

LISSMAC

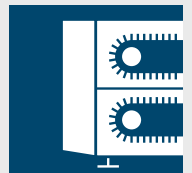
METAL PROCESSING

OPERATING MANUAL GRINDING MACHINE

SBM-L 1000 G1S2 ALU MIX
SBM-L 1500 G1S2 ALU MIX



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Imprint

Operating manual for **LISSMAC**
Grinding Machine SBM-L 1000 G1S2 ALU MIX
SBM-L 1500 G1S2 ALU MIX

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1 About this manual

1.1 Target group

The operating manual is directed at the machine operator and the operating and maintenance personnel.

This operating manual contains important information on how to operate the machine safely, properly and economically.

Each person responsible for operating and maintenance work on the machine must have read and understood this operating manual.

The operating manual is to be supplemented by directives for accident prevention and environmental protection, according to national requirements.

In addition to this operating manual, country-specific regulations for accident protection and also recognised technical regulations for safety and proper work are to be observed


1.2 Additional documents

Additional documentation of the respective manufacturers of individual components of the machine are available as supplements to this operating manual:

- Dust extraction system

1.3 Presentation of warnings

In this operating manual warnings are presented according to the following examples:



⚠ SIGNAL WORD!

Type and source of danger

Consequences of non-compliance

- Actions to avert the danger.

The signal word next to the danger symbol indicates the degree of danger.



This signal word signifies an extremely dangerous situation. If the situation is not avoided, fatal or serious injuries will result.



This signal word signifies a dangerous situation. If the situation is not avoided, fatal or serious injuries will result.




This signal word signifies a dangerous situation. If the situation is not avoided, medium to slight injuries will result.



This signal word signifies a situation which presents risks to objects. If the situation is not avoided, property damage will result. The signal word is present without a danger symbol.

1.4 Additional representations

In this operating manual important information is presented according to the following examples:



Import information is denoted by »i«.

Requests and results Texts, which request action, are marked by a triangle (➤). The immediate effect of this action is marked as result (↳).

Position numbers The positions s of the figures are marked by numbers in parentheses (1).

2 Safety

2.1 Safety instructions

The SBM-L 1000+1500 G1S2 ALU MIX grinding machine is constructed according to the state of the art and recognised technical safety rules. However, during its use, danger for persons and property damage can occur.

- The machine is to be used only for intended use in technically faultless condition and in observance of safety instructions.

2.2 Organisational measures

Personnel authorised to work on the machine must have read and understood the operating manual before starting work. This applies notably to personnel who only work occasionally on the machine, e.g. for changeovers and service.

- The operating manual is to be kept permanently at the machine location and easily accessible.
- Perform checks for safe and hazard awareness work by operators while following the operating manual.
- If necessary or required by country-specific regulation, use personal protective clothing (e.g. work gloves, safety glasses, hearing protection).
- Observe all safety and danger instructions on the machine.
- Keep all safety instructions and danger warnings on the machine complete and in legible condition.
- No changes, removal or addition of parts to the machine without the written approval of the manufacturer.
- Only use original replacement parts from the manufacturer.
- Keep intervals for service work which are given in the operating manual.

2.3 Personnel selection and qualifications

Only authorised personnel of legal minimum age may work on the machine. Personnel who are being trained or orientated on the machine may only work on the machine under continuous supervision of an experienced person.

- Only use trained or orientated personnel. Clearly establish responsibilities of the personnel for operating, maintaining and servicing.
- Establish a machine operator responsibility. The machine operator must refuse to follow instructions that are contrary to safety.

2.4 Transport

- Only use lifting gear and load carrying equipment with sufficient lifting capacity during loading work (see Technical Data for weights).
- Name an expert instructor for the lifting process.
- Only lift the machine properly with the lifting gear according to instructions in the operating manual. Only use the provided attachment points for the load carrying equipment.
- Only use suitable transport vehicles with sufficient load capacity.
- Reliably secure the machine during vehicle transport. Use suitable attachment points.
- Perform recommissioning after transport only according to the operating manual.

2.5 Normal operation

- Before beginning work become familiar with the operating location and working environment. The work environment includes, for example, work area obstructions and assistance options in case of accidents.
- Only operate the machine in a safe and functional condition.
- Refrain from working in any manner that is questionable in regard to safety.
- Immediately stop and secure the machine in case of malfunctions. Immediately correct malfunctions.
- At least once per shift (display indication) check the machine for externally recognisable damage and deficiencies. Report any changes occurring (including operating behaviour) to the responsible department or person. If necessary, immediately stop the machine and secure it.

2.6 Maintenance, Service and Troubleshooting

- Adjustment, maintenance and service work may only be carried out by authorised technical personnel.
- Perform adjustment, maintenance and service work according to instructions in the operating manual. Keep the specified intervals for service work.
- Inform operating personnel before beginning adjustment, repair, or maintenance work.
Name a surveillance person.
- Always disconnect the machine from electrical power during maintenance and repair work (main switch in the 0 position).
- When the machine is being cleaned of material residues, always disconnect the machine and the extraction system from the mains supply.
- Before cleaning with cleaning agents, close all openings with suitable materials in which no water or cleaning agent can penetrate, for safety or functional reasons. Electric motors and switches are especially at risk.
- Do not perform any cleaning with high pressure cleaners.
- Openings which were sealed before cleaning, must be completely opened after cleaning.
- Always tighten loosened screw connections with the specified tightening torques during maintenance and service work.
- If safety equipment is dismantled during changeover, maintenance, service and repair, remount and check the safety equipment immediately after the work is completed.
- Dispose of operating and auxiliary materials and replacement parts safely and in accordance with country-specific regulations.

2.7 Safety instructions for special types of dangers

2.7.1 Electric power

- Work on the machine's electrical systems may only be carried out by electricians according to the rules of electronics.
- In case of problems with the electrical power supply, turn the machine off immediately.
- When changing fuses only use original fuses with specified amperage.
- Regularly check the machine electrical equipment. Immediately correct deficiencies, such as loose connections or scorched cables.

2.7.2 Dust

- The SBM-L 1000+1500 G1S2 ALU MIX grinding machine may only be operated according to country-specific regulations (e.g. EU regulations) and is permitted for steel and aluminium dust.
- If carcinogenic substances are released during grinding (e.g. with stainless steel), the exhaust system must be operated with an absolute filter.
- Comply with operating manual for dust extraction.
- All federal requirements for dust extraction systems for potentially explosive dusts must be met.
- It must be guaranteed that the continued operation of the grinding machine is impossible if the dust extraction system fails.
- The volume flow rate of the dust extraction system must be at least 2200 m³/hr.
- The flow velocity must be at least 20 m/sec.
- No dust deposits should form in the extraction and fixed pipes.

2.7.3 Fire hazard

- Do not process any workpieces which have been treated with a flammable corrosion resistant agent or flammable additive.
- Do not operate the machine near easily flammable materials.
- Make sure that the machine is always cleaned of machining residues according to the operating manual.



2.7.4 Explosion hazard

2.7.4.1 **Description of explosion hazard**

The machining of aluminium produces flammable dust by grinding that, when mixed with air, can form a potentially explosive atmosphere. This also applies to the machining of steel and stainless steel.









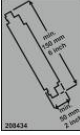
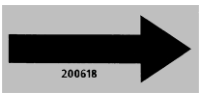



In a mixture of aluminium and steel dust, explosive gas can be produced from corrosion.

2.7.4.2 **Division of zones**

The extraction of the aluminum or steel dust with suitable extraction systems (see 2.7.2) and performance of the cleaning intervals (see 7.4+7.5) prevents the formation of an explosive atmosphere within the machine or in the suction pipes. If these requirements are not observed precisely, there is also no explosion protection for the operator. Only if the dust load in the air is below 30g/m^3 , can the interior of the machine and the suction pipes be considered a zone not threatened by explosion.

2.8 Symbols on the machine

The following symbols are located on the machine and warn of dangers coming from the machine:

Symbol	Meaning
	This symbol on both conveyor belts indicates the danger that hands or body parts can be pulled in and sheared off.
	This symbol on the control cabinet indicates dangerous electrical voltage.
	Risk of shearing from moving part
	Read the operating manual and follow the information in the operating manual.
	Wear protective gloves when placing and removing workpieces.
	Wear hearing protection when working on the machine.
	Wear safety glasses when working on the machine.
	Lubrication point
	The symbol indicates the minimum length of the workpiece to be machined.
	Running direction
	Transport with crane possible.
	Transport with forklift possible.
	Safety strips are attached at various locations in the machine. When these safety strips are covered with grinding dust the machine must be thoroughly cleaned. This should prevent the collecting of grinding dust.

Notes:

3 Product description

The SBM-L 1000+1500 G1S2 ALU MIX grinding machine is described below.

3.1 Appropriate usage

The SBM-L 1000+1500 G1S2 ALU MIX grinding machine is intended exclusively for the two-sided deburring and edge rounding of punch, laser, and fine plasma cut workpieces.

Workpieces up to a warpage of maximum 3mm can be processed.

The SBM-L 1000+1500 G1S2 ALU MIX grinding machine may be used for grinding and rounding edges of workpieces made of aluminium or aluminium alloys as well as steel and stainless steel.

These materials may not be machined simultaneously.

This machine may only be used as a system with a wet dust extractor provided for it and which is approved:

Always note the danger of explosion (see 2.7.4) and machine cleaning (7.4+7.5); only then is safe work possible.

Use for any other purposes is non-intended use.

The machine must only be installed in an indoor space, which meets the following conditions:

- Fortified, level floor with a load carrying capacity of at least 2.5 t.
- Temperature range up +10 ° to +40 °C
- Humidity 5 – 95 % (not condensing)



Not intended use especially includes the machining of composite materials in which both aluminium and steel dust are simultaneously generated.

The manufacturer accepts no liability for damages which occur for use which is non-intended use.

3.2 Technical data

The following specifications apply to the SBM-L-1000+1500 ALU MIX grinding machine.

		SBM-L 1000 G1S2 ALU MIX	SBM-L 1500 G1S2 ALU MIX
Dimensions and weight of the machine	length	2800 mm	3300 mm
	Width (incl. conveyor belt)	1500 mm	1500 mm
	height	1800 mm	1800 mm
	Total weight	2500 kg	2800 kg
Electrical data of the entire machine	Voltage	400V/50Hz/ 480V/60Hz	400V/50Hz/ 480V/60Hz
	Network configuration	3~ PEN / 3~ PE+N	3~ PEN / 3~ PE+N
	Rated current (total)	37,5 A / 34 A	41 A 37 A
	Rated power (total)	21,5 kW / 22,5 kW	23 kW / 24,5 kW
	Power raring (total)	26 kVA / 28 kVA	28 kVA / 30,5 kVA
	protection class	IP 42	IP 42
Machining units Grinding unit (G)	Number of grinding motors	2	2
	Drive power per grinding motor	2,2 kW / 2,6 kW	3 kW / 3,6 kW
	Grinding motor speed	2845 RPM / 3460 RPM	2875 RPM / 3460 RPM
	Grinding motor voltage	400 V / 480 V	400 V / 480 V
	Grinding motor power consumption	4,8 A / 4,6 A	6,25 A / 6,2 A
	Running speed of abrasive belts	approx. 25 m/s	approx. 25 m/s
Machining units Edge rounding (S)	Number of motors	4	4
	Drive power per motor	3 kW	3 kW
	Motor speed	1405 RPM / 1705 RPM	1405 RPM / 1705 RPM
	Motor voltage	400 V / 480 V	400 V / 480 V
	Power consumption of motor	6,3 A / 5,3 A	6,3 A / 5,3 A
	Running speed of edge rounding unit	approx. 7.5 m/s	approx. 7.5 m/s
Feed	Number of feed motors	1	1
	Drive power per feed motor	0.37 kW	0.37 kW
	Feed motor speed	1410 RPM	1410 RPM
	Feed motor voltage	400 V / 480 V	400 V / 480 V
	Power consumption of feed motor	1.18 A	1.18 A
	Feed speed	0–4 m/min	0–4 m/min

		SBM-L 1000 G1S2 ALU MIX	SBM-L 1500 G1S2 ALU MIX
Hydraulic Unit	Number	1	1
	Drive power	0,37 kW / 0,44 kW	0,37 kW / 0,44 kW
	Motor Speed	2800 RPM / 3360 RPM	2800 1/min / 3360 RPM
	Motor Volatage	400 V / 480 V	400 V / 480 V
	Power consumption	0,94 A / 1,63 A	0,94 A / 1,63 A
Environment	Temperature range	+10° - +40° C (air conditioning / heating otherwise required)	+10° - +40° C (air conditioning / heating otherwise required)
	Humidity	5-95% (no condensation)	5-95% (no condensation)
Noise pressure level	Emission noise pressure level at operator's place (average value, since it depends on the workpiece processed)	approx. 80 dB	approx. 80 dB
Workpieces	Material thickness (height of opening for workpieces)	0.5 – 50 mm	0.5 – 50 mm
	Aperture width for workpieces	50 mm – 1000 mm	50 mm – 1500 mm
	Minimum length of workpieces in the direction of travel	150 mm	150 mm
	Maximum workpiece weight	200 .kg	200 .kg

3.3 Type plate

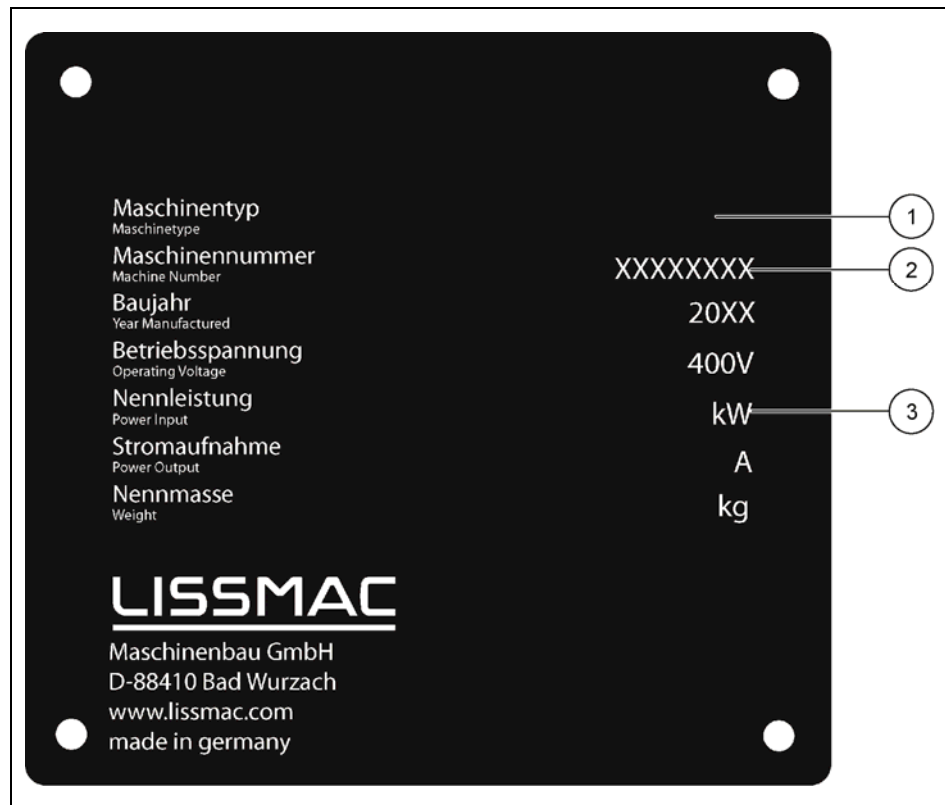


Abb. 1: Type plate

- 1 Name of machine
- 2 Serial number of machine
- 3 Connection values and weights

The type plate is located on the back of the grinding machine.

3.4 Structure of the grinding machine

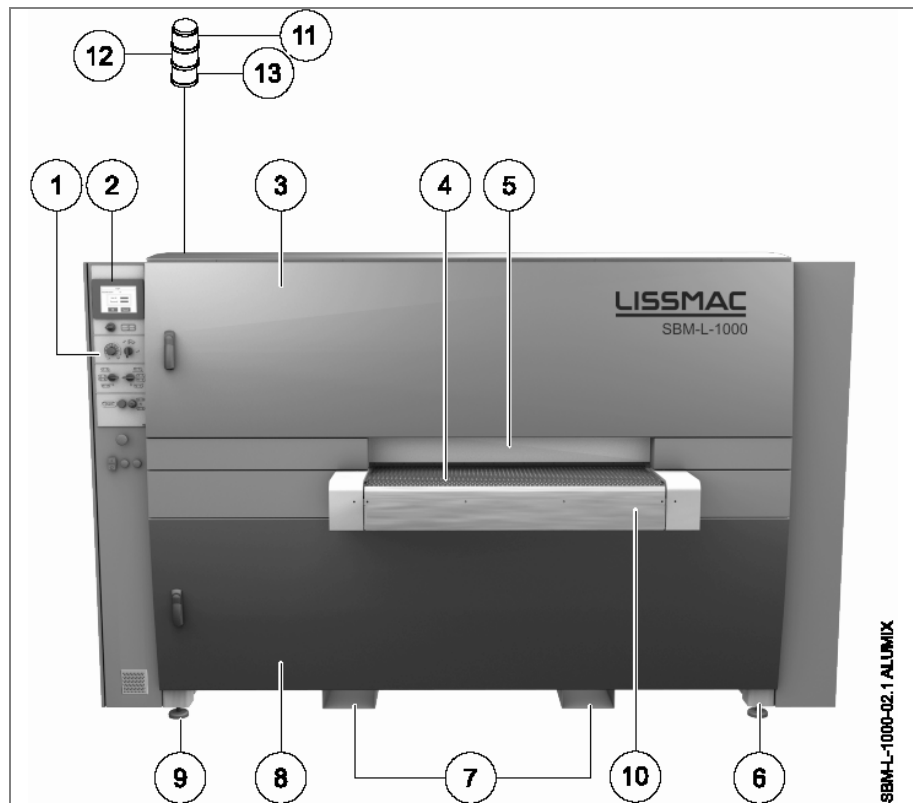


Abb. 2: Components of the machine, input side (front side of SBM-L 1000+1500 G1S2 ALU MIX)

- 1 Control panel with selection switches
- 2 Display control element
- 3 Upper device door
- 4 Conveyor belt for input of workpieces
- 5 Safety shut off bar
- 6 Adjustable machine foot
- 7 Support for transport with forklift
- 8 Lower device door
- 9 Adjustable machine foot
- 10 Safety shut off bar
- 11 Extraction indicator not functional
- 12 Aluminium machining indicator lamp
- 13 Steel machining indicator lamp

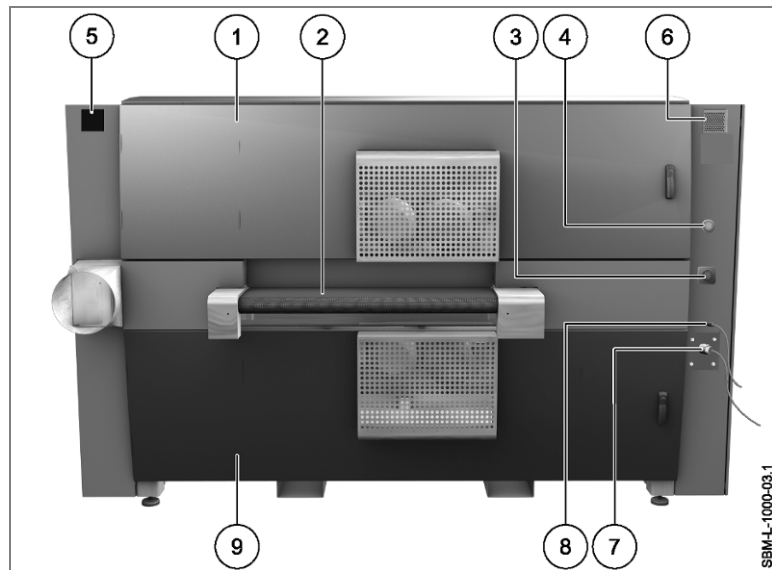


Abb. 3: Components of the machine, output side (back of SBM-L1000+1500 G1S2 ALU MIX)

