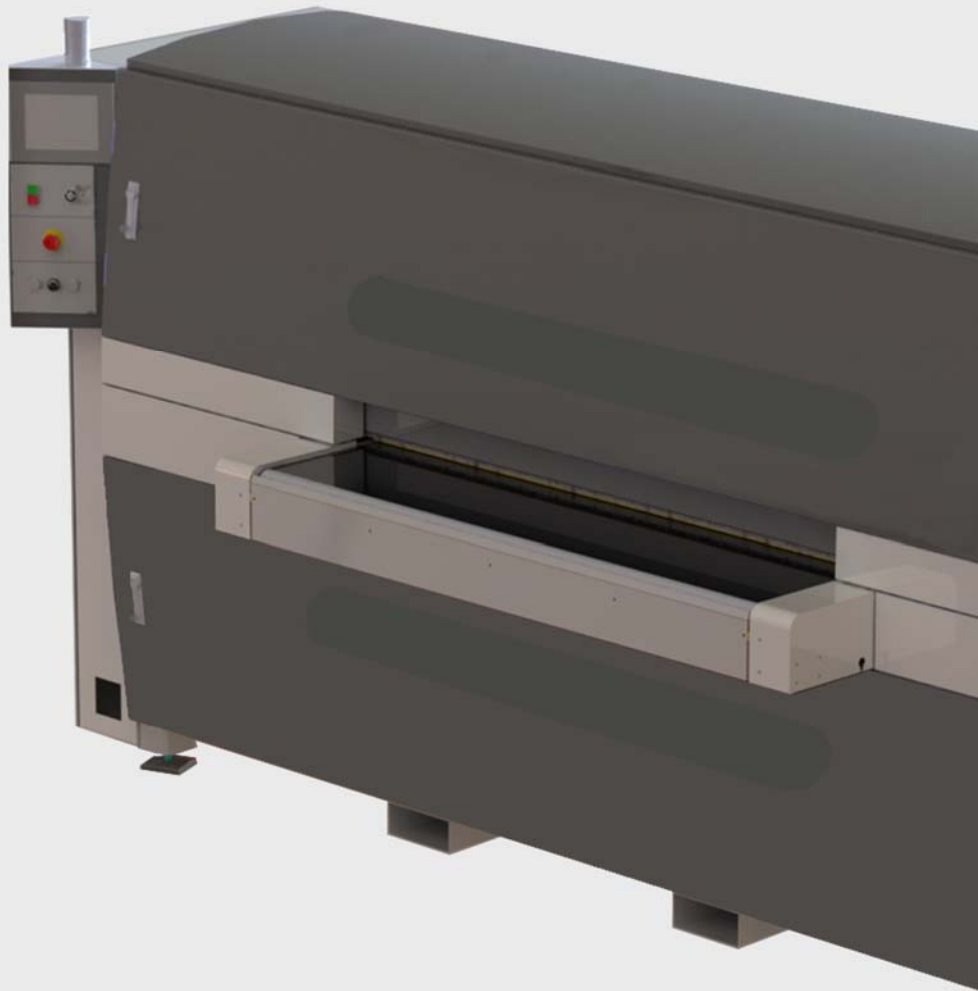


## OPERATING MANUAL GRINDING MACHINE

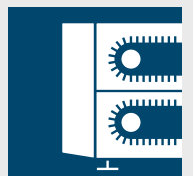
SBM-L 1000 G1S2

SBM-L 1500 G1S2



### EN

LISSMAC Maschinenbau GmbH  
Lanzstraße 4  
D-88410 Bad Wurzach  
Telephone +49 (0) 7564 / 307 - 0  
Telefax +49 (0) 7564 / 307 - 500  
[lissmac@lissmac.com](mailto:lissmac@lissmac.com)  
[www.lissmac.com](http://www.lissmac.com)







## Imprint

Operating manual for  
Grinding Machine

**LISSMAC**  
SBM-L 1000 G1S2  
SBM-L 1500 G1S2  
with Siemens S7 control

Issue date: 02-2019  
Translation of the original operating manual

Manufacturer:

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](mailto:lissmac@lissmac.com)  
Web: [www.lissmac.com](http://www.lissmac.com)

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# Table of Contents

<b>Imprint.....</b>	<b>3</b>
<b>Table of Contents .....</b>	<b>4</b>
<b>1 About this manual .....</b>	<b>7</b>
1.1 Target group .....	7
1.2 Additional documents .....	7
1.3 Presentation of warnings .....	8
1.4 Additional representations .....	8
<b>2 Safety.....</b>	<b>9</b>
2.1 Safety instructions .....	9
2.2 Organisational measures .....	9
2.3 Personnel selection and qualifications .....	9
2.4 Transport .....	9
2.5 Normal operation .....	10
2.6 Maintenance, Service and Troubleshooting .....	10
2.7 Safety instructions for special types of dangers .....	11
2.7.1 Electric power .....	11
2.7.2 Dust .....	11
2.7.3 Fire hazard.....	11
2.7.4 Explosion hazard .....	12
2.7.5 Symbols on the machine.....	13
<b>3 Product description .....</b>	<b>15</b>
3.1 Appropriate usage.....	15
3.2 Technical data .....	16
3.3 Type plate.....	18
3.4 Structure of the grinding machine .....	19
3.5 Machining units .....	21
3.6 Control elements.....	22
3.7 Function .....	23
3.8 Safety equipment.....	24
<b>4 Preparation for use .....</b>	<b>25</b>
4.1 Transporting the machine .....	25
4.2 Storing the machine.....	26
4.3 Installation and assembly .....	26
4.3.1 Installing machine.....	26
4.3.2 Connecting the machine electrically .....	27
4.4 Connecting the extractor system .....	28
<b>5 Operation.....</b>	<b>29</b>
5.1.1 Control elements.....	29
5.2 Operation using function switches .....	30



5.2.1	Setup function with key switch .....	30
5.3	Operation using display functions .....	31
5.3.1	Overview (main screen) .....	31
5.3.2	Start screen.....	32
5.3.3	Setting sheet thickness .....	34
5.3.4	Setting grinding unit G.....	35
5.3.5	Setting grinding unit S.....	36
5.3.6	Settings.....	37
5.3.7	Cleaningintervall and material change.....	38
5.3.8	Listing of tool wear.....	39
5.3.9	Language selection and dimensions .....	40
5.3.10	Setting sheet thickness .....	41
5.3.11	Starting the machine .....	42
5.4	ID key switch (option).....	43
5.5	USB port / RJ45 interface on the outside of the control cabinet.....	45
5.6	Barcode scanner (option) .....	45
5.6.1	Material Data Memory / Recipe Memory internally.....	46
5.6.2	Material Data Memory / Recipe Memory external.....	46
5.7	Interface machine data acquisition for external evaluation (option) .....	47
5.8	Processing material.....	48
<b>6</b>	<b>Changing abrasives .....</b>	<b>49</b>
6.1	Replacing G units grinding belts .....	49
6.1.1	Removing upper and lower G units grinding belt .....	49
6.1.2	Putting on grinding belts.....	50
6.1.3	Align grinding belts.....	50
6.1.4	Replace the sliding blocks .....	51
6.1.5	Remove the sliding block belt.....	52
6.1.6	Placing on and tensioning the sliding block belt.....	53
6.2	Replacing S-unit abrasive belt.....	54
6.2.1	Preparing to replace the abrasive belt .....	54
6.2.2	Recording wear .....	54
6.2.3	Access to S unit.....	55
6.2.4	Releasing the tension on the S-unit abrasive belt .....	56
6.2.5	Place the abrasive belt on the S-unit .....	57
6.2.6	Tensioning the S-unit abrasive belt.....	57
6.2.7	Setting wear .....	58
6.2.8	Measuring wear.....	59
6.2.9	Setting wear display to "zero".....	60
<b>7</b>	<b>Service/Repair.....</b>	<b>61</b>
7.1	G-unit drive belt .....	61
7.1.1	Grinding belt and sliding block belt drive.....	61

7.1.2	Removing grinding belt drive poly-V belt .....	61
7.1.3	Putting on the poly-V belt .....	62
7.1.4	Tensioning the poly-V belts .....	63
7.1.5	Replacing sliding block drive toothed belt .....	64
7.2	Replacing S-unit drive belts .....	65
7.2.1	Remove support bar .....	65
7.2.2	Removing the V-belts .....	65
7.2.3	Installing the V-belt .....	66
7.2.4	Tensioning the V-belts .....	67
7.2.5	Installing the support bar .....	67
7.2.6	Replacing the V-belt on the back of the S-unit .....	68
7.2.7	Tensioning the V-belt on the back of the S-unit .....	69
7.3	Lubrication points/ Hydraulic oil .....	70
7.3.1	Left guide shafts lubrication points .....	70
7.3.2	Right guide shaft lubrication points .....	70
7.3.3	Lubrication points of G unit upper operator side .....	71
7.3.4	Lubricating the S-unit belt Flanged bearing .....	72
7.3.5	Check hydraulic oil level .....	73
7.4	Cleaning .....	74
7.5	Cleaning interval .....	75
<b>8</b>	<b>Service .....</b>	<b>76</b>
8.1	Service intervals .....	76
8.2	Maintenance material .....	76
8.3	Tightening torques .....	77
8.4	Troubleshooting .....	78
8.5	Customer service .....	79
<b>9</b>	<b>Taking out of operation and disposal .....</b>	<b>80</b>
<b>10</b>	<b>Warranty .....</b>	<b>81</b>
<b>11</b>	<b>PREFACE DECLARATION OF INCORPORATION .....</b>	<b>82</b>
<b>12</b>	<b>Declaration of incomplete machine .....</b>	<b>83</b>

# **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:



Important 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 of the figures are marked by numbers in parentheses (1).

## **2 Safety**

### **2.1 Safety instructions**

The SBM-L 1000/1500 G1S2 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 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 3000 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

- When machining metals and especially non-ferrous metals, grinding causes dusts that, when mixed with air, can form an explosive atmosphere.

##### 2.7.4.1 Measures for explosion protection

The operator/owner is responsible for the operation of the system and the system components – responsibilities are to be defined by the operator/owner.

Only media may be processed and vacuumed for which the system and system components of the deburring system and the extraction system are designed (see offer, order confirmation and chapter "Intended use" in the operating instructions of the complete system).

In the event of improper or non-intended use (e.g. operation of the system or system components in explosion-protected areas, extraction of media other than those for which the system and system components of the deburring system and the extraction system are designed), the manufacturer assumes no warranty or liability for function / dangers in handling the system and the system components and all warranty claims do not apply.

The basis for this is the cutting performance that can be achieved with this described deburring system at maximum per unit of time under optimum conditions. It is assumed here that the machine table is equipped as far as possible with workpieces and the maximum possible edge machining (rounding) is carried out.

Results are based on an experiment carried out under different parameters and the maximum results were used for further consideration.

This results in the theoretical value of approx. 15,790 grams of stock removal per hour for steel, approx. 7,800 grams of stock removal per hour for titanium and approx. 7,230 grams of stock removal per hour for aluminium.

If now the maximum stock removal rate is set in relation to the suction power of min. 2200 cubic meters per hour, this results in a dust concentration of 7.177 grams per cubic meter of air with steel, 3.54 grams per cubic meter of air with titanium, and 3.28 grams per cubic meter of air with aluminium.

Thus, according to GESTIS dust database of 2250 grams of dust per cubic meter of air with steel, the limit value falls below by a factor of 313.

The limit of 100 grams of dust per cubic meter of air with titanium falls below by a factor of 28 and falls below the limit of aluminium of 30 grams of dust per cubic meter of air by a factor of 9.14 - regardless of the distribution of grain size in the air and the necessary ignition energy.

Therefore, in the risk assessment, this limit is fulfilled by connecting an extraction system to avoid the formation of a potentially explosive atmosphere.

The machine is controlled so that it can not be operated without extraction system.









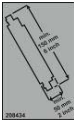



The suction power must be applied to the connection piece of the deburring system and monitored by the flow switch - if the machine is switched on and the units are started for machining, the feed and thus the machining of the workpieces can only take place when the extraction system is started and the volume flow is applied to the connection piece of the deburring system.

If, during operation, the volume flow at the connection piece of the deburring system breaks off, the deburring system immediately goes into fault and is switched off = emergency shut-off.



### 2.7.5 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.

**Notes:**

### 3 Product description

The SBM-L 1000/1500 G1S2 grinding machine is described below.

#### 3.1 Appropriate usage

The grinding machine SBM-L 1000/1500 G1S2 is intended exclusively for one or both side deburring and edge rounding of punched, laser and fine plasma cut workpieces.

This machine may only be operated as an installation with a dedicated and approved extraction system.

When processing steel, steel alloys and stainless steel, a dry separator with a minimum extraction volume of 3000 m<sup>3</sup> can be used.

When working with aluminium or aluminium alloys, a wet separator with a minimum suction volume of 3000 m<sup>3</sup> must be used.

In mixed operation, a wet separator with a minimum extraction volume of 3000 m<sup>3</sup> must also be used.

The materials may only be processed and vacuumed if correctly sorted. When changing the material to be processed, a complete cleaning of the grinding machine, suction tubes and the extraction system must be carried out.

Use for any other purposes is non-intended use.

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

- Park or set up a compacted flat ground with a surface loading according to layout.
- Temperature range up +10 ° to +40 °C
- Humidity 5 – 95 % (not condensing)



**Improper use includes the processing of all materials and media that are not listed in the intended use.**

---

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 grinding machine.

		SBM-L 1000 G1S2	SBM-L 1500 G1S2
<b>Dimensions and weight of the machine</b>	Length approx.	2800 mm	3300 mm
	Width (incl. conveyor belt) approx.	1500 mm	1500 mm
	Height approx.	1800 mm	1800 mm
	Total weight approx.	2500 kg	2800 kg
<b>Electrical data of the entire machine</b>	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 rating (total)	26 kVA / 28 kVA	28 kVA / 30,5 kVA
	protection class	IP 42	IP 42
<b>Machining units Grinding unit (G)</b>	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	2875 RPM
	Grinding motor voltage	400 V / 480V	400 V / 480V
	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
<b>Machining units Edge rounding (S)</b>	Number of motors	4	4
	Drive power per motor	3 kW	3 kW
	Motor speed	1405 RPM	1405 RPM
	Motor voltage	400 V / 480V	400 V / 480V
	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
<b>Feed</b>	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 / 480V	400 V / 480V
	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	SBM-L 1500 G1S2
<b>Hydraulic Unit</b>	Number	1	1
	Drive power	0,37 kW / 44 kW	0,37 kW / 44 kW
	Motor Speed	2800 1/min	2800 1/min
	Motor Volatage	400 V / 480V	400 V / 480V
	Power consumption	0,94 A / 1,63 A	0,94 A / 1,63 A
<b>Environment</b>	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)
<b>Tool wear compensation</b>	Compressed air connection	6 bar / ¼ "	6 bar / ¼ "
<b>Noise pressure level</b>	Emission noise pressure level at operator's place (average value, since it depends on the workpiece processed)	approx. 80 dB	approx. 80 dB
<b>Workpieces</b>	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	300 .kg/lfm	300 .kg/lfm
	Maximum weight of workpieces after increase of load capacity (option)	750 kg/running meter	750 kg/running meter

### 3.3 Type plate

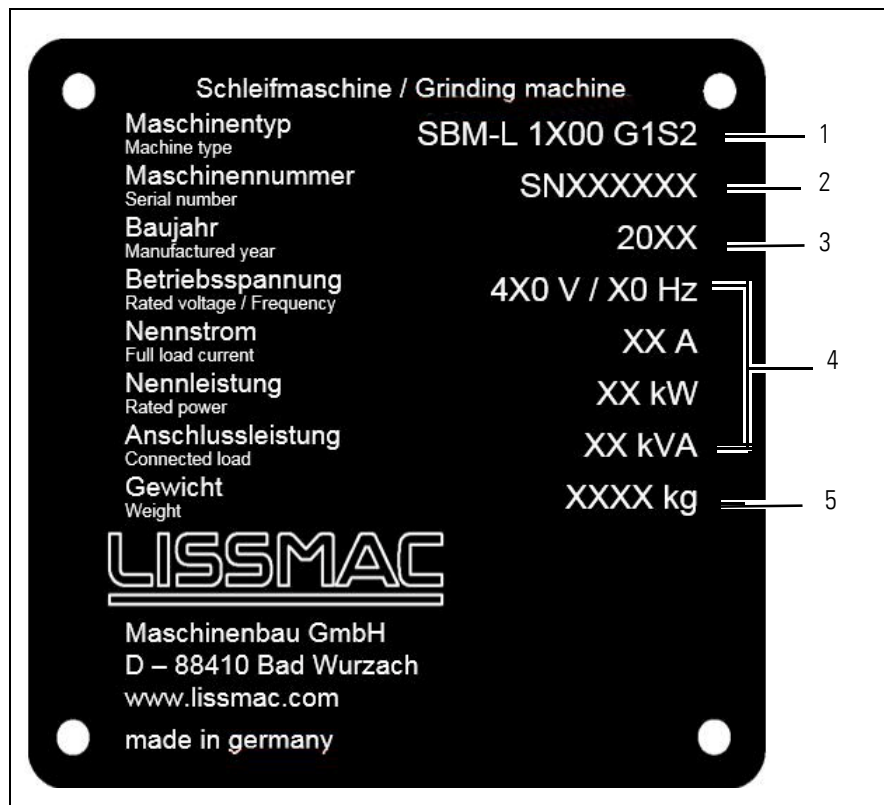


Abb. 1: Type plate

- 1 Name of machine
- 2 Serial number of machine
- 3 Manufactured year
- 4 Connection values
- 5 Weight

