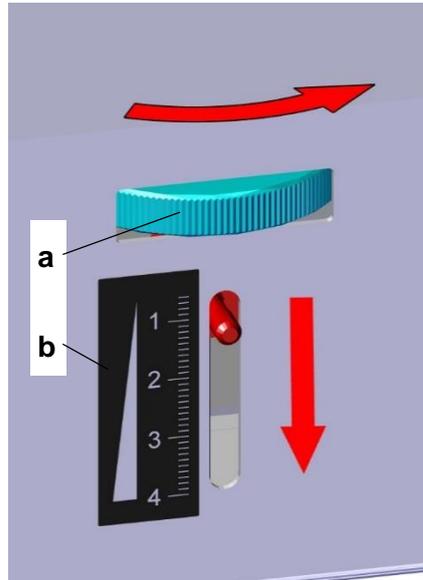


Fig. 47: Increasing the scraper contact pressure

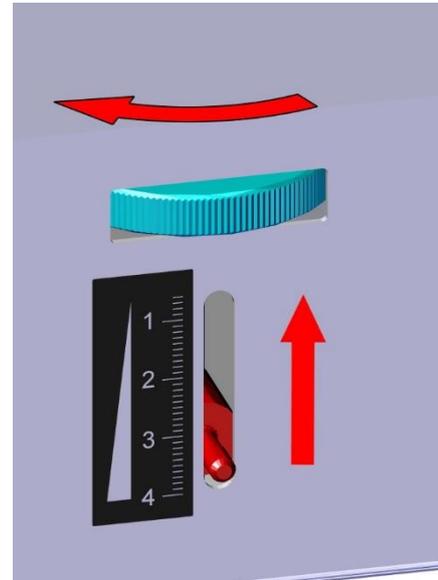


Fig. 48: Reducing the scraper contact pressure

- a Setting dial for scraper force
- b Scale

- > Increase scraper contact pressure by turning the wheel to the right.
  - > Reduce scraper contact pressure by turning the wheel to the left.
1. Set scraper contact pressure to the minimum value at which the product is removed neatly. In general, the scale value should be 1..2.



If the contact pressure is too high or too low, product removal might deteriorate.

Contact pressure too high increases wear of the scraper knife. At first installation, the contact pressure is set to minimum pressure.

For the characteristics if the contact pressure is too low, refer to chapter 15 Troubleshooting.

We recommend not to increase the contact pressure higher than the scale value 3; else check the scraper knife for proper function should it be necessary nonetheless.

## 10.6. MOUNTING THE SCRAPER SOCKET



Allen screwdriver 6 mm

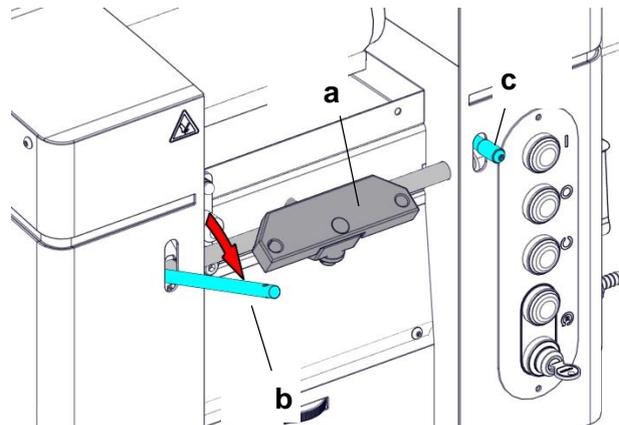


Fig. 49: Swiveling off the scraper base

- |  |  |
|--|--|
| <p><b>a</b> Scraper base, movable with 2 pin receptacles (borings). For autonomous alignment of the scraper knife in parallel to the roller.</p> | <p><b>b</b> Levier de raclage, pour faire pivoter l'unité de commande de la prise de racloir</p> |
|  | <p><b>c</b> Levier de verrouillage pour verrouiller la position pivotée</p>                      |

1. Set the scraper force to minimum force (scale value 1).
2. Swivel off scraper lever (**b**) until locking lever (**c**) snaps in.
3. Check pin receptacles of the scraper base for impurities, clean if necessary.

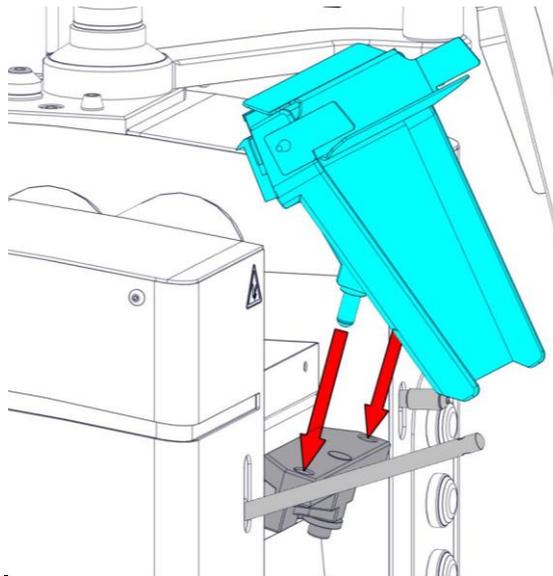


Fig. 50: Set scraper onto scraper base

4. Check location hole at the scraper for impurities.
5. Set scraper socket (with scraper knife and knife guard for scraper socket) onto the two pin receptacles. Make sure that the scraper socket sits completely and is not "tilted".

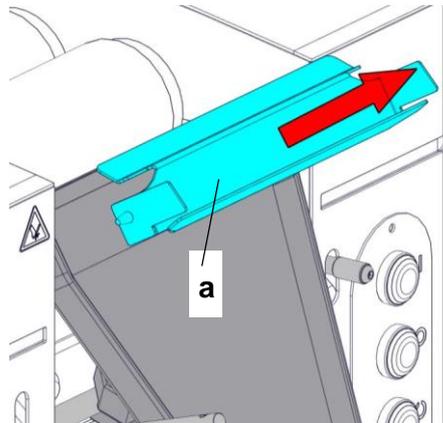


Fig. 51: Removing knife guard

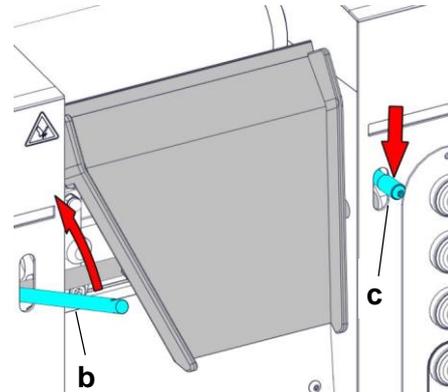


Fig. 52: Swiveling in scraper

6. Remove the knife guard (a).
7. Swivel off the scraper lever (b) and unlock locking lever (c) (press down).
8. Carefully swivel the scraper socket to the roller.

## NOTE

Ceramic scraper knife Danger of breakage

> In particular with ceramic scraper knives, pay attention to careful handling.

## 10.7. ALIGNING THE SCRAPER SOCKET IN PARALLEL TO THE ROLLER



Allen screwdriver 6 mm

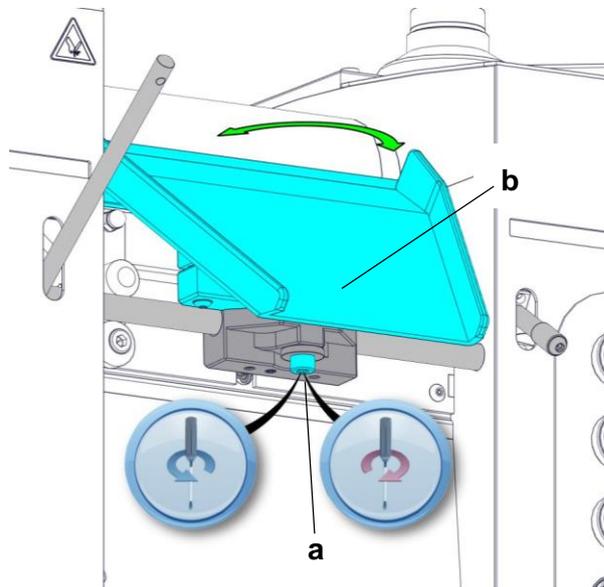


Fig. 53: Aligning the scraper socket in parallel

1. Swivel the scraper socket (**b**) to the roller with the knife inserted.
2. Undo the fixing screw (**a**) slightly with Allen screwdriver so that the scraper base with scraper socket in place can move freely.
  - The knife aligns itself in parallel to the roller.
3. Tighten the fixing screw with the Allen screwdriver hand-tight.



The scraper base only needs to be aligned in case of knife change. The fixing screw can in general remain fixed.

## 10.8. SETUP OF THE SCRAPER ANGLE



Allen screwdriver 4 mm



The scraper angle can be set in 3 different positions. Depending on the product, it might be required to adjust the angle for removing the product.

For this purpose, scraper bolts with different lengths are screwed to the scraper socket to change the tangent angle of the scraper knife to the roller.

The table below contains the corresponding tangent angle for the length of the scraper bolts.

Scraper bolts	Tangent angle scraper knife - roller
1 mm	approx. 110°
4 mm	approx. 115°
8 mm	approx. 120°

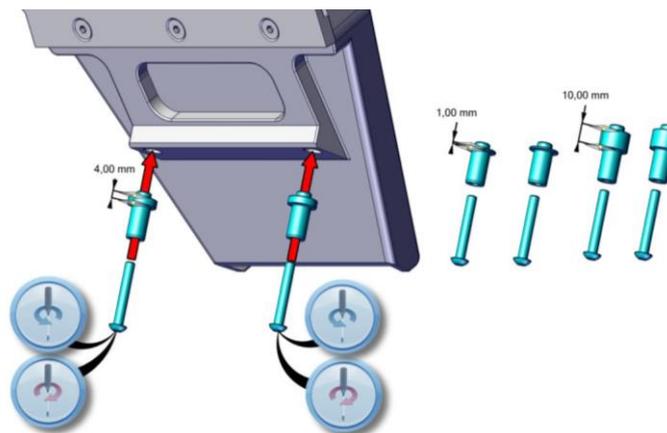


Fig. 54: Mounting the scraper bolts for different scraper angles (tangent angles)

1. Screw off both scraper bolts with an Allen screwdriver.
2. Clean both receptacle holes.
3. Mount the scraper bolts of the desired length and tighten with Allen screwdriver.



The different scraper angle positions might render it necessary to adjust the scraper contact pressure.

The higher the tangent angle, the higher the scraper contact pressure needs to be, and vice versa.

## 10.9. MOUNTING THE SPLASH TRAY



Allen screwdriver 6 mm

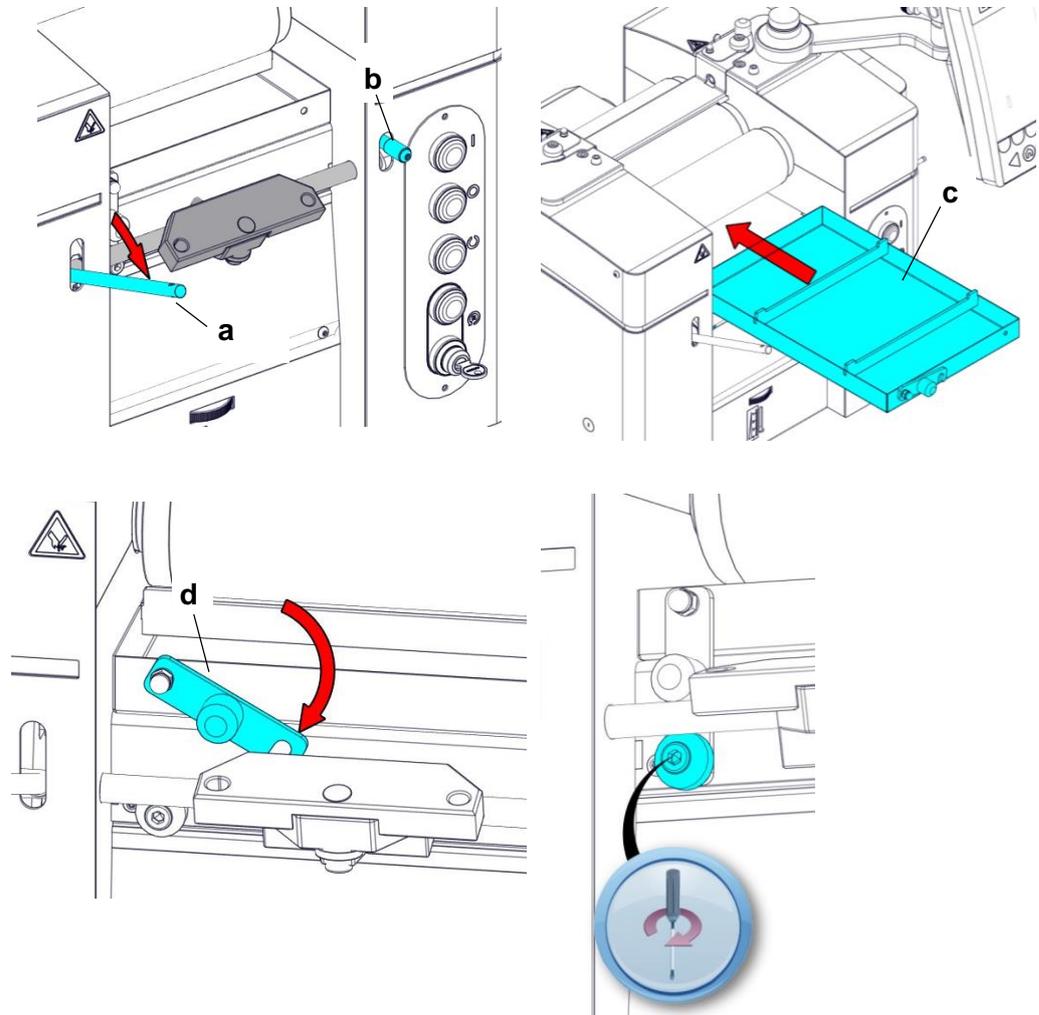


Fig. 55: Mounting the splash tray

1. Swivel off scraper lever (a) until locking lever (b) snaps in.
2. Push in splash tray (c) from the front. Make sure that the splash tray does not touch the rollers.
3. Swivel in latch (d).
4. Secure latch with Allen screwdriver.

## 10.10. MOUNTING THE CLEANING GUARD

When cleaning the roller surfaces, the cleaning guard prevents body parts or foreign objects (e.g. cleaning towel) being pulled in and thus prevents the components being destroyed.



Allen screwdriver 6 mm



### ! WARNING

- Danger of being pulled in by the rollers during cleaning
- > When cleaning, always mount the cleaning guard.
  - > On no account clean with other safety devices.

### NOTE

- Destruction of components due to being pulled into the roller gap
- > When cleaning, always mount the cleaning guard. On no account clean with other safety devices.

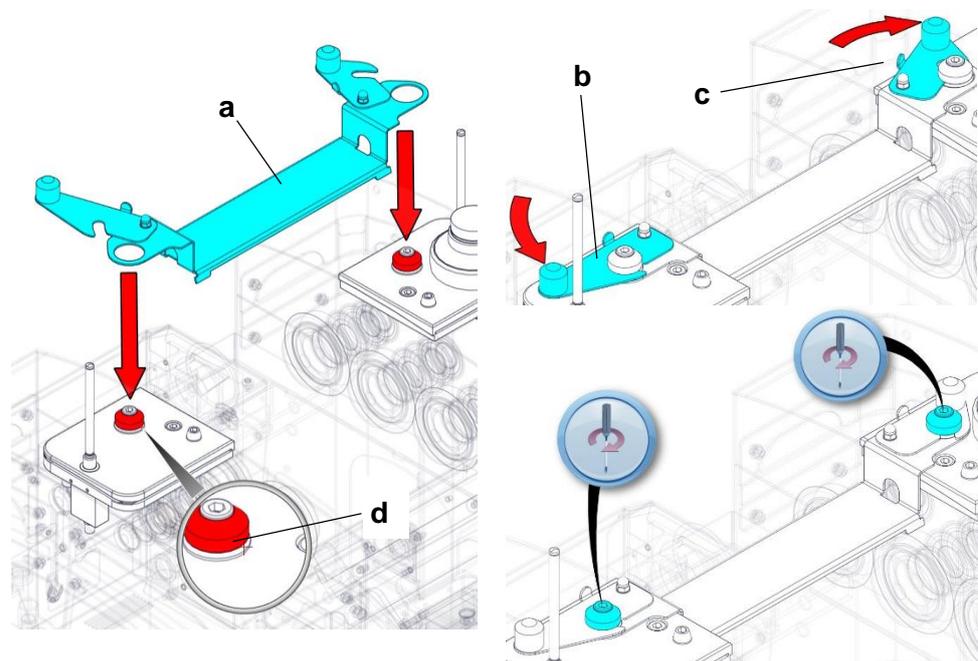


Fig. 56: Mounting the cleaning guard

1. Place cleaning guard (a) from above onto the centering mounts (d).

## NOTE

The centering mounts (**d**) fix all safety devices for the nip gap in the correct position.

