Sheeter

Translation of the original operating manual

SVC525C

Keep for future reference!

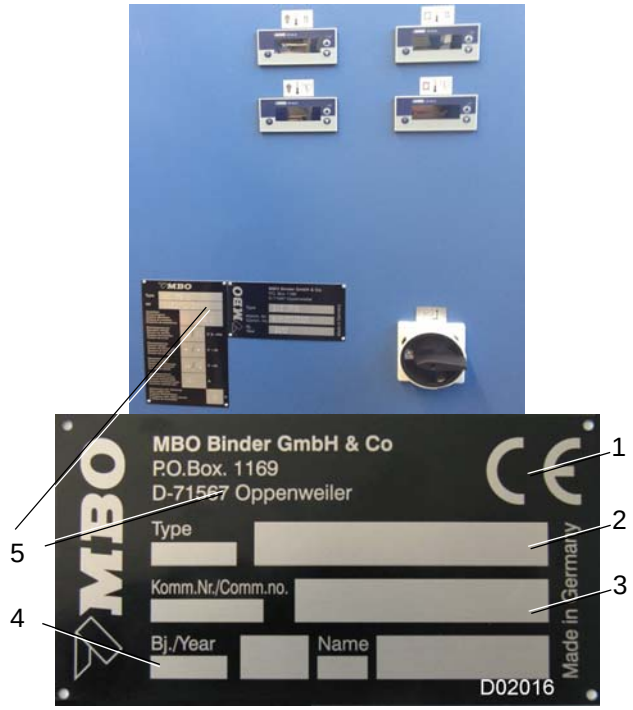
Type of machine:	Sheeter		
Configuration:	SVC 525C		
Type of document:	Translation of the original operating manual		
Version:	V1.1	**Author:**	Wolfgang Matzner
Status as of:	11/04/2014	**Machine no.:**	
Language:	English	**File name:**	BA_SVC525C _V1.1_us-en
Manufacturer:	MBO Maschinenbau Oppenweiler Binder GmbH & Co. KG PO Box 1169 71567 Oppenweiler GERMANY Tel.: +49 7191 46 0 Fax: +49 7191 46 34 http://www.mbo-folder.com info@mbo-folder.com		

Subject to alterations!

Name plate and CE marking:

For all questions relating to your machine, please contact your MBO agency.
You can find the address on our home page: www.mbo-folder.com.

For the identification of the machine and the most important machine data, see the name plate on the machine.



1	CE marking	4	Year of manufacture
2	Type of machine	5	Name plate
3	Commission number		

Illustration 1: Name plate

Always specify these details for inquiries, service and spare parts orders:

- Commission number
- Type of machine

EC Declaration of Conformity

according to EC Machine Directive 2006/42/EC, Annex II, No. 1 A.

The manufacturer

MBO Maschinenbau Oppenweiler Binder GmbH & Co. KG
Grabenstraße 4-6
71570 Oppenweiler
GERMANY

hereby declares that the machine described below

Designation	Sheeter
Type	SVC 525C
Commissioning no.	

complies with the provisions of the following EC directives

Machinery Directive	2006/42/EC
Low Voltage Directive	2006/95/EC

Harmonized standards applied:

EN ISO 12100:2010
EN 1010-1:2004+A1:2010
EN 1010-4:2004+A1:2009
EN ISO 60204-1:2006

Authorized representative for compiling the technical file:

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Oppenweiler, 11/4/2014

_____

Frank Eckert - Managing Director

Table of contents

1 About this manual

Everybody who will transport, set up, connect, operate, maintain, repair, and dismantle this machine must read this operating manual.

Safe use of the machine is only possible once everybody has understood the content of and follows all points of the operating manual. This applies especially to the chapter on safety.

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

Following these notices helps

- To avoid hazards.
- To minimize repair costs and downtimes.
- To increase the reliability and service life of the machine.

Supplementation

- The operator must add instructions regarding national regulations for accident prevention to this operating manual.

Retention

- This operating manual forms part of the machine. It must be available on the machine throughout the machine's entire service life.

If you sell the machine

- Give this operating manual to any subsequent owner or user of the machine.

We reserve the right to make technical changes to improve the machine, even if these changes are not taken into account in this operating manual.

1.1 Additional documents

In addition to this operating manual, there are these documents about the machine:

Designation	Type MBO part number	Use
Wiring diagram		
Pneumatic diagram		
Spare parts list		
Supplier documentation		

Table 1: Additional documents

1.1.1 Supplier documentation

Manufacturer	Designation	Type MBO part number	Use
Becker	Vacuum pumps		
Rittal	Temperature display		
Rittal	Filter fan		

Table 2: Supplier documentation

1.2 Structure of the operating manual

The table lists the chapters of the operating manual. It also describes the essential content of these chapters as well as the target groups at whom the chapters are directed.

No.	Chapter	Contents	Target group
	Table of contents	The detailed table of contents serves as a search tool	• Owner/operator • Operating personnel • Maintenance personnel • Service technicians
1	About this manual	Important notes about this operating manual	• Owner/operator • Operating personnel • Maintenance personnel • Service technicians
2	Basic safety instructions	Details about: • Residual risks and hazards with intended use. • Foreseeable misuse. • Avoidance of the risks.	• Owner/operator • Operating personnel • Maintenance personnel • Service technicians
3	Product description	• Important notices about the product • Technical data	• Owner/operator • Operating personnel • Maintenance personnel
4	Structure and function	Description of: • Structure and function • Protective devices	• Operating personnel • Maintenance personnel • Service technicians
5	Operating and display elements, operating modes	Description of the: • Operating and display elements • Operating modes	• Operating personnel • Maintenance personnel • Service technicians
6	Transport, interim storage	Details about: • Packaging • Transportation • Interim storage	• Transport personnel • Maintenance personnel • Service technicians
7	Set-up and commissioning	Details for: • Set-up • Commissioning	• Maintenance personnel • Service technicians
8	Adjustment and operation	Details for: • Operation • Adjustment	• Operating personnel • Maintenance personnel • Service technicians
9	Maintenance	Details for the: • Operational maintenance • Maintenance • Repair	• Operating personnel, • Maintenance personnel • Service technicians
10	Decommissioning, storage and putting the machine back into operation	Details for the: • Decommissioning • Storage • Recommissioning	• Owner/operator • Operating personnel • Maintenance personnel • Service technicians
11	Disposal	Details for the environmentally friendly disposal	• Owner/operator • Maintenance personnel • Service technicians

Table 3: Structure of the operating manual

1.3 Signs and symbols used

The signs and symbols in this manual should help you to use the manual and the machine quickly and safely.

Symbol	Explanation
▷	Indicates an instruction for action. The sequence is not specified.
1) ... 2) ... 3) ...	Numbered instructions for action. The defined sequence of the instructions for action makes it easier for you to use the machine correctly and safely.
✓	Here you will find the result of a sequence of instructions for action.
<STOP>	Push button with the label between the brackets (e.g. Stop).
	Additional information for use of the machine.
	Important notice, please observe.

Table 4: Symbols, terms, and abbreviations

1.4 Description of safety messages

Safety messages are marked by a safety sign and a signal word.

1.4.1 Signal words

The signal words draw your attention to the severity of the hazard. They are structured according to a classification system.

Signal word	Meaning
DANGER	Signal word to indicate a hazardous situation with high risk level which, if not avoided, will result in death or serious injury.
WARNING	Signal word to indicate a possible hazardous situation with medium risk level which, if not avoided, could result in death or serious injury.
CAUTION	Signal word to indicate a possible hazardous situation with minor risk level which, if not avoided, could result in minor or moderate injury or property damage.

Table 5: Signal word meanings

1.4.2 Structure of safety messages

Each safety message is structured as follows:

- Safety sign
- Signal word to identify the hazard level
- Type and source of the hazard
- Possible consequences of the hazard
- Measure(s) for avoiding the hazard

Example:

DANGER! WARNING! CAUTION! (Signal word)
Type and source of the hazard.
Possible consequences of the hazard.
Measure(s) for avoiding the hazard

1.4.3 Safety sign

Depiction	Meaning
	**Prohibition sign** Red border, white background, black symbol. Safety sign that forbids a behavior that could cause a hazard.
	**Warning sign** Yellow background, black symbol. Safety sign that warns about a hazard.
	**Mandatory sign** Blue background, white symbol. Safety sign that prescribes a particular behavior.
	**Rescue sign** Green background, white symbol. Safety sign that identifies the rescue path or the path to a place where you can get help or find rescue equipment in case of an emergency.
	**Fire protection sign** Red background, white symbol. Safety sign, which in case of hazard marks the location of fire alarm and fire extinguishing equipment and/or the path to this equipment.

Table 6: Safety sign

1.4.3.1 Warning sign

Depiction	Meaning
	**Warning about a general hazard.** You will see this warning-triangle next to activities during which several causes can create hazards.
	**Warning of hazardous voltage.** You will see this warning-triangle next to activities during which there is a hazard of electrical shock, possibly with deadly consequences.
	**Warning of rotating rollers.** You will see this warning triangle next to activities during which there is a hazard of crushing, possibly with deadly consequences.
	**Warning of crushing of hand.** You will see this warning-triangle next to activities during which there is a hazard of crushing the hand.
	**Warning of rotating machine parts.** You will see this warning-triangle next to activities during which there is a hazard of cutting injuries, possibly with deadly consequences.
	**Warning of lifting heavy machine parts.** You will see this warning triangle next to activities during which there is a hazard of overloading due to lifting heavy loads.
	**Warning of tipping machine parts.** You will see this warning-triangle next to activities during which there is a hazard of crushing due to tipping loads.
	**Warning of entanglement zone.** You will see this warning-triangle next to activities during which there is a entanglement hazard.
	**Warning of sharp knives.** You will see this warning-triangle next to activities during which there is a hazard of cutting injuries, possibly with deadly consequences.

Table 7: Warning sign

Depiction	Meaning
	**Warning of substances harmful to health.** You will see this warning-triangle next to activities during which there is a hazard of substances harmful to health, possibly with deadly consequences.
	**Warning of oxidizing substances.** You will see this warning-triangle next to activities during which there is a hazard of oxidizing substances, possibly with deadly consequences.
	**Warning of hot surfaces.** You will see this warning-triangle next to activities during which there is a hazard of burns, possibly with long-term consequences.
	**Warning of tripping points.** You will see this warning-triangle next to activities during which there is a tripping hazard, possibly with deadly consequences.

Table 7: Warning sign

1.4.3.2 Mandatory sign

Depiction	Meaning
	**Use hand protection.** You will see this mandatory sign next to activities for which safety gloves should be worn.
	**Use foot protection.** You will see this mandatory sign next to activities for which safety shoes should be worn.
	**Use ear protection.** You will see this mandatory sign next to activities for which ear protection should be worn.
	**Use eye protection.** You will see this mandatory sign next to activities for which eye protection should be worn.
	**Get help.** You will see this mandatory sign next to activities for which you should ask for the help of other people.
	**Follow the operating manual.** You will see this mandatory sign next to activities for which you should follow the operating manual.
	**Heed the maintenance chapter.** You will see this mandatory sign next to activities for which you should heed the maintenance chapter.
	**Activate before maintenance or repair.** You will see this mandatory sign next to activities for which the machine must be de-energized.

Table 8: Mandatory sign

1.4.4 Marking of danger spots

Permanent hazards and danger spots are marked with yellow and black stripes.

Depiction	Meaning
	**Heed danger spot or hindrance.** This hazard marking is affixed to constant danger spots and hindrances.

Table 9: Marking of danger spots

1.5 User assessment of the operating manual

Our operating manuals are updated regularly. Help us with your suggestions for improvement; they make the manuals user-friendly.

2 Basic safety instructions

The basic requirement for the safe handling and fault-free operation of this machine is knowledge of the basic safety instructions and the safety regulations.

- The operating manual must be heeded by all people who work on or at the machine.
- Read and understand the operating manual before working with the machine.
- Always keep the operating manual where the machine is being used.
- The operating manual must always be freely available to the operating and maintenance personnel.
- Also heed the applicable accident prevention and environmental protection rules and regulations for the place where the machine is used.

2.1 Intended use

- The machine is intended exclusively for the processing of paper webs.

  The specifications relative to format and grammage in the "Technical data" chapter must be complied with.
- The machine is intended exclusively for one-man operation.
- The machine is intended exclusively for operation in a flawless technical state.

  Any failures that may endanger safety must be remedied immediately by trained maintenance personnel, or a specialist from the manufacturer or supplier.
- The machine may only be operated by specially-trained and instructed personnel.
- The machine may only be operated with the required personal protective equipment.
- Troubleshooting, maintenance and service must be carried out by trained maintenance personnel only.
- Follow all instructions in this operating manual.
- Heed the local safety regulations and accident prevention regulations.
- Adhere to the inspection and maintenance intervals.
- Use only original wearing parts and spare parts.

Use the machine only as intended and when the protective device is working perfectly.
This is the only way to guarantee the machine's operating safety.

2.2 Reasonable foreseeable misuse

Reasonable foreseeable misuses are:

- The processing of materials other than easily tearing webs.
- Operation in an area subject to explosion.
- Operation with removed protective devices.
- Operation of the machine without training or briefing of the operating personnel.
- Operation of the machine without the required personal protective equipment.
- Exceeding of the technical values specified for normal operation.
- Individual changes and rebuilding.
- Maintenance and cleaning intervals not adhered to.
- Maintenance and repair work that is not performed correctly.
- Wearing parts not replaced.
- Unintended use.

EMC behavior

The electromagnetic compatibility (EMC) of the machine can be impaired by additions or changes of any kind.

Therefore, do not make any additions or changes to the machine without consulting the manufacturer and procuring written permission.

Spare and wear parts

The use of spare parts and wear parts from third-party manufacturers can cause risks.
Use only original parts or parts approved by the manufacturer.

The manufacturer assumes no liability for damage from the use of spare parts and wear parts not approved by the manufacturer.

2.3 Obligation and liability

The machine is built using the latest technology and according to acknowledged safety rules.

Nonetheless risks and damage can occur when using it:

- to the body and life of the operator or third parties,
- to the machine itself,
- to other property.

If the machine is:

- operated by untrained or uninstructed personnel,
- not used according to its intended use,
- not maintained or not maintained properly or serviced.

The machine is only to be used:

- For the intended use.
- If it is in perfect condition with respect to safety.
  Faults that can compromise safety must be remedied immediately.

2.4 Warranty

Our "General sales and delivery conditions" apply here.
Warranty and liability claims for personal injury and property damage are excluded if they are due to one or more of the following causes:

- Non-intended use of the machine.
- Improper assembly, start-up, operation or maintenance of the machine.
- Operation of the machine with improperly-mounted or defective protective devices.
- Failure to follow the instructions in the operating manual with respect to transport, installation, commissioning, operation, set-up, maintenance, and storage of the machine.
- Individual constructional changes to the machine.
- Failure to adhere to maintenance and cleaning intervals that exclude a breakdown of the machine.
- Defective monitoring of machine parts that are subject to wear, such as belts, tapes, brushes, and couplings.
- Installation of spare and wearing parts that were not ordered from the manufacturer.
- Cases of catastrophe and acts of God.

2.5 Residual risks

A risk analysis with risk assessment was conducted for this machine in accordance with DIN EN ISO 12100:2010.

The construction and model of the machine based on this analysis corresponds to the state of technology.

You can avoid residual risks by heeding and implementing these specifications:

- Safety messages on the machine.
- General safety instructions and special warnings in this operating manual.
- Operating manual of the machine/system manufacturer.
- Operator directives.

The existing residual risks are listed in the following chapters according to the various life phases of the machine.

2.5.1 Transport, interim storage

- Crushing hazard during transport of the machine and machine parts.
- Use of unsuitable fork lifts.
- Tipping machine parts during the unloading process.
- Insufficient properties and condition of the underfloor.
- Wrong interim storage

2.5.2 Set-up, commissioning

- Use of unsuitable fork lifts.
- Tipping machine parts during the installation process.
- Insufficient properties and condition of the underfloor.
- Improper alignment of the machine components.
- Hazardous voltage.
- Incorrect supply voltage
- Incorrect use of the sockets.
- Discharge currents greater than 10mA.
- Disconnected protective conductor connections.
- Dismounted protective devices.
- Tripping points due to connecting cables lying around.
- Operating the sheeter when it is cold.

2.5.3 Adjustment and operation

- Dismantling, bridging or bypassing protective devices.
- Operation without protective covers.
- Operating the sheeter when it is cold.
- High sound pressure level.
- Rotating machine parts.
- Rotating machine parts in setup mode.
- Cutting hazard due to quickly-running, open web
- Cutting hazard on the longitudinal cutting unit.
- Web break
- Paper jam.
- Tripping points due to connecting cables lying around.

2.5.4 Maintenance

Operational maintenance:

- Rotating machine parts.
- Heavy contamination.
- Improper cleaning
- Unsuitable cleaning agents.
- Incorrect use of cleaning agents.
- Used cleaning cloths.
- Use of compressed air.
- Defective pneumatic lines.
- Incorrect maintenance intervals during multi-shift operation.

Maintenance:

- Hazardous voltage.
- Dismantling, bridging or bypassing protective devices.
- Operation without protective covers.
- Rotating machine parts.
- Crushing.
- Winding up.
- Wrong/poor maintenance tool.
- Improper maintenance.
- Incorrect maintenance intervals during multi-shift operation.

Repair:

- Improper repair.

2.5.5 Decommissioning, storage

- Incorrect storage.

2.5.6 Disposal

- Improper disposal.

2.6 Product-specific hazards

2.6.1 Entanglement hazard and crushing hazard

The sheeter, due to the transport and cutting process, has rolls, rollers and knives rotating in opposite directions.

As a result, there is an increased drawn-in hazard and crushing hazard in all setting work.

How to avoid injuries:

▷ Never reach into the machine while the machine is running.
▷ All adjustment or testing/inspection work may be carried out only when the machine is stopped and secured against switching on.
▷ Press the EMERGENCY STOP palm button.
▷ Adjustment and testing work must always be performed by one person only.
▷ There is a drawn-in hazard and crushing hazard even when the machine is in inching mode!
✓ Injuries will be avoided.

2.6.2 Cutting hazard

The longitudinal cut device tools are razor-sharp.

During all work on the tools of the length cut device, there is therefore an increased cutting hazard on hands and arms, such as when:

- Handling the longitudinal cut device.
- Installing and removing the knives.
- Removing paper jams in the area around the longitudinal cut device.

This is how to avoid cutting injuries:

▷ Never reach towards the knives while the machine is running.
▷ All work on the knives may be carried out only when the machine is stopped and secured against switching on.
▷ Press the EMERGENCY STOP palm button.
▷ Always wear cut-proof safety gloves and safety shoes when working on the knives.
▷ Work on the machine must always be performed by one person only.
▷ There is a risk of injury even when the machine is in inching mode.
✓ Cutting injuries will be avoided.

2.6.3 Noise

On the sheeter, there is a high noise pressure level at high production speeds and with heavy papers.
This high sound pressure level can cause hearing damage.
See chapter “3.2.6.1 Geräuschemission”.

This is how to avoid hearing damage:

▷ Always wear ear protection when working on the machine.

✓ Hearing damage will be avoided.

2.7 Life time

2.7.1 Life time of the machine

The life time of this machine is designed for 20 years.

2.7.2 Life time of the control-technical safety components

All components of the control-technical safety circuits have a life time of more than 20 years.

2.8 General safety instructions

2.8.1 Transport, interim storage

- Only specially-trained and authorized personnel may transport the machine.

2.8.2 Set-up, commissioning

- Only specially-trained and authorized personnel may set up and commission the machine.

2.8.3 Normal operation

- Only instructed operating personnel may operate the machine.
- The machine may be operated only if all protective devices such as protective hoods and EMERGENCY STOP palm buttons, are present and fully functional.
- The machine may only be operated with the required personal protective equipment.
- At least once per shift, the machine must also be checked for externally-visible damage. Changes, including to the operating behavior, must be reported immediately.
- Machine parts may not be used as climbing aids. If you need to reach higher-up machine parts, use a suitable working stage or other platform. Make sure that it corresponds to the safety requirements, e.g. with respect to height, stability, etc.

2.8.4 Setting up/equipping

- Only specially-trained and authorized personnel may set up the machine.
- The machine may only be set up with the required personal protective equipment.
- Inform operating personnel before beginning set-up.
- If the machine is switched off for set-up, it must be secured against unauthorized or inadvertent switching on again.
  Use a padlock to secure the main switch against switching on. If necessary, attach a warning sign to the main switch.
- Machine parts may not be used as climbing aids. If higher machine parts must be reached, a suitable working stage or other platform must be used, which fulfills the safety-technical requirements such as height, stability, etc.
- If larger components or parts are replaced, corresponding lift equipment must be used to transport the components. Only use suitable and technically-perfect lift equipment and load suspension devices with sufficient carrying capacity. Secure components and parts so that they present no hazard.
  Do not linger or work under suspended loads.

- After completion of the work, do not leave any tools or other loose objects lying on the machine.

2.8.5 Maintenance and repair

- Maintenance and repair work may only be performed by specially trained technical personnel.
- Maintenance and repair work may only be operated with the required personal protective equipment.
- Inform operating personnel before beginning service and maintenance work. Secure the service area if necessary.
- For all repair and maintenance work, heed the switch-on and switch-off procedures according to the operating manual.
- Heed the prescribed maintenance and maintenance intervals according to the operating manual.
- If the machine is switched off for service and/or maintenance work, it must be secured against unauthorized or inadvertent switching on again. Use a padlock to secure the main switch against switching on. If necessary, attach a warning sign to the main switch.
- If the dismounting of protective devices is necessary during maintenance and repair work, it must be replaced and checked to make sure it is functional immediately after completion of the work.
- After completion of the work, do not leave any tools or other loose objects lying on the machine.
- All operating and consumables as well as spare parts no longer needed must be disposed of safely and in environmentally-appropriate fashion.

2.8.6 Work on electrical equipment

- Only an electrically qualified person is permitted to perform work on the electrical systems or equipment.
- In case of faults in the electrical power supply, the machine must be switched off immediately.
- Only use original fuses with the prescribed amperage.

2.9 Personnel, qualification and duties

All activities at or on the machine must be carried out by authorized personnel only.

Authorized personnel is divided into several groups:

- Owner/operator
- Operating personnel
- Maintenance personnel

The authorized personnel must:

- have reached the age of 16,
- know and be able to apply the accident prevention regulations and safety instructions for the machine,
- have read chapter “2 Basic safety instructions” and be able to apply and implement it in practice,
- be trained and instructed according to the rules of conduct in the event of a fault,
- have the physical and mental abilities to carry out his or her responsibilities, tasks, and activities on the machine,
- be trained and instructed in accordance with his or her responsibilities, tasks, and activities on the machine,
- have understood and can implement practically the operating manual with respect to responsibilities, tasks, and activities for the machine.

2.9.1 Qualification of the personnel

This table lists the necessary qualification of the personnel related to the various activities at or on the machine.

	Specially trained personnel	Instructed operating personnel	Instructed personnel with specialized training (mechanical/ electrical engineering)
Transportation	X	-	-
Interim storage	X	-	-
Set-up	-	-	X
Electrical connections	-	-	X
Stationary mains connection	-	-	X
Commissioning	-	-	X
Troubleshooting (mechanical/electrical	-	-	X
Installation, set-up	X	X	-
Operation	-	X	-
Operational mainte-nance (cleaning)	-	X	-
Maintenance	X	-	X
Repair	-	-	X
Decommissioning	-	-	X
Storage	X	-	-
Disposal	X	-	-

Table 10: Qualification of personnel
Legend: X permitted, - not permitted

2.9.2 Duties of the operator

The owner/operator is responsible for

- the machine being operated only as intended,
- the machine being operated only when it is fully functional, safe and reliable,
- the machine being maintained and cleaned according to the specifications in the maintenance and cleaning schedule,
- the machine is protected against unauthorized use,
- the necessary personal protective equipment being available,
- the necessary personal protective equipment being worn,
- only authorized personnel having access to the machine,
- the authorized personnel being adequately qualified,
- the authorized personnel being instructed in all applicable questions of workplace safety, accident prevention, and environmental protection,
- the authorized personnel has read and understood the operating manual,
- the operating manual is always kept where the machine is used and it is freely accessible to the operating and maintenance personnel,
- the safety and notice signs on the machine are kept in an easily legible condition,
- a risk assessment of the entire system being carried out and its results being summarized in an operator directive,
- identified defects or abnormal operating states/jams being remedied immediately,
- operation of the machine being ceased during troubleshooting.

Heed the national laws and European directives about occupational safety and health of employees at work.

Germany The requirements of the German Labor Protection Act (ArbSchG) and the German Health and Safety at Work Regulations (BetrSichV) must be adhered to.

EC countries The requirements of the directives 89/391/EEC and 2009/104/EU must be adhered to.

2.9.3 Duties of the operating personnel

The operating personnel must:

- be trained and instructed,
- use the machine as intended,
- wear the necessary personal protective equipment,
- observe the basic regulations regarding workplace safety and accident prevention,
- read and heed the chapter “2 Basic safety instructions” and the safety messages in this operating manual,
- immediately take the machine out of operation in the event of defects or abnormal operating states/malfunctions,
- immediately report any identified defects or abnormal operating states/ malfunctions.

The operating personnel is responsible for

- ensuring that the machine is protected against unauthorized use,
- ensuring that the machine is operated only when it is fully functional, safe and reliable,
- cleaning is performed according to the cleaning plan.

2.9.4 Duties of the maintenance personnel

The maintenance personnel must:

- be trained and instructed,
- use the machine as intended,
- wear the necessary personal protective equipment.

The maintenance personnel is responsible for

- protecting the machine against unauthorized use,
- the maintenance being carried out according to the maintenance schedule.

2.10 Personal protective equipment

2.10.1 Operation and adjustment

This personal protective equipment must be provided and worn for the operation and set-up of the machine:

- Ear protection
- Cut-resistant safety gloves
- Safety shoes

2.10.2 Operational maintenance (cleaning)

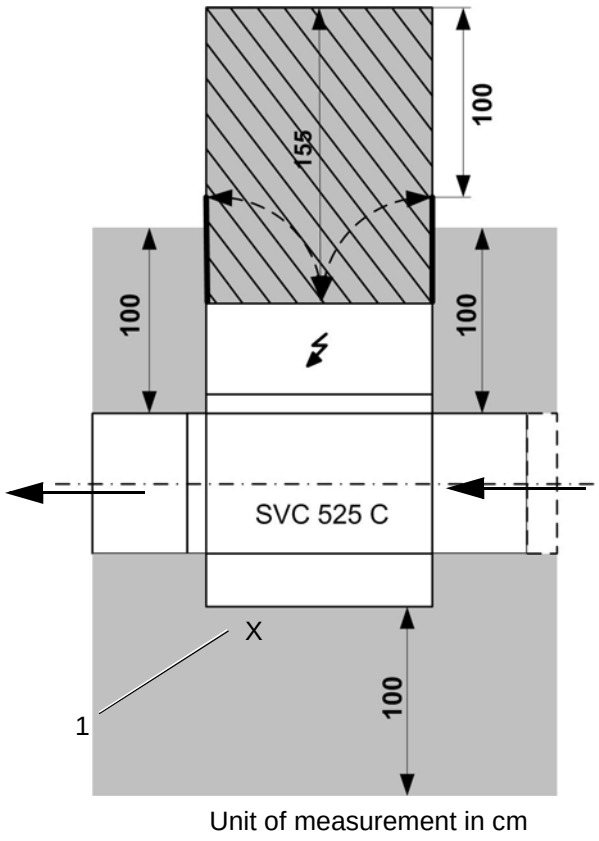
This personal protective equipment must be provided and worn for the proper maintenance (cleaning) of the machine:

- Safety shoes
- Cut-resistant safety gloves

2.11 Work areas and workstations

- The machine is intended exclusively for operation by one person.
- The figure shows the most important workstations as well as the working area and service area of the machine.
- The necessary work areas for operation, installation, commissioning, and maintenance are highlighted in gray and should be at least 100 cm.
- The service area is marked with hatching.The possible workplaces are marked with an "X".

2.11.1 Layout from right to left



Unit of measurement in cm

1 Workstation

Illustration 1: Work area and workstation SVC 525C

2.12 Markings on the machine

These markings must be on the machine and in an easily legible condition.
If the markings are damaged or illegible, they must be replaced.
For the appropriate MBO part number, see chapter “2.12.1 Position and meaning”.