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

### 3.4 Structure of the grinding machine

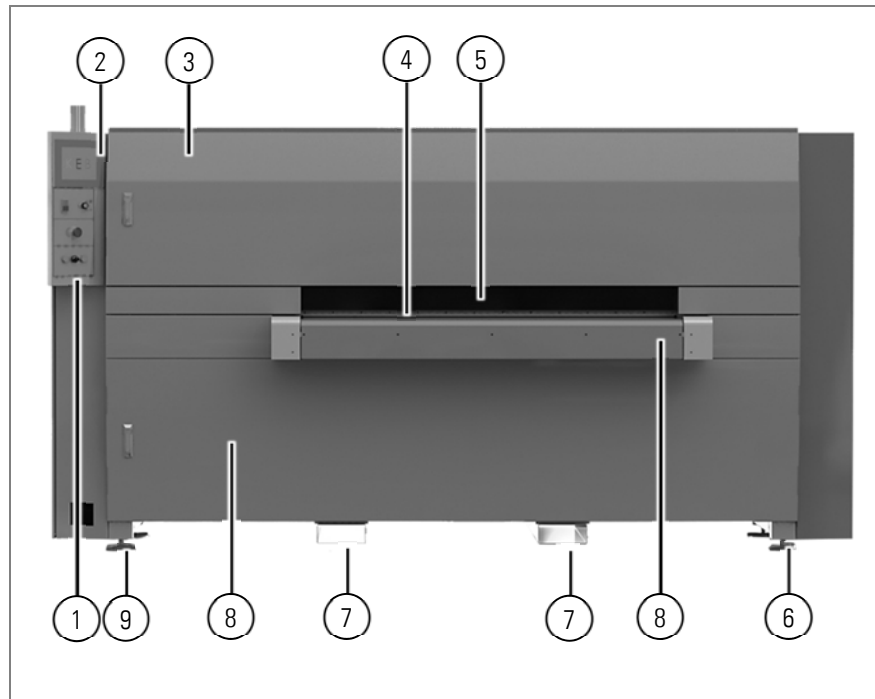


Abb. 2: Components of the machine, input side (front side of SBM-L 1000/1500 G1S2)

- 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

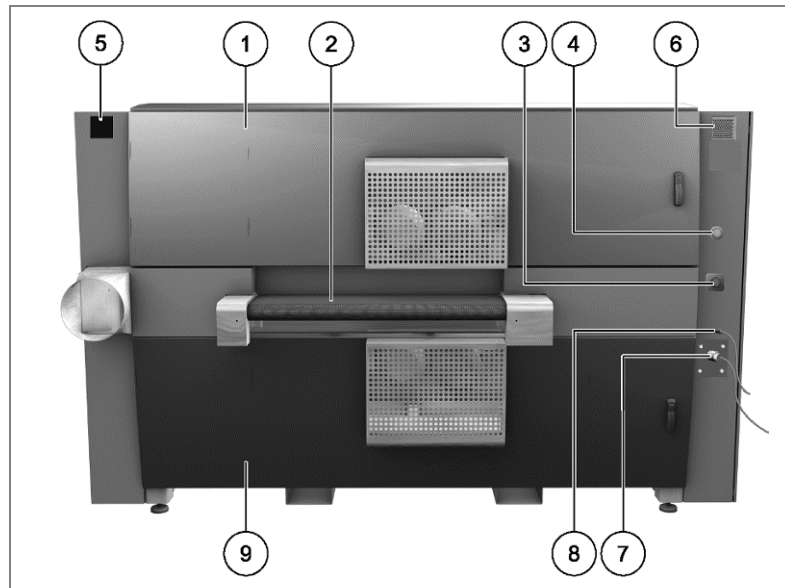


Abb. 3: Components of the machine, output side (back of SBM-L1000/1500 G1S2)

- 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

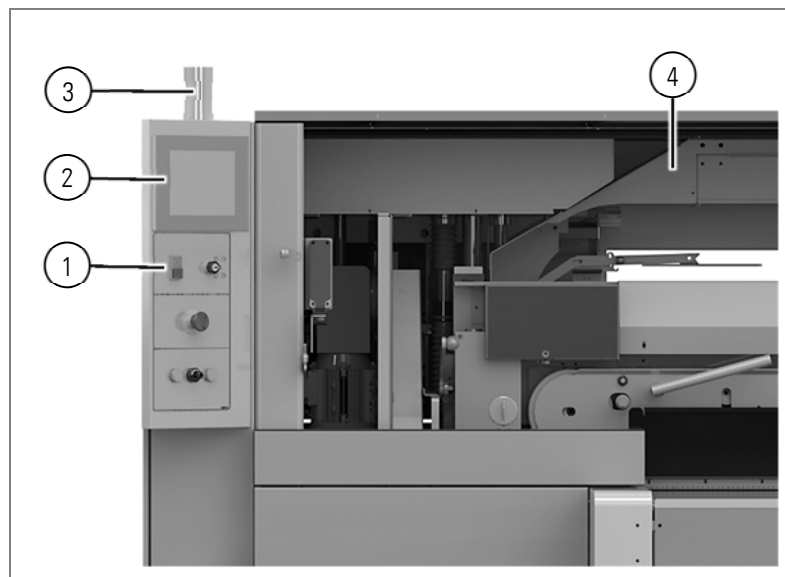


Abb. 4: Control and display elements (front side of SBM-L-1000/1500 GS2)

- 1 Control panel with selection switches
- 2 Display control and display field
- 3 LED light Indication of operating states (option)
- 4 Dust extraction shaft



### 3.5 Machining units

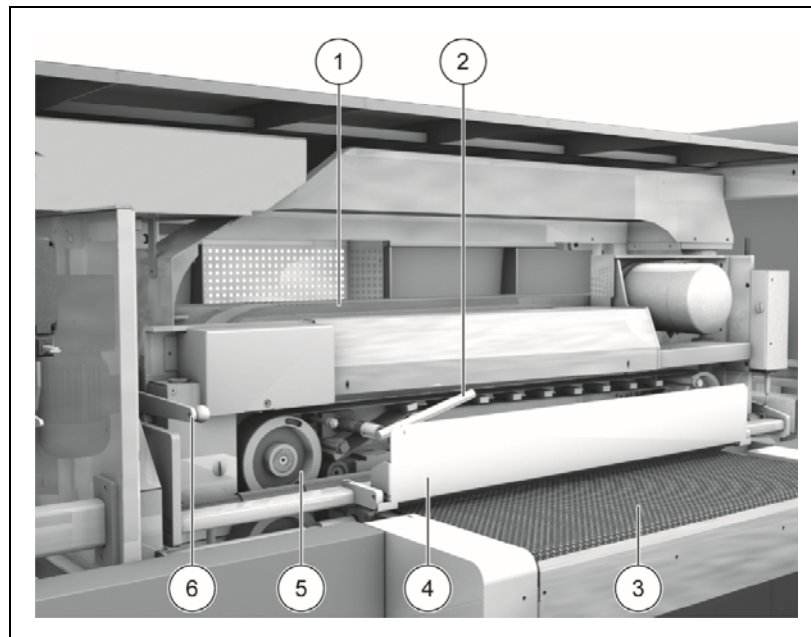


Abb. 5: Machining unit, top

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

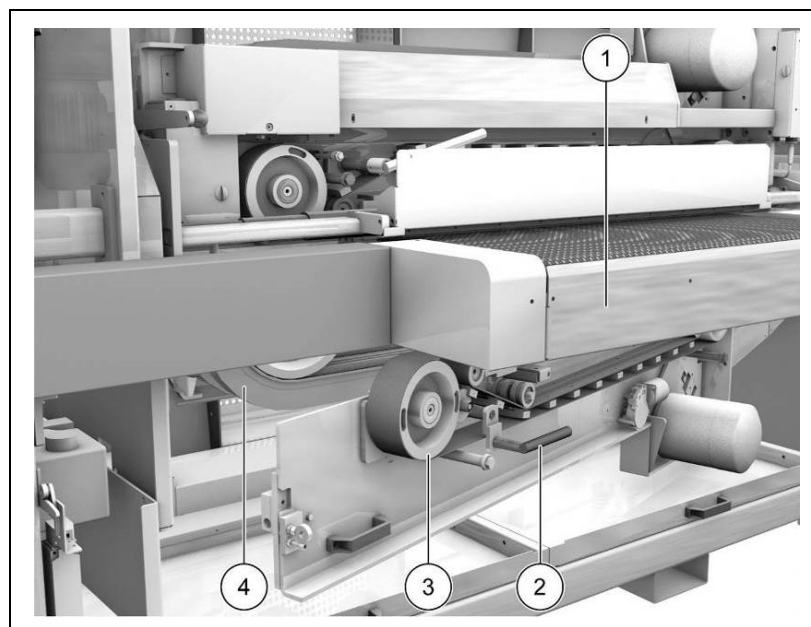


Abb. 6: Machining unit, bottom

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

### 3.6 Control elements

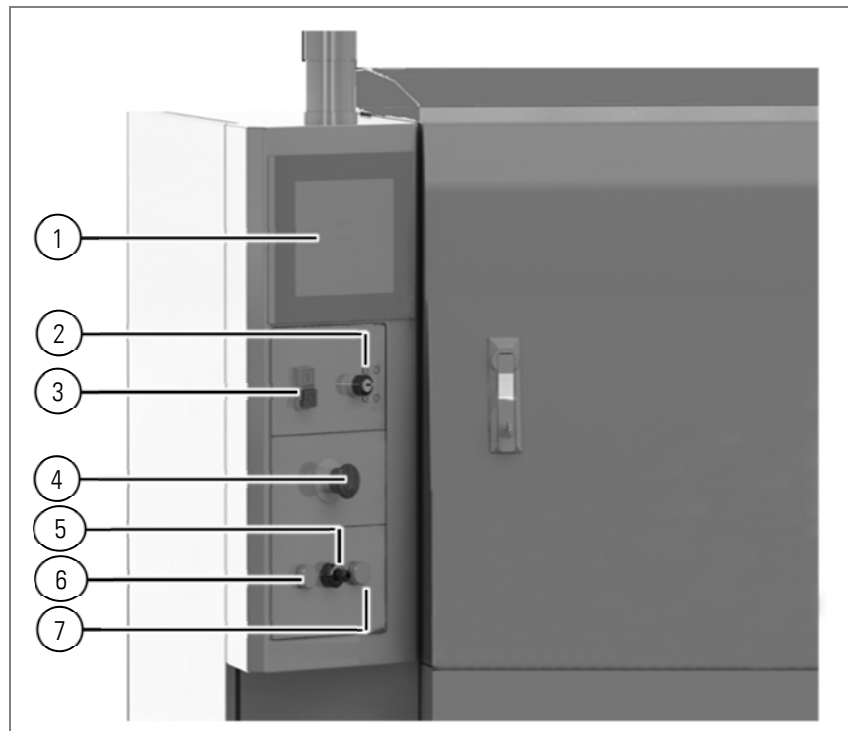


Abb. 7: Control and display elements (front side)

- 1 Display control and display field
- 2 Key switch for setup function
- 3 Automatic Start / Stop
- 4 EMERGENCY STOP
- 5 ID-key switch (option)
- 6 RJ45 interface
- 7 USB-port

### 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 slight burrs and splashes on the sheet surface. The rear edge rounding units (1) and (6) are equipped with two sanding belts running in opposite directions. They are suitable for edge rounding of punched, laser and fine plasma cut workpieces. 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, the workpieces are guided by the feed rollers over the table rollers 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.

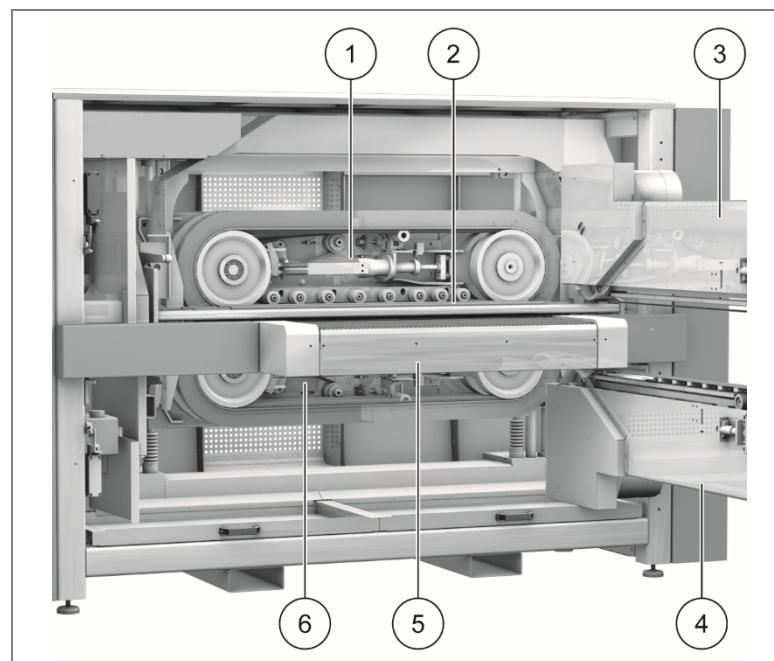


Abb. 8: Functional elements of the SBM-L 1000/1500 G1S2

- 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.

#### Tool wear compensation (Option)

The "automatic tool wear compensation" continuously measures the wear on the "S tools" during the machining process.

With wear greater than 0.20 mm, the wear is automatically compensated. The wear measurement is carried out at each aggregate pair. performed independently on the two upper "S" units and the two lower "S" units.

After setting the S-tools once, no intervention on the part of the machine operator is required.

### 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 door contact switches (2) and (4) on the front of the machine are equipped with a "guard locking". Opening the upper and lower doors on the front of the machine is thus not possible during operation. The two doors can only be opened after the "switch off", after expiry of the preset time.
- The doors on the back of the machine are equipped with door contact switches (5) and (7) without "guard locking" – opening these doors during operation will result in the EMERGENCY SHUT-OFF being triggered.
- Motor overload switch prevents overloading of the motors.
- A phase circuit breaker and display prevent connection of electricity with an incorrect phase sequence.

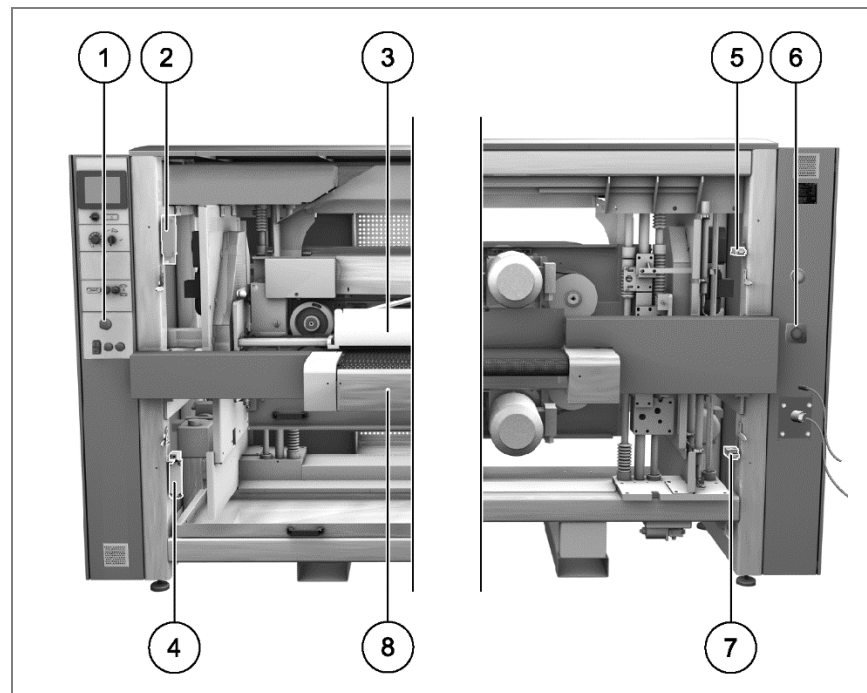


Abb. 9:

Safety equipment of the grinding machine

- 1 EMERGENCY STOP switch
- 2 Door interrogation with interlock
- 3 Safety shut off bar
- 4 Door interrogation with interlock
- 5 Door interrogation without interlock
- 6 EMERGENCY STOP switch
- 7 Door interrogation without 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.

