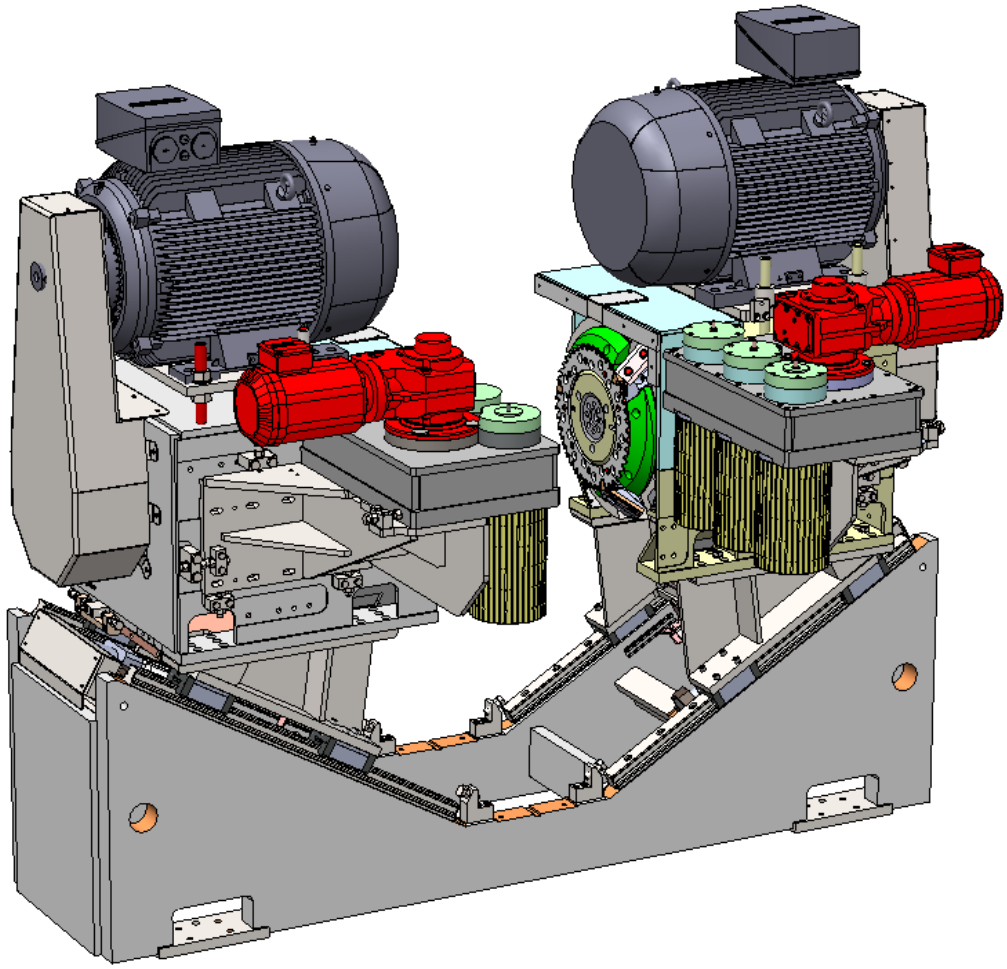
# Operating manual

## Chipping canter with outfeedrolls

### LCA 420-SLT

**Manufacturing year 2022**



# Introduction

These operating instructions are intended for operating personnel.

In this operating manual are also components, facilities and ancillaries described, which are not or only partially included in the scope of delivery.

The operating manual must be read, understood and observed by the operating personnel. We would like to point out that we do not assume any liability for damage and malfunctions resulting from non-compliance with the operating instructions.

We reserve the right to make technical changes to the illustrations and information in these operating instructions that are necessary to improve the system.

# Copyright



# Machine manufacturer

**Lindex GmbH**

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**Germany**

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# List of Figures

# 1. About these operating instructions

**ATTENTION**

All general descriptions on the topic *About these operating instructions* can be found in the operating instructions of the line!

These also apply to these operating instructions!

## 1.1. Change history and applicable documents

**ATTENTION**



| Date | Modification | Title |
|---|---|---|
| 2022 | Original operating instructions | Lindex |

*1 Change history*

| Document | Creator |
|---|---|
| Safety Instructions and Warnings | Lindex |
| Canter head CCH-420-3-SA-4-x-LK1-L | Lindex |

*2 Applicable Documents*

## 1.2. Content of this document

It is divided into the following sections:

- 1. About these operating instructions
- 2. Safety
- 3. Technical specifications
- 4. Process description
- 5. Assembly
- 6. Service
- 7. Maintenance
- 8. Appendix

You can read each section independently to use this guide as a reference.

# 2. Safety

**ATTENTION**

All general descriptions on the subject of safety can be found in the safety and warning notices.

These also apply to these operating instructions!

## 2.1. Intended Use

The machine and system is for the processing, handling and cutting of wood, mainly softwood such as spruce, fir and pine.

The processing of other materials is prohibited without consulting the manufacturer. Materials other than wood can destroy the system, cause significant damage, generate toxic vapors and dust, and cause unforeseeable risks of accidents and operational hazards.

The system is built according to the state of the art and the recognized safety regulations. Nevertheless, their use can result in danger to life and limb for the user or third parties or damage to the system and other property.

The operator must ensure that the system is only operated in a technically perfect condition and as intended, in compliance with the operating instructions. In particular, faults that can impair safety must be eliminated immediately.

Intended use also includes observing the operating instructions and complying with the inspection and maintenance conditions.

The system may only be used, serviced and repaired by operating personnel who are familiar with it and have been informed of the dangers.

## 2.2. Improper use

**WARNING**

**Danger from improper use!**

- Any use of the machine that goes beyond the intended use can lead to dangerous situations!
- Use the machine only as intended!

The information in the operating instructions must be observed.

Movable protective devices that are not firmly locked/fastened must not be opened while the system is running.

Protective devices must not be removed or manipulated, even if they prevent the required view of the process.

Protective devices must be reinstalled after necessary repairs.

Safety switches must not be rendered ineffective. Only suppress the system when it is at a standstill.

It is recommended that a start-up warning signal be given when the "Warn" and "Start" commands are not necessarily sequentially coupled, especially when the view of the plant is obstructed.

## 2.3. Residual risk

**WARNING**

**Danger from residual risks on the machine!**

- Despite all technical protective measures, not all hazards can be eliminated!
- The operating personnel must be instructed about the remaining residual risks!

## 2.3.1. Securing the machineslides

**DANGER**

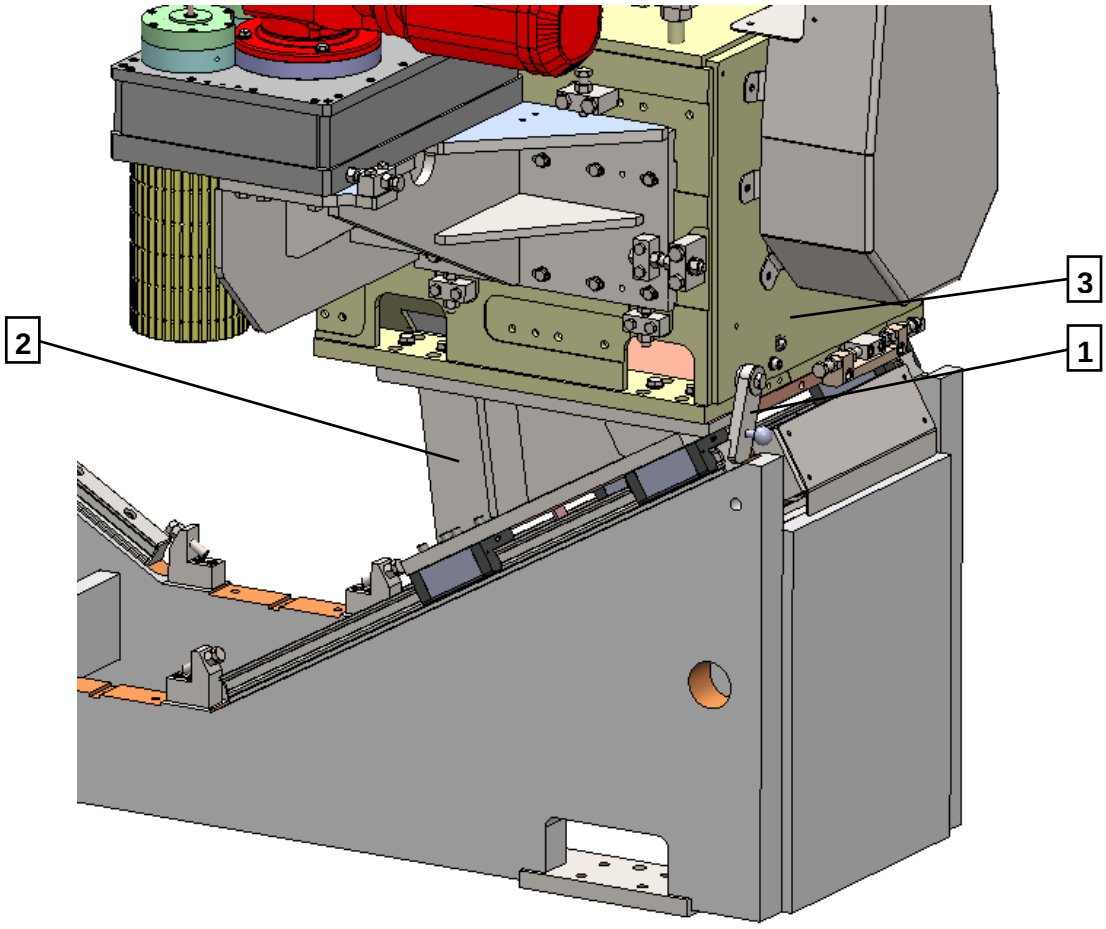
**Danger to life and crushing if the machine slides could slide down!**

When the machine is turned off, the slides (2) are mechanically held in place by the spindle drive. However, if the spindle drive or servo motor is defective, the slide can move down by its own weight!

If possible, do not stand between inside the machine during maintenance work!

Before starting work between slides, e.g. on the canter heads, move the slides to the upper end position and secure there with the locking bar (1).

If this is not possible, support the slides a stable support and secure them against slipping!




*3 Securing the guide tables*

- **1** safety latch
- **2** management table
- **3** safety latch sensor

ATTENTION: The safety latch sensor (3) switches off the machine as soon as the safety bar is folded out to protect people and the machine.

# 2.4. Personal protective equipment

**IMPORTANT**

The operator must provide the necessary personal protective equipment for safe work processes!