2.12.1 Position and meaning

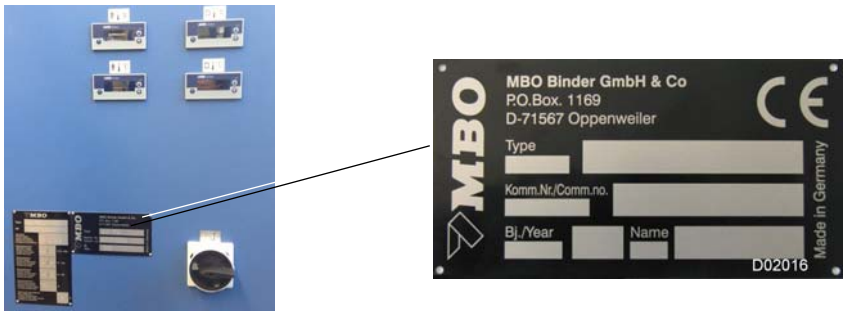
Pos. 1	MBO part number:10.5171.025
	
Meaning: Name plate	

Illustration 2: Name plate

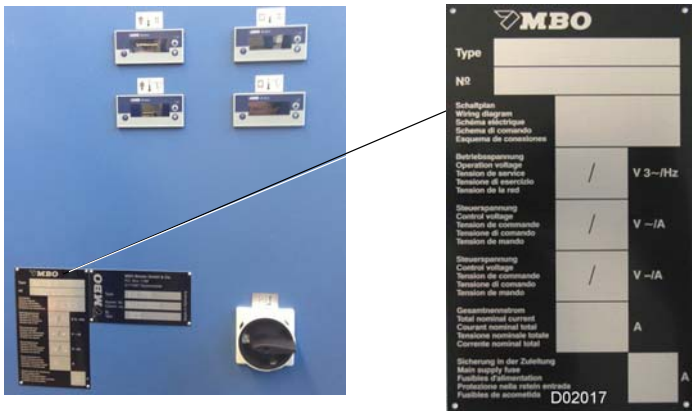
Pos. 2	MBO part number: 10.5171.026
	
Meaning: Electric name plate	

Illustration 3: Electric name plate

Pos. 3	MBO part number:4002643

Meaning: <Read operating manual> mandatory sign

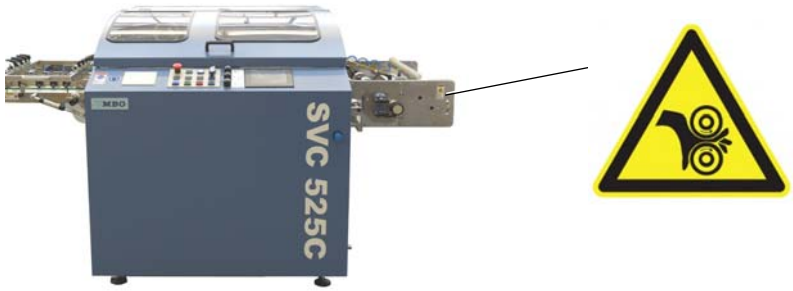
Illustration 4: <Read operating manual> mandatory sign

Pos. 4	MBO part number:4002562

Meaning: <Wear ear protection> mandatory sign

Illustration 5: <Wear ear protection> mandatory sign

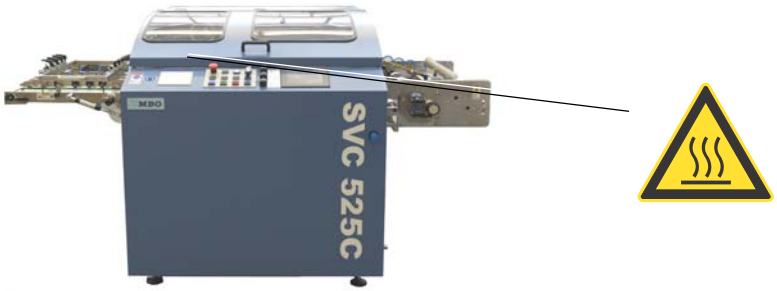
Pos. 5	MBO part number:4003327



Meaning: <Drawn-in hazard> warning sign

Illustration 6: <Drawn-in hazard> warning sign

Pos. 6	MBO part number: 0100699



Meaning: <Hot surface> warning sign

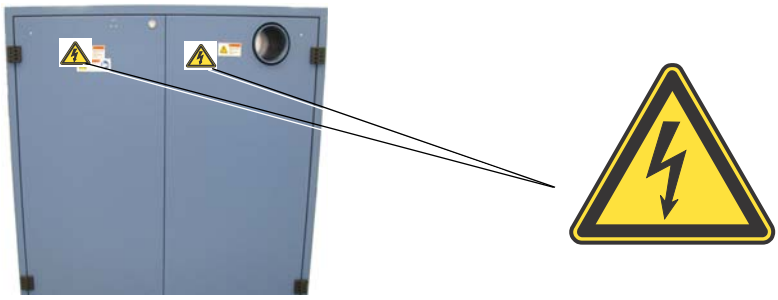
Illustration 7: <Hot surface> warning sign

Pos. 7	MBO part number: 4003326

Meaning: <Crushing hazard> warning sign

Illustration 8: <Crushing hazard> warning sign

Pos. 8	MBO part number: 0128301



Meaning: <Hazardous voltage> warning sign

Illustration 9: <Hazardous voltage> warning sign

2.13 Directions for emergencies

The operator must add instructions regarding national regulations for accident prevention to this operating manual.

2.13.1 Emergency call numbers

European Union	Police Fire department Ambulance	112 112 112
Germany	Police Fire department Ambulance	110 or 112 112 112
USA	Police Fire department Ambulance	911 911 911
China	Police Fire department Ambulance	110 119 120

Table 11: Emergency call numbers

2.13.2 Behavior in case of accidents

1 Immediate measures		• Stay calm. • Secure the accident location. • Heed your own safety. • If necessary, rescue person from the danger zone. • Check consciousness and breathing/check for type of injury. • If necessary, take lifesaving measures right away.
2 Emergency call		• Where is the accident location? • What happened? • How many injured? • What injuries? • Who's calling? • Wait for queries!
3 First aid		• Provide help as necessary. • Check consciousness and breathing. • Protect against heat loss. • Provide support and assistance.

Table 12: Behavior in case of accidents

3 Product description

3.1 Important notices about the product

3.1.1 View

Illustration 10: Overall view

3.1.2 Standard equipment

- Completely automatic conversion of format and chip-out.
- Variable format length up to a maximum of 2.032 mm.
- Variable chip-out possible (4 - 80 mm).
- External length cut cassette.
- Air-assisted sheet running.
- Discharge table, foldable.
- Window function.

3.1.3 Options

- Gully cut in longitudinal direction SVC-GC.
- Interfaces (digital printer, folding machines).
- Print mark control software (watchdog).

3.2 Technical data

3.2.1 Floor plan

3.2.1.1 Layout from right to left

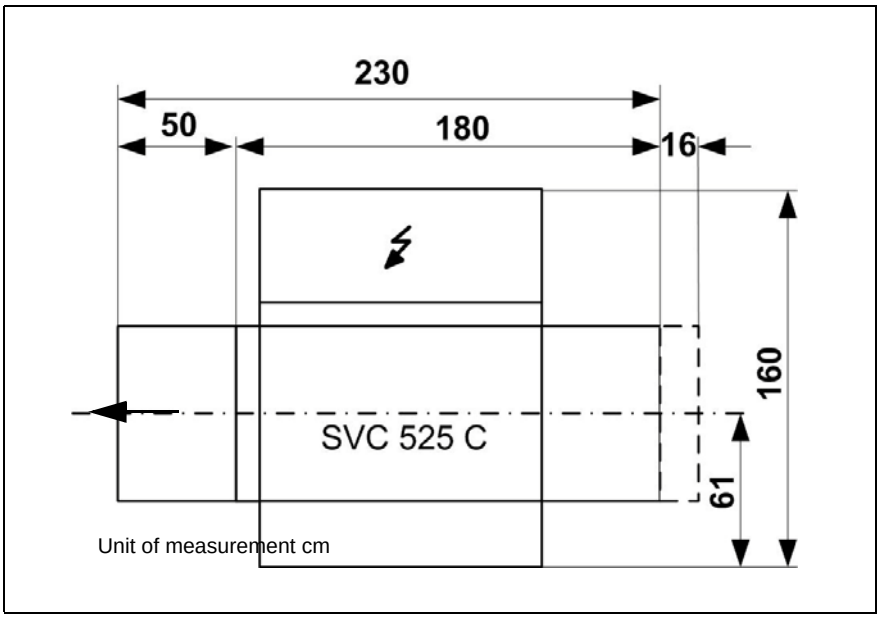


Illustration 11: Floor plan SVC 525 C, right to left

3.2.2 Performance characteristics

Speed		**Minimum**	**Maximum[1)]**
		7 m/min	250 m/min
Web	**format width**	150 mm	520 mm
	Grammage [2)]	40 g/m^2	250 g/m^2
Cutting accuracy	**Longitudinal cut**	± 0.5 mm	
	Cross-cut	± 0.5 mm	
Lateral web guide accuracy		± 0.2 mm	
Format lengths	Continuously variable	76 mm	2,032 mm
	Continuously variable with chip out	127 mm	2,032 mm
Chip-out sizes	**Without chip-out**	0 mm	-
	Continuously variable	4 mm	80 mm

Table 13: Performance characteristics

1) The maximum working speed depends on paper properties, format, fold type, temperature, and humidity, as well as various states at the operator that the manufacturer cannot influence.
2) All values refer to simple volume paper.

3.2.3 Shipping and transport data

Weight		**Net**	**Gross**
	Without packaging	Approx. 1380 kg	-
	With shipping pallet	-	Approx. 1500 kg
	With shipping crate	-	Approx. 1700 kg
Dimensions		**L x W x H**	
	Without packaging	180 x 160 x 133 (cm)	
	With shipping pallet	200 x 180 x 175 (cm)	
	With shipping crate	205 x 185 x 180 (cm)	
Fork lift [1)]	Carrying capacity / load (Q) [2)]	Min. 2000 kg	
	Fork tine length	Min. 150 cm	
Floor conditions	Cargo [3)]	> 20 kN/m^2	
	Levelness [4)]	< 10 mm/m	

Table 14: Shipping and transport data

1) Minimum requirements of the fork lift
2) Heed operating manual for the fork lift, load capacity depends on the load center of gravity (c).
3) Minimum load capacity of the floor where the machine will be set up
4) In the area of the machine, the total height difference may not exceed 20 mm.

3.2.4 Electrical supply

Electrical supply [1)]	Wiring diagram no. See electrical name plate		
Nominal voltage 3 x 400 V + N + PE [2)]	Required mains configuration [3)]	TN - C - S - power mains TN - S - power	Clockwise rotating field required
	Voltage	400 V AC	+/-10%
	Frequency	50 Hz	+/-1 %
	Control voltage:	24 VDC/10 A	
Connecting line [4)]	Cross-section (IEC)	mm^2	
	Cross-section (UL)		
	Max. line length	m	
	Min. network impedance	mOhm	
	Short-circuit current rating (SCCR) according to UL 508A	6 kA	
Fuse	IEC	63 A characteristic C	
	UL	63 A	
Protective equipotential bonding conductor [5)]	Cross-section according to IEC	10 mm^2	
Connected loads	Total [6)]	Approx. 14 kW	
Operational readiness (stand-by)	Power	kW	
	Current rate	A	

Table 15: Electrical supply 400V network

1) Stationary mains connection
2) If the existing nominal voltage varies from the supply voltage specified above, an isolating transformer must be installed.
If the nominal voltage is 380 V or 415 V at 50 Hz, the tolerance of the power mains must be checked.
If the tolerance is between 360 V – 440 V, an isolating transformer is not required.
3) N - line is loaded; a fault-current circuit breaker (FI) may not be used.
4) According to EN ISO 60204:2006 Table 10.
5) According to EN 60204:2006.
6) The total connected load depends on the number and equipment of the connected machines.

3.2.5 Compressed air supply

Compressed air supply		
Connected loads	Necessary network pressure	6 bar +1 bar
	Average consumption [1)]	60 l/min
	Quality:	Filter unit 40 µm [2)] Dried and oiled [3)]
Connecting line	Connection type	PK 6 hose with quick opening device

Table 16: Compressed air supply

1) Required volume flow according to ISO 1217 or DIN 1945
2) Corresponds to ISO 8573-1 Class 5
3) According to ISO 8573-1

3.2.6 External extraction system (to be provided by the customer)

External extraction system		
Suction power	Volume	1800 m^3/h
	Flow speed	25 m/sec
Connection type[1)]	Edge trim	2 x open tube with 50 mm diameter
	Gully cut (optional)	1 x open tube with 50 mm diameter
	Chip-out	Open tube with 100 mm diameter

Table 17: External extraction system

1) Optionally a collection system can be provided, to which all internal machine suction hoses are connected. The connection to the external extraction system is then made with a single open tube with a 150 mm diameter.

3.2.7 Emissions

3.2.7.1 Noise emissions

Noise emissions		
Specified two-digit noise emissions value according to DIN EN 4871	Idling	Load
A-weighted sound power level L_{WA} in dB re 1 pW Uncertainty K_{WA} in dB	- -	99 2.5
A-weighted emission sound pressure level L_{PA} In dB re 20 µPa at the operating place Uncertainty K_{WA} in dB	 < 70 2.5	 79 2.5
The values were determined in accordance with the noise emission standard DIN EN ISO 13023 [1] using the basic standards DIN EN ISO 3746 and DIN EN ISO 11204		

Table 18: Noise emissions

1) Noise measurement EN 13023 F.2 - class 2

3.2.8 Ambient conditions

Room temperature		17 ... 35 °C [1]
Storage temperature		10 ... 35 °C
Relative humidity	Optimal Minimum Maximum	40 - 60 % 30 % 80 % (non-condensing)
Set-up height [2]		Max. 800 above sea level

Table 19: Ambient conditions

1) At temperatures below or above the permissible room temperature, special measures must be taken.
2) For installation at an altitude of 800 m above sea level or higher, special measures are necessary for the pressure vacuum pumps.
Learn more about this from the manufacturer.

4 Structure and function

In this chapter you will find a description of the components and function of the sheeter.

4.1 Structure

4.1.1 Components of the sheeter

The components are distributed across the four sides of the sheeter.

1 Control cabinet side	3 Operator side
2 Infeed side	4 Outfeed side

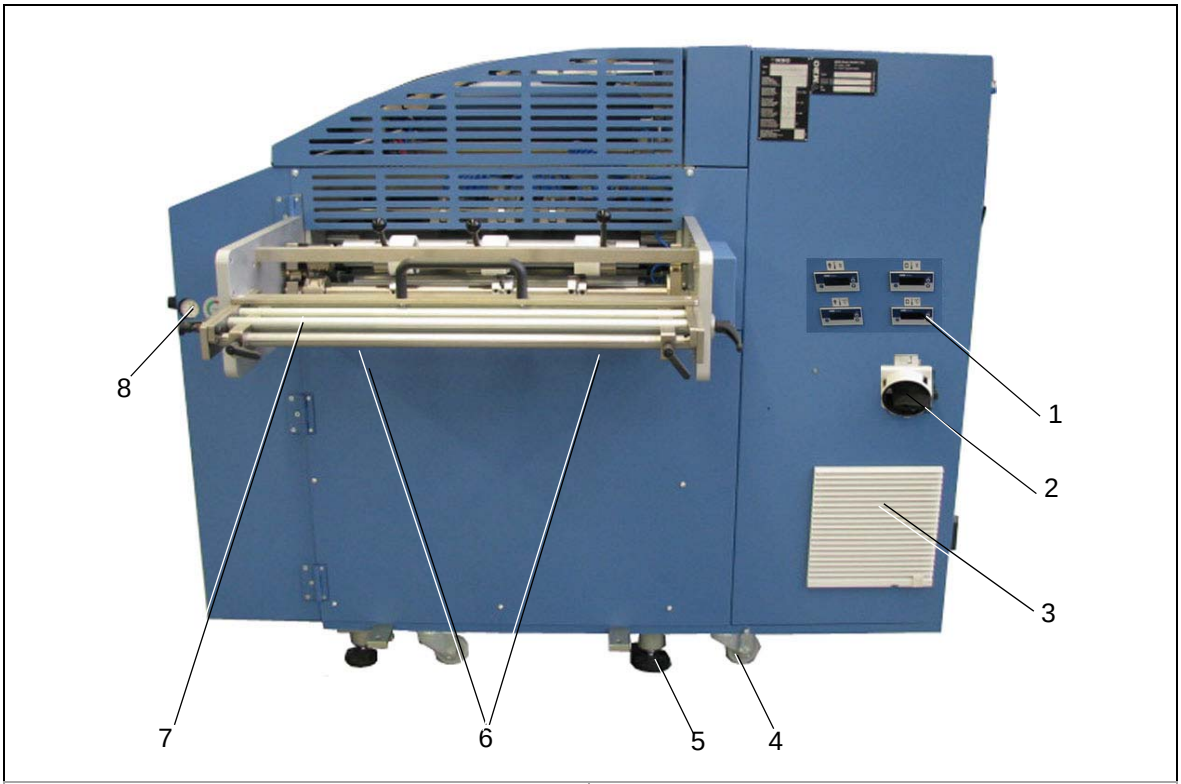
Illustration 12: Views of the sheeter

4.1.1.1 Components of the control cabinet side

1 Control cabinet	2 Connection of extraction device for chip-out

Illustration 13: Components of the control cabinet side

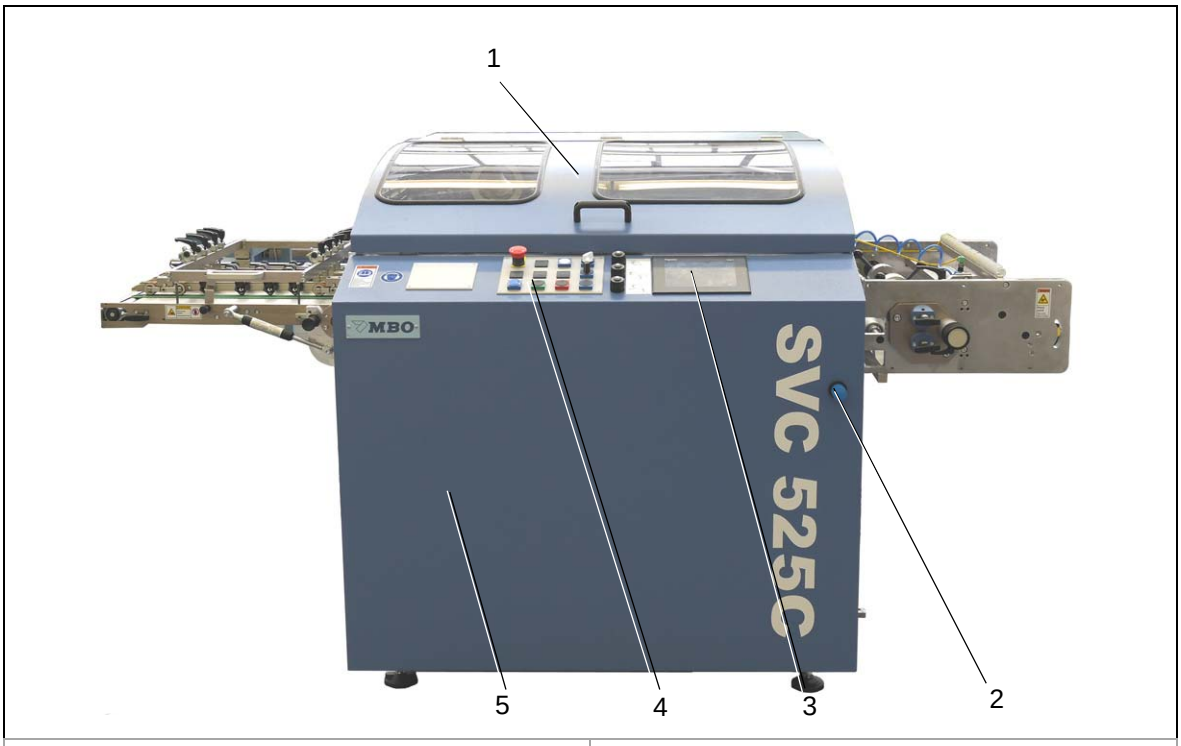
4.1.1.2 Components of the infeed side



1 Temperature regulation, cutting unit	5 Adjustable feet
2 Main switch	6 Suction device, longitudinal cutting device
3 Fan, control cabinet	7 Infeed table with longitudinal cutting device
4 Transport rollers	8 Manometer, nip rollers

Illustration 14: Components of the infeed side

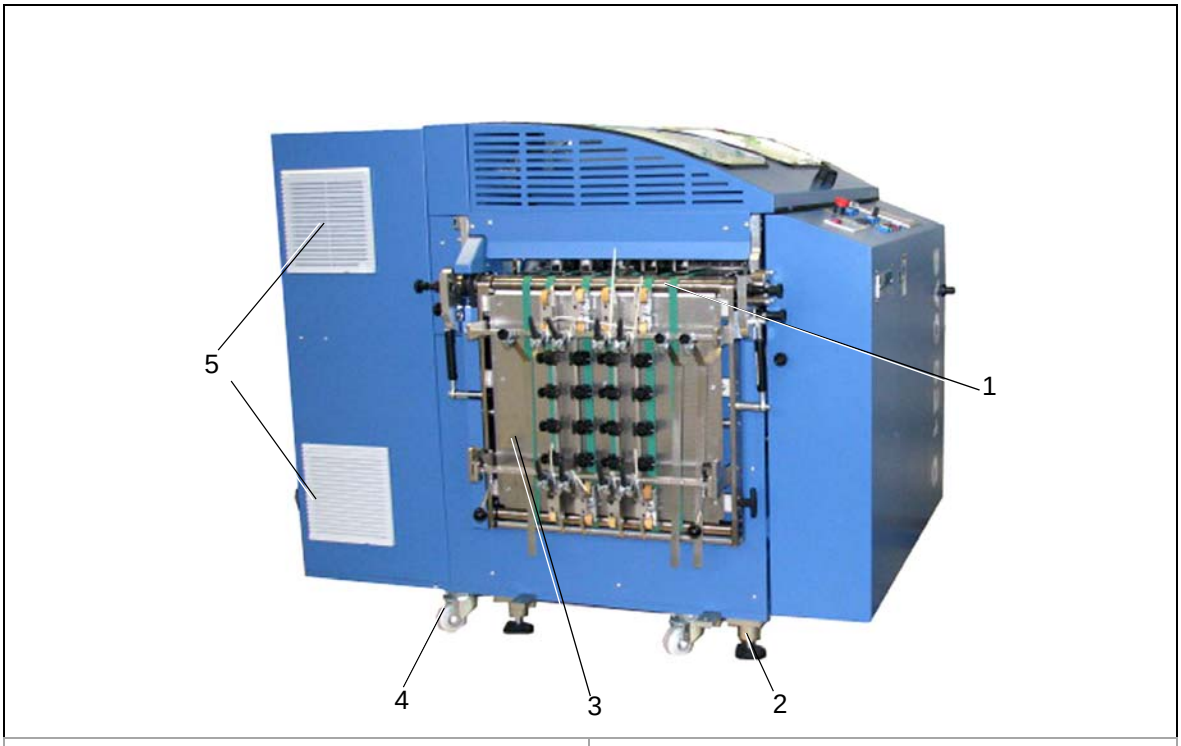
4.1.1.3 Components of the operator side



1 Protective hood with guard locking 2 Pressure regulator for nip rollers 3 Touchscreen	4 Control panel 5 Guard door with guard locking

Illustration 15: Components of the operator side

4.1.1.4 Components of the outfeed side



1 Waste sheet deflector 2 Adjustable feet 3 Conveyor table, foldable	4 Transport rolls 5 Fan, control cabinet

Illustration 16: Components of the outfeed side

4.2 Functional description

The SVC525C sheeter is a completely electronically-controlled sheeter with variable and infinite adjustment with respect to format and chip out size.

The sheeter can either be operated in-line (i.e. after a digital printer) or off-fline (with its own unwinder).

4.2.1 Cutting sequences

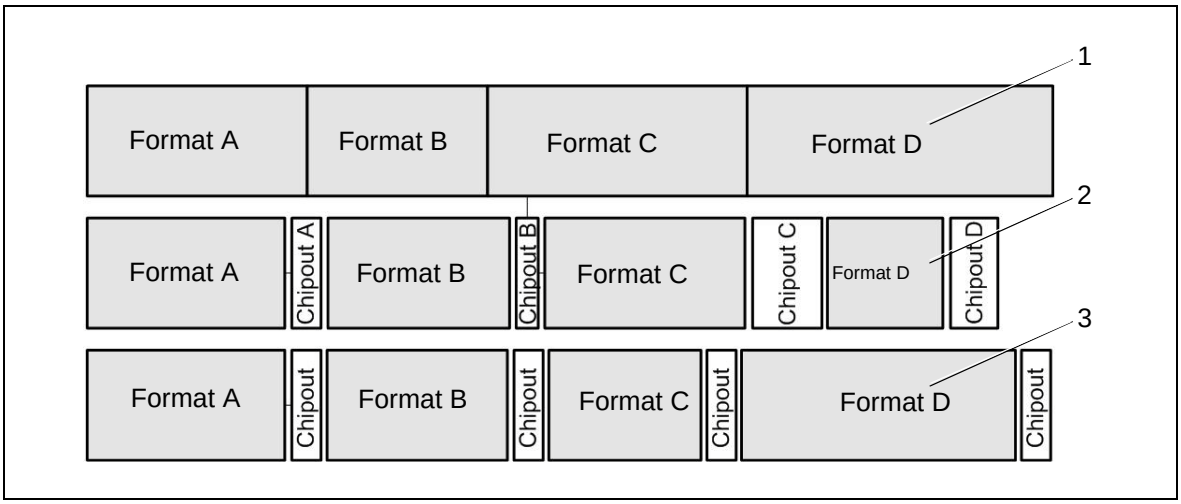


Illustration 17: Cutting sequences

The following cutting sequences are possible:

1 Sequential cutting: Multiple formats (max. 6) and 1 chip-out in one sequence (max. 2 m).

2 Sequential cutting: Multiple formats (max. 6) and multiple chip-outs in one sequence (max. 2 m).

(The number of maximum possible chip-outs is limited by the mechanical setting in the chip-out disposal).

3 Fully variable cutting: Cut is made from print mark to print mark in a different sequence with constant chip-out.

4.2.2 Control panel

The control panel with EMERGENCY STOP palm button provides the control functions.
The touchscreen is used to adjust the sheeter unit.

4.3 Infeed table

Infeed rolls

The infeed rolls introduce the web into the sheeter.
The infeed position of the web changes according to the upstream machine.

Longitudinal cut cassette

The longitudinal cut cassette is used for cutting (principle of rotating scissor cutting) of the web fed in for:

- Edge trim.

  An external extraction system is required for this.
- Separator cut
- Gully cut (optional).

  An external extraction system is required for this.

4.3.1 In-feed unit

Sensor <Web break>

The <Web break> sensor detects a web break in front of the first in-feed shaft and stops the sheeter.

First in-feed shaft

The first in-feed shaft with the nip rollers fixes the web for the previous machine.
It turns at the web speed.

Sensor <Print mark>

The <Print mark> sensor detects the print marks on the web and controls the setting made accordingly, the position of the cross-cuts for the format and the chip-out.

Sensor <Paper jam>

The <Paper jam> sensor stops the sheeter if there is a jam between the first in-feed shaft and the second in-feed shaft.

Second in-feed shaft

The second in-feed shaft transports the web into the sheeter unit.
It turns approx. 11% faster than the first in-feed shaft.

4.3.2 Sheeter unit

Cutting principle

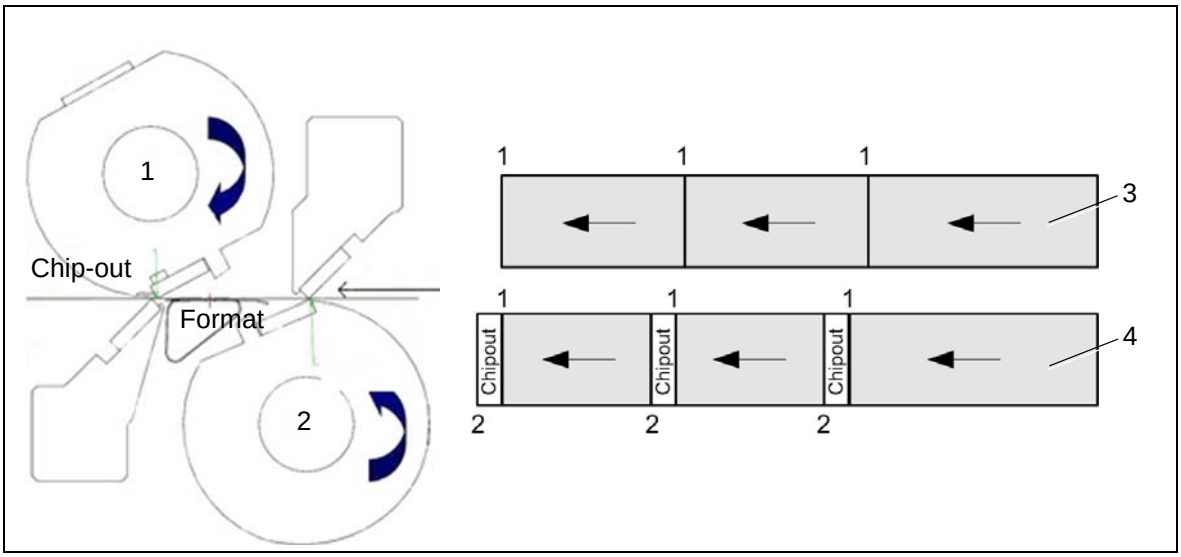


Illustration 18: Cutting principle

Production without chip-out (3):

- the upper cutting cylinder (1) cuts the format.
- the lower cutting cylinder (2) is stationary in its resting position.

Production with chip-out (4):

- the lower cutting cylinder (2) cuts the format (= chip-out + format).
- the upper cutting cylinder (1) cuts the chip-out off the front edge of the format.

Heated side walls

- In order to maintain a constant temperature and achieve perfect cut quality, the side walls of the sheeter unit are actively heated.
- Heating begins when the main switch is switched on.
- The duration of the warm-up phase depends strongly on the respective ambient temperature.

  At an ambient temperature of 18°C, this is approx. 15-20 min**.**
  To ensure that the entire cutting unit is heated evenly, a warm-up phase of one hour should be observed. This avoids increased wear on the cutting units.
- If a temperature of 33°C is not reached, production is not enabled. This is indicated by a message on the touchscreen.
- Never operate the sheeter when the set temperature has not yet been reached, otherwise this could result in serious property damage.
- A fluctuation on the temperature indicator during operation is normal and is caused by the set hysteresis characteristic curve.

4.3.3 Discharge table

Short belt table
The short belt table serves as a transport route from the upper cutting cylinder to the waste sheet deflector.
It runs approx. 2% faster than the second in-feed shaft.

Waste sheet deflector
The waste sheet deflector discharges waste sheets during set-up.
For the discharge of waste sheets that arise during production, the discharge module EM770 is used.

Long belt table
The long belt table serves as a transport route to the downstream machine.
It is designed to fold up so that settings can be made on the sheeter without taking the system apart.

4.3.4 External extraction system

The external extraction system is required for the disposal of the cut paper strips in the longitudinal cutting unit (edge-trim, gully cut) as well as the chip outs from the sheeter unit.
The extraction system should be equipped with a shut-off device so that the air quantity can be set individually.
For technical data, see Chapter “3.2.6 External extraction system (to be provided by the customer)”.

