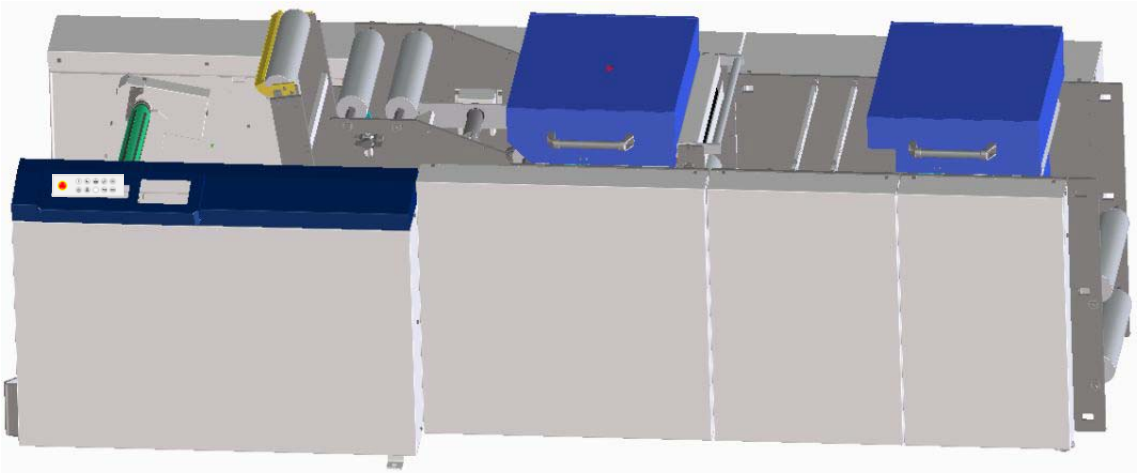
Rewinder

Translation of the original operating manual



RW500

Keep for future reference!

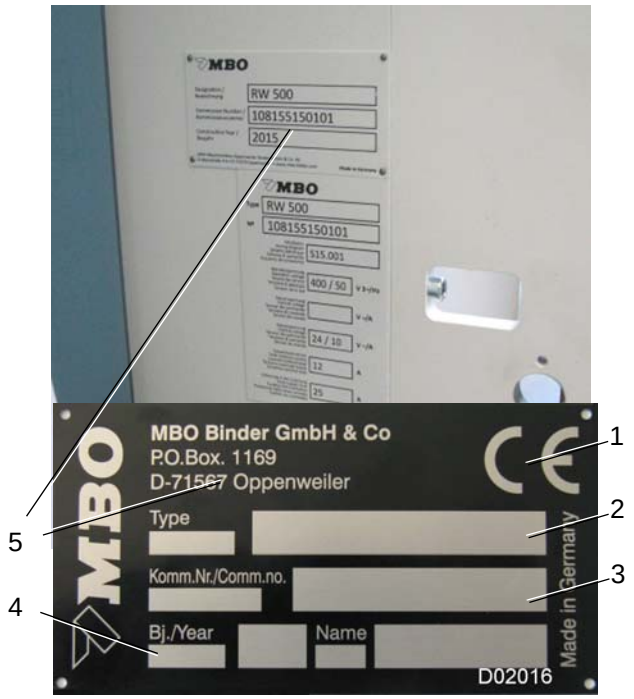
Type of machine:	Rewinder		
Configuration:	RW500		
Type of document:	Translation of the original operating manual		
Version:	V1.2	**Author:**	Wolfgang Matzner
Status as of:	8/20/2015	**Machine no.:**	
Language:	US English	**File name:**	BA_RW500_V1.2_usen
Manufacturer:	MBO Maschinenbau Oppenweiler Binder 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	Rewinder
Type	RW500
Commissioning no.	

complies with the provisions of the following EC directives:

Machinery Directive	2006/42/EC
EMC Directive	2004/108/EC

Harmonized standards applied:

EN ISO 12100:2010

EN 1010-1:2004+A1:2010

EN 1010-4:2004+A1:2009

EN ISO 13849-1:2008

EN 60204-1/2007

Authorized representative for compiling the technical file:

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Oppenweiler, 8/20/2015

_____

Frank Eckert - Managing Director

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1 About this manual

Everybody who will transport, install, connect, adjust, 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

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	• Operator • Operating personnel • Maintenance personnel • Service technicians
1	About this manual	Important notes about this operating manual	• 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.	• Operator • Operating personnel • Maintenance personnel • Service technicians
3	Product description and product data	• Important notices about the product • Technical data	• Operator • Operating personnel • Maintenance personnel • Service technicians
4	Structure and Function.	Description of: • Structure and function • Protective devices	• Operator • 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	Shutdown, storage and putting the machine back into operation	Details for the: • Decommissioning • Storage • Recommissioning	• Operator • Operating personnel • Maintenance personnel • Service technicians
11	Disposal	Details for the environmentally friendly disposal	• 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 crushing of body parts.** You will see this warning triangle next to activities during which there is a hazard of crushing, possibly with deadly consequences.
	**Warning against rotating shafts.** 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 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 against rotating shafts.** You will see this warning triangle next to activities during which there is an entanglement hazard.
	**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.

Table 7: Warning sign

Depiction	Meaning
	**Warning of stumbling points.** You will see this warning-triangle next to activities during which there is a tripping hazard, possibly with deadly consequences.
	**Warning of laser beam.** You will see this warning sign in front of activities during which there is a risk of eye injury due to laser beam.
	**Warning of cutting hazard.** You will see this warning sign in front of activities during which there is a cutting hazard due to the moving web.

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

1.4.3.3 Marking of danger spots

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

Depiction	Meaning
	**Heed danger spot or hindrance.** This 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 only intended for rewinding easily tearing webs from a roll.

  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.

  The specifications relative to format and grammage in the "Technical data" chapter must be complied with.
- Processing paper grades and sizes outside the specifications in the "Technical data" chapter.
- The operation of the machine by several people.
- 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.
- Climbing on panel covers or frames on the machine.
- Securing or suspending a person on the movable paper guide (e.g. dancer arm, roll support arm).

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 wearing 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,
- Is 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 safety devices and 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.
- Basic safety instructions and special safety messages in this operating manual.
- Operating manual of the machinery.
- 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.
- 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.
- Disconnected protective conductor connections.
- Dismounted protective devices.
- Trip hazards due to cables and hoses lying around.

2.5.3 Adjustment and operation

- Dismantling, bridging or bypassing protective devices.
- Operation without protective devices.
- Overloading of the roll lift.
- Crushing hazard when loading and unloading the paper roll
- Rotating machine parts.
- Rotating machine parts in setup mode.
- Drawn-in hazard between paper roll and floor.
- Crushing hazard when lowering the pressure arm.

- Crushing and drawn-in hazard on the pressure shaft of the pressure arm.
- Cutting hazard due to quickly-running, open web.
- Web break.
- Trip hazards due to cables and hoses lying around.
- Laser sensor class 2.
- Crushing hazard on the paper guidance.
- Crushing hazard from dancer system.
- Crushing hazard when changing paper rolls.
- Risk of burning on hot braking resistors.

2.5.4 Maintenance

Operational maintenance:

- Crushing and drawn-in hazards due to rotating machine parts.
- Heavy contamination.
- Improperly carried out maintenance.
- Unsuitable cleaning agents.
- Incorrect use of cleaning agents.
- Used cleaning cloths.
- Use of compressed air.
- Defective pneumatic lines.
- Trip hazards due to cables and hoses lying around.
- Incorrect maintenance intervals during multi-shift operation.

Maintenance:

- Hazardous voltage.
- Dismantling, bridging or bypassing safety and protective devices.
- Operation without protective devices.
- Crushing and drawn-in hazards due to rotating machine parts.
- Unsuitable tool.
- Improper maintenance.
- Use of non-approved safety components.
- Trip hazards due to cables and hoses lying around.
- Incorrect maintenance intervals during multi-shift operation.

Repair:

- Improper maintenance.

2.5.5 Decommissioning, storage

- Incorrect storage.

2.5.6 Disposal

- Improper disposal.

2.6 Product-specific hazards

2.6.1 Crushing hazard when handling paper rolls

This is how to avoid crushing injuries.

▷ Observe the operator directive from the operator.
▷ Wear safety shoes.
▷ Secure the paper rolls against rolling away.
▷ Use suitable and approved transport equipment.

✓ Crushing injuries are avoided

2.6.2 Cutting hazard due to fast-moving webs

This is how to avoid cutting injuries:

▷ Observe the operator directive from the operator.
▷ Never reach into the web while the machine is running.
▷ When feeding in the web:
  - Cut web in a V-shape.
  - Pull the web through the machine by hand.
  - Do not use inching mode when doing this.