> Make sure that the safety device sit well on the centering mounts before securing the latches.

2. Swivel in left latch (**b**) and right latch (**c**) successively.
3. Secure both latches successively with Allen screwdriver.

## 10.11. INSERTING PLASTIC GUIDES FOR WORKING WIDTH 85 MM AND 170 MM



### **WARNING**

Danger of being pulled in by the rollers in case of incorrect length of the guide shafts:

- > Always select the same length for both guide shafts matching the selected working width. Insert the corresponding safety devices only according to the selected working width.

### **NOTE**

Roller destruction due to incorrect input of the working width (E-models)

- > In general, program the working width of the used safety device via the operating unit. Else the line force values [N/mm] will not correspond.  
Danger of roller destruction in force mode.

The plastic guides for the working widths 85 and 170 mm consist each of the following units:

- Plastic guide (**a**)
- Guide shaft 85 or 170, blue (**b**)
- Guide shaft 85 or 170, black (**c**)
- Springs (**d**) for work with hopper
- Depending on the working width, the guide shafts are screwed into the plastic guide.
- The color coding helps in inserting the plastic guide into the machine on the correct side.
- Also at the machine are a blue and a black screw on the left and right central mount, respectively, that can be used as side orientation.
- Left machine side: **blue**
- Right machine side: **black**

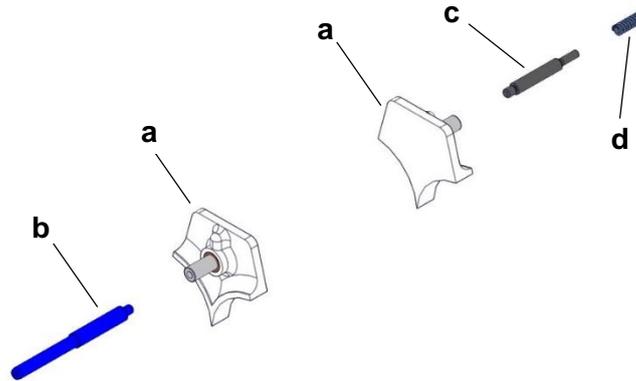


Fig. 57: Plastic guide WW 85mm and 170mm: Assembling parts

1. Select guide shafts for the desired working width
2. Screw guide shaft (**b, c**) into plastic guide (**a**) hand-tight.
3. For **working with hopper**, additionally push the springs (**d**) onto the guide shafts 170. The springs seal the guides against the hopper.

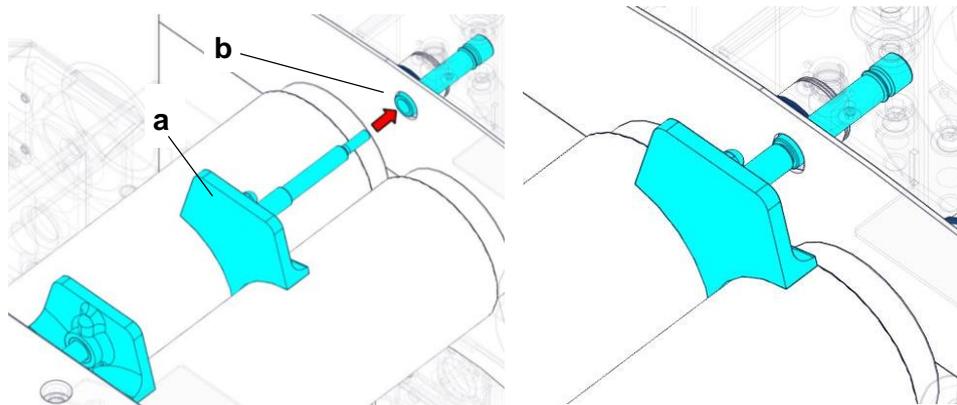


Fig. 58: Inserting plastic guides for working width 85 mm and 170 mm  
(Shown here: working width 170 mm)

4. Insert guide shaft (**a**) into the hole of the guide tube (**b**).
5. Lift guide shaft slightly with index finger.
6. Push in plastic guide up to the stop.

## 10.12. MOUNTING PLASTIC GUIDES FOR WORKING WIDTH 200 MM



Allen screwdriver 4 mm

### NOTE

Roller destruction due to incorrect input of the working width (E-models)

> In general, program the working width of the used safety device via the operating unit. Else the line force values [N/mm] will not correspond.

Danger of roller destruction in force mode.



Leaks in product flow at working width 200:

The plastic guides have a blue (left plastic guide) or black screw connection, respectively. The plastic guides wear differently. In order to avoid leaks, the plastic guides must always be used on the same side.

> Observe the color coding **blue** (left) and **black** (right).

> Replace worn plastic guides.

The plastic guides for the working width 200 mm consist each of the following units:

- Plastic guide shoulder roller (**a**), wear parts
- Top for shoulder guide (**b**) / top for shoulder guide, hopper (**b.1**)
- The tops (**b**) are each screwed onto the plastic guides (**a**) (wear part) (**c, d**) and (**c, e**). The **blue** screw (**d**) or the **black** screw (**e**) help to insert the plastic guides on the correct side into the machine
- Also at the machine are a blue and a black screw on the left and right central mount, respectively, that can be used as side orientation.
- Left machine side: **blue**
- Right machine side: **black**
- Clamping cone for shoulder guide (**f**).

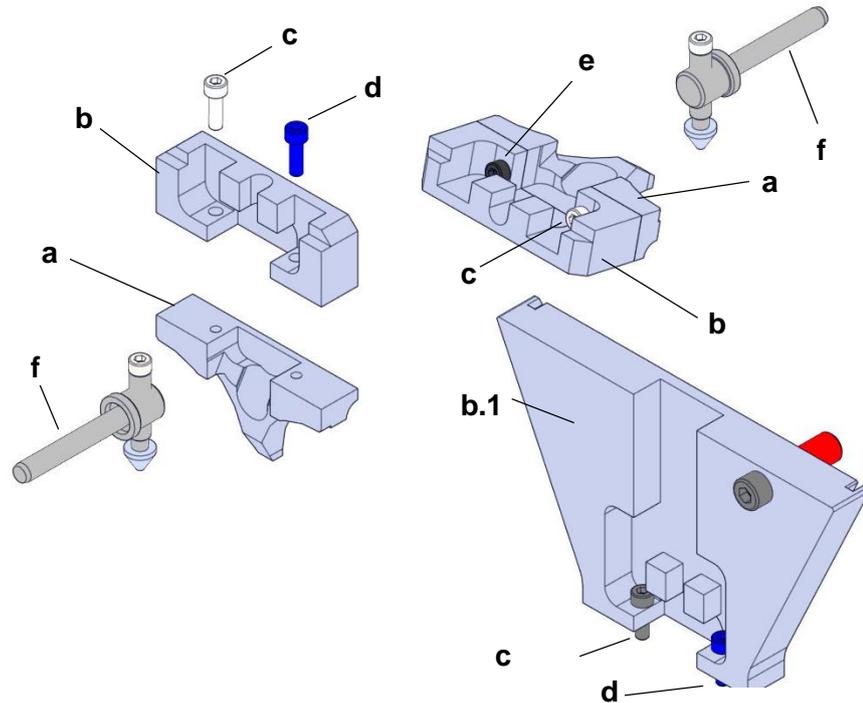


Fig. 59: Plastic guide working width 200mm: assembling parts

1. Screw together plastic guide - shoulder guide (**a**) with top for shoulder guide (**b**) / top shoulder guide, hopper (**b.1**). Pay attention to the color code with the blue or black screw, respectively. The front edges of the plastic guide and the tops must be flush.

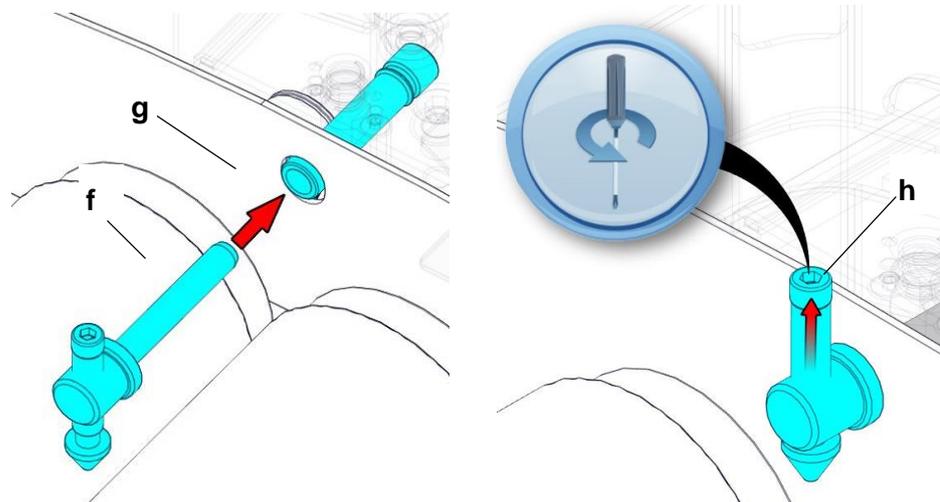


Fig. 60: Plastic guide working width 200mm: assembling parts

2. Insert clamping cone for shoulder guide (**f**) into the drilled hole of the guide tube (**g**).
3. Lift clamping cone slightly with index finger.
4. Push in clamping cone up to the stop.

5. Use an Allen screwdriver to turn the clamping cone (**h**) all the way up.

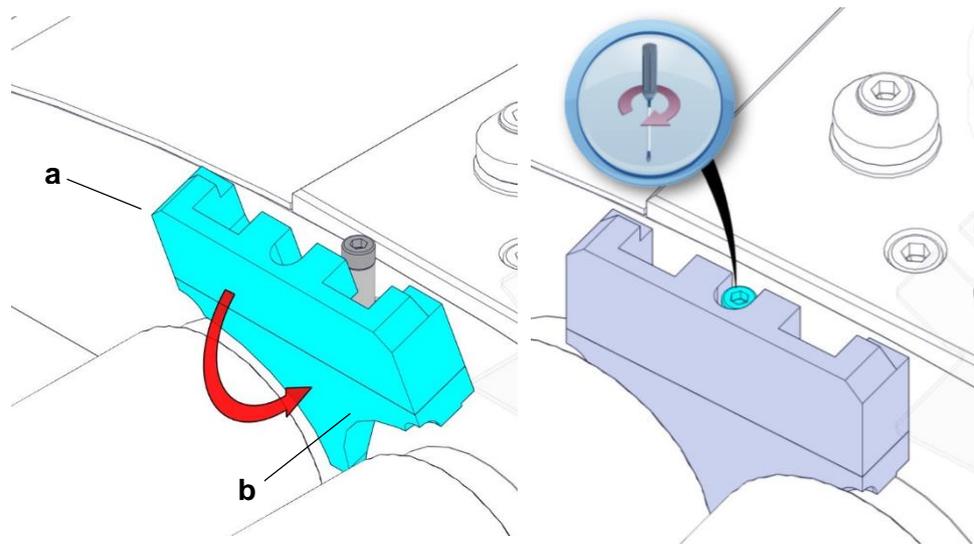


Fig. 61: Inserting plastic guides for working width 200 mm (shoulder roller)  
(here: with top for shoulder guide)

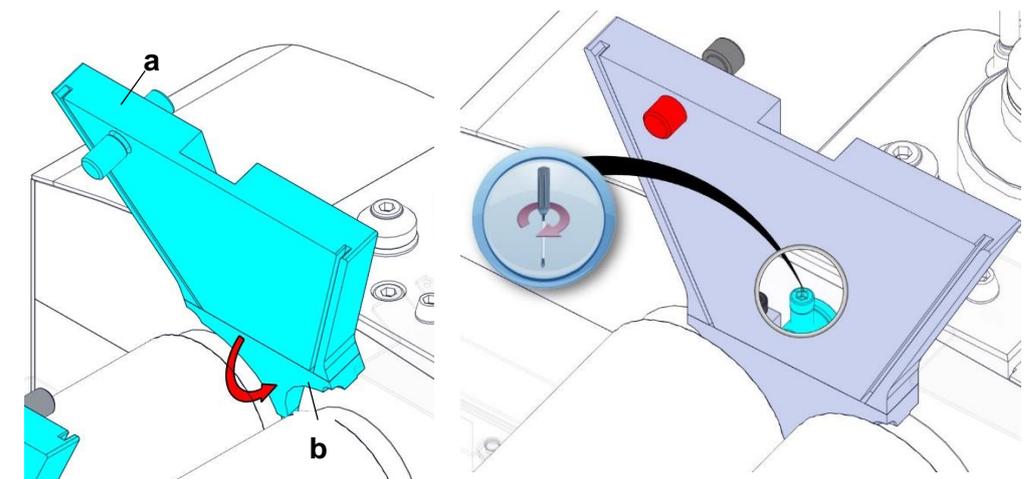


Fig. 62: Inserting plastic guides for working width 200 mm (shoulder roller)  
(here: with top for shoulder guide, hopper)

6. Insert plastic guide (**a**) at an angle from above under the clamping cone. Make sure that the sharp edges of the rollers do not damage the sealing surfaces (**b**).
7. Tighten the clamping cone with the Allen screwdriver **HAND-TIGHT**.

## NOTE

### Premature wear:

- > Only tighten the clamping cone as much as necessary so that the plastic guide seals. The stronger it is tightened, the faster the sealing surface of the plastic guide will wear.

### 10.13. MOUNTING THE SAFETY DEVICE NIP GAP, WORKING WIDTHS 85 MM, 170 MM, 200 MM



Allen screwdriver 6 mm

#### NOTE

Roller destruction due to incorrect input of the working width (E-models)  
 > In general, program the working width of the used safety device via the operating unit. Else the line force values [N/mm] will not correspond.  
 Danger of roller destruction in force mode.



In principle, all safety devices for the nip gap are mounted in the same way. There are only differences in mounting the hopper.