- 1 Upper device door
- 2 Conveyor belt for output of workpieces
- 3 Main switch OFF/ON for entire machine
- 4 "EMERGENCY STOP" switch for immediate shutdown of the entire machine
- 5 Type plate
- 6 Ventilation grate on switching cabinet
- 7 Electrical connection
- 8 Optional interface
- 9 Lower device door

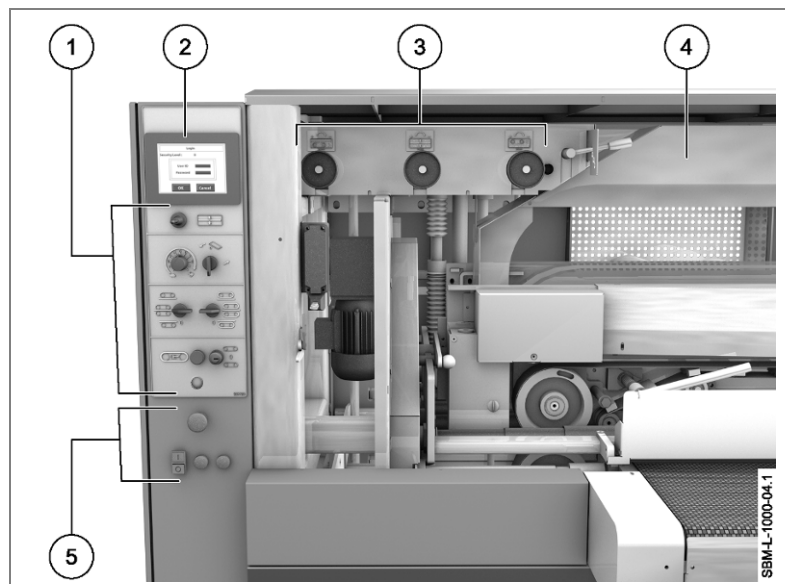


Abb. 4: Control and display elements (front side of SBM-L-1000+1500 GS2 ALU MIX)

- 1 Control panel with selection switches
- 2 Display control and display field
- 3 Gear boxes
- 4 Dust extraction shaft
- 5 Switches and buttons for machine operation

3.5 Machining units

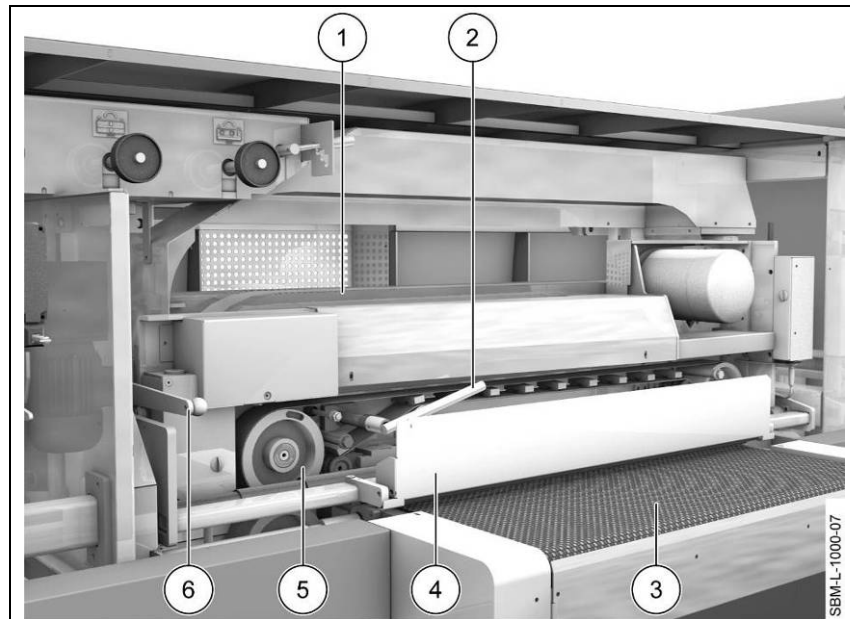


Abb. 5: Machining unit, top

- 1 Grinding belt cover
- 2 Grinding belt tensioning lever
- 3 Conveyor belt for input of workpieces
- 4 Safety shut off bar
- 5 Belt roller
- 6 Locking lever

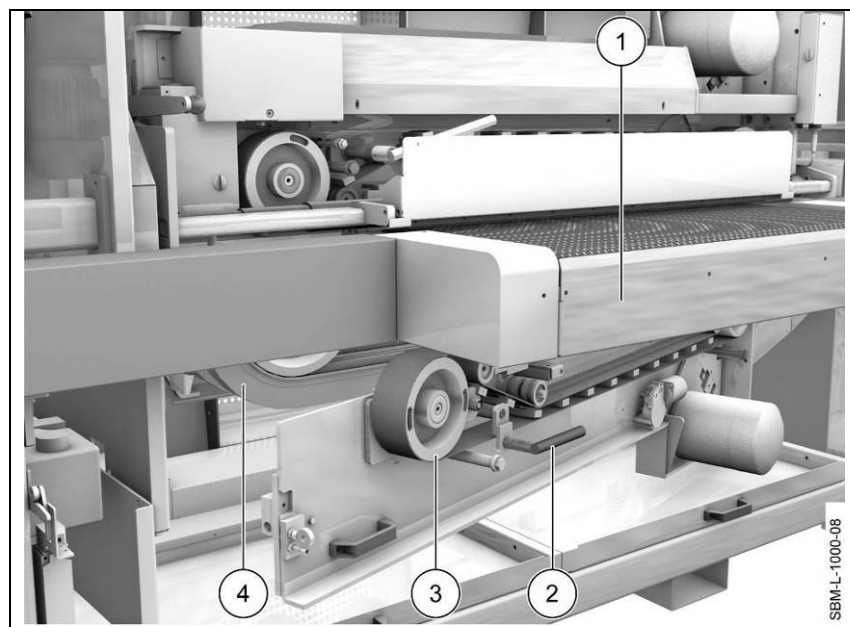


Abb. 6: Machining unit, bottom

- 1 Safety shut off bar
- 2 Grinding belt tensioning lever
- 3 Belt roller
- 4 Lower edge rounding unit

3.6 Control elements

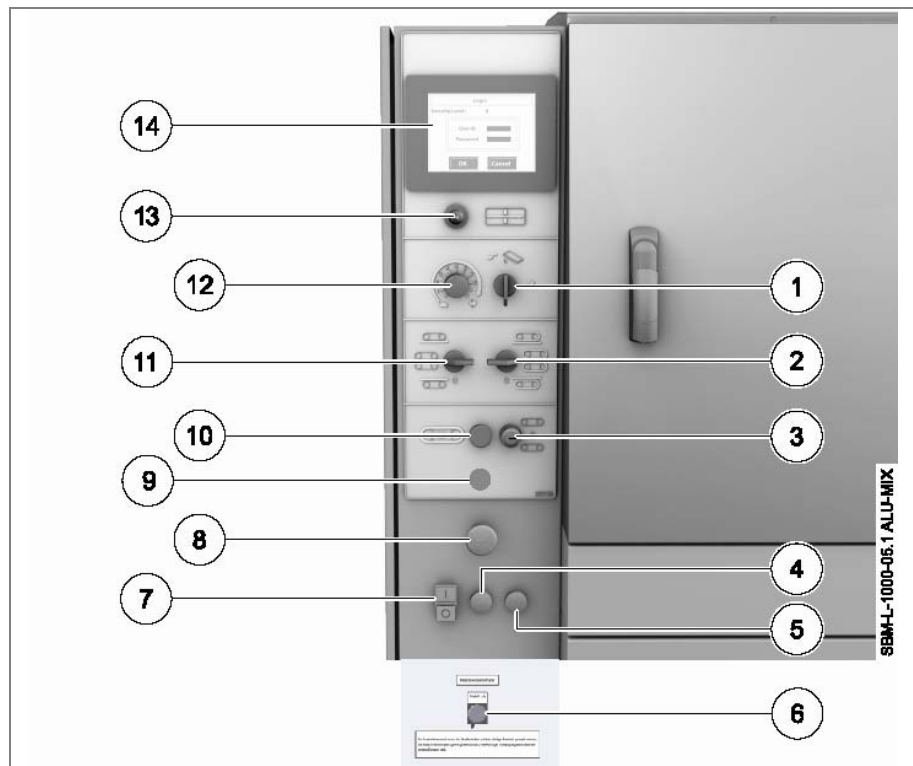


Abb. 7: Control and display elements (front side)

- 1 Feed direction of conveyor belt for workpiece input
- 2 S-unit selection switch
- 3 Key switch for setup function
- 4 Acknowledge EMERGENCY STOP
- 5 Display phase sequence incorrect
- 6 Material exchange switch
- 7 All motors OFF/ON
- 8 EMERGENCY STOP
- 9 Button for override of door during wear query for abrasive belt
- 10 Rotary switch of the hydraulic belt tensioner, S-unit
- 11 G-unit selection switch
- 12 Belt speed adjustment
- 13 Joystick for moving work elements
- 14 Display control and display field

**WARNING****Rotating parts**

Injury due to rotating hand wheels.

- Do not grasp rotating hand wheels during setup.
- Secure machine against unintended start.

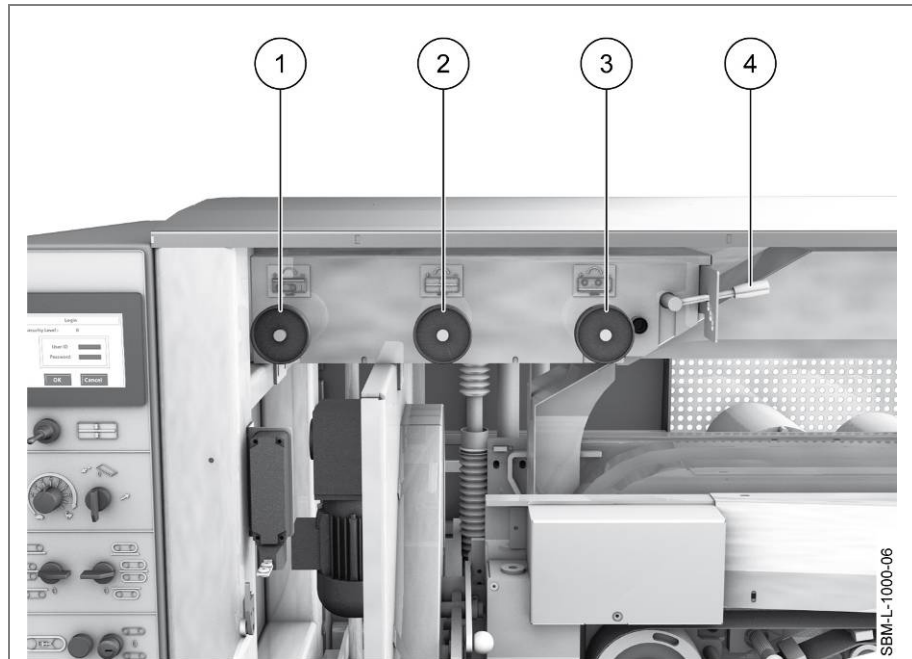


Abb. 8: Control elements of gear box (front side SBM-L 1000+1500 G1S2 ALU MIX 60)

- 1 Hand wheel for moving lower S-unit
- 2 Hand wheel for adjusting sheet thickness.
- 3 Hand wheel for moving upper S-unit
- 4 Gear selector lever

NOTE**Operating the hand wheels**

Possible damages

- Before turning the hand wheels, ensure that the gear selection lever is in the respective position.
See display – The selected unit is displayed!
- The hand wheels are intended only for emergency operation and for possible fine adjustment.

3.7 Function

There are two machining units built into the grinding machine each in different designs. The front grinding units (3) and (4) remove splatter on the plate surface. The rear grinding units (1) and (6) are each equipped with two abrasive belts that travel in opposite directions. They are suitable for the edge rounding (deburring) of workpieces cut by punching, laser, or fine plasma. The grinding units are installed on both top and bottom. In this way the workpieces can be processed on both sides in one work step.

In the machine, workpieces are brought under the feed roller on the conveyor belt (5) and transported between the machining units.

Material thickness and positioning of machining units

The machining units can be positioned, along with the feed roller (2), using the sheet thickness adjustment. The machining units can also be positioned individually for the single-sided processing of workpieces. Each machining unit can also be positioned individually for maintenance, adjustment, and optimisation of processing.

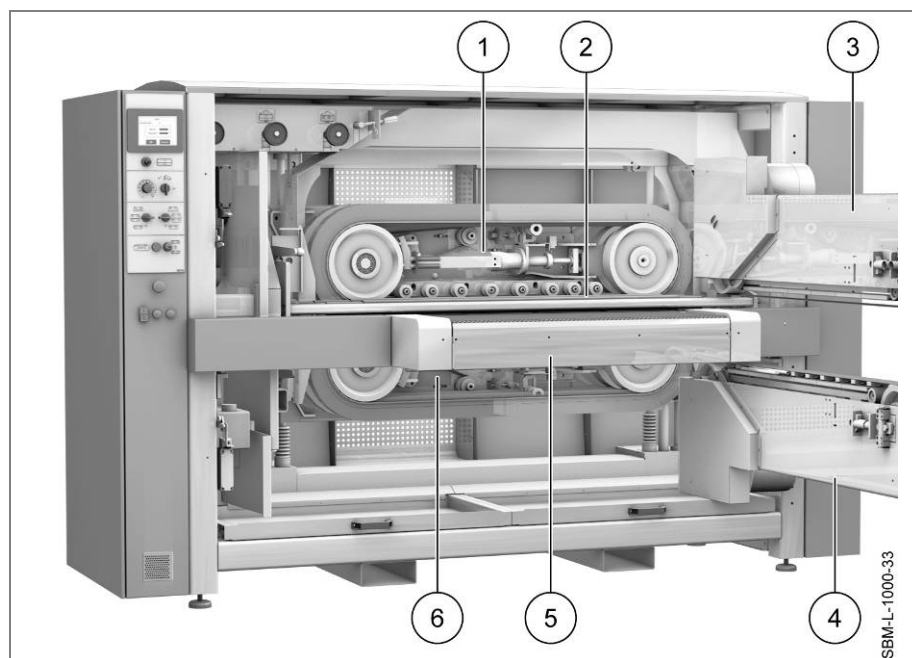


Abb. 9: Functional elements of the SBM-L 1000+1500 G1S2 ALU MIX

- 1 Edge rounding unit, top
- 2 Feed rollers
- 3 Upper grinding unit
- 4 Lower grinding unit
- 5 Conveyor belt
- 6 Edge rounding unit, bottom

Abrasive belts Grinding belts

To exchange the abrasive belts and grinding belts (tool change) move the upper and lower machining units completely apart.

3.8 Safety equipment

The grinding machine has the following safety equipment:

- »EMERGENCY STOP« buttons (1) on the front and (6) on the back of the machine for the immediate shutdown of the machine in case of emergency.



The »EMERGENCY STOP« buttons must be disengaged again after an emergency stop.

- The safety shutdown bars (3) and (8) on the conveyor belt on the input side switch the feed (conveyor belt) off when touched.
- The electrical contacts with magnetic holding of the interlock (2) and (4) on the front of the machine and (5) and (7) on the back of the machine hold the flaps closed and shut the machine down if the flaps are forced open.
- Motor overload switch prevents overloading of the motors.
- A phase circuit breaker and display prevent connection of electricity with an incorrect phase sequence.

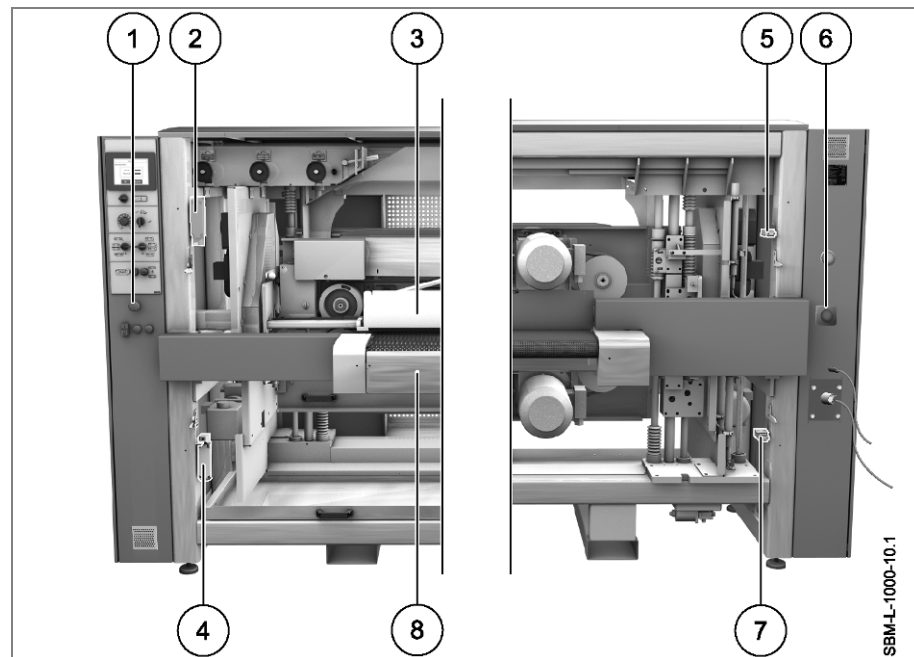


Abb. 10: Safety equipment of the grinding machine

- 1 EMERGENCY STOP switch
- 2 Electrical contacts with interlock
- 3 Safety shut off bar
- 4 Electrical contacts with interlock
- 5 Electrical contacts with interlock
- 6 EMERGENCY STOP switch
- 7 Electrical contacts with interlock
- 8 Safety shut off bar

4 Preparation for use

4.1 Transporting the machine

For transport of the machine by crane, there are two steel carriers (1) and (2) fastened to the top of the machine with attachment points. To do this, it is necessary to unscrew the top cover, to screw in the two steel carriers and to reattach the top cover. Two braces (4) are mounted between the steel carriers. For transport by forklift, there are appropriate supports (3) built in under the grinding machine (for tightening torques, see 8.3).

WARNING

Heavy loads



Injury from falling parts.

- Do not stop under the lifted machine.
- Only use lifting gear and loading equipment with sufficient lifting capacity and length.

- To lift the machine, secure the lifting gear on the four attachment points.
- Secure the machine by the four attachment points with suitable means when transporting on a vehicle.
- Insert the forks into the beams provided when transporting using a forklift.

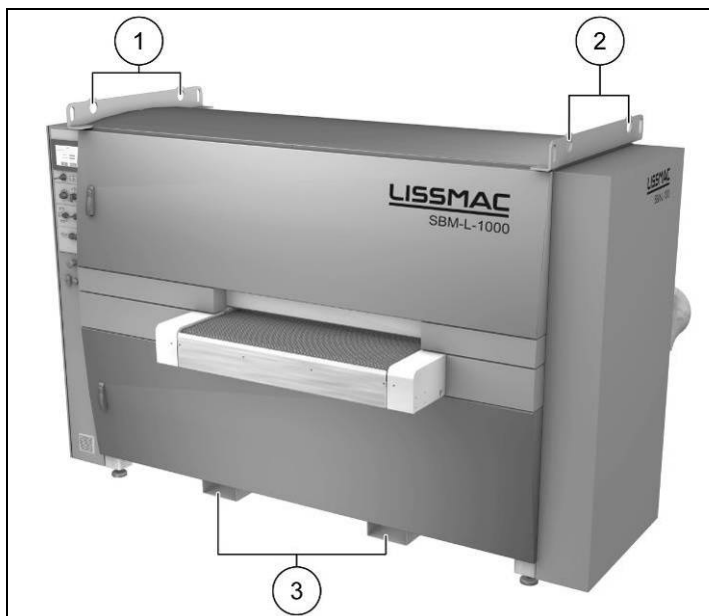


Abb. 11: Transport supports



- 1 Attachment points left
- 2 Attachment points right
- 3 Brackets for forklift
- 4 Braces

4.2 Storing the machine

- Disconnect the electrical connection to the grinding machine.
- Thoroughly clean all grinding dust and material residue from the grinding machine.
- Clean the dust extraction shafts using an industrial vacuum cleaner.
- Completely grease the grinding machine.
- Pack the machine in plastic film for storage.
- Do not store the machine outdoors.
- Only store the machine in an indoor space with a dry environment.