4.3.5 Compressed air connection

The compressed air connection is made via an external compressed air hose (PK 6 – hose with quick-action locking piece).

This is required for:

- Activation of the nip rollers on the in-feed shafts.
- Air-assisted sheet running in the sheeter unit.

4.4 Variants

4.4.1 Variant SVC 525 C

Definition of terms:

The designation „SVC 525 C" means:	
SVC	Type designation, sheeter
525	Maximum web width 520 mm
C	With second cutting cylinder for the chip-out

4.5 Protective devices

4.5.1 Definition of terms

4.5.1.1 Fixed guards

Fixed guards:

- are used if access to the area secured by the protective device is seldom or never required.
- must only be loosened or removed using tools.
- do not have any electric locking (safety switch).

4.5.1.2 Interlocking movable guards

Interlocking movable guards:

- are used if access to the area secured by the protective device is frequently required.
- can be opened without tools.
- have electric locking (safety switch).

  When the protective device is opened, this causes the machine to stop. The machine can be restarted only after the protective device is closed.

4.5.1.3 Interlocking movable guards with guard locking

Interlocking movable guards with guard locking:

- cannot be opened when the machine is operating.

  The locking prevents access to the danger spot until the hazardous function has been eliminated.
- can be opened without tools.
- have electric locking (safety switch) and a locking.

  When the protective device is lifted, the electric locking causes the machine to stop.
  Only when the hazardous function has been eliminated safely is the locking reset and then the protective device can be opened completely. The machine can be restarted only after the protective device is closed.

4.5.2 Overview

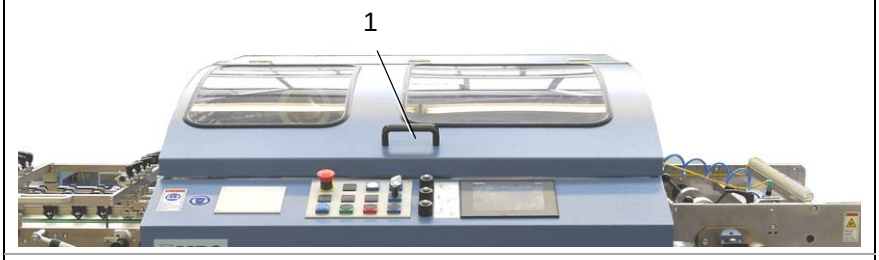
Operate the machine only if all protective devices are completely present and fully functional!

The following protective devices are present on the machine.

1 Protective hood with guard locking
2 Guard door with guard locking
3 EMERGENCY STOP palm button

Illustration 19: Overview

4.5.3 Protective hood with guard locking



1 Protective hood with guard locking

Illustration 20: Protective hood with guard locking

- The protective hood prevents intervention in the in-feed area and in the cross-cutting area of the machine.
- It is fitted with a guard locking.
  This means that the protective hood can only be opened after the secure stopping of the machine.

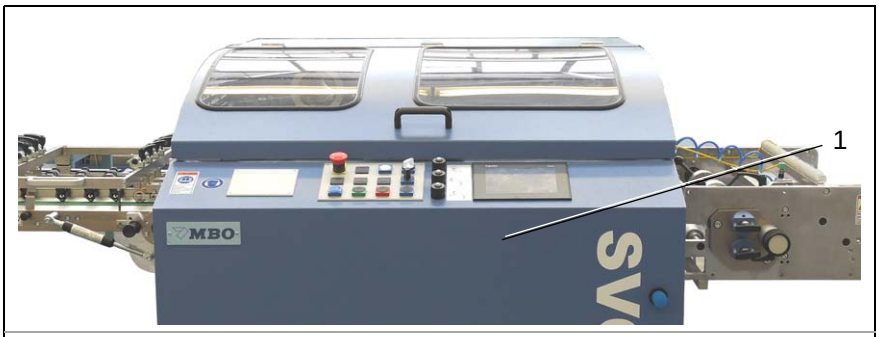
How to open the protective hood:

▷ Lift and hold the protective hood.
  The machine stops.

▷ After detection of the secure stop, the guard locking is unlocked.
  The protective hood can now be opened completely.

✓ The protective hood is open.

4.5.4 Guard door with guard locking

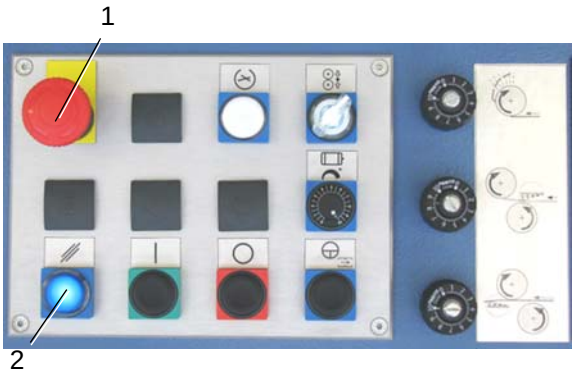


1 Guard door with guard locking

Illustration 21: Guard door with guard locking

- The guard door prevents intervention in the drive area of the machine.
- The guard door is fitted with guard locking.
  In other words, the guard door can only be opened when the protective hood is open.

4.5.5 EMERGENCY STOP palm button



1 EMERGENCY STOP palm button
2 <Reset EMERGENCY STOP> illuminated button

Illustration 22: EMERGENCY STOP palm button

- To prevent immediate or potential hazards, the machine is equipped with an EMERGENCY STOP shut-off device.
- After the <EMERGENCY STOP> palm button is pressed, all electrical drives are switched off.
- EMERGENCY STOP does not disconnect the machine from the electrical supply.

The machine is in operation.
There is a hazardous situation and the machine must be stopped quickly.

Procedure:

▷ Press the EMERGENCY STOP palm button (1).
The <Reset EMERGENCY STOP> light (2) lights up.
▷ Eliminate the failure.
▷ Disengage the EMERGENCY STOP palm button (1) by turning it to the right.
▷ Activate the <Reset EMERGENCY STOP> illuminated button (2).
The <Reset EMERGENCY STOP> light (2) does not come on.
✓ The machine is ready for operation.

Note that:

- When the EMERGENCY STOP palm button is pressed, the entire system is stopped immediately.
- To restart the entire system, a special switch-on sequence must be carried out.
- After restarting the system, an automatic pallet change is carried out in the high pile stacker.

4.5.6 Guards

There are other fixed guards present on the machine.

These protect the operator against danger spots such as:

- rotating machine parts, e.g., drives, shafts
- entanglement zones
- pinch points

The function and position of the corresponding protective devices are listed in the "Protective devices" check list.
See chapter “4.5.9 Checklist for protective devices”.

4.5.7 Faulty protective devices

Faulty protective devices can lead to hazardous situations.

For this reason:

▷ Switch off the machine at the main switch immediately.
▷ Secure it against being switched on again.
▷ If necessary, disconnect the supply of compressed air and electrical current.
▷ Service faulty protective devices immediately.

4.5.8 Checking protective devices

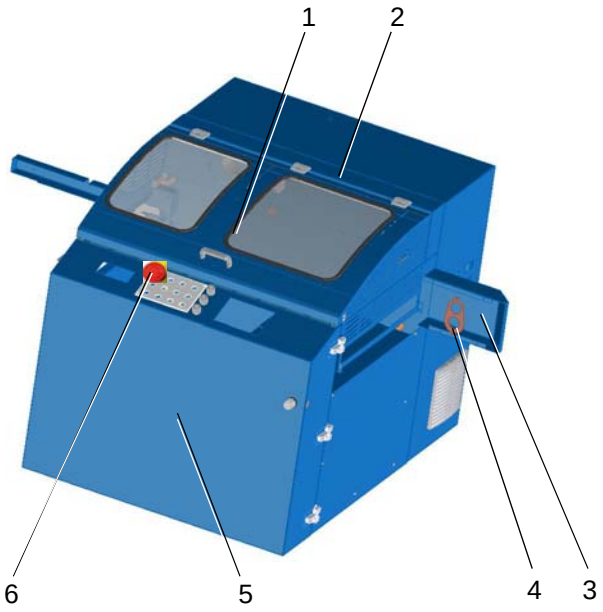
All protective devices must be checked regularly.

For the corresponding inspection intervals, see chapter “4.5.9 Checklist for protective devices”

For the corresponding procedure, see the Maintenance chapter.

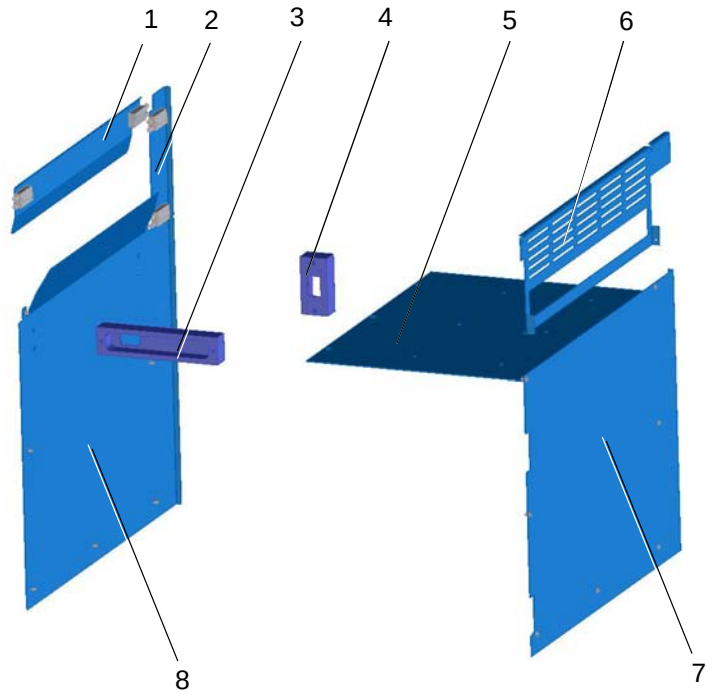
4.5.9 Checklist for protective devices

Use this checklist to check the machine protective devices regularly.



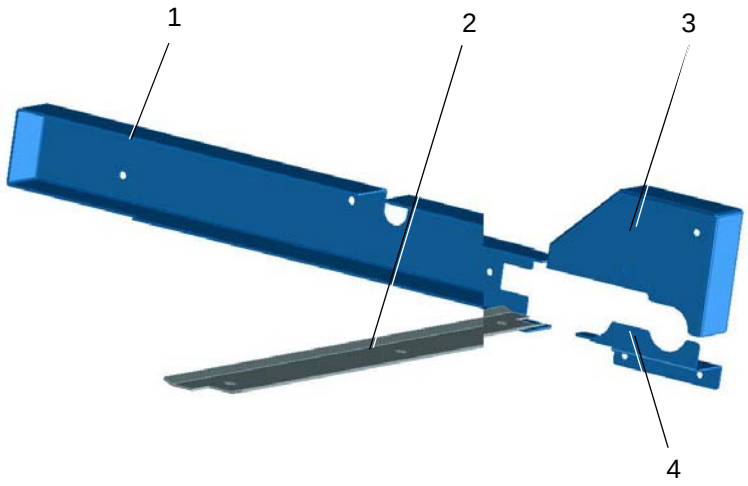
Pos.	Designation	Functioning control	Visual inspection	Result	Inspection interval
1	Protective hood with safety switch and guard locking				Daily
2	Guard				Weekly
3	Guard, in-feed drive				Weekly
4	Guard, in-feed				Weekly
5	Guard door with guard locking				Daily
6	EMERGENCY STOP palm button				Daily
Date:		Name:		Signature:	

Table 20: Checklist for protective devices



Pos.	Designation	Function-ing control	Visual inspec-tion	Result	Inspection interval
1	Guard, out-feed				Weekly
2	Guard, out-feed				Weekly
3	Guard				Weekly
4	Guard				Weekly
5	Guard below in-feed shafts				Weekly
6	Guard, in-feed				Weekly
7	Guard, in-feed				Weekly
8	Guard, out-feed				Weekly
Date:		Name:		Signature:	

Table 21: Checklist for protective devices

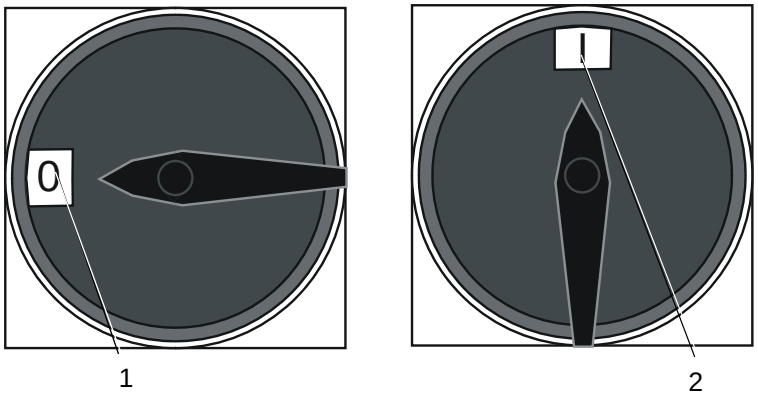


Pos.	Designation	Function-ing control	Visual inspec-tion	Result	Inspection interval
1	Guard, conveyor table				Weekly
2	Guard, conveyor table				Weekly
3	Guard, conveyor table				Weekly
4	Guard, conveyor table				Weekly
Date:		Name:		Signature:	

Table 22: Checklist for protective devices

5 Operating and display elements, operating modes

5.1 Main switch



1 Main switch OFF

2 Main switch ON

Illustration 23: Main switch

The main switch has the following properties:

- It disconnects the sheeter from the electrical supply.
- It disconnects the machines connected to the sheeter from the electrical supply.
- It has only one OFF and one ON position, labeled 0 and I.
- It is equipped with a device that enables it to be locked in the OFF position (e.g. by a padlock).

Switching off the main switch also switches off the heaters of the cutting units.
After switching on the main switch, observe the necessary warm-up phase of the heaters.

5.2 Control panel

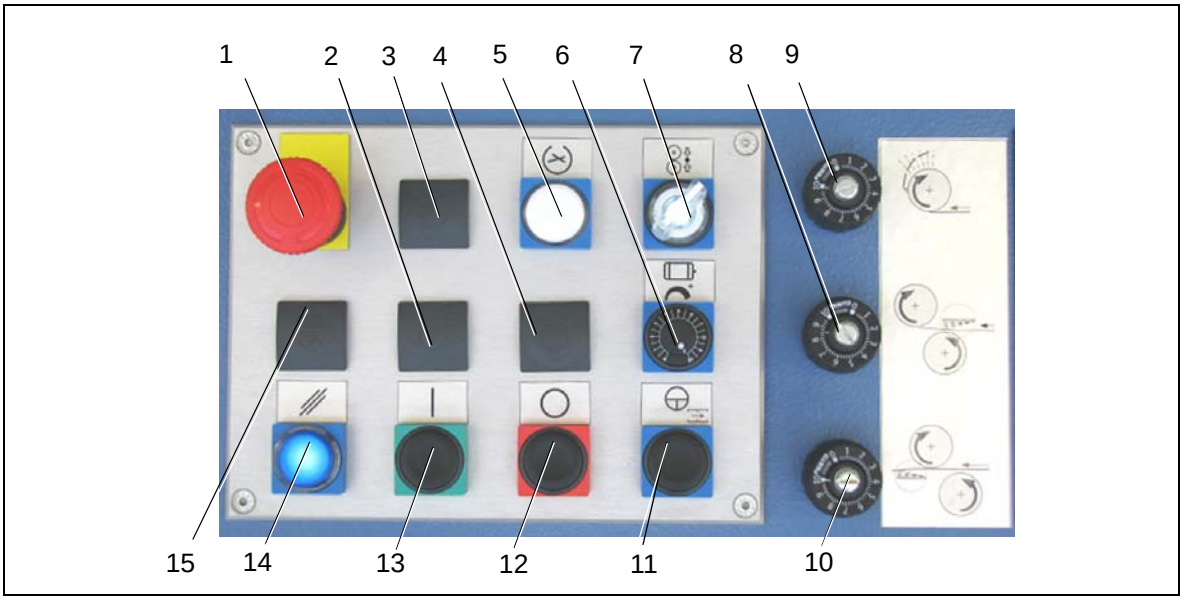


Illustration 24: Control panel

1 EMERGENCY STOP palm button
2 Not assigned
3 Not assigned
4 Not assigned
5 <Not ready for operation> <Jam> light
6 <Speed adjustment, conveyor table> potentiometer
7 <Nip rollers on/off> illuminated selector switch
Position left = off.
Position right = on, illuminated selector switch lights up.
8 <Air 2> adjusting element
Web is lifted to the upper cutting cylinder.
9 <1> adjusting element
Blow out chip-out.
10 <Air 3> adjusting element
Web is held down on the upper cutting cylinder.
11 <Inching> button
12 <Stop> button
13 <Start> button
14 <Reset EMERGENCY STOP> illuminated button
15 Not assigned

5.3 Touchscreen

5.3.1 Usage

- Only use your finger or a stylus pen (MBO part number 0131900) to operate the touch pen (1).
- Ball-point pens or other metallic objects may damage the surface of the touchscreen.

Illustration 25: Usage of the touchscreen

5.3.2 Structure of the pages

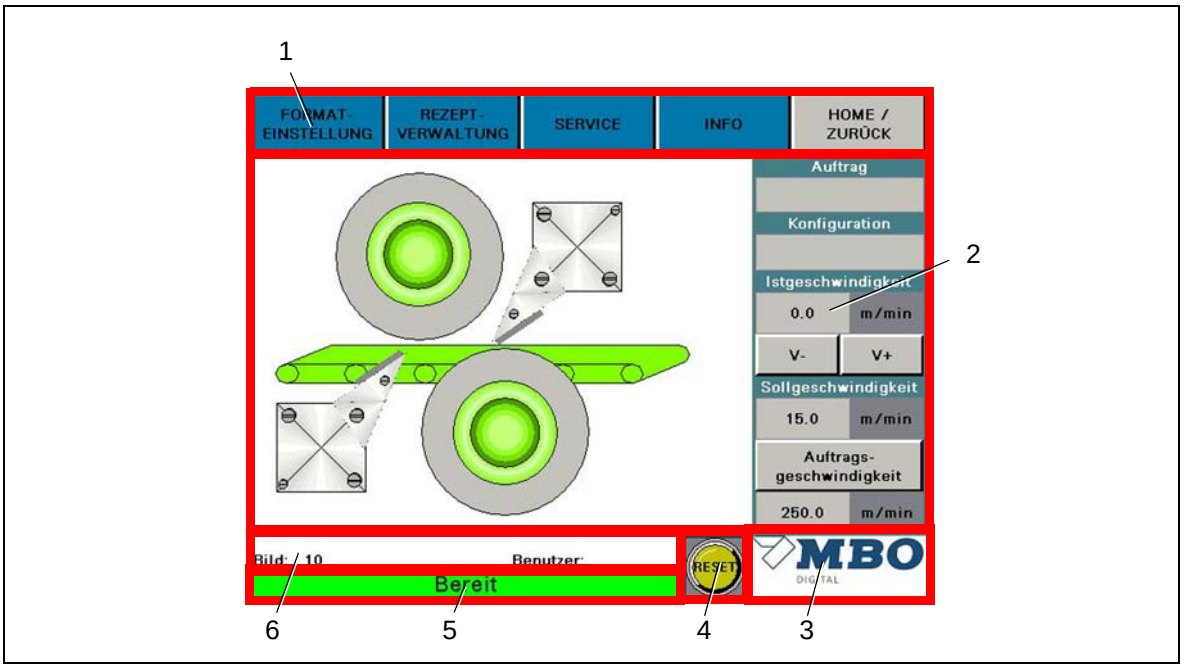


Illustration 26: Structure of the pages

All pages are equipped with these basic functions:

1 <Page selection> selector switches.
2 Current page content display
3 <Password> keypad.
4 <Reset EMERGENCY STOP> button
5 <Error messages / status information> info box
6 Image number/user code

5.3.2.1 <Page selection> selector buttons

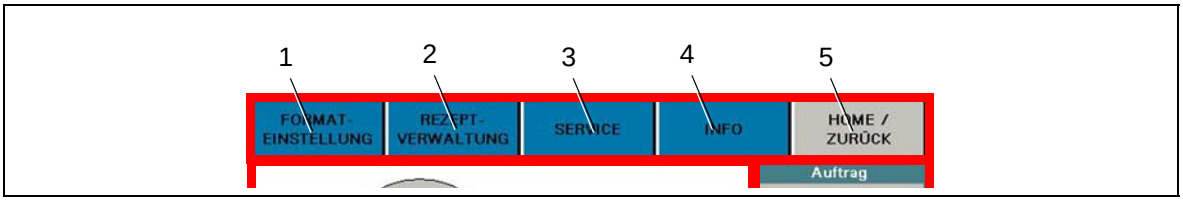


Illustration 27: Page selection

The following selector buttons are available:

1 <Format setting> button.
Pressing the <Format setting> button displays the <Format setting> page.
See chapter “5.3.4.2 <Format setting> page”.

2 <Recipe management> button.
Pressing the <Recipe management> button displays the <Recipe management> page.
See chapter “5.3.4.3 <Recipe management, load stored recipes> page”.

3 <Service> button.
Pressing the <Service> button displays the <Service> page.
See chapter “5.3.4.5 <Service> page”.

4 <Info> button.
Pressing the <Info> button displays the <Info> page.
See chapter “5.3.4.2 <Format setting> page”.

5 <Home / Back> button.
Pressing the <Home / Back> button displays the <Start page> page.
See chapter “5.3.4.1 <Start page> page”.

5.3.2.2 Error messages / status information info boxes

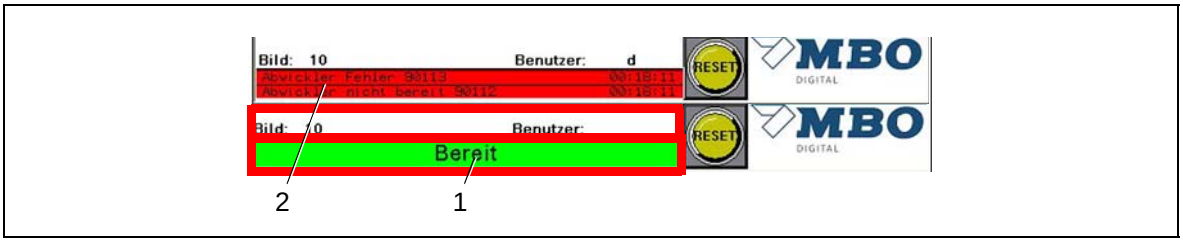


Illustration 28: Info boxes

1 <Status information> info box
Status information is displayed as black text on a green background.

2 <Error messages> info box
Error messages are displayed as black text on a red background.

5.3.2.3 <Password> keypad

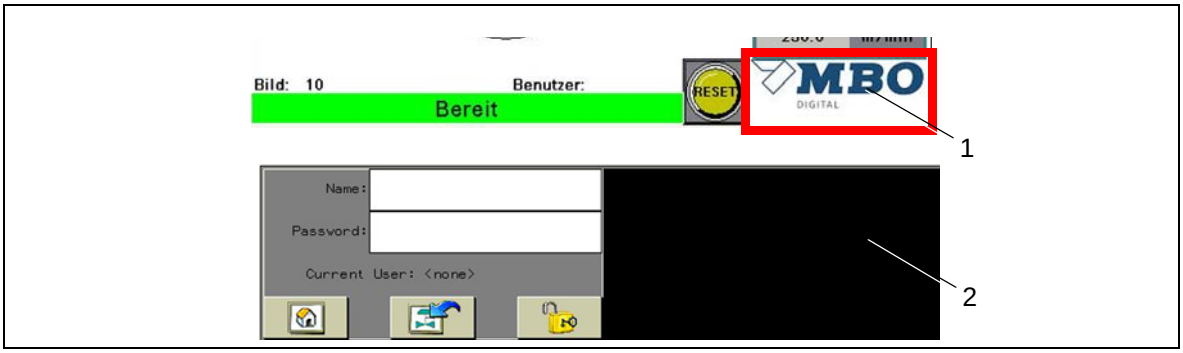


Illustration 29: <Password> keypad

1 <Password> keypad (1).
Pressing the keypad opens the <Password input> page.
2 <Password input> page (2).
Entering specific passwords enables defined functions for reading and adjustment on the <Service> page.

Changes to password-protected functions on the <Service> page are only permitted to be carried out by MBO Service or by an authorized customer service representative.

5.3.2.4 <Reset EMERGENCY STOP> button

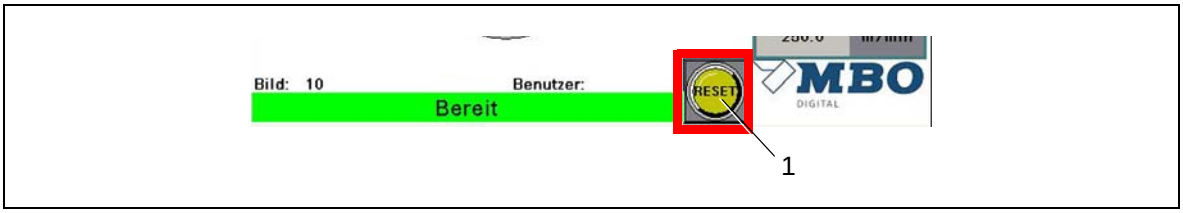


Illustration 30: <Reset EMERGENCY STOP> button

1 <Reset EMERGENCY STOP> button
After unlocking the <EMERGENCY STOP palm button>, the <Reset EMERGENCY STOP> button must be pressed twice.

5.3.3 Structure of the pages

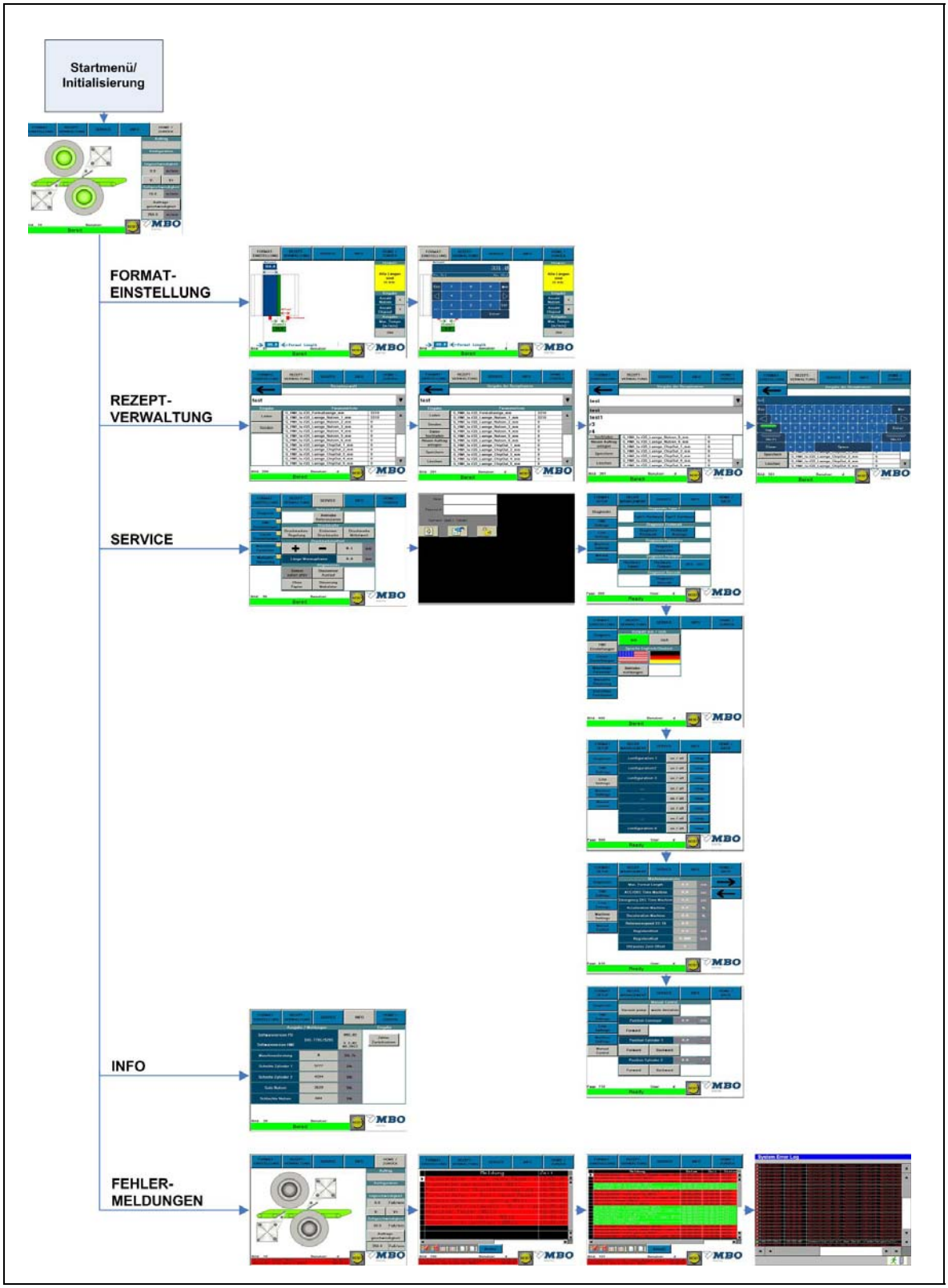


Illustration 31: Structure of the pages

5.3.4 Description of the pages

5.3.4.1 <Start page> page

This page displays the current production data.