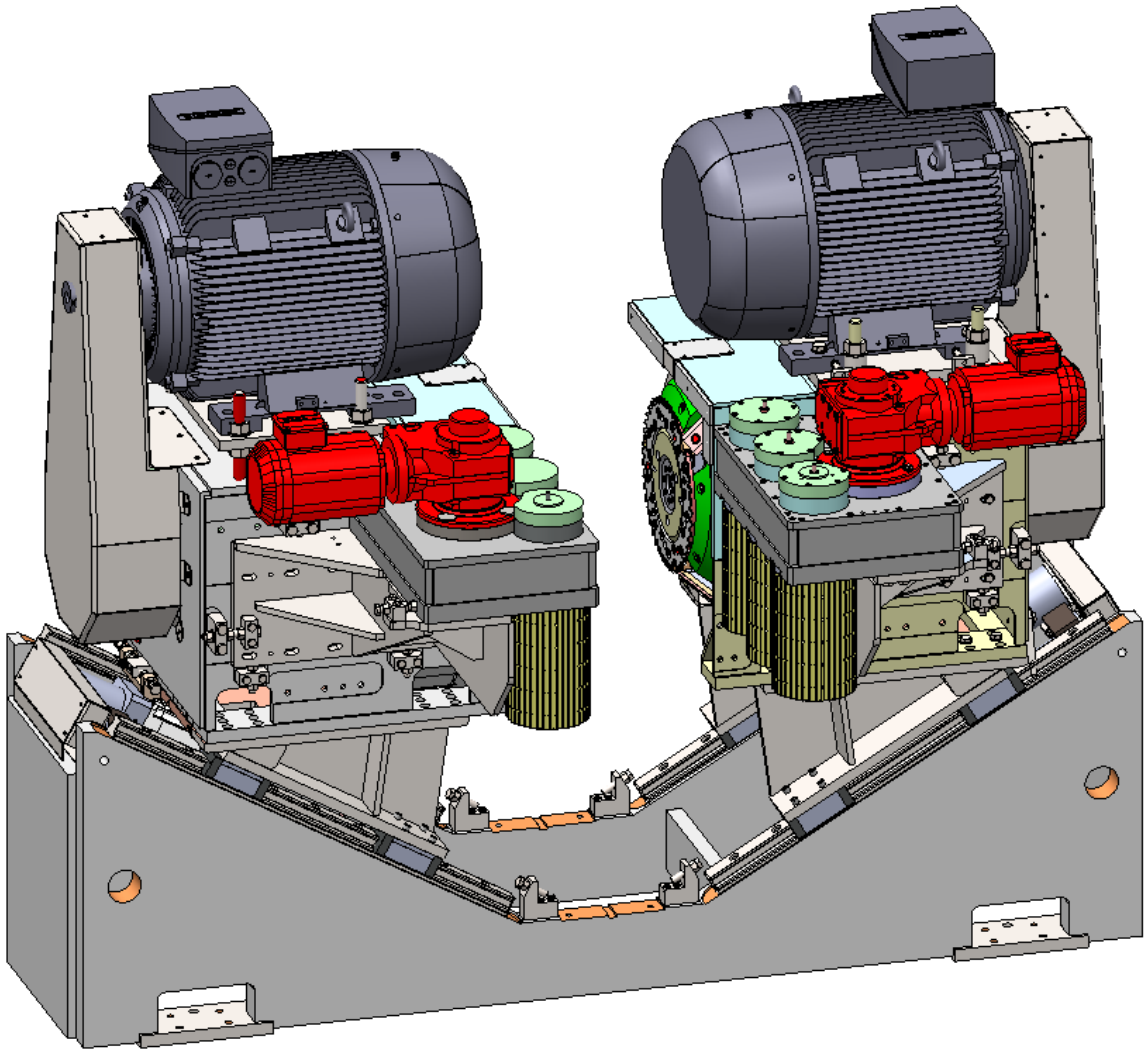
| | | |
|---|---|---|
| Head protection must be worn for cleaning, fault and maintenance work as well as for troubleshooting.  | Wear gloves.  | Safety shoes must be worn in the entire machine/system area.  |
| Wear close-fitting protective clothing.  | Eye protection must be worn for cleaning work that generates a lot of dust and for maintenance cutting and grinding work.  | Breathing protection must be worn for cleaning work that generates large amounts of dust.  |
| Liquid-tight protective gloves must be worn when working on the hydraulic system  . | Safety goggles with side protection must be worn when working on the hydraulic system.  | Hearing protection must be worn in the entire machine/system area.  |

*4 Personal protective equipment*

# 3. Technical specifications

## 3.1. Chipping canter with outfeed rolls

### 3.1.1. Technical data



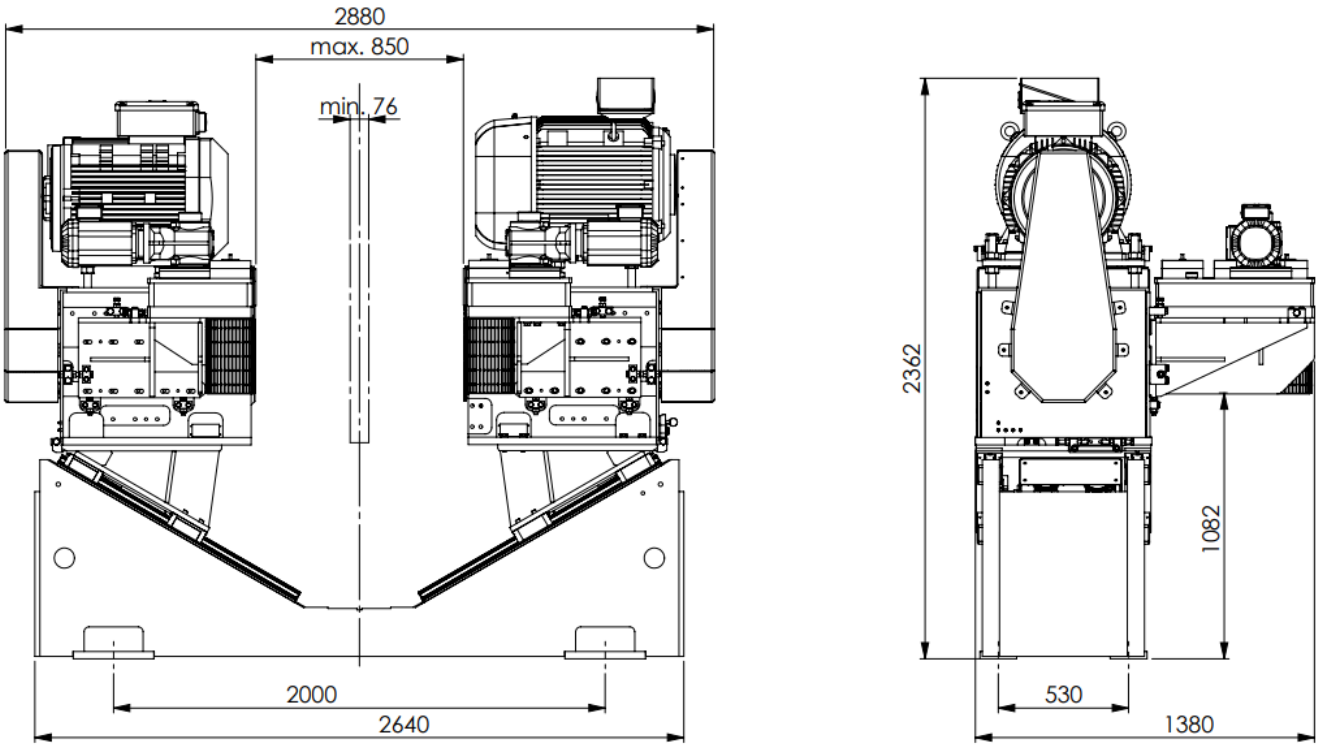
*5 Plant layout*

### 3.1.2. Technical specifications

| Designation | Data |
|---|---|
| Manufacturer | Lindex GmbH, Am Sportplatz 13<br>74420 Oberrot, Germany |
| Machine | Profile chipper with extension |
| Type | LCA 420-SLT |
| Manufacturing year | 2022 |

| | |
|---|---|
| Weight | 6120 Kg |
| Sound pressure dB(A) | < 70 |
| Ambient temperature [°C] | -10 bis 40 |
| Humidity max [%] | 75 |
| Cycle time number of models max. (line dependent) | max. 5 |
| Opening of the rollers | 850 mm |
| Passage (depending on the configuration) | max. 850 mm |
| Feed rate: | 20 m/min - max. 60 m/min |
| Control voltage | 24 V DC |
| Gear motor outfeed rolls SEW | |
| Drive power | 2 x 2,2 kW |
| Tension | 460 V |
| Frequency | 60 Hz |
| RPM | variable |
| Drive motor (shredder head) EMZ | |
| Drive power | 2 x 75 kW |
| Tension | 460 V |
| Frequency | 60 Hz |
| RPM | variable |
| Servo motor Schneider 1 on each side | |
| Drive torque | 18,5 Nm |
| Tension | 480 V |
| Frequency | 60 Hz |
| Rotational speed | variable |

### 3.1.2.1. Clean and lubricate linear guides




*7 Machine dimensions*

### 3.1.3. Exposure to noise

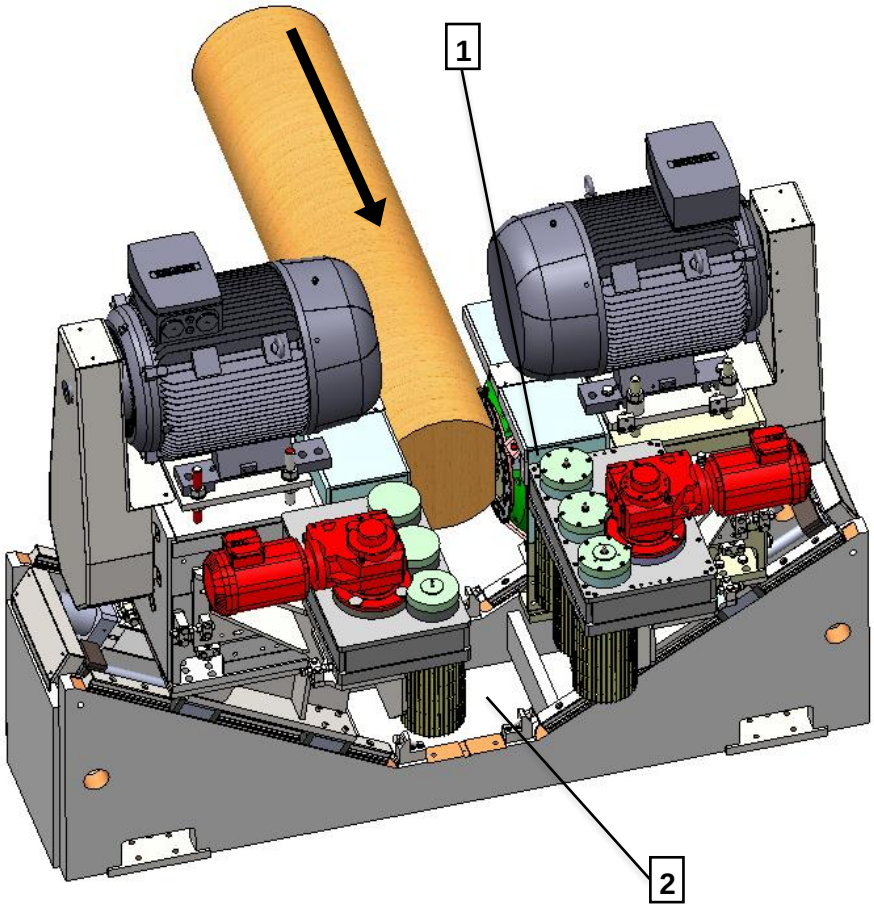
The A-weighted emission sound pressure level of the machine is LpA < 80 db(A).