✓ Cutting injuries will be avoided.

2.7 Additional hazards

2.7.1 Cutting hazard due to fast-moving webs in a machine combination

This is how to avoid cutting injuries:

▷ Observe the operator directive from the operator.
▷ Secure the paper webs between the machines via stationary enclosures fitted (e.g. hook-up chains, barrier tapes, etc).
▷ Fit the enclosures with a minimum distance of 50 cm to the web edge.

✓ Cutting injuries are avoided.

2.8 Life time

2.8.1 Life time of the machine

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

2.8.2 Service life of the control-technical safety components.

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

2.9 General safety instructions

2.9.1 Transport, interim storage

- Only specially-trained and authorized personnel may transport the machine.
- Keep the transport paths and the loading and unloading areas free of personnel.
- Transport is only permitted to be carried out with approved lifting and transport equipment.

2.9.2 Set-up, commissioning

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

2.9.3 Normal operation

- Only instructed operating personnel may operate the machine.
- The machine may be operated only if all safety devices such as protective hoods and EMERGENCY STOP palm buttons, are present and fully functional.
- 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 it is necessary to reach higher-up machine parts, a suitable work platform or other platform must be used. This must fulfill the safety-technical requirements such as height, stability, etc.

2.9.4 Setting up/equipping

- Only specially-trained and authorized personnel may set up the machine.
- 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 it is necessary to reach higher-up machine parts, a suitable work platform or other platform must be used. This must fulfill 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.

2.9.5 Maintenance and repair

- Maintenance and repair work may only be performed by specially trained technical personnel.
- 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.

2.9.6 Work on electrical equipment

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

2.10 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:

- 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 at or on the machine,
- be trained and instructed in accordance with his or her responsibilities, tasks, and activities at or on the machine,
- have understood and can implement practically the operating manual with respect to responsibilities, tasks, and activities for the machine.

2.10.1 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
Setting	X	X	-
Operation	-	X	-
Operational maintenance (cleaning)	-	X	-
Maintenance	X	-	X
Repair	-	-	X
Decommissioning	-	-	X
Storage	X	-	-
Disposal	X	-	-

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

2.10.2 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 safety signs on the machine are kept in an easily legible condition,
- a risk assessment of the entire machine system being carried out and its results being summarized in an operator directive,
- identified defects or abnormal operating states/malfunctions 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.

2.10.3 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 instructions in this operating manual,
- immediately put 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

- protecting the machine against unauthorized use,
- operating the machine only when it is fully functional, safe and reliable,
- carrying out the cleaning according to the maintenance schedule.

2.10.4 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.

2.11 Personal protective equipment

2.11.1 Operation and adjustment

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

- Safety shoes

2.11.2 Operational maintenance (cleaning)

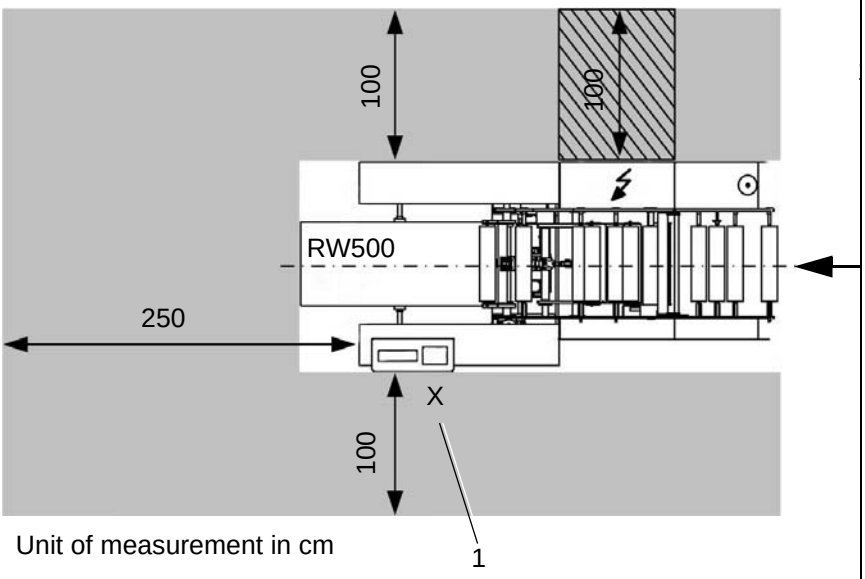
This personal protective equipment must be provided and worn for the proper maintenance (cleaning) of the machine:

- Safety shoes

2.12 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 highlighted shaded.
- The possible workstations are marked with an "X."

2.12.1 Layout from right to left



1 Workstations

Illustration 1: Work area and workstations RW500

2.13 Markings and safety messages on the machine

These markings and safety labels must be on the machine and in an easily legible condition.
If the markings and safety labels are damaged or illegible, they must be replaced.
For the appropriate MBO part number, see chapter "2.13.1 Position and meaning".

2.13.1 Position and meaning

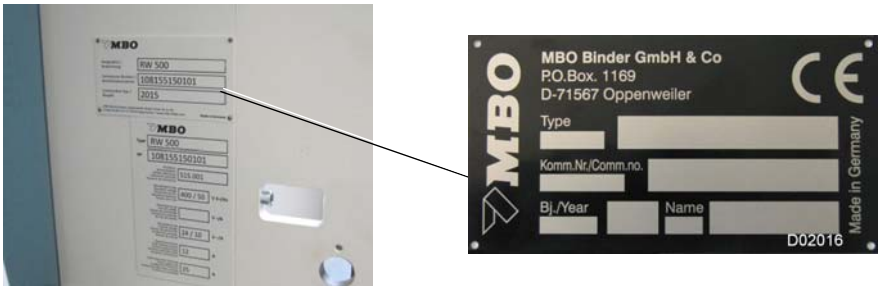
Pos. 1	MBO part number:10.5171.025
	
Meaning: Name plate	

Illustration 2: Name plate

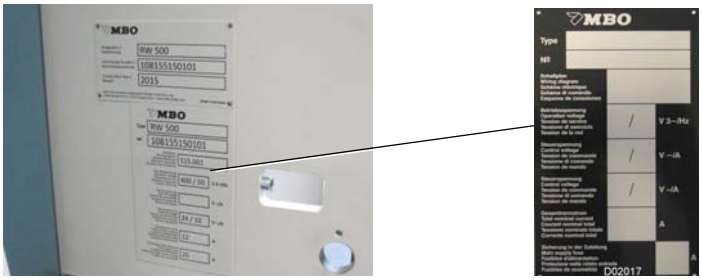
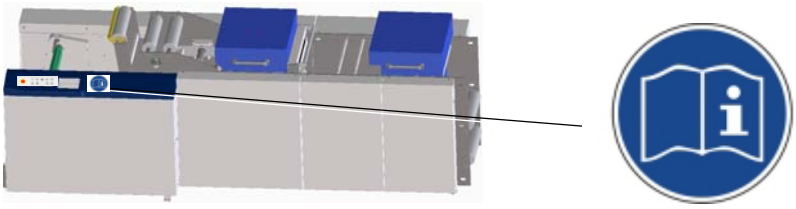
Pos. 2	MBO part number: 10.5171.026
	
Meaning: Electric name plate	

Illustration 3: Electric name plate

Pos. 3	MBO part number: 4002643

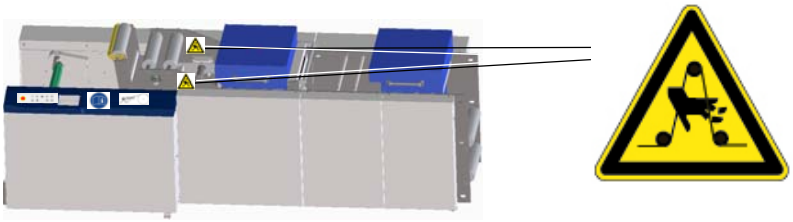


Meaning: Mandatory sign <Read operating manual>

- 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.

Illustration 4: Mandatory sign, observe operating manual

Pos. 4	MBO part number: 4004431



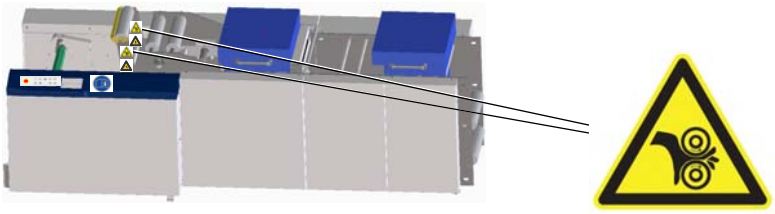
Meaning: <Cutting hazard due to moving web> warning sign

Edges of running webs can cause cutting injuries.