4.3 Installation and assembly

4.3.1 Installing machine

WARNING



Heavy loads

Injury from falling parts.

- Do not stop under the lifted machine.
- Only use lifting gear and loading equipment with sufficient lifting capacity and length.

- Fasten the lifting accessories to the four attachment points, or lift by the two supports with the forklift.
- Remove the packaging from the machine.
- Set up the machine on a fortified, level floor with at least 2.5 t load carrying capacity.
- Use the machine feet to level the machine in all directions.

4.3.2 Connecting the machine electrically

DANGER



High voltage

Death or injury from electric shock.

- Place the main switch on the back of the machine into the "Off" position.
- Connect the machine to the power supply (plug)
- Place the main switch on the back of the machine into the "On" position.
- Disengage both "EMERGENCY STOP" buttons.
 - ↳ The machine is ready for operation.



The machine is delivered ready for connection to a right-hand power supply. A phase monitor checks the connection for the correct phase sequence. If the phase sequence is incorrect the LED »Incorrect phase sequence« lights up, and the machine cannot be turned on. Use a connection cable with phase inverter for easier power connection with the correct phase sequence.

5 Operation

5.1 Operation

The central functions of the machine are controlled using control elements on the front of the grinding machine. The display provides information about the current settings and status of the machine.

The following list gives an overview of the operating functions and associated displays.

5.1.1 Control elements

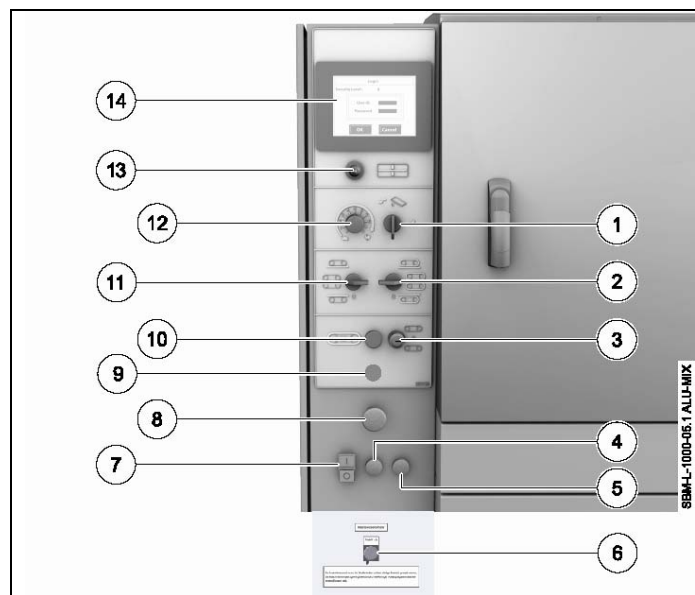


Abb. 12: Control elements

- 1 Feed direction of conveyor belt for workpiece input
- 2 S-unit selection switch
- 3 Key switch for setup function
- 4 Acknowledge EMERGENCY STOP
- 5 Display phase sequence incorrect
- 6 Material exchange switch
- 7 All motors OFF/ON
- 8 EMERGENCY STOP
- 9 Button for override of door during wear query for abrasive belt
- 10 Rotary switch of the hydraulic belt tensioner, S-unit
- 11 G-unit selection switch
- 12 Belt speed adjustment
- 13 Joystick for moving work elements
- 14 Display control and display field

The control elements shown here are used to control and operate most of the functions of this grinding machine.

The display shown here is implemented as a touch screen and is thus both a display and a control panel.

The functions are described below.

5.2 Operation using function switches

5.2.1 G-unit selection switch

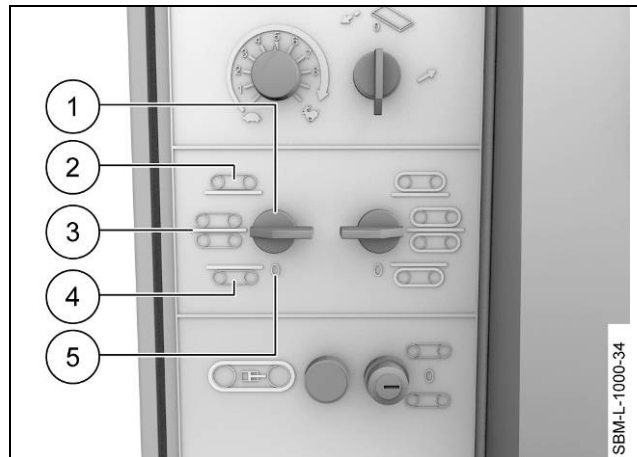


Abb. 13: G-unit selection switch

- 1 selection switch
- 2 Upper G-unit
- 3 Both G-units
- 4 Lower G-unit
- 5 0 position

The G-unit selection switch (1) can be used to select a specific G-unit.

Position (2): Here, the upper G-unit is selected. Only the upper G-unit is running. The drive of the lower G unit is switched off.

Position (3): In this position, both G-units are selected. Both drives for the upper and lower G units are switched on.

Position (4): Here, the lower G-unit is selected. Only the lower G-unit is running. The drive of the upper G unit is switched off.

Position (5): With this switch position the complete G unit is switched off.



The G units can move up and down via the display independently of the position of the selection switch.

NOTE

G-unit not selected

Possible damages

- If a G unit is switched off (not selected), then this G unit must be moved approx. 10 mm away from the workpiece with the up/down buttons.



The units selected with the selection switch are started using the ON/OFF switch of the machine.

5.2.2 S-unit selection switch

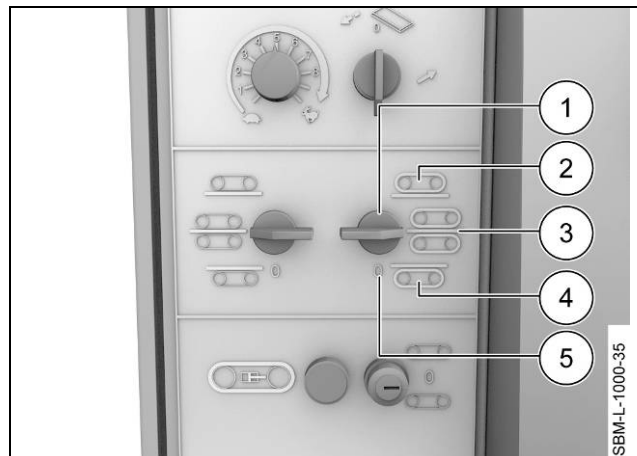


Abb. 14: S-unit selection switch

- 1 selection switch
- 2 Upper S-unit
- 3 Both S-units
- 4 Lower S-unit
- 5 0 position

The S-unit selection switch (1) can be used to select a specific S-unit.

Position (2): Here, the upper S-unit is selected. Only the upper S-unit is running. The drive of the lower S unit is switched off.

Position (3): In this position, both S-units are selected. Both drives for the upper and lower S units are switched on.

Position (4): Here, the lower S-unit is selected. Only the lower S-unit is running. The drive of the upper S unit is switched off.

Position (5): With this switch position the complete S unit is switched off.



The units selected with the selection switch are started using the ON/OFF switch of the machine.

NOTE

S unit or S units not needed

Damage to the tool and the workpiece

- If a unit is unselected, it must absolutely be ensured that this is manually moved away, otherwise the workpiece will run into the stopped tool.

5.2.3 Conveyor belt speed and direction

The grinding results of the machining units depend among other things on the feed speed of the conveyor belts.



Abb. 15: Conveyor belt speed and direction

- 1 Conveyor belt direction selection switch
- 2 Conveyor belt speed rotary switch

- Select the conveyor belt direction on selection switch (1).
- Adjust the feed speed on the conveyor belt speed rotary switch (2).

5.2.4 Setup function with key switch

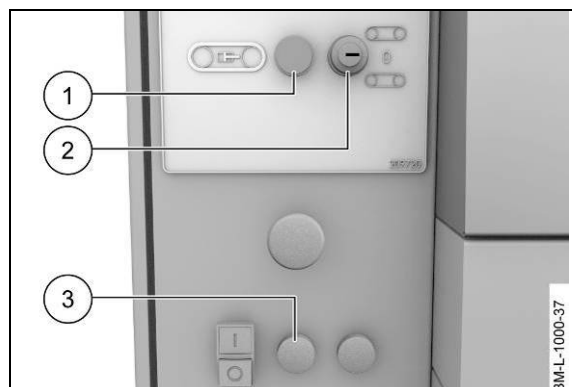


Abb. 16: Setup function

- 1 Hydraulic belt tensioner button
- 2 Key switch for setup function
- 3 Button Acknowledge EMERGENCY OFF

- Turn and hold key switch (2).
- Press Acknowledge EMERGENCY STOP button (3) (continue to hold key switch).

The machine is now in "Setup" mode. The setup mode is used for setting and checking the running of the belt of the G units, as well as to tighten the S units. In addition, all functions can now be operated even with the doors open.



Only one safety contact can be bridged at a time.
Therefore always one of the front doors must be closed.
The rear doors cannot be overridden.

5.3 Operation using display functions

5.3.1 Operation (start screen)

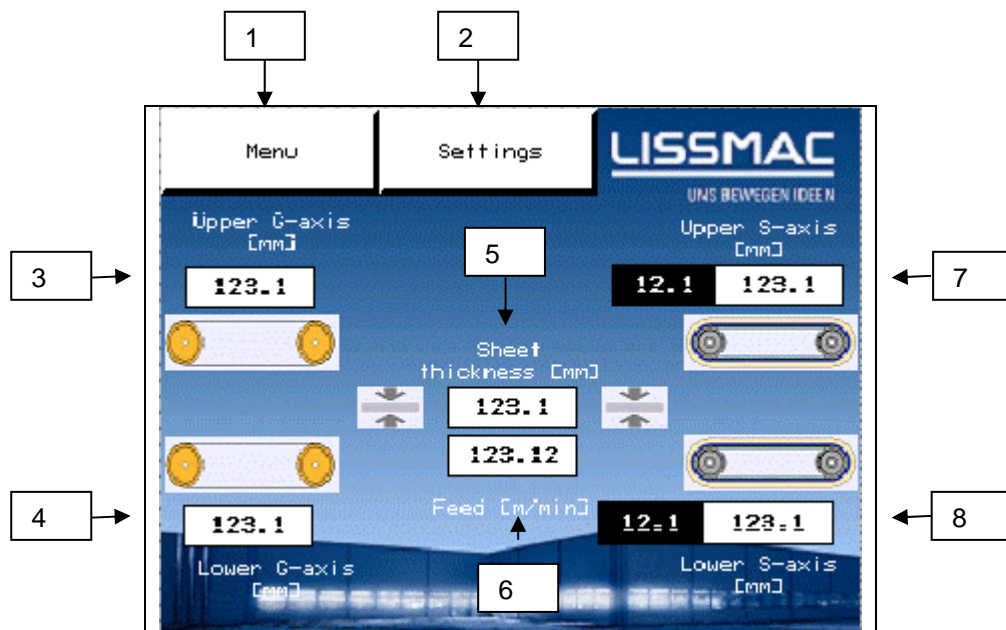


Abb. 17: Operation

On the Operation start screen the following menu items are available:

- 1 Menu:
The options here are: Language, Operating hours + Date + Time, Contact, Cleaning, Alarms, Machine settings (password protected) (see 5.3.2)
- 2 Tool settings:
(see 5.3.9)

Also the following values are displayed:

- 3 Upper G axle: Value corresponds to the current position in mm.
- 4 Lower G axle: Value corresponds to the current position in mm.
- 5 Sheet thickness: Value corresponds to the set sheet thickness in mm.
- 6 Feed: Value corresponds to the feed in m/min.
- 7 Upper S axle: The first value corresponds to the wear, the second value corresponds to the current position in mm (depending on the wear).
- 8 Lower S axle: The first value corresponds to the wear, the second value corresponds to the current position in mm (depending on the wear).

5.3.2 Menu

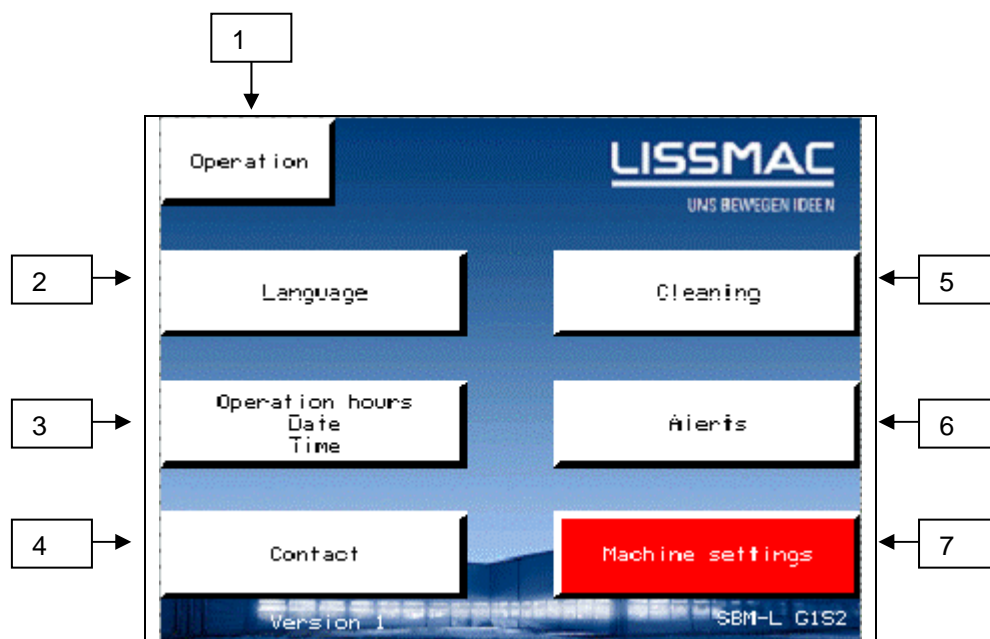


Abb. 18: Menu

On the Menu screen the following menu items are available:

- 1 Operation (see 5.3.1)
- 2 Language (see 5.3.3)
- 3 Operating hours, Date, Time (see 5.3.4)
- 4 Contact (see 5.3.5)
- 5 Cleaning (see 5.3.6)
- 6 Alarms (see 5.3.7)
- 7 Machine settings (see 5.3.8)

5.3.3 Language



Abb. 19: Language

Here the desired language is selected.

- 1 Back button

5.3.4 Operating hours, Date, Time

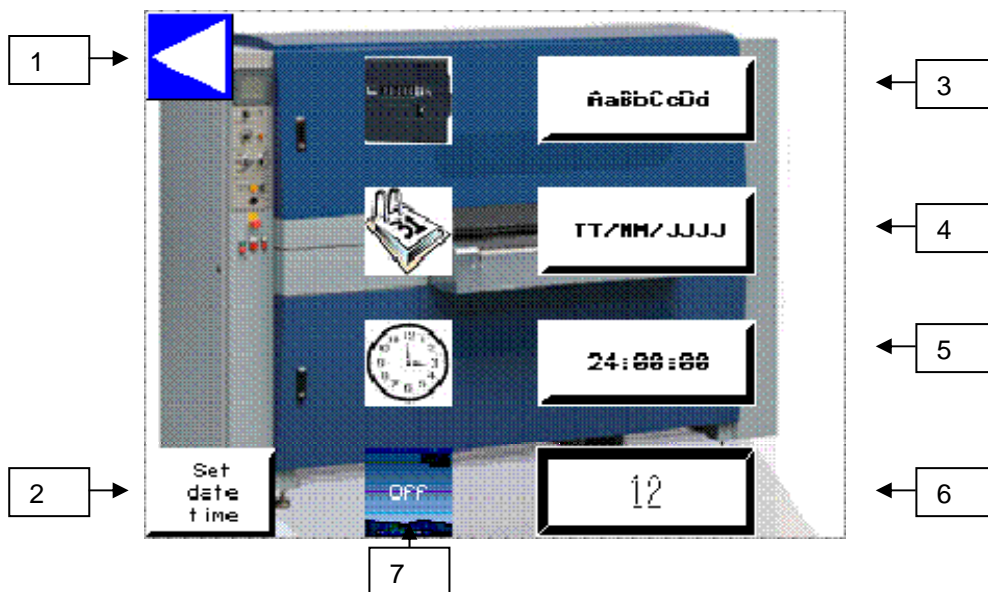


Abb. 20: Operating hours, Date, Time

- 1 Back button
- 2 Button - Set date, time (see 5.3.4.1)
- 3 Operating hours counter
- 4 Date display
- 5 Time display
- 6 Display - Screen saver turns on after x minutes.
When touched, a touch screen appears in which the turn on time can be changed.
- 7 Screen saver on/off button

5.3.4.1 Setting date, time

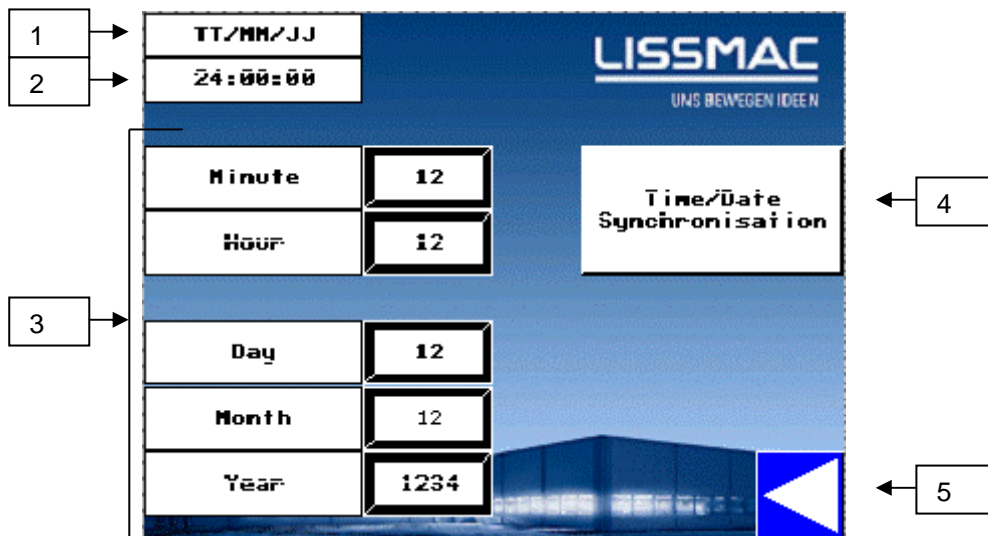


Abb. 21: Setting date, time

- 1 Display - Date
- 2 Display - Time
- 3 When the respective number field is touched a field appears in which the desired value can be entered
- 4 When the synchronisation button is pushed, the values form the number fields (3) are transferred
- 5 The Back button returns back to the previous screen

5.3.5 Contact



Abb. 22: Contact

Contact data is saved here.

- 1 Back button

5.3.6 Cleaning

5.3.6.1 Display - Cleaning interval



Abb. 23: Cleaning 1

- 1 Back button
- 2 Display (time until reaching the cleaning interval)
- 3 Machine cleaned – Button for resetting the cleaning interval display (if the machine is cleaned before reaching the cleaning interval).