### 3.1.4. Purpose of the machine

The chipping canter processes logs on two opposite sides and at the same time creates two rough sawn surfaces running parallel to each other. At the same time, the chipping heads produce wood chips.

The width adjustment of the machine is infinitely variable via threaded spindles and servomotors. The desired width is set via the central control .

After the wood has passed through the finishing process, the outfeed rolls  feed the cant forward.



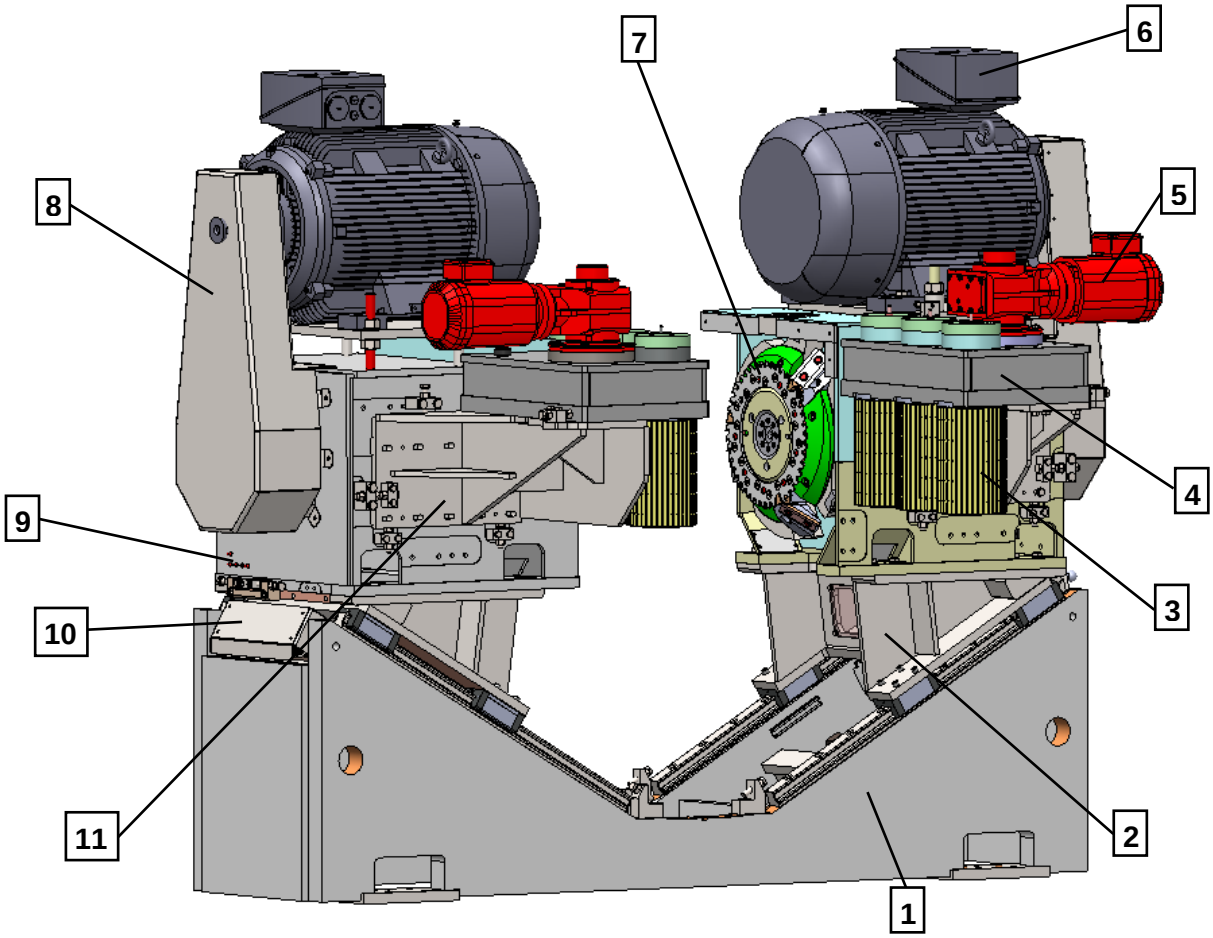

*8 Operation of the machine*

- **1** canterunit with chipping heads

  **2** Outfeed rolls

### 3.1.5. Structure of the machine

The most important components of the machine are shown in the following overview.



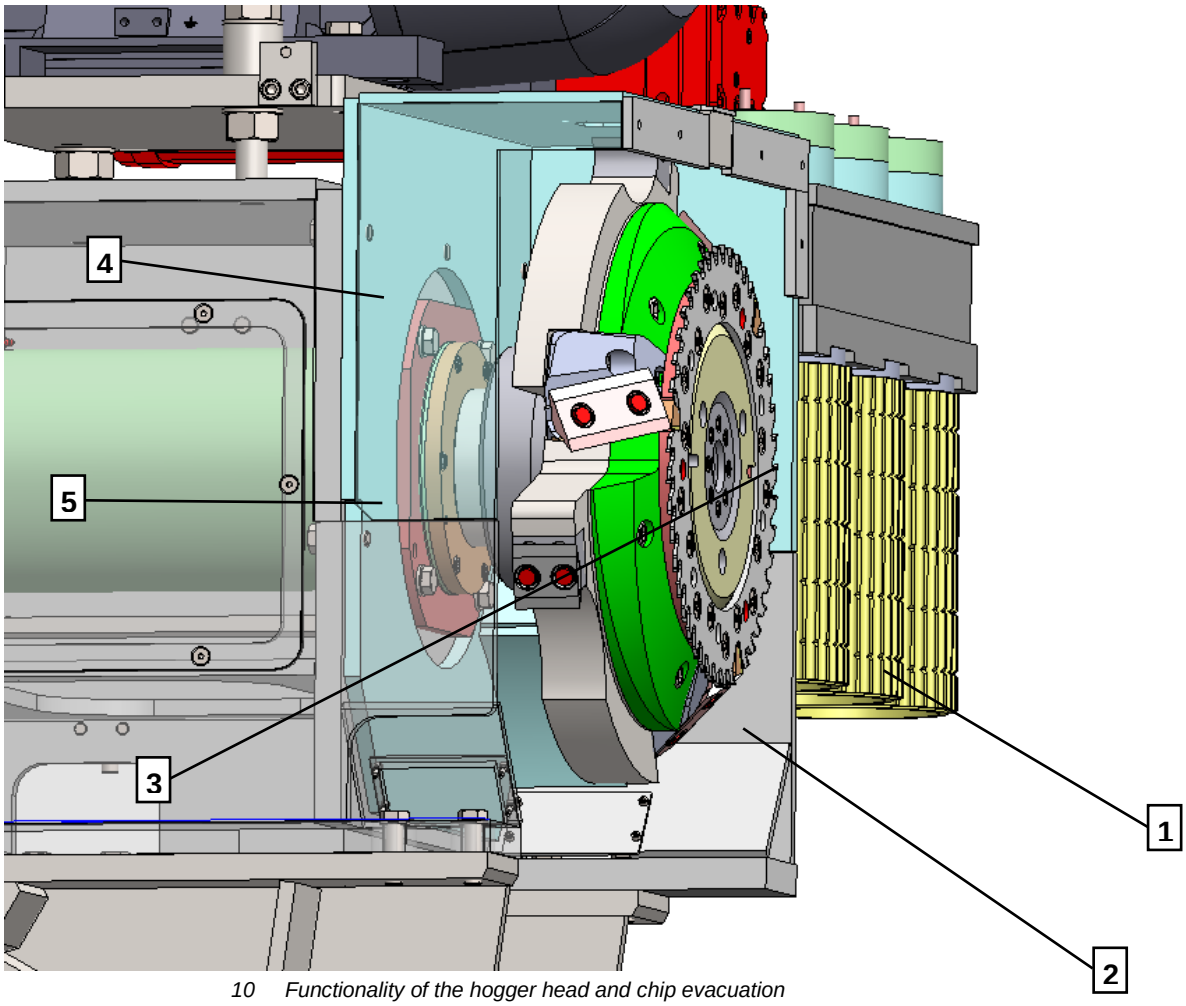

*9 Components profile hogger with extension*

- **1** Machine base frame
- **2** machine slides
- **3** Outfeed rollers
- **4** roller gear box
- **5** geared motor
- **6** Drive motor for chipping head
- **7** Chipping head
- **8** Belt drive chipping head
- **9** grease nipples for linear guides 7x
- **10** Belt drive servoelectric setworks
- **11** Console out feed rolls

### 3.1.6. Description of the chipping head and chip shroud.

- The chipping head carries the chipping knives and the finishing saws and, with the guide plate in the center, also serves as a wood guide. The wood chips are discharged to the bottom.

- The chipping head bearing is equipped with heavy roller bearings. They absorb the radial and axial forces from the drive or., he friction and pressure forces occurring on the chipping head. The machine slides with cutter head bearing housing mounted on them are both motor consoles s for the main drive motors .
-




*10 Functionality of the hogger head and chip evacuation*

- **1** Chipping head
- **2** Shroud
- **3** Shroud
- **4** Housing
- **5** Knife head bearing

## 3.2. Structure of the chipping head

**ATTENTION**

The description and structure of the chipping head, as well as the maintenance and safety instructions can be found in the separate document:
*shredder head CCH-420-3-SA-4-x-LK-L.*

The information given there also applies to these operating instructions!

The maintenance of the guide plate mounted on the chipping head can be found in chapter 7 of these instructions.