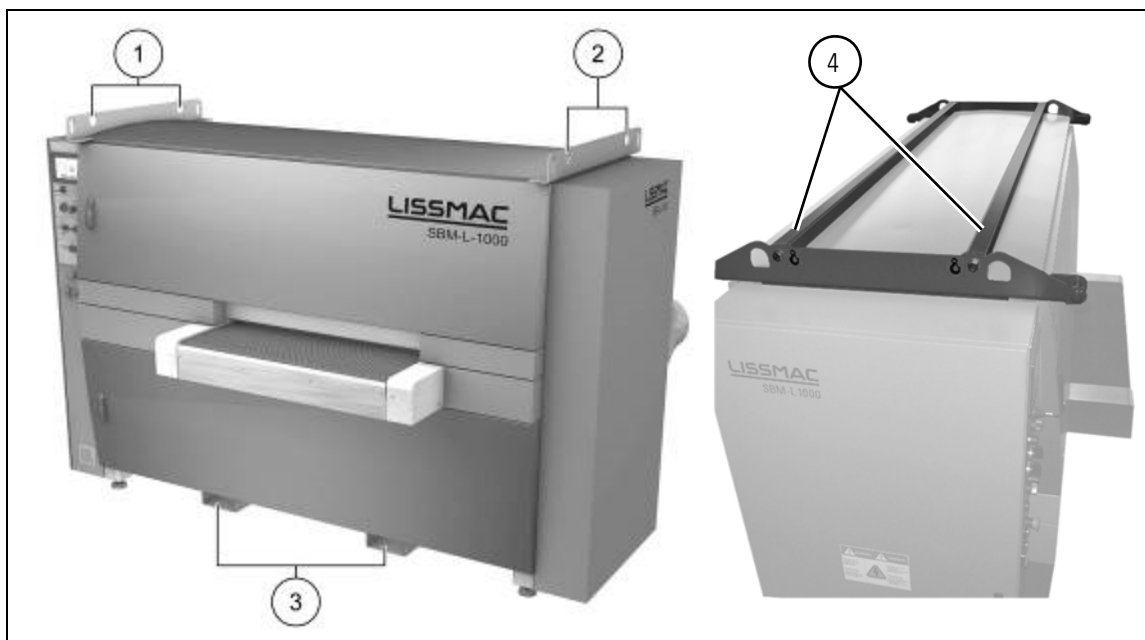


Abb. 10: Transport supports

- 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 at fixed flat floor with a wing loading according to the layout.
- 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.

- Only to be carried out by a certified electrician:

- 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.

### 4.4 Connecting the extractor system

Observe the regulations for your extractor system and clarify these with the manufacturer as necessary. All national requirements for explosive steel dust must be met.

#### Extractor volume flow

Extraction ducts are installed in the grinding machine. These lead to a central point at the side or at the top of the machine. The flow speed in the extraction ducts must be **at least 20 m/s** in order to achieve the best results.

The specified volume flow must be complied with.

LISSMAC:

SBM-L 1000/1500 G1S2	min. 3000 m³/h
----------------------	----------------

At the connection point, the piping should have the following diameter:

LISSMAC:

SBM-L 1000/1500 G1S2	Ø 180 mm
----------------------	----------

Connection of the grinding machine to the extractor system with seamless pipes with integrated cleaning flaps.



To prevent the danger of dust deposits in the extractor pipes, only use seamless extractor pipes (not corrugated pipes). Provide inspection/cleaning flaps on all horizontal pipe sections upstream or downstream of pipe bends. Remove dust deposits via the inspection / cleaning flaps. Only use approved cleaning agents.



The extractor pipes must be grounded in order to prevent electrostatic charging. To avoid the danger of dust deposits in the extractor pipes the volume flow must be complied with.



## DANGER



#### High voltages

Death or injury due to electric shock.

➤ Connection and function testing must only be carried out by a qualified electrician.

➤ Establish the electrical connection (control cable) between the grinding machine and the extractor system.

On top of, or at the rear of the machine, there is an interface (pipe connection), which is connected to the extractor system.

➔ **See the circuit diagram for the interface**



### 5 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

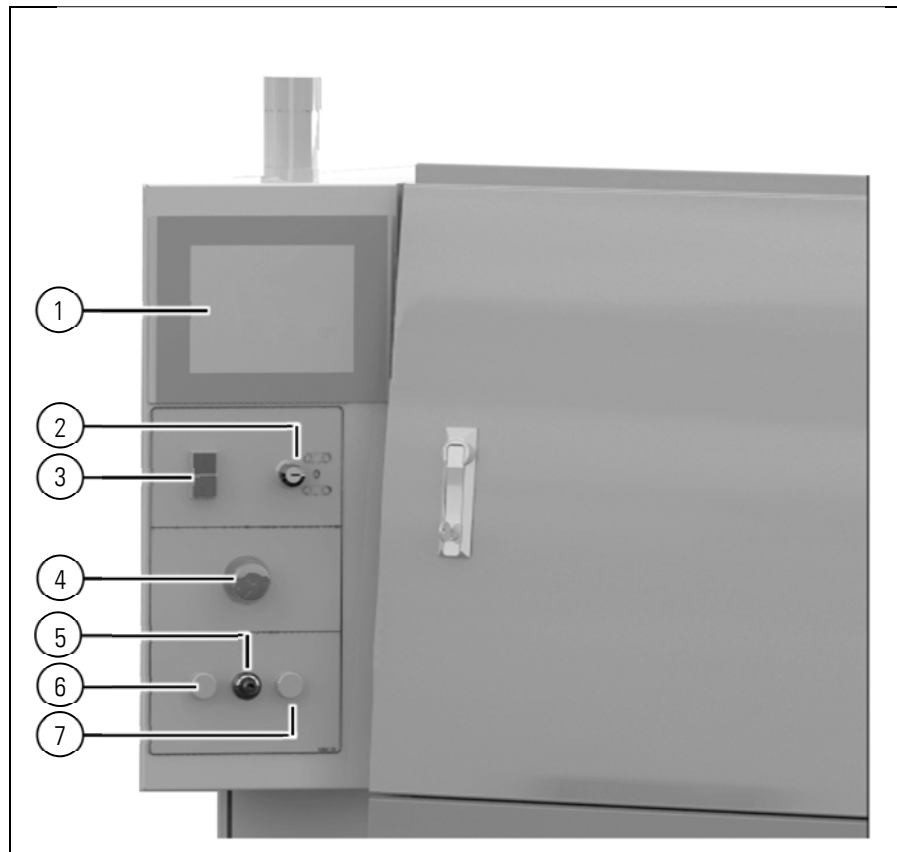


Abb. 11: Control elements

- 1 Display control and display field
- 2 Key switch for setup function
- 3 Automatic Start / Stop
- 4 EMERGENCY STOP
- 5 ID-key switch (option)
- 6 RJ45 Interface
- 7 USB-port

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 Setup function with key switch



Abb. 12: Setup function

- 1 Open the key of the machine door
- 2 Key switch for setup function
- 3 Button Acknowledge EMERGENCY OFF

- Open the machine door (1)
- 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 possible with the password level installer)



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 Overview (main screen)

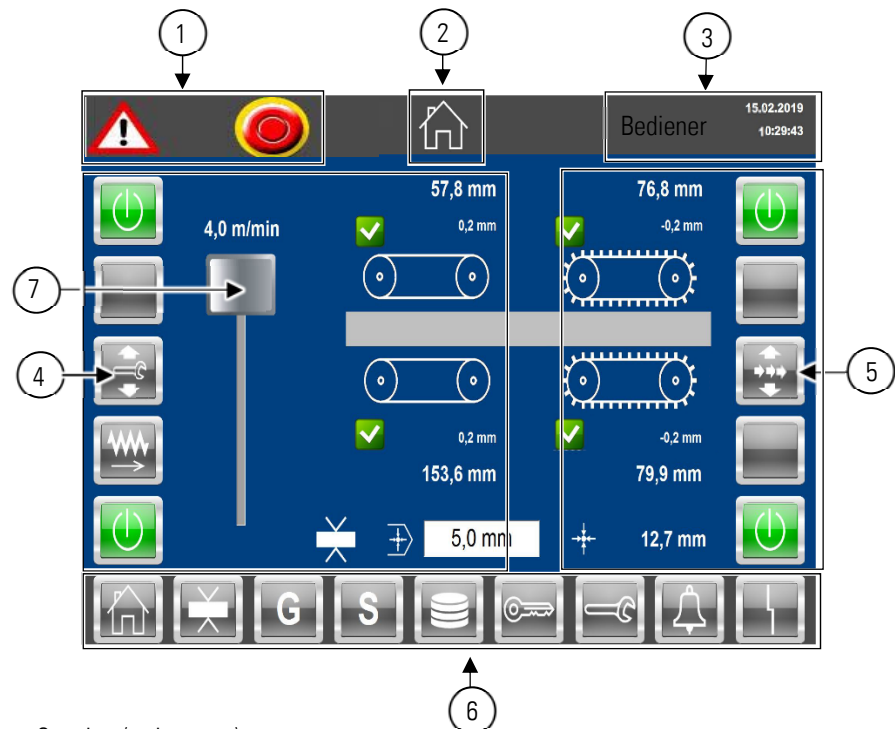


Abb. 13: Overview (main screen)

The following menu items are available on the start screen:

- 1 Machine malfunction, Emergency Stop activated and Connection error
- 2 Displays the current menu
- 3 User level (Option ID key switch) / Date / Time
- 4 Selection menu for grinding unit G
- 5 Selection menu for grinding unit S
- 6 Constant buttons
- 7 Controller feed speed conveyor belt

The grinding result of the processing units depends, among other things, on the feed speed of the conveyor belts.

### 5.3.2 Start screen

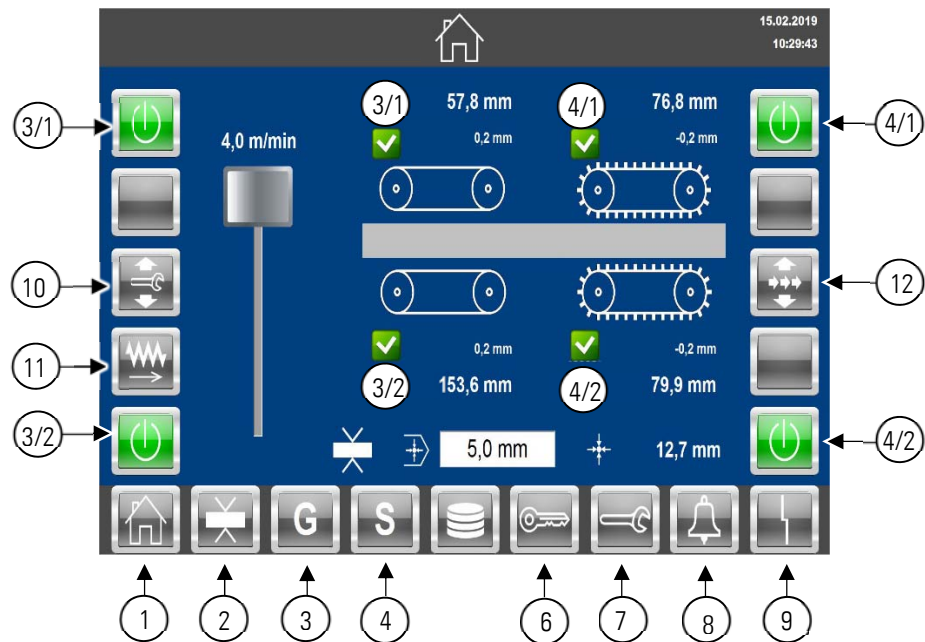























Abb. 14: Description of images on start screen

 <b>Pos. 1</b>	<b>Main menu</b> Return to start screen of the machine.
 <b>Pos. 2</b>	<b>Sheet thickness</b> The sheet thickness can be adjusted.
 <b>Pos. 3</b>	<b>Grinding unit G</b> Grinding unit G can be adjusted.
 <b>Pos. 4</b>	<b>Grinding unit S</b> Grinding unit S (Edge rounding unit) can be adjusted.
 <b>Pos. 5</b>	<b>Material data memory / recipe memory</b> See 5.6.1 Material Data Memory / Recipe Memory internally <b>Fehler! Verweisquelle konnte nicht gefunden werden.</b> 5.6.2 Material Data Memory / Recipe Memory external
 <b>Pos. 6</b>	<b>Password level</b> Password level button. For machine set-up man and service personnel of manufacturer.
 <b>Pos. 7</b>	<b>Settings</b> Operating hours, service and offset values.

 <b>Pos. 8</b>	<b>Error messages</b> "Error messages" button. When pressed, the screen with the error messages is shown.
 <b>Pos. 9</b>	<b>Acknowledge error</b> With this button, the error messages can be acknowledged after the error has been corrected.
  <b>Pos. 3/1</b>	<b>Unit activate / inactive</b> By pressing the button, the <b>G-unit at the top</b> can be activated or deactivated. <u>green</u> : Aggregate active <u>gray</u> : Aggregate inactive
  <b>Pos. 3/2</b>	<b>Unit activate / inactive</b> By pressing the button, the <b>G-unit below</b> can be activated or deactivated. <u>green</u> : unit active <u>gray</u> : unit inactive
  <b>Pos. 4/1</b>	<b>Unit activate / inactive</b> By pressing the button, the <b>S-unit at the top</b> can be activated or deactivated. <u>green</u> : unit active <u>gray</u> : unit inactive
  <b>Pos. 4/2</b>	<b>Unit activate / inactive</b> By pressing the button, the <b>S-unit below</b> can be activated or deactivated. <u>green</u> : unit active <u>gray</u> : unit inactive
 <b>Pos. 10</b>	<b>Tool change</b> Move the unit to the tool change position in order to be able to change the tool, sheet thickness moves to 3 mm
  <b>Pos. 11</b>	<b>Feed</b> When pressing the Change feed direction button.
 <b>Pos. 12</b>	<b>Release movement</b> Tool assemblies move approx. 5 mm up or down, so the operator can remove trapped workpiece. Sheet thickness remains as previously configured.

### 5.3.3 Setting sheet thickness

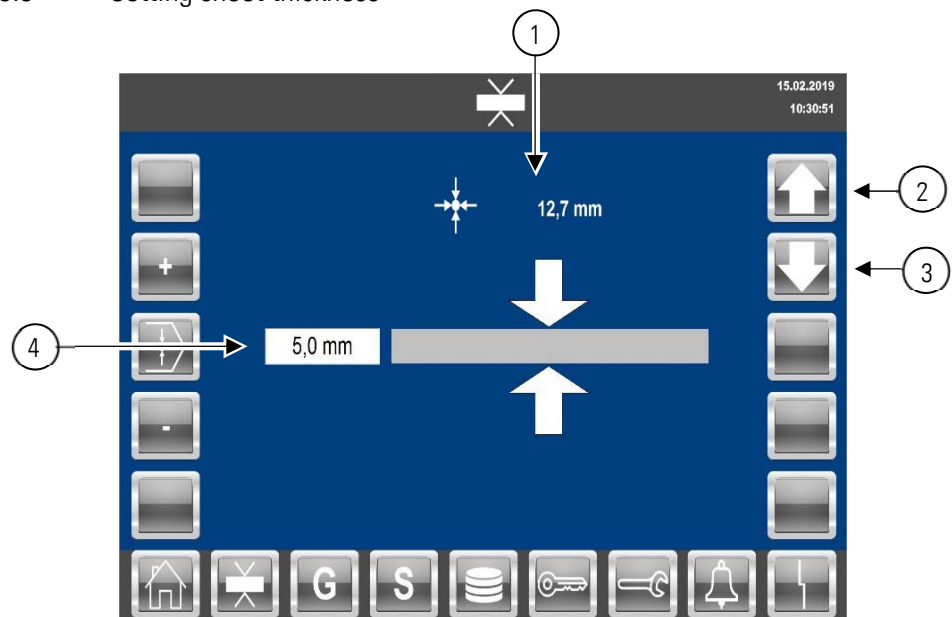


Abb. 15: Menu

The following menu items are available on the screen:

- 1 Sheet thickness actual value
- 2 Increase sheet thickness in jog mode (+)
- 3 Decrease sheet thickness in jog mode (-)
- 4 Sheet thickness target value (after corresponding input)

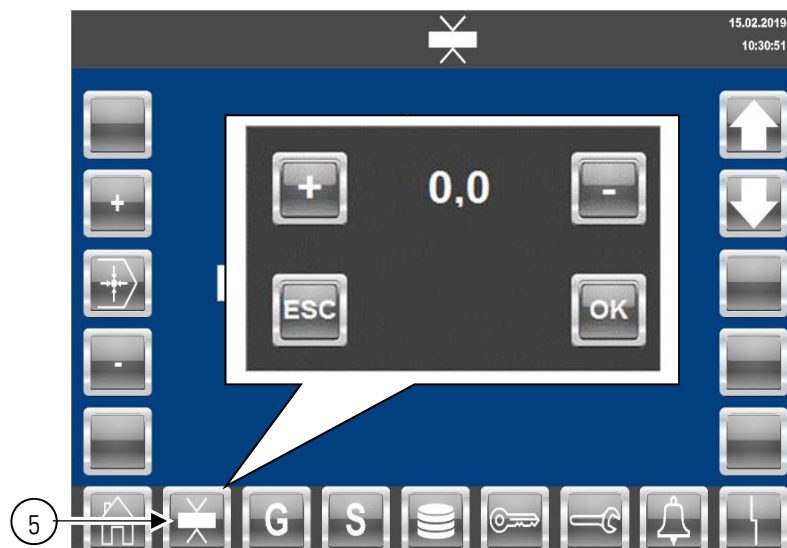


Abb. 16: Sheet thickness direct input

- 5 Numerical value direct input

The value can be directly entered via the input on the button.