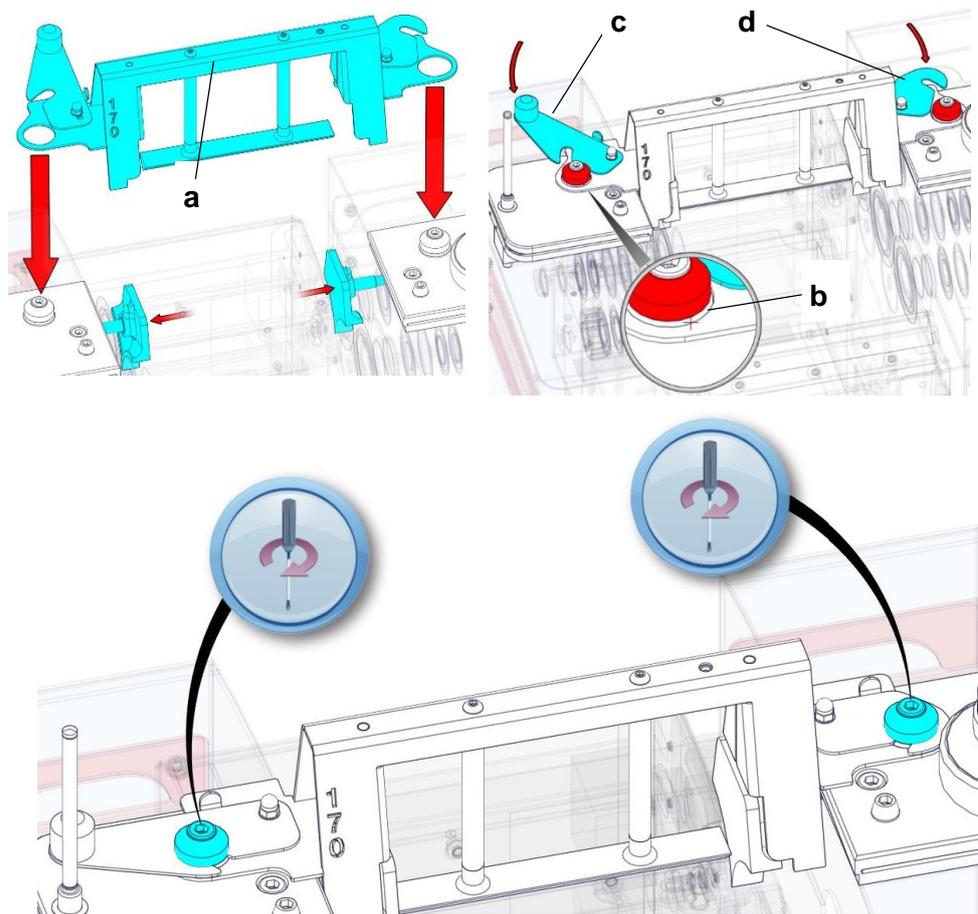


Fig. 63: Mounting safety device for nip gap

1. Mount plastic guides matching the working width.
2. Set the safety device (a) for the corresponding working width from above onto the centering mounts (b). Make sure that the safety device sits correctly on the centering mount.

3. Swivel in latch **(c)** and latch **(d)** successively.
4. Secure both latches successively with Allen screwdriver.

## 10.14. MOUNTING HOPPER FOR WORKING WIDTH 170 MM



Allen screwdriver 6 mm

### NOTE

Roller destruction due to incorrect input of the working width (E-models)  
> In general, program the working width of the used safety device via the operating unit. Else the line force values [N/mm] will not correspond.  
Danger of roller destruction in force mode.



The hopper base **(a)** 170 mm is mounted the same way as other safety devices for the nip gap. In addition, the safety guard **(b)** is mounted to the hopper. The safety guard can be dismantled for easier cleaning.

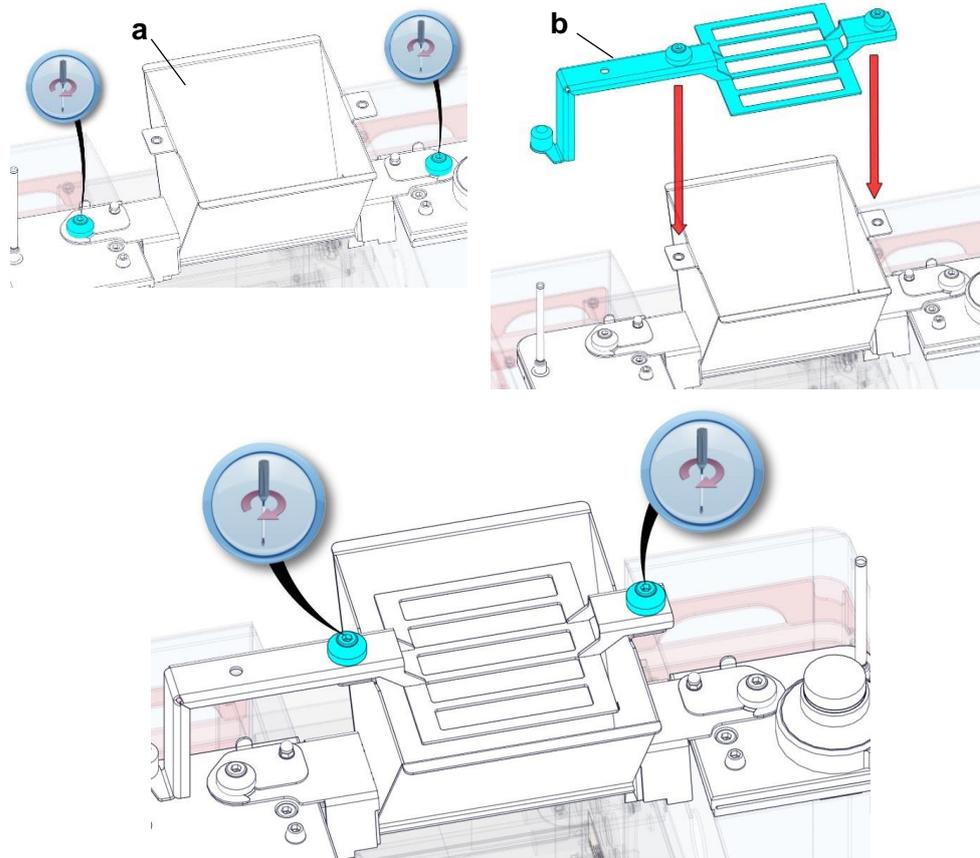


Fig. 64: Mounting hopper for working width 170 mm

1. Mount plastic guide 170 mm with springs (see chapter 10.11 Inserting plastic guides for working width 85 mm and 170 mm).
2. Mount hopper base (a). In doing so, push in the plastic guides completely against the spring pressure. The plastic guides will then later fit closely to the outer wall of the hopper base.
3. Screw tight hopper base with the Allen screwdriver.
4. Insert safety guard (b) from above.
5. Screw tight safety guard with the Allen screwdriver.

## 10.15. MOUNTING HOPPER FOR WORKING WIDTH 200 MM



Allen screwdriver 4 mm, 6 mm

### NOTE

Roller destruction due to incorrect input of the working width (E-models)  
 > In general, program the working width of the used safety device via the operating unit. Else the line force values [N/mm] will not correspond.  
 Danger of roller destruction in force mode.

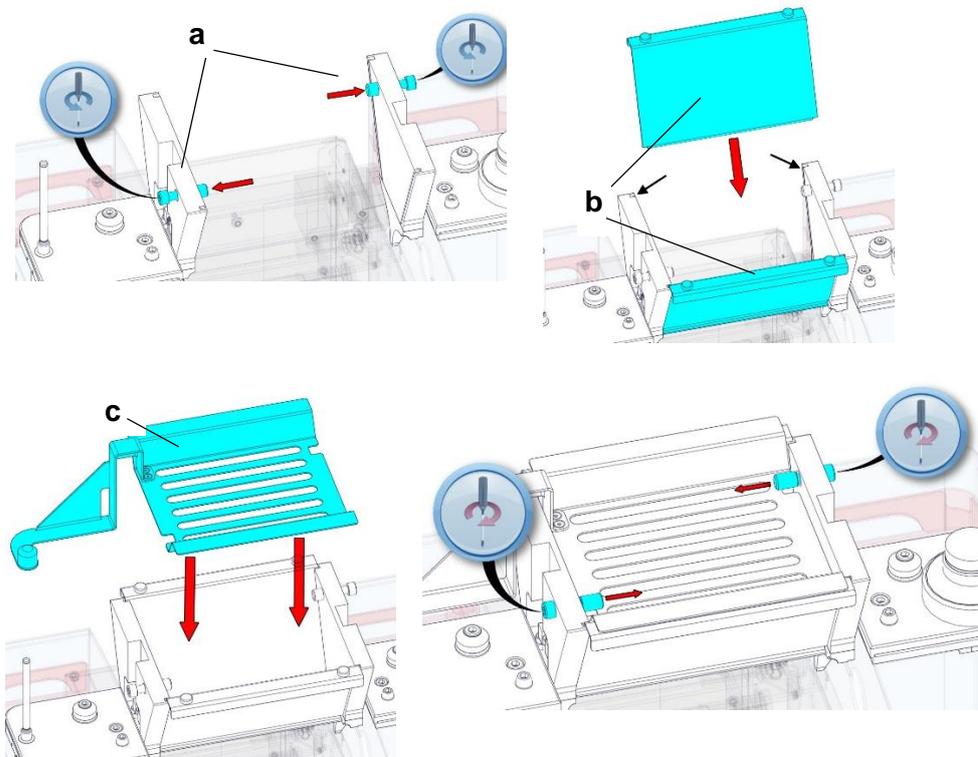


Fig. 65: Mounting hopper for working width 200 mm

1. Mount plastic guides with „top for shoulder guide, hopper“ (see chapter 10.12 Mounting plastic guides for working width 200 mm).
2. Screw out both securing bolts (a) up to the stop.
3. Carefully insert both hopper plates (b) into the guide slots of the plastic guides up to the lower stop.
4. Set protective grid onto the hopper plates.
5. Set hopper safety guard (c) into place.
6. Screw in both securing bolts (a) with the Allen screwdriver.

## 10.16. MOUNTING SPLASH GUARDS FOR WORKING WIDTH 200 MM



Allen screwdriver 6 mm



Whenever necessary, the two splash guards (**a**) prevent the product being ejected from the first roller and darting through the room.

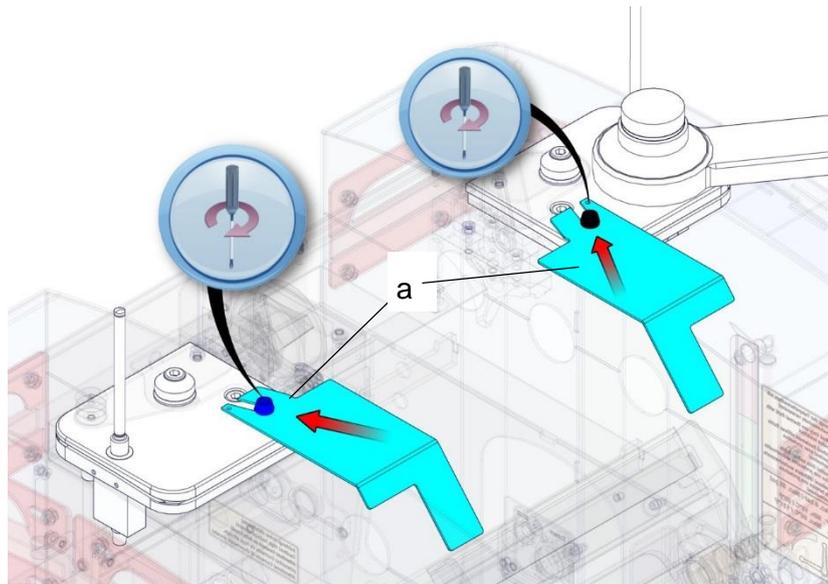


Fig. 66: Mounting splash guard for working width 200mm

1. Undo **blue** or **black** screw, respectively, at the central unit.
2. Push in splash guards (**a**) and screw tight.

## 10.17. MOUNTING SPLASH GUARDS FOR INNER SIDE PANELING



Allen screwdriver 6 mm



The splash guards (**a**) for the inner side paneling facilitate cleaning the side paneling as the plates can be removed for cleaning.

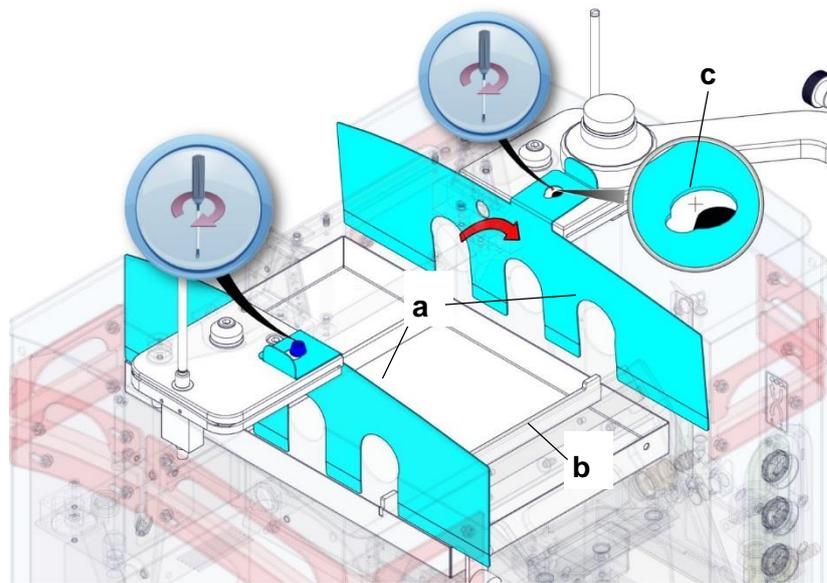


Fig. 67: Mounting splash guard for inner paneling

- > The plastic guides must have been removed.
  - > The splash tray (**b**) must be mounted.
1. Undo **blue** or **black** screw, respectively, at the central unit.
  2. Push in splash guards (**a**) from above.
  3. Push with the lock cutout (**c**) over the screw and engage.
  4. Tighten blue or black screw, respectively.

## 10.18. MOUNTING THE SOLVENT DISPENSER FOR GUIDE LUBRICATION



Allen screwdriver 6 mm

Open-ended spanner 22 mm

### NOTE

Destruction of rollers with working widths 85 mm and 170 mm in force mode (E-models):

Due to low gap widths and high line pressure, we recommend to operate the machine with a solvent dispenser for guide lubrication in force mode in order to enhance protection of the rollers against damage.

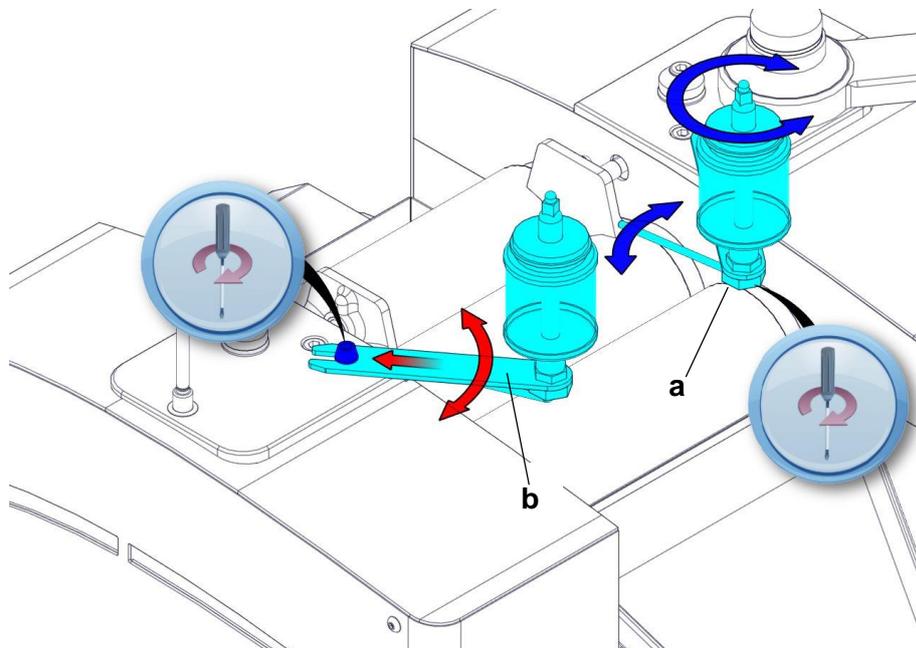


Fig. 68: Mounting splash guard for inner paneling

1. Mount plastic guides matching the working width.
2. Undo **blue** or **black** screw, respectively, at the central unit.
3. Undo nut at dispenser (**a**) with open-end spanner 22 mm so that the dispenser can move in its holder (**b**).
4. Push in holder (**b**) and align position.
5. Tighten hexagon socket screw.
6. Align the tube of the dispenser so that the dry run area is wetted.
7. Tighten nut size 22.
8. Close dispenser valve completely and fill dispenser.
9. Open the dispenser valve according to the required amount.

## 11 OPERATING ELEMENTS AND OPERATING UNIT



The following chapter describes the operation of the operating unit. These operating instructions contain all basic menu items for operating the machine. For the complete menu guide of the operating unit, refer to the separately provided operating instructions "Operating unit EXAKT E Plus".

### 11.1. MAIN SWITCH



The main switch (**a**) switches the power of the machine on or off. It can be secured with a padlock against unauthorized startup.