# 4. Process description

**ATTENTION**

All general descriptions on the topic of process description can be found in the operating instructions for the chipper line!

These also apply to these operating instructions!

# 5. Assembly

**ATTENTION**

All general descriptions on the subject of assembly can be found in the operating instructions for the chipper line!

These also apply to these operating instructions!

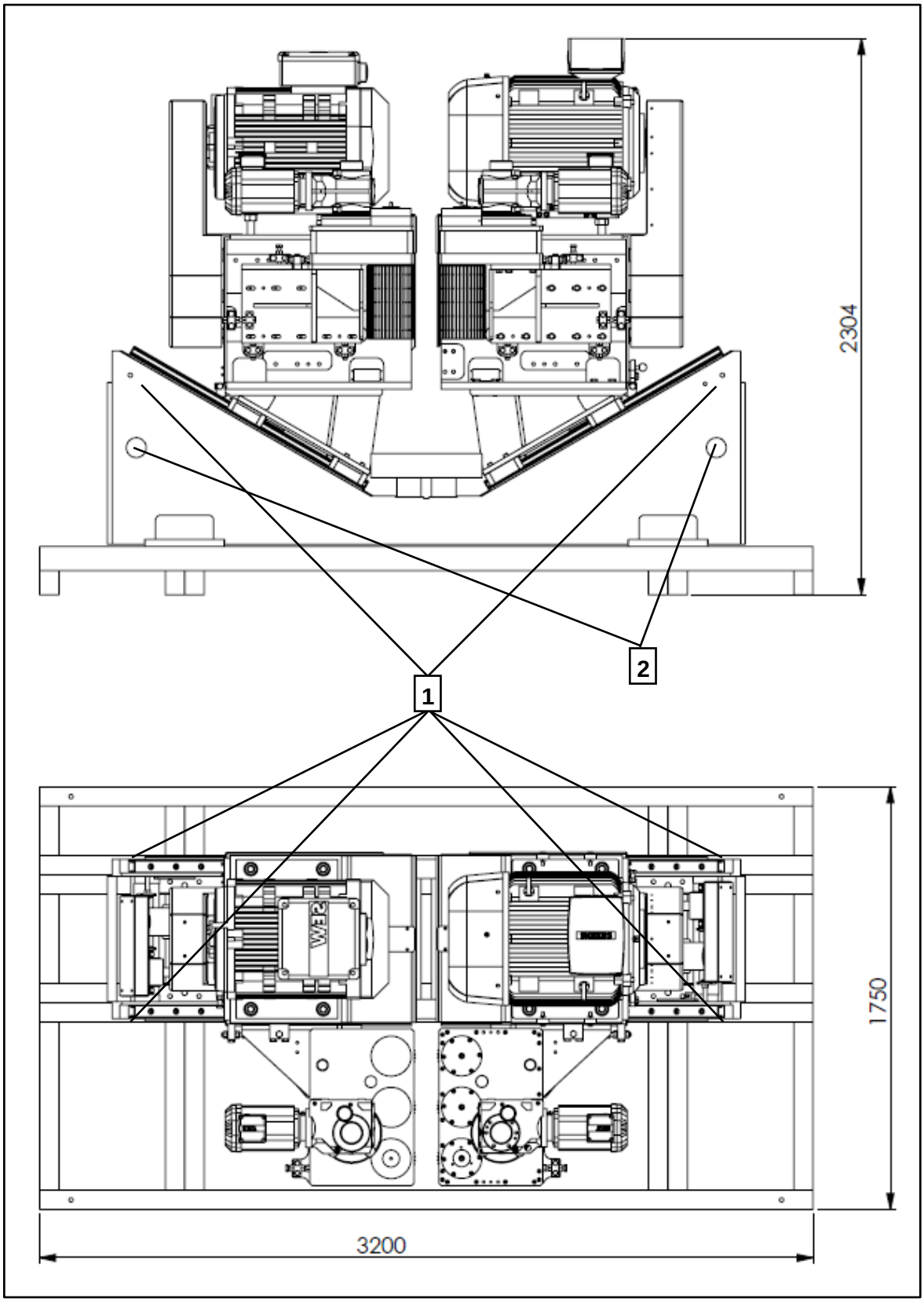
## 5.1. Transport

### 5.2. Transport by crane

**WARNING**

**The general regulations for operating cranes apply. The machine should only be lifted by trained persons.**

- Make sure that the lifting crane has a lifting capacity of at least 7 tons.
- Use slings with a lifting capacity of at least 5 tons.
- Attach the loops to the threaded holes provided on the base frame (see transport sketch) using lifting eyes so that the machine hangs horizontally. Pay attention to edge protection.
- Then lift the machine slowly at first under constant observation. The machine must be level when lifting, if not, stop lifting. Then check the type of attachment and the length of the slings (belts or chains). Also observe the behavior of the hoists. These must not be twisted, crushed, bent or placed in a forced position.




*11 Pack dimensions and attachment points for transport loops*

- **1** Threaded holes for M24 Swivel Eyelets
- **2** Alternatively 2x Ø 80 mm Insert the shaft into the respective hole

# 6. Service

**ATTENTION**

All general descriptions on the subject of operation can be found in the operating instructions for the chipper line!

These also apply to these operating instructions!

## 6.1. Operating modes

### 6.2. Automatic mode

In automatic mode, the machine is operated from a central workstation

### 6.3. Manual operation

Manual operation is only required in the event of faults or maintenance work on individual components.

This can also be done at on-site desks.

# 7. Maintenance

**ATTENTION**

All general descriptions on the subject of maintenance can be found in the operating instructions for the chipper line!

These also apply to these operating instructions!

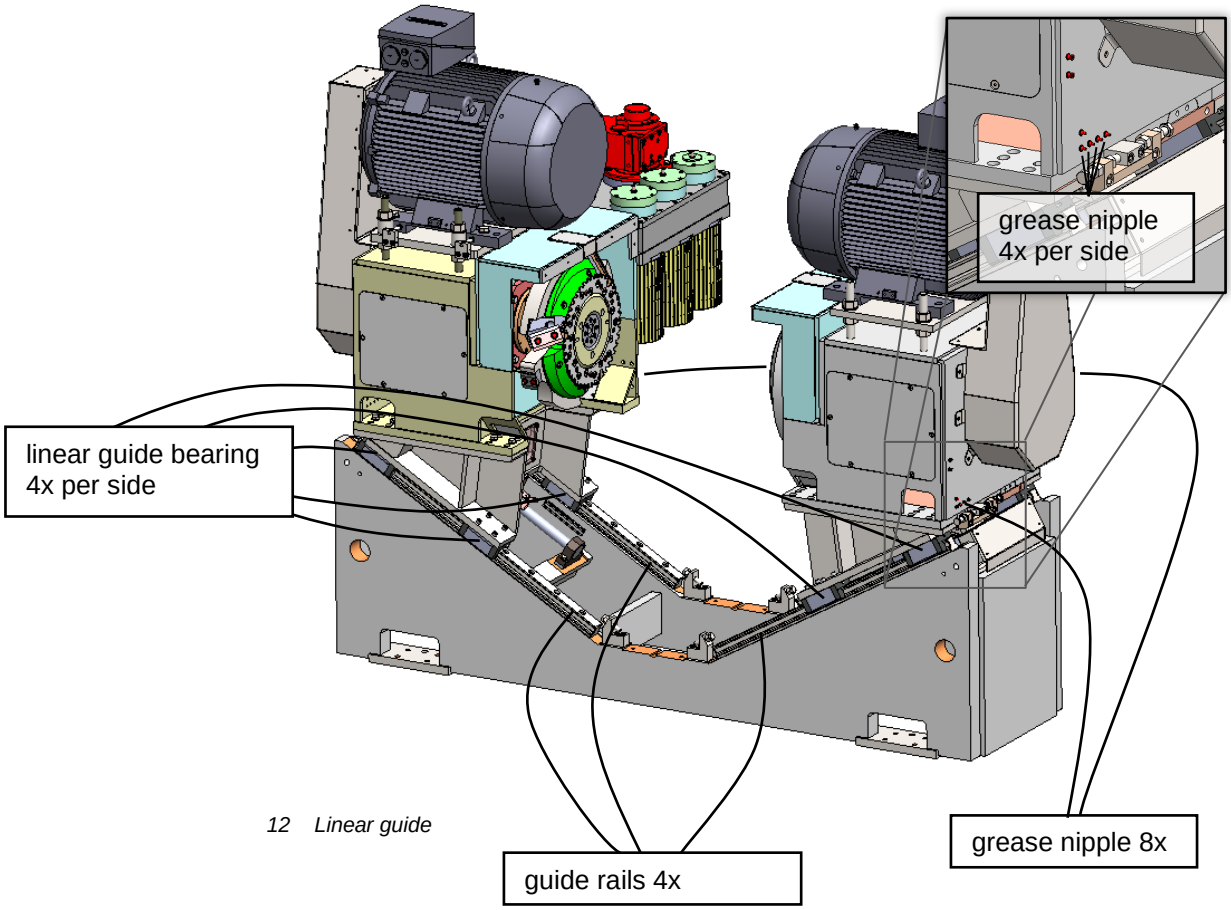
## 7.1. Maintenance

### 7.1.1. Maintenance daily

#### 7.1.1.1. Clean and grease linear guides

The guide tables are mounted on the guide rails via linear ball bearings.

- Clean the guide rails daily.
- Grease the guide rails thinly after each cleaning.



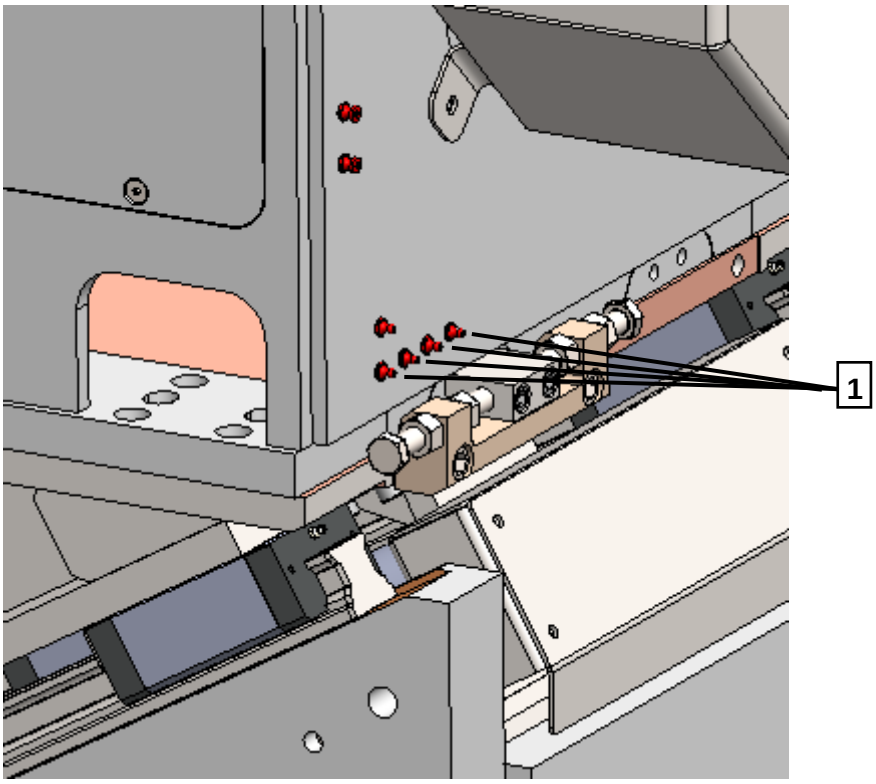

*12 Linear guide*

## 7.1.2. Maintenance weekly

### 7.1.2.1. Grease the linear guide bearing (grease classifiocation KP2K-30)

Re-grease all linear guide bearings weekly at their respective side-mounted grease nipples.