### 5.3.4 Setting grinding unit G

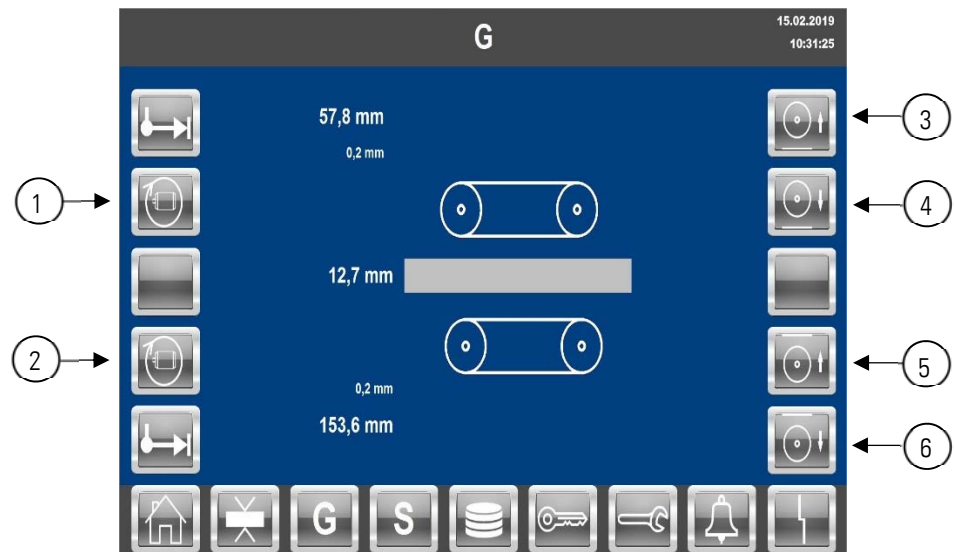


Abb. 17: Grinding unit G

New grinding belts must be set on the retracted grinding unit G according to the wear. In job mode the drive motor will control the grinding unit only as long as the icon (1 and 2) on the screen is pushed.

- 1 Retract upper grinding belt using jog mode
- 2 Retract lower grinding belt using jog mode
- 3 Upper grinding unit up
- 4 Upper grinding unit down
- 5 Lower grinding unit up
- 6 Lower grinding unit up

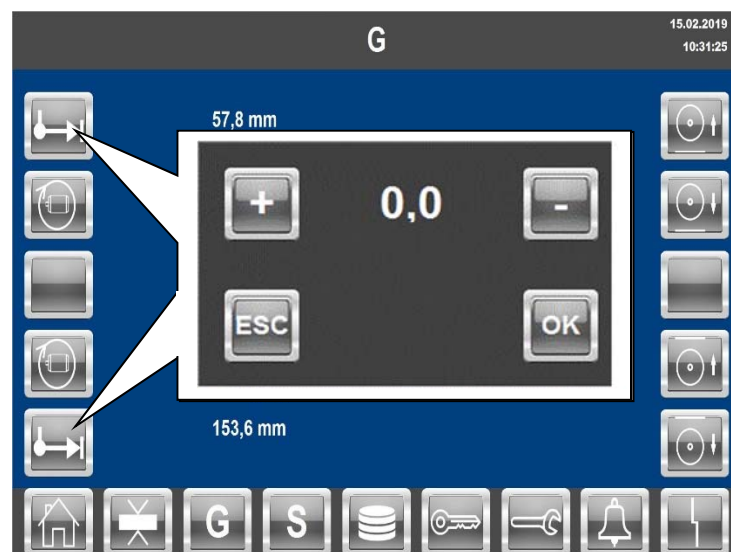


Abb. 18: Grinding unit G

The value can be directly entered via the input on the button.

### 5.3.5 Setting grinding unit S

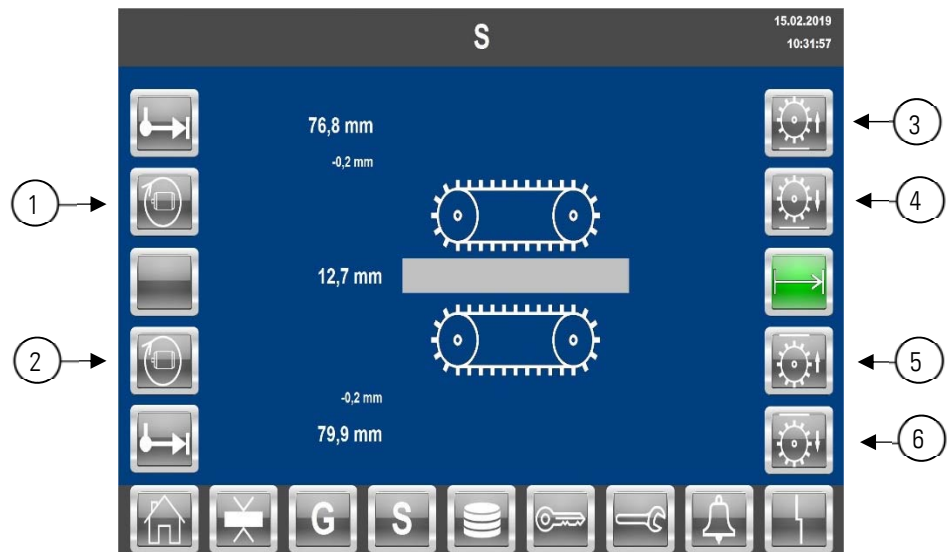


Abb. 19: grinding unit S

New abrasive belts must be set on the retracted grinding unit S according to the wear. In job mode the drive motor will control the grinding unit only as long as the icon (1 and 2) on the screen is pushed.

- 1 Retract upper abrasive belt using jog mode
- 2 Retract lower abrasive belt using jog mode
- 3 Upper abrasive belt up
- 4 Upper abrasive belt down
- 5 Lower abrasive belt up
- 6 Lower abrasive belt down

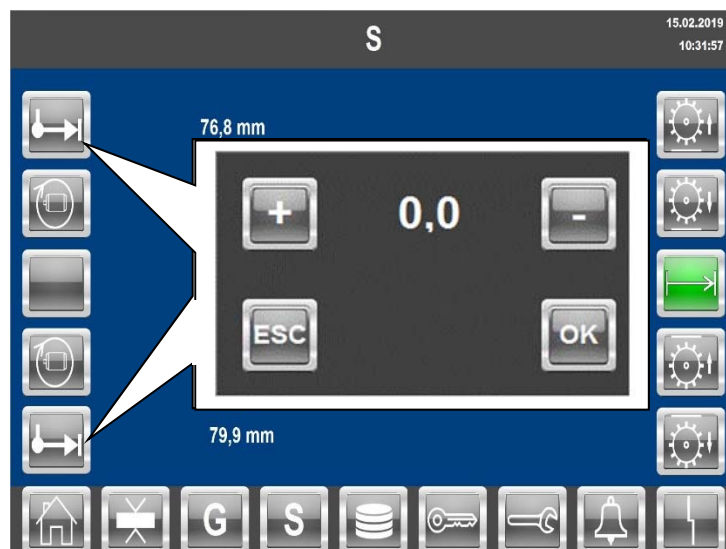


Abb. 20: grinding unit S

The value can be directly entered via the input on the button.

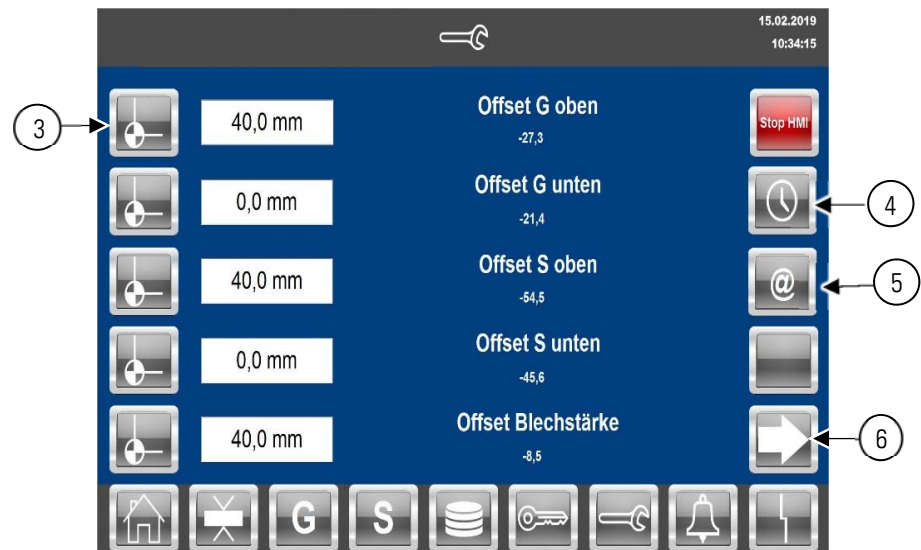


### 5.3.6 Settings



The operating hours of the individual assemblies are indicated.

- 1 Settings
- 2 Next button



- 5 Offset values can only be changed by service
- 6 Next – button

### 5.3.7 Cleaning interval and material change



Abb. 23: Cleaning interval display

- 7 Expiring time display for the cleaning interval of the machine  
yellow: clean the machine  
red: urgently clean the machine
- 8 Next – button



Abb. 24: Display Choice of material Steel/Optional aluminium

- 9 Steel machining is selected.  
Cleaning interval indicator steel.  
By pressing the respective button, we select the material to be processed.  
Replug connector extraction system -> grinding machine (depending on material).  
Before any material change, the entire machine and the extraction system must be cleaned. After cleaning the machines, confirm cleaning on the operator terminal.



Abb. 25: Display choice of material aluminium (option)

- 10 Aluminium machining is selected.  
Cleaning interval display adjusts to the cleaning interval of aluminium.  
(Option)

### 5.3.8 Listing of tool wear



- 11 Tool wear compensation (option)



Abb. 26: Tool wear compensation values (option)

- 11 In this view, the function of the upper and lower tool wear compensation is graphically displayed.  
Listing of tool wear by the integrated sensors in the machine.  
The continuously updated values of the tool wear compensation are stored on this page. (Option)

### 5.3.9 Language selection and dimensions



Abb. 27: Language selection

- 12 Selection mm / inch
- 13 Setting the language
- 14 Next – button



Abb. 28: Pop-up language selection

- 13 Press the button to display the popup with the available languages of the HMI. Select the language by pressing the respective button.

### 5.3.10 Setting sheet thickness



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

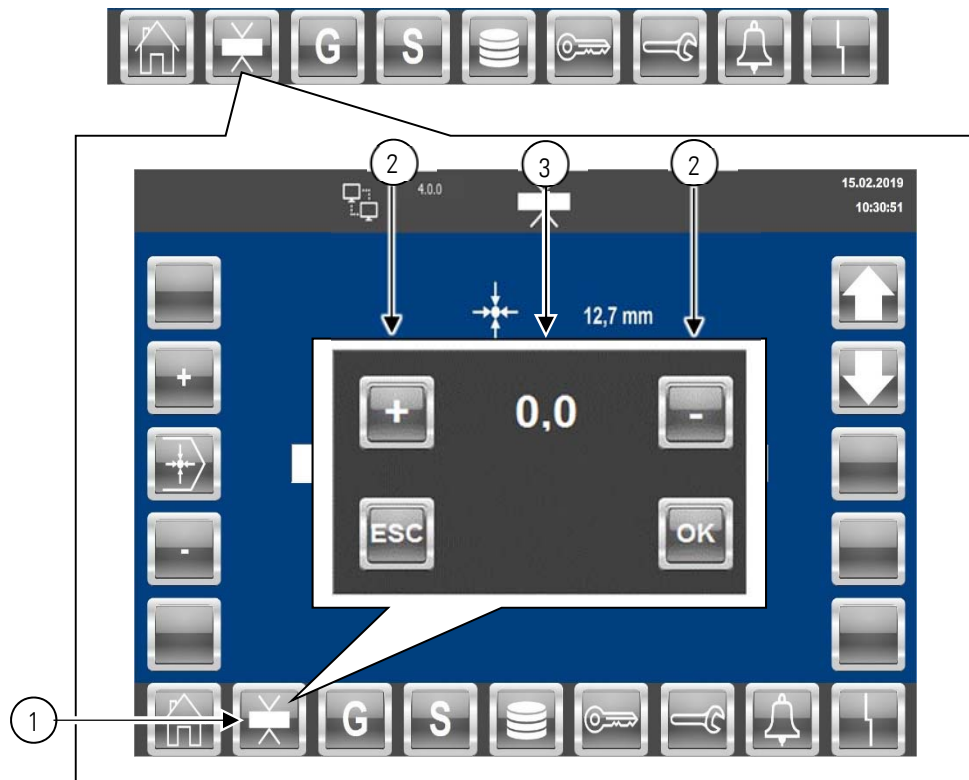


Abb. 29: Setting sheet thickness

- 1 Symbol for the sheet thickness
- 2 +/- buttons
- 3 Direct input

## 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.

- Select the symbol (1) on the control screen for the sheet thickness.
  - ↳ The sheet thickness information is shown in the display.
- The sheet thickness value can be set with the +/- buttons (2) or with direct input (3).
  - ↳ After activation with OK the sheet thickness is automatically positioned.

### 5.3.11 Starting the machine

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

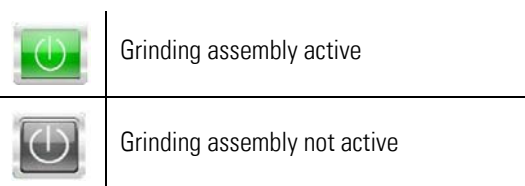
- Acceptance of the workpieces at the output side of the machine is ensured.
- Contamination such as material residue and dust deposits are removed.
- All abrasive belts and grinding belts are checked for damage (visual inspection).
- Place the main switch on the back of the machine into the »On« position.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



Abb. 30: Starting the machine

- 1 Upper grinding assemblys are active
- 2 Start the grinding assembly (start the machine)
- 3 Lower grinding assemblys are active

Before starting the machine, the required grinding assemblies must be selected. Each grinding assembly can be activated using the buttons (1 or 3).



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

- The sheet thickness of the workpiece is measured and set on the machine
- Feed speed is set
- Top and bottom machining units are correctly positioned






The symbol for starting the grinding assemblies (2) is displayed on the screen when all grinding assemblies are in position and the automatic mode has been started (On switch chapter 3.6).

### 5.4 ID key switch (option)

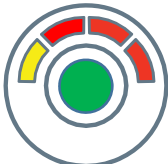
The ID key switch is used to block/unlock various user levels.

The set level is displayed on the switch and in the display (item 3) when selecting the position.






	User level:
	No key inserted No operation of the system possible
	Operator
	Setter
	Service
	Administrator*





\*LISSMAC reserved

ID key colour	Possible functions on the machine:
 <p>Green (Level 4)</p>	<p><b>Operator Level:</b></p> <ul style="list-style-type: none"> <li>• System start</li> <li>• System stop</li> <li>• Change the sheet thickness</li> <li>• Emergency stop</li> <li>• Acknowledge emergency stop</li> </ul>



 <p>Yellow (Level 4/6)</p>	<p><b>Setter level:</b></p> <p>All operator level actions are included</p> <ul style="list-style-type: none"> <li>• Selection of units (G, S, D)</li> <li>• Change of delivery G-unit</li> <li>• Change of delivery S-unit</li> <li>• Change of delivery D-unit</li> <li>• Change of feed rate</li> <li>• Retracting the G-units</li> </ul>
 <p>Red (Level 4/6/8)</p>	<p><b>Service level:</b></p> <p>All actions of the operator and installer levels are included.</p>
 <p>Blue (Level 4/6/8/9)</p>	<p><b>Administrator level *:</b></p> <p>All functions are unlocked and changing the machine references is also possible.</p> <p>*LISSMAC reserved</p>

The display of the ID key switch indicates permissible and selected positions by means of yellow, green and red colours.