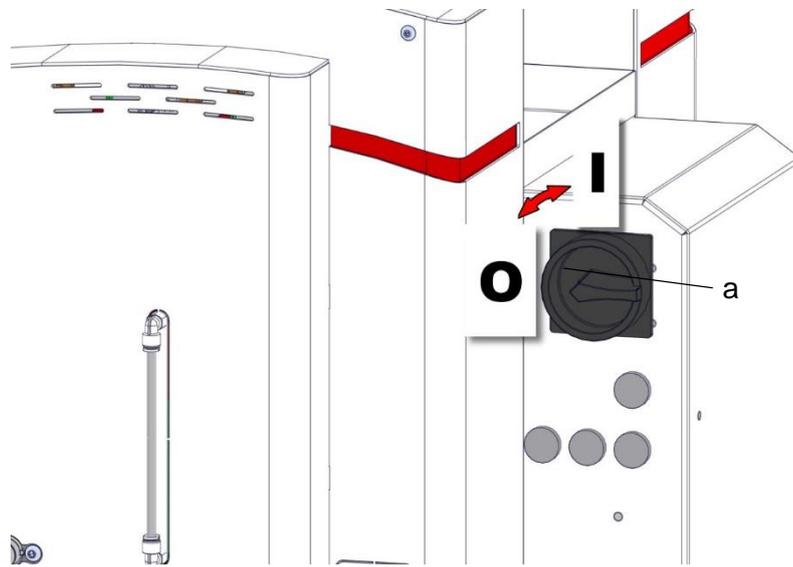


Fig. 69: Main switch (position shown: OFF)

## 11.2. OPERATING PANEL



The operating panel controls the basic functions of the machine such as:

- > Start and stop of the roller drive.
- > Receipt safety of the safety devices.
- > Reversing in case of overload or foreign objects being pulled in, in order to move the product / foreign object in reverse direction out of gap 1.

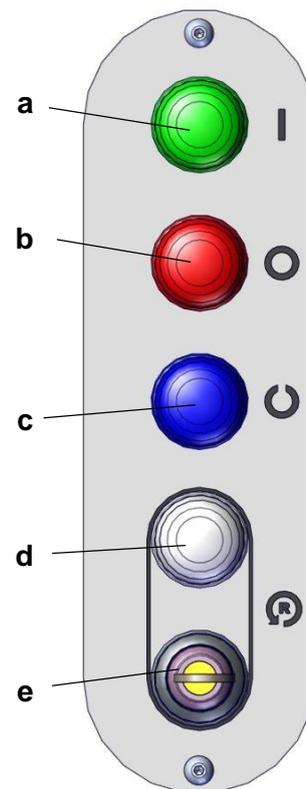


Fig. 70: Operating panel with operating buttons

- |  |   |
|--|---|
| <p>a Start button, starts the drive motor with the preselected roller speed</p> <p>b Stop button, stops the drive motor</p> <p>c Receipt safety button All safety devices must be mounted. The emergency stop button must be unlocked.</p> | <p>d Start button reversing mode, to reverse the rollers in case of overload by a product with excessive viscosity</p> <p>e Key switch „Release Reverse“ The key can be pulled off in the non-released position and kept at a safe place.</p> |
|--|---|

### 11.3. EMERGENCY STOP BUTTON

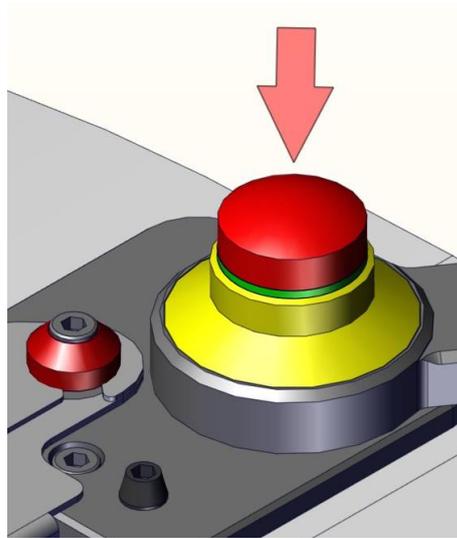


Fig. 71: Actuating the emergency stop button

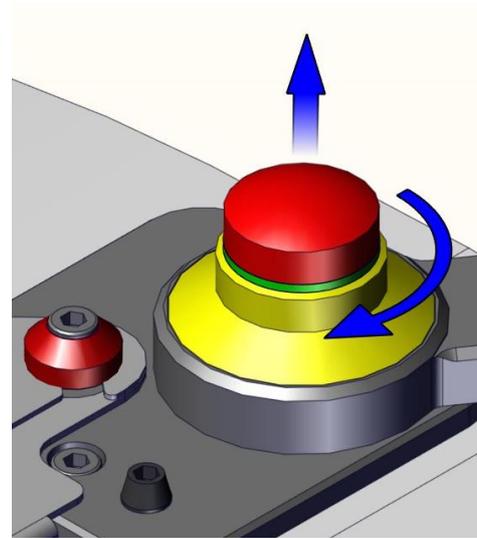


Fig. 72: Unlocking the emergency stop button

1. Actuate emergency stop button.
  2. Rectify the fault.
  3. Unlock the red button of the emergency stop button.
  4. Actuate receipt safety button (confirm safety circuit).
- Machine is ready to start again.

## 11.4. OPERATING UNIT



The operating unit takes over all functions to control the machine during operation:

- > Cleaning mode.
- > Routine operations with setting of the operating parameters such as rotational speed, gap or force mode.
- > Programming program sequences such as mixing, programs with up to 9 passes with different operating parameters.

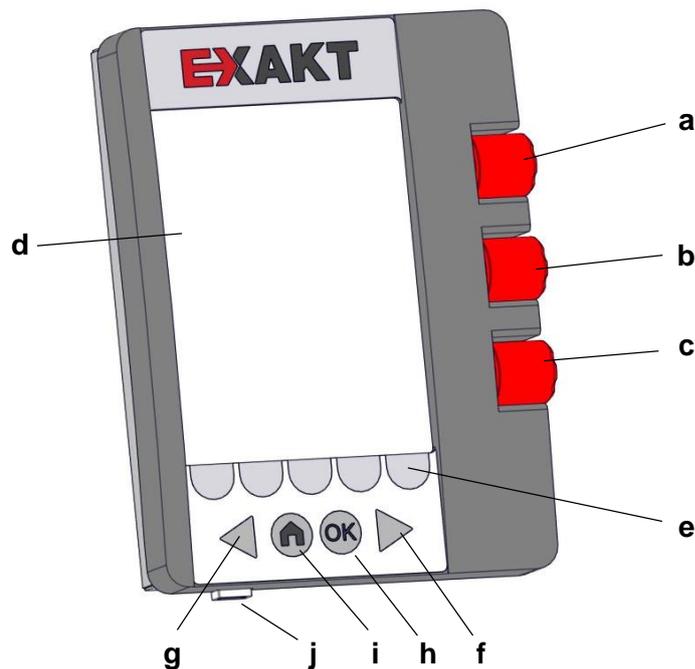


Fig. 73: Operating unit

- |   |   |   |  |
|---|---|---|--|
| a | Control dial gap 1 with pushbutton                      | g | Arrow left, e.g. to display other screens to the left                        |
| b | Control dial gap 2 with pushbutton                      | h | OK button, to confirm an action like entering a password or in the main menu |
| c | Control dial roller speed with pushbutton               | i | Home button, back to main menu   |
| d | Display   | j | USB interface, for data transfer   |
| e | Control keys (5 pieces) to select various functions     |   |  |
| f | Arrow right, e.g. to display other screens to the right |   |  |

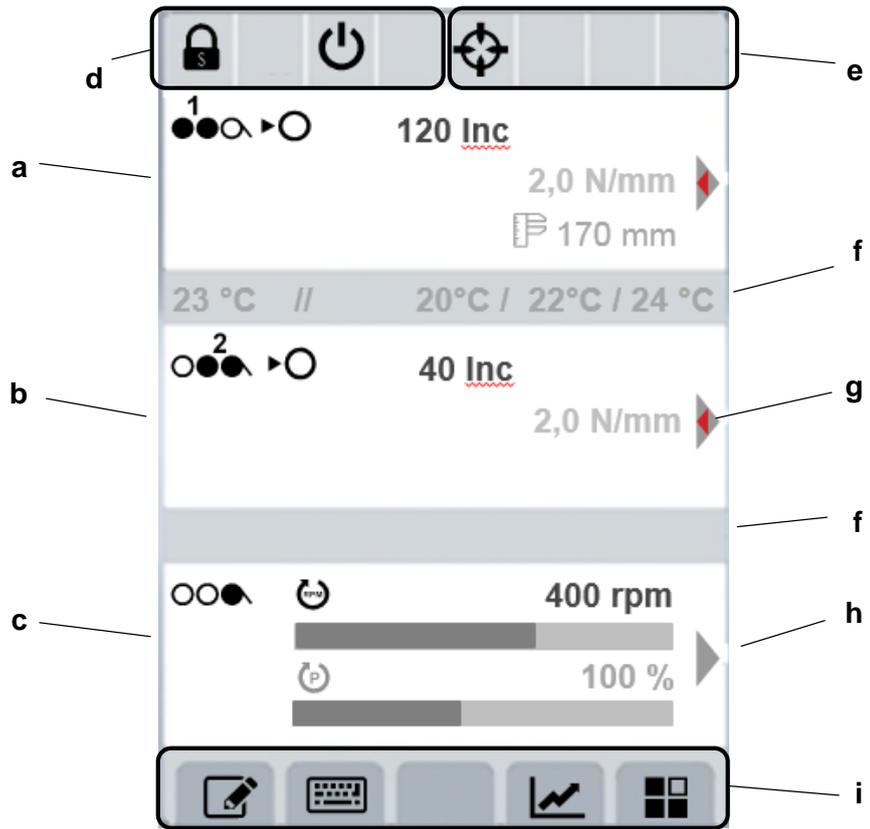


Fig. 74: Layout of the user interface, three parts, shown: routine operations

- a Upper display field
- b Center display field
- c Lower display field
- d Status messages safety controller
- e Status messages software
- f Information lines
- g Enable for control dial with inner red arrow control dial can additionally be pressed to select other modes
- h Enable for control dial (e.g. setting the speed)
- i Toolbar with assignment of control keys (menu-dependent)

### 11.4.1.SAFETY MESSAGES ON THE DISPLAY



For operation of the machine, all safety devices must be mounted correctly. This is monitored by the safety circuit, roller start will else not be released. Incorrectly mounted safety devices or unsafe conditions are indicated on the display.

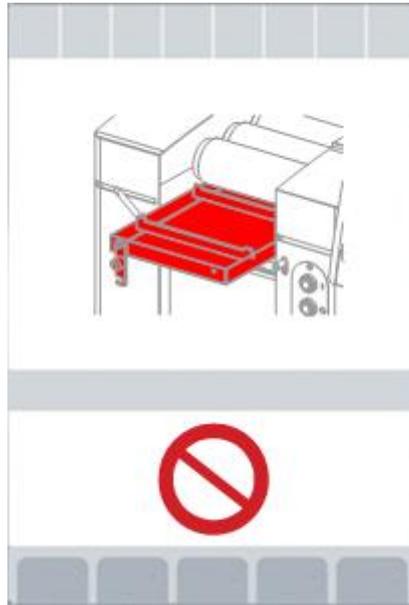


Fig. 75: Safety message splash tray

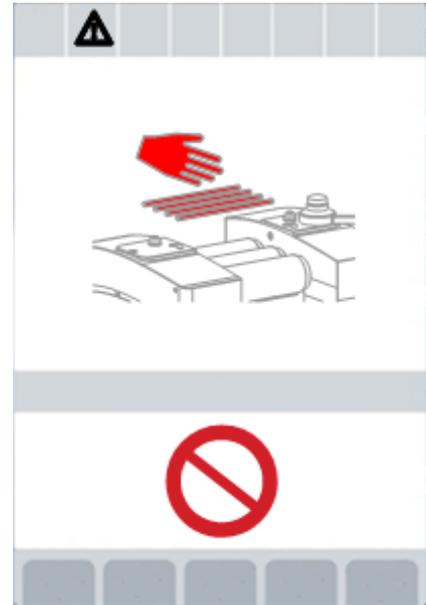


Fig. 76: Safety message upper safety guard (hopper, nip cover, etc.)

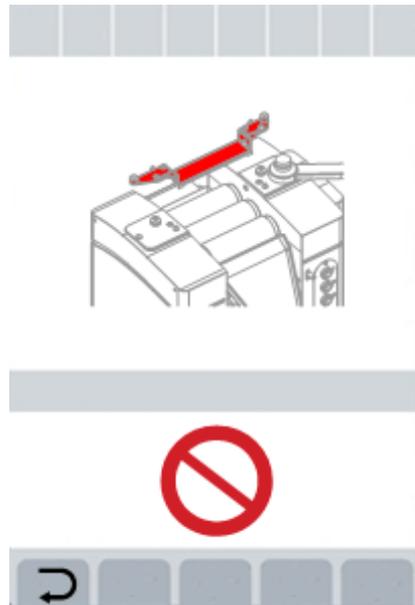


Fig. 77: Safety message cleaning guard

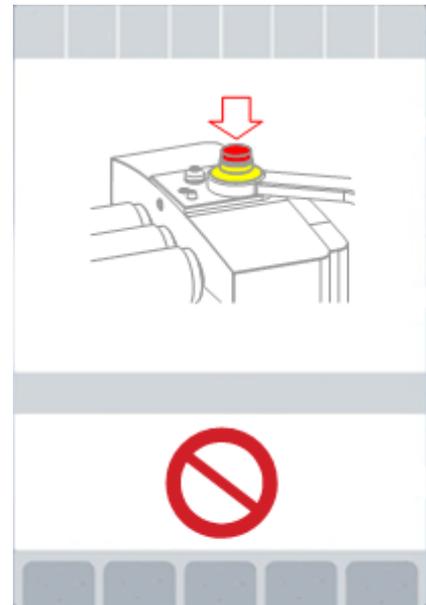


Fig. 78: Safety message emergency stop

- > Check that the respective safety device has been mounted correctly according to these instructions.
- > In case of EMERGENCY STOP: Rectify fault and unlock button
  - After the fault has been rectified and/or mounting has done correctly, you automatically jump to the selected menu.

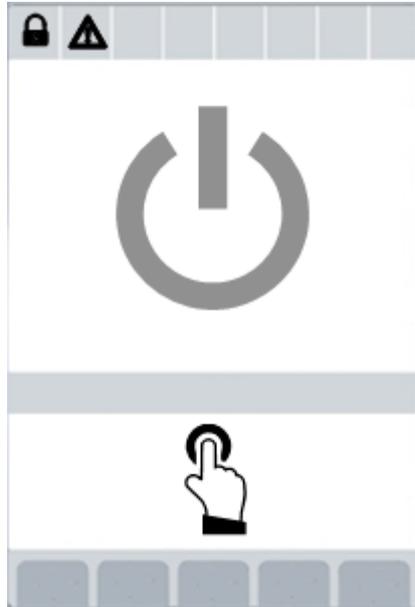


Fig. 79: Safety message receipt safety



### **WARNING**

Before every machine operation, make sure that safe operation is ensured beyond the safety devices of the machine.

- > Adhere to proper use of the machine.
  - > Use the personal protective equipment.
  - > Observe the warning and safety notes at the machine and the products to be processed.
  - > Follow the company-internal and legal regulations.
- > Actuate receipt safety button (lights blue) on the operating panel.
    - The blue receipt safety button goes off.
    - Starting the rollers with the start button is now possible.

## 11.4.2.OVERLOAD MESSAGES ON THE DISPLAY



The roller drive automatically stops in case of overload to protect the machine.