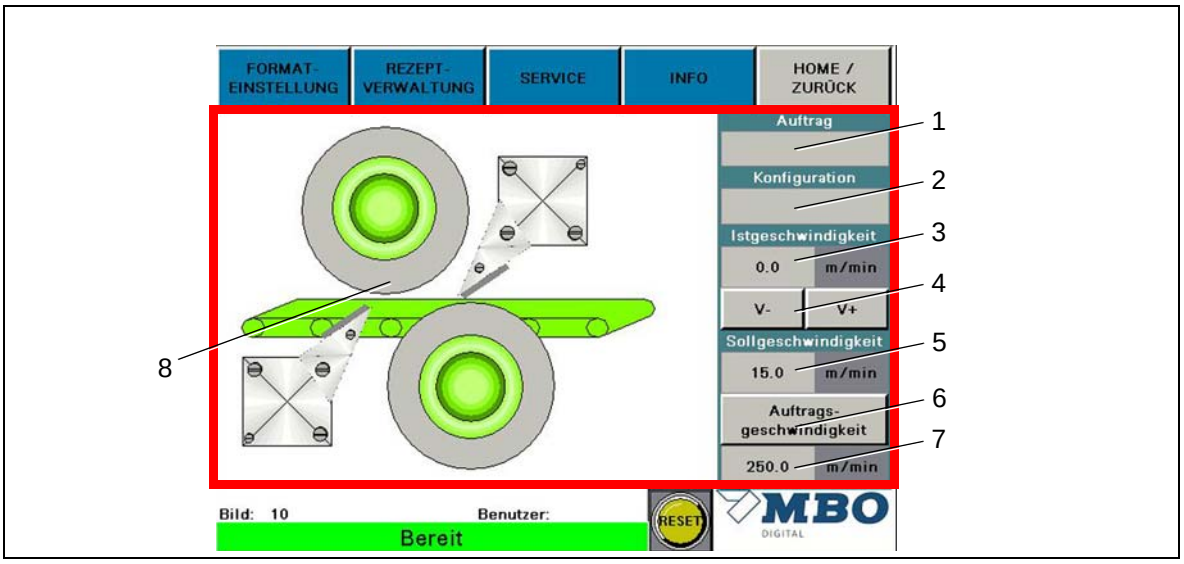


Illustration 32: Start page

1 **<Job> display**.
Displays the designation of the current job.
2 **<Configuration> display**.
Displays the designation of the current configuration.
3 **<Actual speed> display**.
Displays the current actual speed of the machine.
4 **Buttons <V-> and <V+>**.
Pressing the <V-> or >V+> button reduces or increases the speed in increments.
5 **<Set speed> display**.
Displays the current set speed of the machine.
6 **<Job speed> button**.
Pressing the <Job speed> button opens a number input field. A new job speed can be entered in this input field.
7 **<Job speed> display**.
Displays the current job speed.
8 **<Animation graphic> display**.
Displays the current cutting process in graphics.

5.3.4.2 <Format setting> page

This page is used to enter the format data.

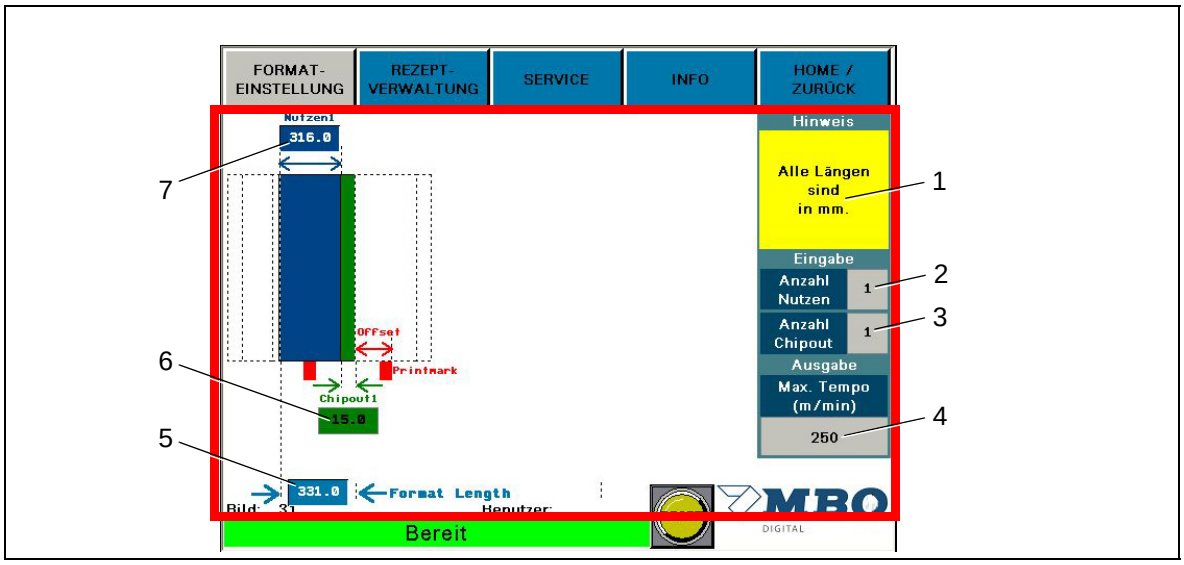


Illustration 33: Format setting

1 **<Length unit> notice**.
All displayed and entered lengths are in mm.

2 **<Number of sheets> input field**.
Pressing the <Number of sheets> input field opens a number input field. The required number of sheets can be entered in this field.

3 **<Number of chip-outs> input field**.
Pressing the <Number of chip-outs> input field opens a number input field. The required number of chip-outs can be entered in this field.

4 **<Max. speed> display**.
Displays the current job speed.

5 **<Format length> input field**.
Pressing the <Format length> input field opens a number input field. The required format length is entered into this field.

6 **<Chip-out1> input field**.
Pressing the <Chip-out1> input field opens a number input field. The required length of chip-out 1 is entered into this field.

7 **<Sheet1> input field**.
Pressing the <Sheet1> input field opens a number input field. The required length of sheet 1 is entered into this field.

5.3.4.3 <Recipe management, load stored recipes> page

Stored recipes (jobs) can be selected on this page and loaded into the control system

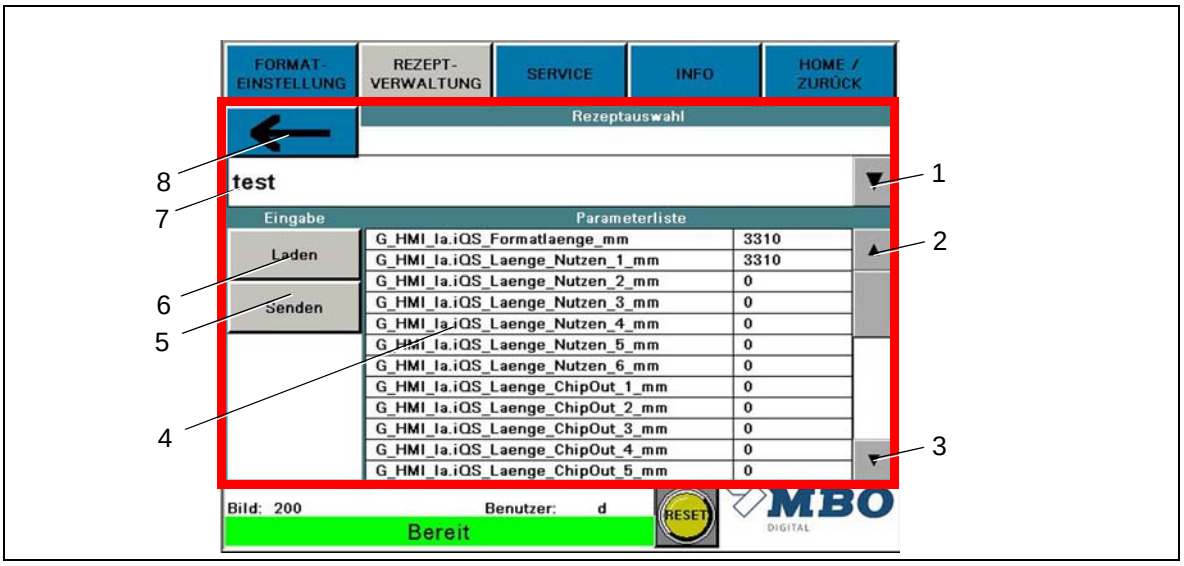


Illustration 34: <Recipe management, load stored recipes

1 **<Selection list display> button**.
After the button is pressed, all stored recipes (jobs) are listed in a display field.
Select the required recipe by tapping the touchscreen.
The name of the selected recipe is displayed in the <Current recipe> (7) display field.

2 **<Scroll one row up> button**.
This makes it possible to scroll through the <Parameter list> (4) display field.

3 **<Scroll one row down> button**.
This makes it possible to scroll through the <Parameter list> (4) display field.

4 **<Parameter list> display field.**
Displays the individual parameters of the selected recipe.

5 **<Send> button**.
The data for the displayed parameter list is sent to the control system.

6 **<Load> button.**
The data for the selected recipe is displayed in the <Parameter list> (4) display field.

7 **<Current recipe> display field**.
Displays the name of the current recipe.

8 **<To next page> button**.
Pressing the button displays the <Recipe management, create new recipes> page.

5.3.4.4 <Recipe management, create new recipes> page

The following can be carried out on this page:

- Stored recipes (jobs) can be selected and loaded onto the control system.
- New recipes created and stored.
- Stored recipes deleted.

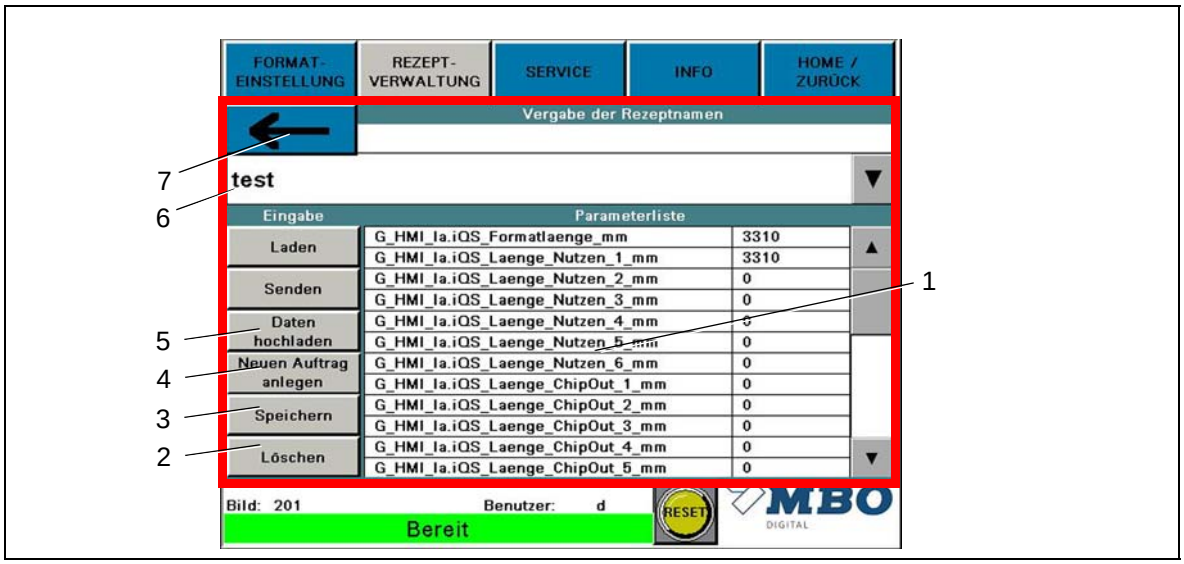


Illustration 35: Recipe management, create new recipes

1 **<Parameter list> display field**.
Displays the data for the selected recipe.

2 **<Delete> button.**
The recipe displayed in the display field (6) is deleted.

3 **<Save> button.**
The new recipe created (job) is saved with the data displayed for the parameter list (1).

4 **<Create new job> button**.
A new recipe (job) is displayed in the display field (6).
The suggested name (r?) can be changed by tapping (alphanumeric keypad).

5 **<Upload data> button**.
The current data of the control system is loaded into the <Parameter lists> display field.

6 **<Current recipe> display field**.
Displays the name of the current recipe.

7 **<To next page> button**.
Pressing the button displays the <Recipe management, load stored recipes> page.

5.3.4.5 <Service> page

Other service pages can be selected on this page.

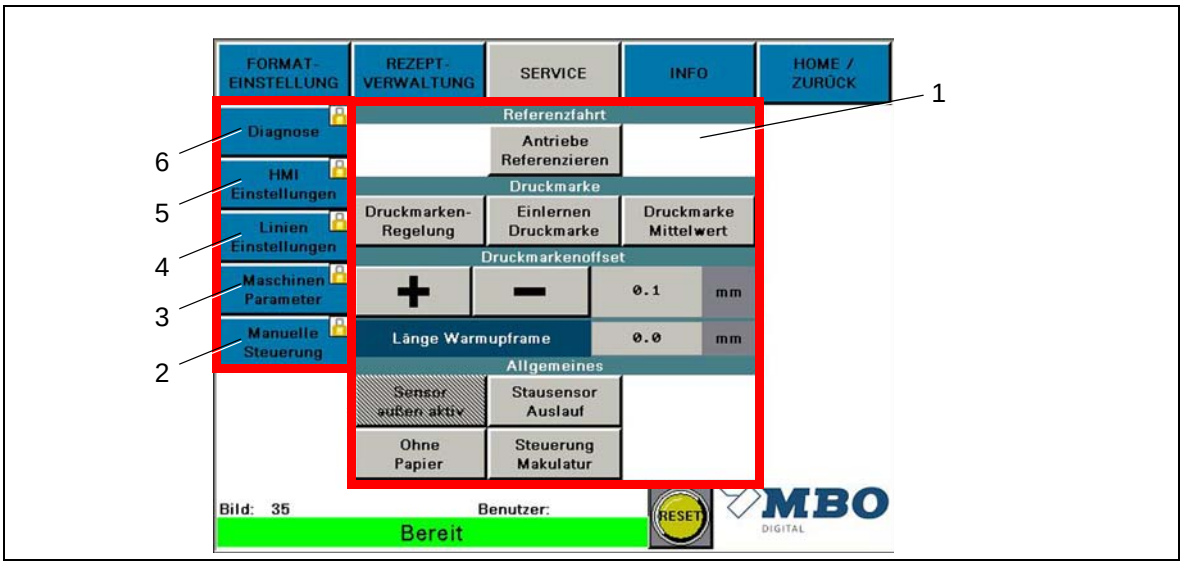


Illustration 36: <Service> page

1 **<Service> keypad**.
Different settings can be made in the <Service> keypad.
See chapter “5.3.4.6 <Service keypad> page”

2 **<Manual control> button**.
The button is password-protected.
If the password protection is removed, the machine can be controlled manually via the touchscreen.

3 **<Machine parameters> button**.
The button is password-protected.
If the password protection is removed, settings can be made to the parameters on the machine.

4 **<System settings> button**.
The button is password-protected.
If the password protection is removed, settings can be made for the machinery.

5 **<Display settings> button**.
The button is password-protected.
If the password protection is removed, settings can be made for the display.
E.g.: Selecting the language.

6 **<Diagnosis> button.**
The button is password-protected.
If the password protection is removed, certain functions can be diagnosed.

Changes to the password-protected functions are only permitted to be carried out by MBO Service or by an authorized customer service representative.

5.3.4.6 <Service keypad> page

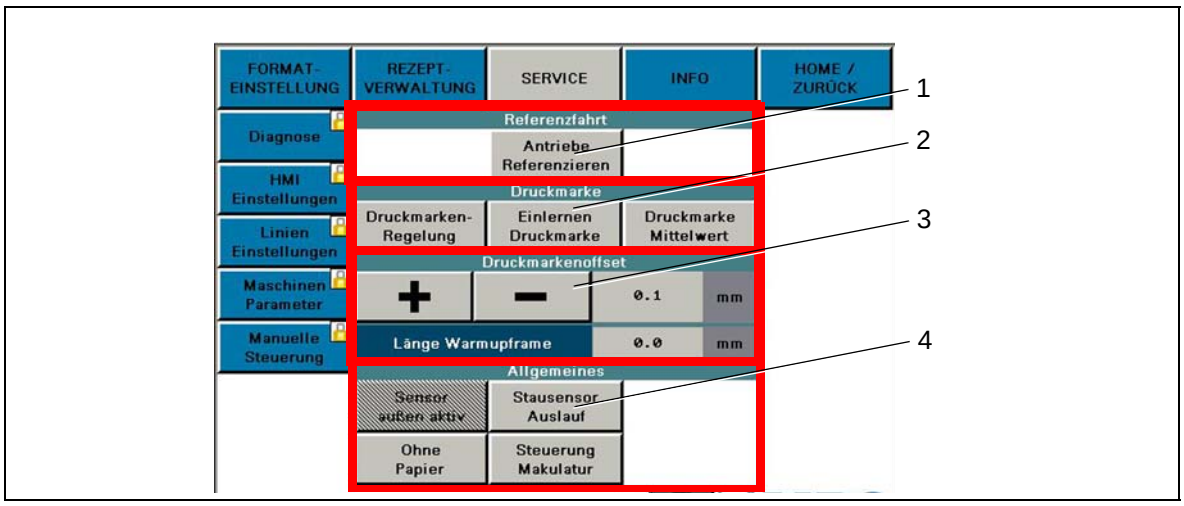


Illustration 37: <Service keypad>

1 **<Calibration > area**.
<Calibrate drives> button
2 **<Print mark> area**.
<Print mark control> button
<Teach print mark> button
<Print mark mean value> button.
3 **<Print mark offset> area**.
<+> button
<-> button.
<Print mark offset> display
<Length warm-up frame> display
4 **<General> area**.
<Outer sensor active> button
<Jam sensor outfeed> button
<No paper> button
<Waste paper control> button

5.3.4.7 <Info> page

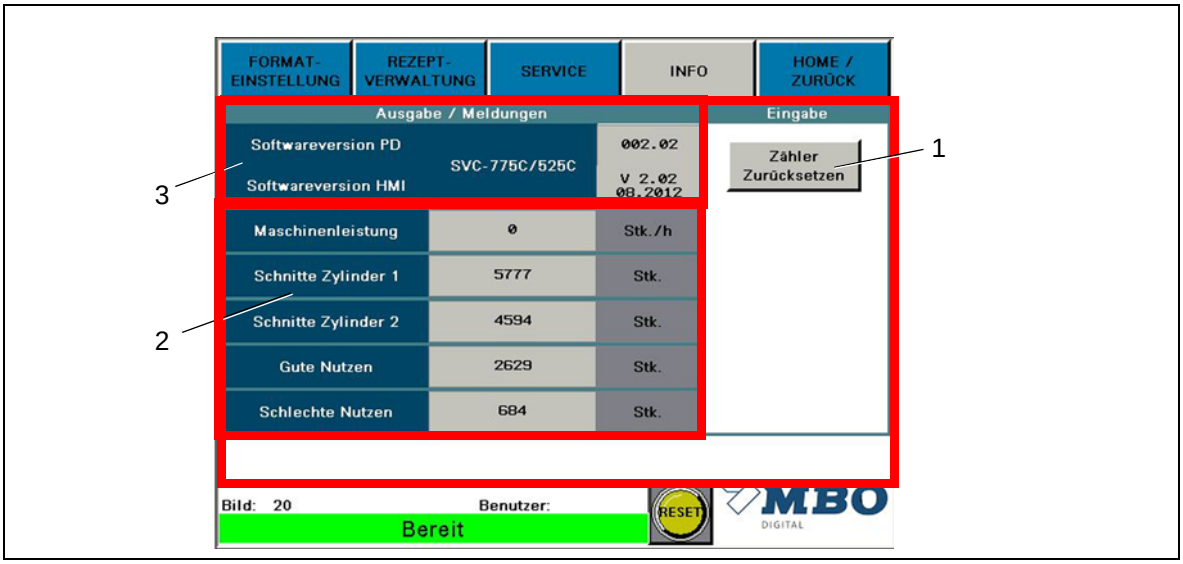


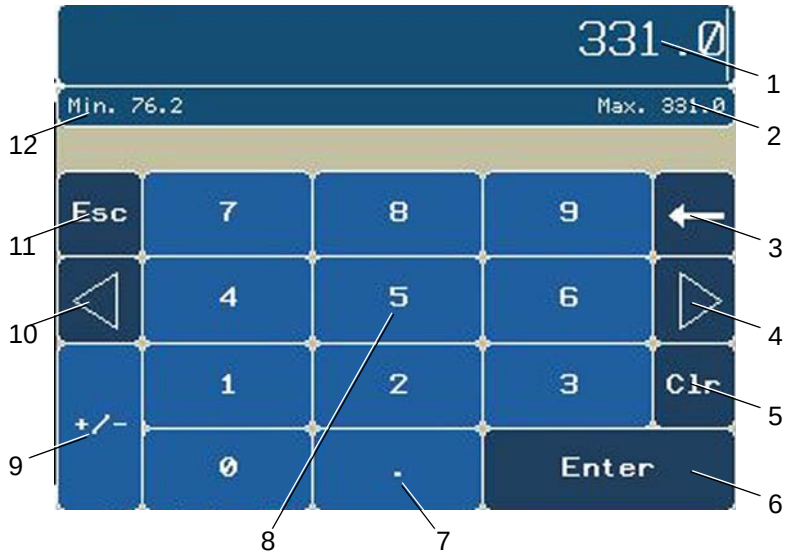
Illustration 38: Info page

1 **<Reset counter> button**.
Pressing the <Reset counter> button resets the counter readings in the <Counter readings> display field (2) to zero.

2 **<Counter readings> display field**.
The current machine counter readings are displayed in the <Counter readings> display field.

3 **<Software versions> display field**.
The software versions installed on the machine are displayed in the <Software versions> display field.

5.3.4.8 Numeric input field

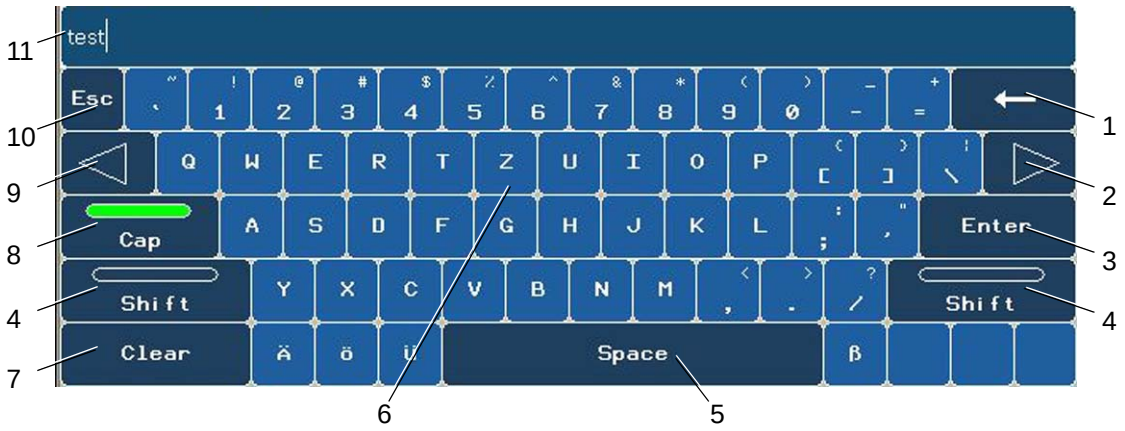


1 Current input value	7 Comma input
2 Maximum input limit	8 Number block 0 - 9
3 Delete last digit	9 Sign
4 Cursor, one digit back	10 Cursor, one digit forwards
5 Delete display value	11 Cancel
6 Enter	12 Minimum input limit

Illustration 39: Numeric input field

The structure of the input field can vary a little depending on the function.

5.3.4.9 Alphanumeric input field



1 Delete last digit 2 Cursor, one digit back 3 Confirm input, Enter 4 Shift button 5 Space 6 Alphanumeric buttons	7 Delete display 8 Caps lock 9 Cursor, one digit forwards 10 Cancel 11 Display, current input

Illustration 40: Alphanumeric input field

The structure of the input field can vary a little depending on the function.

5.4 Temperature indicator, heating of cutting unit

CAUTION!

Operating the sheeter when it is cold.

Non-observance could result in property damage to the cutting units.

- Observe a warm-up phase of one hour.
- Always only adjust the cutting knives when it is heated.
- Only operate the sheeter when it is heated.

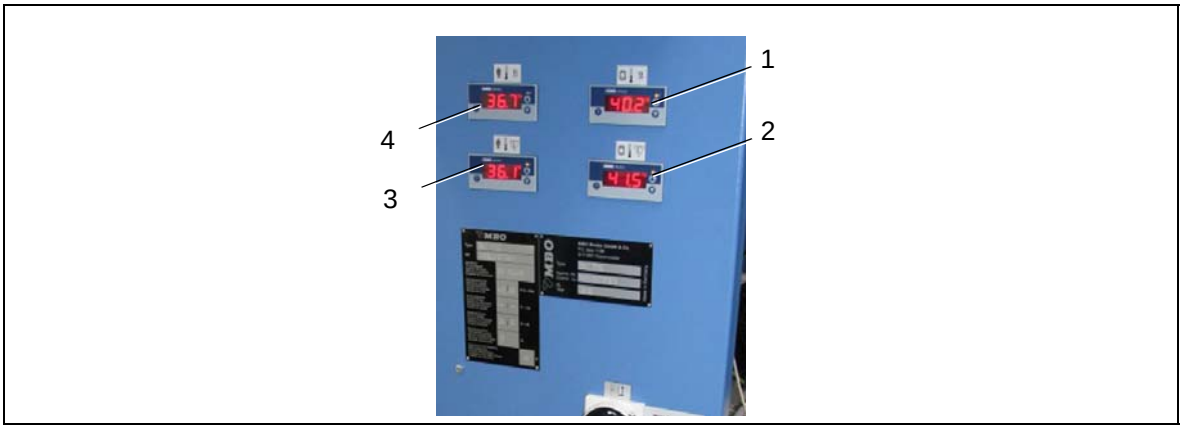


Illustration 41: Temperature indicator, heating of cutting unit

1 <Actual temperature of heating, drive side> display
2 <Actual temperature for production release, drive side> display
3 <Actual temperature for production release, operator side> display
4 <Actual temperature of heating, operator side> display

	Heating display, operator side (4)	Production release display, operator side (3)	Heating display, drive side (1)	Production release display, drive side (2)
Min. temperature threshold, heating	38 °C	-	38 °C	-
Max. temperature threshold, heating	41 °C	-	41 °C	-
Display area during production [1)]	38 °C - 44 °C	38 °C - 44 °C	38 °C - 44 °C	38 °C - 44 °C
Temperature threshold for production release	-	33 °C	-	33 °C
Min. alarm threshold	10 °C	10 °C	10 °C	10 °C
Max. alarm threshold	60 °C	60 °C	60 °C	60 °C
Sensor interruption	u u u	u u u	u u u	u u u
Sensor short circuit	o o o	o o o	o o o	o o o

Table 23: Temperature display

1) A fluctuation of the temperature display during production is normal and is caused by the set hysteresis characteristic curve.

5.5 Operating modes

There are the following operating modes:

- Off-line mode
- In-line mode
- Inching mode

5.5.1 Off-line mode

In off-line mode, the sheeter works with its own unwinder (UW52/520).
Other machines can be arranged between the unwinder and the sheeter (e.g.: plough fold station, Split&Merge station).
The control of the system and the specification of the speed is done on the sheeter.

5.5.2 In-line mode

In in-line mode, the sheeter works after a digital printer.
The sheeter and the further processing equipment are made ready for production.
The control of the system and the speed specification come from the digital printer.

If the digital printer works with web tension, the sheeter must be equipped with an optional web tension control unit WT.

5.5.3 Inching mode

The sheeter can be operated in in-line and off-line modes in inching mode (reduced speed, approx. 7 m/min).

6 Transport, interim storage

6.1 Introduction

To transport and store the machine temporarily, heed also:

- The safety instructions.
  See chapter “6.1.2 Safety instructions”.
- The protective devices.
  See chapter “4.5.8 Checking protective devices”.
- Qualification of transport personnel.
  See chapter “6.1.1 Qualification of personnel”.

6.1.1 Qualification of personnel

This table lists the necessary qualification of the personnel related to "Transport and interim storage" of the machine.

	Specially trained personnel	Instructed operating personnel	Instructed personnel with specialized training (mechanical/ electrical engineering)
Transportation	X	-	-
Interim storage	X	-	-

Table 24: Qualification of personnel; Transport, interim storage
Legend: X permitted, - not permitted

6.1.2 Safety instructions

WARNING!

Use of unsuitable fork lifts.

Non-observance could result in serious injury or death.

- When selecting a fork lift, observe the relevant data such as load-bearing capacity, load center of gravity, fork width and fork tine length.
- For details about the minimum requirements, please see the "Technical data" chapter.

WARNING!

Tipping machine parts while unloading and installing the machine.

Non-observance could result in serious injury or death.

- Use a fork lift for transportation.
- No people may linger in the unloading area.

WARNING!

Insufficient properties and condition of the underfloor.

Non-observance could result in serious injury or death.

Check the properties and condition and load rating of the subsurface in the set-up location.

For necessary minimum requirements, please see the "Technical data" chapter.

6.2 Packaging of the machine

6.2.1 Machine

The machine is delivered as follows:

- On a transport pallet (Europe)
- In a shipping crate (overseas).

In addition, it is covered with plastic foil that is fastened to the transport pallet.

6.2.2 Accessories/options

Standard accessories, tools, options, and documentation are packaged with the machine or accommodated in separate cartons or containers.

Procedure:

▷ Be sure to unpack these carefully.

6.2.3 Incoming inspection

Procedure:

▷ When you receive the shipment, check the packaging right away for transport damage.
▷ Check the machine and accessories for transport damage.
▷ Check that the shipment is complete based on the delivery note.

6.2.4 In case of damage

Procedure:

▷ Notify the transport company immediately of any damage.
▷ Contact your transport insurance carrier immediately.
▷ Safeguard the machine and accessories from further damage.

6.3 Transporting the machine.

Here's how to proceed to transport the machine.

Prerequisites

These prerequisites must be fulfilled:

- Machine is bolted to the transport pallet.
- Use a suitable fork lift.

  For requirements, see Chapter “3.2.3 Shipping and transport data”.

WARNING!