	<p><b>Everything red:</b></p> <ul style="list-style-type: none"> <li>➤ ID key switch is ready to start</li> <li>➤ No key inserted</li> <li>➤ Key is not coded</li> </ul>
	<p><b>Partial red:</b></p> <ul style="list-style-type: none"> <li>➤ Displays impossible positions</li> <li>➤ Users of the ID key switch cannot use positions marked in red.</li> </ul>
	<p><b>Yellow:</b></p> <ul style="list-style-type: none"> <li>➤ Shows possible positions</li> <li>➤ The user of the ID key switch can select one of the yellow marked positions by turning the switch</li> </ul>
	<p><b>Partial green:</b></p> <ul style="list-style-type: none"> <li>➤ Displays selected position</li> </ul>



## 5.5 USB port / RJ45 interface on the outside of the control cabinet

Universally applicable anywhere, where fast access to interfaces and sockets, such as the USB port on the HMI, is necessary and required. The affected housing (control cabinet) thereby remains closed.

As a result, the danger of coming into contact with the live electrical components installed in the switch cabinet is minimized, and the switch cabinet components are therefore also protected against environmental influences and unauthorized access.

Can also be used as an external connection point for the service technician on the control cabinet.



## 5.6 Barcode scanner (option)

The barcode scanner is a reader for all common bar code information. It is connected to the machine via a 1.5 m spiral cable with USB connector.

The information read in via the barcode scanner is transmitted to the machine. The machine adjusts itself fully automatically to the information read in and stored in the application.

The scope of supply includes the barcode scanner and the holder for the barcode scanner.

Only possible in conjunction with a Siemens S7 1200 with KEB HMI and the option Material Data Memory.

As soon as the barcode scanner option is selected, the Material Data Memory option must also be ordered.

The data read in by the barcode are number combinations which in themselves have no significance - these data are used for component identification. So if you are working with a barcode scanner and the processing machine is to adjust fully automatically to the scanned workpiece then a Material Data Memory must first be created which contains all important data / information about the workpiece to be processed.

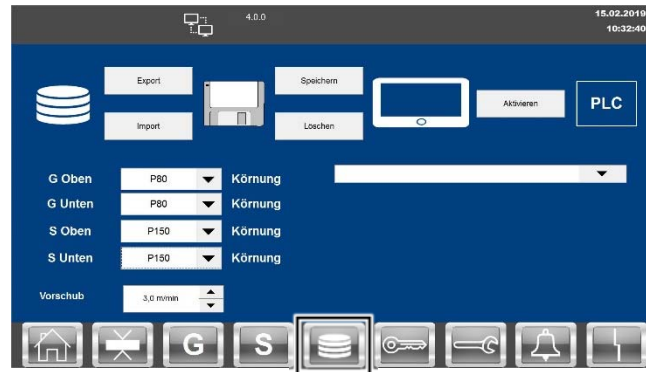
The Material Data Memory is filled with information by the operator - each new workpiece being processed for the first time is taught in and stored in the Material Data Memory with the set parameters and data. As soon as a workpiece that has already been taught in is scanned for a second time via the barcode scanner, the processing machine or system adjusts itself fully automatically to the data and parameters previously stored by the operator.

### 5.6.1 Material Data Memory / Recipe Memory internally

Material Data Memory / Recipe Memory internally (in the machine control) with a storage capacity of max. 2 GB via USB flash drive.

In the Material Data Memory / Recipe Management, all machine parameters necessary for reproducing the achieved process result are stored internally on the HMI.

Other freely writeable input fields for identifying / naming the recipes are available for the machine parameters.



### 5.6.2 Material Data Memory / Recipe Memory external

Material Data Memory / Recipe Memory on an external storage space. The storage capacity here depends on the resource provided.

In the Material Data Memory / Recipe Management, all machine parameters necessary for reproducing the achieved process result are stored either internally or externally.

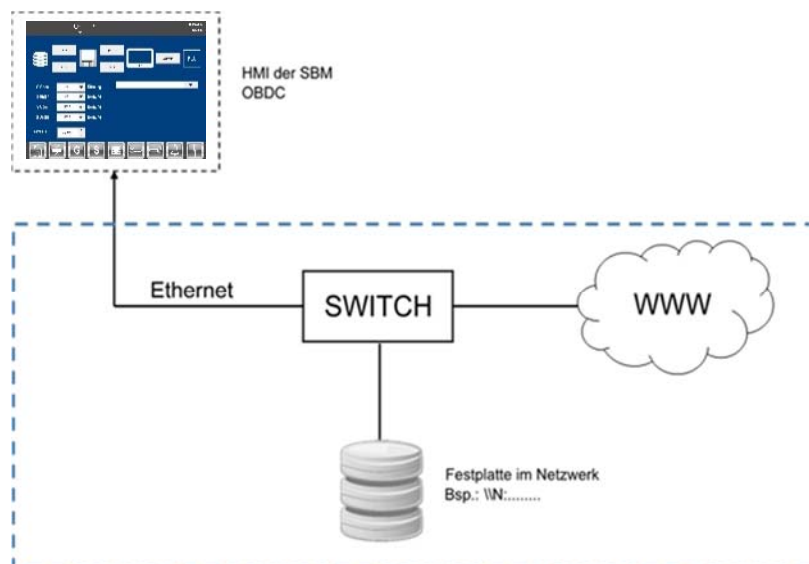
Other freely writeable input fields for identifying / naming the recipes are available for the machine parameters.

The graph below shows the scope of services that the customer or LISSMAC must provide.

The HMI (KEB Touch) is included in the grinding / deburring machine and the customer has to lay the Ethernet cable from his network to the HMI. LISSMAC provides the machining programs in the ODBC data format on the Ethernet interface.

The customer must provide the file path for storage on his hard drive. The machining programs are thus no longer stored locally on the HMI of the machine, but exclusively only on the drive of the hard disk in the network of the customer.

Without a network connection, the machine thus has no access to the stored machining programs. LISSMAC assumes no liability for errors in data transfer or data loss.



### 5.7 Interface machine data acquisition for external evaluation (option)

Interface in the form of a Harting connector on the back of the machine mounted on the control cabinet. The following information or operating states in digital form are made available as potential-free contacts at this interface.

These signals can also be displayed for the visualization of the different operating conditions additionally in the form of an LED lamp "a" of the machine by colour change.

#### **Examples of possible operating states:**

<b>LED lamp</b>	<b>operating status</b>
GREEN	Machine in operation – machining in progress
BLUE	Machine on hold – positioning completed but not yet processed
YELLOW	Machine in positioning – parameters have been changed
RED	Machine in fault – door open, exhaust volume missing etc.
RED flashing	Machine emergency shut-off – fatal error
MAGENTA	Machine in service – tool change becomes carried out
WHITE	Machine in cleaning mode – machine is being cleaned



### 5.8 Processing material



#### WARNING



#### Explosion or fire hazard

When using fire- or explosion-prone cleaners to clean the workpieces, there is a risk of fire or explosion during processing or in the event of unfavorable flying sparks.

- Do not clean workpieces with fire or explosion-prone cleaners.

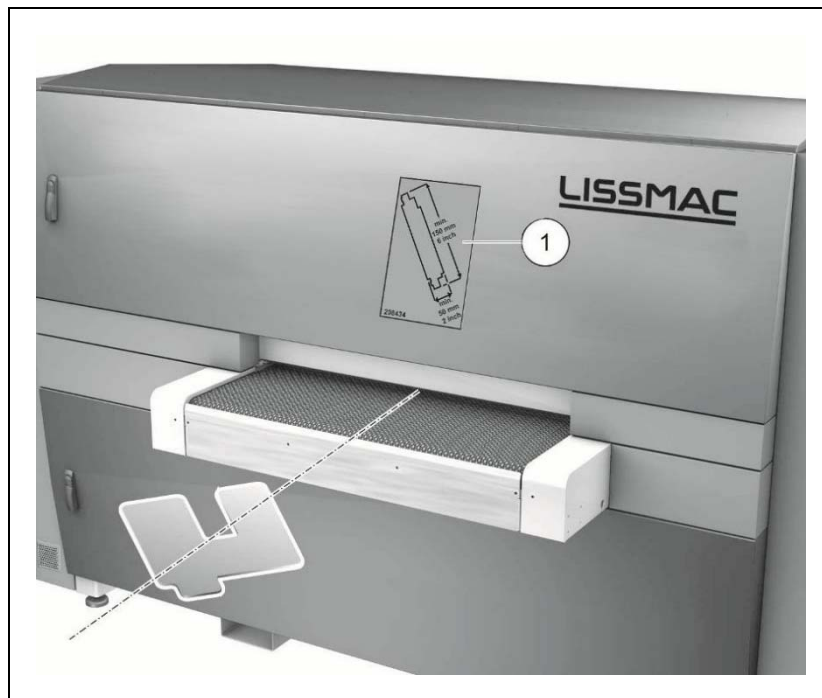


Abb. 31: Processing material

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 150 x 50 x 0.5 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.

## 6 Changing abrasives

### 6.1 Replacing G units grinding belts

#### 6.1.1 Removing upper and lower G units grinding belt

Move the upper and lower G units to change the sanding belts completely to their final positions using the tool change button .

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

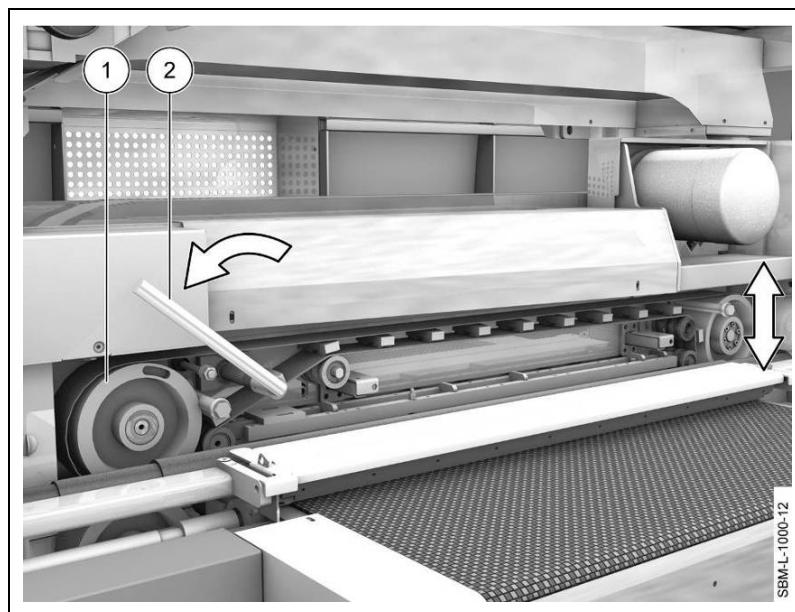


Abb. 32: Changing the grinding belt of the upper G unit

- 1 Belt roller
- 2 Tensioning lever

- Turn off the machine (main switch).
- Move the tensioning lever (2) to the left and loosen the grinding belt.
- Remove the grinding belt.
- Place the grinding belt
- Move the tension lever to the right and tension the grinding belt.

### 6.1.2 Putting on grinding belts

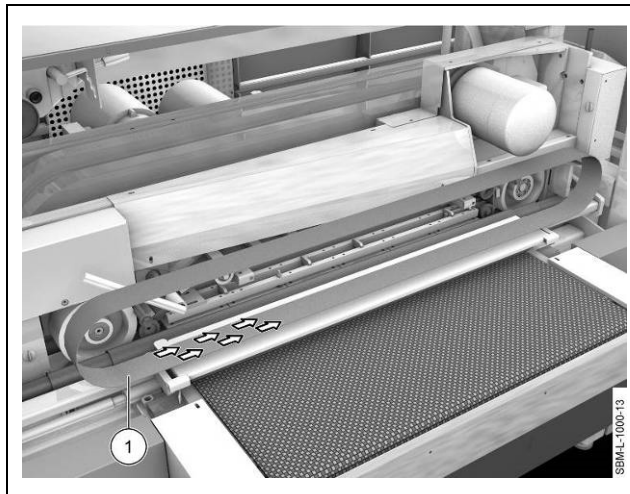


Abb. 33: Putting on grinding belts

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.

### 6.1.3 Align grinding belts



Abb. 34: Adjust running of the belt

- 1 Left adjustment screw
- 2 Right adjustment screw

- Start grinding units and observe the belt running.
- Put the key switch in the necessary position and hold (Setup function with key switch)
- Start the desired unit via the touchscreen (password-level setter).
- 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.



### 6.1.4 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.

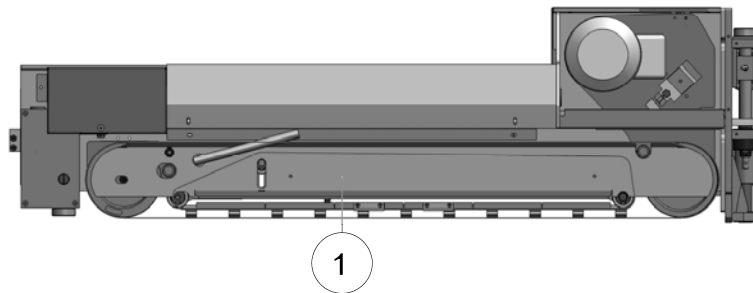


Abb. 35: Upper G-unit with mounted safety plate

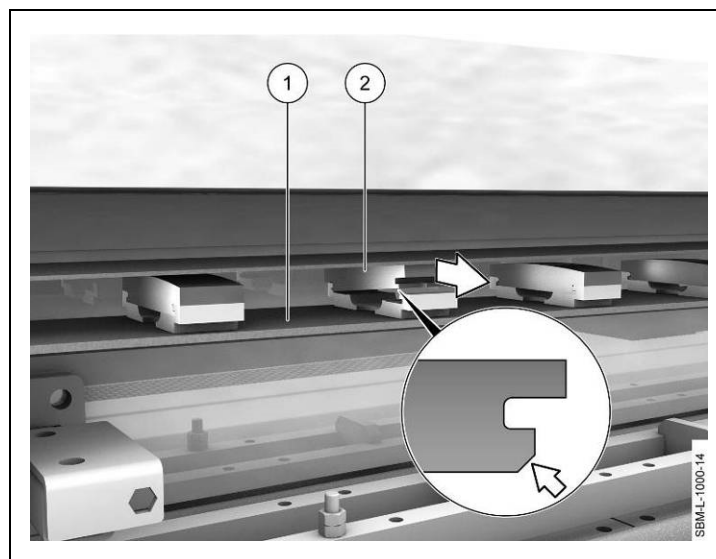


Abb. 36: Replacing sliding blocks

- 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.

### 6.1.5 Remove the sliding block belt

The G unit must be moved into its end position for replacing the sliding block belt.  
(tool change look at 5.3.2)

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.

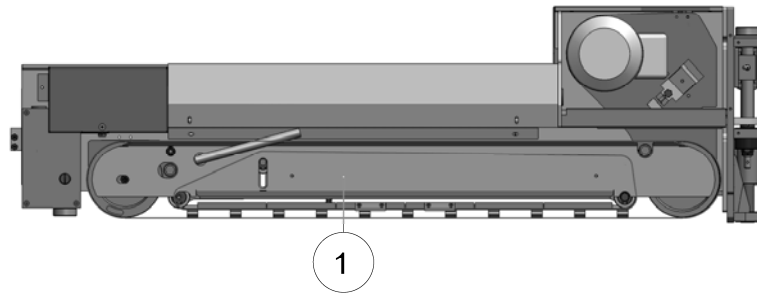


Abb. 37: Upper G-unit with mounted safety plate

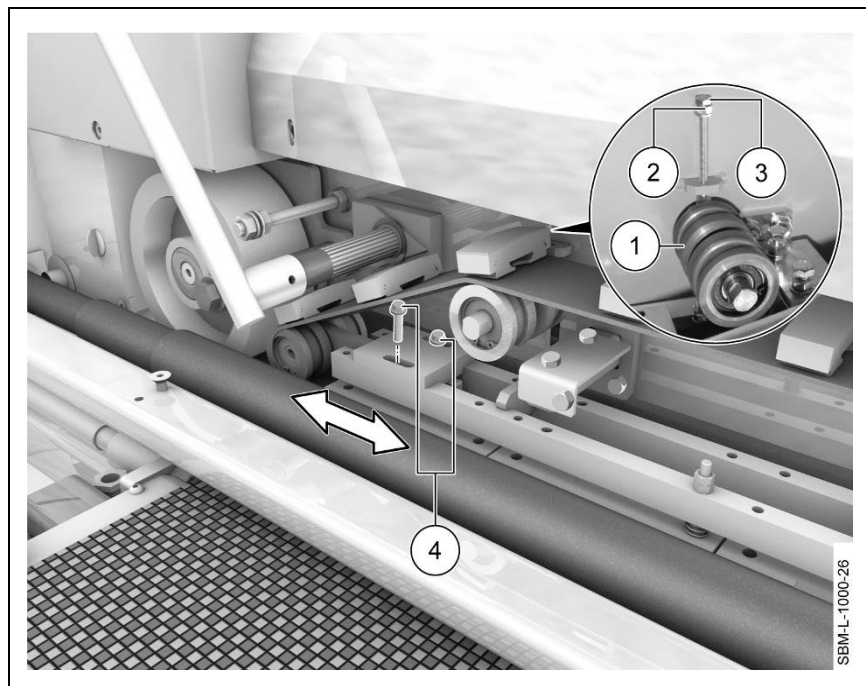


Abb. 38: Sliding block belt

- 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.