Such events are indicated by the following messages:



Fig. 80: Force exceeded - Line pressure too high

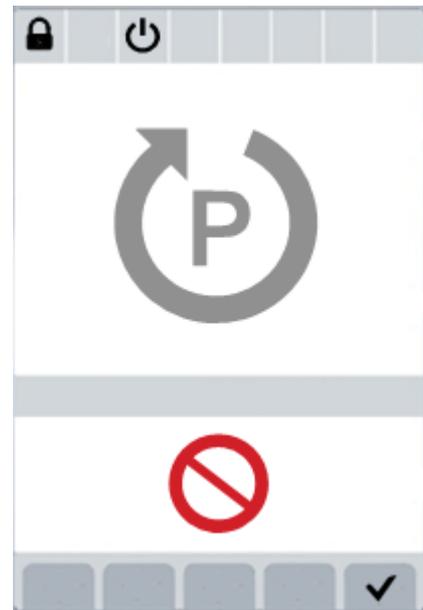


Fig. 81: Drive overload

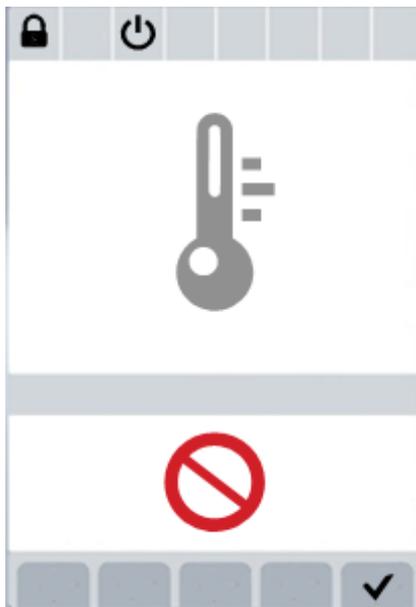
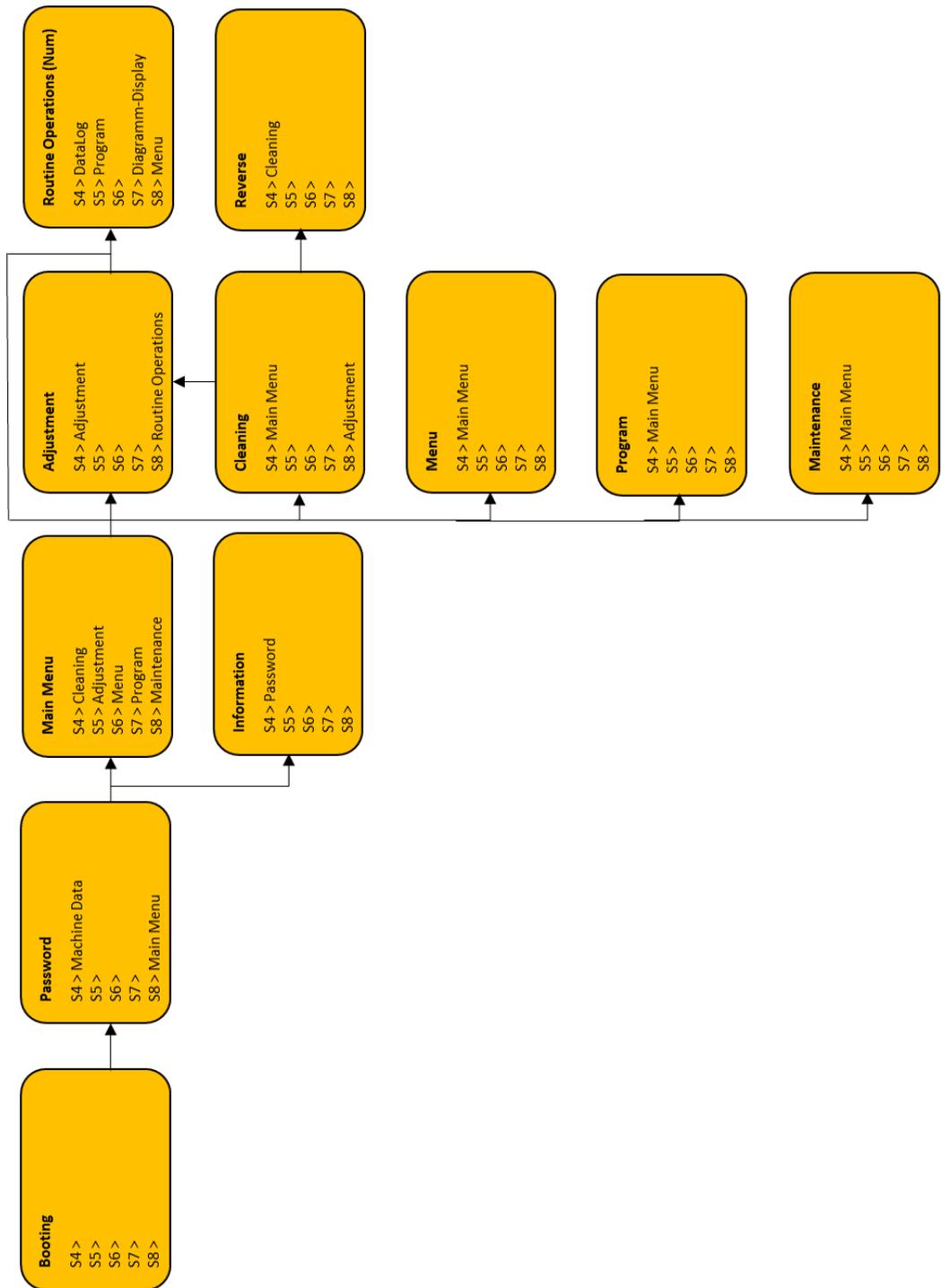


Fig. 82: Drive overheated

- > Rectify the cause of the fault.
- > Confirm that fault has been rectified with control key ✓.

## 11.5. PROGRAM STRUCTURE



## 12 OPERATION



This section describes operation of the three roller mill:

- > Switching on the machine.
- > Cleaning the rollers.
- > Adjust the machine.
- > Defining the pre-settings (setup)
- > Routine operations: Test run with petroleum jelly.



### **WARNING**

Danger of being pulled in by the rollers:

During operation, the rollers of the machine are driven.

This causes a danger of being pulled in.

- > When working at the machine, pay attention to your hands and fingers.
- > For cleaning, set up the cleaning plate and change into cleaning mode.
- > Only use the machine with the provided safety devices.
- > In routine operation, always work with the limiting jaws inserted to the correct working width (according to the selected safety device).



- > In routine operation, supply or remove product only with the spatula.
- > Only use one-part spatulas or riveted spatulas with long handle.
- > ALWAYS keep the spatula as far away as possible from gap 1 (nip gap roller 1 and roller 2).



### **WARNING**

Danger of scalding:

Danger of scalding or burns at the media and at hot machine parts when handling hot temperature control media.



- > Before handling temperature control media, let them cool down.
- > Wear safety gloves and protective clothing.



### **WARNING**

Danger of eye injuries due to rotating rollers or when handling product and cleaning agents



- > In general, wear eye protection.
- > Wear suitable protective clothing.



### **CAUTION**

Danger of cuts at the scraper knife.

- > During assembly and handling, always work with plastic knife protection or with knife protection for scraper socket.



- > When working with the scraper socket and scraper knife, wear suitable safety gloves.

### **CAUTION**

Danger arising from the substances to be processed:



The substances to be processed can cause health hazards.

- > Read the safety datasheets of the substances to be processed carefully.



- > Wear suitable protective clothing.



- > When using cleaning agents, provide sufficient ventilation.
- > Observe the safety data sheets of the substances to be processed.
- > Observe the disposal instructions by the respective manufacturers.
- > Observe local safety regulations.

## 12.1. SWITCHING ON THE MACHINE

1. Switch on the machine via the main switch.
  - The machine starts and the operating unit boots with the following screen:

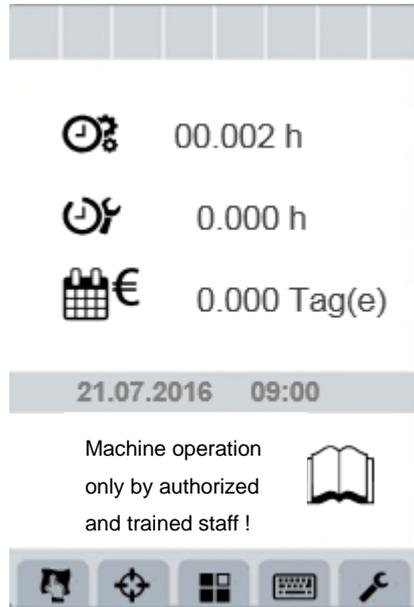


Fig. 83: Start screen

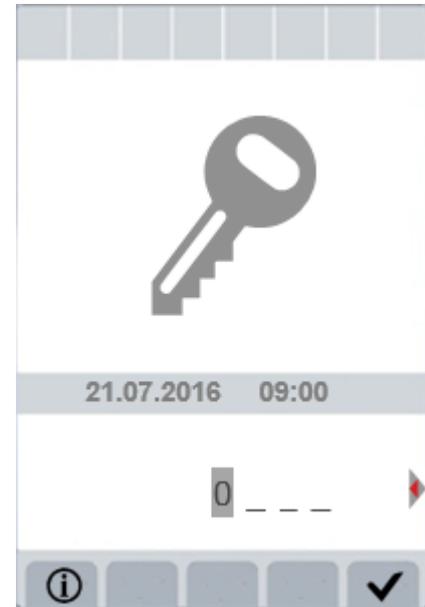


Fig. 84: Password entry



With the control key ⓘ you can call up information on the machine.

To enter the 4-digit password:

1. Set digits by turning the control dial 3.
  2. Jump to the next digit by pressing the control dial.
  3. Finish entering the password with the control key ✓.
- You access the main menu.

The main menu displays operating hours, time to next service and remaining payment period, if applicable.

From the main menu you call up the other sub-menu to operate the machine.

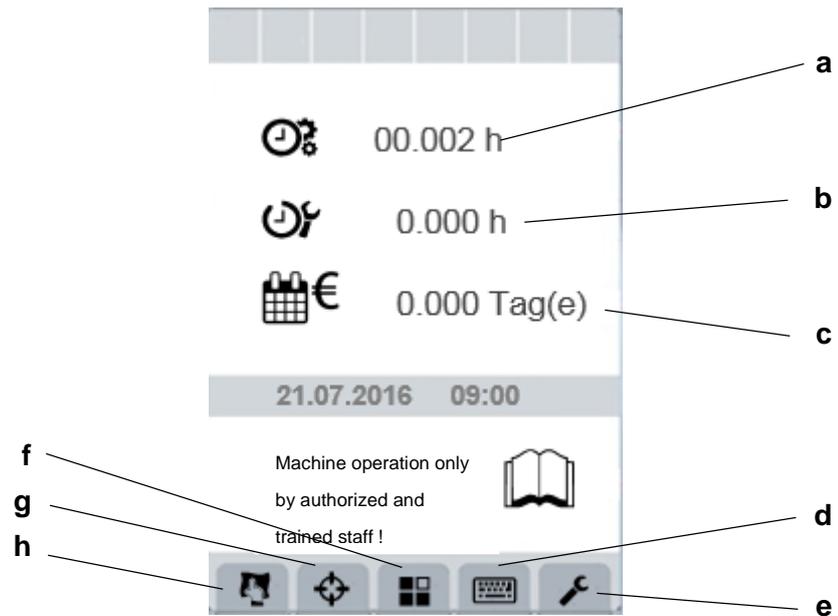


Fig. 85: Main menu

- |   |                     |   |                       |
|---|---------------------|---|-----------------------|
| a | Period of operation | f | Settings              |
| b | Next service        | g | Adjusting the rollers |
| c | Term of payment     | h | Cleaning menu         |
| d | Program menu        |   |                       |
| e | Maintenance menu    |   |                       |

## 12.2. CLEANING THE ROLLERS



Allen screwdriver 6 mm



In the cleaning menu, the rollers are cleaned by the user, afterwards the adjustment run for the roller distance can be started.



The cleaning guard must be mounted.

In cleaning mode, the speed is set to 30 rpm. The maximum speed is limited to 200 rpm (70 rpm in the US). The drive torque is limited and the force sensors for the gaps are set to a low shutdown value in order to prevent / minimize injuries or damage e.g. due to pulling in a cleaning towel.

### NOTE

Danger of destroying components:

It is possible to skip cleaning mode and start directly with adjustment.

> **ALWAYS CLEAN the machine before adjustment.**

### 12.2.1. PRE-CLEANING THE ROLLERS

If there is still some product on the rollers, let the machine run empty as follows:

- > Machine must be in gap mode.
- > There is hardly any product left in gap 1.
  1. Reduce speed to low speed (e.g. to 60 rpm).
  2. Reduce gap 1 and gap 2 evenly to smallest gap value until gap 1 is just about empty.
  3. Stop drive.
  4. Remove as much of the product as possible from scraper knife and discharge surface of scraper socket while the scraper is swiveled into position.

### 12.2.2. PREPARING FOR CLEANING

1. Dismount scraper. Use knife guard.
2. Mount splash tray.
3. Mount cleaning guard.
4. Press receipt safety button.
5. Select cleaning mode  .
6. Fold cleaning towel in such a way that no corners are protruding.

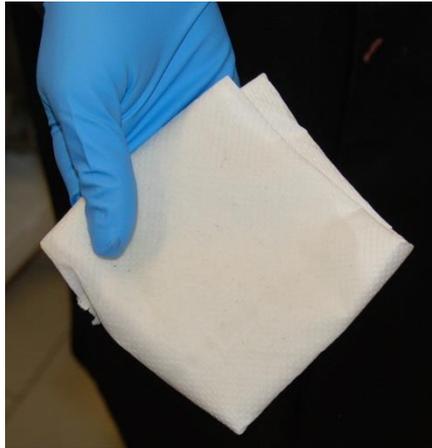


Fig. 86: Folded cleaning towel

7. Wet cleaning towel with cleaning agent.
8. Start drive and set desired speed.

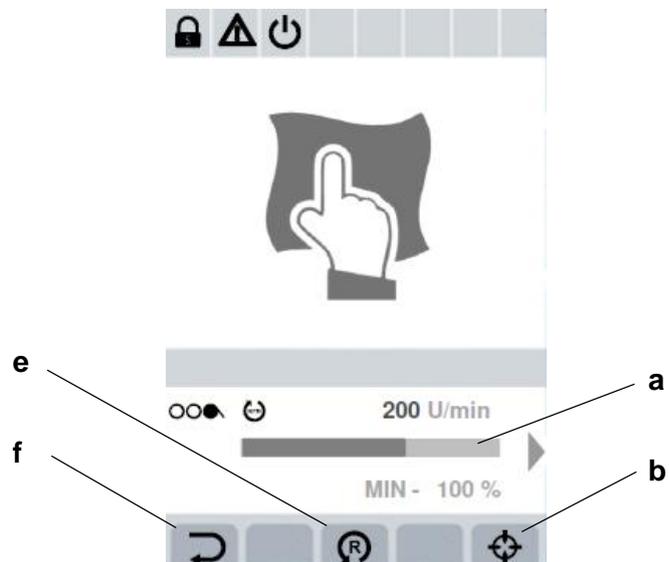


Fig. 87: Menu cleaning mode

- |                         |                        |
|-------------------------|------------------------|
| a Roller speed          | c Reversing mode       |
| b Adjusting the rollers | d Back to start screen |

### 12.2.3.CLEANING ROLLER 1

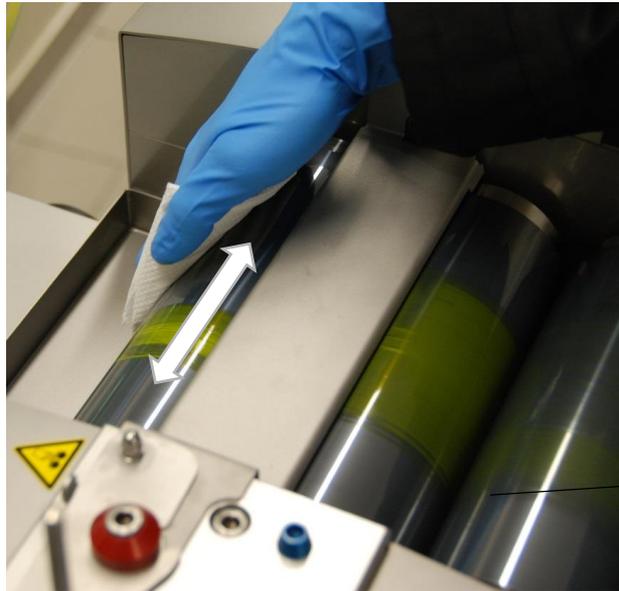


Fig. 88: Cleaning roller 1

- > Place cleaning towel as far away from the roller gap as possible and move to and fro.