Use of unsuitable fork lifts.

Non-observance could result in serious injury or death.

- When selecting a fork lift, observe the relevant data such as load-bearing capacity, load center of gravity, fork width and fork tine length.
- For details about the minimum requirements, please see the "Technical data" chapter.

1 Machine

Illustration 42: Transporting the machine

Transporting the machine

Here's how to transport the machine:

▷ Only lift the transport pallet as high as absolutely necessary for the transport.

▷ Transport the transport pallet as close as possible to the intended location.

▷ Set the transport pallet down carefully.

✓ Machine is transported.

6.4 Interim storage of the machine

6.4.1 Outdoors

Here's how to store the machine temporarily outdoors.

Prerequisites

These prerequisites must be fulfilled:

- Machine is bolted to the transport pallet.
- The packaging must be intact.
- Storage time outdoors = maximum two weeks.

WARNING!

Incorrect storage.

Non-observance could result in severe property damage.

Observe the specified storage conditions.

Interim storage of the machine

Here's how to store the machine outdoors:

▷ Protect machine with a roof or suitable tarpaulin against humidity.

▷ As soon as condensate forms, store the machine in a storage room (danger of corrosion).

▷ Loosen plastic foil from the transport pallet and lift it so that the air can circulate.

✓ Machine is stored temporarily.

6.4.2 In a storage room

For storage conditions, see chapter “3.2.8 Ambient conditions”

Interim storage of the machine

7 Set-up, commissioning

7.1 Introduction

To set up/commission the machine, also follow:

- The safety instructions.
  See chapter “7.1.2 Safety instructions”.
- The protective devices.
  See chapter “4.5.8 Checking protective devices”.
- The intended use.
  See chapter “2.1 Intended use”.
- Qualifications of the service personnel.
  See chapter “7.1.1 Qualification of personnel”.

7.1.1 Qualification of personnel

This table lists the necessary qualification of the personnel related to "Set-up and commissioning" of the machine.

:	Specially trained personnel	Instructed operating personnel	Instructed personnel with specialized training (mechanical/ electrical engineering)
Set-up	-	-	X
Electrical connections	-	-	X
Stationary mains connection	-	-	X
Commissioning	-	-	X

Table 25: Qualification of personnel; Set-up, commissioning
Legend: X permitted, - not permitted

7.1.2 Safety instructions

DANGER!

Hazardous voltage.

Non-observance will result in serious injury or death.

- Only an electrically qualified person may perform work on the machine's electrical system.
- Follow the local occupational safety regulations and electrotechnical regulations.
- On the supply terminals and on the terminals of the main switch, there is hazardous voltage even when the main switch is switched off (see wiring diagram).
- There is hazardous residual voltage on the connection terminals of the frequency inverter even when the main switch is switched off (heed capacitor discharge time).

DANGER!

Hazardous voltage at the stationary mains connection.

Non-observance will result in serious injury or death.

- The stationary mains connection of the machine may only be made by an electrically qualified person.
- Follow the local occupational safety regulations and electrotechnical regulations.
- 400 V power supply. In case of a missing neutral conductor, electrical components, e.g. frequency inverters, can be destroyed.
- Due to the leakage currents of the controlled drives (frequency inverters), an equipotential bonding conductor must be connected. See Chapter “7.3.3 Observe the design of the stationary mains connection” and “7.3.5 Connecting additional protective equipotential bonding”

WARNING!

Use of unsuitable fork lifts.

Non-observance could result in serious injury or death.

- When selecting a fork lift, observe the relevant data such as load-bearing capacity, load center of gravity, width of forklift carrier and length of forks.
- For details about the minimum requirements, please see the "Technical data" chapter.

WARNING!

Tipping machine parts while unloading and installing the machine.

Non-observance could result in serious injury or death.

- Use a fork lift for transportation.
- No people may linger in the unloading area.

WARNING!

Insufficient properties and condition of the underfloor.

Non-observance could result in serious injury or death.

Check the properties and condition and load rating of the subsurface in the set-up location.

For necessary minimum requirements, please see the "Technical data" chapter.

CAUTION!

Incorrect supply voltage.

Non-observance could result in severe property damage.

- If the existing rated voltage deviates from the details on the name plate, wiring diagram, and "technical data" in the operating manual, an isolating transformer must be used.
- You can get the necessary information from the manufacturer.

CAUTION!

Tripping points due to connecting cables lying around.

Non-observance could result in minor or moderate injury.

Lay the machine connections (cables, hoses, pipes) so that there are no tripping points.

7.2 Setting up the machine

- The machine must be unpacked, assembled and installed in the installation location by specialized personnel.
- Separate installation and commissioning instructions are required for this.

Only have the machine installed by MBO Service or by a customer service technician authorized by MBO.

7.3 Making the stationary mains connection

The electrical supply of the machine must be performed by a stationary mains connection.

The stationary mains connection may:

- in Germany this may only be done by an installation company that is registered in the installers' directory of the local power supply company.
- in Europe, this must generally be done by a electrically qualified person.
  This electrically qualified person must be familiar with the corresponding standards, especially EN IEC 60364, as well as the technical connection requirements of the local power supply company.

7.3.1 Safety instructions

DANGER!

Hazardous voltage at the stationary mains connection.

Non-observance will result in serious injury or death.

- The stationary mains connection of the machine may only be made by an electrically qualified person.
- Follow the local occupational safety regulations and electrotechnical regulations.
- 400 V power supply. In case of a missing neutral conductor, electrical components, e.g. frequency inverters, can be destroyed.
- Due to the leakage currents of the controlled drives (frequency inverters), an equipotential bonding conductor must be connected.

7.3.2 Heed network prerequisites

CAUTION!

Incorrect supply voltage.

Non-observance could result in property damage.

- Verify that the specifications for mains voltage and frequency on the name plate match the supply network data.
- Connect the machine only if the mains voltage and frequency match.
- If the existing rated voltage deviates from the details on the name plate, wiring diagram, and "technical data" in the operating manual, an isolating transformer must be used.
  You can get the necessary information from the manufacturer.

With regard to the stationary mains connection, make sure that:

- This may only be done in Germany by an installation company that is registered in the installers' directory of the local power supply company.
- In Europe, this must generally be done by an electrically qualified person.

  This electrically qualified person must be familiar with the corresponding standards, especially EN IEC 60364, as well as the technical connection requirements of the local power supply company.
- This may ***not*** be connected by an MBO technician or a customer service technician.
- For the electrical installation, EN 60204-1, Clause 6.3.3. "Protection through automatic switching off of the supply" is adhered to.
- The loop impedance and the suitability of the assigned overcurrent protection device are checked according to EN 60204-1, Clause 18.2.2.
- A TN-S power system or TN-C-S power system is mandatory as the power supply system.
- The voltage, frequency, network cross-section, and mains protection must match the details on the name plate, wiring diagram, and "Specifications" of the operating manual.
- Due to the leakage currents of the EMC filter, the mains connection must be stationary.
- Due to the leakage currents of the EMC filter, no power supply with a ground fault circuit interrupter (GFCI) or a voltage fluctuation relay can be used.
- Due to the leakage currents of the EMC filter, a protective equipotential bonding system according to EN 60204-1, Clause 8.2.8 must be connected.
- The customer's grounding system should have as small a grounding resistance as possible (optimal would be a value < 2 Ohm), since with relatively high grounding resistance levels (> 50 Ohm) the EMC filters hardly have any more filter effect.
- The N conductor is loaded (for 400 VAC power supply).
- A right rotating field is absolutely necessary.

- The machine sockets of the MBO machines are only permitted to be used for the connection of MBO units.
- The 230 VAC sockets of the MBO machines may be used exclusively for the connection of the intended accessory devices.
- All sockets (400 VAC and 230 VAC sockets) of the MBO machines must be monitored at all times according to the corresponding federal and local codes, guidelines and other regulations.

7.3.3 Observe the design of the stationary mains connection

Electrical supply	**Connecting line**		
Nominal voltage 3 x 400 V + N + PE	**Cable**	**Cross-section**	**PE conductor**
Design according to DIN EN 60204-1, Clause 4.3.1	Five-pin copper cable (L1, L2, L3, N, PE): Single-conductor or multi-conductor with connector sleeves, make connection touch-proof, clockwise rotating field.	Layout according to VDE 0100 Part 430 (IEC 60364-4-47)	Design according to VDE 0100 Part 540 (IEC 60364-5-54)
Nominal voltage 3 x 220 V + PE	**Cable**	**Cross-section**	**PE conductor**
Design according to DIN EN 60204-1, Clause 4.3.1	Four-pin copper cable (L1, L2, L3, PE): Single-conductor or multi-conductor with connector sleeves, make connection touch-proof, clockwise rotating field.	Layout according to VDE 0100 Part 430 (IEC 60364-4-47)	Design according to VDE 0100 Part 540 (IEC 60364-5-54)
	Protective equipotential bonding[a] (Second, additional PE conductor)		
		Cross-section	
		Design according to VDE 0100 Part 540 (IEC 60364-5-54) and EN 60204-1, Clause 8.2.8 Cross-section = 10 mm^2 (Cu).	

Table 26: Design of the stationary mains connection

a) If the discharge current of the entire system is more than 10 mA, according to EN 60204-1 there must be a protective equipotential bonding conductor connected.

7.3.4 Connecting to the stationary mains connection

The stationary mains connection is made in the control cabinet.

1 Cable grommet	2 Power supply to the main switch

Illustration 43: Stationary mains connection

Procedure:

1) Insert the mains connection cable through the cable grommet (1) in the control cabinet.
2) Connect the mains connection cable to the upper terminals of the main switch (2) according to the wiring diagram.

✓ The stationary mains connection is complete.

Use only copper wires as mains connection cable.

7.3.5 Connecting additional protective equipotential bonding

CAUTION!

Discharge currents greater than 10 mA.

Non-observance could result in property damage.

- Connect the protective equipotential bonding conductor to the PE terminals.
- Cross-section 10 mm^2 (Cu).

1 PE connection terminal strip	2 Cable grommet

Illustration 44: Connection of protective equipotential bonding conductor

The RFI filters of the frequency converters used generate a system-conditioned grounding leakage current.

Since this can be greater than 10 mA, according to EN 60204-1 Clause 8.2.8 an additional protective equipotential bonding conductor is necessary.

This should have a cross-section of 10 mm^2.

Procedure:

1) Insert the protective equipotential bonding conductor into the main control cabinet through the cable grommet (1).
2) Connect the protective equipotential bonding conductor to the PE connection terminal strip (2).

✓ The protective equipotential bonding conductor is connected.

7.3.6 Checking the protective conductor connections

WARNING!

Disconnected protective conductor connections.

Non-observance could result in serious injury or death.

Reconnect all protective conductor connections that were disconnected for transport.

Check that all protective conductor connections that were disconnected for transport are reconnected correctly.

Procedure:

▷ Check this by visual inspection.

7.4 Commissioning

- After the stationary mains connection, the machine must be commissioned.
- Separate installation and commissioning instructions are required for this.

Only have the machine commissioned by MBO Service or by a customer service technician authorized by MBO.

7.5 Final check of the protective devices

After commissioning the machine, be absolutely certain to carry out a final check of the protective devices.

Procedure:

▷ Check that all covers and protective devices are installed and fully functional.

For this purpose, use the checklist for the protective devices.

See chapter “4.5 Checkliste Sicherheits- und Schutzeinrichtungen”.

7.6 Inspection after initial operation

20 operating hours after initial operation, it is necessary to perform an inspection of all belts and tapes.

Proceed as follows to conduct the inspection after initial operation.

Prerequisites

These prerequisites must be fulfilled:

- The machine is ready for operation.

Carrying out an inspection

Here's how to carry out an inspection:

▷ Check all tapes and belts to make sure they run centered and have the necessary tension.

▷ If required, readjust these.

See Maintenance chapter.

✓ The inspection has been carried out.

7.7 Connecting units to the sheeter

WARNING!

Hazardous voltage when opening the control cabinet.

Non-observance could result in serious injury or death.

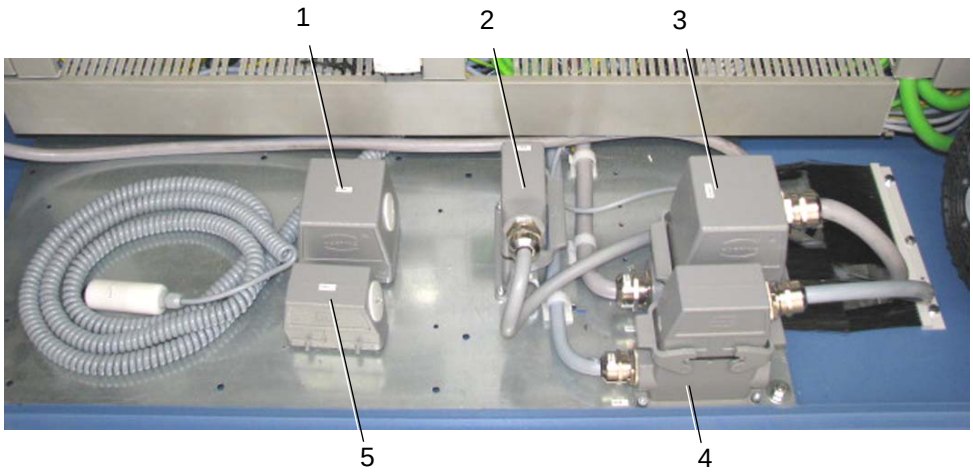
- The control cabinet may only be opened by an electrically trained person.
- Follow the local occupational safety regulations and electrotechnical regulations.
- Units may only be connected by people who have received electrotechnical training, in the control cabinet of the sheeter.

The sheeter control cabinet is used as the electric power supply for the following modules:

- Unwinder UW
- Folding machine DFT.

For each of these modules, there are power and control sockets present in the main control cabinet.

7.7.1 Description of the connections



1 Dummy plug X200 2 Power socket XB5 for UW 3 Control socket X220 for UW	4 Control socket X420 for DFT NC 5 Dummy plug X400

Illustration 45: Connections

Outside on the SVC 525C sheeter control cabinet, there is the power socket XB2 for the DFT folding machine.

Units	**Equipment identifier (EID). See wiring diagram**			
	Power	**Control**	**Control voltage frequency**	**Dummy plug**
Unwinder UW	XB5	X220	XB10	X200
Split&Merge PSM/SPM	On the unwinder	On the unwinder		On the unwinder
Folding machine	XB2	X420	XB64	X400

8 Adjustment and operation

8.1 Introduction

To adjust and operate the machine, heed also:

- The safety instructions.
  See chapter “8.1.2 Safety instructions”.
- The intended use.
  See chapter “2.1 Intended use”.
- Qualification and training of the operating personnel.
  See chapter “2.9 Personnel, qualification and duties”.

8.1.1 Qualification of personnel

This table lists the necessary qualification of the personnel related to "Adjustment and operation" of the machine.

	Specially trained personnel	Instructed operating personnel	Instructed personnel with specialized training (mechanical/ electrical engineering)
Adjustment	X	X	-
Operation	O	X	-

Table 27: Qualification of personnel, adjustment and operation
Legend: X permitted, - not permitted, O possible.

8.1.2 Safety instructions

DANGER!

Dismantling, bridging or bypassing protective devices.

Non-observance will result in serious injury or death.

- No protective devices of the machine may be dismantled, bridged or bypassed.
- Using the check list for protective devices, check that all protective devices are on the machine.
- Report any audible / visible safety-relevant change of the machine to the person at your operation responsible for the system.

WARNING!

Rotating machine parts.

Non-observance could result in serious injury or death.

- Make sure that you always tie back your hair and keep it protected.
- Remove your jewelry during operation and maintenance of the machine.
- Make sure of wearing only close fitting clothes while you operate or maintain the machine.

WARNING!

Rotating machine parts.

Non-observance could result in serious injury or death.

In case of a sudden standstill of the machine, check before switching on again:

- That there are no other people on the machine.
- That the machine is in perfect condition.

WARNING!

Cutting hazard.

Edges of running webs can cause cutting injuries.

- Never touch the edges of running webs.

CAUTION!

Operating the sheeter when it is cold.

Non-observance could result in serious property damage to the cutting units.

- Observe a warm-up phase of one hour.
- Only adjust the sheeter knives when it is heated.
- Only operate the sheeter when it is heated.

8.2 Operation

8.2.1 Press the EMERGENCY STOP palm button

Here's how to press the EMERGENCY STOP palm button:

Prerequisites

These prerequisites must be fulfilled:

- Machine is in production.
- There is a hazard to people.
- There is danger to the machine.

1 <Reset EMERGENCY STOP> illuminated button
2 EMERGENCY STOP palm button

Illustration 46: EMERGENCY STOP palm button

To prevent immediate or potential hazards, the machine is equipped with an EMERGENCY STOP shut-off device.
After the <EMERGENCY STOP> palm button is pressed, all electrical drives are switched off.
EMERGENCY STOP does not disconnect the machine from the electrical supply.

Press the EMERGENCY STOP palm button

Here's how to press the EMERGENCY STOP palm button:

1) Press the EMERGENCY STOP palm button.(2).
2) The <Reset EMERGENCY STOP> illuminated button (1) lights up.
3) Eliminate the problem.
4) Unlock the EMERGENCY STOP palm button (2) with a turn to the right.
5) Activate the <Reset EMERGENCY STOP> illuminated button (1).

   The <Reset EMERGENCY STOP> illuminated button does not light up.

✓ The machine is ready for operation.

After an EMERGENCY STOP, <Top knife preselection> button in the <Manual control> menu must be switched on and off.
(New reference run of the cutting cylinder).

8.2.2 Opening/closing the nip rollers

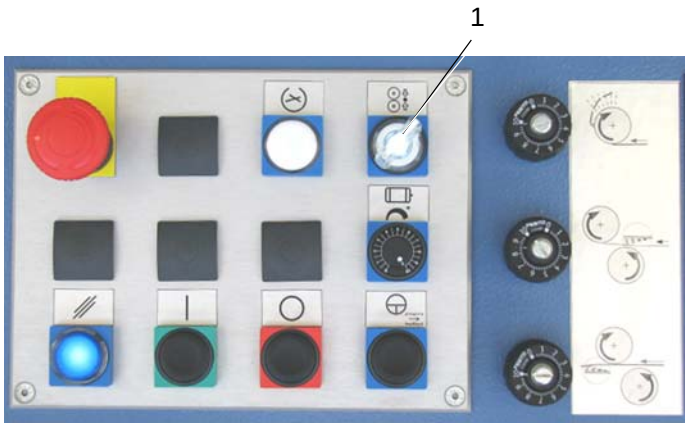
Proceed as follows to open/close the nip rollers.

Always release the web tension before you open the nip rollers. Otherwise the web may come unthreaded from the sheeter.

Prerequisites

These prerequisites must be fulfilled:

- The main switch on the sheeter is switched on.



1 <Open/close the nip rollers> illuminated selector switch
2 Position left = open nip rollers
Position right = close nip rollers, illuminated selector switch lights up.

Illustration 47: Open/close the nip rollers

Closing the nip rollers

Here's how to open the nip rollers:

1) Place <Nip rollers> illuminated selector switch (1) to the right.

✓ The illuminated selector switch lights up.
The nip rollers are closed.

Opening the nip rollers

Here's how to close the nip rollers:

1) Place <Nip rollers> illuminated selector switch (1) to the left.

✓ The illuminated selector switch does not light up.
The nip rollers are open.

8.2.3 Operating the sheeter in inching mode

How to proceed to operate the sheeter in inching mode:

Prerequisites

These prerequisites must be fulfilled:

- The warm-up phase of one hour has been observed.
- The sheeter should be set up.
- The web has been fed in.
- The nip rollers are closed.

1 <Inching> button 2 <Inching> remote control

Illustration 48: Inching the sheeter

Starting inching

Here's how to start inching mode:

▷ Press and hold the <Inching> button (1).
▷ Press and hold the <Inching> button (2).
✓ A warning signal sounds and the sheeter moves at approx. 7 m/min.

Stopping inching

Here's how to stop inching mode:

▷ Release the <Inching> button (1).
▷ Release the <Inching> button (2).
✓ The sheeter stops.

- The sheeter can only be set up in inching mode.
- If the sheeter is ready for production, it can be also be operated in inching mode to check the settings.
- Inching speed = approx. 7 m/min.

8.2.4 Starting/stopping the sheeter

CAUTION!

Operating the sheeter when it is cold.

Non-observance could result in property damage to the cutting units.

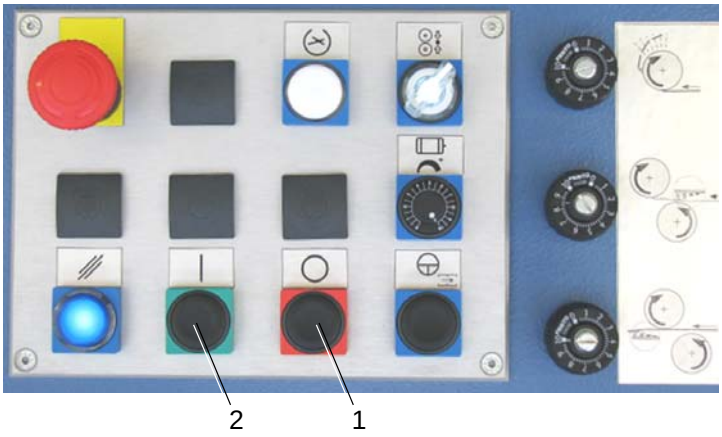
- Observe a warm-up phase of one hour.
- Always only adjust the cutting knives when it is heated.
- Only operate the sheeter when it is heated.

Here's how to start/stop the sheeter.

Prerequisites

These prerequisites must be fulfilled:

- The warm-up phase of one hour has been observed.
- The sheeter is ready for production.
  See chapter “8.5 Creating production readiness”.



1 <Stop> button 2 <Start> button

Illustration 49: Starting/stopping the sheeter

Starting

Here's how to start the sheeter:

▷ Press the <Start> button (2).

✓ A warning signal sounds and the sheeter moves at the set production speed.

Stopping

Here's how to stop the sheeter:

▷ Press the <Stop> button (1).

✓ The sheeter stops.

8.3 Brief instructions for adjusting the machine

The machine is adjusted in these work steps.

- Wait during warm-up phase of the side walls.
- Adjust the machine.

  See chapter “8.4 Adjusting the machine”.
- Adjust the nip rollers on the first infeed shaft.

  See chapter “8.4.1 Adjusting the nip rollers on the first infeed shaft”.
- Thread in the web.

  See chapter “8.4.2 Feeding in the web”.
- Smooth the web.

  See chapter “8.4.3 Smoothing the web”.
- Adjust the guide plates.

  See chapter “8.4.4 Adjusting the guide plates”.
- Adjust the nip rollers on the second infeed shaft.

  See chapter “8.4.5 Adjusting the nip rollers on the second infeed shaft”.
- Adjust belts and smoother.

  See chapter “8.4.6 Adjusting the smoothers”.
  See chapter “8.4.7 Adjusting the short belts after the cutting cylinder unit”.
  See chapter “8.4.8 Adjusting the smoothers after the cutting cylinder unit”.
  See chapter “8.4.9 Adjusting belts on the conveyor table”.
  See chapter “8.4.10 Adjusting smoothers on the conveyor table”.
- Adjust longitudinal cut.

  See chapter “8.4.11 Adjusting the longitudinal cut”.
- Adjust sensors.

  See chapter “8.4.12 Adjusting <Paper jam> sensor”.
  See chapter “8.4.13 Adjusting <Web break> sensor”.
  See chapter “8.4.14 Positioning the <Print mark> sensor”.
- Teach <Print mark> sensor.

  See chapter “8.4.15 Teaching the <Print mark> sensor”.
- Adjust format length.

  See chapter “8.4.16 Adjusting the format on the touchscreen”.
- Adjust angle of the cutting cylinder unit

  See chapter “8.4.18 Angle of the cutting cylinder unit”.
- Adjust print mark control.

  See chapter “8.4.19 Adjusting the print mark control”.
- Adjust cutting position.

  See chapter “8.4.20 Adjusting the cutting position”.
- Adjust the air.

  See chapter “8.4.21 Adjusting the air for paper transport”.
- Get ready for production.

  See chapter “8.4.5 Adjusting the nip rollers on the second infeed shaft”.
- Troubleshooting.

  See chapter “8.6 Identification and handling of malfunctions”.

8.4 Adjusting the machine

CAUTION!

Operating the sheeter when it is cold.

Non-observance could result in property damage to the cutting units.

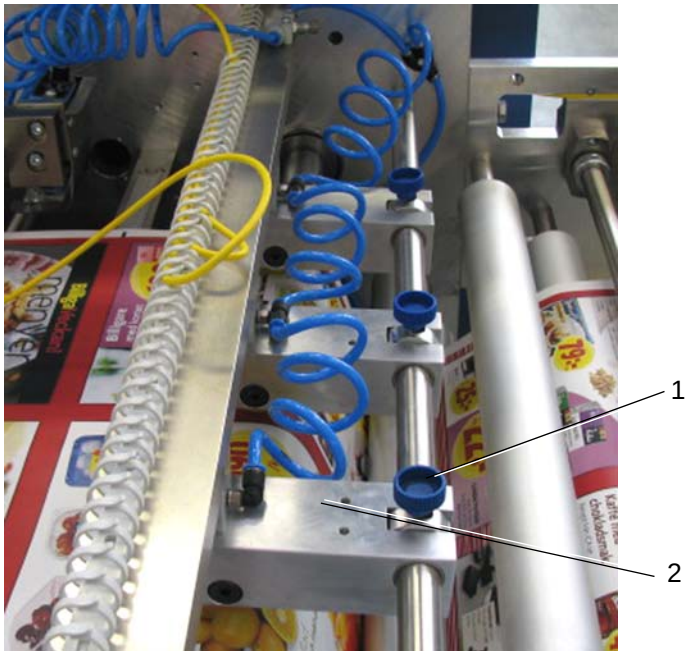
- Observe a warm-up phase of one hour.
- Always only adjust the cutting knives when it is heated.
- Only operate the sheeter when it is heated.

8.4.1 Adjusting the nip rollers on the first infeed shaft

Here's how to proceed to adjust the nip rollers.

The pressure of the nip rollers is set to 6 bar by default.
Reduce the pressure only if:
- an impression of the nip rollers is visible on the paper
- You are moving with the Split & Merge setting (setting 1 - 2 bar).
- You are moving with the plough fold setting.

Adjusting nip rollers



1 Knurled screw	2 Nip roller

Illustration 50: Adjusting the nip rollers on the in-feed.

Here's how to adjust the nip rollers:

1) Open nip rollers on the control panel.
   See chapter “8.2.2 Opening/closing the nip rollers”.
2) Loosen the knurled screw (1).
3) Position the nip roller (2).
   Both outside nip rollers should be placed at a distance of 5 - 6 cm from the edge of the paper. Distribute the middle nip rollers evenly across the remaining width.
4) Press the knurled screw to the right and tighten.
   (Nip roller may not touch the in-feed shaft when it is open).

✓ The nip rollers are adjusted.

8.4.2 Feeding in the web

Here's how to feed in the web.

Prerequisites These prerequisites must be fulfilled:

Tear off the web tapering up. This way, you can thread the web more easily through the sheeter.

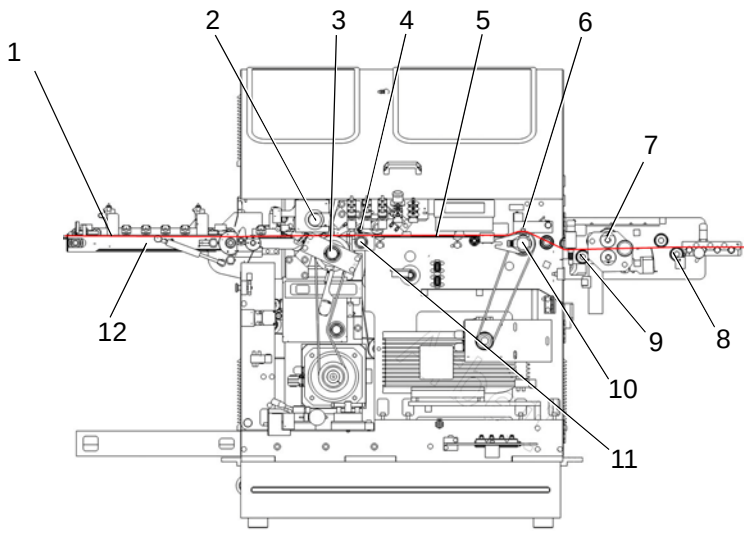
- The system is stationary.
- The nip rollers are open.

WARNING!

Drawn-in and crushing hazard.

Non-observance could result in potentially serious injury or death.

- Only feed in the web when the system is at a standstill.



1 Web	7 Longitudinal cutting unit
2 Upper cutting cylinder	8 Guide pulleys
3 Lower cutting cylinder	9 Guide pulleys
4 Nip rollers	10 In-feed roller
5 Guide plates	11 In-feed roller
6 Nip rollers	12 Conveyor table

Illustration 51: Feeding in the web

Feeding in the web

Here's how to feed in the web:

1) Guide the web (1) through the guide rollers (8).
2) Guide the web (1) through the longitudinal cutting knife (7).
3) Guide the web (1) through the guide rollers (9).
4) Guide the web (1) through the first in-feed shaft (10) and the nip rollers (6).
5) Close the nip rollers.
6) From here on, thread the web through the machine in inching mode.
7) Guide the web (1) via the guide plates (5).
8) Guide the web (1) through the first in-feed shaft (11) and the nip rollers (4).
9) Guide the web (1) between the upper cutting cylinder (2) and the lower cutting cylinder (3).
10) Feed the web (1) over the conveyor table (12) into the downstream machine to the next in-feed shaft. See operating manual for the downstream machine.

✓ The web has been fed in.