### 6.1.6 Placing on and tensioning the sliding block belt

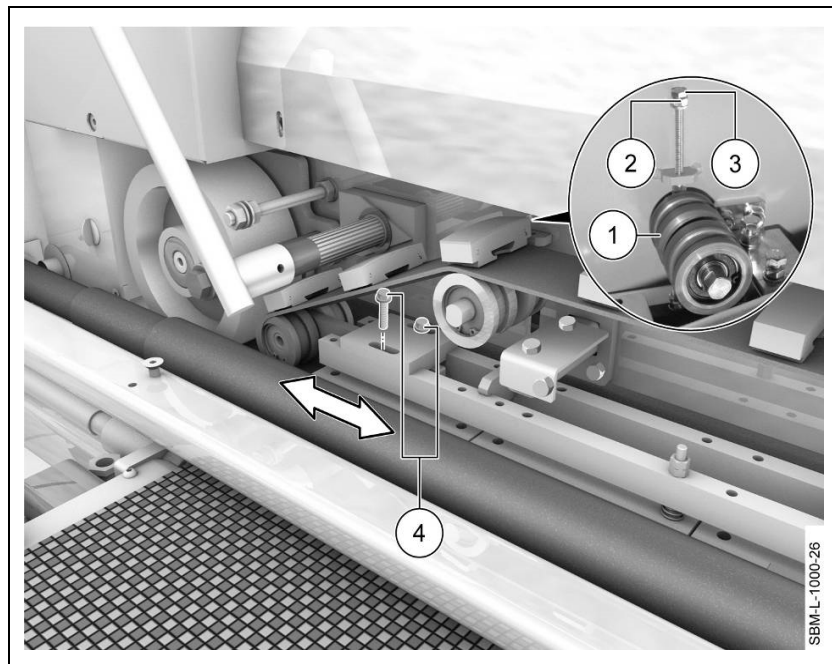


Abb. 39: Tensioning the sliding block belt.

- 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.

### 6.2 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

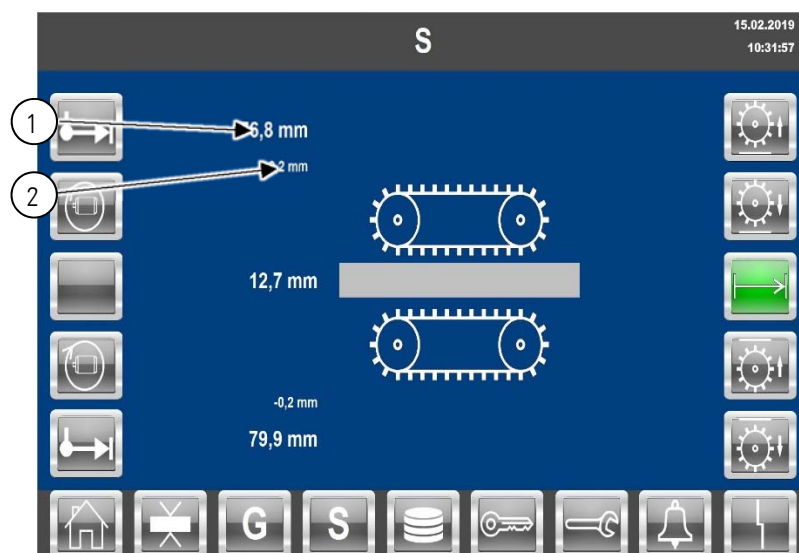



Abb. 40: Wear display (display in operation mode 5.3.1)

- 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** To change the sanding belts, the upper and lower S units must be moved to their final positions via the button .

**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.

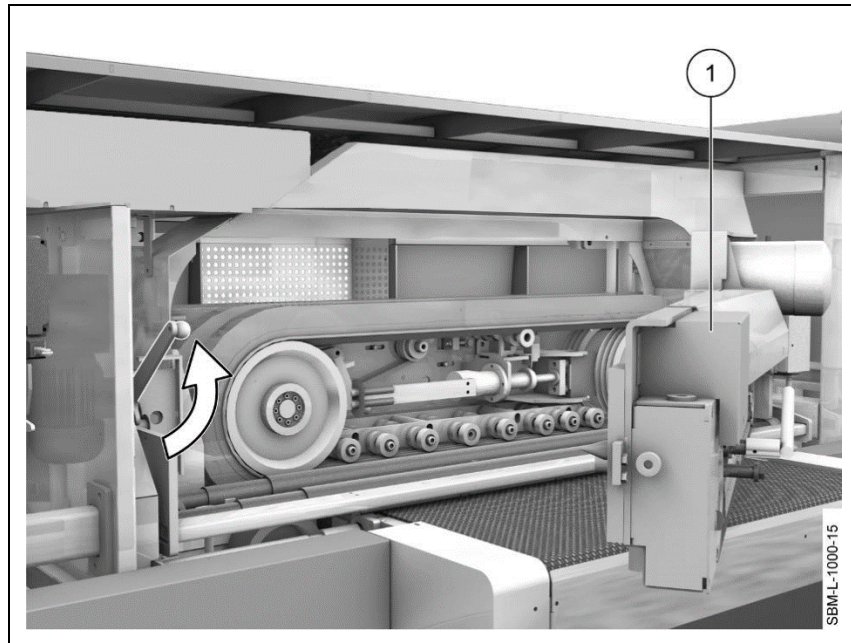


Abb. 41: Access to S unit

### 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.

- 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 and actuated via the control unit. To release the tension of the abrasive belts, press the button Belt tension (1) on the operating screen on the side of the S-unit. Grinding belts are released.

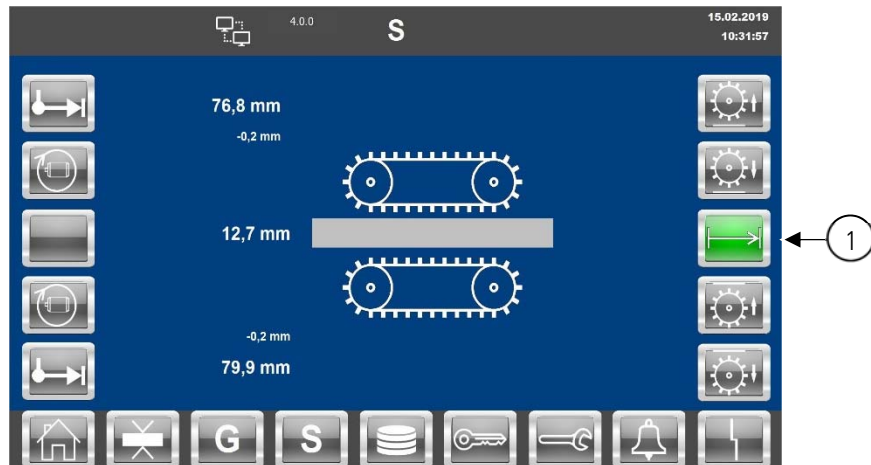


Abb. 42: Hydraulic belt tensioner

1 Button for hydraulic belt tensioner

- Press the button of the hydraulic belt tensioner (1).

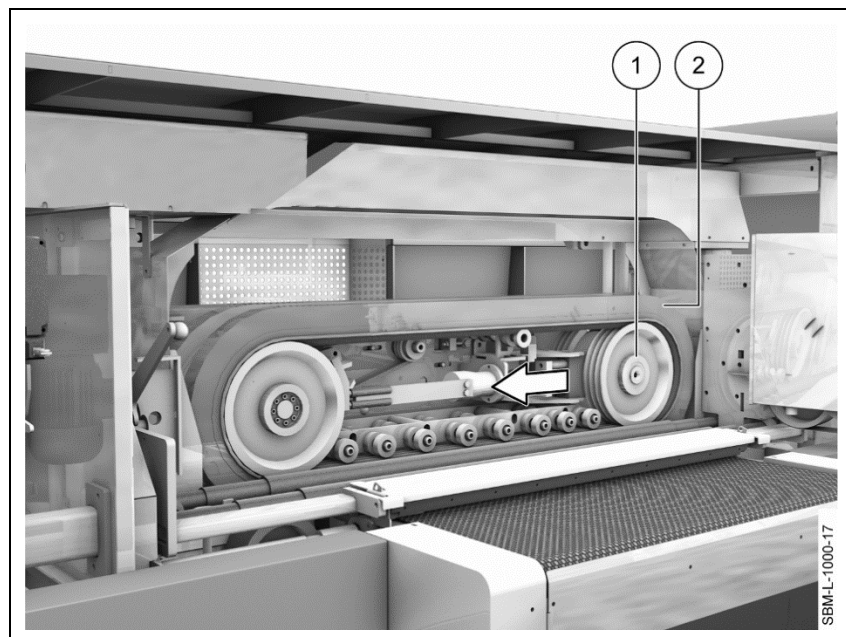


Abb. 43: Hydraulic belt tensioner

1 Tensioning unit  
2 Abrasive belt

Tensioning unit moved back.

- Disassemble the grinding belt guide. (Wrench size 13)
- Remove the abrasive belt from the pulley.

### 6.2.5 Place the abrasive belt on the S-unit

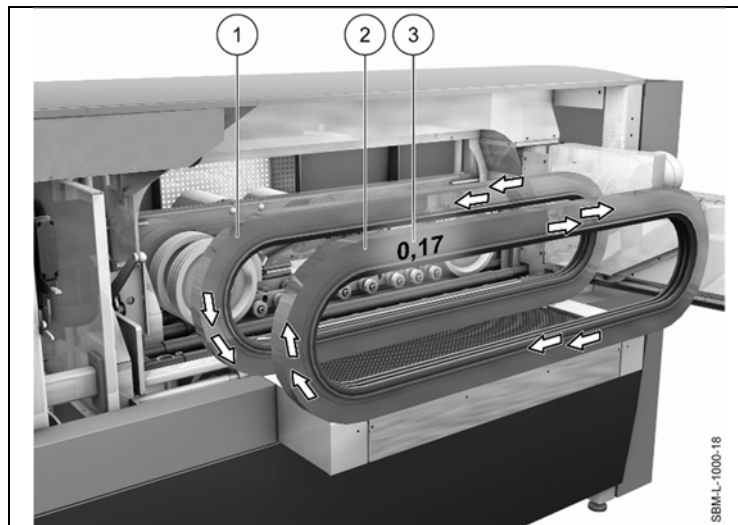


Abb. 44: Removing the grinding belts

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

- Replace the abrasive belts onto the pulleys according to their labels (S-unit, position, and operating direction).
- Mount the grinding belt guide. (Pay attention to the smooth running of the grinding belt!)

### 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.

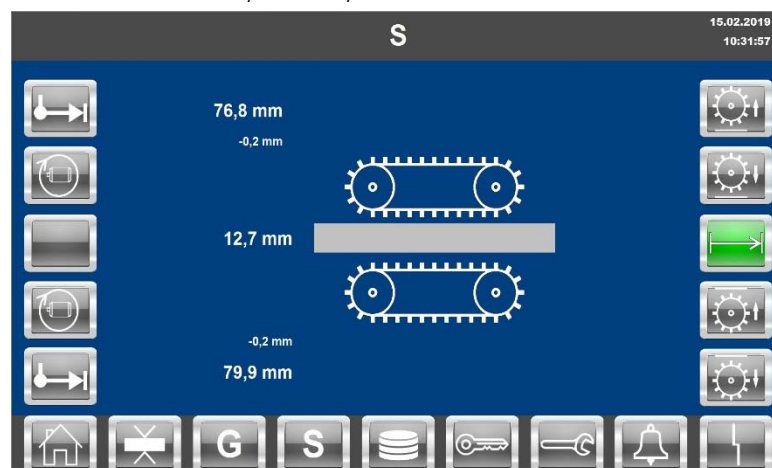


Abb. 45: Hydraulic belt tensioner

- 1 Button for hydraulic belt tensioner
- 2 Button Acknowledge EMERGENCY OFF

- Press the hydraulic belt tensioner button (1) again.
- After closing the doors and acknowledging the EMERGENCY STOP (3), the belt is tensioned.

### 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.

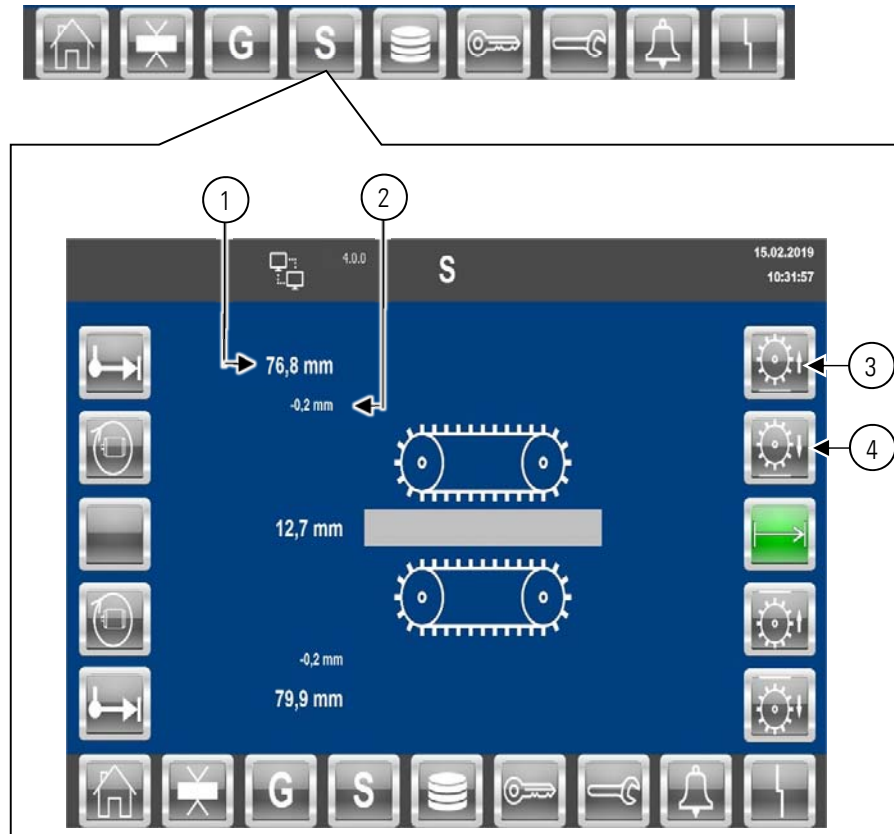


Abb. 46: Setting wear

- 1 Current position of the upper grinding unit
- 2 Current wear of the abrasive belt
- 3 Upper grinding unit S up
- 4 Upper grinding unit S down

➤ Reset to the noted wear value on the abrasive belt.



### 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.

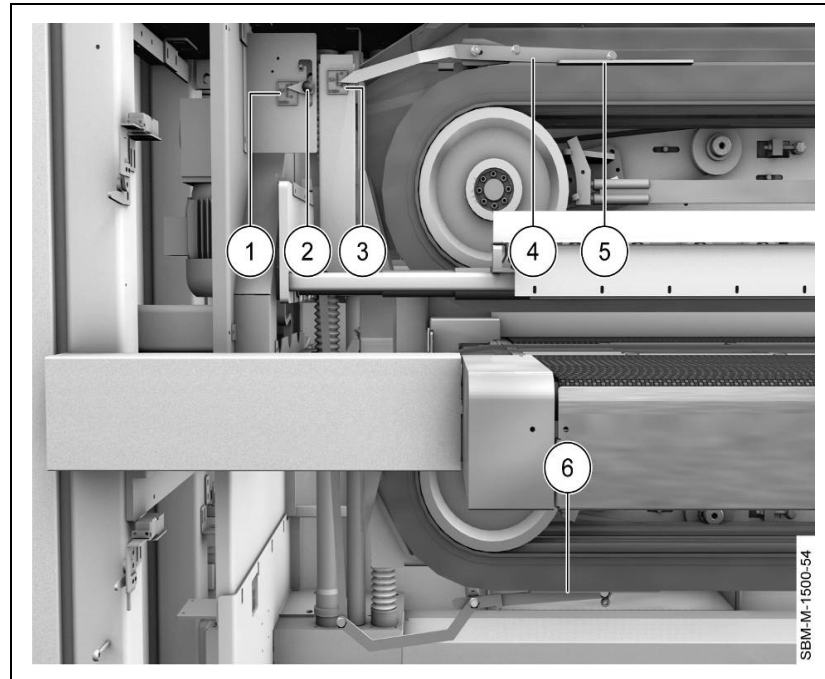


Abb. 47: Mechanical wear display

- 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" .**

- Correct the wear values of the S-unit until the wear indicator is set to "zero".
- Apply the wear query. Under the setup level (Password), the units in the S-unit menu can be zeroed using the buttons (3,4,5,6) in the display.
- Hold key switch, press keys (3,4,5,6).  
(See 5.3.5 and 5.2.2)



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.