Never touch the edges of running webs.

Illustration 5: Warning sign, cutting hazard due to moving web

Pos. 5	MBO part number: 4003327



Meaning: <Drawn-in hazard> warning sign

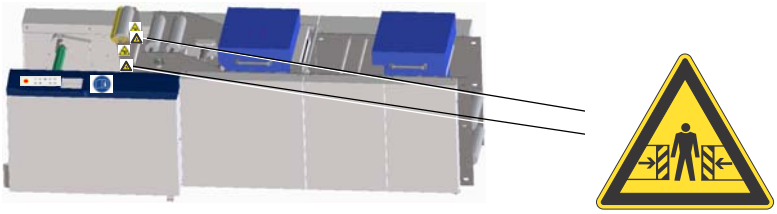
With the relevant rewind direction, there is a hazardous entanglement zone between the paper roll and pressure roller.

Non-observance could result in serious injury or death.

- Never reach into the rotating paper roll and pressure roller while the machine is running.

Illustration 6: Warning sign, drawn-in hazard

Pos. 6	MBO part number: 4004759



Meaning: Warning-triangle <Crushing hazard>

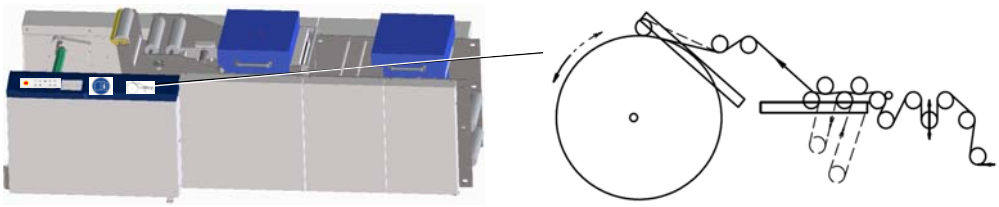
Crushing hazard when lowering/raising the pressure arm.

Non-observance could result in serious injury or death.

- Before lowering or raising the pressure arm, check that there are no other persons in the hazard area.
- Do not touch the pressure arm during lowering or raising

Illustration 7: Warning sign, crushing hazard

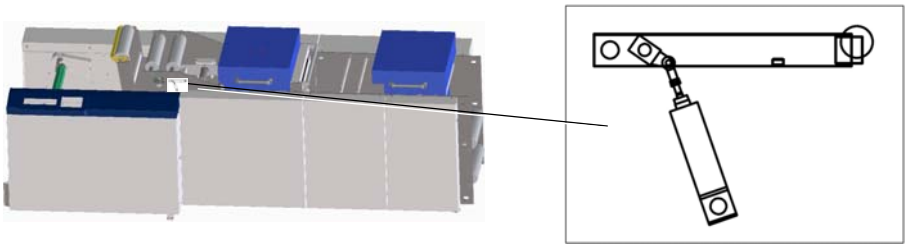
Pos. 7	MBO part number: 719.0071.0004



Meaning: Notice <Web trajectory, right to left>
Non-observance could result in property damage.
Observe the specified web trajectory.

Illustration 8: Notice, web trajectory, right to left

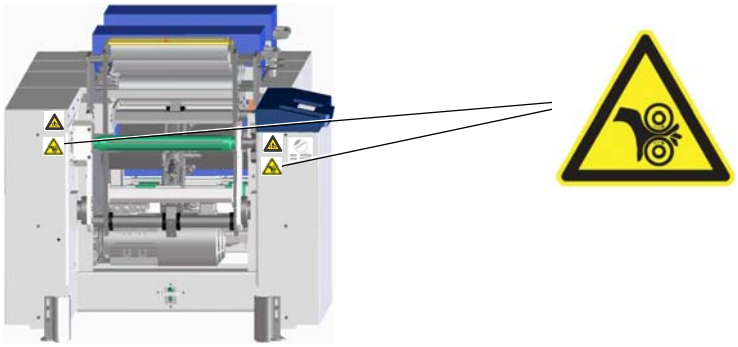
Pos.8	MBO part number: 719.0071.0002



Meaning: <Pressure arm pressure setting> notice
Non-observance could result in property damage.
Never overload the specified operating pressure.

Illustration 9: Notice, pressure arm pressure setting

Pos. 9	MBO part number: 4003327



Meaning: <Drawn-in hazard> warning sign

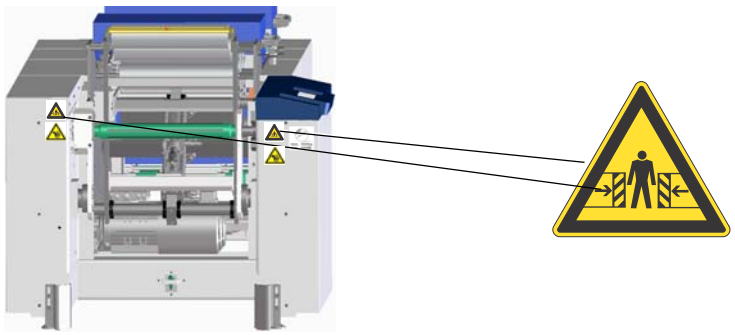
With the relevant rewind direction, there is a hazardous entanglement zone between the paper roll and floor.

Non-observance could result in serious injury or death.

- Do not stand in the area of the paper roll when the machine is running.
- Never crawl underneath the paper roll.
- Never reach into the rotating paper roll while the machine is running.
- Ensure that there are no objects located in this danger zone.

Illustration 10: Warning sign, drawn-in hazard

Pos. 10	MBO part number: 4004759



Meaning: <Crushing of body parts> warning sign

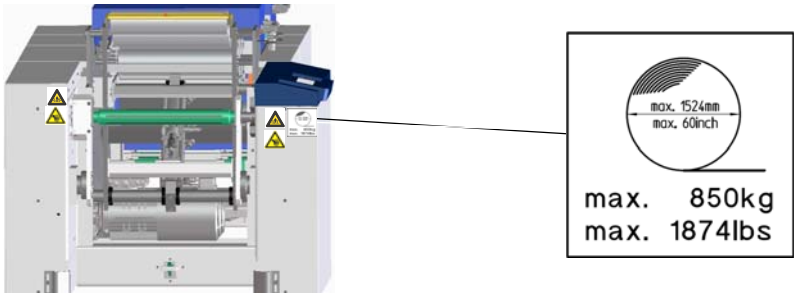
Crushing hazard when loading and unloading the roll lift.

Non-observance could result in serious injury or death.

- The loading and unloading should only be carried out by one person.
- Stand to the side of the roll lift when loading and unloading.
- Do not reach into the moving supporting arms on the roll lift when loading and unloading.

Illustration 11: Warning sign, crushing of body parts

Pos. 11	MBO part number: 718.8171.0001



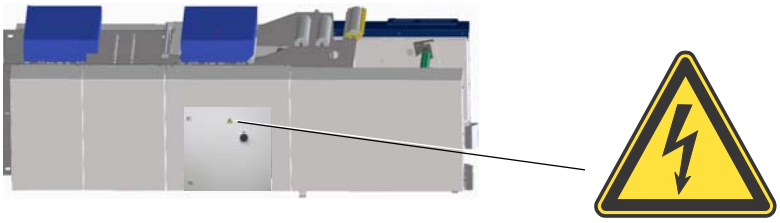
Meaning: <Maximum load weight, maximum roll diameter> notice

Non-observance could result in serious injury or death.

- Never overload the maximum load weight.
- Never overload the maximum roll diameter.

Illustration 12: Maximum load capacity, maximum web diameter notice

Pos. 12	MBO part number: 0128301



Meaning: <Hazardous voltage> warning sign

Non-observance could result in serious injury or death.

- Only a electrically qualified person may perform work on the machine's electrical system.
- Follow the local occupational safety regulations and electrotechnical regulations.
- 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).