- Amount of grease : 2 strokes of a grease gun (20 g)



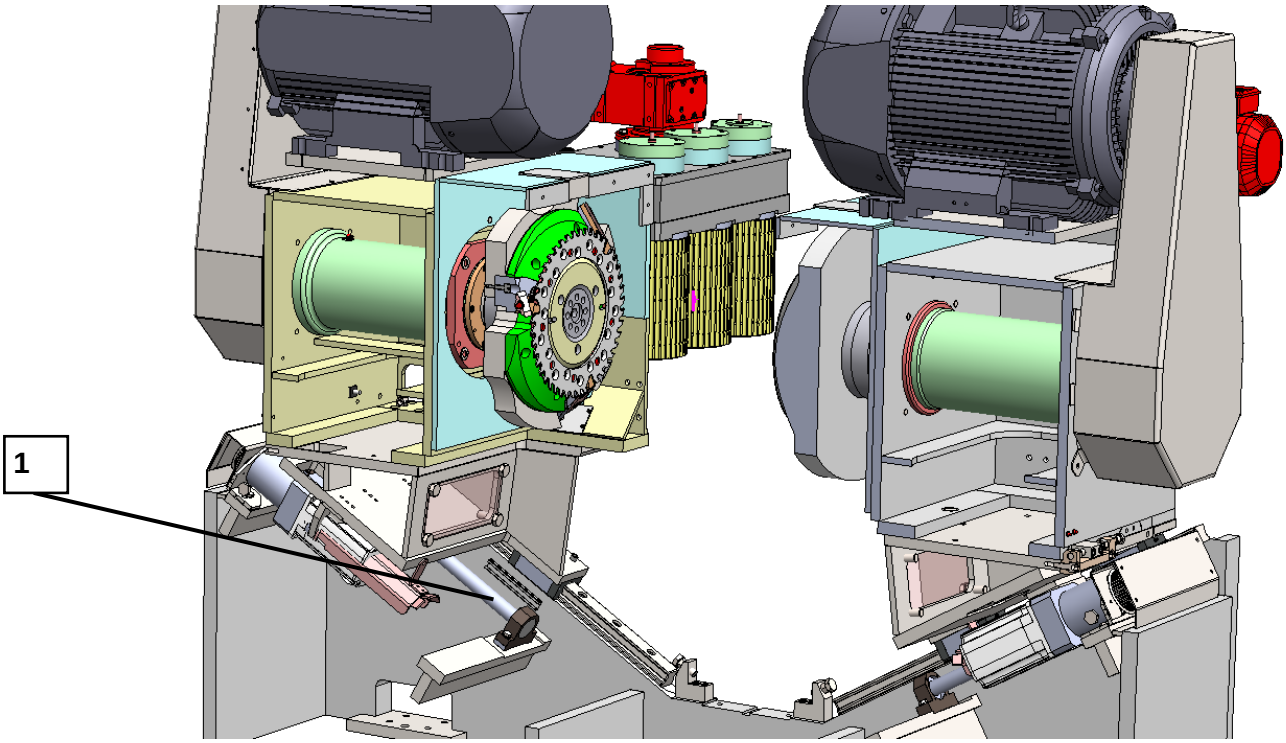

*13 Grease the linear guide*

- **1** Grease nipple linear guide bearing 4x per side

### 7.1.2.2. Grease the spindle nut e.g. (grease classification KP2K-30)

The machine slides move via a mounted spindle nut and are moved or adjusted e.g. the spindle drive.

- Grease the spindle nut weekly at the grease nipples attached to the side.
- Amount of grease: 1 stroke of a grease gun (10 g)




*14 Grease the spindle nut*

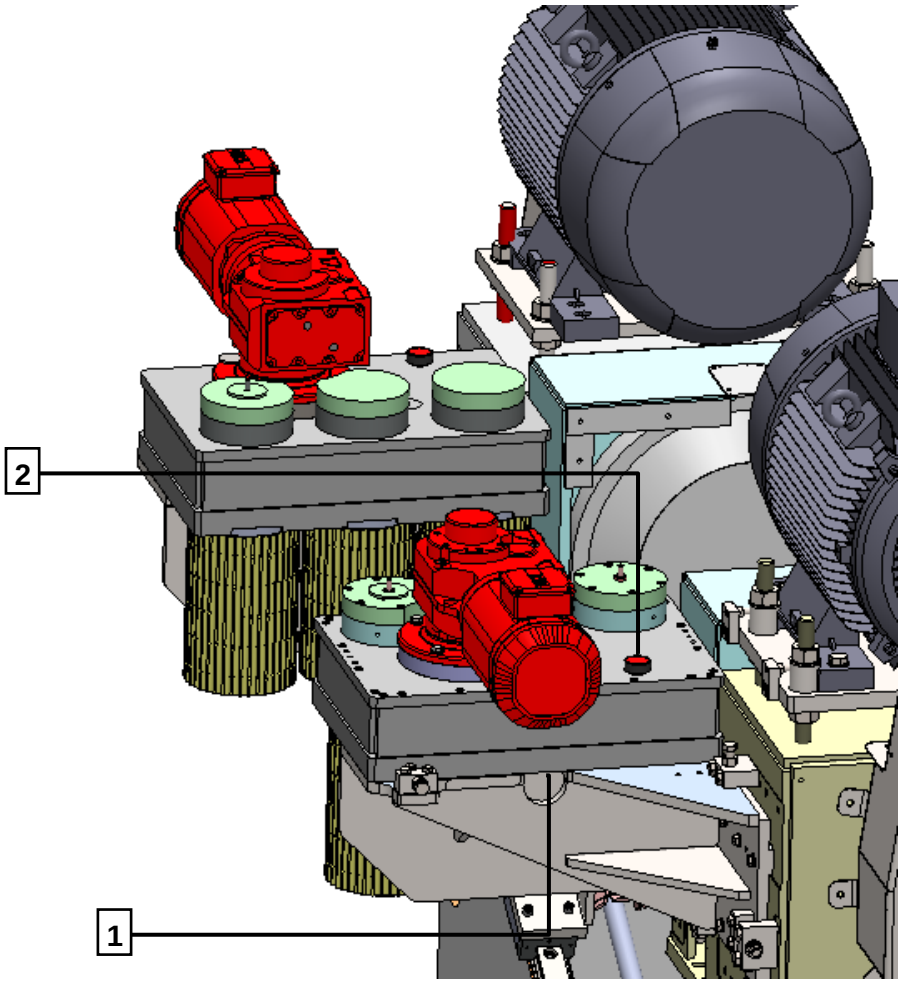
- **1** Grease nipple spindle nut 1x per side

### 7.1.2.3. Check the outfeedroller gear oil level (oil classification clp 220)

The gears boxes are filled with 10 liters of 220 gear oil.

Check the oil level weekly using the oil dipstick and top up if necessary.

If there is a significant loss of oil, the person responsible for repairs must be informed.




*15 Check gear oil*

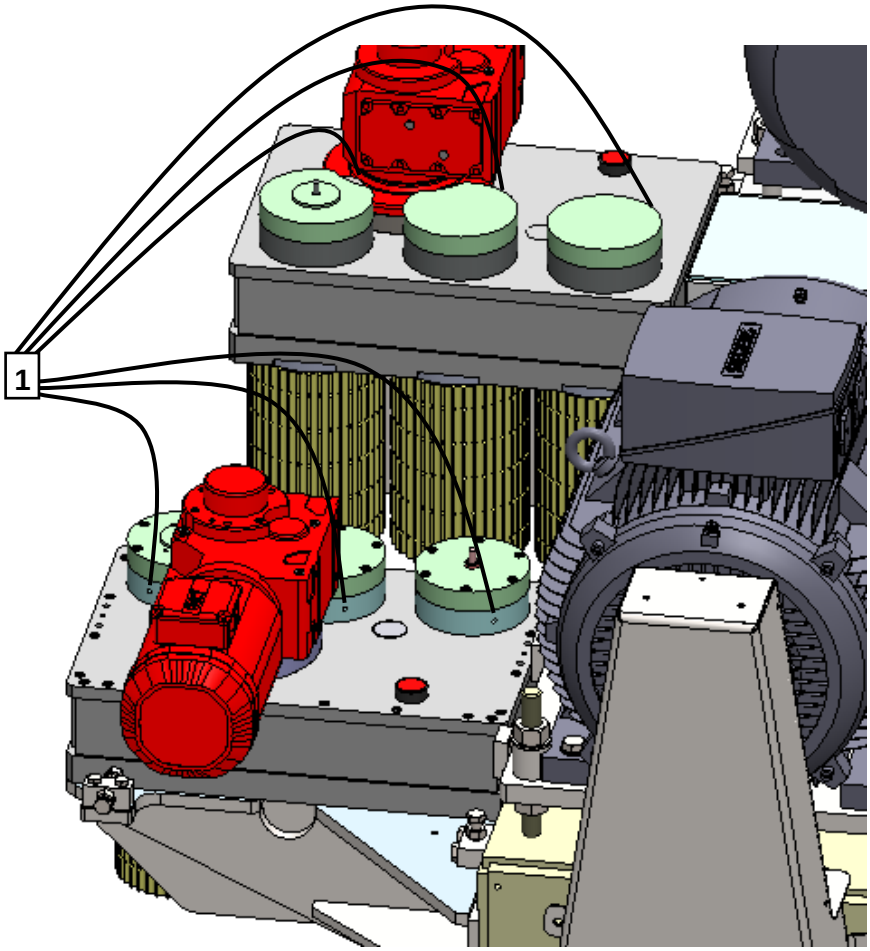
- **1** Oil drain plug 1x per side
- **2** Oil dipstick and filler opening 1x per side

### 7.1.3. Maintenance bi-weekly

#### 7.1.3.1. Grease outfeed roll top bearing (grease classification KP2K-30)

The rollers on the outfeed are mounted on spherical roller bearings.