8.4.3 Smoothing the web

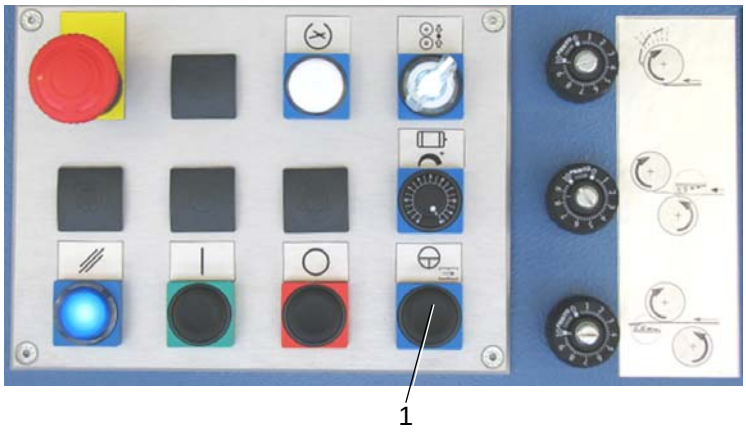
Here's how to proceed to smooth the web.

Prerequisites

These prerequisites must be fulfilled:

- The nip rollers are adjusted.

Smoothing the web



1 <Inching> button

Illustration 52: Smooth the web.

Here's how to smooth the web:

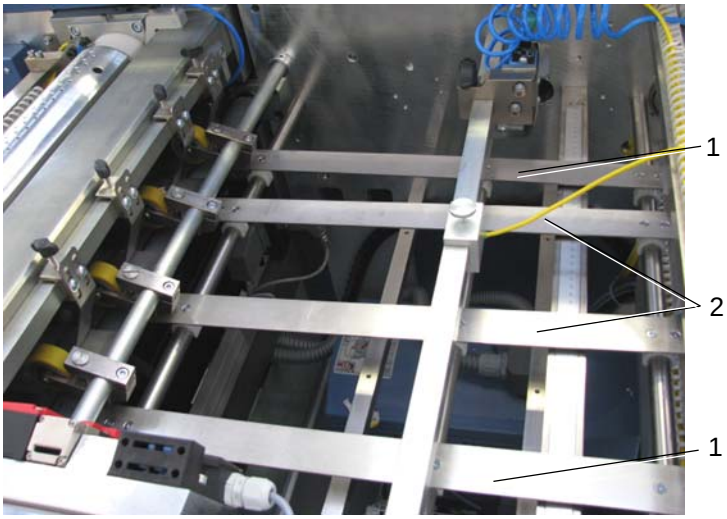
1) Press the <Inching> button (1).
2) Leave the web run 5 - 6 m through the machine.

✓ The web is smoothed.

8.4.4 Adjusting the guide plates

Here's how to proceed to adjust the guide plates.

Adjusting the guide plates



1 Outer guide plates	2 Inner guide plates

Illustration 53: Adjust the guide plates.

Here's how to adjust the guide plates:

The guide plates are placed on round cross bars and can be moved by hand.

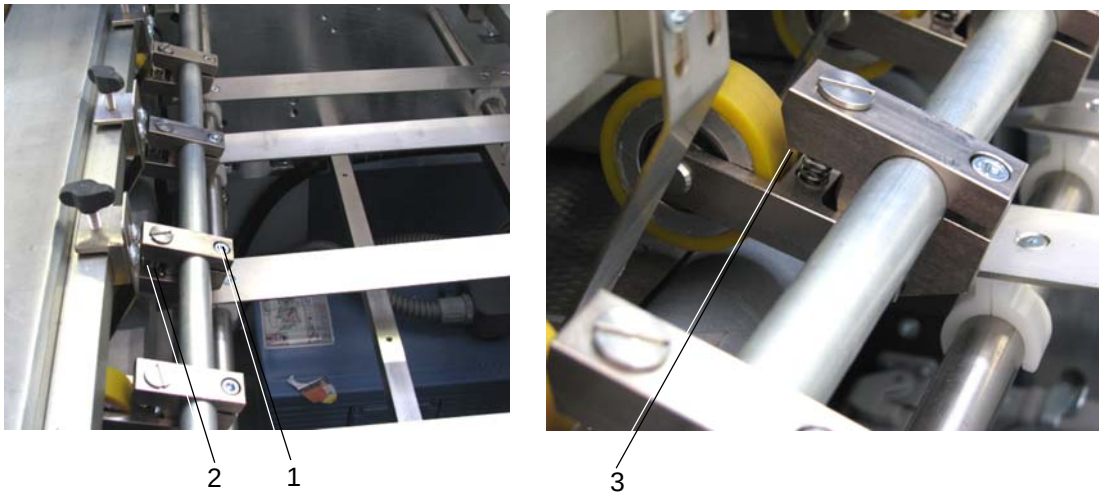
▷ Adjust the two outer guide plates to the edge of the web.
▷ Distribute the middle guide plates evenly across the remaining width.
✓ The guide plates are adjusted.

8.4.5 Adjusting the nip rollers on the second infeed shaft

Here's how to proceed to adjust the nip rollers.

Prerequisites These prerequisites must be fulfilled:

- The nip rollers on the first infeed shaft are adjusted.
- The nip rollers are closed on the first infeed shaft.
- The web has been inserted.



1 Hexagon head screw 2 Gap	3 Nip roller

Illustration 54: Adjust the nip rollers on the second infeed shaft.

Here's how to adjust the nip rollers:

1) Loosen hexagon head screw (1).
2) Position the nip roller (3).

   Both outside nip rollers should be placed at a distance of 5 - 6 cm from the edge of the paper. Distribute the middle nip rollers evenly across the remaining width.
3) Tip the clamping to the right until there is a gap (2) of approx. 2 - 3 mm between the roller and clamping.
4) Tighten the hexagon head screw again.

✓ The nip rollers are adjusted.

8.4.6 Adjusting the smoothers

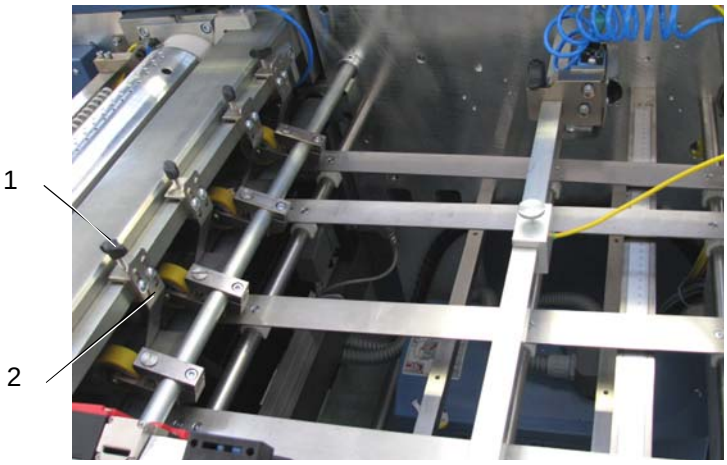
Here's how to proceed to adjust the smoothers.

Prerequisites

These prerequisites must be fulfilled:

- The web is smoothed.

Adjusting the smoothers



1 Knurled screw	2 Smoother

Illustration 55: Adjusting the smoothers.

Proceed as follows to adjust the smoothers:

1) Loosen the knurled screw (1).
2) Adjust the smoothers (2).
   Both outer smoothers should be fitted flush to the edge of the paper.
   Distribute the middle smoothers evenly across the remaining width.
3) Tighten the knurled screw (1).

✓ The smoothers are adjusted.

For especially thick paper, special smoothers can be attached over the guide plates.

8.4.7 Adjusting the short belts after the cutting cylinder unit

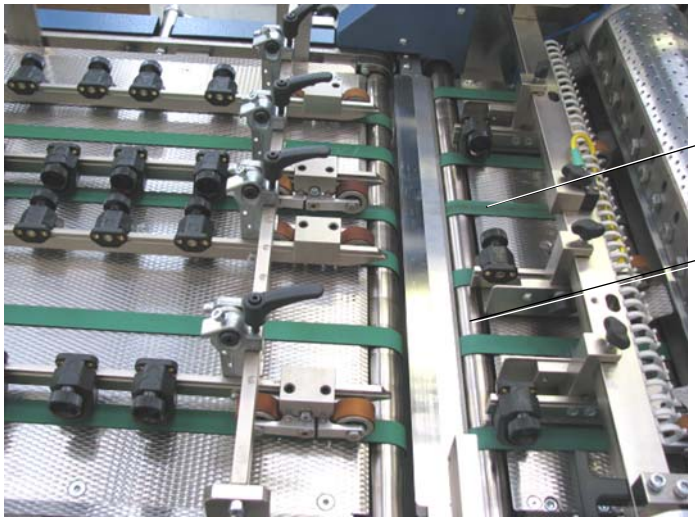
Here's how to proceed to adjust the belts

Prerequisites

These prerequisites must be fulfilled:

- The web is smoothed.

Adjusting the belts



1 Belt	2 Shaft

Illustration 56: Adjust the belts after the cutting cylinder unit.

Here's how to adjust the belts after the cutting cylinder unit:

Both outside belts must be as flush as possible with the web.
Distribute the middle belts evenly across the remaining width.

1) On the shaft (2), push the belt (1) to the desired, next possible crowned position.
2) Hold the left side in position with a finger.
3) Let the machine run until the belt is positioned over the desired position (o-ring) of the right shaft.
4) Make adjustments for all belts.

✓ The belts are adjusted.

8.4.8 Adjusting the smoothers after the cutting cylinder unit

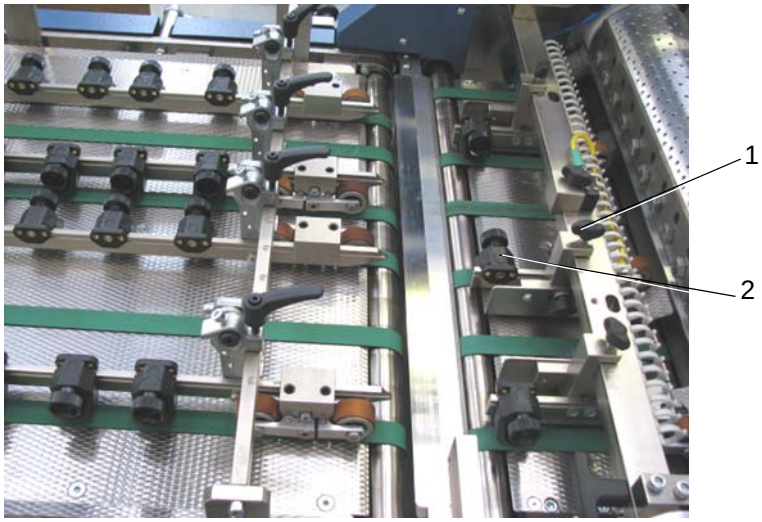
Here's how to proceed to adjust the smoothers.

Prerequisites

These prerequisites must be fulfilled:

- The belts after the cutting cylinder unit are adjusted.

Adjusting the smoothers



1 Wing screw	2 Smoother

Illustration 57: Adjust the smoothers after the cutting cylinder unit.

Here's how to adjust the smoothers after the cutting cylinder unit:

The balls/rollers must be positioned exactly over the belts.

1) Loosen the wing screw (1).
2) Position the smoothers (2) so that the balls/rollers run on the corresponding belt.
3) Tighten the wing screw clamp.
4) Make adjustments for all smoothers.

✓ The smoothers are adjusted.

8.4.9 Adjusting belts on the conveyor table

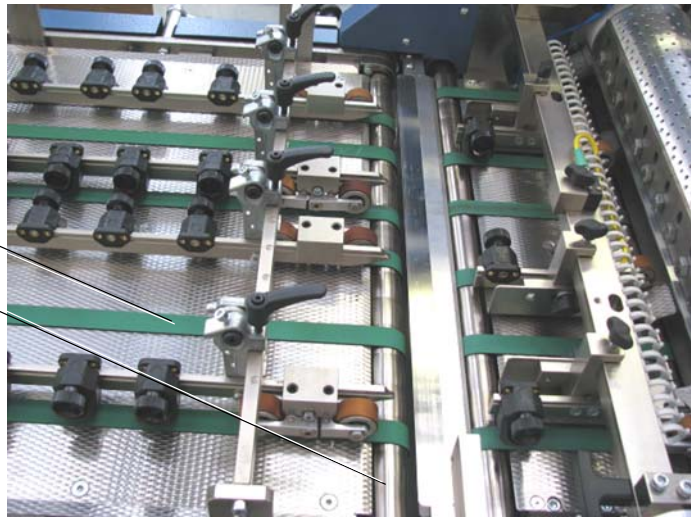
Here's how to proceed to adjust the belts

Prerequisites

These prerequisites must be fulfilled:

- The web is smoothed.

Adjusting the belts



1 Shaft	2 Belt

Illustration 58: Adjust belts on the conveyor table.

Here's how to adjust the belts on the conveyor table:

- Both outside belts must be as flush as possible with the web.
- Distribute the middle belts evenly across the remaining width.

▷ Push belt (2) on both shafts (1) to the desired next possible crowned position.

▷ Make adjustments for all belts.

✓ The belts are adjusted.

8.4.10 Adjusting smoothers on the conveyor table

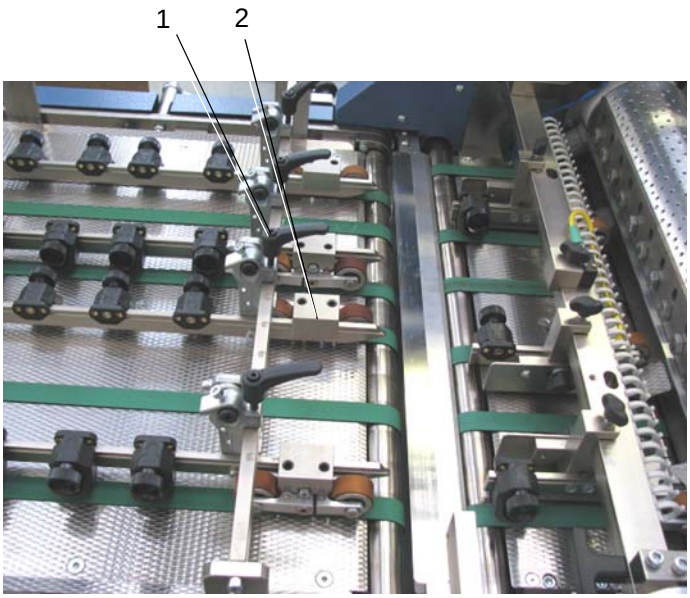
Here's how to proceed to adjust the smoothers.

Prerequisites

These prerequisites must be fulfilled:

- The belts on the conveyor table are adjusted.

Adjusting the smoothers



1 Clamping lever	2 Smoother

Illustration 59: Adjusting the smoothers.

Here's how to adjust the smoothers on the conveyor table:

- The balls/rollers must be positioned exactly over the belts.
- For light paper, use white plastic balls and for heavy paper steel balls. If the steel balls are not sufficient, rollers can also be used.

1) Loosen the clamping lever (1).
2) Position the smoothers (2) so that the balls/rollers run on the corresponding belt.
3) Tighten the clamping lever again.
4) Make adjustments for all smoothers.

✓ The smoothers are adjusted.

8.4.11 Adjusting the longitudinal cut

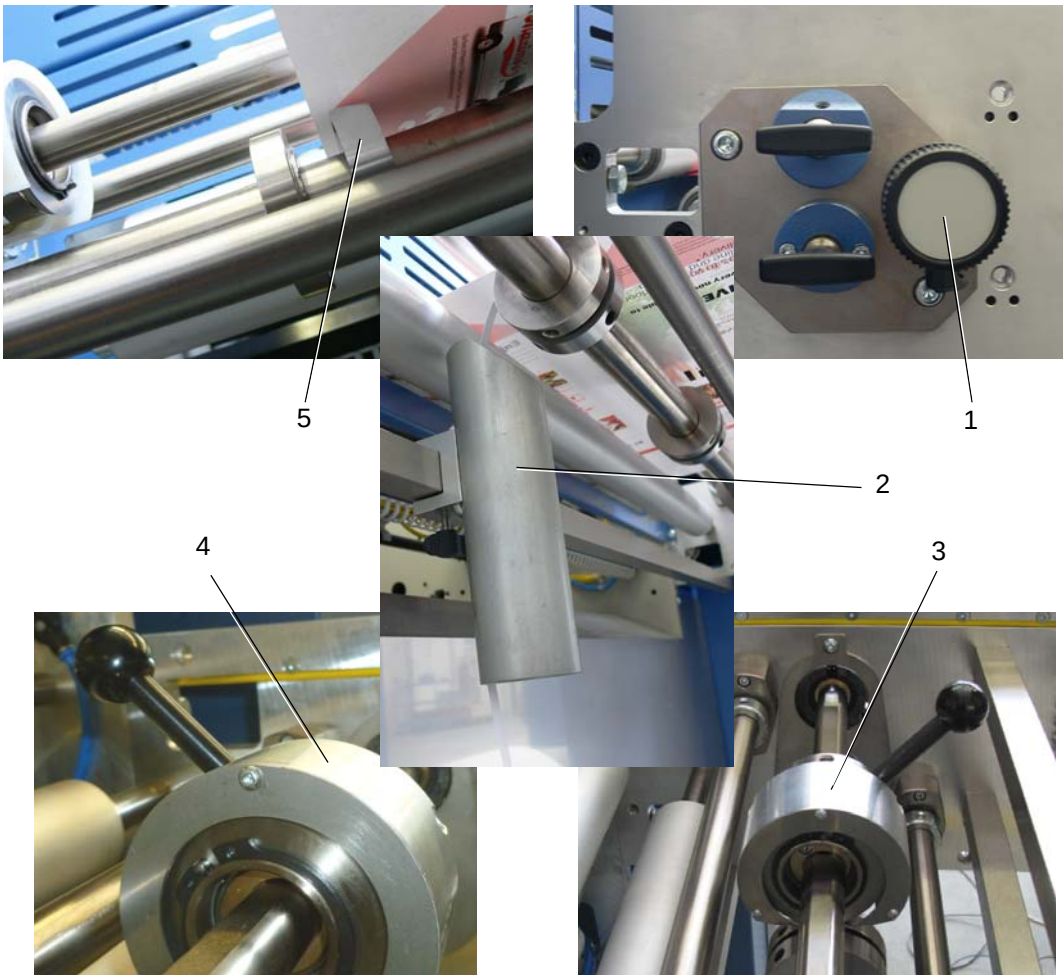
Here's how to set the longitudinal cut.

If you would like to make a clean separating cut, you need the gully cut option with additional knives.

Prerequisites These prerequisites must be fulfilled:

- The warm-up phase of one hour has been observed.
- The web is smoothed.

Adjusting the longitudinal cut



1 Setting wheel
2 Suction device
3 Knife lifted
4 Knife plunged in
5 Counter knife

Illustration 60: Adjusting the longitudinal cut

Here's how to set the longitudinal cut:

1) Adjust counter knife (5) to the desired position.
2) Tear paper at the position.
3) Plunge the knife (4) in.

   Reverse the lever of the knife.

4) Adjust the knife (4) with slight pressure on the counter knife (5).
5) Lift the knife (3) again.
6) Adjust the other side precisely to the format width.
7) Attach the suction devices (2) below the cutting position and feed the strips into the suction device.
8) Let the web run for a few meters and use the adjusting wheel (1) to slide the cut to the desired position.

✓ Longitudinal cut is adjusted.

8.4.12 Adjusting <Paper jam> sensor

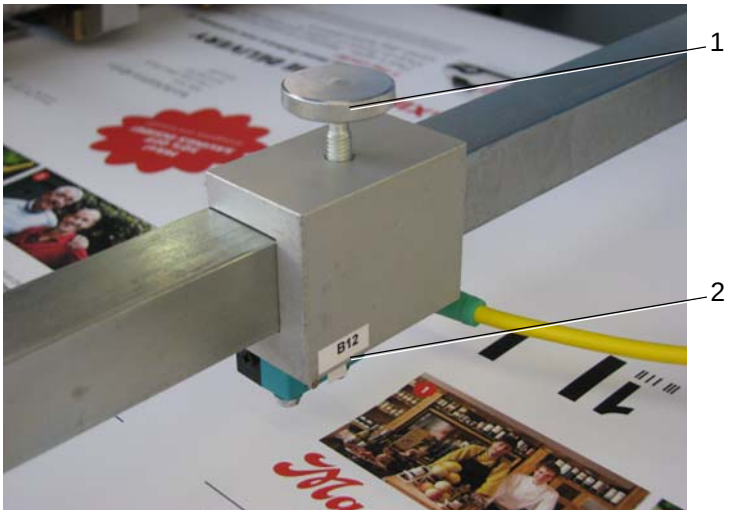
Here's how to proceed to adjust the <Paper jam> sensor.

Prerequisites

These prerequisites must be fulfilled:

- All smoothers and belts are adjusted.

Adjusting the sensor



1 Knurled screw	2 Sensor <Paper jam>

Illustration 61: Adjust <Paper jam> sensor.

Here's how to position the sensor for the paper jam:

The scan width of the sensor is set permanently to 130 mm and may not be changed.
You can have the sensor look forward or backward, depending on the side on which a jam will sooner form.
According to experience, the jam forms between the first infeed shaft and the sensor.

1) Loosen the knurled screw (1).
2) Put the <Paper jam> sensor (2) in the desired position.
3) Tighten the knurled screw.

✓ The <Paper jam> sensor is set.

8.4.13 Adjusting <Web break> sensor

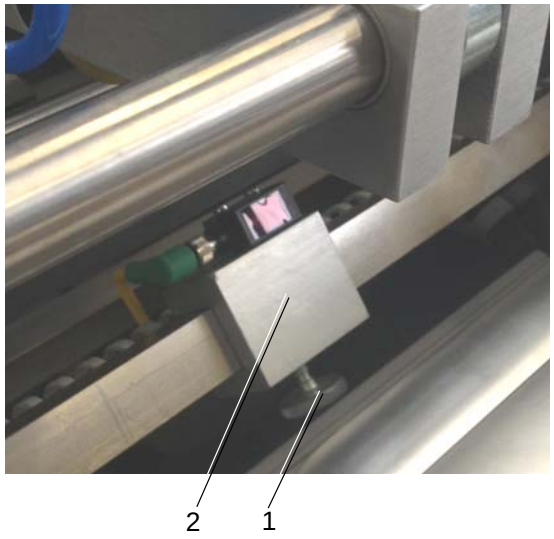
Here's how to proceed to adjust the <Web break> sensor.

Prerequisites

These prerequisites must be fulfilled:

- All smoothers and belts are adjusted.

Adjusting the sensor



1 Knurled screw	2 Sensor <Web break>

Illustration 62: Adjust <Web break> sensor.

Here's how to position the sensor for the web break:

The scan width of the sensor is set permanently to 85 mm and may not be changed.

1) Loosen the knurled screw (1).
2) Put the <Web break> sensor (2) in the desired position.
3) Tighten the knurled screw again.

✓ The <Web break> sensor is set.

8.4.14 Positioning the <Print mark> sensor

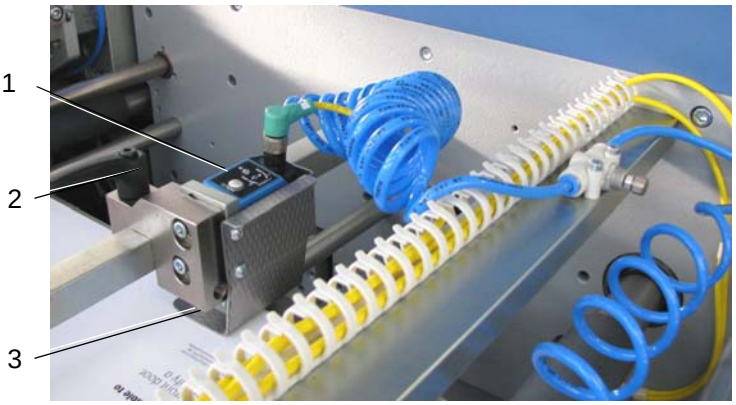
Here's how to proceed to adjust the <Print mark> sensor.

Prerequisites

These prerequisites must be fulfilled:

- Web with print mark.
- The web is smoothed.

Positioning the sensor



1 Sensor <Print mark> 2 Clamping lever	3 Print mark

Illustration 63: Position the <Print mark> sensor.

Here's how to position the sensor for the print mark:

In order to get constant imprint precision, the print mark must be directed as evenly as possible past the print mark sensor. Therefore, set the print mark sensor directly over a guide plate.

If the print mark is cut off by the edge cut or the print mark is on the back side of the printing, you have to set the print mark sensor on the round bar of the longitudinal cut cassette and adjust it there to the print mark. Use a counterholder if you set the print mark sensor on the round bar of the longitudinal cut cassette.
Heed the changed sensor distance to the cutting cylinder unit.

1) Loosen the clamping lever (2).
2) Position the <Print mark> sensor (1).
   The sensor has to be in the middle over the print mark (3).
3) Tighten the clamping lever again.

✓ The <Print mark> sensor is set.

8.4.15 Teaching the <Print mark> sensor

Here's how to proceed to teach the <Print mark> sensor.

Teach the print mark sensor if you are beginning a new job.

Prerequisites

These prerequisites must be fulfilled:

- The <Print mark> sensor is set.

Teaching the sensor

1 Selection switch	2 <Teach> button

Illustration 64: Teach <Print mark> sensor.

Here's how to teach the sensor for the print mark:

- For a black print mark on white paper, the selector switch (1) must point in direction <D>.
- For a white print mark on black paper, the selector switch (1) must point in direction <L>.

If the <Print mark> sensor is blinking after ending the teaching process, the teaching procedure was not successful and it must be repeated.

1) Set selector switch <2> to <TEACH>.
2) Press and hold the <Teach> button (1).
3) Inch the web forwards to make a print mark under the sensor.
4) Release the <Teach> button (2).
5) Set selector switch <1> to <RUN>.

✓ The <Print mark> sensor is taught.

8.4.16 Adjusting the format on the touchscreen

CAUTION!

Operating the sheeter when it is cold.

Non-observance causes potentially serious damage to the cutting units.

- Observe a warm-up phase of one hour.
- The sheeter knives should only ever be adjusted when heated.
- Only operate the sheeter when it is heated.

Here's how to proceed to adjust the format.

The maximum format length is 2032 mm.
It is composed of the number of sheets and the number of chip-outs.
You can enter a maximum of 6 s and 6 chip-outs per format.
(Due to the mechanical setting of the chip-out extraction, the length of the individual chip-outs must be equal, however).

For a simple cut (without chip-out), only the upper cutting cylinder cuts. If working with chip-out, the lower cutting cylinder cuts the rear edge of the sheet in front and the upper cutting cylinder the front edge of the following sheet and thus the chip-out. Therefore, you have to adjust the upper cutting cylinder for the chip-out.

Prerequisites

These prerequisites must be fulfilled:

- The warm-up phase of one hour has been observed.
- All sensors are adjusted.

Setting the format

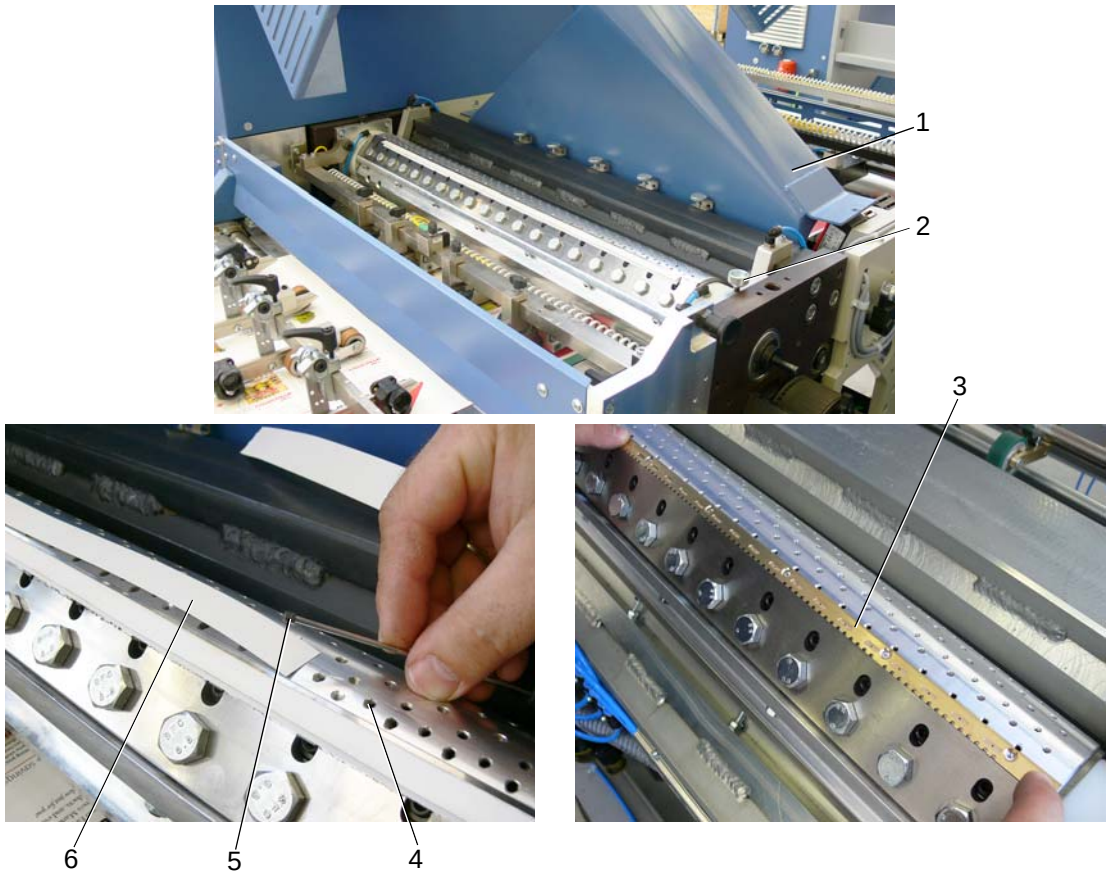
Here's how to set the format:

1) Go to the <Format setting> menu.
2) Press the <Number of sheets> input field and enter the required number of sheets in the numeric input menu.
3) Press the <Number of chip-outs> input field and enter the required number of chip-outs in the numeric input menu.
4) The corresponding number of sheets and chip-outs will then be displayed graphically.
5) Press the corresponding input fields and enter the required lengths.
6) Press the <Inching> button.