### 12.2.4.CLEANING ROLLER 2 AND ROLLER 3

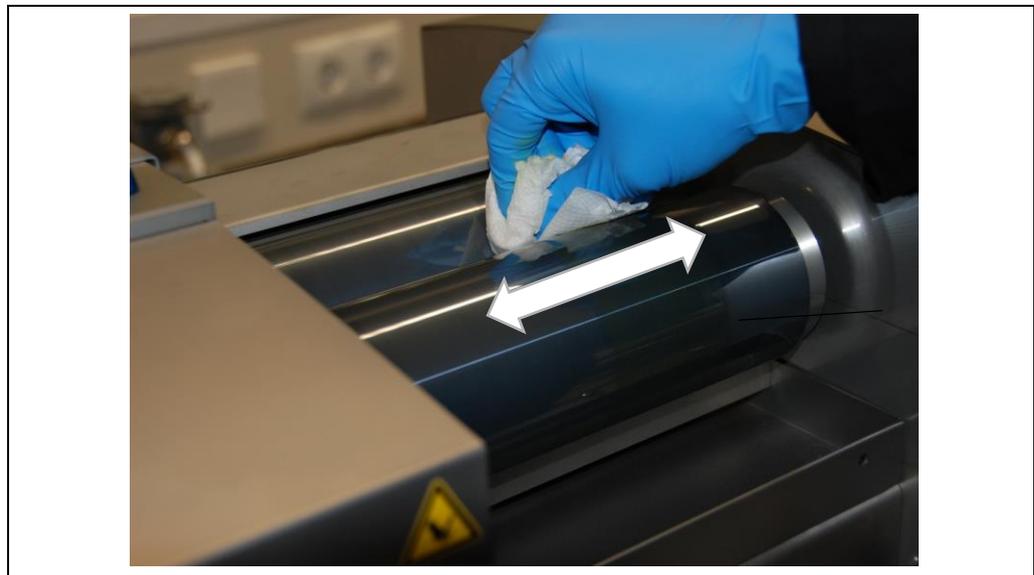


Fig. 89: Cleaning roller 2 and roller 3

- > Press cleaning towel into gap 2 between roller 2 and roller 3 and move to and fro.
- > Drop the drive when the rollers have been cleaned.

### 12.3. CLEANING THE SCRAPER SYSTEM

The scraper system must be cleaned after every use. In addition, it might be necessary to clean or change the scraper system even between two passes. This prevents mixing of the fine parts of the raw product and the already dispersed product.

1. Dismount the scraper knife.
2. Use a spray-moistened lint-free towel to clean the individual components of the scraper system thoroughly.
3. Mount the scraper knife.



Make sure that the scraper knife fits correctly to its lateral stop. When using a new knife, the scraper base must be adjusted again (see chapter 10.7 Aligning the scraper socket in parallel to the roller)

### 12.4. TEMPERATURE CONTROL OF THE ROLLERS

If the rollers are temperature-controlled, the machine must be temperature-controller for a while before adjusting the rollers.

> Scraper system is not mounted

1. Switch on the temperature control unit and set to desired temperature.  
(Observe the maximum temperature change of the supply temperature in the temperature control process: **30 °C/h (54 °F/h)**!)
2. Drive rollers at 30 rpm in cleaning mode and temper for approx. 1 h.
3. Then adjust the rollers.

#### NOTE

Danger of destroying components

If the machine is adjusted before the temperature control, the adjustment process might not be correct any more due to thermal expansion within the machine. Danger of damaging or destroying the rollers.

> If the machine is set to the right temperature, **ALWAYS adjust after the TEMPERATURE CONTROL.**

## 12.5. ADJUSTING THE ROLLERS

### NOTE

Danger of destroying components:

It is possible to skip cleaning mode and start directly with adjustment.

> **ALWAYS CLEAN the machine before adjustment.**

- > Scraper swiveled off or dismantled (knife guard mounted).
- > Plastic guides dismantled.
- > Select "Adjustment" .



During the adjustment process, a progress bar appears on the display.

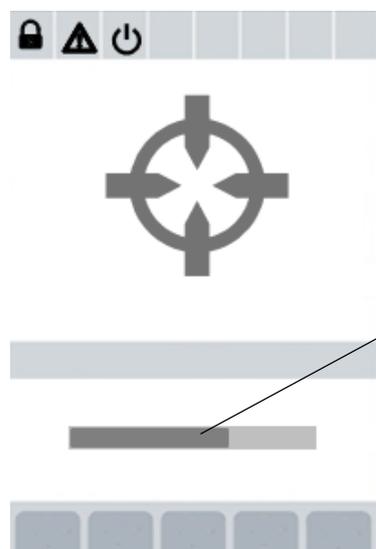


Fig. 90: Display during adjustment

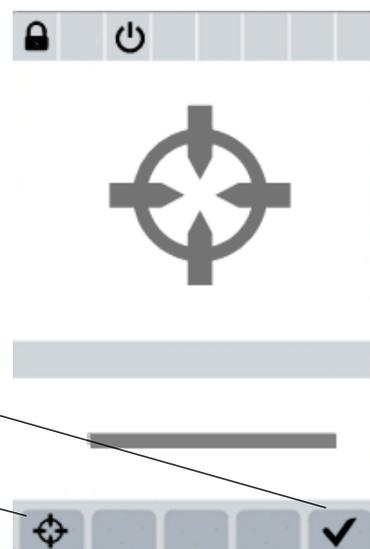


Fig. 91: Adjustment finished, confirm with 

- a Progress bar
- b To routine operations

- c Adjusting the rollers (repeat adjustment)

- > After finishing, dismantle cleaning guard.
- > Confirm successful adjustment with .
- The machine changes to routine operations.



A mounted cleaning guard automatically calls up the cleaning menu, you do not access routine operations.

## 12.6. DEFINING THE PRE-SETTINGS (SETUP)



In the pre-settings (setup), you set the selected working width and the instruction for the temperature settings of an external temperature control unit.

In general, the working width must be set matching to the used safety device.

The instruction for the temperature settings defines a display value  on the display (only graphical and schematic view) that the user must set at the external temperature control unit. This function is particularly useful when running programs.

### NOTE

Roller destruction due to incorrect input of the working width (E-models)  
> In general, program the working width of the used safety device via the operating unit. Else the line force values [N/mm] will not correspond.  
Danger of roller destruction in force mode.

## 12.6.1.SETUP AFTER EVERY ADJUSTMENT AND BEFORE EACH PROGRAMMING

After every adjustment of the rollers or before every creation of a program, the setup menu is displayed automatically.

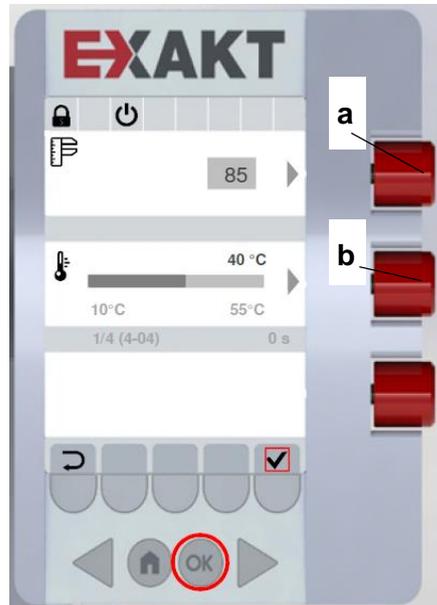


Fig. 92: Setup - Setting working width and temperature

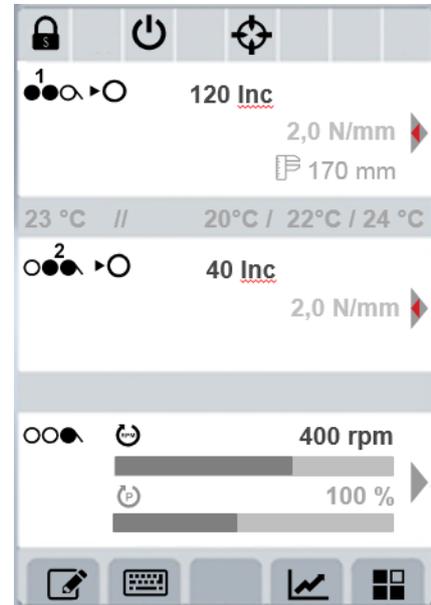


Fig. 93: Continue in routine operations

1. Select working width with control dial (a) out of 85 / 170 und 200 mm.
2. Select temperature limit with control dial (b).
3. Confirm with ✓ or OK. Display changes to routine operations.

## 12.6.2. SELECT SETUP VIA MENU ITEM SELECT SETTING (IN ROUTINE OPERATIONS)

1. Select menu item Settings .
2. Select Setup .

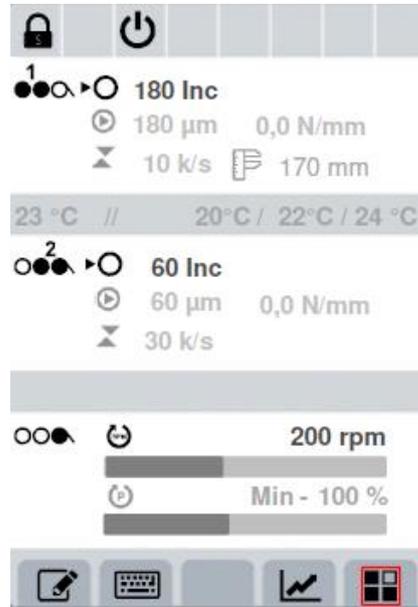


Fig. 94: Select menu selection



Fig. 95: Select setup

3. Select working width with control dial (a) out of 85 / 170 und 200 mm.
4. Select temperature value with control dial (b).

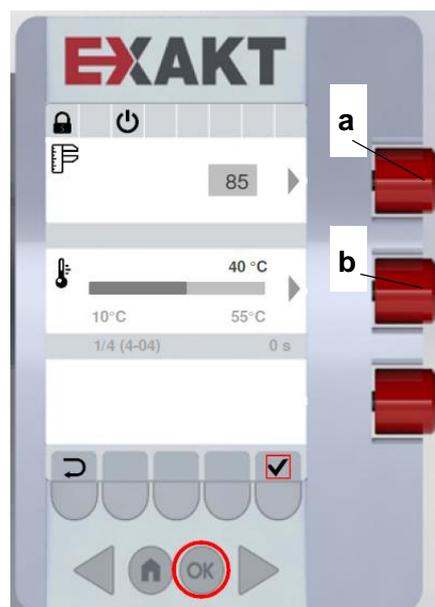


Fig. 96: Setting working width and temperature

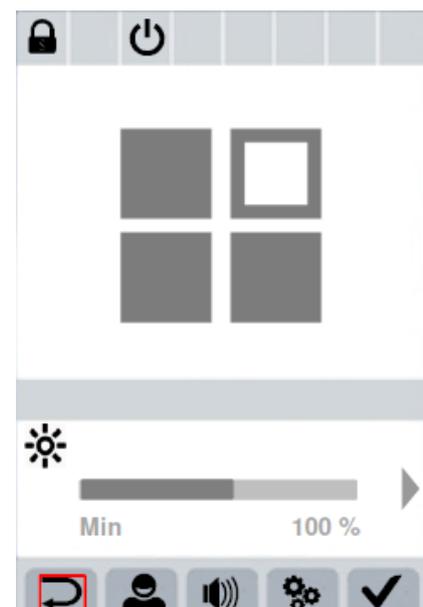


Fig. 97: Back in routine operations

5. Confirm with ✓ or .
6. Back to routine operations with .

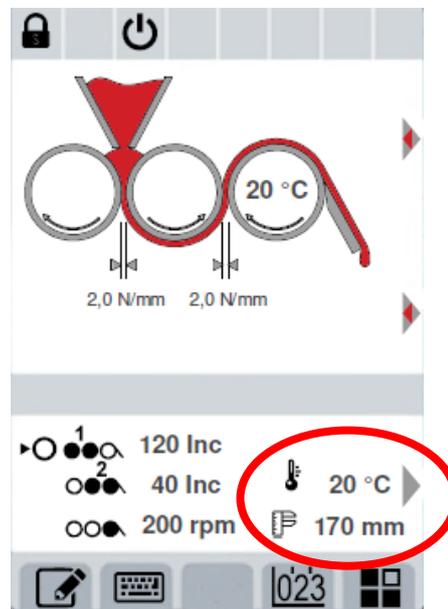


Fig. 98: Display values for working width and temperature setting instruction for external temperature control unit

## 12.7. ROUTINE OPERATIONS

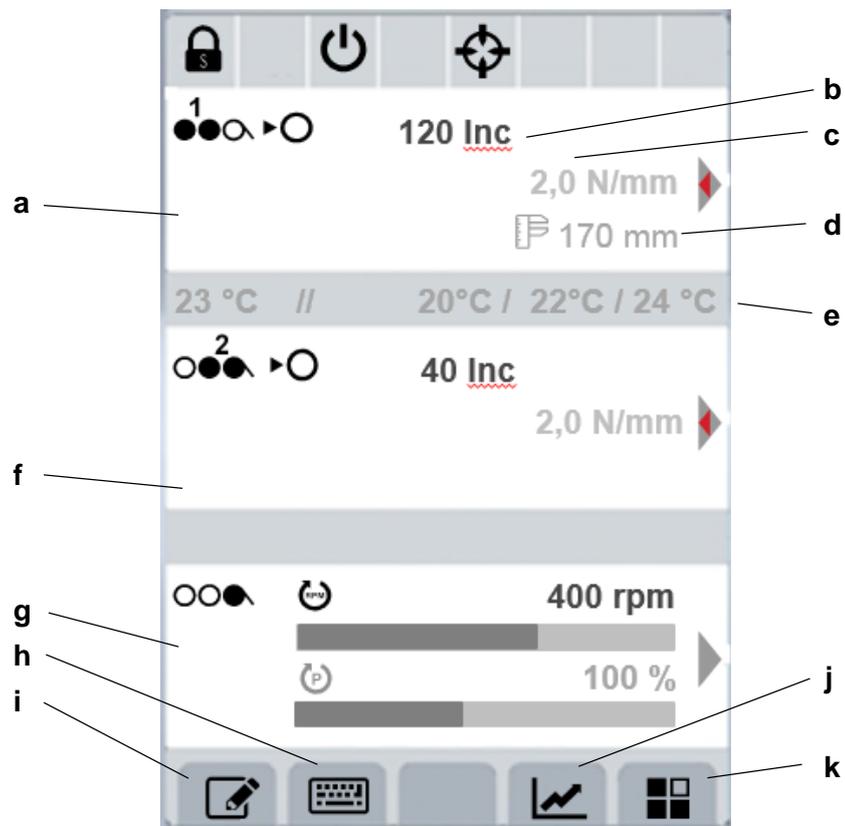


Fig. 99: Display routine operations, numerical view

- |   |                          |   |   |
|---|--------------------------|---|---|
| a | Display gap 1            | h | Program menu  |
| b | Gap width [Inc]          | i | Menu DataLog  |
| c | Line pressure [N/mm]     | j | Display process data, change between graphical, schematic and numeric display |
| d | Settings working width   | k | Settings  |
| e | Temperature display(s)   |   |   |
| f | Display gap 2            |   |   |
| g | Display drive parameters |   |   |

- > Set the desired gap values with control dials 1 and 2 (about how to find the correct gap values see chapter 12.8 Routine operations: Test run with petroleum jelly).
- > Pressing the corresponding control dial toggles between gap mode and force mode.
 

**Note:** In the beginning, only operate in gap mode until you master operation in gap mode securely.
- > Use control dial 3 to set the desired speed. Start with a low speed, e.g. 80 ... 100 rpm.
- > Press start button. Gap widths and speed can be varied during operation.