Illustration 13: Warning sign, hazardous voltage

2.14 Directions for emergencies

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

2.14.1 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

2.14.2 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

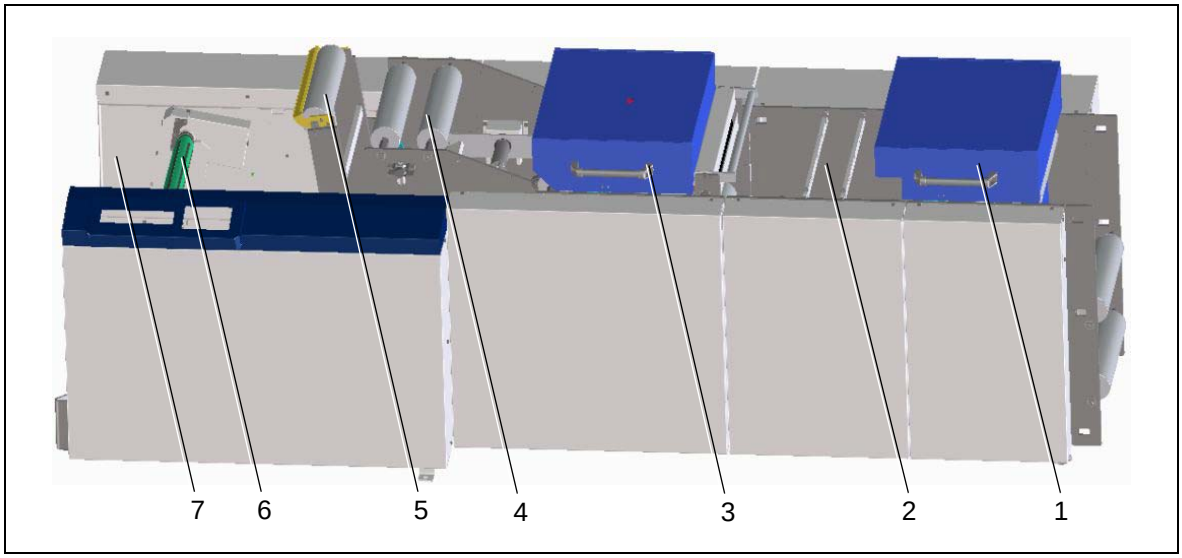


Illustration 14: View

3.1.2 Standard equipment

- Electric roll lift (7)
- Pneumatic core shaft (6)
- Pneumatic dancer (3)
- Weight force dancer (1)

3.1.3 Options

- Various core shaft diameters (6)
- Splice table
- Splice detection sensor
- Web guide (2)

3.2 Technical data

3.2.1 Floor plan

3.2.1.1 Layout from right to left

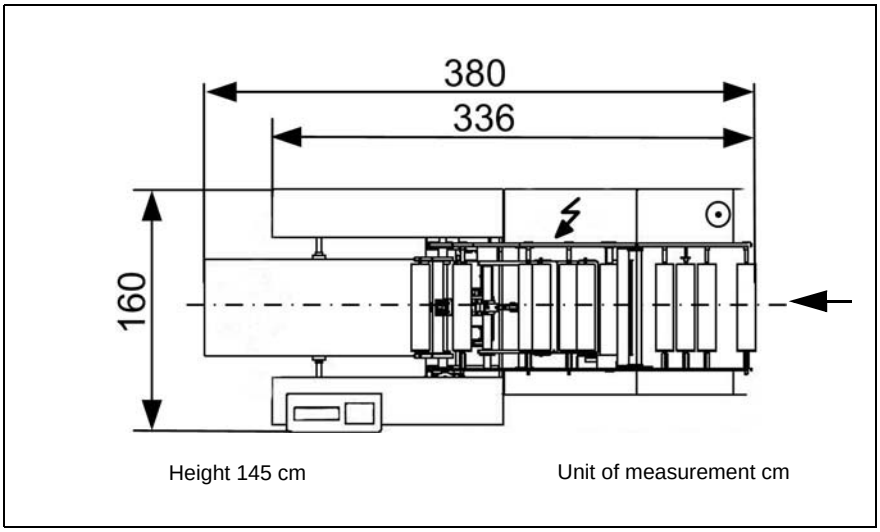


Illustration 15: Floor plan RW500 from right to left

3.2.2 Performance characteristics

Speed		Minimum	Maximum
RW500		10 m/min	130 m/min[1)]
	Inching mode	-	5 m/min
Web	**Width**	165 mm	520 mm
	Grammage [2)]	40 g/m^2	250 g/m^2
	Paper thickness	30 µm	200 µm
Web storage			1400 mm
Guide roller	**Diameter**		120 mm
Roll diameter		500 mm	1524 mm [3)]
		500 mm [4)]	
Core diameter		70 mm	200 mm [5)]
Load capacities			850 kg[6)]

Table 13: Performance characteristics

1) *The maximum working speed depends on paper properties, format, 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) *At a roll diameter of and over 1320 mm (52"), a core shaft with a diameter of 127 mm (5") is recommended as a minimum*
4) *Minimal web diameter that can be processed + 144 mm (height of a Europool pallet (EPAL)*
5) *Any larger size required as an option.*
6) *Depending on the core shaft diameter*

3.2.3 Acceleration data

Acceleration [m/s²]	0.4
Hard stop deceleration (Web) [m/s²]	0.7
Emergency stop deceleration [m/s²]	1.0

Table 14: Acceleration data

3.2.4 Emissions

3.2.4.1 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		- -	- -
A-weighted emission sound pressure level L_{PA} In dB re 20 µPa at the operating place Uncertainty K_{WA} in dB		 - 2.5	 < 70 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 15: Noise emissions

1) Noise measurement EN ISO 13023 F.1 - Class 2

3.2.5 Shipping and transport data

Weight piece		**Net**	**Gross**
RW500	Production	Approx. 2170 kg	Approx. 3020 kg [1)]
	Shipping pallet	Approx. 2170 kg	Approx. 2470 kg
	Shipping crate	Approx. 2170 kg	Approx. 2750 kg
Dimensions		**L x W x H**	
RW500	Without packaging	336x 160 x 145 (cm)	
	With transport pallet	350 x 180 x 200 (cm)	
	With shipping crate	355 x 185 x 210 (cm)	
Fork lift [2)]	Carrying capacity / load (Q) [3)]	Min. 3000 kg	
	Fork tine length	Min. 200 cm	
Floor conditions	Cargo [4)]	> 25 kN/m^2	
	Levelness [5)]	< 10 mm/m	

Table 16: Shipping and transport data

1) Total weight with a maximum load of 1200 kg.
2) Minimum requirements of the fork lift
3) Heed operating manual for the fork lift, load capacity depends on the load center of gravity (c).
4) Minimum load capacity of the floor where the machine will be set up
5) In the area of the machine, the total height difference may not exceed 20 mm.

3.2.6 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	50/60 Hz	+/-1 %
	Control voltage:	24 VDC	
Connecting line	Cross-section (IEC)	4 mm^2	
	Cross-section (UL)	AWG11	
	Max. line length [4)]	135 m	
	Min. network impedance [5)]	500 mOhm	
	Short-circuit current rating (SCCR) according to UL 508A		
Fuse	IEC	25 A	
	UL	25 A	
Protective equipotential bonding conductor [6)]	Cross-section IEC	10 mm^2	
	Cross-section UL	AWG7	
Connected loads	Total	approx. 8 kW	
	Stand-by		

Table 17: 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 mains power 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) In accordance with table 10 EN 60204-1:2006, with double safety
5) In accordance with table 10 EN 60204-1:2006
6) Required if the leakage currents of the RFI filters > 10 mA.
Not required if the cross-section of the power supply connection > 10 mm^2.

3.2.7 Compressed air supply, control air

Compressed air supply		**Minimum**	**Maximum**
Connected loads	Necessary network pressure	6 bar	7 bar
	Average consumption [1)]	10 l/min	
	Purity class [2)]	ISO 8573-1:2010 [3:4:2] [3)]	
	Schott plug connection	QSS-8	
Connecting line	Hose with external diameter	8 mm	

Table 18: Compressed air supply, control air

1) Required volume flow according to ISO 1217 or DIN 1945
2) Purity class according to ISO 8573-1:2010 [particles:water:oil].
3) Typical purity classes for the publishing and print sector (control air) in compliance with VDMA standard sheet 15390-1:2014-12, table 5.

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. 1500 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 1000 m above sea level or higher, a power reduction of 1 % per 100 m should be incorporated.

Avoid direct sunlight and drafts.