   The cutting cylinders carry out a reference run
7) Continue pressing the <Inching> button until 3 cutting cycles have been carried out. (Required control path until the correct cutting position has been reached).
8) Check the cut sheet and correct the cutting position as necessary.

✓ The format is set.

8.4.17 Set upper cutting cylinder for chip-out



1	Suction hood	4	Vacuum hole
2	Screw	5	Grub screw
3	Chip-out bar	6	Chip-out

Illustration 65: Adjusting the upper cutting cylinder

Here's how to adjust the upper cutting cylinder to the chip-out:

If you want to cut out a chip-out smaller than 7 mm, you have to mount the chip-out bar (3) with countersunk screws.

When removing/attaching the suction hood there is a danger of damage.
- When removing the suction hood, heed the electrical lines.
- Before attaching the suction hood, turn the knife blade downward.

CAUTION!

Cutting hazard.

The cutting edges of the knives can cause cut injuries.

- Never touch the cutting edges of the knives.

1) Cut a chip-out (6).
2) Remove the suction hood (1).
3) Place chip-out on the knife edge.
4) On the covered area, open every second vacuum hole (4) by loosening the locking pin (5).
5) Attach suction hood (1) to the upper cutting cylinder again.

✓ The chip-out can now be suctioned on the upper cutting cylinder and then be exhaust via the suction hood.

8.4.18 Angle of the cutting cylinder unit

CAUTION!

Operating the sheeter when it is cold.

Non-observance causes potentially serious damage to the cutting units.

- Observe a warm-up phase of one hour.
- The sheeter knives should only ever be adjusted when heated.
- Only operate the sheeter when it is heated.

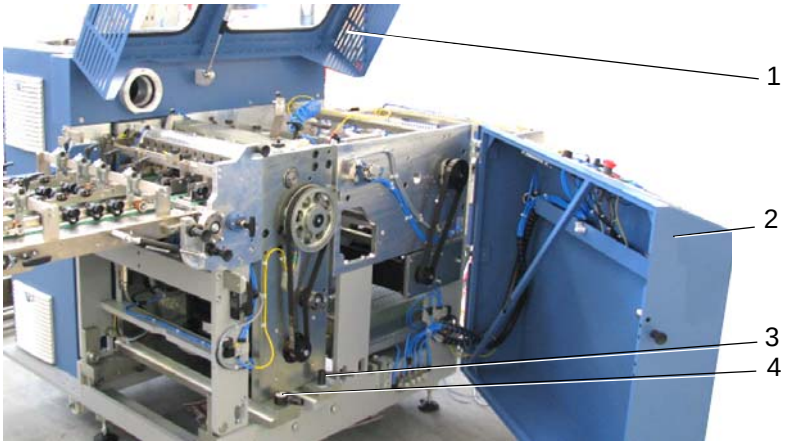
Here's how to adjust the angle of the cutting cylinder unit.

Prerequisites

These prerequisites must be fulfilled:

- The warm-up phase of one hour has been observed.
- The format length is adjusted.

Adjusting the angle



1 Protective hood with guard locking 2 Guard door with guard locking	3 Clamping lever 4 Eccentric

Illustration 66: Adjust angle of the cutting cylinder unit.

Here's how to set the angle of the cutting cylinder:

1) Check the perpendicularity of a cut sheet.
2) Open the protective hood (1) and guard door (2).
3) Loosen the clamping lever (3).
4) Using the eccentric (4), adjust the angle of the cutting cylinder unit.
5) Re-tighten the clamping lever (3).
6) Close the protective hood (1) and guard door (2).
7) Inch web through the machine.
8) Remove the 3rd sheet and check the perpendicularity again. If the perpendicularity is OK, continue with step 8. If the perpendicularity is not OK, repeat steps 2 - 8.

✓ The angle of the cutting cylinder unit is adjusted.

8.4.19 Adjusting the print mark control

Here's how to proceed to adjust the print mark control.

Prerequisites

These prerequisites must be fulfilled:

- The format is set.

Adjusting the print mark control

Here's how to adjust the print mark control:

1) Switch on the print mark control in the manual control menu.
2) Press the <Inching> button.

✓ The cutting cylinder performs a reference run and cuts on the print mark.

8.4.20 Adjusting the cutting position

Here's how to proceed to adjust the cutting position.

Prerequisites

These prerequisites must be fulfilled:

- The print mark control is adjusted.

Adjusting the cutting position

Here's how to adjust the cutting position:

▷ In the touchscreen underneath <Print mark offset> enter the value for the print mark offset directly.

Or

▷ Change the cutting position using "+" and "-" in the touchscreen under <Print mark offset> during production.

8.4.21 Adjusting the air for paper transport

Here's how to proceed to adjust the air for the paper transport.

The air adjustment serves to guide the chip-out and the sheet in the cutting area better.

Prerequisites

These prerequisites must be fulfilled:

- The format is set.
- The upper cutting cylinder is set.
- The air supply is switched on in the manual control menu.

Adjusting the air

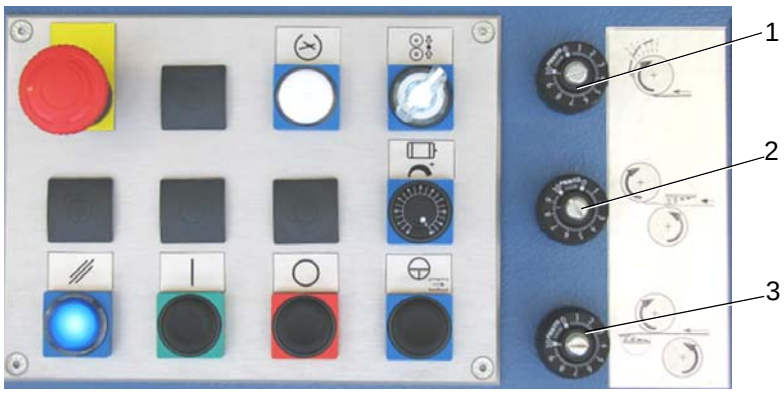


Illustration 67: Adjusting the air

Here's how to adjust the air:

Adjusting valve 1

With valve 1 (1), the air quantity can be set with which the chip-out is blown out of the cutting cylinder and conducted securely into the suction device. The adjustment depends on the chip-out size.

Adjusting valve 2

With valve 2 (2), the air quantity can be set with which the sheet is applied to the top cutting cylinder.
The adjustment depends on the paper quality.

Adjusting valve 3

With valve 3 (3) it is possible to adjust the air quantity with which the sheet is smoothed after the top cutting cylinder.
The adjustment depends on the paper quality.

8.5 Creating production readiness

Here's how to proceed to create production readiness.

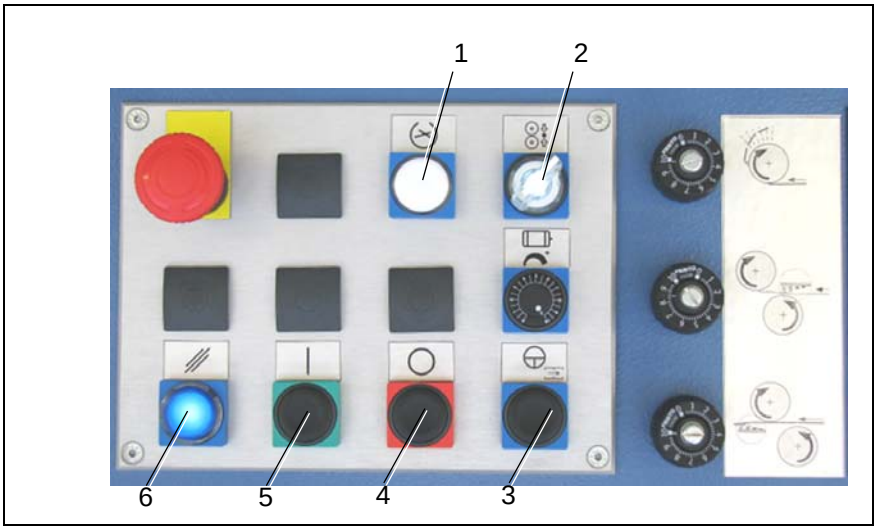


Illustration 68: Creating production readiness

Prerequisites These prerequisites must be fulfilled:

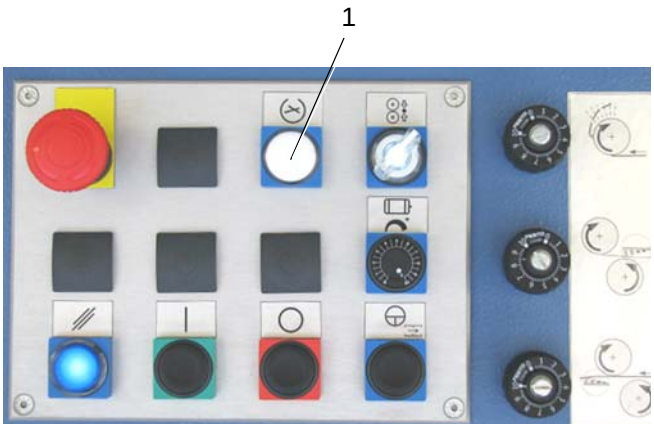
If you work with chip-out and/or longitudinal cut, you also have to switch on the suction device.

- The sheeter is supplied with power.
- The warm-up phase of one hour has been observed.
- The web has been fed in.
- The web is tensioned.
- The nip rollers are closed (2).
- The format settings have been carried out.
- The <Error> lamp (1) is not lit up.
- The <Reset EMERGENCY STOP> illuminated button (6) does not light up.

✓ The system is ready for production.
The sheeter can now be started by pressing the <Start> button (5).

8.6 Identification and handling of malfunctions

8.6.1 Error display



1 <Jam> light. Lights up when there is a fault.

Illustration 69: Error display

If there is an error in the machine, the <Jam> lamp lights up.

A corresponding error message is issued on the touchscreen and on the Siemens display.

8.6.2 Error messages

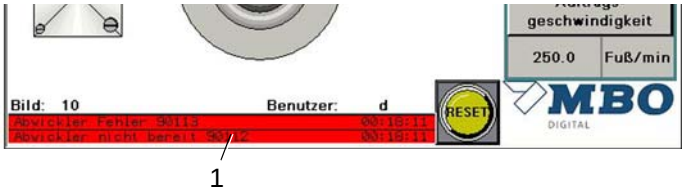


Illustration 70: Main menu

1 Error messages are displayed as black text on a red background.

8.6.3 Troubleshooting/Cause/Correction

Failure	Cause	Elimination
The selector switches and buttons are not responding.	No power.	• Switch on main switches for all connected modules. • Connect power cable and control line. • Check the fuses.
• EMERGENCY STOP cannot be reset. • The <Reset EMERGENCY STOP> illuminated button lights up.	EMERGENCY STOP circuit is still active.	• Unlock all EMERGENCY STOP palm buttons. • Press Reset EMERGENCY STOP, also on the touchscreen. • Check fuse. • Check EMERGENCY STOP module and downstream modules. • Check reactivation circuit.
<Print mark> sensor is not working.	• Print mark control switched off. • Print mark not learned • Sensor not taught. • Sensor is not correctly adjusted. • Incorrectly positioned. • Has no power.	• Switch on print mark control. • Learn print mark. • Teach the sensor. • Adjust sensor so that the laser point points to the print mark. • Check print mark distance. • Check the power supply/fuse.
Sensor <Web break>	• Web not present • Web torn. • Sensor is not adjusted. • Sensor incorrectly positioned. • Sensor has no power.	• Feed in the web. • Feed in the web • Set the sensor. • Positioning the sensor • Check the power supply/fuse.
Sensor <Paper jam>	• Sensor is not adjusted. • Sensor incorrectly positioned. • Sensor has no power.	• Set the sensor. • Positioning the sensor • Check the power supply/fuse.
Paper laterally offset.	• Unwinder positioned diagonally. • Sheeter positioned diagonally. • Webguide in unwinder not switched on. • Guide plates incorrectly positioned. • Web tension uneven. • Contact pressure of the nip rollers different or too low.	• Align unwinder correctly. • Align sheeter correctly. • Switch on webguide in the unwinder. • Position guide plates correctly. • Check web tension. • Check contact pressure of the nip rollers.

Table 28: Troubleshooting/Cause/Correction

Failure	Cause	Elimination
Format problems	• Incorrect format input • Print mark control not switched on. • Contact pressure of the nip rollers different or too low. • Gear factor incorrect.	• Enter correct format length. • Switch on print mark control. • Check contact pressure of the nip rollers. • Check gear factor.
Chip-out problems	• Lower knife not switched on. • Suction device not switched on. • Vacuum not switched on. • Air settings for paper transport not correctly set. • Chip-out settings incorrect. • Cut is diagonal. • Cut is not clean.	• Switch on lower knife. • Switch on suction device. • Switch on vacuum. • Correct air settings for paper transport. • Check chip-out settings. • Check angle setting. • Change knife.

Table 28: Troubleshooting/Cause/Correction

9 Maintenance

9.1 Introduction

For the maintenance of the machine, also observe:

- The safety instructions.
  See chapter “9.1.2 Safety instructions”.
- The protective devices.
  See chapter “4.5.8 Checking protective devices”.
- Qualification of maintenance personnel.
  See chapter “9.1.1 Qualification of personnel”.

9.1.1 Qualification of personnel

This table lists the necessary qualification of the personnel related to "Maintenance" of the machine.

.	Specially trained personnel	Instructed operating personnel	Instructed personnel with specialized training (mechanical/ electrical engineering)
Operational maintenance	O	X	O
Maintenance	X	-	X
Repair	-	-	X

Table 29: Qualification of personnel
Legend: X permitted, - not permitted

9.1.2 Safety instructions

DANGER!

Hazardous voltage.

Non-observance will result in serious injury or death.

- Only an electrically qualified person may perform work on the machine's electrical system.
- Follow the local occupational safety regulations and electrotechnical regulations.
- On the supply terminals and on the terminals of the main switch, there is hazardous voltage even when the main switch is switched off. (See wiring diagram)
- There is hazardous residual voltage on the connection terminals of the frequency inverter even when the main switch is switched off. (heed capacitor discharge time).

DANGER!

Dismantling, bridging or bypassing protective devices.

Non-observance will result in serious injury or death.

- No protective devices of the machine may be dismantled, bridged or bypassed.
- Using the check list for protective devices, check that all protective devices are on the machine.
- Report any audible / visible safety-relevant change of the machine to the person at your operation responsible for the system.

WARNING!

Improper maintenance.

Non-observance could result in serious injury or death.

- Maintenance work may be performed by trained and authorized personnel only.
- Follow the local occupational safety regulations and electrotechnical regulations.
- Heed the maintenance plan.

WARNING!

Crushing hazard during maintenance work.

Non-observance could result in serious injury or death.

Maintenance work must be carried out by one person only.

WARNING!

Operation without protective covers.

Non-observance could result in serious injury or death.

The protective covers protect against danger spots:

- Never operate the machine without protective covers.
- Note that after maintenance or repair work, all protective covers have to be reinstalled.

WARNING!

Rotating machine parts during maintenance and cleaning work.

Non-observance could result in serious injury or death.

- Maintenance and cleaning work must be carried out by one person only.
- Turn the main switch to the position <0>.
- Use a padlock to secure the main switch from unintentionally switching on again.
- Make absolutely sure that before the machine is switched back on, all persons are in the secured area.

CAUTION!

Wrong/poor maintenance tool.

Non-observance could result in injury or property damage.

- You should only use tools that are in perfect condition.
- Make sure that after adjustment or maintenance work, there are no tools left on or in the machine.

9.2 Service

WARNING!

Use of impermissible safety components.

Non-observance could result in serious injury or death.

- Only approved safety components may be used.
- Use only original parts.

9.2.1 Ordering spare and wear parts

You can obtain the spare and wear parts worldwide via the corresponding MBO agency near you.

For all questions relating to your machine, please also contact your MBO agency.

You can find the address on our home page: www.mbo-folder.com.

For the identification of the machine and the most important machine data, see the name plate on the machine.

1	CE marking	4	Year of manufacture
2	Type of machine	5	Name plate
3	Commission number		

Illustration 71: Name plate

Always provide this information for service requirements and procurement of spare parts:

- Commission number
- Type of machine

Please use only spare parts that are delivered and recommended by the manufacturer!

9.3 Operational maintenance

MAINTENANCE!

Rotating machine parts during operational maintenance.

Non-observance could result in serious injury or death.

Operational maintenance work:

- May be performed by trained and authorized personnel only.
- Must be carried out by one individual person.
- Turn the main switch to the position <0>.
- Use a padlock to secure the main switch from unintentionally switching on again.
- Make absolutely sure that before the machine is switched back on, all persons are in the secured area.

9.3.1 Checking protective devices

WARNING!

Incorrectly set safety switches.

Non-observance could result in serious injury or death.

- Make sure that the specifications for the respective gap are adhered to.
- If a gap is too large, it must be re-adjusted by MBO Service or authorized customer service.
- Never dismantle, bridge or bypass safety switches.

- All devices for shutting down the machine in an emergency and all interlocking moveable guards must be checked individually and separately from each other.
- If any protective devices malfunction, shut down the machine immediately and secure it against being switched on again.

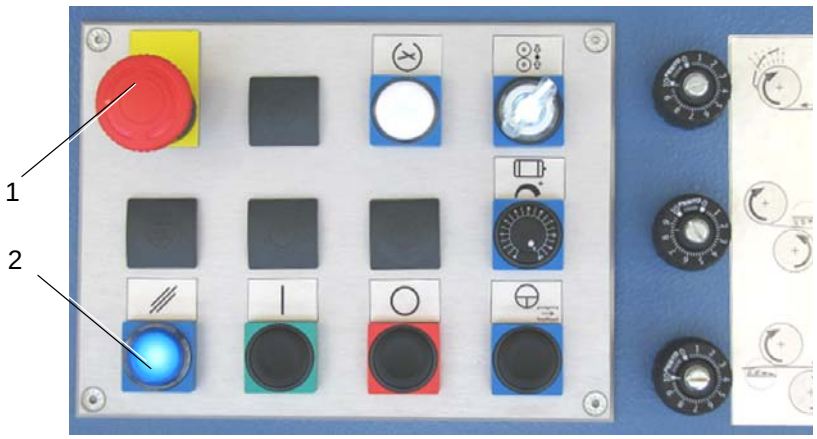
9.3.1.1 Checking the EMERGENCY STOP palm button

Here's how to proceed to check the EMERGENCY STOP palm button:

Prerequisites

These prerequisites must be fulfilled:

- The machine is in production.



1 EMERGENCY STOP palm button	2 <Reset EMERGENCY STOP> illuminated button

Illustration 72: EMERGENCY STOP palm button

To prevent immediate or potential hazards, the machine is equipped with an EMERGENCY STOP shut-off device.
After the <EMERGENCY STOP> palm button is pressed, all electrical drives are switched off.
EMERGENCY STOP does not disconnect the machine from the electrical supply.

Checking the EMERGENCY STOP palm button

Here's how to check the EMERGENCY STOP palm button:

1) Press the EMERGENCY STOP palm button so that it remains engaged and in an actuated state.
   The <Reset EMERGENCY STOP> illuminated button (2) lights up.
   Pressing the EMERGENCY STOP palm button must cause all machine functions to shut down.
2) Unlock the EMERGENCY STOP palm button with a turn to the right.
3) Activate the <Reset EMERGENCY STOP> illuminated button (2).
   The <Reset EMERGENCY STOP> illuminated button (2) goes out.

✓ EMERGENCY STOP palm button has been checked.

Before the machine can be restarted, all illuminated buttons <Reset EMERGENCY STOP> on the system must be activated in line with the system's EMERGENCY STOP concept.

9.3.1.2 Checking the protective hood and guard door

For technical safety reasons, the function of the protective hood and the guard door must be checked daily.

Checking the protective hood

Proceed as follows to check the protective hood.

These prerequisites must be fulfilled:

- The machine is ready for operation.

Here's how to check the protective hood:

1) Start the machine.
2) Raise the protective hood slightly on the handle.
   The protective hood can only be opened up to the locking position.
   The machine stops and the guard locking is released after a short delay.
3) Then fully open the protective hood.
4) Press the <Start> button.
   The machine may not start up.
5) Close the protective hood again.

✓ The protective hood is checked.

Checking the guard door

Proceed as follows to check the guard door.

These prerequisites must be fulfilled:

- The machine is ready for operation.
- The guard door is checked.

How to check the guard door:

1) Start the machine.
2) Try opening the guard door.
   The guard door is not permitted to be opened due to the guard locking.
3) Open the protective hood.
   See the Checking the protective hood section for the procedure.
4) Then open the guard door.
   It should now be possible to open the guard door.
5) Close the guard door.
6) Close the protective hood.

✓ The guard door is checked.

9.3.1.3 Check that all protective devices are present

Operation without protective devices.
Non-observance could result in serious injury or death.
The protective devices protect against danger spots.
- Operation of the machine without protective devices is forbidden.
- Make sure that all protective devices are re-attached after maintenance or maintenance work.

Proceed as follows to check the protective devices.

Prerequisites

These prerequisites must be fulfilled:
- The machine is ready for operation.

Checking protective devices

Here's how to check the protective devices:

▷ Check all covers and protective devices to make sure they are present and functional.

See chapter “4.5.8 Checking protective devices”.

✓ The protective devices are checked.

9.3.2 Cleaning of the machine

CAUTION!

Heavy contamination can impair the functioning of the machine.

Non-observance could result in property damage.

- Clean the machine after each job (at least once per week).
- The dust layer may never be more than 1 mm.
- Especially clean dirt (paper dust, printing powder, etc.) from moving parts.
- Do not use any chemically aggressive washing and cleansing agents!
  If unsuitable detergents or cleaning agents are used, they can attack lacquered surfaces.
- Never clean the machine using compressed air. (Bearing damage)

CAUTION!

Incorrect use of cleaning agents.

Non-observance could result in minor or moderate injury.

- Be sure to follow the manufacturer's safety instructions.
- Avoid any skin contact.
- Wear suitable safety gloves.
- Wear safety glasses.

CAUTION!

Used cleaning cloths.

Non-observance could result in injury or property damage.

- Observe fire hazards resulting from the inflammability of the cleansing agent.
- Dispose of the cleaning rags in an environmentally-friendly fashion.
- Inform yourself by asking the cleaning agent manufacturer about residual risks and about environmentally friendly disposal.

9.3.2.1 Recommendation of cleaning agents

Flat surfaces and cavities
Suction clean or sweep out.
(no compressed air since danger of bearing damage).

For deposits that adhere to finished surfaces
Solvent-free cleansing agent.

Shafts and rollers
MBO Binder GmbH & Co. KG recommends "Varn" cleansing agent with the designation: "VM 111 or VWM Wash".
The "Varn“ company delivers to the printing industry worldwide.
Therefore, it cannot be excluded that in certain other countries different designations are used.
Therefore, please use the respective order no. from the technical data sheets of the "Varn“ company.

Be sure to follow the manufacturer's safety instructions.

9.3.2.2 Cleaning the machine

Here's how to proceed to clean the machine.

Always release the web tension before switching off the main switch.
Otherwise the web may come unthreaded from the sheeter.

Prerequisites
These prerequisites must be fulfilled:

- Protective hood and guard door are open.
- Main switch is switched off and secured.
- Clean the machine at least 1 x per week.
- The dust layer must never exceed 1 mm (0.039 in.).
- Especially clean dirt (paper dust, printing powder, etc.) from moving parts.

Cleaning the machine

Here's how to clean the machine:

▷ Suck up the dirt.
▷ Use a brush for hard-to-reach areas.
▷ Wipe down the surfaces using a dry cloth.
▷ Do not use any chemically aggressive washing and cleansing agents!

✓ The machine is clean.

- Clean the machine at least once per week.
- The dust layer must never exceed 1 mm (0.039 in.).
- Never clean the machine using compressed air. (bearing damage)
- Heavy contamination can impair the functioning of the machine.

9.3.3 Cleaning the optical sensors

The optical elements of the print mark sensor are blown out with compressed air during operation.

- The optical sensors of the machine get dirty during production due to paper dust and printing powder.
- They should therefore be cleaned after each job (daily).

Here's how to proceed to clean the optical sensors.

Prerequisites

These prerequisites must be fulfilled:

- Main switch is switched off and secured.
- EMERGENCY STOP palm button is pressed.

Cleaning the optical sensors

Here's how to clean the optical sensors:

▷ Clean the optical elements of the sensors with a dry, lint-free cloth.

✓ Optical sensors are clean.

9.3.4 Cleaning/replacing the filter of the vacuum pump VT 4.25

Manufacturer	Designation	Type MBO part number	Use
Company Becker	Vacuum pump	VT 4.25 0104261	Retaining of the cutted chip-out at the upper cutting cylinder.

- The filter of the vacuum pump VT 4.25 get dirty during production due to paper dust and printing powder.
- Thus have a significant negative effect on generating the vacuum.
- The filter must therefore be cleaned monthly.
- If the filter cannot be cleaned any more, it must be replaced.
- Never operate the vacuum pump without a filter.
- For cleaning and replacing the filter read and understand the operating manual from Becker.
  Operating manual vacuum pump VT 4.25
  (oi_vt 4.25_XXXXXX.pdf

Prerequisites These prerequisites must be fulfilled:

- Main switch is switched off and secured against accidently switching on again.
- The fan wheel is stationary.

Cleaning intervals specified by MBO:

- Every 40 operating hours (weekly).
  Clean the filter and blow out the filter case.
- Every 1000 operating hours (semiannual).
  Replace the filter and blow out the filter case.

9.4 Maintenance

WARNING!

Machine parts are under compressed air.

Non-observance could result in serious injury or death.

Before maintenance work, ensure that:

- The compressed air supply is switched off.
- The system is fully vented.

9.4.1 Checking the pneumatic lines

WARNING!

Defective pneumatic lines.

Non-observance could result in serious injury or death.

Check the pneumatic lines monthly for damage.

Here's how to check the pneumatic lines:

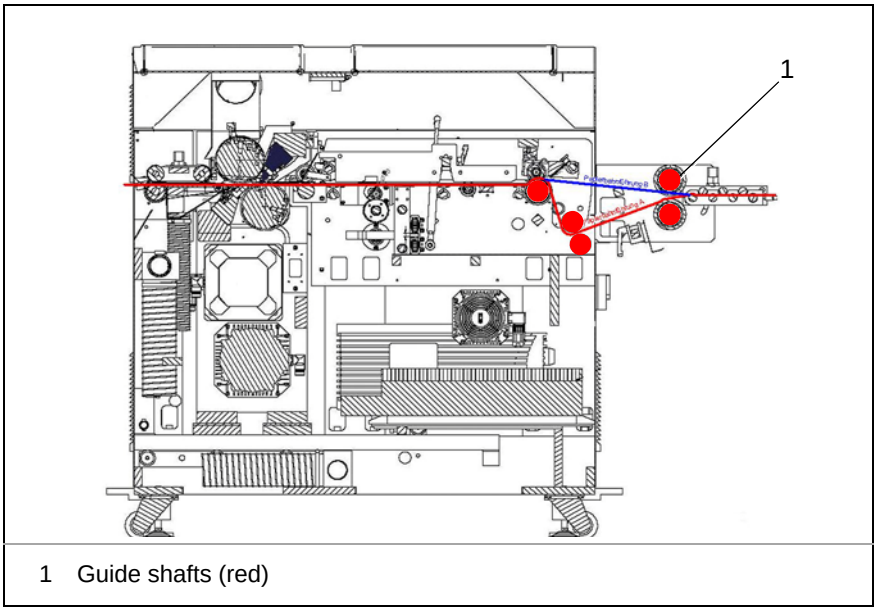
1) Check all pneumatic lines monthly for damage (visual inspection).
2) It is not permitted to operate machines with damaged pneumatic lines.
3) Damaged pneumatic lines must be replaced immediately by trained and authorized personnel.

✓ The pneumatic lines are checked.

Compressed air generation costs money!
For this reason, please report every leak to the person responsible for the plant.

9.4.2 Checking the guide shaft bearings

- Check the guide shaft bearings monthly for running properties and condition.
- If the shafts are stiff, the bearings need to be replaced.



1 Guide shafts (red)

Illustration 73: Check the guide shafts

Checking the bearings

Here's how to check the bearings:

1) Check the guide shaft bearings monthly for running properties and condition.
2) Turn the guide shafts in question by hand.
3) If the shafts are stiff or rough, the bearings need to be replaced.

✓ The bearings are checked.

Only have the bearings replaced by MBO Service or by an authorized customer service agent.

9.4.3 Changing the knives of the longitudinal cutting unit

WARNING!

Cutting hazard!

The knives can cause cut injuries.

- Never touch the blade of the knives.
- Be very careful when changing the knives.