If the time until "Cleaning interval reached" is less than 5 minutes, every 30 seconds the display "Clean machine" is shown (see 5.3.6.2). However, processing can still continue.

5.3.6.2 Display – Cleaning interval reached



Abb. 24: Cleaning 2

When the cleaning interval is reached, "Cleaning machine" is shown in the display.

- 1 By pushing the "Clean machine" button, the next level is called up (see 5.3.6.3 Resetting the cleaning interval)

5.3.6.3 Resetting the cleaning interval



Abb. 25: Cleaning 3

- 1 Back button
- 2 Machine cleaned – Pushing this button resets the cleaning interval display.

5.3.7 Alarms

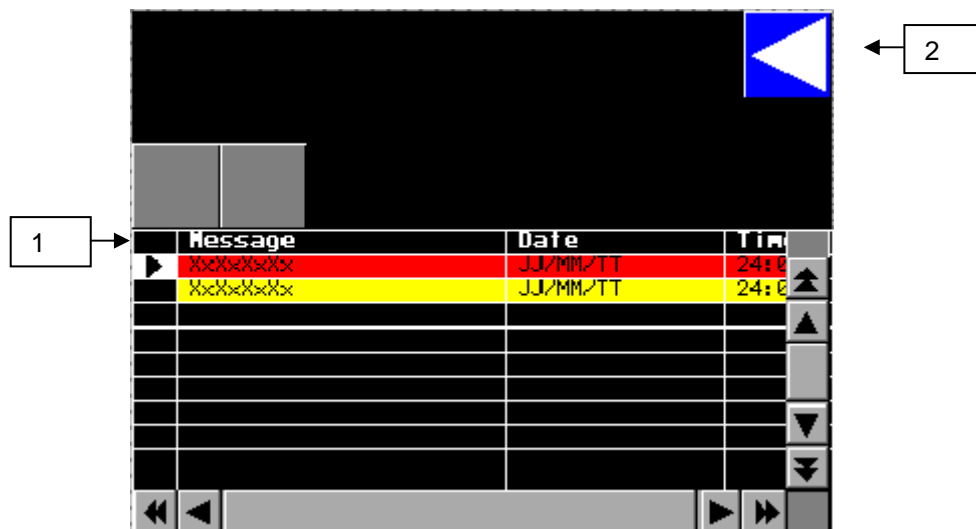


Abb. 26: Alarms

- 1 Error messages are shown in this table
- 2 Back button

5.3.8 Machine settings



Abb. 27: Machine settings

The machine parameters are stored here; access is password protected and only accessible for service personnel.

- 1 Back button

5.3.9 S-unit gear selection lever

When selecting the individual gears, the display and display functions switch to the function pertaining to that gear.



Abb. 28: Gear selector lever

- 1 Lower S unit / Lower G unit (see 5.3.9.1)
- 2 Upper and lower S unit / Upper and lower G unit (see 5.3.9.2)
- 3 Upper S-unit / Upper G-unit (see 5.3.9.3)
- 4 Sheet thickness (upper G and S unit + feed rollers) (see 5.3.9.4)

Here, the functions of the S and G units can be mechanically preselected. The selected functions are shown in the display and can be moved with the joystick.

Position (4) is the operating position and also the delivery state.

5.3.9.1 Display – Lower S unit / Lower G unit

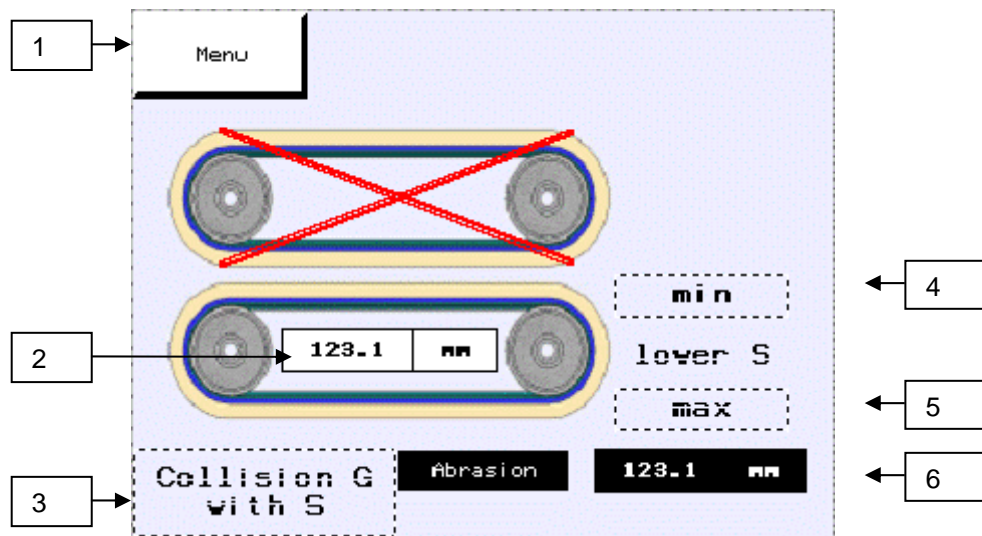


Abb. 29: Display – Lower S unit

- 1 Menu (see 5.3.2)
- 2 Current position of lower S unit
- 3 Display only appears if the lower G axle and lower S axle have collided.
- 4 Display appears, if minimum end position has been reached.
- 5 Display appears, if maximum end position has been reached.
- 6 Wear display

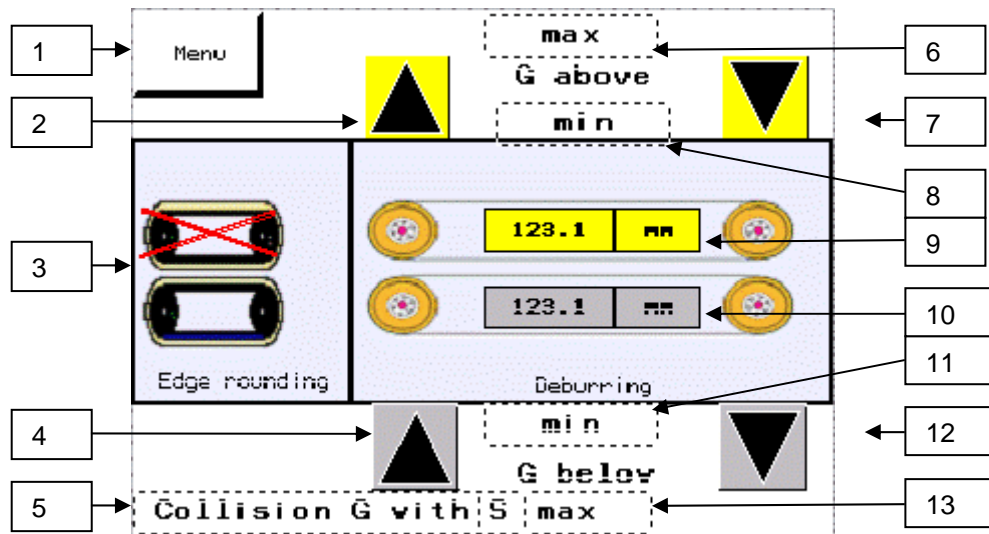


Abb. 30: Display – lower G-unit

- 1 Menu (see 5.3.2)
- 2 Button for moving the upper G unit upwards.
- 3 Button for changing to lower S unit.
- 4 Button for moving the lower G unit upwards.
- 5 Display only appears if the lower G axle and lower S axle have collided.
- 6 Display appears if the maximum position of the upper G unit has been reached.
- 7 Button for moving the upper G unit downwards.
- 8 Display appears if the minimum position of the upper G unit has been reached.
- 9 Current position of the upper G axle.
- 10 Current position of the lower G axle.
- 11 Display appears if the minimum end position of the lower G unit has been reached.
- 12 Button for moving the lower G unit downwards.
- 13 Display appears if the maximum end position of the lower G unit has been reached.

5.3.9.2 Display of upper and lower S-unit / Upper and lower G-unit

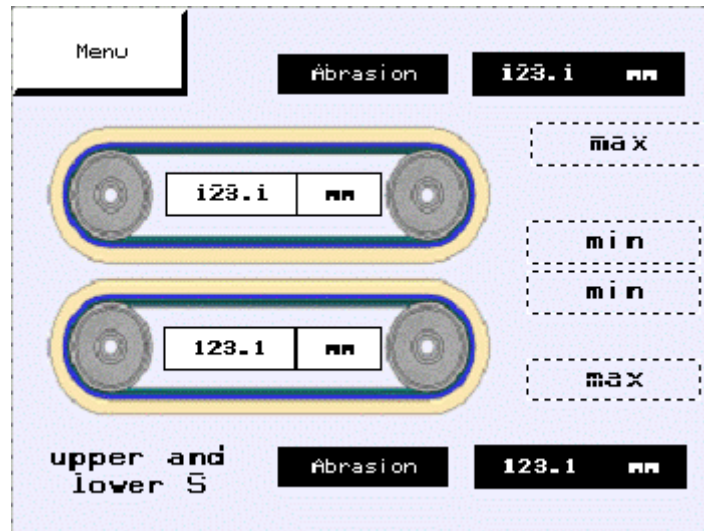


Abb. 31: Display – Upper and lower S-unit

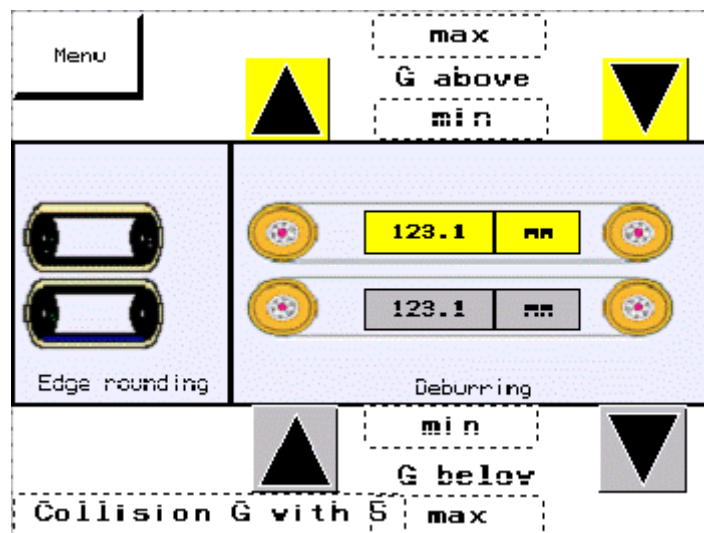


Abb. 32: Display – Upper and lower G-unit

(see 5.3.9.1)

5.3.9.3 Display – Upper S-unit / Upper G unit

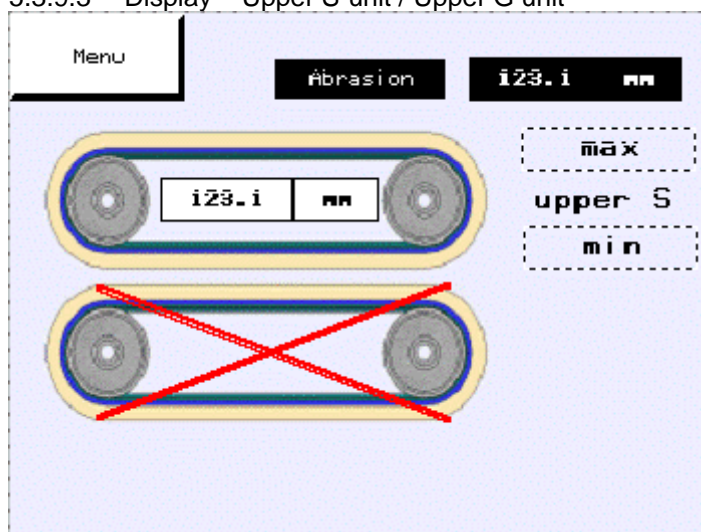


Abb. 33: Display – Upper S-unit

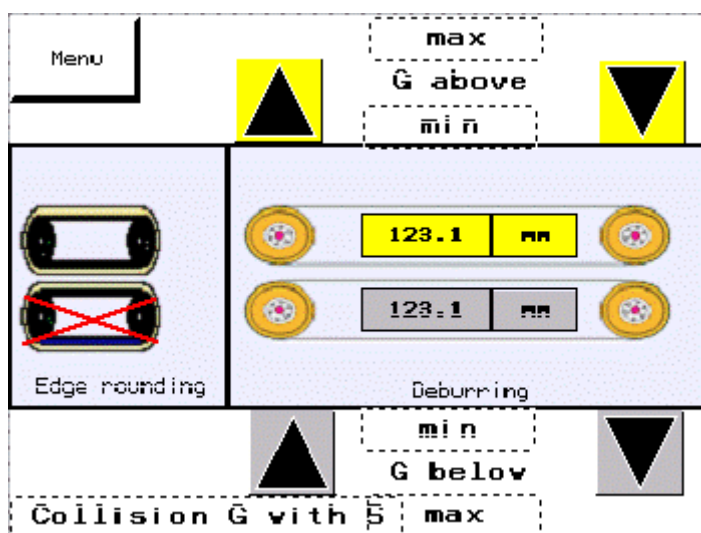


Abb. 34: Display – Upper G-unit

(see 5.3.9.1)

5.3.9.4 Display – Sheet thickness / Setting sheet thickness

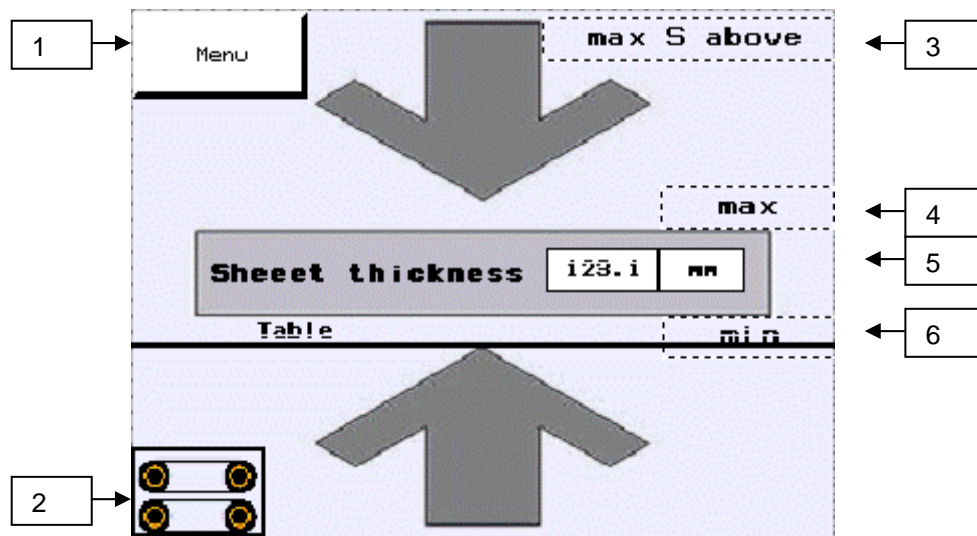


Abb. 35: Display – Sheet thickness

- 1 Menu (see 5.3.2)
- 2 This button switches to the G unit.
- 3 Display only appears, if the S axle is located at the upper end point.
- 4 Display appears, if maximum sheet thickness has been reached.
- 5 Current set sheet thickness.
- 6 Display appears, if minimum sheet thickness has been reached.

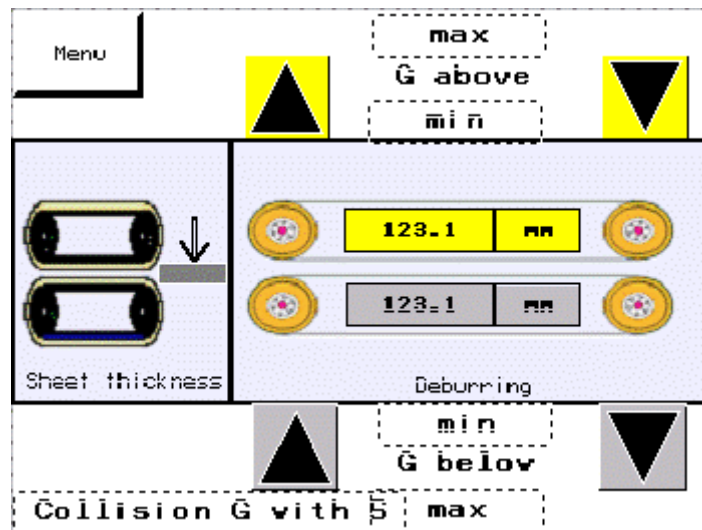


Abb. 36: Display –

(see 5.3.9.1)

5.3.10 Setting sheet thickness



Before processing, the sheet thickness of the workpieces must be measured and adjusted on the machine.



Abb. 37: Setting sheet thickness

- 1 "Sheet thickness" display (see 5.3.9.4)
- 2 Set sheet thickness joystick
- 3 "Sheet thickness setting" gear selection lever

NOTE

Workpieces remaining in the machine

Damage to the machine

- Ensure that no workpieces are in the machine.
 - The sheet thickness cannot be set correctly.
-
- Move the gear selection lever (3) to the lowest position (Gear 1).
 - ↳ The sheet thickness information is shown in the display (1).
 - Use the joystick (2) to set the sheet thickness to the value measured.

5.3.11 Starting the machine

Before starting the machine, the following conditions must be checked:

- Acceptance of the workpieces at the output side of the machine is ensured.
- Contamination such as material residue and dust deposits are removed.
- All abrasive belts and grinding belts are checked for damage (visual inspection).
- Place the main switch on the back of the machine into the "On" position.
- Make sure that all malfunctions are corrected.
- Ensure that both »EMERGENCY STOP« buttons are disengaged.

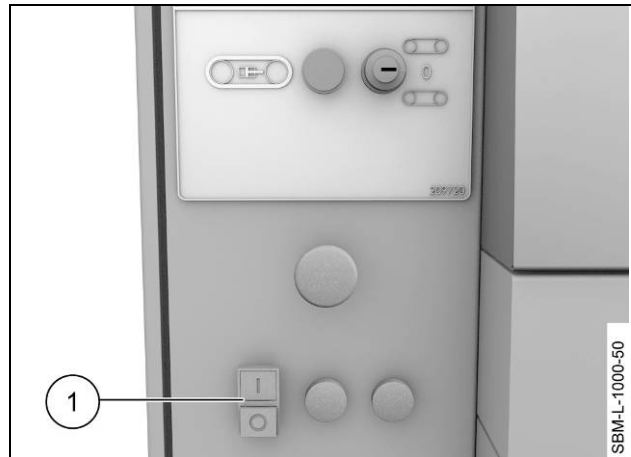


Abb. 38: Starting the machine

1 ON/OFF switch

Start the machine using the ON/OFF switch.