> By pressing the control keys ,  and  you can switch between graphical, schematic and numeric display. The set parameters remain.

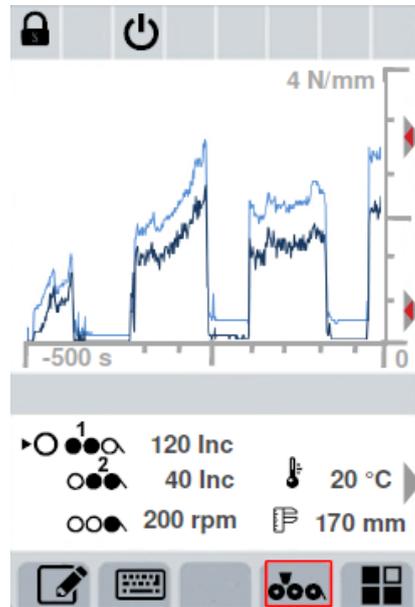


Fig. 100: Graphical display process parameters

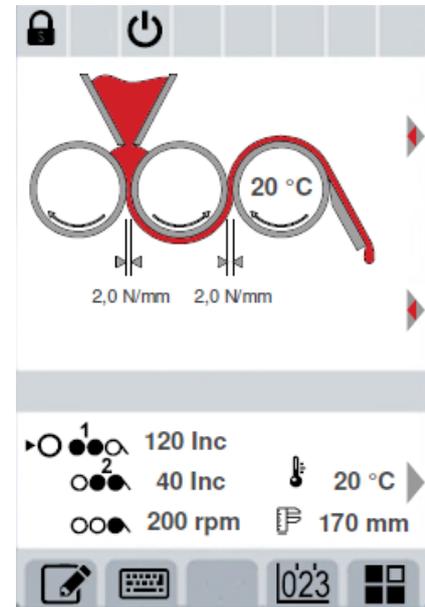


Fig. 101: Schematic display

## 12.8. ROUTINE OPERATIONS: TEST RUN WITH PETROLEUM JELLY

### NOTE

Roller destruction due to incorrect input of the working width (E-models)  
 > In general, program the working width of the used safety device via the operating unit. Else the line force values [N/mm] will not correspond.  
 Danger of roller destruction in force mode.

### NOTE

Roller destruction due to product film too thin or missing  
 > The rollers always need a product film so that the rollers do not run dry on each other and get damaged.  
 > NEVER let the machine run empty uncontrolled or without product in gap mode at gap values **<20 Inc**  
 > In force mode, keep monitoring and ensure that there is always a product film on the rollers. Here, too, avoid uncontrolled running empty of the machine.

### 12.8.1.STEP 1

1. Clean machine housing.
2. Mount splash tray.
3. Mount cleaning guard.
4. Clean machine.
5. Adjust the machine.
6. Select the desired working width (170 mm) via the operating unit.
7. Insert plastic guides 170 mm.
8. Mount safety device for nip gap (170 mm).
9. Change control into routine operations.
10. Gap settings gap 1= 10 Inc; gap 2 = 10 Inc.

### 12.8.2.STEP 2

11. Mount the scraper socket with scraper knife.
12. Supply product with spatula.
13. Start machine with speed 100 rpm.
14. Increase gap 1 step by step until an even product film forms. The gap settings of gap 1 should then be around 30 Inc.



It is important that nip gap and scraper gap are coordinated. The product film should have an even width on all rollers and an even thickness per roller.

The setting ratio from gap 1 to gap 2 should not exceed the value of approx. 8:1 because else a product jam upstream of gap 2 can arise and the product is pushed outward (see 12.8.3 Optimum product flow)

In general, good results can be achieved with a **gap ratio gap 1 : gap 2** of approx. **3:1**.

- 15. Take up the product with the spatula and supply it back to gap 1 (nip gap).



> To remove the product from the scraper system, use a separate spatula so that the finely grates product is not contaminated with raw product.

### 12.8.3.OPTIMUM PRODUCT FLOW

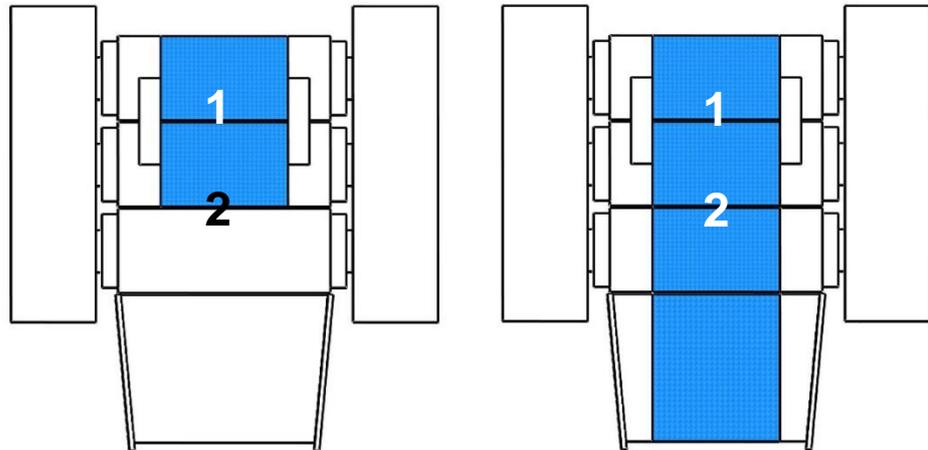


Fig. 102: Gap 1/ gap 2 too small

Fig. 103: Gap 1/ gap 2 good

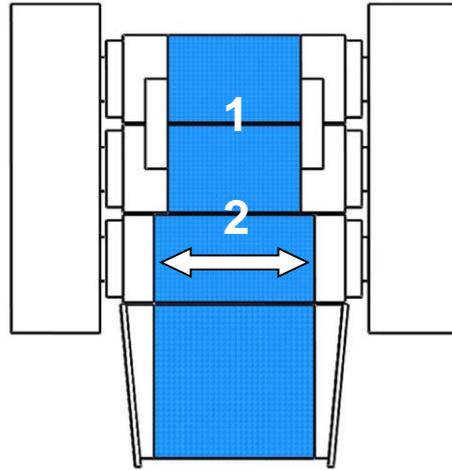


Fig. 104: Ratio gap 1 / gap 2 too large



If gap 2 is set relatively too tight, the product will flow laterally outwards and causes leaks of the plastic guides (working widths 85 mm and 170 mm) because the product is transported back from the center roller back to gap 1 over the newly created width.

With working width 200 mm, the relatively narrow gap 2 causes the product to pass over at the roller edges, possibly the product is darted off by roller 3 in this area.

## 12.9. REVERSE FUNCTION



In reversing mode, the rollers rotate backwards and foreign objects or a product jam can be removed.

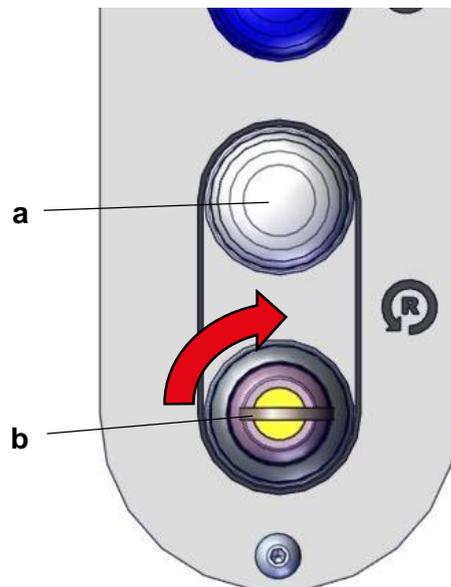


### **WARNING**

Danger of being pulled in by the rollers:

In reversing mode, gap 2 becomes the nip gap. Increased risk of being pulled in because this gap is not covered by a safety device.

- > When working at the machine, pay attention to your hands and fingers.
- > Ensure tight-fitting clothes.



### 12.9.1. SEQUENCE FROM THE CLEANING MODE

- > Splash tray must be mounted.
  - > Cleaning guard is mounted.
1. On the display, select reversing .
  2. Activate key switch **(b)** clockwise.



Fig. 105: Select reversing



Fig. 106: Key switch must be switched

3. Unlock right latch of the cleaning guard (deactivate cleaning mode).



Fig. 107: Display: "Press start button reversing mode"

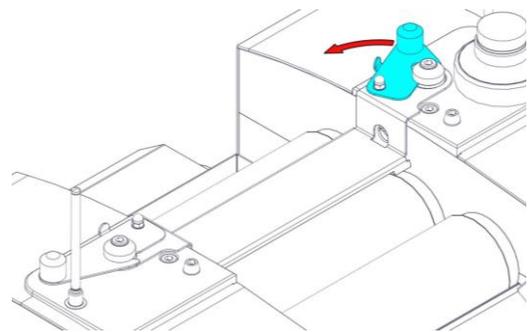


Fig. 108: Deactivating cleaning mode

4. Press start button reversing mode (a).
5. The rollers rotate in reverse at 30 rpm.
6. Remove foreign object out of nip gap (gap 1).
7. Lock key switch counter-clockwise. In that position, the key can be pulled off.
8. Select Back button ↶.
9. Lock right latch of the cleaning guard.
10. Cleaning the rollers.

## 12.9.2. SEQUENCE FROM ROUTINE OPERATIONS

- > Splash tray must be mounted.
- > Safety device at nip gap (gap 1) is mounted.



If a foreign object was pulled in, it can be helpful to mount the safety bridge before reversing, depending on the employed safety bridge.

1. Select menu item Settings .
2. Select Setup .
3. On the display, select reversing .
4. Activate key switch **(b)** clockwise.

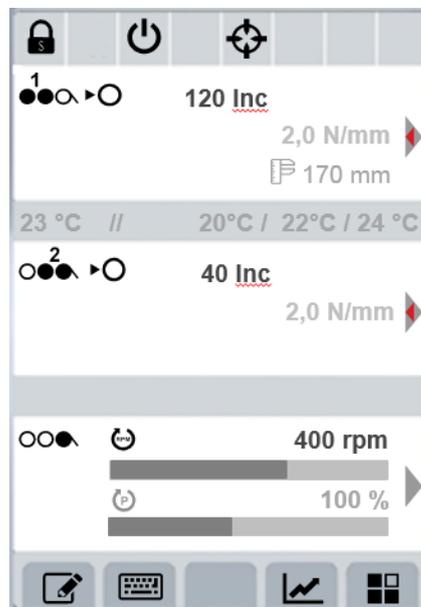


Fig. 109: Select "Settings" / "Setup" / "Reversing"



Fig. 110: Key switch must be switched

5. Press start button reversing mode **(a)**.
6. The rollers rotate in reverse at 30 rpm.
7. Remove foreign object out of nip gap (gap 1).
8. Lock key switch counter-clockwise. In that position, the key can be pulled off.
9. Press Back button  to return to routine operations.

## 12.10. CHECKING THE SAFETY DEVICES



Allen screwdriver 6 mm

### 12.10.1. PREPARING FOR CHECK

1. Dismount scraper. Use knife guard.
2. Mount splash tray.
3. Mount cleaning guard.
4. Press receipt safety button.
5. Select cleaning mode.
6. Start machine at 30 rpm.

### 12.10.2. CHECKS FUNCTIONS



- |  |  |
|--|--|
| 1. Release and swivel off latch of the splash tray.<br>> Machine must stop by itself.<br>> Display splash tray on the display.       |  |
| 2. Lock splash tray again and press receipt safety button.<br>3. Start machine (30 rpm).   |  |
| 4. Release left latch of the cleaning guard and swivel off.<br>> Machine must stop by itself.<br>> Display safety device on display. |  |
| 5. Lock cleaning guard again and press receipt safety button.<br>6. Start machine (30 rpm).  |  |
| 7. Actuate emergency stop button.<br>> Machine must stop by itself.<br>> Display emergency stop on the display.                      |  |
| 8. Unlock emergency stop button and press receipt safety button.<br>> Machine is ready to start.                                     |  |

## 13 MAINTENANCE

EXAKT units are, if operated properly and checked for safety, very reliable and low-maintenance.

To ensure this, the following service and maintenance works must be done in the specified intervals according to maintenance plan.



EXAKT recommends annual maintenance by EXAKT or by a dealer authorized by EXAKT.



### **WARNING**

Danger of scalding:

Danger of scalding or burns at the media and at hot machine parts when handling hot temperature control media.

- > Let machine cool down before maintenance.
- > Disconnect machine from the mains before performing maintenance.
- > Maintenance work must only be performed by persons who are familiar with them, have been instructed about hazards and have the required qualification.



### **CAUTION**

Danger of cuts at the scraper knife.



- > During assembly and handling, always work with plastic knife protection or with knife protection for scraper socket.
- > When working with the scraper socket and scraper knife, wear suitable safety gloves.

## 13.1. CLEANING THE MACHINE HOUSING



### ⚠ CAUTION



When handling chemical substances such as cleaning agents, cooling and temperature control media can cause hazards in case of contact with skin or eyes as well as inhalation.

Provide suitable exhaust and wear safety goggles, safety gloves and protective clothing.



- > When using cleaning agents, provide sufficient ventilation.
- > Observe the safety data sheets of the substances to be processed.
- > Observe the disposal instructions by the respective manufacturers.
- > Observe local safety regulations.

1. Switch off the machine via the main switch.
  2. Do not clean housing parts with aggressive solvents.
  3. Only moisten the dust- and lint-free towel with cleaning agent, do NOT soak.
  4. Clean electric cables and parts made of rubber or EPDM with a moist cloth.
- > Ensure proper disposal of the waste.

### 13.1.1. CLEANING THE DISPLAY OF THE OPERATING UNIT

#### NOTE

Destruction of the housing seal to the display.

In case of heavy soiling, the display surface can be cleaned with solvents such as alcohol, benzene or acetone.

- > In general, only moisten the cleaning towel slightly so that no solvent can damage the seal directly.
- > Keep the contact with solvent as short as possible.

## 14 MAINTENANCE AND CARE

EXAKT units are, if operated properly, very reliable and low-maintenance. To ensure this, the following service and maintenance works must be done in the specified intervals according to maintenance plan.



### **WARNING**

Prior to performing service and maintenance tasks, read the chapter *safety!*

Non-observance of the chapter *Safety* increases the risk of injury.

Maintenance work must only be performed by persons who are familiar with them, have been instructed about hazards and have the required qualification.

> Prior to performing service and maintenance work, disconnect the unit from the mains.



Basically, keep the entire system in a clean state.

## 14.1. SERVICE AND MAINTENANCE PLAN

Schedule	System	Service and maintenance works	Chapter
After each use and product change	Plastic guides Rollers	Check plastic guides for dirt and wear, clean / replace if necessary.	
		Clean rollers and run visual check for wear.	
Weekly	Machine	Clean machine housing.	13.1 Cleaning the machine housing).
	Scraper socket	Check state, replace if necessary.	
	Splash tray	Check state, replace if necessary.	
Every month	Safety devices	Check function of splash tray, function of the employed safety device for nip gap.	12.10 Checking the safety devices
	Emergency stop button	Check function.	12.10 Checking the safety devices
	Reversing button	Check function.	12.9 Reverse function
	Temperature control unit rollers	Check for absence of leaks.	
	Temperature control unit rollers (pressure-less)	Check transparency of the hose of the level indication (return flow trough), replace if necessary.	

Schedule	System	Service and maintenance works	Chapter
1500h / 12 months Maintenance by EXAKT:	Machine	Clean inside.	
	Rollers	Check geometry.	
	Lever mechanics	Check status, check adjustment function	
	Drive belt	Replace, tension.	
	Drive belt for tensioning / deflector pulleys	Replace.	
	Electrical operating materials	Safety check	
	Rotary unit	Check, re-lubricate.	
Every 10 years EXAKT Service	Safety controller and safety sensors, emergency stop button	Replace.	