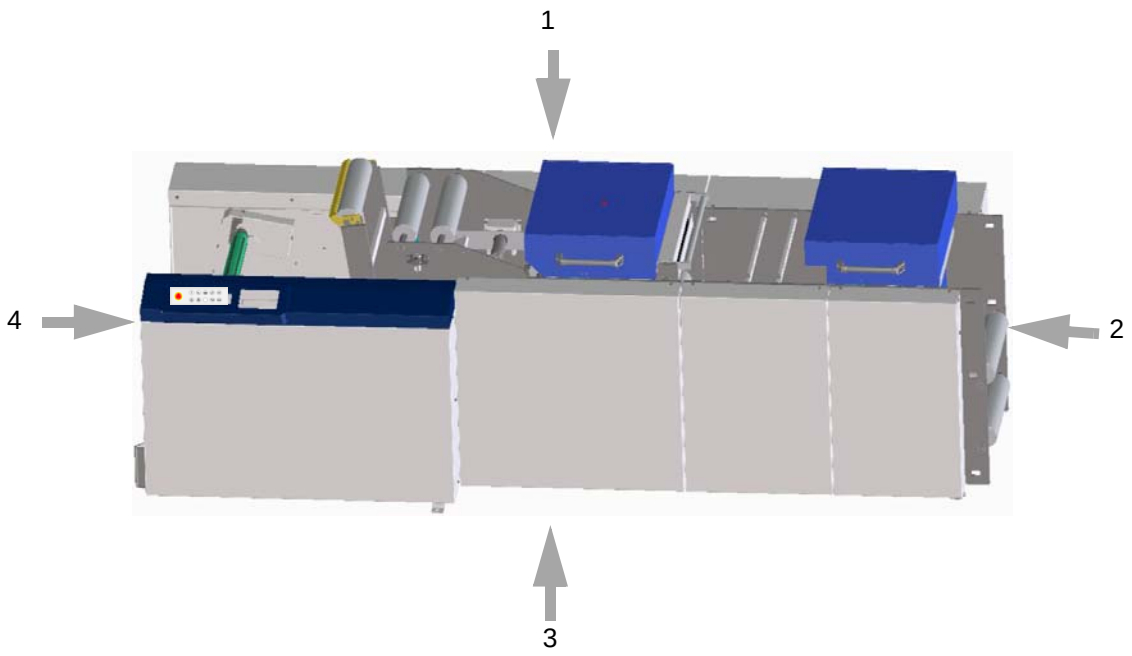
4 Structure and function

This chapter describes the components and function of the rewinder.

4.1 Structure

4.1.1 Components of the rewinder

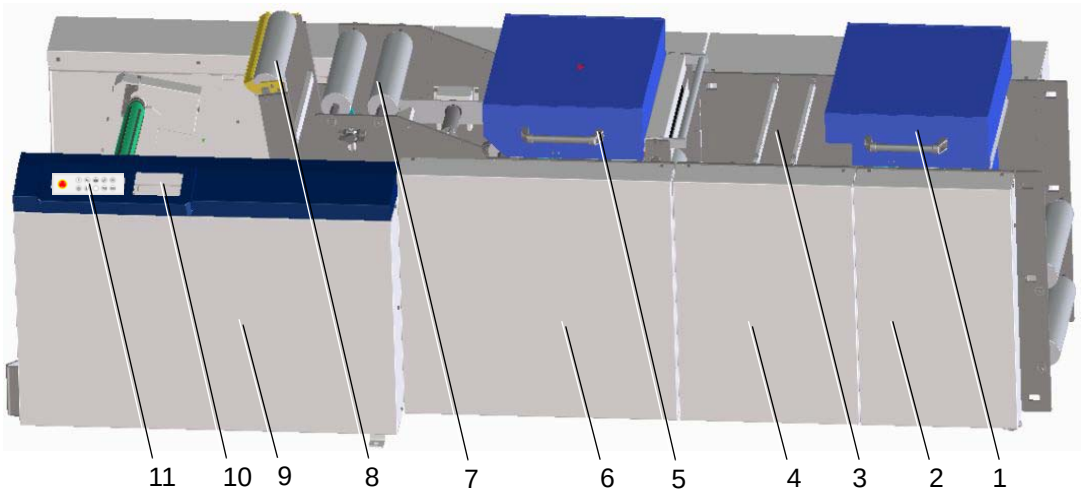
The components are distributed across four sides of the rewinder.



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

Illustration 16: Views of the rewinder

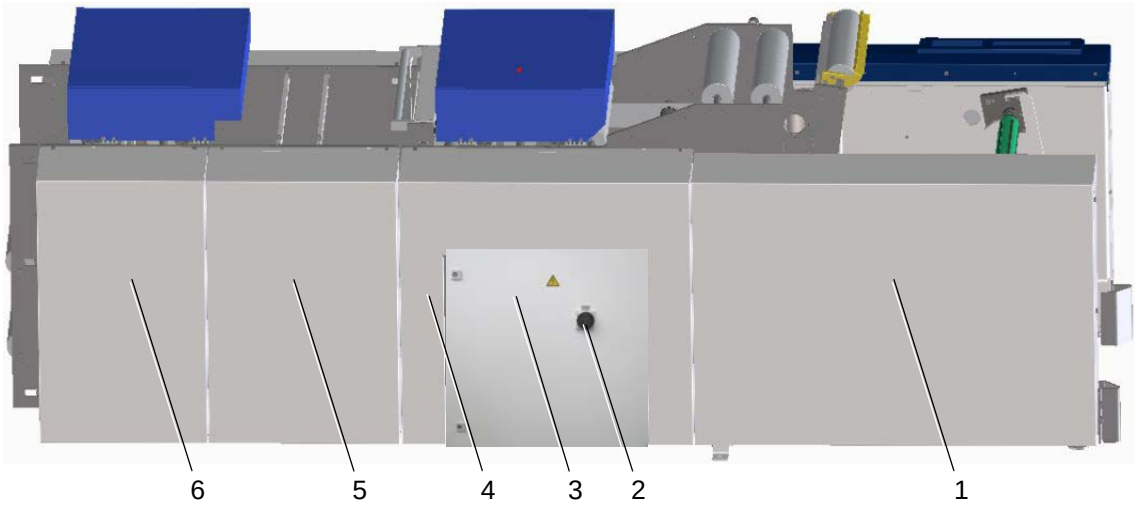
4.1.1.1 Components of the operator side



1 Interlocking movable guards with guard locking 2 Module, weight force dancer 3 WebGuide (option) 4 Module, WebGuide (option) 5 Interlocking movable guards with guard locking	6 Module, pneumatic dancer 7 Guide roll 8 Pressure arm with pressure shaft 9 Module, roll lift 10 Touchscreen 11 Control panel with EMERGENCY STOP palm button

Illustration 17: Components of the operator side

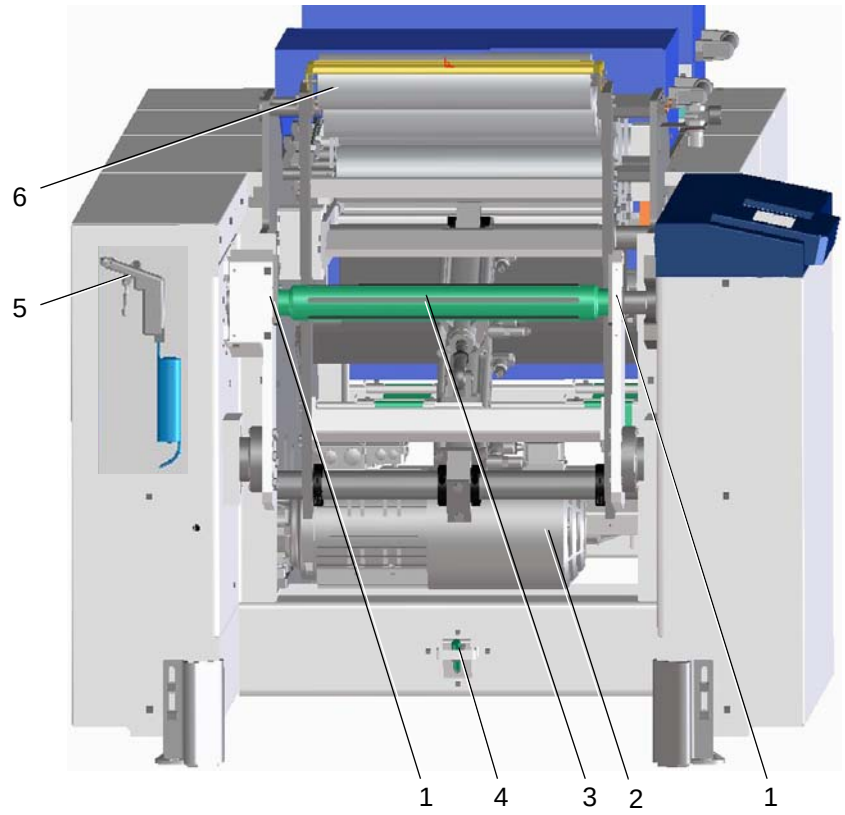
4.1.1.2 Components of the control cabinet side



1 Module, roll lift	4 Module, pneumatic dancer
2 Main switch	5 Module, WebGuide (option)
3 Control cabinet	6 Module, weight force dancer