Before grinding can begin, the following pre-requisites must be met:

- The sheet thickness of the workpiece is measured and set on the machine (see Chapter 5.3.6)
- Feed speed is set (see Chapter 5.2.3).
- Top and bottom machining units are correctly positioned

5.4 Processing material

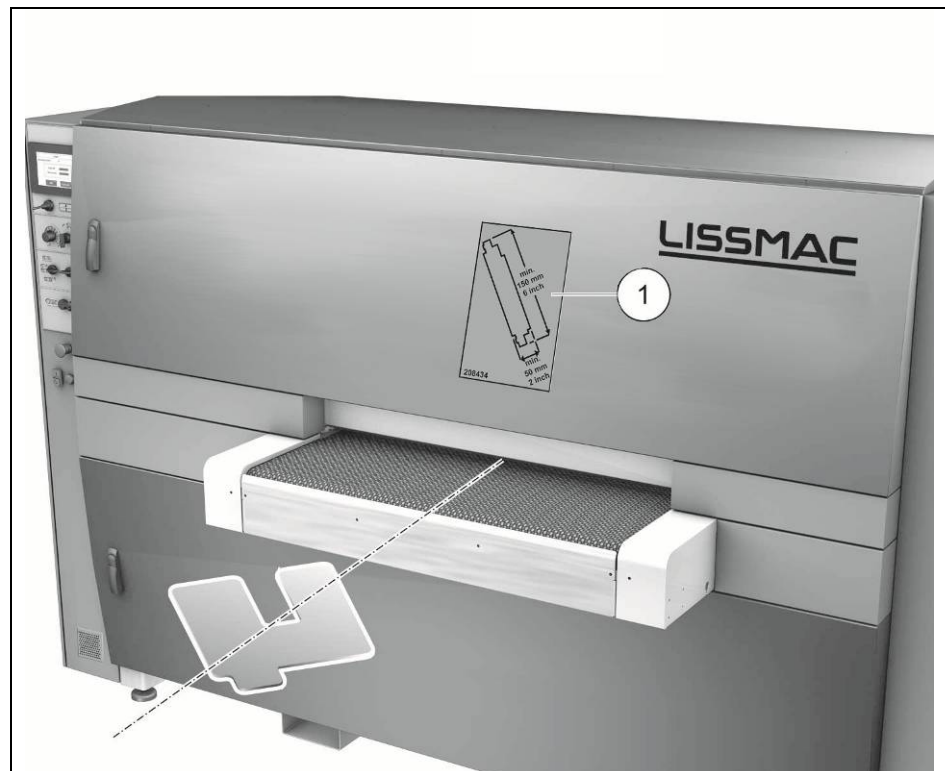


Abb. 39: Processing material

1 Pictogram on the machine

Place workpieces onto the conveyor belt as shown.



To achieve the best possible machining of all edges, always place the workpiece with its straight edges diagonal to the grinding belt if possible.

NOTE

Minimum dimensions of the workpiece

Damage to the machine, the workpiece

- The minimum dimensions of a workpiece are 150x50x0.5 mm.
- It must be ensured with short workpieces that the passage length is at least 150 mm. Place short workpieces parallel to the conveyor belt if necessary.

5.5 Connecting the extractor

5.5.1 Aluminium machining



WARNING



In a mixture of aluminium and steel dust, explosive gas can be produced from corrosion.

For each material change, the machine

- must be cleaned completely
- Fixed piping must be exchanged
- Remaining dust deposits must be removed from pipes



Not intended use especially includes the machining of composite materials in which both aluminium and steel dust are simultaneously generated.

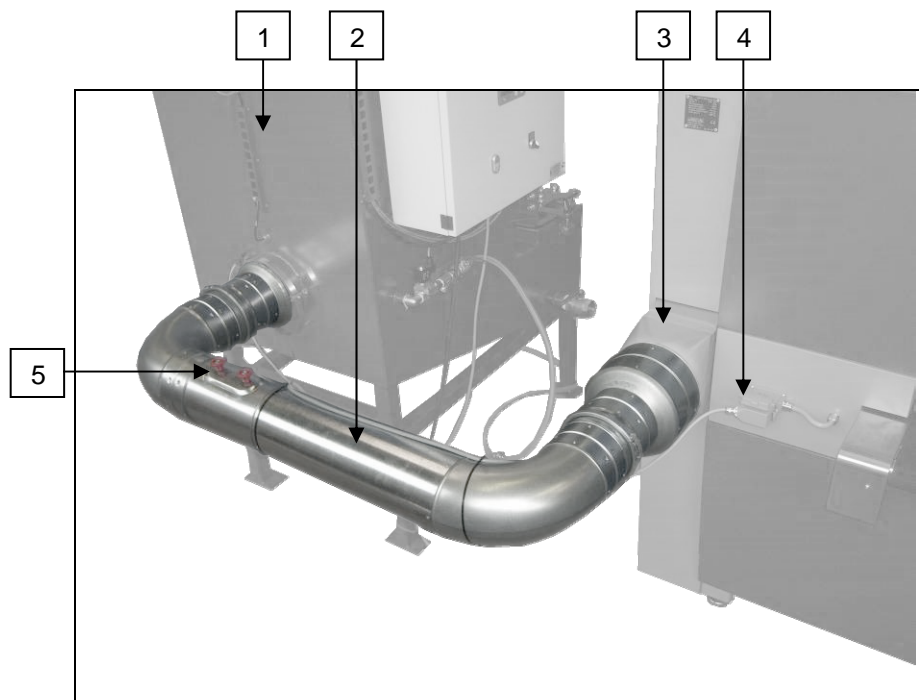


Abb. 40: Connecting the wet separator

- 1 Dust extraction
- 2 Fixed pipes for aluminium and steel processing
- 3 Suction nozzles
- 4 Connector plugs

- Fixed piping for aluminium or steel processing is to be connected (pos. 2) to the extraction supports (pos. 3) of the machine.
- Insert the connection plug (pos. 4)
 - ↳ The machine detects the material to be processed via the connection plug (pos. 4).

- Place the material switch (also see 3.6 Operating elements on the machine) on the front side of the machine to aluminium or steel.
 - ↳ The cleaning interval of the machine is set automatically.
 - ↳ The indicator lamp (see 3.4 Grinding machine assembly) for aluminium or steel must be illuminated.



The material switch setting and fixed piping must match otherwise there is a mode conflict.

- ↳ The material switch and the fixed piping are not matched to each another.

5.5.2 "Fault" lamp (see 3.4 Grinding machine structure) lights

- The material switch and the extraction system are not connected to one another.

5.6 Switching machining material

- Switch off the main switch (see 3.4).
- Remove the fixed piping and plug in the connection plug for dust extraction.
- Remove all dust and metal residue from the plumbing, machine interior and suction nozzles.



Danger of explosion / fire!

In a mixture of aluminium and steel dust, explosive gas can be produced from corrosion, so this cleaning is of utmost importance.

- Switch on the main switch (see 3.4) again

6 Changing abrasives

WARNING



Accidental starting of the grinding motors during replacement of abrasives

Severe injuries due to rotating grinding belts.

- Turn off the main switch each time the S-unit or the the G-unit is moved.
- Only entrust the work to authorised personnel.

6.1 Replacing G units grinding belts

6.1.1 Removing upper and lower G units grinding belt

The upper and lower G units must be moved completely into their end positions to change the grinding belts.

For the upper G unit the sheet thickness must additionally be moved to "zero" (see display).

Changing the grinding belt is shown on the upper G unit. Changing the grinding belt in the lower G unit is identical.



Abb. 41: Changing the grinding belt of the upper G unit

- 1 Belt roller
- 2 Tensioning lever

- Set sheet thickness to "zero".
- Move the upper G unit upward into the end position (Chapter 5.3.9.1 Fig.30).
- Turn off the machine (main switch).
- Move the tensioning lever (2) to the left and loosen the grinding belt.
- Remove the grinding belt.

6.1.2 Replace the sliding blocks

The G units are equipped with a slowly following sliding block belt for stabilizing the grinding belts.

The sliding block belt is equipped with exchangeable sliding blocks.

Check the sliding blocks at each replacement of the grinding belts and exchange if necessary.

In order to work on the sliding blocks or sliding block belts, the safety plate (1) must first be removed on the respective G unit and replaced after the work is completed.

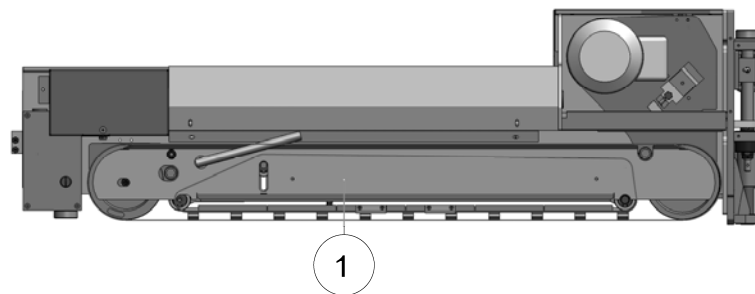


Abb. 42: Upper G-unit with mounted safety plate

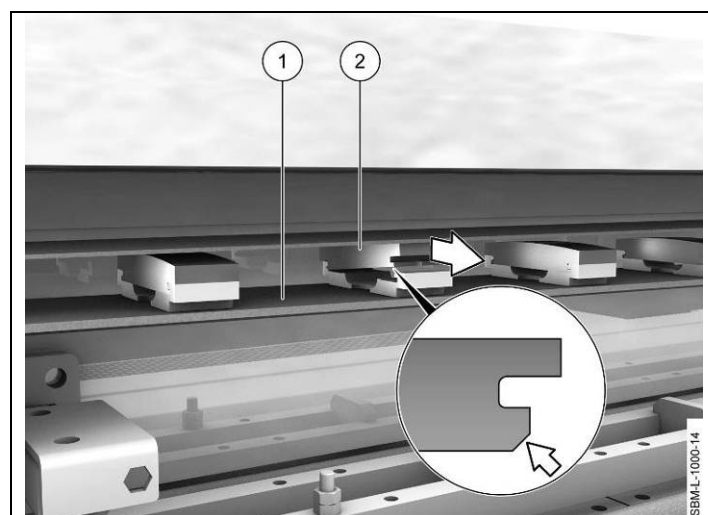


Abb. 43: Replacing sliding blocks

- 1 Sliding block belt
- 2 Sliding block

- Check sliding block.
- Clip out the slider block from the holder with a screwdriver.
- Place the sliding block with the side without chamfer in the holder and clip in.

NOTE

Worn sliding block

Poor grinding results

- If one sliding block is damaged, they must all be replaced, since the differing heights of new and old sliding blocks can have a negative impact on the grinding results.

6.1.3 Remove the sliding block belt

The G unit must be moved into its end position for replacing the sliding block belt.

For the upper G unit the sheet thickness must additionally be moved to "zero" (see display).

In order to work on the sliding blocks or sliding block belts, the safety plate (1) must first be removed on the respective G unit and replaced after the work is completed.

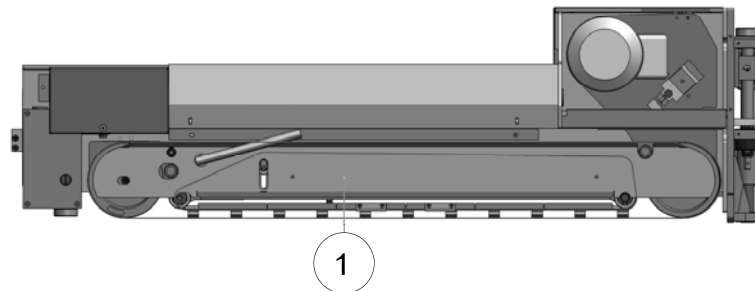


Abb. 44: Upper G-unit with mounted safety plate

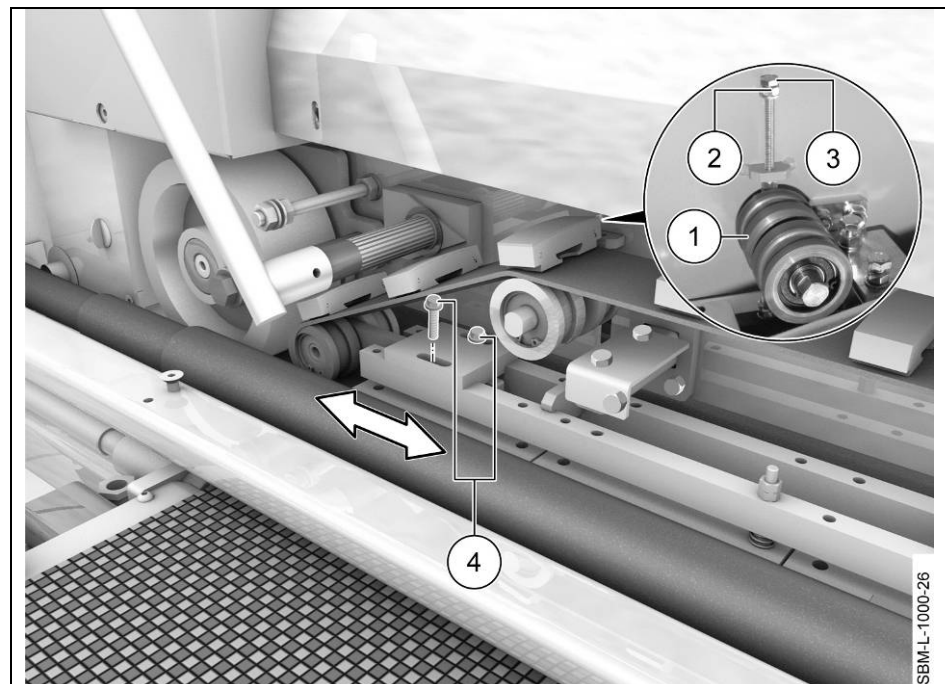


Abb. 45: Sliding block belt

- 1 Sliding block belt tensioning roller
- 2 Counter nut
- 3 Tensioning bolt
- 4 Screw fasteners

- Loosen counter nuts (2) and turn back.
- Remove the screw fastener of the tensioning roller (1) (only accessible with swung out G unit from the rear, 19mm width across flats)
- Release the tensioning roller (1) with the tensioning bolts (3).
- Remove screw fasteners (4) and slide the deflection roller towards the rear.
- Remove the sliding block belt.

6.1.4 Placing on and tensioning the sliding block belt

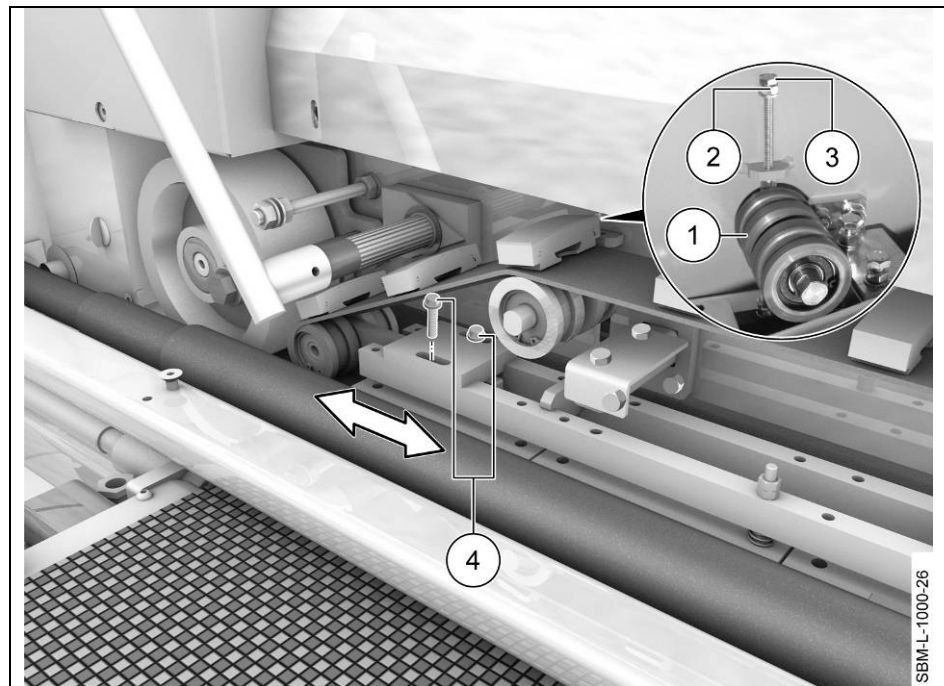


Abb. 46: Tensioning the sliding block belt.

- 1 Tensioning roller
- 2 Counter nut
- 3 Tensioning bolt
- 4 Screw fasteners

- Put on the sliding block belt according to running direction arrows.
- Slide the deflection roller to the maximum end position and fix with the screw fasteners (4) (for tightening torque, see Chapter 8.3).
- Tighten the sliding block belt with the tensioning roller (1) using the tensioning bolt (3) and secure with counter nut (2).
- Tighten the screw fastener (width across flats 19 mm) of the tensioning roller (1) on the other side (for tightening torque, see Chapter 8.3).
- Mount safety plate (see 6.1.3)



Tension sliding block belt tightly, otherwise the power transmission is not guaranteed.

The belt runs counter clockwise.

6.1.5 Putting on grinding belts

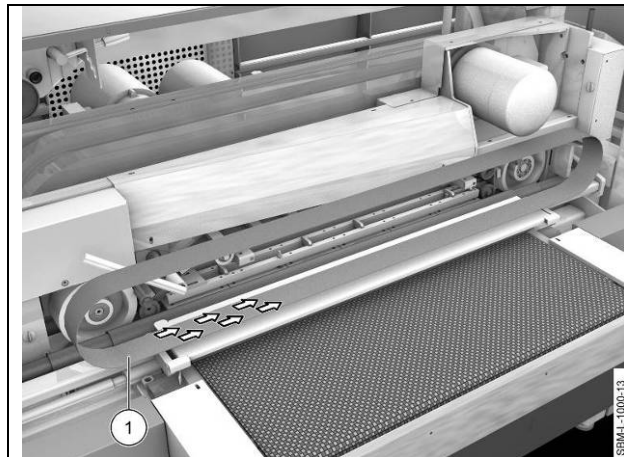


Abb. 47: Putting on grinding belts

1 Put on the new grinding belt according to running direction arrows.

- Tighten the grinding belt with the tensioning lever



Pay attention to the running direction of the grinding belt; the running direction is marked with arrows.

6.1.6 Align grinding belts



Abb. 48: Adjust running of the belt

- 1 Left adjustment screw
- 2 Right adjustment screw

- Start grinding units and observe the belt running. For this turn the S unit selection switch to the 0 position, set the G unit selection switch to the upper or lower G unit, put the key switch in the necessary position and hold (see 5.2.4 Setup function with key switch) and activate the ON/OFF switch all motors.
- Set the running of the belt with the adjustment screws (1) and (2) (on stopped belt)



The grinding belt must run even with the deflection roller.

6.2 Replacing S-unit abrasive belt

6.2.1 Preparing to replace the abrasive belt

The abrasive belts on the S-unit differ according to the material to be processed.

The abrasive belts have opposite operating directions in both the upper and the lower S-unit.

The existing wear must be reset to reuse the abrasive belts. To do this, note the wear (1) and (2) shown in the display and later apply the value to the abrasive belt.

Since the abrasive belts depend on the operating direction, the direction of the abrasive belts must also be logged.

NOTE

To prevent damage to the abrasive belts, the S unit (upper or lower), the running direction and the wear of the abrasive belts must be recorded.

6.2.2 Recording wear

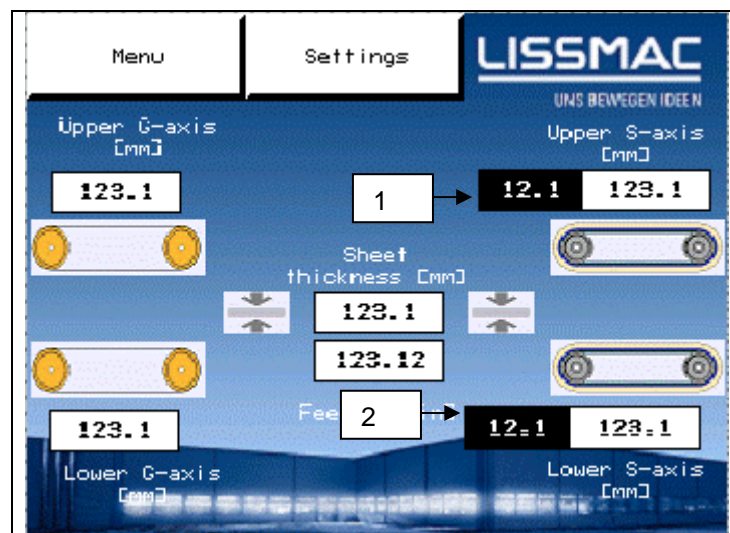


Abb. 49: Wear display (display in operation mode 5.3.1)

- 1 Wear display of upper S unit
- 2 Wear display of lower S unit

➤ Note "Wear" display on the respective abrasive belt.