- Grease the spherical roller bearings every two weeks at the grease nipples attached to the side.
- Amount of grease: 1 Hub (10 g)



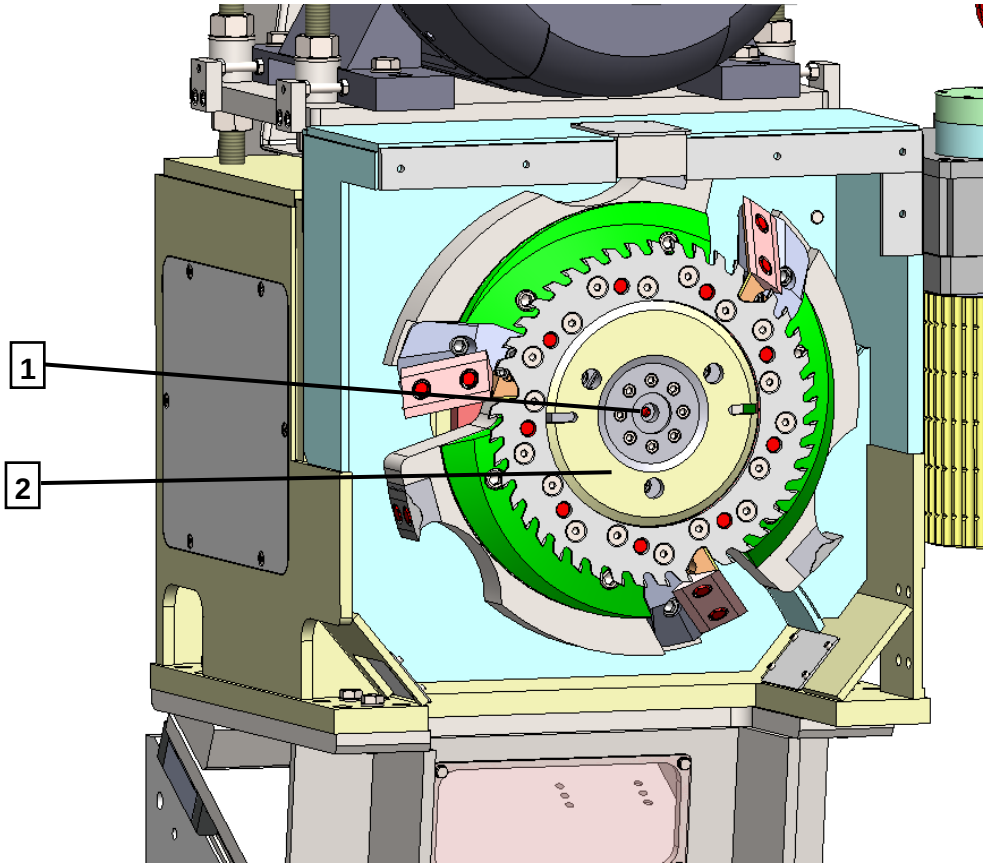

*16 Grease outfeed roller bearing*

- **1** Grease nipple roller bearing 6x

### 7.1.3.2. Grease the chipping head guide plate bearing (grease classification KP2K-30)

The chipping heads are each equipped with a rotating guide plate in the middle for guiding the wood. This is located in the center of the chipping head.

- Grease the guide plate bearing at the centrically attached lubricating nipples every two weeks.
- Amount of grease: 1 Hub (10 g)




*17 Grease the guide plate on the shredder head*

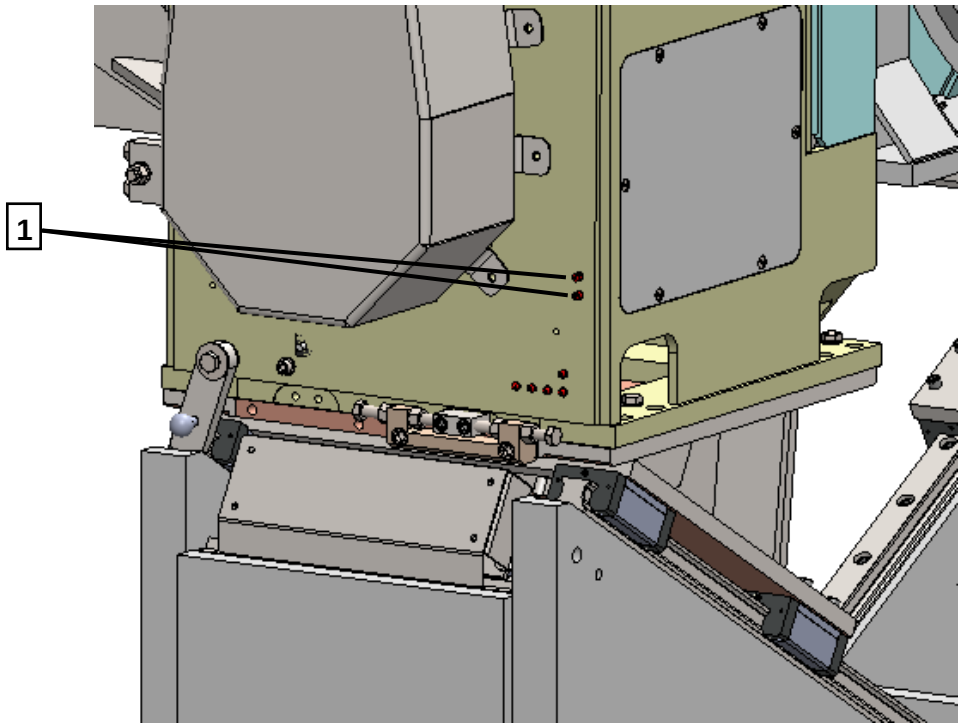
- **1** Grease nipple plate bearing 1x per chipping head
- **2** guide plate

### 7.1.4. Maintenance every 6000 hours

#### 7.1.4.1. Grease the chipping head shaft bearing (grease classification KP2N-20)

The chipping heads are each mounted on a shaft which is mounted in the bearing housing with 2 bearings.

- Grease the chipping head shaft bearing at the grease nipples attached to the side.
- Amount of grease: 50 g per grease nipple.




*18 Lubricate the chipper head shaft bearing*

- **1** Grease nipple shaft bearing 2x per side

### 7.1.5. Maintenance every 600 hours.

#### 7.1.5.1. Check roller diameter and alignment

Check rollers for wear every 600 hours. The rollers can be reversed if they are too worn and can continue to be used..
See section *7.2.3. Rotate or exchange the outfeed rollers.*

Check the alignment of the chipping heads and the outfeed rollers.
See section 7.2.5. Alignment of *chipping head* and *pull-out unit.*

**ATTENTION**

Operation with incorrect positioning of the chipping heads or outfeed rollers can lead to yield losses and process disruptions .

# 7.2. Repair

- ## 7.2.1. General

**WARNING**

**Severe injuries due to improper shutdown of the system!**

- Before starting the repair work, shut down the system, interrupt the power supply (electrical, hydraulic, pneumatic) and secure it against being switched on again!
- Depressurize hydraulic systems/pneumatic systems, pay attention to existing pressure accumulators!

**ATTENTION**

Before starting the repair work, observe Chapter 2 Safety, in particular Sections 2.3. residual risk and 2.3.1. Secure the guide tables!

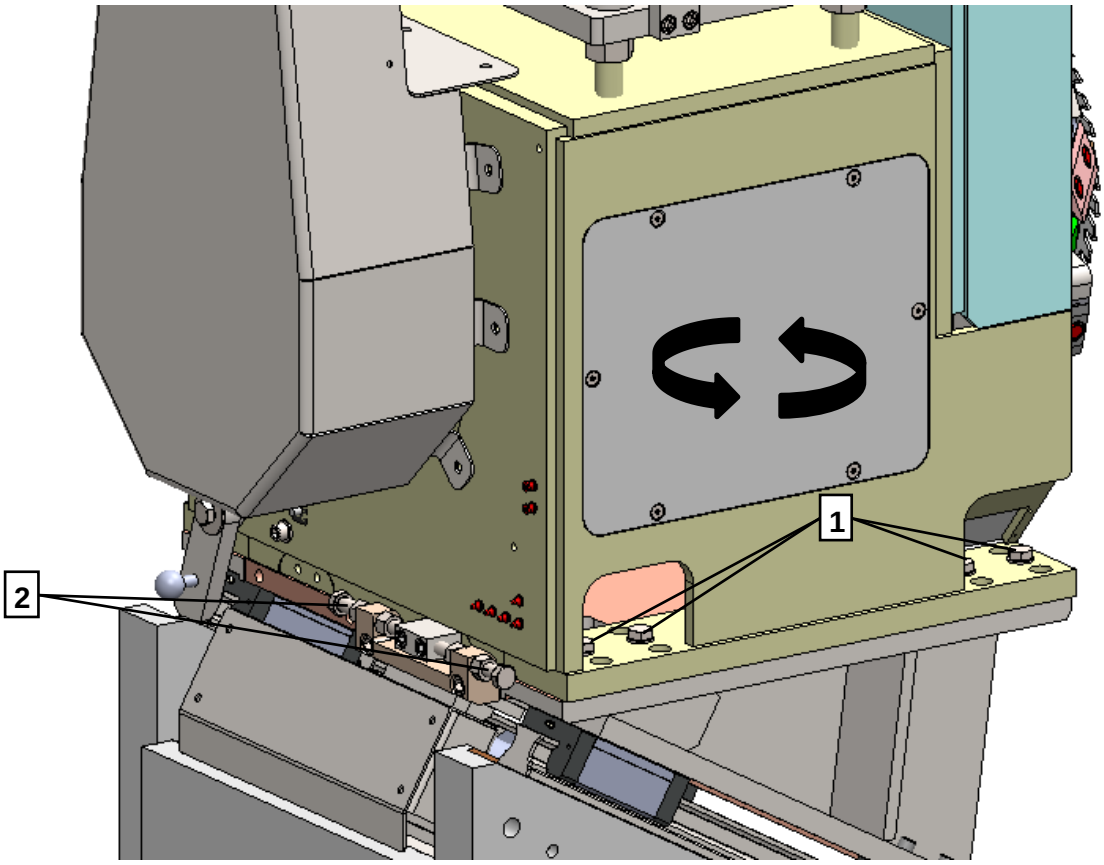
The instructions contained therein must always be observed!