Illustration 18: Components of the control cabinet side

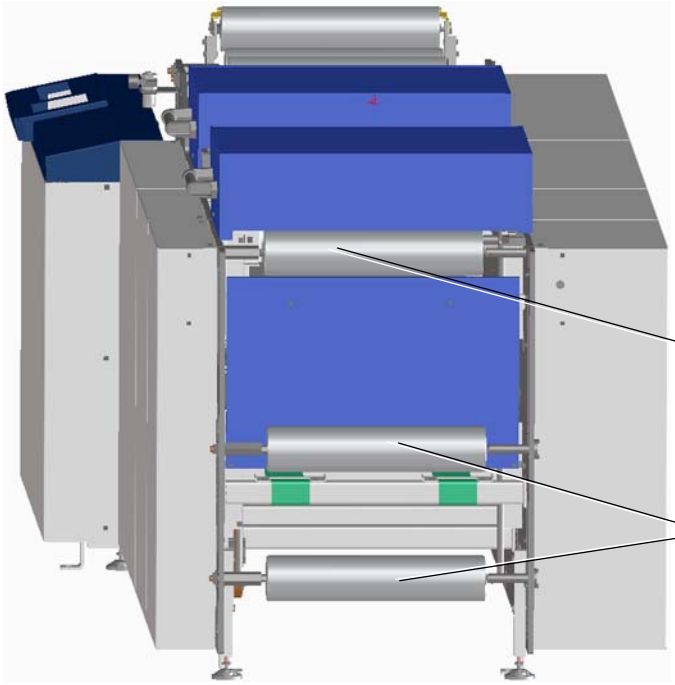
4.1.1.3 Components of the roll side



1 Retainers for core shaft 2 Paper roll drive 3 Core shaft	4 Roll diameter sensor 5 Compressed air pistol 6 Pressure arm with pressure shaft

Illustration 19: Components of the roll side

4.1.1.4 Components of the infeed side



1 Weight force dancer	2 Infeed rolls

Illustration 20: Components of the infeed side

4.2 Functional description

The RW500 rewinder is a center-driven rewinder with servo drive and electric roll lift.

4.2.1 Compressed air supply

The compressed air is supplied via an external compressed air hose.

The compressed air supply is required to:

- Tension the pneumatic core shaft in the paper roll core.
- Supply the pneumatic dancer.
- Supply the pressure arm.

4.2.2 Control panel

The main control panel with EMERGENCY STOP palm button is used to control the:

- Roll lift.
- Rewinder in the machinery (system).

4.2.3 Roll lift

Roll lift The roll lift is used to load and unload paper rolls.

Winding direction The rewind direction is counter clockwise in normal operation (viewing direction from operator side).
Reverse operation (rewind direction clockwise) is possible.

Winding speed The winding speed of the paper roll is controlled by:

- A sensor that records the roll diameter.
- The position of the dancer.

Pneumatic core shaft The diameter of the standard core shaft is 70 mm.
As an option, core shafts with larger diameters can also be supplied. This is recommended when processing thicker papers or cardboard.

Compressed air pistol The compressed air pistol is used to tension the pneumatic core shaft in the paper roll core.

Pressure arm with pressure shaft The pressure arm with pressure shaft prevents air pillows forming between the webs.
This improves the winding quality.

Roll end detection The roll end or roll change is set by entering a specific roll diameter in the touchscreen.

4.2.4 Web break detection

A web break is detected via the lower position of the pneumatic dancer.

4.2.5 Pneumatic dancer

The pneumatic dancer is used:

- To generate internal web tension.
- As web storage.

4.2.6 Weight force dancer

The weight force dancer is used:

- To generate a constant web tension to the previous machine (e.g. printer).
- As web storage.

4.2.7 Web tension

- The rewinder can only be operated with web tension.
- The external web tension to the previous machine is generated by the in-feed shaft with nip roller and the intrinsic weight of the weight force dancer.
- The internal web tension of the rewinder is generated by the pneumatic dancer.
- The in-feed shaft with nip roller disconnects the external web tension from the internal web tension.

4.2.8 Web guide (optional)

The web guide holds the web in an exact side position.

4.3 Variants

4.3.1 Variant RW500

Definition of terms

The designation "RW500" means:	
RW	Rewinder
500	Maximum web width = 520 mm

4.4 Protective devices

The protective devices are divided into the following main groups:

- Guards
- Protective devices

4.4.1 Explanation of the term "guard"

4.4.1.1 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).

4.4.1.2 Moveable guard

Interlocking moveable guard:

- are used if access to the area secured by the protective device is frequently required.
- can be opened and closed 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.

Interlocking, movable guards with guard locking:

- cannot be opened when the machine is operating.

  The guard locking prevents access to the danger spot until the hazardous function has been eliminated.
- can be opened and closed 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.

4.4.1.3 Adjustable guards

Adjustable guards are used:

- where due to the use of different downstream devices, the protective device needs to be adjusted for the current situation.
- They can be set manually by the operator easily and without tools.
- They 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.

4.4.2 Explanation of the term "protective devices"

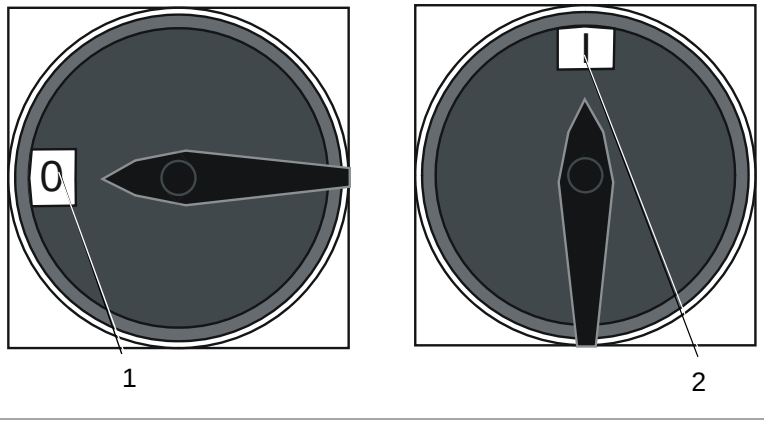
Protective devices differ from the guards in that they do not form a physical barrier between the endangered person and the danger spot.

Protective devices include:

- Two-hand switches
- Sensitive protective devices such as:
  Contact mats, safety strips, switch rods and switch wires.
- Optoelectronic, protective devices such as:

  Light barriers, laser scanners and camera-controlled safety systems.

4.4.3 Main switch



1 Main switch OFF 2 Main switch ON

Illustration 21: Main switch

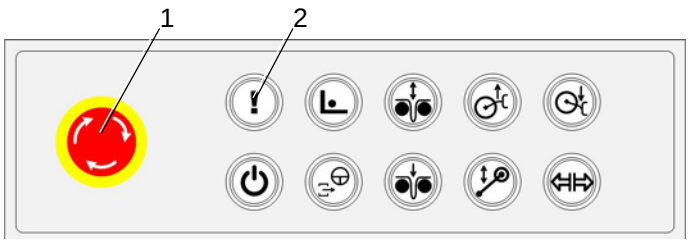
The main switch has the following properties:

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

When switching off the main switch during production:

- the machine is stopped,
- the drives gradually run down,

4.4.4 EMERGENCY STOP palm button



1 EMERGENCY STOP palm 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.

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

1) Press the EMERGENCY STOP palm button (1).
   The <Reset EMERGENCY STOP> illuminated button (2) lights up blue.
2) Eliminate the failure.
3) Unlock the EMERGENCY STOP palm button (1) with a turn to the right.
4) Press the <Reset EMERGENCY STOP> illuminated button (2).
   The <Reset EMERGENCY STOP> illuminated button (2) does not light up.

✓ The machine is ready for operation.

When the EMERGENCY STOP palm button is pressed, the machine is stopped immediately.