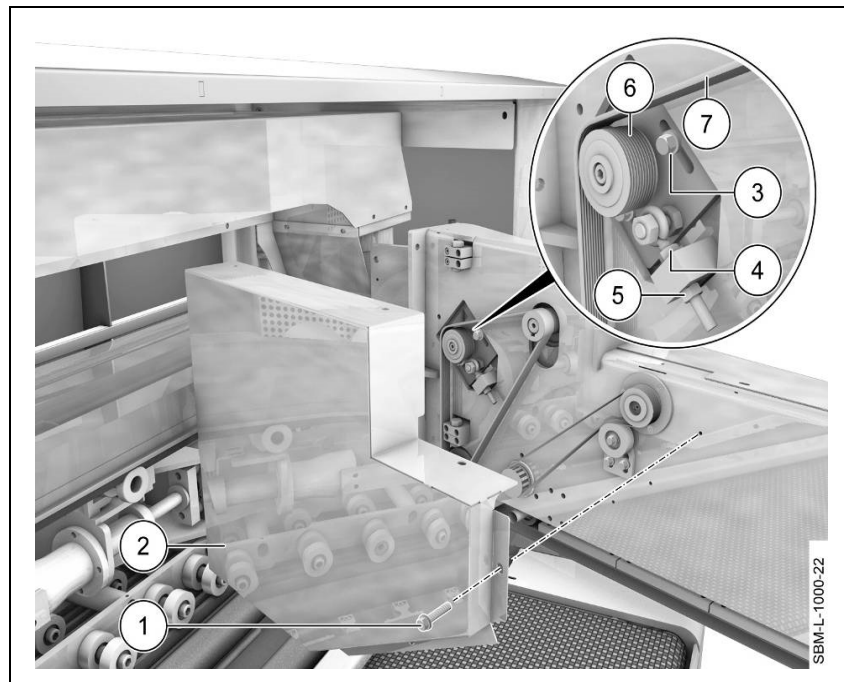


Abb. 48: G unit V-belt

- 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

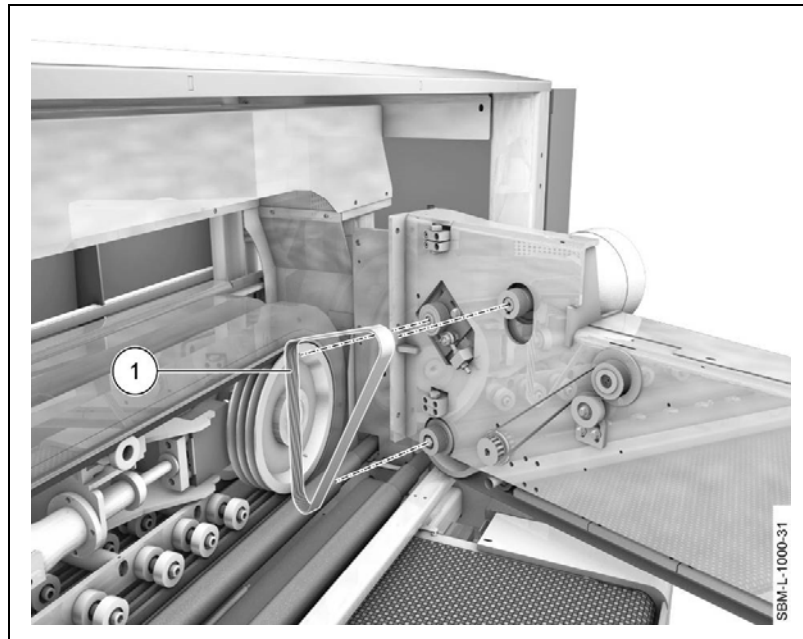


Abb. 49: Putting on the poly-V belt

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

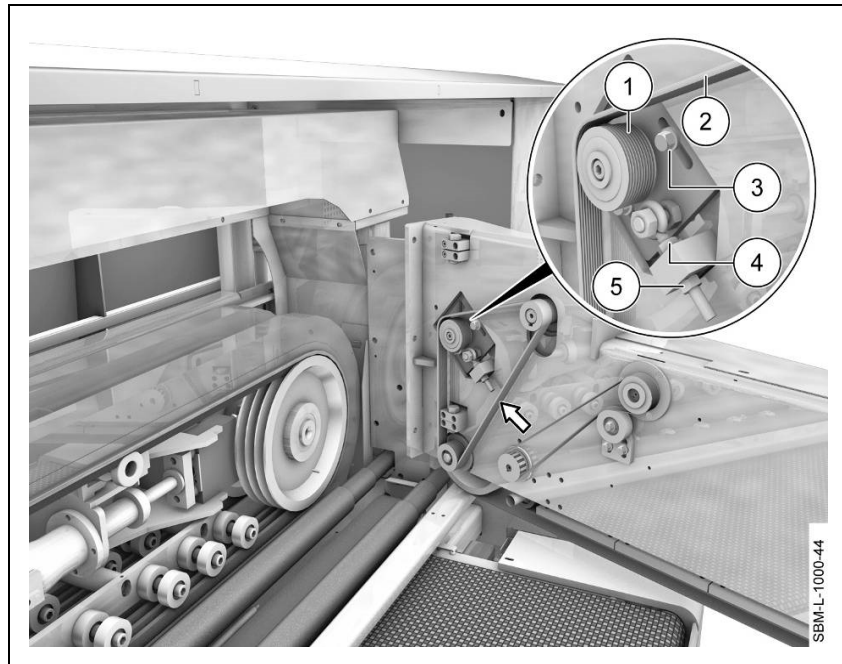


Abb. 50: Tensioning the poly-V belts

- 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

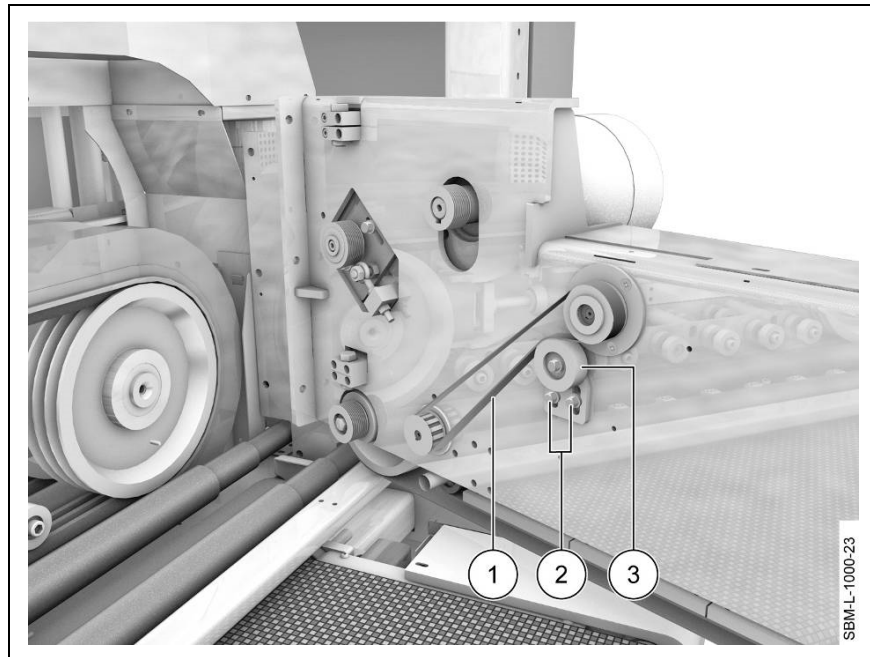


Abb. 51: Sliding block drive toothed belt

- 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

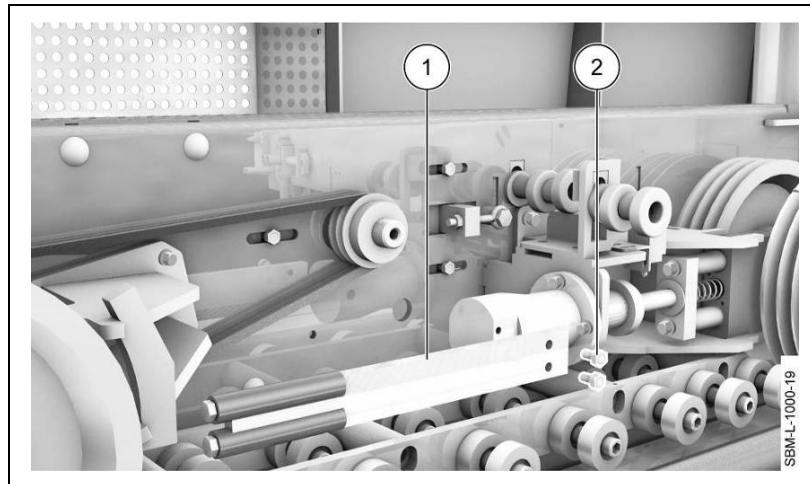


Abb. 52: Remove support bar

- 1 Support bar
- 2 Screw fasteners

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

#### 7.2.2 Removing the V-belts

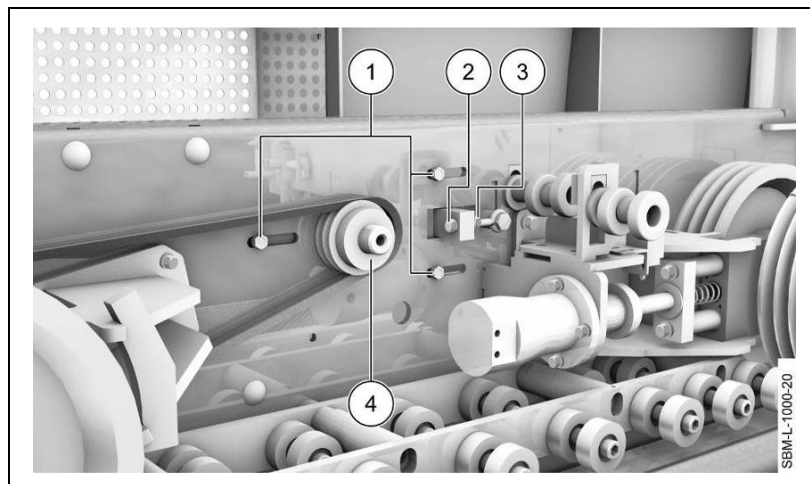


Abb. 53: Removing the V-belts

- 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.

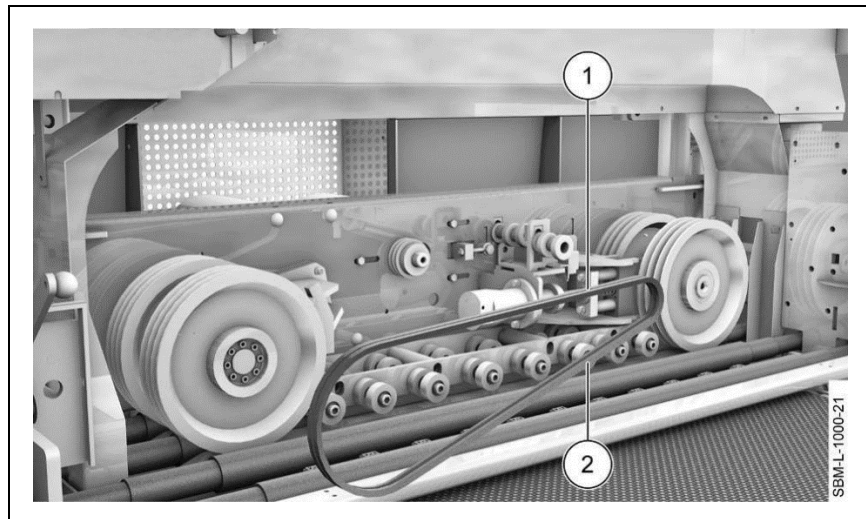


Abb. 54: Installing the V-belt

- 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

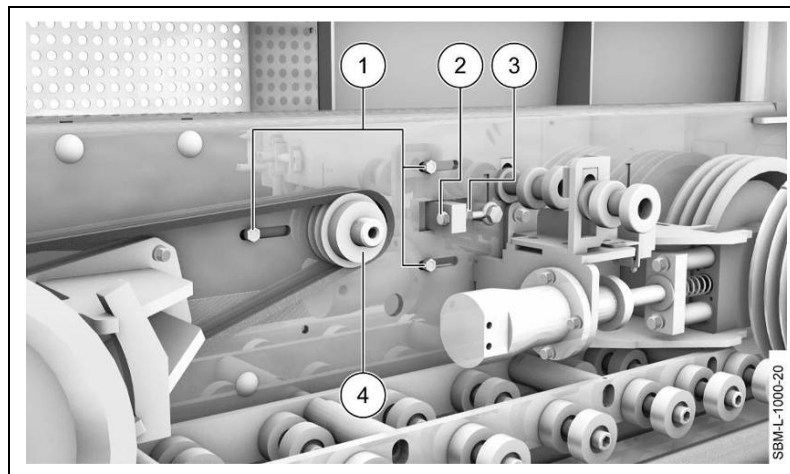


Abb. 55: Tensioning the V-belts

- 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

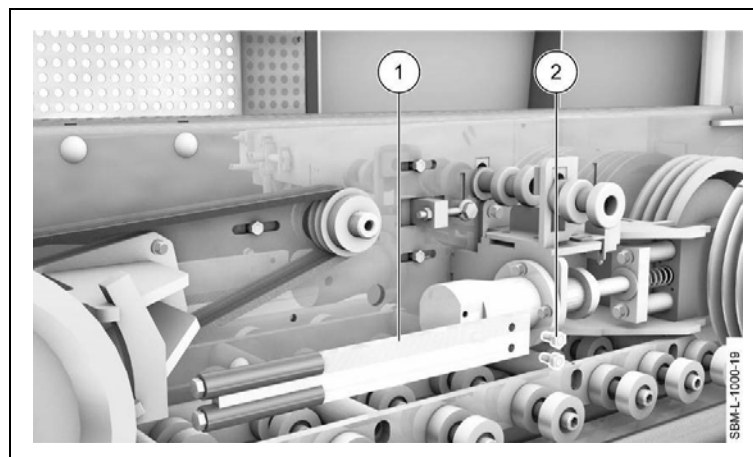


Abb. 56: Installing the support bar

- 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.