6.2.3 Access to S unit

- Upper S-unit** The upper and lower S unit must be moved into their end positions for replacing the abrasive belt.
- For the upper S unit the sheet thickness must additionally be moved to "zero" (see display).
- Lower S unit** Changing the abrasive belt is shown on the upper S unit. Changing the abrasive belt in the lower S unit is identical.

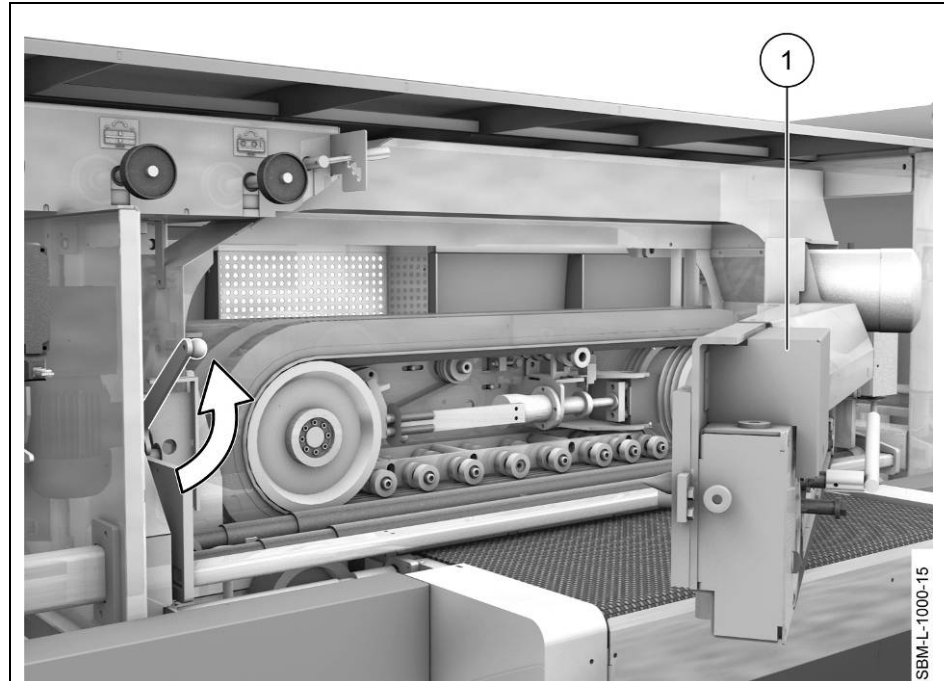


Abb. 50: Access to S unit

NOTE

In order to move the S unit into its end position, the G unit (1) must be closed.

If the G unit is open, the S unit function cannot be activated.

- Move the G unit to the end position.
- Set sheet thickness to "zero".
- Open locking lever.
- Clap open G unit (1).

6.2.4 Releasing the tension on the S-unit abrasive belt

The abrasive belts in the S-units are hydraulically tensioned; actuation is carried out from the operating unit.

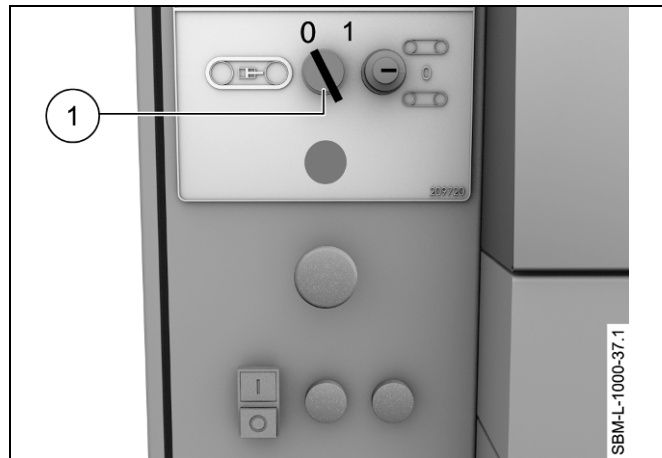


Abb. 51: Hydraulic belt tensioner

1 Rotary switch for hydraulic belt tensioner

- Set the rotary switch of the hydraulic belt tensioner (1) from position 1 to position 0 (release tension of S unit).

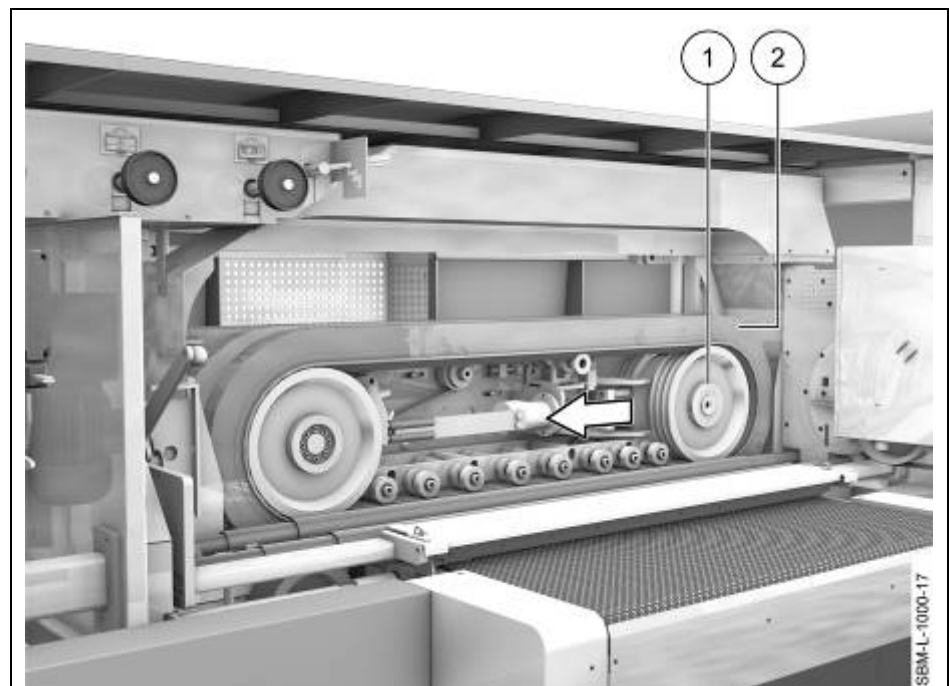


Abb. 52: Hydraulic belt tensioner

1 Tensioning unit
2 Abrasive belt

↶ Tensioning unit moved back.

- Remove the abrasive belt from the pulley.

6.2.5 Place the abrasive belt on the S-unit

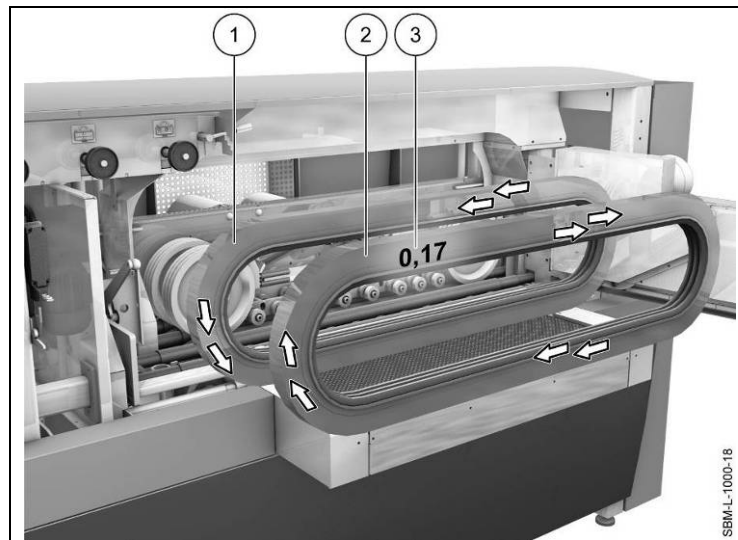


Abb. 53: Removing the grinding belts

- 1 Back abrasive belt
- 2 Front abrasive belt
- 3 Wear notch on abrasive belt

- Replace the abrasive belts onto the pulleys according to their labels (S-unit, position, and operating direction).

6.2.6 Tensioning the S-unit abrasive belt

The hydraulic belt tensioner has an automatic shutoff using the end switch. This ensures that the abrasive belts are always correctly tensioned.

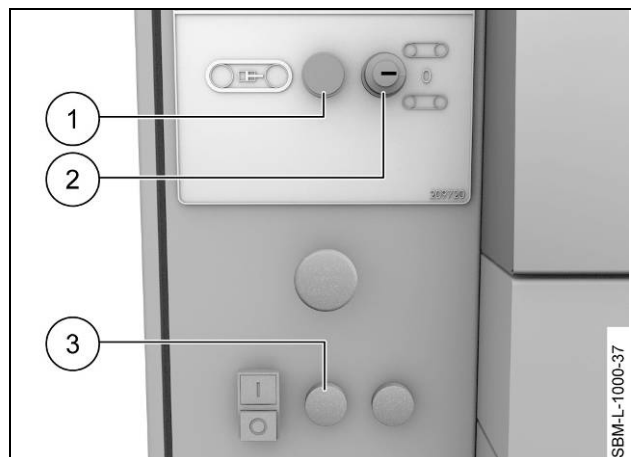


Abb. 54: Hydraulic belt tensioner

- 1 Rotary switch for hydraulic belt tensioner
- 2 Setup machine key switch
- 3 Button Acknowledge EMERGENCY OFF

- Turn key switch (2) into the desired position (upper or lower unit) and hold
- Press Acknowledge EMERGENCY STOP button (3)
- Set the button of the hydraulic belt tensioner (1) from position 0 to position 1 (tighten the S unit).
- Key switch can be released

6.2.7 Setting wear

Measure new belt according to 6.2.8.

When reusing existing abrasive belts, reset the to the noted wear value on the abrasive belt, or measure according to 6.2.8.

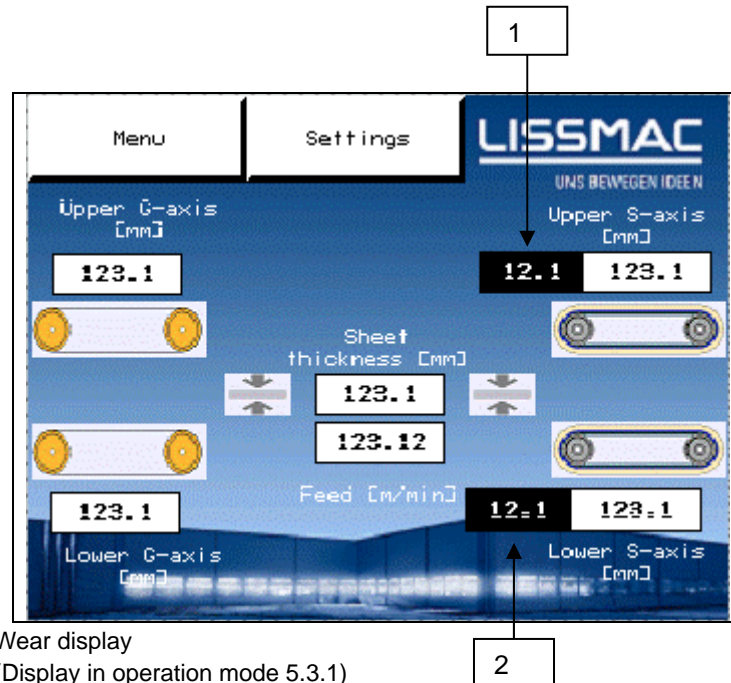


Abb. 55: Wear display
(Display in operation mode 5.3.1)

- 1 Wear display on top S-unit
- 2 Wear display on bottom S-unit

- Reset to the noted wear value on the abrasive belt.
- The S-units can be moved with the joystick, depending on the position of the gear lever.

6.2.8 Measuring wear

After replacing an abrasive belt, always adjust the S-unit so that the wear display is on "Zero".

If the upper and lower wear measuring device is on zero, a normal edge rounding should be achieved.

If a heavy edge rounding is desired, a deviation can also be made.

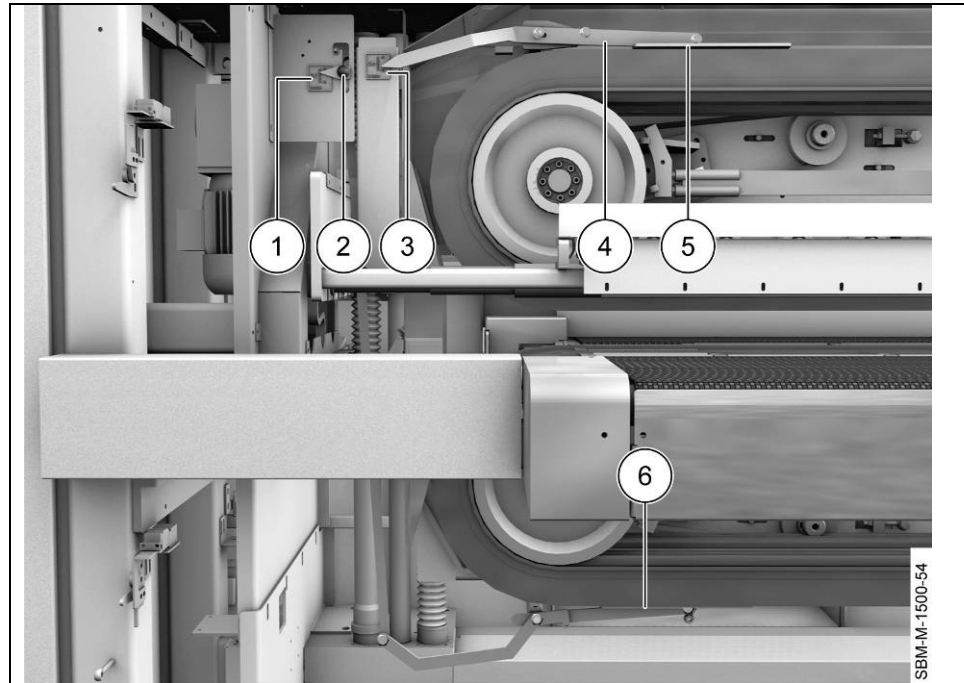


Abb. 56: Mechanical wear display

- 1 Wear display on bottom S-unit
- 2 Hand lever to apply display of lower wear measurement
- 3 Wear display on top S-unit
- 4 Lever for wear display
- 5 Base plate for upper abrasive belt
- 6 Base plate for lower abrasive belt



Both abrasive belts can be measured independently of one another.

Measuring the wear on the upper abrasive belt

- To measure the upper abrasive belts, lift the lever (4) out of its interlock and pull it back.
- Place the base plate (5) onto the abrasive belt.
- Read the wear on the wear display (3).
- Bring the base plate (5) back into initial position.

Measuring the wear on the lower abrasive belt

- To measure the lower abrasive belts, left the lever (2) out of its interlock and move it downwards until the base plate (6) is on the abrasive belt.
- Read the wear on the wear display (1).
- Bring the base plate (6) back into initial position.

6.2.9 Setting wear display to "zero".

- To set the wear display to "zero", proceed as with the respective wear measurement (up to reading wear display).
- Set gear selection lever to upper or lower S unit (5.3.9).
- Hold the "Wear query for abrasive belt" button down (see 3.6 Control elements on the machine) and move with the S unit joystick, until the wear display is at zero.
- Bring lever (2) or lever (4) into the initial position.



- After the wear measurement the "Acknowledge EMERGENCY STOP" switch on the control panel must be activated (see 3.6 Control elements on the machine), otherwise the motors of the grinding units do not start.
 - Setting to "zero" is used for a rough orientation; the fine adjustment is determined either via the workpiece or the test plate, as desired.
-

7 Service/Repair

7.1 G-unit drive belt

7.1.1 Grinding belt and sliding block belt drive

The grinding and sliding block belts are driven via drive belts. These belts must be inspected at regular intervals (see Service intervals, Chapter 8.1) and if necessary retightened or replaced.

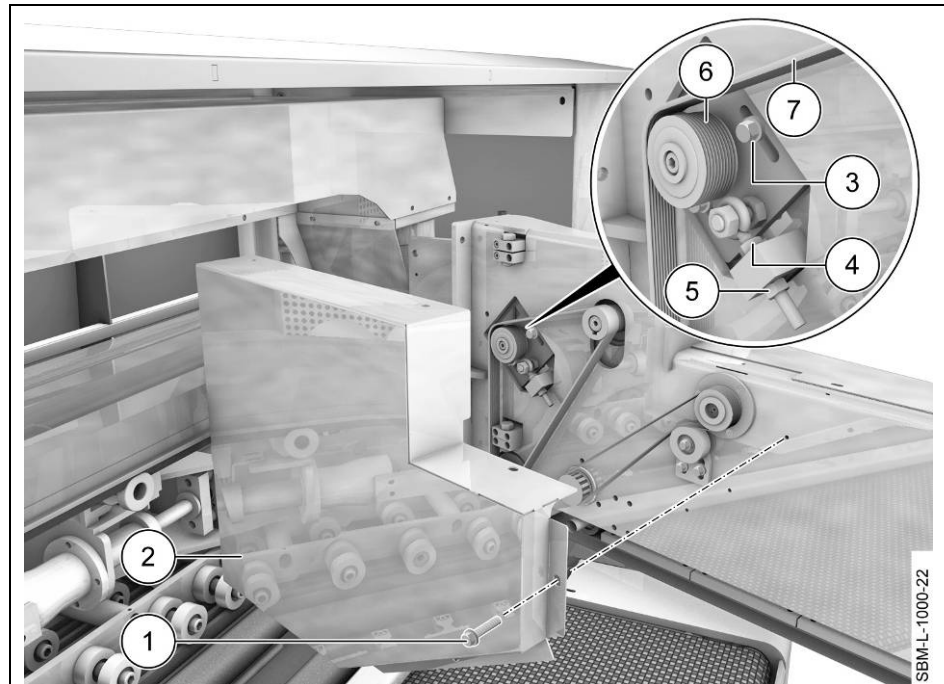


Abb. 57: G unit V-belt

- 1 Covering hood screw fastener
- 2 Covering hood
- 3 Belt tensioner grinding belt drive screw fastener
- 4 Upper tensioning bolt counter nut
- 5 Lower tensioning bolt counter nut
- 6 Grinding belt drive tensioning roller
- 7 Grinding belt drive poly-V belt

7.1.2 Removing grinding belt drive poly-V belt

- Unscrew the covering hood screw fasteners (1).
- Remove the covering hood (2).
- Unscrew the belt tensioner screw fasteners (3).
- Loosen upper counter nut (4) of the tensioning bolt and move back a good distance.
- Pull belt tensioner back with lower counter nut (5) and release tension on the poly-V belt.