4.4.5 Interlocking movable guards with guard locking

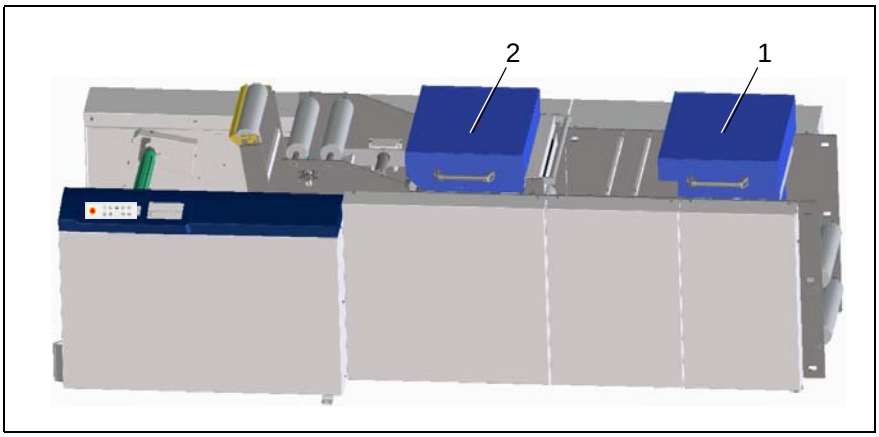


Illustration 23: Interlocking moveable guard

Moveable guard (1) prevents access into the weight force dancer area.
Moveable guard (2) prevents access into the pneumatic dancer area.
Each has a locking device and guard locking.
In other words, the moveable guards can only be opened in the <Setup> operating mode.

4.4.6 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.

4.4.7 Checking protective devices

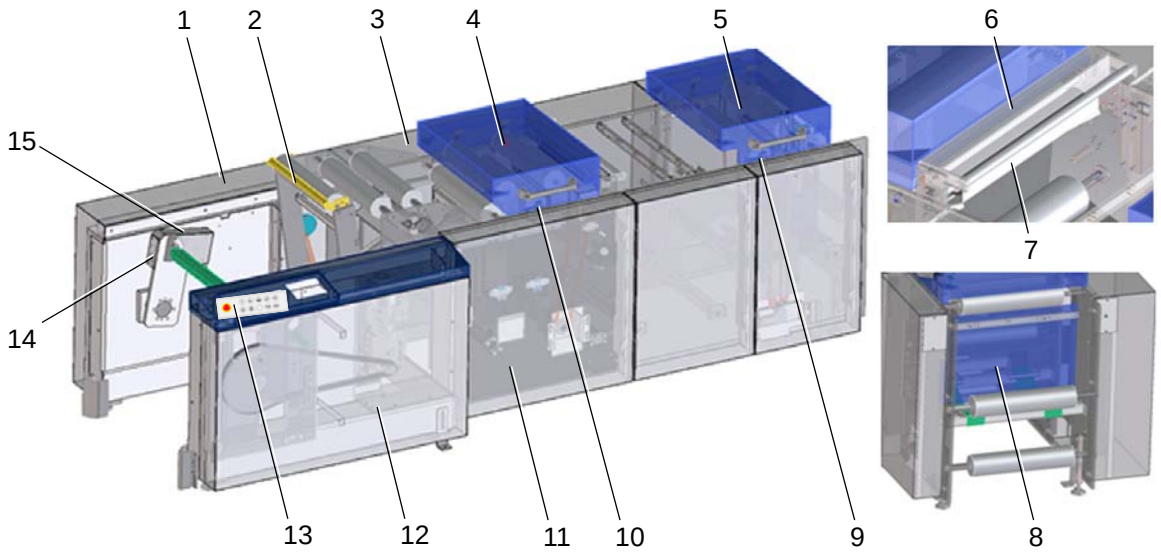
All protective devices must be checked regularly.

For the corresponding inspection intervals, see chapter "4.4.8 Checklist for protective devices"

For the corresponding procedure, see the Maintenance chapter.

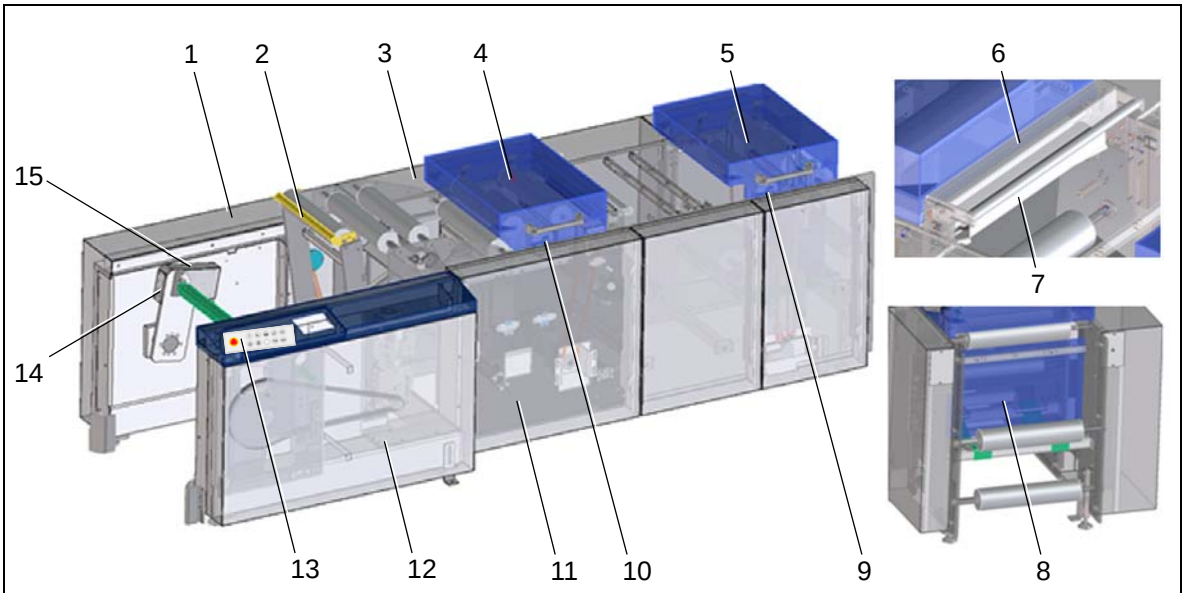
4.4.8 Checklist for protective devices

Use this checklist to check the machine protective devices regularly.



Pos.	Designation	Functioning control	Visual inspection	Result	Inspection interval
1	Guard				Weekly
2	Guard, pressure arm				Weekly
3	Guard				Weekly
4	Interlocking movable guards with guard locking				Daily
5	Interlocking movable guards with guard locking				Daily
6	Guard				Weekly
7	Guard				Weekly
8	Guard, disc				Weekly
9	Safety switch for pos. 5				Daily
10	Safety switch for pos. 4				Daily
	All safety screws are secured with screw locking (e.g. Loctite 222).				Weekly
11	Guard				Weekly
12	Guard				Weekly
13	EMERGENCY STOP palm button				Daily

Table 20: Checklist for protective devices



Pos.	Designation	Function-ing control	Visual inspec-tion	Result	Inspection interval
14	Guard				Weekly
15	Guard				Weekly
Date:		Name:		Signature:	

Table 20: Checklist for protective devices

5 Operating and display elements, operating modes

5.1 Operating and display elements

5.1.1 Overview

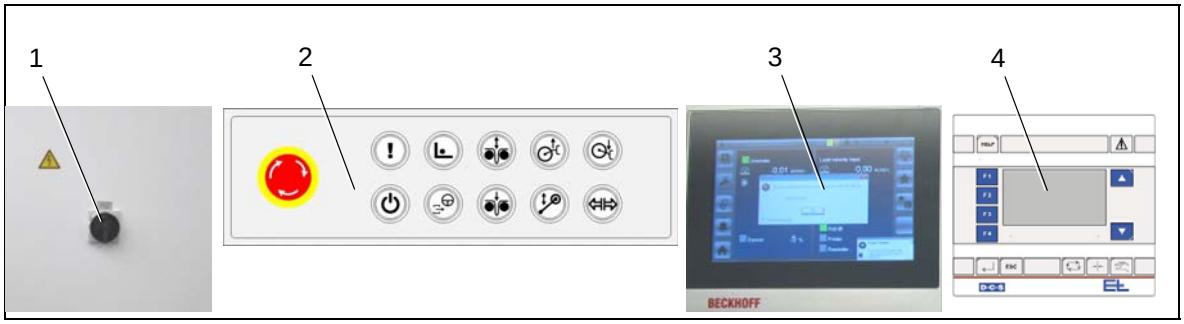
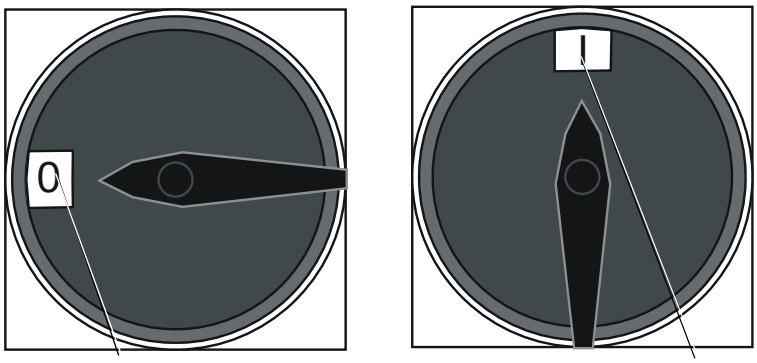


Illustration 24: Overview, operating and display elements

1 **Main switch**.
See chapter "5.1.2 Main switch".
2 **Control panel**.
See chapter "5.1.3 Control panel".
3 **TOUCHSCREEN**.
See chapter "5.1.6 Touchscreen structure"
4 **Control panel, web guide (optional)**.
See chapter "5.1.4 Control panel, web guide (optional)".