- ## 7.2.2. Aligning the chipper heads

After a period of operation, the chipping heads may need to be realigned. The chipping heads are aligned by turning the housing horizontally on the guide carriage.

See section *7.2.6. Alignment of chipping heads and pull-out unit.*

For alignment, the hexagonal screws (1) on the housing are loosened towards the guide table. (Caution! Do not unscrew completely!)
Then the alignment of the chipping heads can be adjusted using the adjusting screws (2). Then tighten the fastening screws (1) with Nm and fix the adjusting screws with the lock nuts.

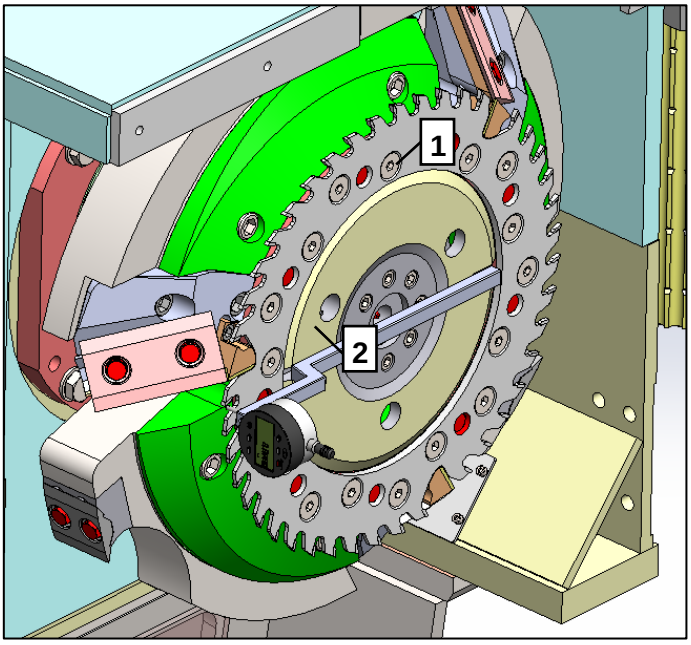



*19 Align the canter head*

- **1** Mounting screws
- **2** Adjustment screws

### 7.2.3. Alignment of the guide plate on the chipping head.

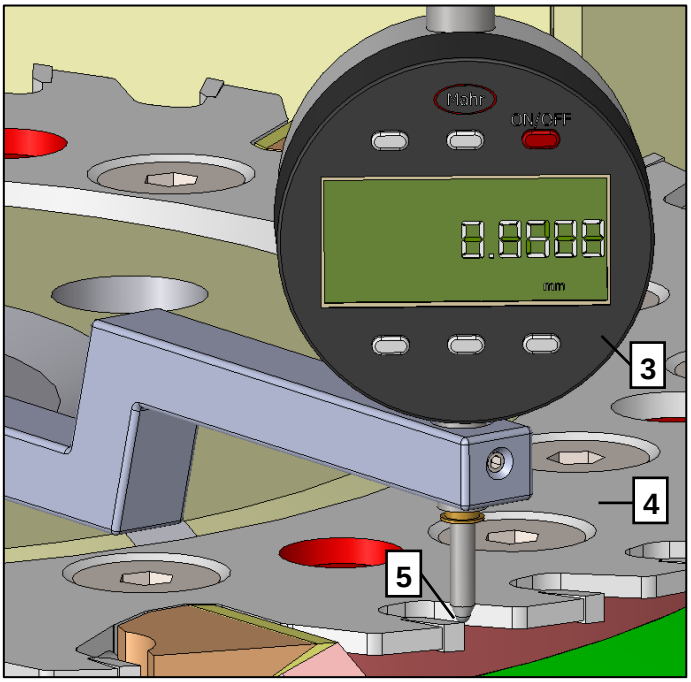
The height of the guide plate (1) is checked with a measuring device and a dial gauge (2).




*20 Measure and adjust the chipper head guide plate*

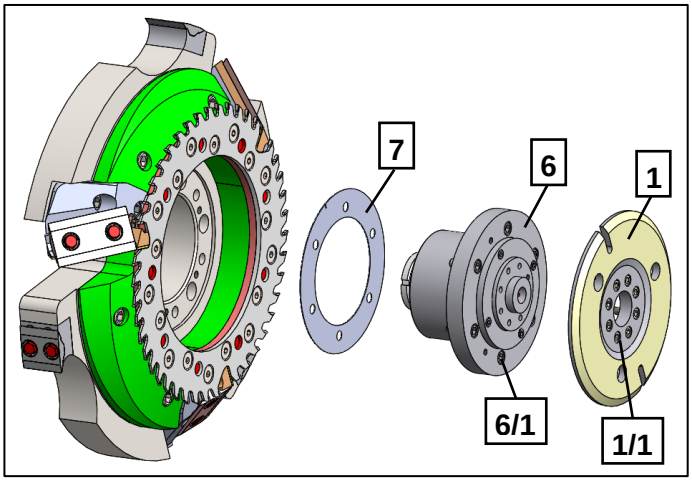
To do this, the measuring gauge is placed flat on the guide plate and moved until the dial gauge (3) touches a toothed edge of the saw blade (4) at the outermost point (5). Make sure that the flat surface of the gauge does not rest on the saw blade.

The dimension should be in the range of ±0.1mm.



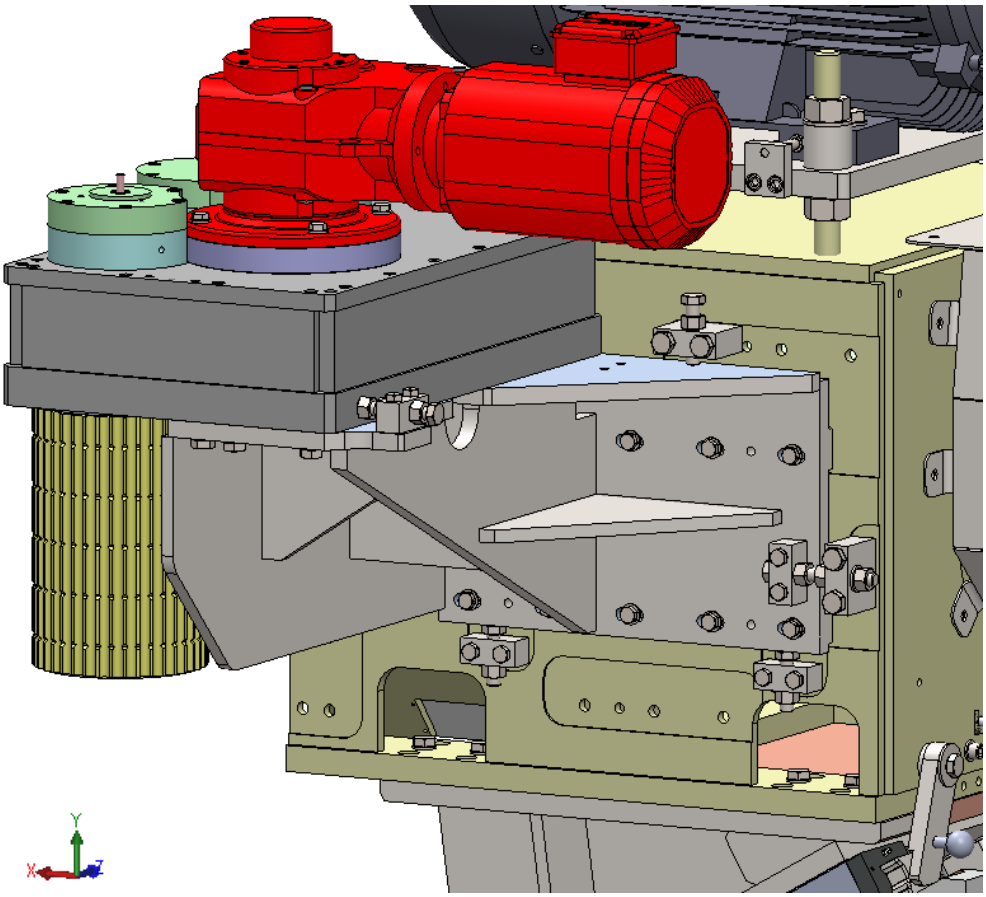

If the dimension deviates, it can be adjusted Using shims (7).
Dimensions for shims are
0.1; 0.2; 0.5; 1.0mm.

To do this, use the guide plate (1)
→ 8 x M10 screws **(1/1)**
and the bearing housing **(6)**
→ 6 x M12 screws **(6/1)**
dismantle.



### 7.2.4. Alignment of the outfeed rollers

The alignment of the outfeed rollers in the X-Y direction can be adjusted using the adjusting screws (2) attached to the console (1). To do this, the 9 x M12 hexagonal screws (3) on the console are first loosened by 1 turn (Caution! Do not unscrew completely!). Then tighten the fastening screws (3) with Nm and fix the adjusting screws with the counter nuts.

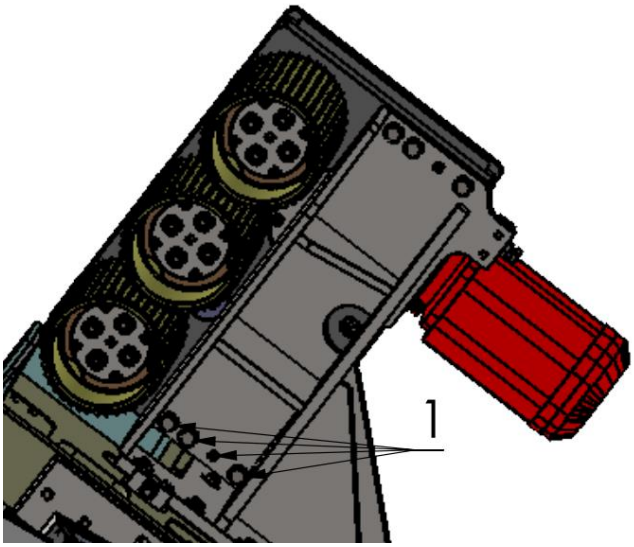



*Attitude*

- 1 9x M12 Hex bolt
- 2 adjustment screw
- 3 6x M16 Hex bolt

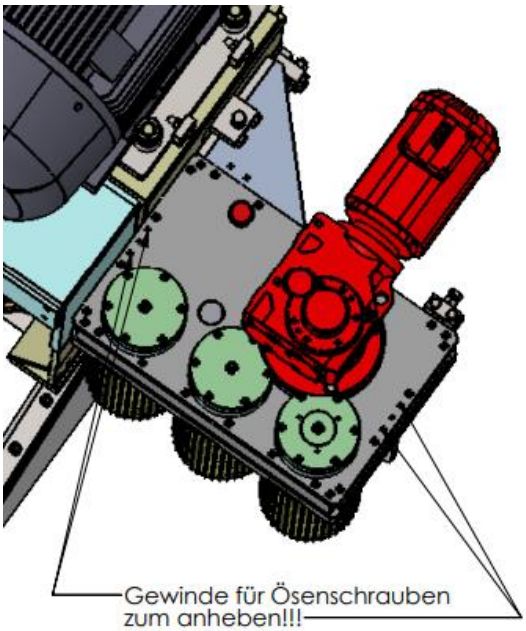
### 7.2.5. Rotate or exchange the outfeed rollers

The gearbox housing is screwed and pinned to the console.