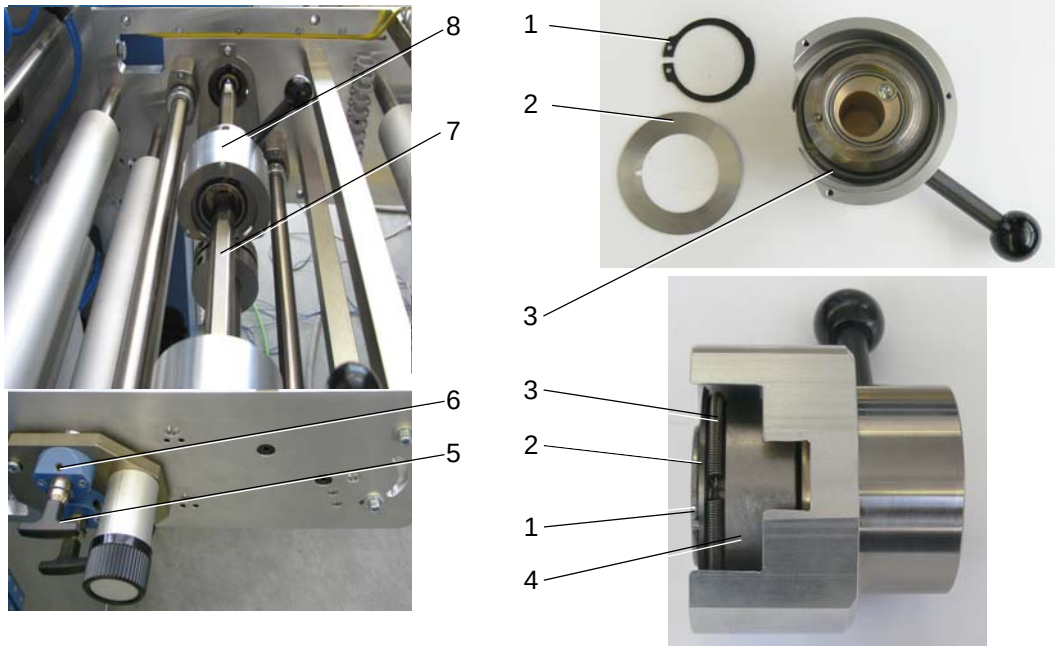
Always change the knives and counter knives in pairs.

9.4.3.1 Changing knives

Here's how to proceed to change the knives.

Prerequisites These prerequisites must be fulfilled:

- Main switch is switched off and secured.
- The electrotechnical regulations are heeded.



1 Clamp ring	5 Plug bearing
2 Knife	6 Pin
3 Spring	7 Slitter shaft
4 Knife holder	8 Complete knife

Illustration 74: Changing the knives of the longitudinal cutting unit

Here's how to change the knife:

1) Loosen the pin (6).
2) Remove the plug bearing (5).
3) Carefully remove the slitter shaft (7).
4) Pull the complete knife (8) away from the slitter shaft (7).
5) Remove the clamp ring (1).
6) Remove the knife (2).
7) Slide the spring (3) down on the knife holder (4).
8) Insert new knife (2).
9) Insert the clamp ring (1) again.
10) Slide the spring (3) upward again.
11) Slide the complete knife (8) back onto the slitter shaft (7).
12) Insert the slitter shaft (7) again.
13) Press the plug bearing (5) back in.
14) Tighten the pin (6) again.

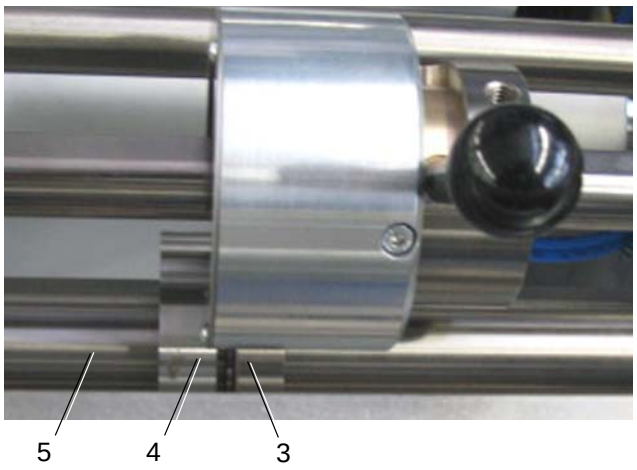
✓ The knives are changed.

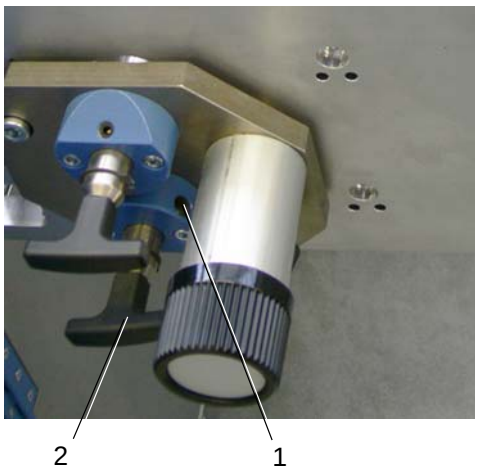
9.4.3.2 Changing the counter knife

Here's how to proceed to change the counter knives.

Prerequisites These prerequisites must be fulfilled:

- Main switch is switched off and secured.
- The electrotechnical regulations are heeded.





1 Pin	4 Spring stretching support
2 Plug bearing	5 Slitter shaft
3 Counter knife	

Illustration 75: Change the counter knives of the longitudinal cutting unit.

Here's how to change the counter knives:

1) Loosen the pin (1).
2) Remove the plug bearing (2).
3) Carefully remove the slitter shaft (5).
4) Release the spring stretching support (4) and pull down away from the slitter shaft (5).
5) Release the counter knife (3) down from the slitter shaft (5).
6) Slide and fix the new counter knife (3) on the slitter shaft (5).
7) Slide and fix the spring stretching support (4) on the slitter shaft (5).
8) Insert the slitter shaft (5) again.
9) Press the plug bearing (2) back in.
10) Tighten the pin (1) again.

✓ The counter knife is changed.

9.4.4 Changing the knives of the cutting cylinder unit

CAUTION!

Cutting hazard!

The blades of the knives can cause cut injuries.

- Never touch the blade of the knives.
- Be very careful when changing the knives.

- Always change the knives and counter knives in pairs.
- The knives and counter knives may not touch each other. Otherwise there is a danger of damaging the cutting edges.
- When lifting and lowering the suction hood, make sure not to damage anything.
- The knives may only be changed by specially trained personnel.

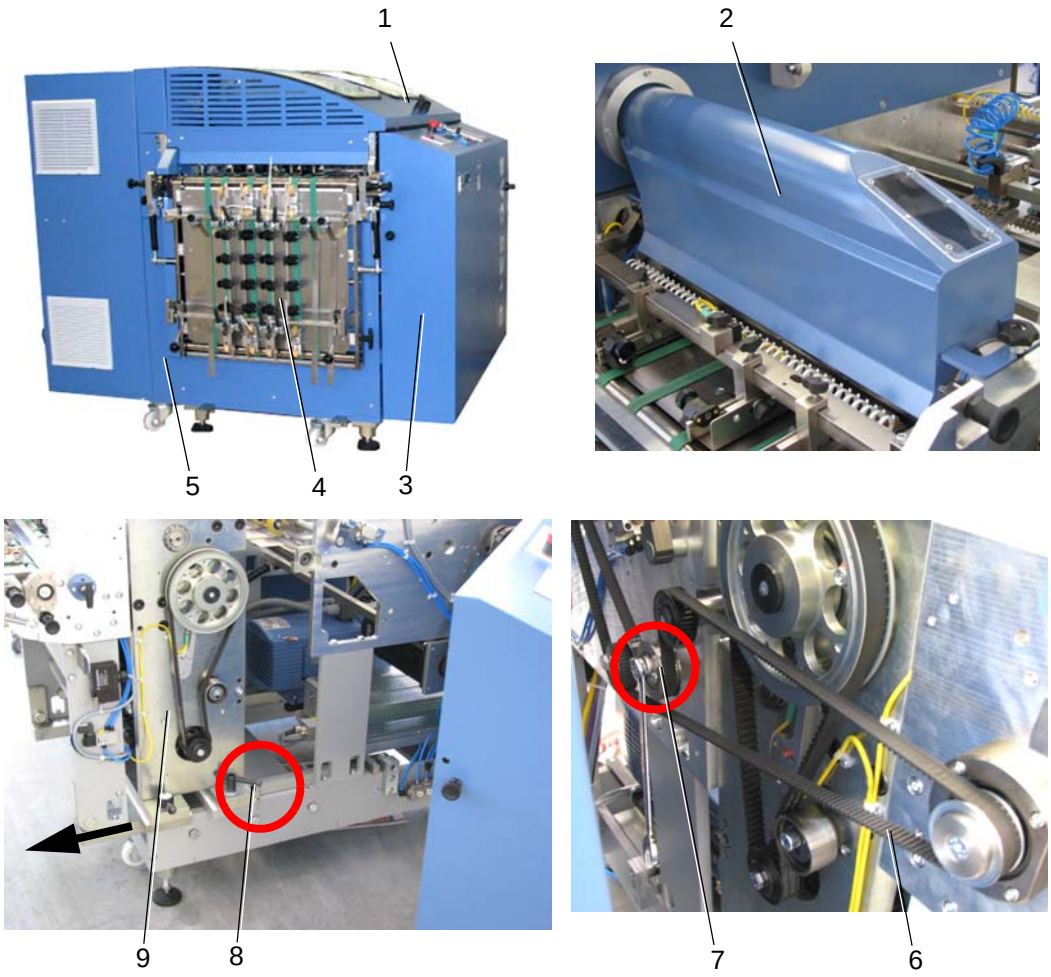
If you turn the knife and counter knife by 180°, you can use these twice.

9.4.4.1 Sliding knife block into service position

Here's how to proceed to slide the knife block.

Prerequisites These prerequisites must be fulfilled:

- Protective hood and guard door are open.
- Main switch is switched off and secured.
- The electrotechnical regulations are heeded.



1 Protective hood with guard locking	5 Protective plate
2 Suction hood	6 Drive belt
3 Guard door with guard locking	7 Pulley
4 Conveyor table	8 Locking screw
	9 Knife block

Illustration 76: Sliding the knife block

Here's how to slide the knife block:

1) Open the protective hood (1).
2) Remove the suction hood (2).
3) Remove the guard plate (5).
4) Fold the conveyor table (4) downward.
5) Unfasten the pulley (7) and unthread the drive belt (6).
6) Loosen the locking screw (8).
7) Lift the locking screw (8) and pull out the knife block (9) in the direction the web is running.

✓ The knives are now accessible and can be changed.

9.4.4.2 Changing the counter knife

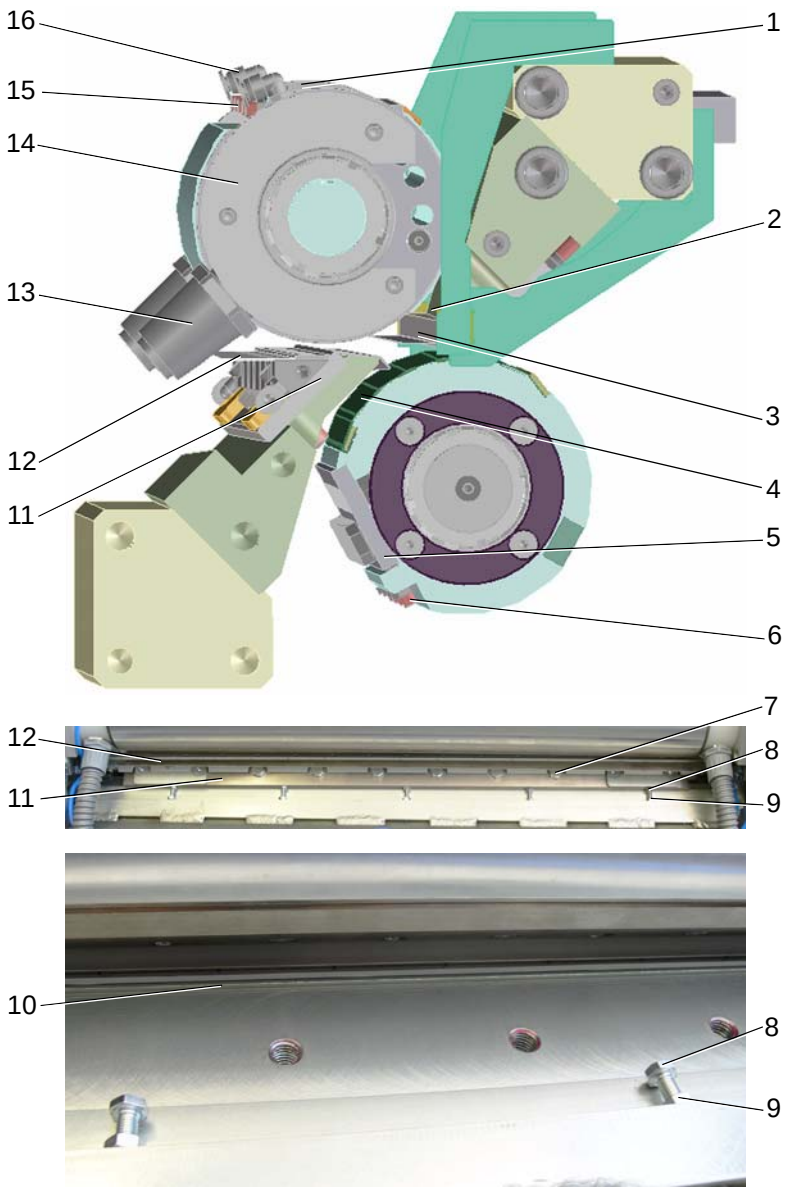
Secure the fastening screws of the counter knife with Vibrate VC3.

Here's how to proceed to change the counter-knife.

Prerequisites These prerequisites must be fulfilled:

- Main switch is switched off and secured.
- The electrotechnical regulations are heeded.
- Knife block is in service position.

Changing the counter knives



1 Knife	9 Counterholder screw
2 Counter knife	10 Stop edge
3 Venturi bar	11 Counter knife
4 Nylon mat	12 Venturi bar
5 Knife	13 PG union joint
6 Positioning screw	14 Plastic ring
7 Screws	15 Positioning screw
8 Positioning screw	16 Compressed air supply

Illustration 77: Changing the counter-knife.

Here's how to change the counter knives:

1) Remove venturi bar (3 or 12).
2) Loosen compressed air hoses.
3) Loosen counter holder screws (9) and turn positioning screws (8) away from the counter knife.
4) Loosen the fastening screws (7) of the counter knife (2 or 11).
5) Remove the counter knife (2 or 11).
6) Clean stop edge (10) and check for damage.
7) Insert new counter knife until it lies against the stop edge (10).
8) Apply fastening screws (7) gently.
9) Apply positioning screws (8) gently.
10) Tighten fastening screws (7).
11) Counter the positioning screws (8) with the counter holder screws (9).
12) Install the venturi bar (3 or 12).
13) Reconnect the compressed air hoses.

✓ The counter knife is changed.

9.4.4.3 Changing knives

Under no circumstances should you turn the cutting cylinder while changing knives; otherwise the swivel screws (11) and small metal plates (10) will fall down.

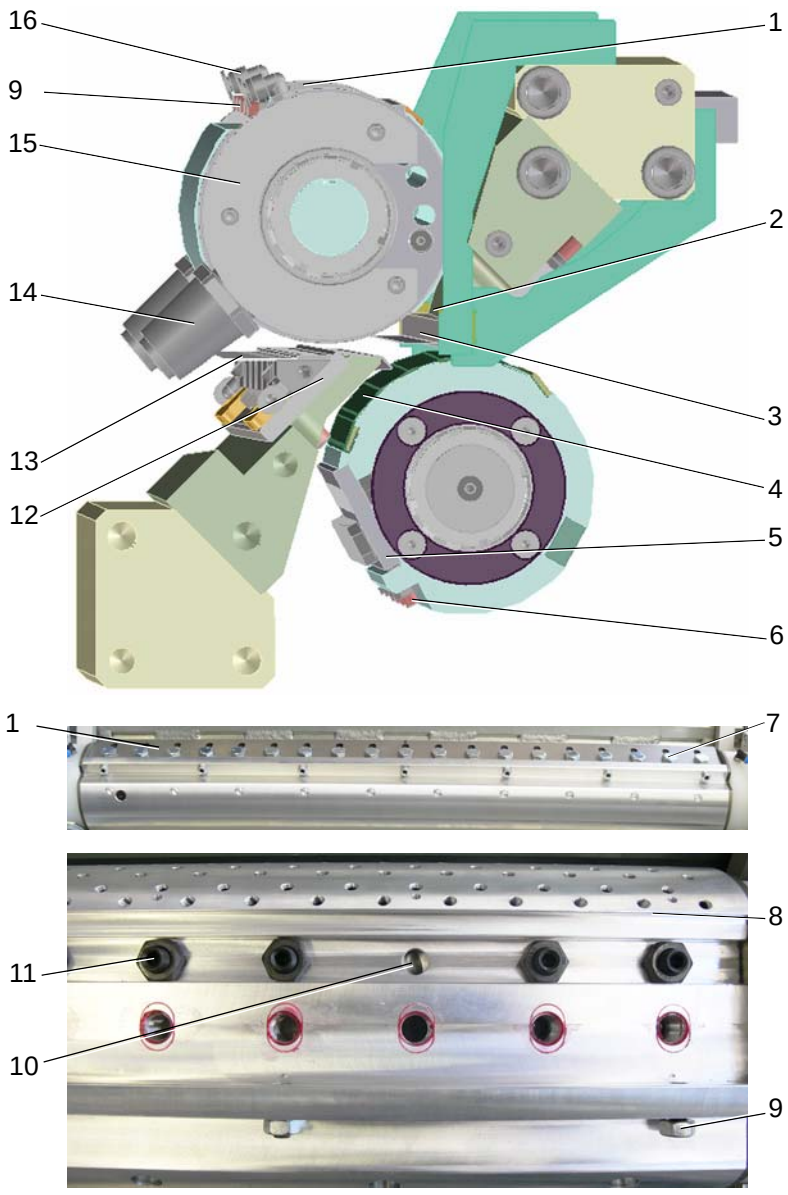
Here's how to proceed to change the knife.

Prerequisites

These prerequisites must be fulfilled:

- Main switch is switched off and secured.
- The electrotechnical regulations are heeded.
- Knife block is slid.

Changing knives



1 Knife	9 Positioning screw
2 Counter knife	10 Small metal plates
3 Venturi bar	11 Swivel screw
4 Nylon mat	12 Counter knife
5 Knife	13 Venturi bar
6 Positioning screw	14 PG union joint
7 Screw	15 Plastic ring
8 Stop edge	16 Compressed air supply

Illustration 78: Change knife.

If when adjusting the knife to the counter knife a swivel screw is difficult to turn, you must loosen the fastening screw in question and tighten it again with 10 Nm.

Here's how to change the knife:

1) Loosen the positioning screws (6 or 9).
2) Loosen the fastening screws (7).
3) Remove the knife (1).
4) Turn back the swivel screws (11).
   The nut must life freely in the groove.
5) Clean and check the stop edge (8).
6) Insert new knife.
7) Tighten positioning screws (6 or 9) slightly.
8) Tighten fastening screws (7) with 10 Nm.
9) Counter the positioning screws (6 or 9).

✓ The knife is changed.

10) Switch on the machine and wait until the operating temperature has been reached.
11) Adjust the knife (1) with the swivel screws (11) to the counter knife (2 or 12).
12) Insert 300 g sheet across the entire breadth of the cutting cylinder.
13) Turn cutting cylinder by hand in the web direction, thus cutting the sheet.
14) In the places where the knife does not cut cleanly through the paper, lift the knife from the cutting cylinder with the swivel screws.
15) Then cut the sheet again.
16) Repeat adjustment until the paper is cut cleanly across its entire width.
17) Repeat the adjustment with 80 g sheet and then with a 35 g sheet.

✓ The knife is changed and adjusted.

9.4.5 Changing the plastic ring

Here's how to proceed to change the plastic ring.

During removal and installation, make sure that you do not damage the temperature sensor (4) or its cable.

Prerequisites

These prerequisites must be fulfilled:

- Main switch is switched off and secured.
- The electrotechnical regulations are heeded.

Changing the plastic ring

1 Screw	4 Temperature sensor
2 PG union joint	5 Compressed air connection
3 Plastic ring	

Illustration 79: Change the plastic ring

Here's how to change the plastic ring:

1) Loosen the fastening screws (1).
2) Loosen the compressed air connections (5).
3) Loosen the PG union joint (2).
4) Remove the plastic ring (3) from the slitter shaft.
5) Push the new plastic ring on the slitter shaft.
6) Reattach the PG union joint (2).
7) Reconnect the compressed air connections (5).
8) Tighten the fastening screws (1).

✓ The plastic ring is changed.

9.4.6 Changing the nylon mat

Here's how to proceed to change the nylon mat.

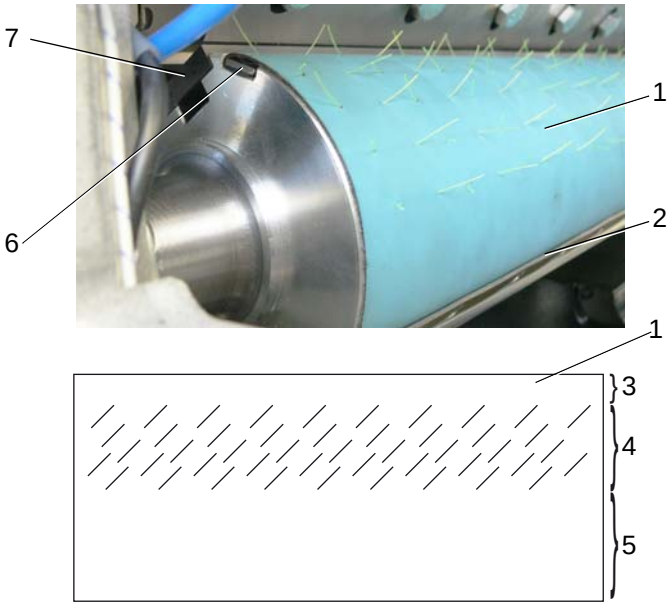
The nylon mat is fastened to the shaft with double-sided adhesive tape.

Prerequisites

These prerequisites must be fulfilled:

- Main switch is switched off and secured.
- The electrotechnical regulations are heeded.
- The knife block is in the service position.

Changing the nylon mat



1 Nylon mat	5 Area without "threads"
2 Clamping bar	6 Wrapper bar
3 Wrapper	7 Knife
4 Area with "threads"	

Illustration 80: Change the nylon mat.

Here's how to change the nylon mat:

1) Loosen the clamping bar (2).
2) Loosen the nylon mat (1) from the shaft.
3) Loosen the wrapper bar (6).
4) Clean the shaft.
5) Bear the wrapper (3) around the wrapper bar (6) and attach to the knife (7).
6) Glue nylon mat (1) to the shaft.
7) Fasten clamping bar (2).

✓ The nylon mat is changed.

9.4.7 Checking the vacuum pump VT 4.25

Manufacturer	Designation	Type MBO part number	Use
Company Becker	Vacuum pump	VT 4.25 0104261	Retaining of the cutted chip-out at the upper cutting cylinder.

- The carbon vanes of the vacuum pump are wearing during production.
- Therefore the length of the carbon vanes must be checked every 3000 operating hours.
- Does the length of the carbon vanes come below the prescribed value of A_{MIN} the carbon vanes must be replaced.
- Before checking and replacing the carbon vanes read and understand the operating manual from Becker.
  Operating manual vacuum pump VT 4.40
  (oi_vt_4.40_01.2013.pdf

Prerequisites These prerequisites must be fulfilled:

- Main switch is switched off and secured against accidently switching on again.
- The fan wheel is stationary.

Maintenance intervals specified by Becker:

Every 3000 operating hours (every 1.5 operating years).

▷ Check the length of the carbon vanes.
▷ Does the length of the carbon vanes come below the prescribed value of A_{MIN} the carbon vanes must be replaced.
✓ The carbon vanes are checked.

9.4.8 Checking the fan in the control cabinet

- The filter mats get dirty during production due to paper dust and printing powder.
- Contaminated filter mats have a significant negative effect on the control cabinet cooling.
- The fans must therefore be checked monthly.
- If the filter mat cannot be cleaned any more, it must be replaced.
- Never operate the fan without a filter mat.
- Read and understand the operating manual for the filter fan from Rittal.

WARNING!

Risk of fire!

Non-observance could result in serious personal injury or property damage.

- Do not use any flammable liquids for cleaning.

Proceed as follows to check the fan.

Prerequisites

These prerequisites must be fulfilled:

- The main switch is switched off and secured against accidental restart.
- The fan wheel is still.

Opening the filter housing

Here's how to open the filter housing:

▷ Pull the function symbol in the louvre grille upwards with a finger.
The louvre grille will open up.

✓ The filter housing is open.

Cleaning the fan

Here's how to clean the fan:

1) Remove the filter mat.
2) Clean the filter mat using a vacuum cleaner.
   If the filter mat cannot be cleaned any more, it must be replaced.
3) Clean the louvre grille using a brush and vacuum cleaner.
4) If the fan become noisy, blow out the fan with compressed air from inside outwards.
5) Place the cleaned or a new filter mat into the filter housing.

✓ The fan is cleaned.

Compressed side of the filter mat pointing towards the fan wheel.

Closing the filter housing

Here's how to close the filter housing:

▷ Fold the louvre grille back onto the filter housing until it clicks into place.

✓ The filter housing is closed.

9.5 Maintenance schedule

Incorrect maintenance intervals during multi-shift operation.
Non-observance could result in property damage.
All specified maintenance intervals are designed for single-shift operation. For multi-shift operation, calculate the specified intervals accordingly.

	Chapter No.:	Step	Interval	Date	Signature
Operational maintenance	7.6	“Inspection after initial operation”	After 20 operating hours		
	9.3.1	“Checking protective devices”	Daily		
	9.3.2	“Cleaning of the machine”	Weekly		
	9.3.3	“Cleaning the optical sensors”	Daily		
	9.3.4	“Cleaning/replacing the filter of the vacuum pump VT 4.25”	Weekly		
Maintenance	9.4.1	“Checking the pneumatic lines”	Monthly		
	9.4.2	“Checking the guide shaft bearings”	Monthly		
	9.4.3	“Changing the knives of the longitudinal cutting unit”	In case of wear		
	9.4.4	“Changing the knives of the cutting cylinder unit”	In case of wear		
	9.4.5	“Changing the plastic ring”	In case of wear		
	9.4.6	“Changing the nylon mat”	In case of wear		
	9.4.7	“Checking the vacuum pump VT 4.25”	Every 3000 operating hours		
	9.4.8	“Checking the fan in the control cabinet”	Monthly		

Table 30: Maintenance schedule

MBO recommends attaching a copy of this maintenance schedule to the machine.

9.6 Repair

WARNING!

Improper repair.

Non-observance could result in serious injury or death.

- Repair work may only be performed by trained and authorized specialized personnel.
- Heed the local occupational safety regulations.
- Carry out a function test after the repair.

Only have repair work performed by MBO Service or by an authorized customer service agent.

10 Decommissioning, storage

10.1 Introduction

10.1.1 Qualification of personnel

This table lists the necessary qualification of the personnel related to "Decommissioning and storage" of the machine.

	Specially trained personnel	Instructed operating personnel	Instructed personnel with specialized training (mechanical/ electrical engineering)
Decommissioning	-	-	X
Storage	X	-	-
Putting the machine back into operation	-	-	X

Table 31: Qualification of personnel; Decommissioning, storage
Key: X permitted, - not permitted

10.1.2 Safety instructions

CAUTION!
Incorrect storage.
Non-observance could result in property damage.
Observe the corresponding storage conditions.

10.2 Decommissioning

10.2.1 Temporary shutdown

Here's how to shut the machine down temporarily.

Prerequisites These prerequisites must be fulfilled:

- Main switch is switched off.
- Compressed air supply is cut off.

Shutting down the machine

Here's how to shut down the machine:

▷ Remove products, tools from the machine.

▷ Clean and maintain machine.

See Chapter “9 Maintenance”.

✓ The machine is temporarily shut down

After a temporary shutdown, the machine must be commissioned again. See chapter “7 Set-up, commissioning”

10.2.2 Final decommissioning

Here's how to shut the machine down permanently.

Prerequisites

These prerequisites must be fulfilled:

- Main switch is switched off.
- Electrical supply is disconnected.
- Compressed air supply is cut off.

Shutting down the machine permanently

Here's how to shut down the machine permanently:

▷ Remove products, tools from the machine.

▷ Dismantle the machine by following the installation steps in the opposite sequence.

▷ For transport, observe the instructions in Chapter “6 Transport, interim storage”.

✓ The machine is permanently shut down.

10.3 Storage

Here's how to proceed to store the machine.

Prerequisites

These prerequisites must be fulfilled:

- Machine is shut down.

Storing the machine

Here's how to store the machine:

Check the premises with respect to the temperature and humidity.

See chapter “3.2.8 Ambient conditions”.

The higher the humidity, the greater the danger of corrosion.

▷ For long-term storage, measures for corrosion protection must be taken.

▷ Observe the specifications regarding the weight and size of the machine when selecting the premises.

See chapter “3.2 Technical data”

▷ Use a suitable fork lift for transport.

See chapter “3.2.3 Shipping and transport data”.

▷ Cover the machine with foil.

✓ The machine is stored.

11 Disposal

11.1 Introduction

11.1.1 Qualification of personnel

This table lists the necessary qualification of the personnel related to "Disposal" of the machine.

	Specially trained personnel	Instructed operating personnel	Instructed personnel with specialized training (mechanical/ electrical engineering)
Disposal	X	-	-

Table 32: Qualification of personnel; Disposal
Legend: X permitted, - not permitted

11.1.2 Safety instructions

CAUTION!

Improper disposal.

Non-observance could result in environmental damage.

Comply with the corresponding national and regional regulations, laws and directives.

11.2 Disposal/recycling

The environmentally compatible and professional disassembly and disposal of the machine is the responsibility of the owner/operator.

EC countries

- Comply with the corresponding European directives.
- Comply with the corresponding national and regional laws and regulations.

Non-EU countries:

- Comply with the corresponding national and regional regulations, laws and directives.

Here's how to proceed to dispose of/recycle the machine.

Prerequisites

These prerequisites must be fulfilled:

- Decommission the machine prior to disposal.
  See chapter “10.2 Decommissioning”.
- Heed transport instructions.
  See chapter “6 Transport, interim storage”.

Disposing of/ recycling the machine

Here's how to dispose of/recycle the machine:

▷ Separate machine parts and electrical components by type and dispose of them properly.

✓ The machine is disposed of.

All parts, auxiliary materials, and operating materials of the machine:

- Separate by type
- Dispose of in accordance with local regulations, laws, and directives.

If you have any further questions regarding disposal, please contact the manufacturer!

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