7.1.3 Putting on the poly-V belt

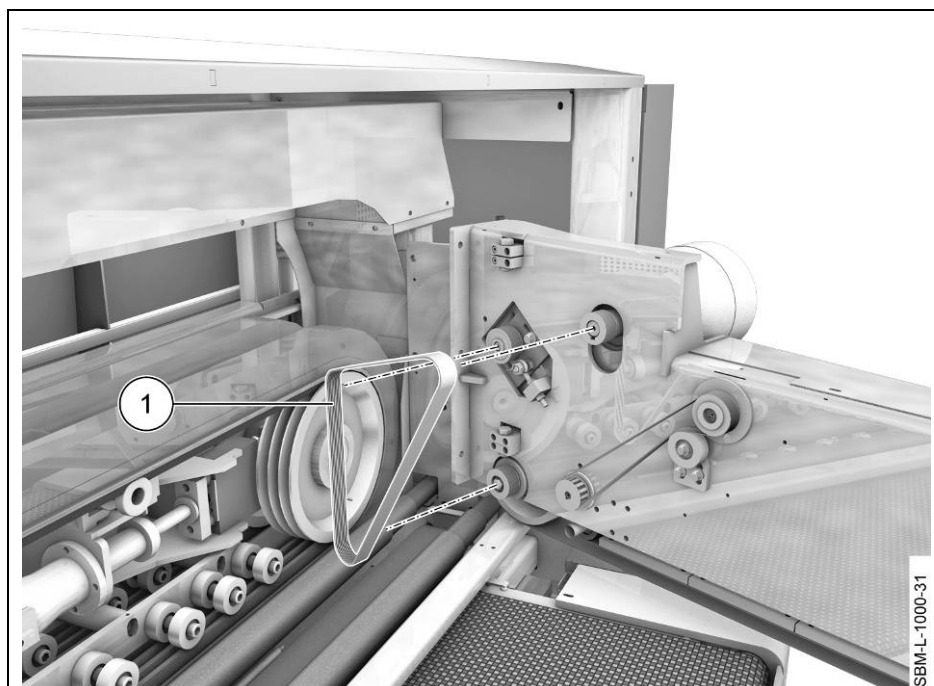


Abb. 58: Putting on the poly-V belt

1 Poly-V belt

➤ Put on new poly-V belt.

NOTE

To prevent damage to the poly-V belt and to the belt drive, make sure that the poly-V belt lies completely on all belt pulleys.

7.1.4 Tensioning the poly-V belts

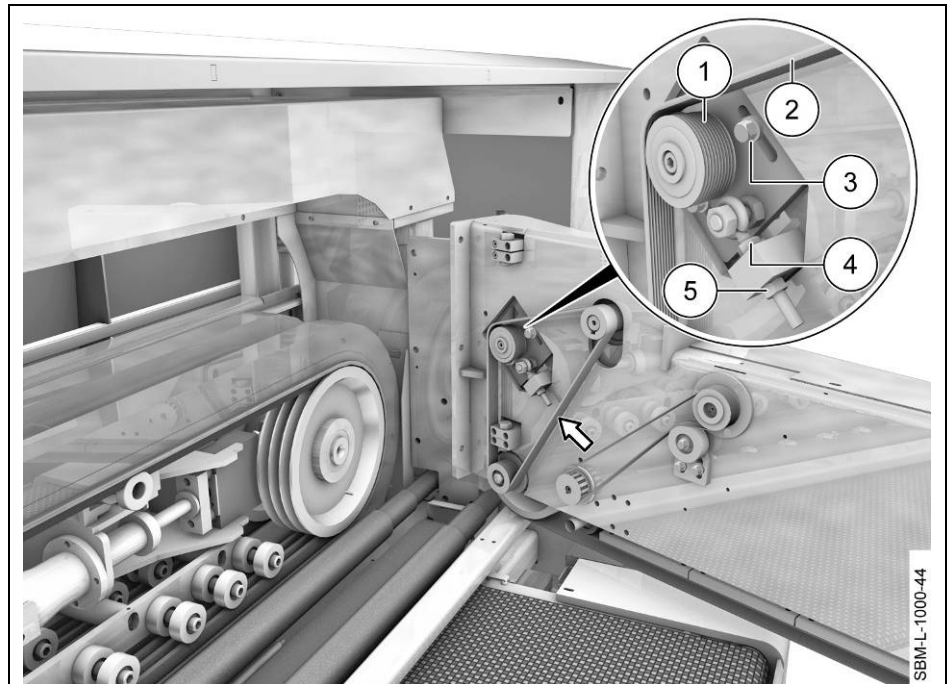


Abb. 59: Tensioning the poly-V belts

- 1 Grinding belt drive tensioning roller
 - 2 Grinding belt drive poly-V belt
 - 3 Belt tensioner grinding belt drive screw fastener
 - 4 Upper belt tensioner counter nut
 - 5 Lower belt tensioner counter nut
- Slide the tensioning roller (1) with the counter nut (4) until the poly-V belt is pre-tensioned.
 - ↳ The poly-V belt (2) is correctly tensioned when the poly-V belt (2) can be pressed down on the longest side by approx. 1 cm.
 - Tighten the screw fasteners (3) with the tightening torque (see Chapter 8.3).
 - Tighten the counter nut (5) with tightening torque (see Chapter 8.3).

7.1.5 Replacing sliding block drive toothed belt

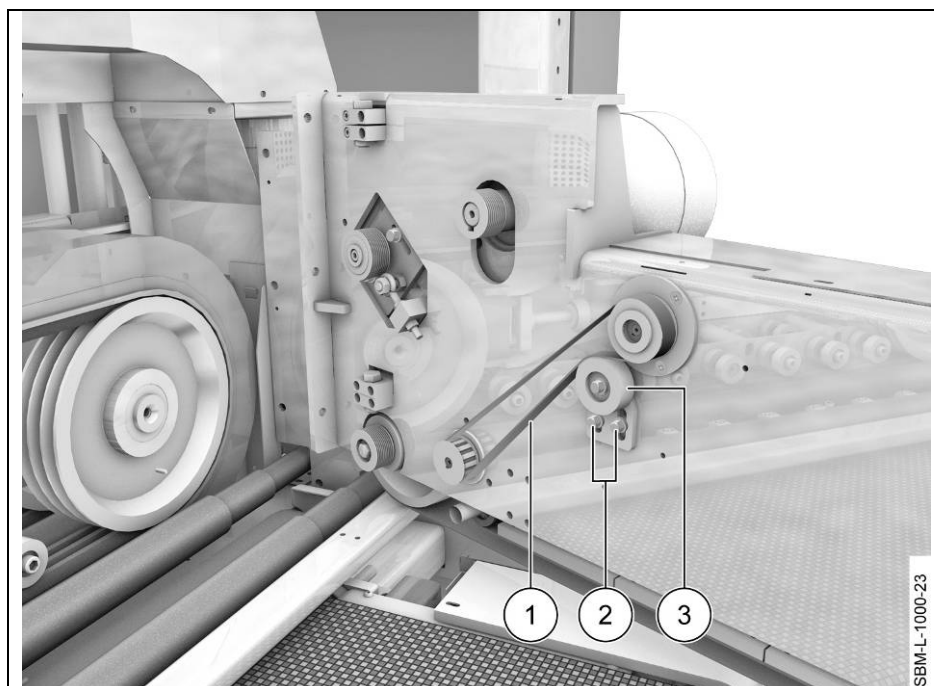


Abb. 60: Sliding block drive toothed belt

- 1 Toothed belt
- 2 Belt tensioner screw fastener
- 3 Belt tensioner

- Check toothed belt (1) for wear, replace if necessary
- Loosen screw fasteners (2).
- Pull back belt tensioner (3).
- Remove toothed belt (1) and check the belt pulleys for wear.
- Put new toothed belt (1) into place.
- Slide belt tensioner (3) in the direction of the toothed belt (1), until the pre-tensioning is reached.
- Tighten the screw fasteners (2) with the tightening torque (see Chapter 8.3).
- Replace the covering hood

NOTE

Worn or damaged teeth on the belt pulleys lead to destruction of the toothed belt.

Replace worn or damaged belt pulleys immediately.

7.2 Replacing S-unit drive belts

To be able to replace the V-belts on the inner side of the S-units, the abrasive belts must first be removed; see Chapter 6.2.

7.2.1 Remove support bar

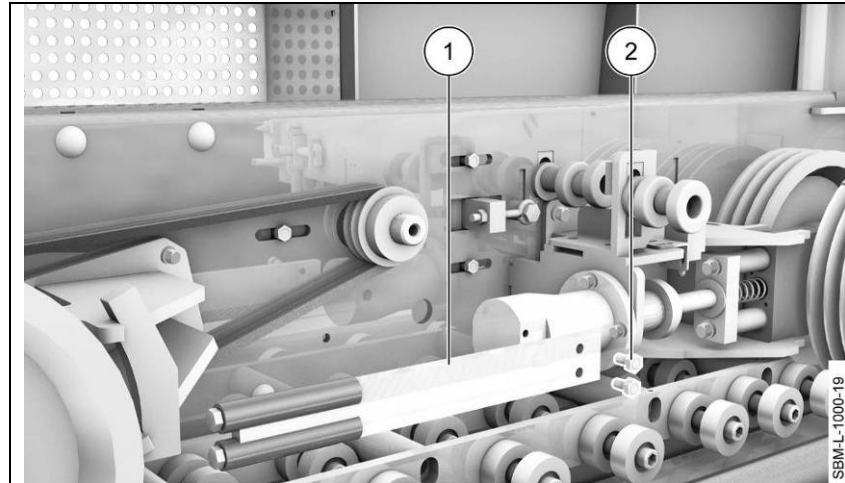


Abb. 61: Remove support bar

- 1 Support bar
- 2 Screw fasteners

- Unscrew the screw fasteners (2).
- Remove the support bar (1).

7.2.2 Removing the V-belts

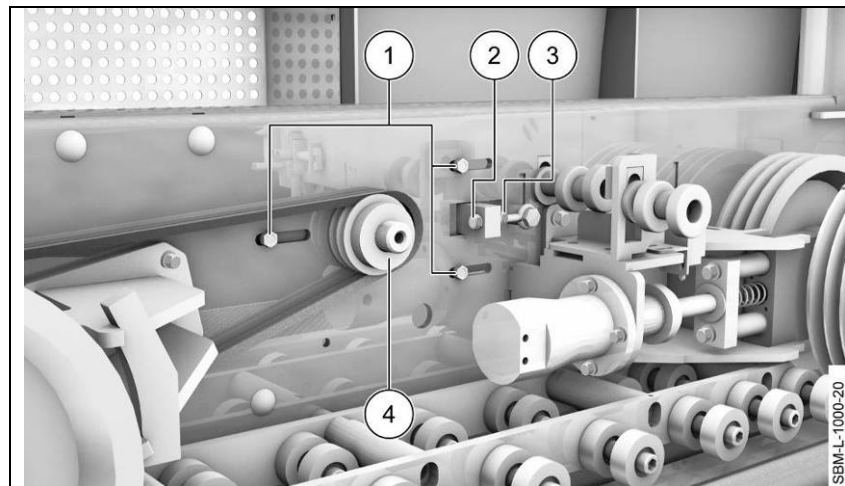


Abb. 62: Removing the V-belts

- 1 Drive motor screw fasteners
- 2 Counter nut
- 3 Counter nut
- 4 Drive motor V-belt pulley

- Loosen screw fasteners (1), but do not remove.
- Loosen counter nut (2) and move back a good distance.
- Use counter nut (3) to push the belt pulley and drive motor back.
- Remove the V-belt.

7.2.3 Installing the V-belt

NOTE

Always replace the V-belts in pairs.

If V-belts are replaced individually, secure drive is no longer possible.

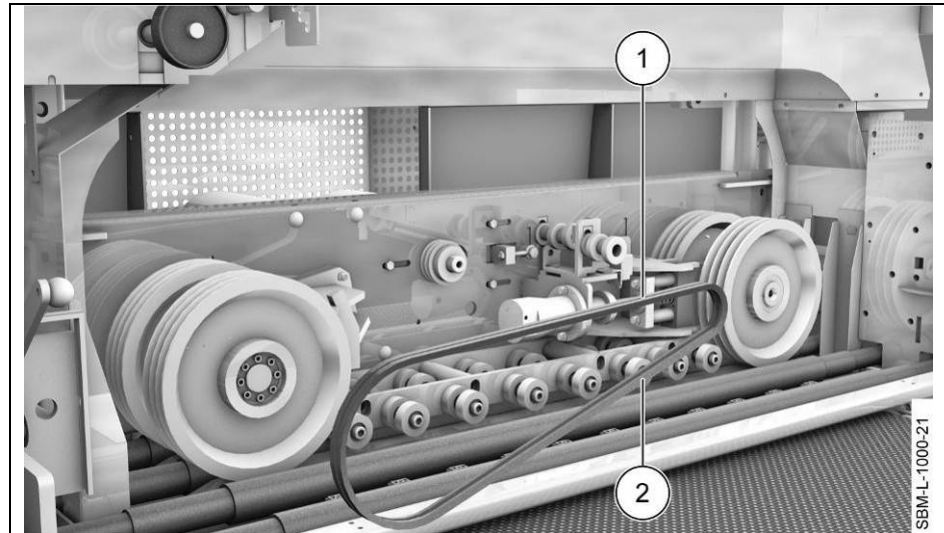


Abb. 63: Installing the V-belt

- 1 Inner V-belt
- 2 Outer V-belt

➤ Place both V-belts (1) and (2) onto the pulley.

7.2.4 Tensioning the V-belts

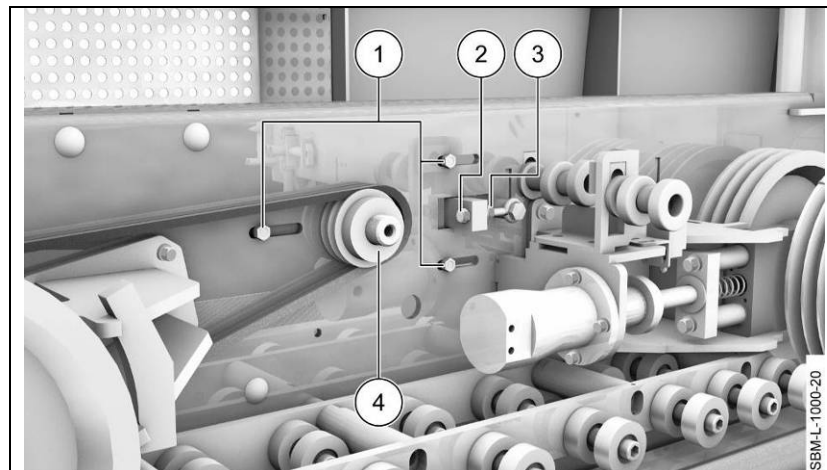


Abb. 64: Tensioning the V-belts

- 1 Drive motor screw fasteners
- 2 Counter nut
- 3 Counter nut
- 4 Drive motor V-belt pulley

- Turn counter nut (3) all the way back.
- Use counter nut (2) to tension the drive motor V-belt pulley (4) until the V-belt can still be pushed in about 1 cm on its longest segment.
- Tighten the screw fasteners (1) with the tightening torque (see Chapter 8.3).

7.2.5 Installing the support bar

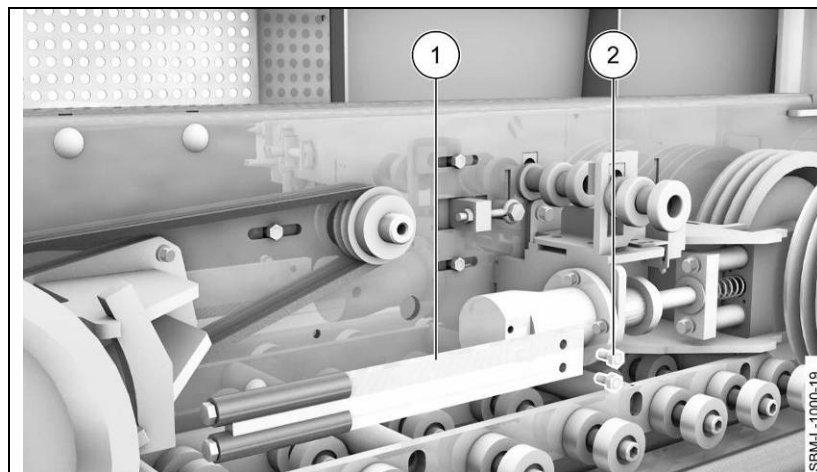


Abb. 65: Installing the support bar

- 1 Support bar
- 2 Screw fasteners

- Place the support bar (1) between the hydraulic belt tensioner and the belt pulley bracket.
- Tighten the screw fasteners (2) with the tightening torque (see Chapter 8.3).

7.2.6 Replacing the V-belt on the back of the S-unit

NOTE

Always replace the V-belts in pairs.

If V-belts are replaced individually, secure drive is no longer possible.

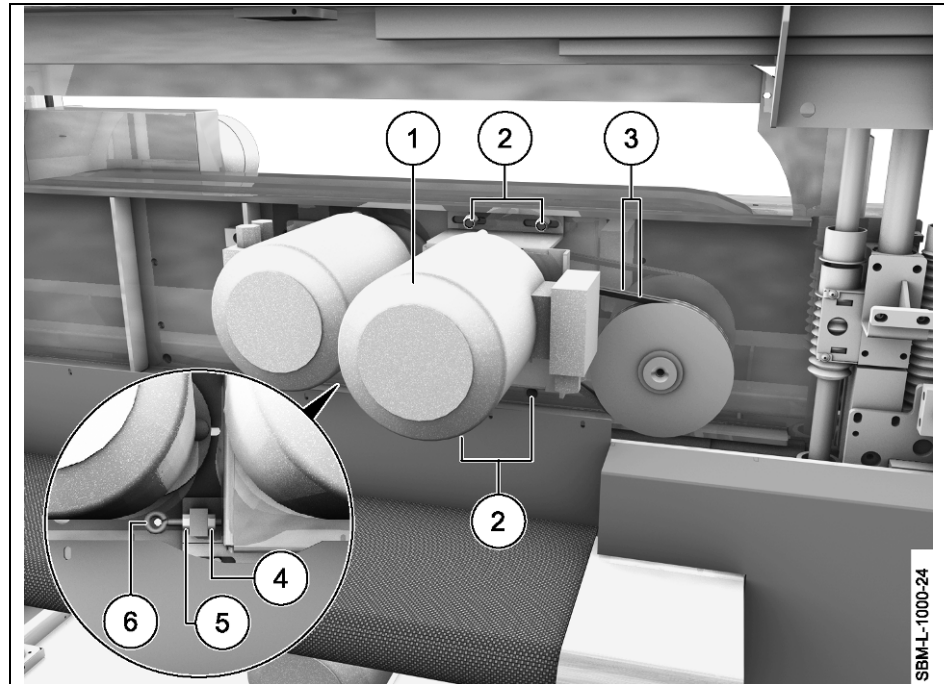


Abb. 66: Outer V-belt

- 1 drive motor
- 2 fastening nuts
- 3 V-belts
- 4 Counter nuts
- 5 Counter nut
- 6 Tensioning bolt

- Loosen fastening nuts (2)
- Loosen counter nuts (5) and turn back
- Use counter nut (4) to turn the drive motor (1) back and release the tension on the V-belt (3).
- Remove the V-belt (3).

7.2.7 Tensioning the V-belt on the back of the S-unit

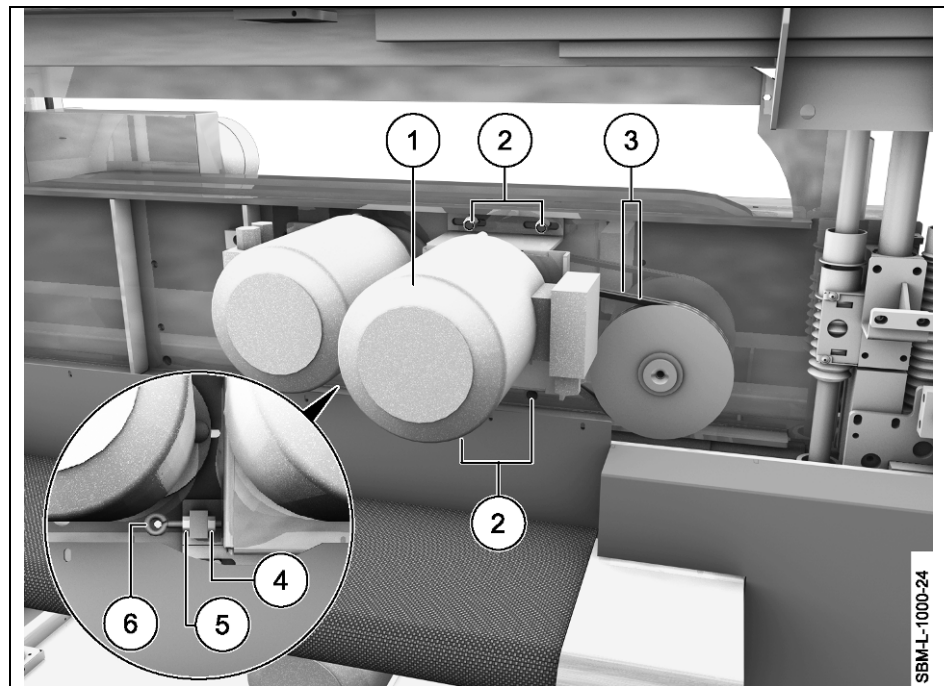


Abb. 67: Tensioning the V-belts

- 1 Drive motor
- 2 Fastening nuts
- 3 V-belts
- 4 Counter nut
- 5 Counter nut
- 6 Tensioning bolt

- Put new V-belt (3) into place.
- Turn counter nut (4) back.
- Use counter nut (5) to tension the drive motor (1) until the V-belt (3) can still be pushed in about 1 cm on its longest segment.
- Tighten counter nut (4).
- Tighten the fastening nut (2) with the tightening torque (see Chapter 8.3).