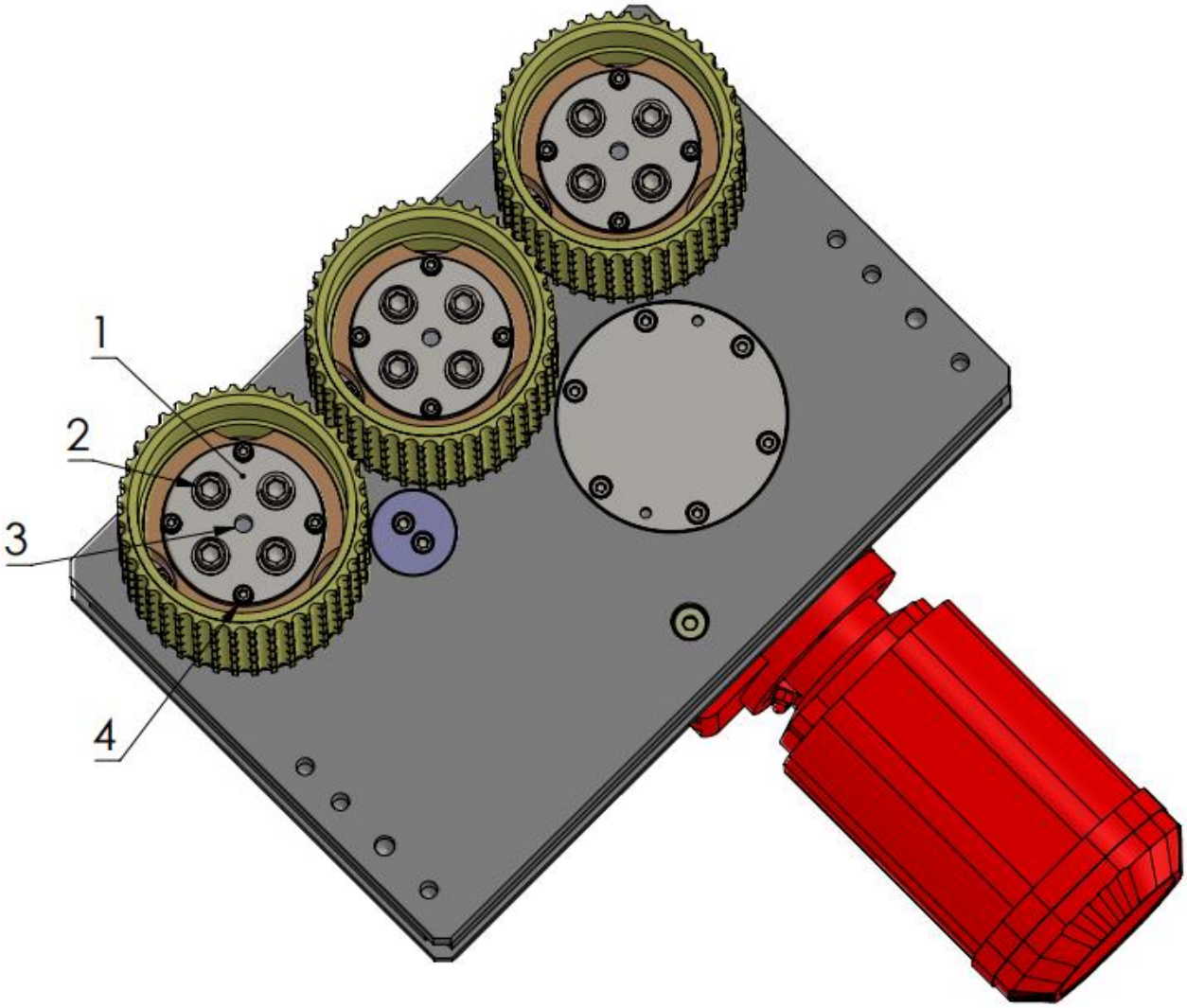



*Attachment of the feed gear*

- 1 Mounting screws and 1x dowel pin



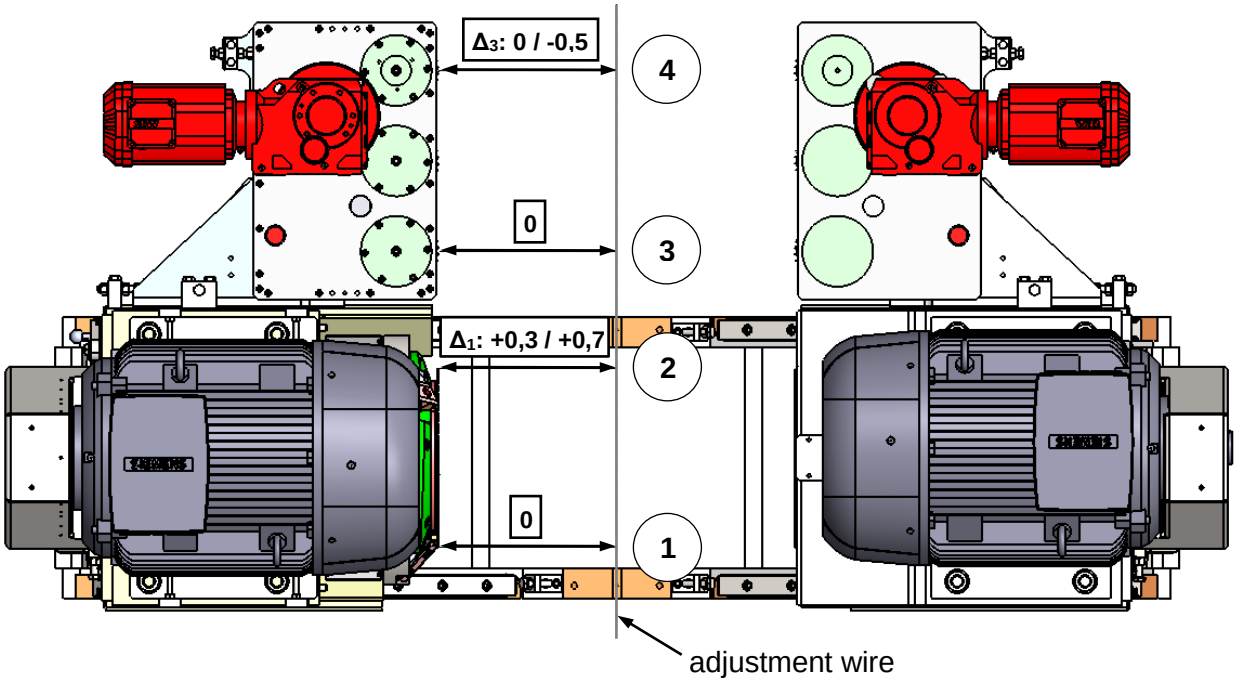

- Screw eyebolts into the gearbox housing and hang it on the crane.
- Now the fastening screws and the positioning pin can be removed.
- Now lift off the feed gear




*Attachment of the feed rolls*

- 1 printing plate
- 2 mounting screw
- 3 extraction thread
- 4 pressure plate mounting screw
- Remove the mounting screws (Pos. 2)
- Screw a threaded rod with a nut welded on one side into the forcing thread and remove the roller
- The roll can now be turned or replaced

## 7.2.6. Alignment of chipping heads and outfeed unit




**Alignment of the chipping heads and the outfeed rollers:**

**1.** Before entering the machine, the Housing to be secured against displacement.

**2.** Tension the setting wire in the middle.

**3.** First the chipping head is aligned. To do this, the 8 x M16 fastening screws on the housing are loosened towards the guide table.
The entire housing can then be turned horizontally using the external adjustment screws, the pivot point is almost in the middle under the chipping head. For precise adjustment, the distance from the teeth of the saw blade (not to the main blade!) to the setting wire is measured on the chipping head

**4.** Adjust the head so that the difference in distance compared to measuring point (1) is between +0.3/+0.7 mm at measuring point (2).

**5.** Note the distance to the setting wire from measuring point (1), this serves as a starting point for setting the alignment of the outfeed rollers.

**6.** Screw the adjustment screws of the housing back onto the fixed with base plate.

**7.** Check dimensions (1).

**8.** Adjust the rollers exactly vertically using a spirit level; the pull-out bracket must be loosened for this
(Max 1 turn) the angle can now be changed using the vertically attached adjusting screws.
In order to check the exact vertical alignment, the console must be screwed tight again.

**9.** Loosen the fastening screws of the pull-out console again (max. 1 turn)
Measure at measuring point 3 from the roller to the wire and use the adjusting screws on the side to set the same dimension as measuring point 1.

**10.** Lock the adjusting screws in this position.

**11.** Swivel the sliding gear using the last adjusting screw until the dimension at point 4 is the same as or 0.5 mm smaller than dimension 1 and 3.

**12.** Screw and lock everything firmly (Observe tightening torques).

**13.** Check all dimensions again and enter them in the table below.

# 8. Appendix

## 8.1. Maintenance checklists

| Maintenance activity | Every day | 10 days after commissioning | weekly | Every 600 hours | yearly | if necessary |
|---|---|---|---|---|---|---|
| Clean machine | X | | | | | |
| Check the oil levels in the gears and geared motors | | X | | X | | |
| Change gear oil in gears and geared motors | | | | | X | |
| Clean fan housing on geared motors | | | X | | | |
| Clean guide rails | X | | | | | |
| Lubricate guide rails | X | | | | | |
| Clean ball screws | X | | | | | |
| Lubricate ball screws | X | | | | | |
| Check safety devices | | | X | | | |
| Tighten screw connections | | X | | | | |
| Visual inspection of screw connections | | | | X | | |
| Check rollers for wear | | | | X | | |
| Outfeed rollers: check rollers (check screws) | X | | | | | |
| The chipping head: check all screws | X | | | | | |
| The chipping head: check the knives | | | X | | | |
| The chipping head: check the V-belt | | | X | | | |
| | | | | | | |
| | | | | | | |

*Maintenance checklist*