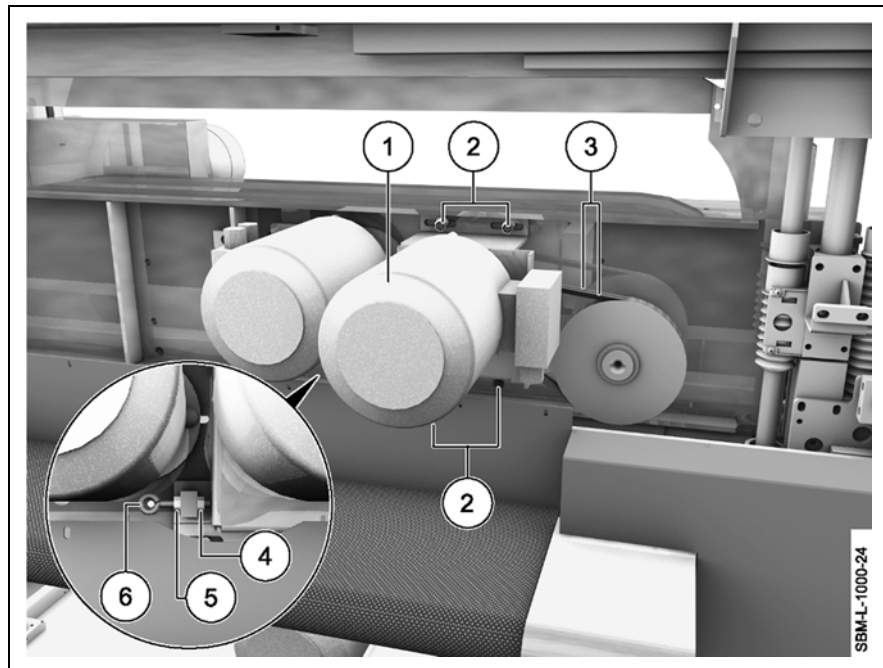


Abb. 57: Outer V-belt

- 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

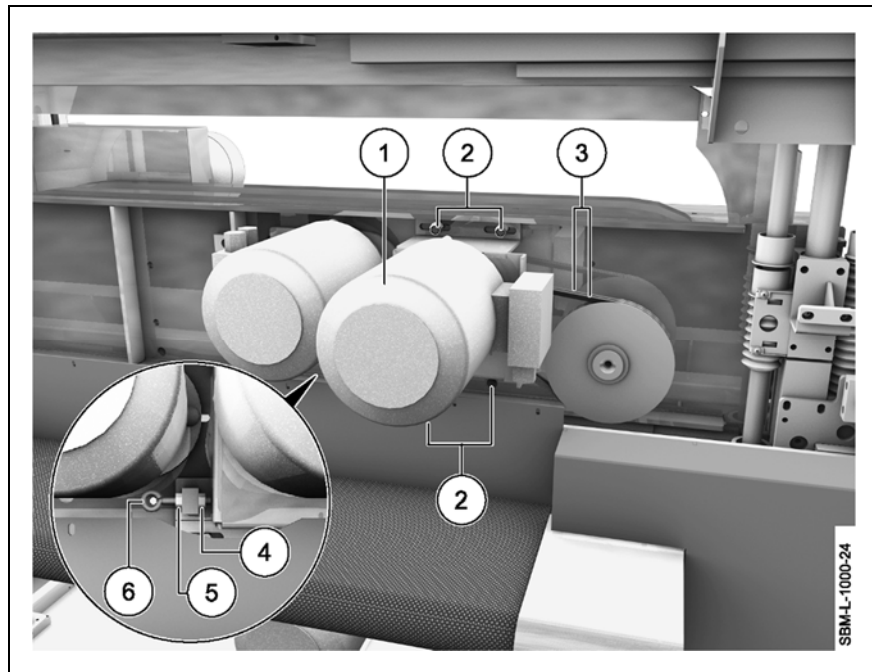


Abb. 58: Tensioning the V-belts

- 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

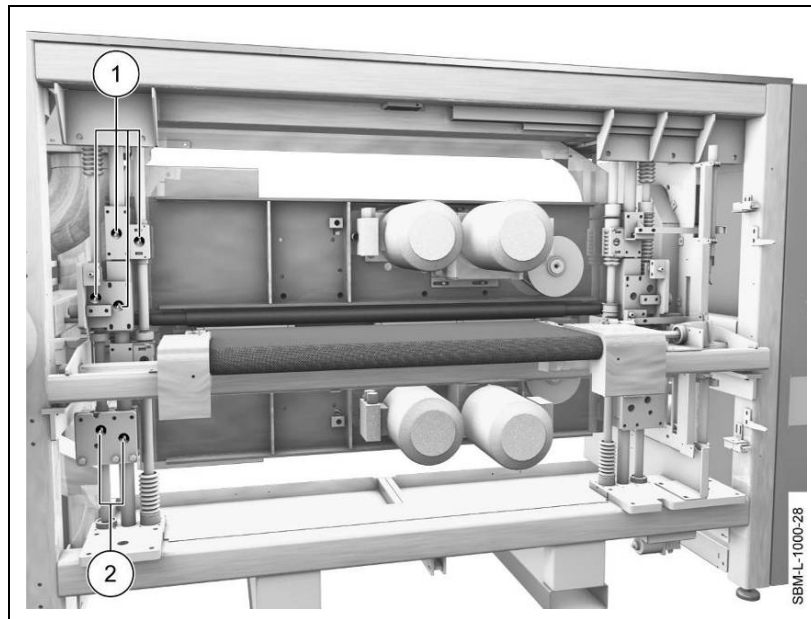


Abb. 59: Left guide shafts lubrication points

- 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

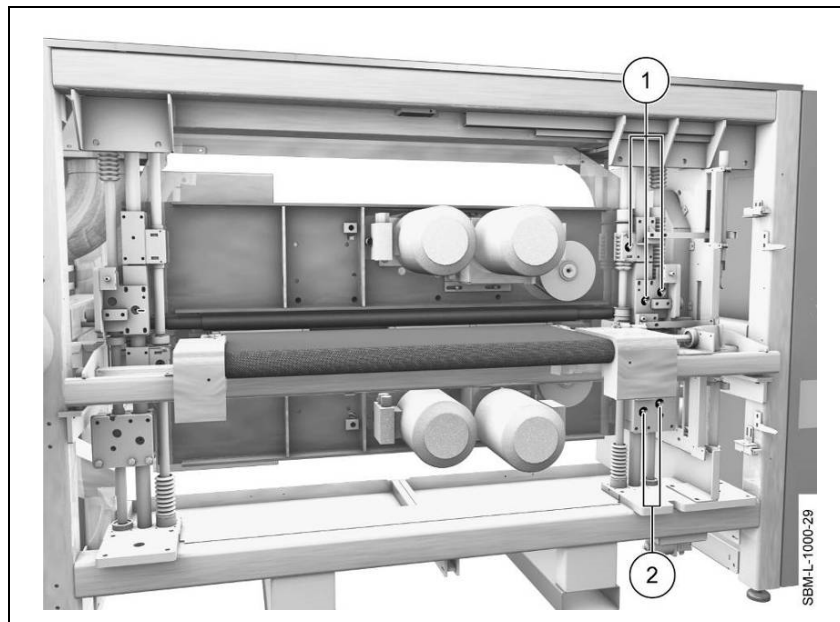


Abb. 60: Right guide shaft lubrication points

- 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

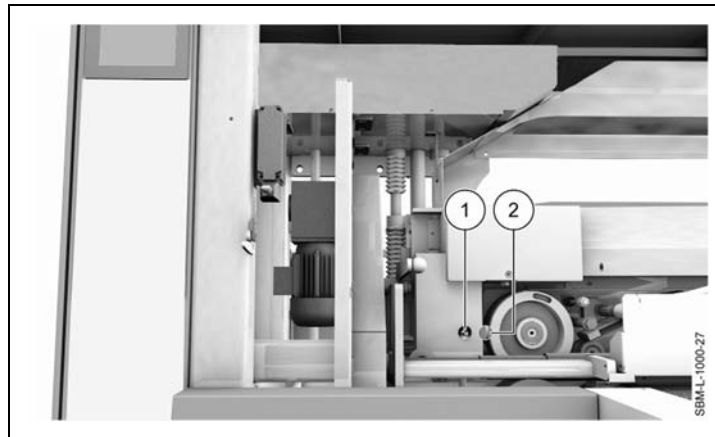


Abb. 61: Lubrication points of G unit

- 1 Grease lubrication point
- 2 Plugs

- Move tools with the tool change button to maximum position (See 5.3.2)
- Remove plugs (2) from the cover guide shafts.
- Lubricate point (1) according to the service schedule.

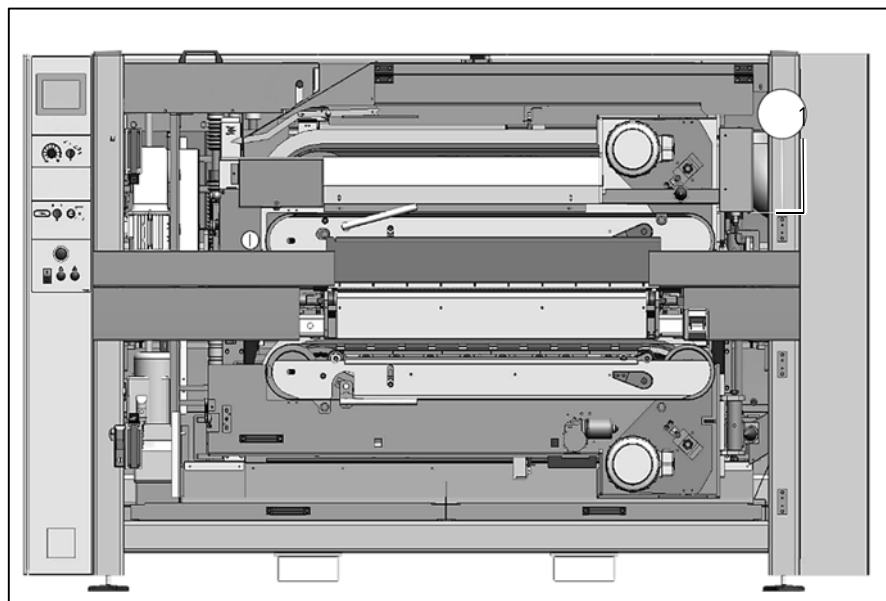


Abb. 62: Lubrication points of G unit

- 1 Grease lubrication point

- Lubricate point (1) according to the service schedule.

### 7.3.4 Lubricating the S-unit belt Flanged bearing

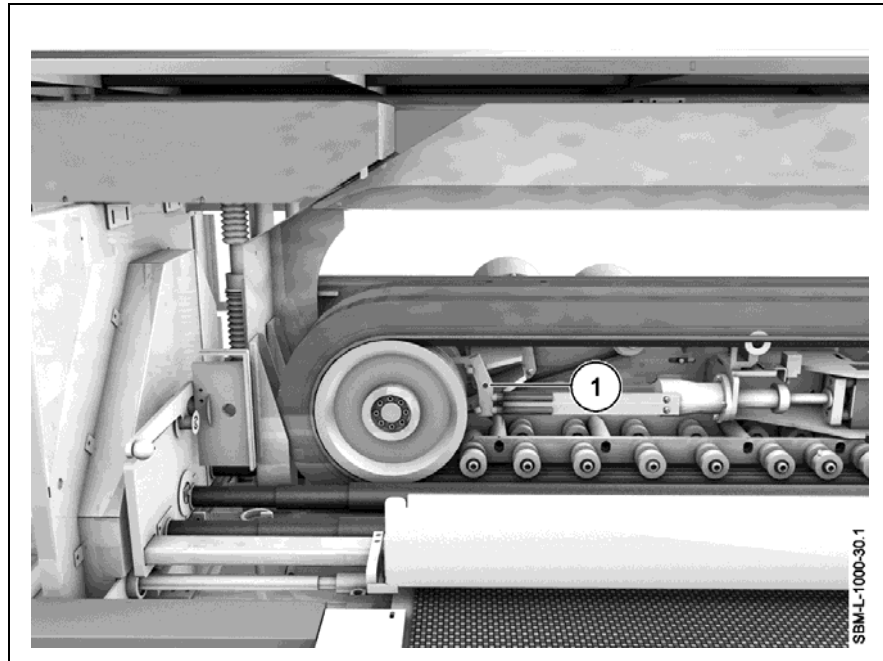


Abb. 63: Lubricating the Flanged bearing

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.

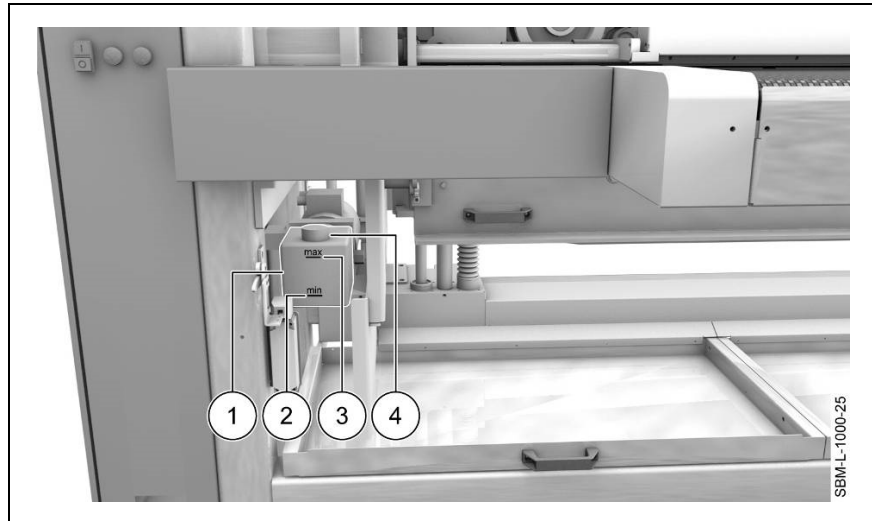


Abb. 64: Hydraulic oil level

- 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



##### Cleaning agents - Risk of fire or explosion

When using cleaning agents that may cause a fire or explosion, in the event of unfavorable flying sparks in the machine, a fire may start or even explode.

- Do not use flammable or explosive cleaning agents
- Only vacuum the machine and suction pipes with a vacuum cleaner approved for this purpose, or sweep them out with a broom.



#### ATTENTION



##### Swirling up of grinding dust

Sanding dust can come in contact with the eyes and enter respiratory tract.

- Wear face mask and protective goggles.
- Do not use compressed air.

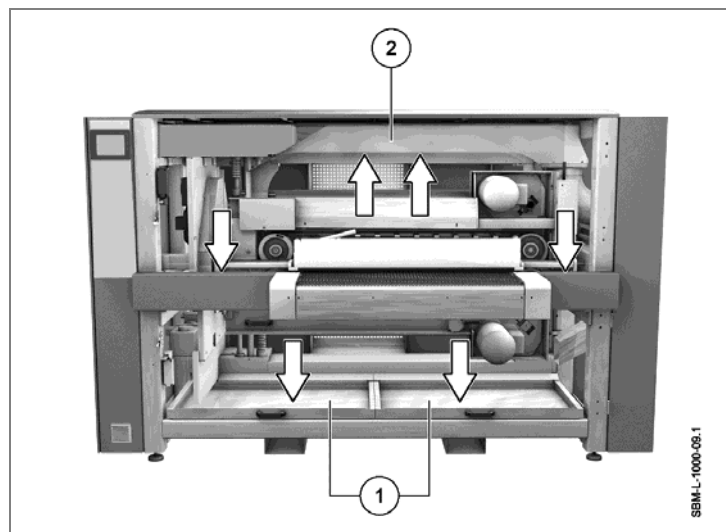


Abb. 65: Catch boxes and dust extraction shaft

- 1 Catch boxes
- 2 Cleaning flap

- 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).

##### Clean the interior and suction pipes completely

- Remove all dust deposits and other residues (work pieces, tool wear, sheet metal auxiliary materials, etc.) from the interior of the entire machine.
  - ↪ 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

### NOTE



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.

<b>Machining of aluminium</b>	The machine must be cleaned completely every three hours (see 7.4)
<b>Machining of steel</b>	The machine must be cleaned completely every eight hours (see 7.4)
<b>When processing aluminium, there is a lot of grinding dust inside the machine (frame, collecting boxes).</b>	The machine must be cleaned completely (see 7.4) even if three hours have not yet expired.
<b>Material switch from steel (stainless steel) to aluminium or vice versa</b>	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)	every 100 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  $\mu_{\text{tot}} = 0.12$ .

Hexagon head screws / hexagon socket head screws / hex nuts	Maximum tightening torque Maximum Ma in <b>Nm</b>		
	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)
		Volume flow of the suction power of the extraction system is too low	➤ Clean pipes. ➤ Clean the extraction system. ➤ Check the extraction piping (tightness, dirt).
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 Intrusion protection not set up.	➤ 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](mailto:lissmac@lissmac.com)  
Web: [www.lissmac.com](http://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.

## 11 PREFACE DECLARATION OF INCORPORATION



### WARNING



- Carcinogenic substances can be released during grinding, which can cause damage to the health
- It must be guaranteed that the continued operation of the grinding machine is impossible if the dust extraction system fails or decreases

Operation without the exhaust system is improper use. Liability of the manufacturer of the grinding machine for damages from operating without an exhaust system is excluded.

All national requirements for the extractor system and the material which is to be extracted must be complied with. A dry dust extractor (e.g. DDE 3200) may be used as an extractor for machining steel and stainless steel. A wet dust extractor (e.g. WDE 3000) may be used as an extractor for machining aluminum or aluminum alloys. A wet dust extractor must also be used as an extractor for mixed operation with stainless steel and aluminum. For machining of non-ferrous metals other than steel or stainless steel, or non-ferrous light metals other than aluminum, or for mixed operation with such materials, the extractor solution must always be agreed with LISSMAC

This declaration is based on the Machinery Directive 2006/42/EC Annex VII Part B:

## Declaration of incomplete machine

**LISSMAC**  
METAL PROCESSING

This declaration relates exclusively to the machine in the state in which it was placed on the market and excludes components which are added and/or operations carried out subsequently by the final user.

The machine may only be put into operation if the system complies with the relevant regulations of Directive 2006/42/EC. In addition, Directive 2014/30/EU was applied.

### Manufacturer:

LISSMAC Maschinenbau GmbH  
Lanzstraße 4  
D-88410 Bad Wurzach

Technical documentation retained by  
LISSMAC Maschinenbau GmbH, Lanzstraße 4, D-88410 Bad Wurzach.

### Description of the machine:

The LISSMAC SBM-L series grinding machine is used to round the edges of stamped, laser and fine plasma-cut workpieces and may only be operated in combination with an extractor which is approved according to the relevant EC Directive.

	SBM-L 1000 G1S2	SBM-L 1500 G1S2
Working width:	1000 mm	1500 mm
Operating voltage:	400V/50Hz / 480V/60Hz	400V/50Hz / 480V/60Hz
Power output:	37,5 A / 34 A	41 A / 37 A
Power input:	21,5 kW / 22,5 kW	23 kW / 24,5 kW
Power rating:	26 kVA / 28 kVA	28 kVA / 30,5 kVA
Protection class:	IP 42	IP 42
Weight:	2500 kg	2800 kg
Manufactured year:	2019	2019

### Harmonised standards:

EN ISO 12100:2011-03  
EN 60204-1; VDE 0113-1:2007-06  
EN 60204-1/A1; VDE 0113-1/A1:2009-10

### Legally binding representative:

LISSMAC Maschinenbau GmbH  
Lanzstraße 4  
88410 Bad Wurzach  
Tel.: +49 (0) 7564 / 307 – 0  
Fax.: +49 (0) 7564 / 307 – 500  
Mail: lissmac@lissmac.com / www.lissmac.com

Bad Wurzach, 22.02.2018

  
Klaus Kiefer  
(Managing Director)

  
p.p. Stefan Krummenauer  
(Product Manager)