7.3 Lubrication points/ Hydraulic oil

7.3.1 Left guide shafts lubrication points

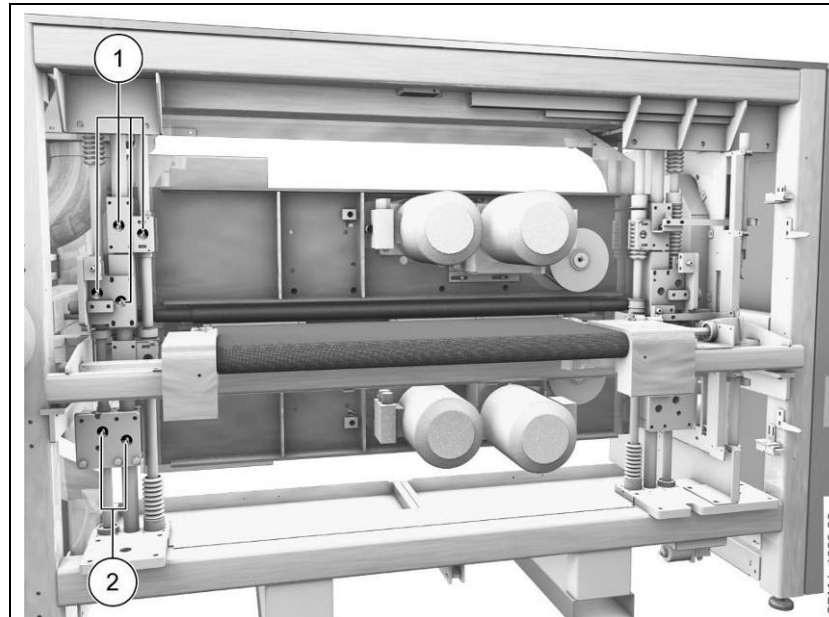


Abb. 68: Left guide shafts lubrication points

- 1 Upper left lubrication points
- 2 Lower left lubrication points

➤ Lubrication points (1) and (2) according to the service schedule.

7.3.2 Right guide shaft lubrication points

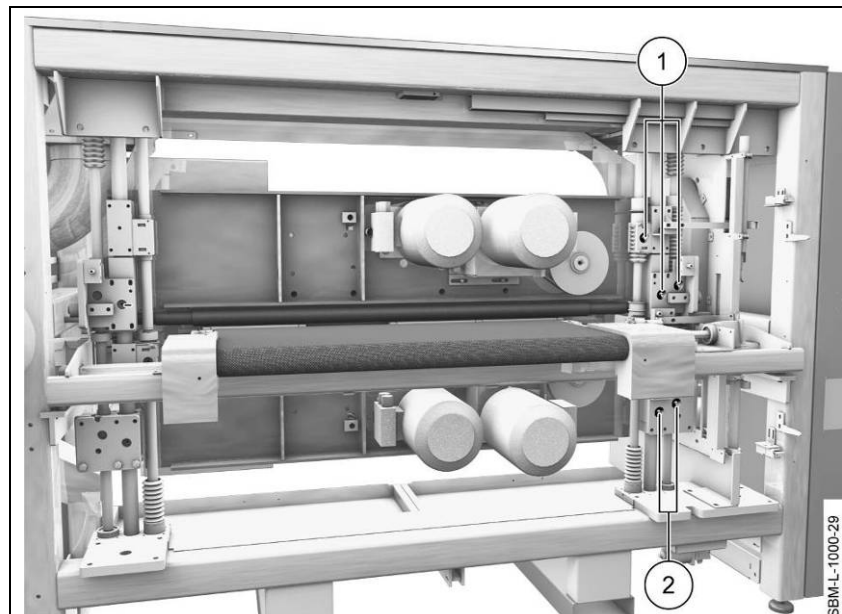


Abb. 69: Right guide shaft lubrication points

- 1 Upper right lubrication points
- 2 Lower right lubrication points

➤ Lubrication points (1) and (2) according to the service schedule.

7.3.3 Lubrication points of G unit upper operator side

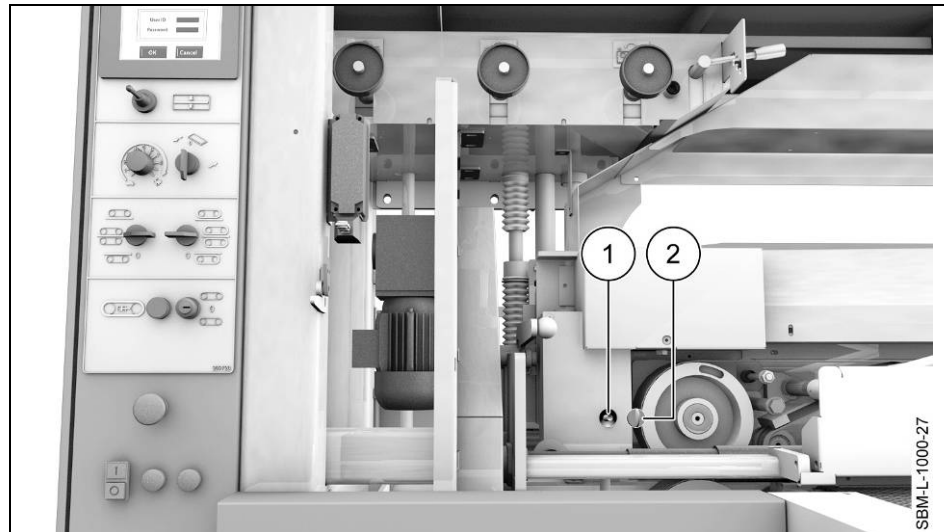


Abb. 70: Lubrication points of G unit

- 1 Grease lubrication point
- 2 Plugs

- Remove plugs (2) from the cover guide shafts.
- Move the G unit so far in the direction of the end position until the lubricating nipple (1) can be seen in the opening.
- Lubricate point (1) according to the service schedule.

7.3.4 Lubricating the S-unit belt Flanged bearing

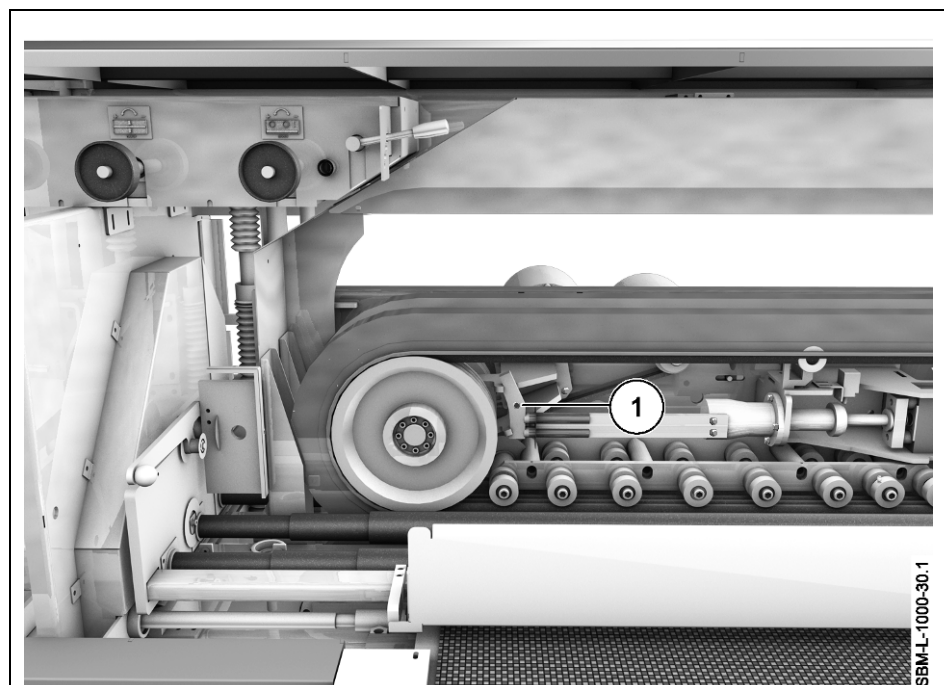


Abb. 71: Lubricating the Flanged bearing

- 1 Lubrication nipple of Flanged bearing

- Lubricate the lubricating nipple (1).

7.3.5 Check hydraulic oil level

NOTE

The hydraulic oil level must always be between the minimum and maximum markings.

If the hydraulic oil level is too low, the hydraulic belt tensioner for the S-unit cannot work correctly, and belt tension is not assured.

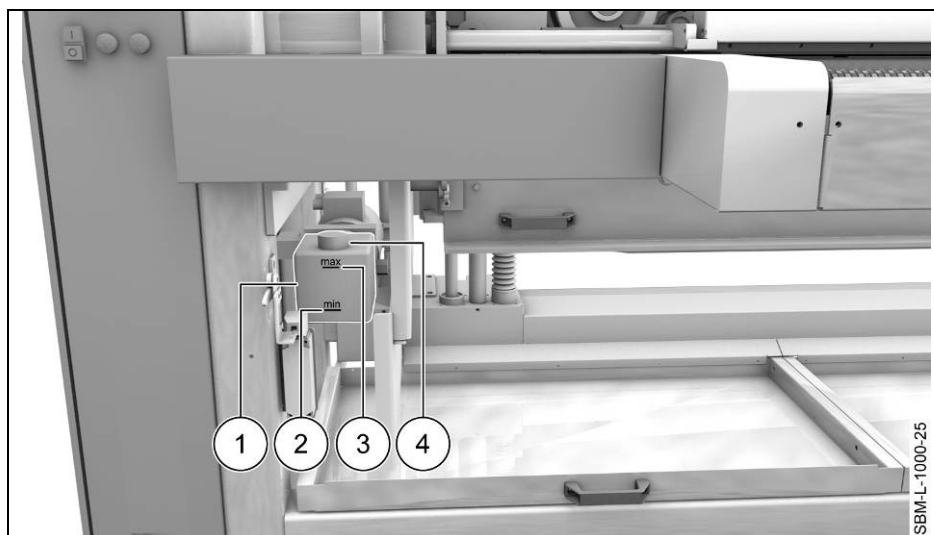


Abb. 72: Hydraulic oil level

- 1 Hydraulic oil container
- 2 Minimum mark
- 3 Maximum mark
- 4 Filling cap

- Check hydraulic oil level, fill if necessary.
- Replace hydraulic oil; see service schedule.

7.4 Cleaning

**WARNING****Accidental starting of the grinding motors during cleaning / grinding dust**

Severe injuries due to rotating abrasive belts / grinding belts

- Disconnect electrical power to the machine; turn off main switch.
- Only entrust the work to authorised personnel.
- Do not use compressed air.

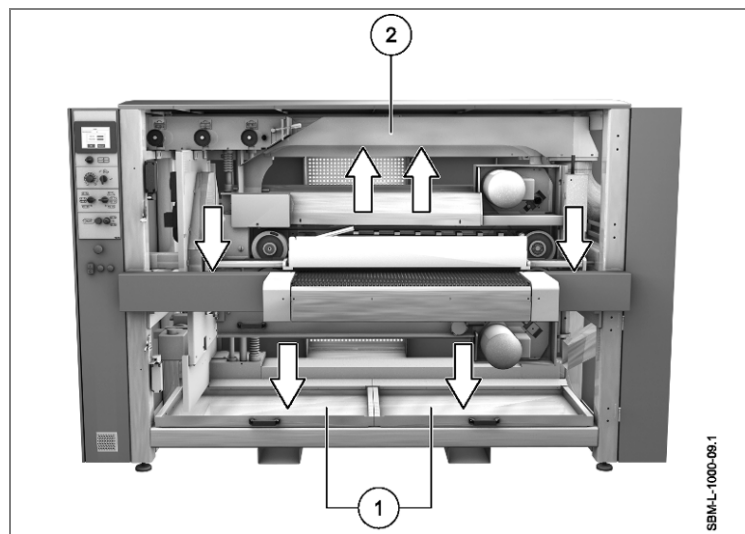


Abb. 73: Catch boxes and dust extraction shaft

- 1 Catch boxes
- 2 Cleaning flap

**Clean the interior
and suction pipes
completely**

- Turn off the main switch.
- Open the doors on the front and back.
- Open cleaning flap (2).
- The grinding dust may not come into contact with ignition sources (e.g. fire).
- Remove all dust deposits and other residues (work pieces, tool wear, sheet metal auxiliary materials, etc.) from the interior of the entire machine, all yellow marks must be visible again.
 - ↳ Also look in hidden corners and angles.
- For convenience, use a handheld vacuum cleaner that meets all legal requirements for aluminium or steel dust for this cleaning.
- Clean both dust collection containers (pos. 1) on the grinding machine, as well as the suction pipes for extraction.
- Close doors again



Grinding dust and material residue must be disposed of in accordance with applicable country-specific law.

7.5 Cleaning interval



WARNING



The machine is programmed with an automatic cleaning stop. This takes place every 3 hours with aluminium and every 8 hours with steel machining. Only after you have opened all four doors, cleaned the entire interior (see 7.4) and closed all doors again, you can continue working. There are yellow safety strips glued in the machine. When these safety strips are covered with grinding dust the machine must be thoroughly cleaned. This should prevent dust collections from forming.

These daily cleaning tasks of the machine is to be recorded in writing in the cleaning record.

Machining of aluminium	The machine must be cleaned completely every three hours (see 7.4)
Machining of steel	The machine must be cleaned completely every eight hours (see 7.4)
When machining aluminium, the yellow marks in the machine (frame, catch boxes) can no longer be seen.	The machine must be cleaned completely (see 7.4) even if three hours have not yet expired.
Material switch from steel (stainless steel) to aluminium or vice versa	The machine and the suction pipes must be cleaned completely (see 7.4)

8 Service

8.1 Service intervals



The following service work should be performed regularly in the specified intervals.

The intervals are shortened corresponding to multiple-shift operation.

Service work	Interval
Clean interior of the machine and catch boxes (see 7.4)	daily/once per shift every 8 hrs.
Lubricate the lubricating nipple of the Flanged bearing (see 7.3.4)	daily/once per shift every 8 hrs.
Changing the filter pad on the control cabinet	weekly
Check drive belts and deflection rollers for wear	daily/once per shift every 8 hrs.
Lubricating the spindle threads for the height adjustment	every 250 hrs.
Tensioning and lubricating the chains	every 1500 hrs.
Check V-belt tension	every 250 hrs.
Check hydraulic oil level	every 250 hrs.
Change hydraulic oil	every 3000 hrs.

8.2 Maintenance material

Consumables	Designation
Grease	Multi-purpose grease (NLGI-Class EP 2)
Hydraulic oil	HV 46

8.3 Tightening torques

Tightening torque for standard metric thread

All maximum permissible tightening torques listed here apply to threaded connections with ISO 4014 – 4018 hexagon head screws and ISO 4762 hexagon socket head screws, as well as screws with analogous head strength for a friction coefficient of $\mu_{tot} = 0.12$.

Hexagon head screws / hexagon socket head screws / hex nuts	Maximum tightening torque Maximum Ma in Nm		
	ISO 898/1 strength classes		
	8.8	10.9	12.9
M4	2,5	4	4,5
M5	5	7,5	9
M6	9	13	15
M7	14	20	25
M8	22	30	35
M10	45	65	75
M12	75	105	125
M14	115	170	200
M16	180	260	310
M18	260	370	430
M20	360	520	600
M22	490	700	820
M24	620	890	1040

8.4 Troubleshooting

If the machine is not working or is not working correctly, the following causes may pertain.

Error	Display/behaviour	Cause	Solution
1	Indicator lamp »Phase sequence incorrect« is lit	Phase sequence of the power supply does not match that of the machine	➤ Turn phases (may only be done by an electrician)
		Motor overload switch has responded	➤ Inform electrician
2	Machine does not start	EMERGENCY STOP pushed in front or in back	➤ Disengage EMERGENCY STOP ➤ With synchronous operation acknowledge with an SBM-GS EMERGENCY OFF to SBM-GS
		Main switch set to 0	➤ Set main switch to 1
		Door contact switch defective	➤ Inform electrician
		Base plate for abrasive belt is still located on the abrasive belt	➤ Return base plate to initial position (see 6.2.8)
3	Digital display off		➤ Notify customer service
4	Feed is not running	Feed speed controller set to 0	➤ Increase feed speed
		Feed switch set to 0	➤ Turn feed switch to the right
		Top switch bar is responding	➤ Material too high or incorrect material thickness set, switch bar folded down
		Switch bar on conveyor belt is pressed	➤ Free switch bar

8.5 Customer service

If malfunctions occur which cannot be remedied by the customer themselves, contact the following customer service address:

LISSMAC
Maschinenbau GmbH
Lanzstraße 4
D-88410 Bad Wurzach
Telephone: +49 (0) 7564 / 307 - 0
Fax: + 49 (0) 7564 / 307 - 500
E-mail: lissmac@lissmac.com
Web: www.lissmac.com

9 Taking out of operation and disposal

If the machine should be dismantled after the end of its service life, it must be properly disassembled and the individual parts delivered to recycling and disposal.

The following parts of the machine contain environmentally hazardous substances:

- Electronic components of the controls
- Gears (lubricant)

- Disconnect the machine from the power supply.
- Disassemble the machine into individual parts and dispose of parts which contain environmentally hazardous substances according to the applicable national regulations.
- Recycle the other machine parts according to their materials.

10 Warranty

The warranty for this machine is 12 months. For the following listed wear parts the warranty only applies if the wear is not caused by operation.

- Feed and drive elements, such as toothed racks, gears, pinions, spindles, spindle nuts, spindle bearing, cables, chains, chain wheels, belts
- Seals, cable, hoses, collars, connectors, couplings and switches for pneumatics, hydraulics, water, electrical, fuel
- Guide elements, such as guide strips, guide bushings, guide rails, rollers, bearings, anti-slide plating
- Tension elements from quick-coupling systems
- Plain and roller bearings, which do not run in oil bath
- Shaft sealing rings and sealing elements
- Friction and overload couplings, braking equipment
- Carbon brushes, collectors
- Easily dissolvable rings
- External potentiometer and manual switching elements
- Fuses and lamps
- Auxiliary and operating materials
- Fastening elements, such as pegs, anchors and screws
- Lamella
- Diaphragms
- Sealing brushes, sealing rubber, splash guard cloths
- All types of filters
- Drive and deflector rollers and bracings
- Running and drive wheels
- Transport belt
- Rubber scrapers
- Needle felt protection
- Energy storage
- Abrasive belts/grinding belts



Wear parts are parts that with intended use of the machine have limited operational wear. The wear time is not uniformly specified, it differs according to intensity of use. Wear parts must be serviced, adjusted, and replaced as needed corresponding to the specific device's operating manual provided by the manufacturer.

Wear caused by operation does not qualify for warranty claims.