## 15 TROUBLESHOOTING

Description	Cause	Remedy
Rollers do not rotate or with reduced speed.	EMERGENCY STOP actuated.	Unlock emergency stop button.
	Safety device not or incorrectly mounted.	Check safety device, mount correctly.
	Power supply interrupted.	Switch on main switch, establish power supply, check fuses if necessary.
	Electric assembly group without power supply.	Check fuses, contact Service if necessary.
	Overload of drive.	Switch off drive with stop button. Rectify reason for overload, restart machine after remedy.
	Thermal overload of drive.	Reduce speed. Let machine cool down at standstill.
	Overload due to highly viscous product.	Process product in several passes. Hereby, larger gap values for the first passes. Reduce gap widths stepwise in the subsequent passes.
Noise from the left machine side.	Drive belt insufficiently tensioned or defective.	Tension or let be replaced by EXAKT Service.
	Belt tensioner or deflector pulley worn.	replace / EXAKT Service.
	Toothed wheel defective.	replace / EXAKT Service.
Product fineness decreases. Product is not remove clean.	Rollers damaged.	replace / EXAKT Service.

Description	Cause	Remedy
Product fineness decreases. Product is removed on one side only.	Contact pressure of the scraper system is not set correctly (too low or too high!).	Increase or reduce contact pressure (see chapter 10.5 Adjusting the scraper contact pressure).
	Scraper knife worn.	Replace.
Product is removed on one side only.	Scraper system askew.	Check if all contact surfaces at the support and the scraper are clean and free from deposits, clean if necessary. Mount scraper system correctly.
	Scraper knife worn.	Replace.
	Scraper knife not inserted correctly.	Check scraper knife and scraper bar for dirt. Insert scraper knife all the way to the rear and right stop.
	Roller adjustment not parallel.	Clean machine and adjust machine again. Contact EXAKT Service if necessary.
Product flows below the plastic guides	Plastic guides dirty or worn.	Clean, replace if necessary.
	Sides of plastic guides mismatched.	Blue marker = left side. Black marker = right side

Description	Cause	Remedy
Product diverges laterally on the rollers, possibly beyond the roller ends.	Gap 1 (nip gap) in ratio to gap 2 too large, this causes more product to be pulled in than gap 2 can take over.	Reduce gap width of gap 1 or increase gap width of gap 2.
	Removal behavior of scraper knife not perfect, therefore product jam in gap 2.	Check function of scraper knife and/or scraper system, correct contact pressure if necessary.
	Sealing function of plastic guide not sufficient any more.	Check function of plastic guides, replace if necessary.
Product dries out in the area of the plastic guides.	Evaporation of dispersion agent.	Use solvent dispenser for guide lubrication (optional) (see chapter 7.13.2 Optional accessories).

## 16 SHUTTING DOWN

### 16.1. SHORT-TERM SHUTTING DOWN

- > Cleaning the rollers.
- > Clean and store all accessories.
- > Clean machine housing.
- > If necessary, drain tempering fluid completely.
- > Secure machine against unauthorized switching on (padlock at main switch).
- > Cover machine

### 16.2. LONG-TERM SHUTTING DOWN

- > Cleaning the rollers.
- > Clean and store all accessories.
- > Clean machine housing.
- > If necessary, drain tempering fluid completely.
- > Secure machine against unauthorized switching on (padlock at main switch) or let it be disconnected from mains by a skilled electrician.
- > Cover machine

### 16.3. PUTTING OUT OF OPERATION

- > Cleaning the rollers.
- > Clean all accessories.
- > Clean machine housing.
- > If necessary, drain tempering fluid completely.
- > Let machine be disconnected from mains by a skilled electrician.
- > Dispose of machine properly (see chapter 17.3 Disposing of unit)

## 17 DISPOSAL

### 17.1. DISPOSING OF PACKAGING



The packaging of the machine consists of wood, cardboard and plastic insulation material. For disposal of the packaging, please observe the valid local regulations.

### 17.2. DISPOSING OPERATING MATERIALS AND CLEANING AGENTS



When using operating materials (e.g. tempering fluid) and/or cleaning fluid, observe the corresponding safety data sheets and disposal instructions of the respective manufacturer and the local valid regulations

### 17.3. DISPOSING OF UNIT



Within the EU this symbol indicates that this product is not allowed to be disposed of in household waste at the end of its service life. Old units contain valuable materials that should be sent for recycling to protect the environment and the health of the public against uncontrolled waste disposal. Please therefore dispose of old units via suitable collecting systems or send the unit for disposal to the dealer from whom you purchased it. The dealer will then send the unit for recycling.

Electrically operated equipment is disposed of in accordance with national rules, which are based on the EU directive 2002/96/EC on waste electronic and electrical equipment (WEEE).

In accordance with this directive, equipment in the business-to-business sector, to which this product belongs, supplied after 13.08.2005 is no longer allowed to be disposed of in communal waste disposal systems. During disposal follow the related statutory provisions in your country. As the regulations vary from country to country, we recommend you contact your dealer or supplier if disposal is necessary.

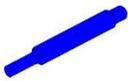
In Germany the marking obligation has been in force since 23.03.2006. The manufacturer must offer an appropriate means of return for all equipment supplied from 13.08.2005.

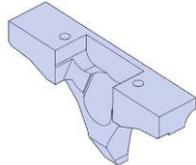
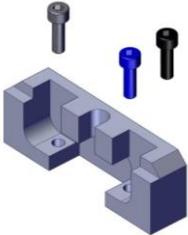
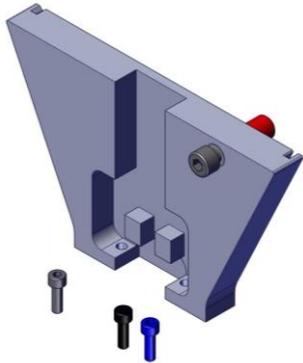
## 18 SPARE AND WEAR PARTS



You can order all spare parts, consumables and accessories from your specialized supplier.

### 18.1. WEAR PARTS 80S PLUS, 80E PLUS

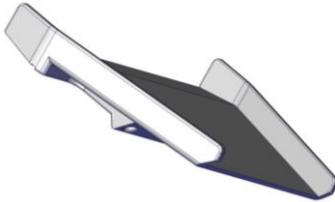
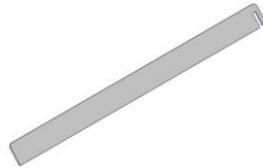
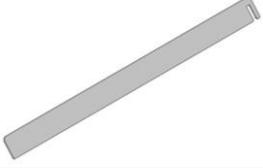
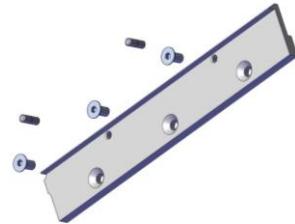
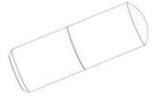
Article number	Description	Quantity
27300	Begrenzungsbacke Plastic guide 	
27305	Federsatz Backenstange, 10Stk. <i>Springs guide shaft, 10pcs.</i> 	
27306	Backenstange 170, blau <i>Guide shaft 170, blue</i> 	
27307	Backenstange 170, schwarz <i>Guide shaft 170, black</i> 	
27308	Backenstange 85, blau <i>Backenstange 85, blau</i> 	
27309	Backenstange 85, schwarz <i>Guide shaft 85, black</i> 	
27320	Abnehmermesser, Metall/ZrO2 (Hybridmesser) <i>Scraper knife, metal/ZrO2 (hybrid knife)</i>	
27325	Abnehmermesser, Solidknife ZrO2 <i>Scraper knife, Solidknife ZrO2</i>	
27330	Abnehmermesser, vernickelt  27330 ist mit einer 45°-Fase markiert (als Unterschied zu 27350) <i>Scraper knife, nickel plated</i>  27330 is marked with a 45°-chamfer (as distinct from 27350)	

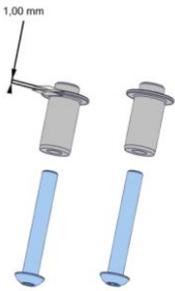
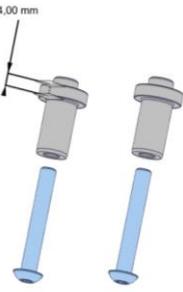
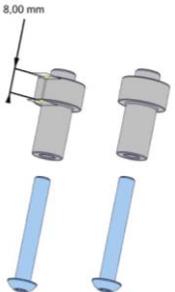
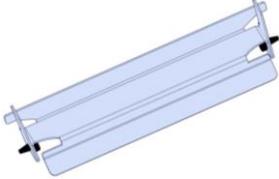
Article number	Description	Quantity
27350	Abnehmermesser, hartverchromt <i>Scraper knife, hard-chrome plated</i>	
27360	Abnehmermesser, PVC, rot <i>Scraper knife, PVC, red</i>	
27370	Abnehmermesser, Epoxy, gelb <i>Scraper knife, epoxy, yellow</i>	
27380	Abnehmermesser, Keramik, ZrO2 <i>Scraper knife, ceramic, ZrO2</i>	
27390	Abnehmermesser, Keramik, Al2O3 <i>Scraper knife, ceramic, Al2O3</i>	
27700	Begrenzungsbacke- Stufenbacke <i>Plastic guide-Shoulder guide</i>	
27701	Aufsatz f. Stufenbacke <i>Top f. plastic-guide</i>	
27702	Aufsatz Stufenbacke, Trichter <i>Top f. plastic-guide, hopper</i>	
27703	Spannkonus Stufenbacke, BG <i>Clamping cone f. shoulder guide</i>	
27715	Spatel weiss, Nip Cover <i>Spatula white, Nip Cover</i>	

Article number	Description		Quantity
19910	Spatel weiss, 185x38 mm, 10Stck. <i>Spatula white, 185x38 mm, 10pcs.</i>		
19911	Spatel weiss, 185x51 mm, 10Stck. <i>Spatula white, 185x51 mm, 10pcs.</i>		
19912	Spatel weiss, 185x76 mm, 10Stck. <i>Spatula white, 185x76 mm, 10pcs.</i>		

## 18.2. SPARE PARTS 80S PLUS, 80E PLUS

Article number	Description	Quantity
B4019	<b>200V-Maschine (US,Jap):</b> Sicherung <b>F401..403</b> 10AT / träge (10Stck.) <b>200V-Machine (US,Jap):</b> fuse <b>F401..403</b> 10AT / time-lag (10pcs.)	
B4020	<b>400V-Maschine (EU):</b> Sicherung <b>F401..403</b> 6,3AT / träge (10Stck.) <b>400V-Machine (EU):</b> fuse <b>F401..403</b> 6,3AT / time-lag (10pcs.)	
B4021	Sicherung <b>F404</b> 2AT / träge (10Stck.) Fuse <b>F404</b> 2AT / time-lag (10pcs.)	
27106	<b>200V Maschine</b> Harting Wandbuchse, 6polig <b>200V machine</b> Harting wall female plug, 6-poles	
27107	<b>200V Maschine</b> Harting Stecker 6-polig <b>200V machine</b> Harting male plug, 6- poles	
27108	<b>400V Maschine</b> Harting Wandbuchse 6polig <b>400V machine</b> Harting wall female plug, 6-poles	
27109	<b>400V Maschine</b> Harting Stecker, 6- polig <b>400V machine</b> Harting male plug, 6- poles	

Article number	Description	Quantity
27341	Abnehmersockel, eloxiert <i>Scraper socket, anodized</i>	
27342	Abnehmersockel, PFA <i>Scraper socket, PFA</i>	
27391	Klemmstreifen 1mm für Abnehmermesser <i>Adaptor 1mm for scraper knife</i>	
27392	Klemmstreifen 2mm für Abnehmermesser <i>Adaptor 2mm for scraper knife</i>	
27393	Abnehmerleiste für Solid knife, schwarz <i>Scraper bar for Solid knife, black</i>	
27394	Abnehmerleiste, silber <i>Scraper bar, silver</i>	
27395	Rändelschraube M5, Abnehmerleiste (10x) <i>Knurled screw M5, scraper bar (10x)</i>	 <b>10x</b>

Article number	Description	Quantity
27397	<p>Abnehmerstift 1mm / 110° (2x) incl. 2 Schrauben M5x35. <i>Scraper bolt 1mm / 110° (2x) incl. 2 screws M5x35</i></p> 	
27398	<p>Abnehmerstift 4mm / 115° (2x) incl. 2 Schrauben M5x35. <i>Scraper bolt 4mm / 115° (2x) incl. 2 screws M5x35.</i></p> 	
27399	<p>Abnehmerstift 8mm / 120° (2x) incl. 2 Schrauben M5x35. <i>Scraper bolt 8mm / 120° (2x) incl. 2 screws M5x35.</i></p> 	
27349	<p>Messerschutz BG <i>Knife guard assembly</i></p> 	
B2748	<p>Gummi-Zargenpuffer 5mm, schwarz <i>Rubber buffer 5mm, black</i></p> 	
27516	<p>Schlauch OD6x1x500mm, transparent für Füllstandanzeige Rücklaufwanne (Drucklose Kühlung) <i>Hose OD 6x1x500mm, transparent for level control and overflow (pressure-less temperature control)</i></p>	
14250	<p>Schutzhaube <i>Protective Cover</i></p>	

## 19 CONFORMITY CHECK

### 19.1. CHECKING THE CONFORMITY



Only operate the machine after personnel authorized by EXAKT have performed the installation and instruction.

During installation and instruction, the corresponding installation and instruction checklists are worked off.

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## 21 ANNEX

### 21.1. WARRANTY CONDITIONS

Manufacturer's warranty becomes void in case of improper use:

- > Non-observance of this manual.
- > Assigning non-qualified personnel.
- > Unauthorized modifications to the unit and its components.

The manufacturer is not liable for resulting damage.

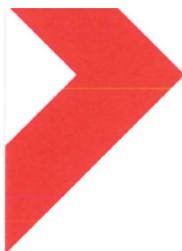
#### NOTE

Impairment of unit function due to using incorrect spare parts or operating materials; the manufacturer warranty becomes void!

When using not approved spare parts or operating materials, the unit function is not ensured, warranty becomes void.

Only use original or EXAKT-approved spare parts and operating materials.

## 21.2. DECLARATION OF CONFORMITY


**EXAKT**

### EC Declaration of Conformity

within the meaning of the  
EC Machinery Directive (2006/42/EC)

**EXAKT Advanced Technologies GmbH**  
Robert-Koch-Str. 5  
D-22851 Norderstedt, Germany  
Telephone: +49 40 529 560-0

We herewith declare that, based on its construction and design, the machine described in the following as well as the version thereof released by ourselves commercially, corresponds to all the safety and health requirements of the relevant EU Guideline.

In the event of modifications of the machine not approved by us this certificate loses its validity.

Designation of the machine:

**Three Roll Mill 80E Plus**

Serial number: from 1010  
Year of construction: from 2016

The machine also complies with all regulations of the EMC Directive (2014/30/EC) and the EC Low Voltage Directive (2014/35/EG).

Applied harmonized standards:

DIN EN ISO 14121-1:(2007), EN ISO 12100-2:2003, EN ISO 12100-2:2003  
EN 13849-1:2006, EN 954-1

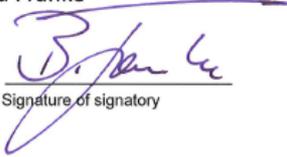
DIN EN 55014-1:05.2012, FCC 15:09.2001, DIN EN 55014-2:06.2009, DIN EN 61000-3-2:03.2010,  
EN 61000-3-3:03.2014, DIN EN 61000-4-2:12.2009, DIN EN 61000-4-3:04.2011,  
DIN EN 61000-4-4:04.2013, DIN EN 61000-4-5:07.2013, DIN EN 61000-4-6:08.2014,  
DIN EN 61000-4-11:02.2005, DIN EN 61000-6-3: 09.2011  
EN 60 335-1, EN 60 204-1  
VDE 0701

The product complies with the requirements of the German Equipment Safety Law (GSG).

**Authorized documentation representative: Bernd Franke**

Address of the Authorized documentation representative: See above  
Norderstedt,

08.03.2017 Bernd Franke CEO  
Date Signatory and details

  
Signature of signatory

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Amtsgericht Norderstedt HRB 5001 · Geschäftsführer: Bernd Franke · Hamburger Sparkasse (BLZ 200 505 50) · Konto Nr. (intl. a/c no.) 1051 213 583  
IBAN: DE21 2005 0550 1051 2135 83 · S.W. .F.T. Code (BIC): HASPDE3333







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