5.1.2 Main switch

The main switch is located on the side frame of the control cabinet.



1 Main switch OFF

2 Main switch ON

Illustration 25: Main switch

The main switch has the following properties:

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

5.1.3 Control panel

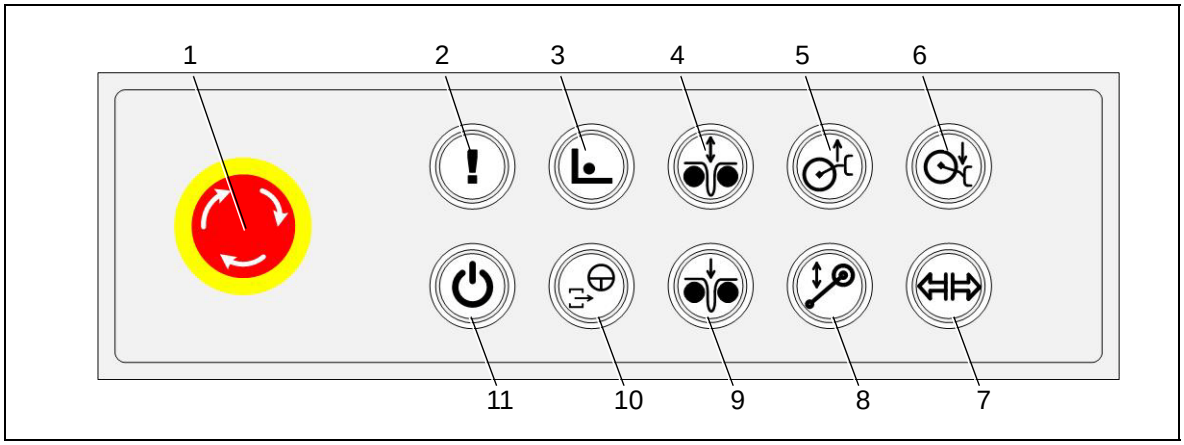


Illustration 26: Control panel

1 **<EMERGENCY STOP> palm button**.
2 **<Reset EMERGENCY STOP/confirm error> illuminated button**.
Status indicator of the light ring:
Blue = <EMERGENCY STOP> palm button (in the machinery) was or is activated.
Yellow = an error/warning present.
Off = no error/warning present.
3 **<Setup / production mode> illuminated button**.
Can only be changed when the <Stop request> illuminated button is off.
Press the illuminated button for approx. 3 seconds to change the mode.
Status indicator of the light ring:
Yellow = <Setup> operating mode is active.
Flashing green = <Production> operating mode in preparation.
Continuous green = <Production> operating mode is active.
4 **<Production / setup dancer position> pneumatic dancer illuminated button**.
Only active in the <Setup> operating mode.
Status indicator of the light ring:
Off = <Production> operating mode is active.
Yellow = <Setup / Threading> dancer in position.
Green = <Production> dancer in position.
5 **<Raise roll lift> illuminated button**.
Only active in the <Setup> operating mode.
Status indicator of the light ring:
White = <Setup> operating mode is active.
Yellow = illuminated button is pressed.
Off = <Production> operating mode is active.
6 **<Lower roll lift> illuminated button**.
Only active in the <Setup> operating mode.
Status indicator of the light ring:
White = <Setup> operating mode is active.
Yellow = illuminated button is pressed.
Off = <Production> operating mode is active.
7 **<Open / close brake> illuminated button**.
Only active in the <Setup> operating mode.
Status indicator of the light ring:
Yellow = brake is open.
Green = brake is closed.
Off = <Production> operating mode is active.

8 **<Raise/lower pressure arm> illuminated push button**.
Can only be changed if <Setup> operating mode is active.
Press the illuminated button for approx. 3 seconds to raise/lower the pressure arm.
Status indicator of the light ring:
Yellow = pressure arm is raised, <Setup/Threading> position.
Green = pressure arm is lowered, <Production> position.

9 **<Production/setup dancer position> weight force danger illuminated push button**.
Only active in the <Setup> operating mode.
Status indicator of the light ring:
Off = <Production> operating mode is active.
Yellow = <Setup / Threading> dancer in position.
Green = <Production> dancer in position.

10 **<Inch> illuminated push button of the in-feed shaft**.
Status indicator of the light ring:
Off = inching off.
White = inching on

11 **<Stop request> illuminated button**
<Stop request> can only be carried out if the illuminated button lits red.
Status indicator of the light ring:
Off = <Production> operating mode is active, printer is inactive.
Red = <Production> operating mode is active, printer is active.

The following functions are automatically moved to the <Production> position after switching to the <Production> operating mode (3):
- Weight force dancer (9)
- Pneumatic dancer (4)
- Pressure arm (8)

5.1.4 Control panel, web guide (optional)

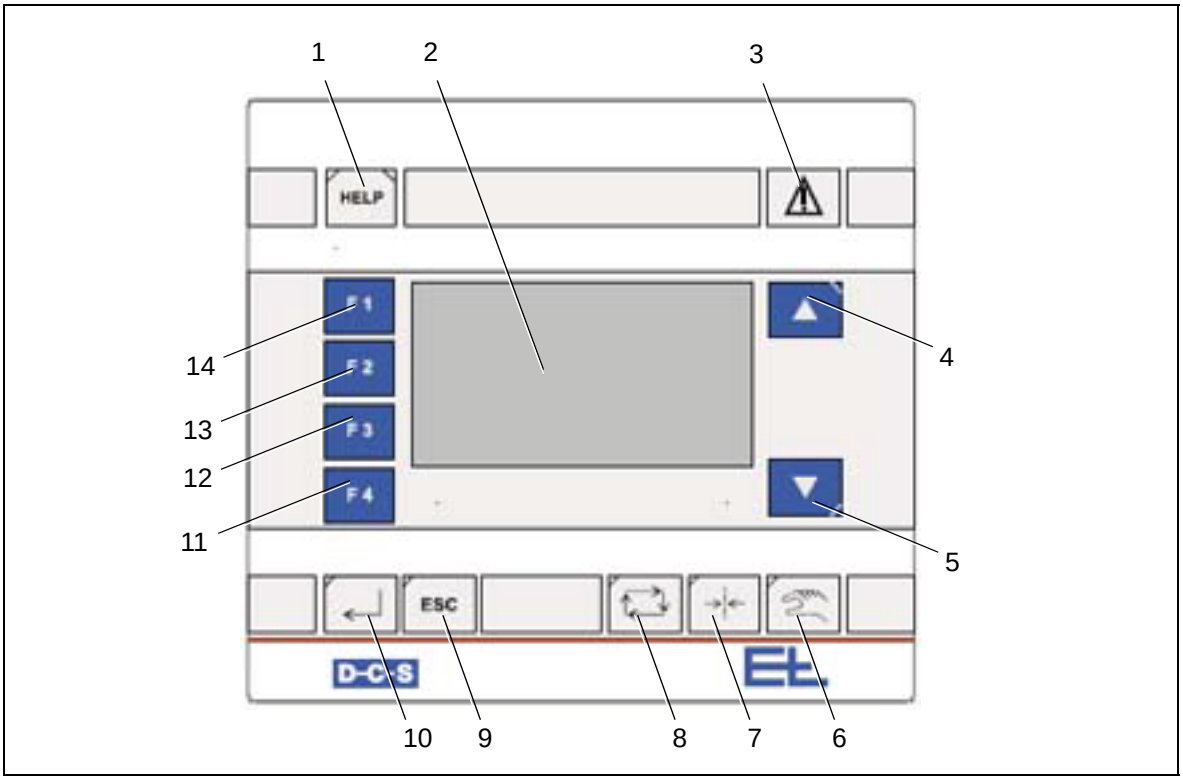


Illustration 27: Control panel, web guide

1 <Help menu> button
2 Display
3 <Alarm display> button
4 <Web offset, (increase value)> button.
5 <Web offset, (decrease value)> button.
6 <Manual adjustment> button.
LED is green when active.
7 <Center mode> button.
LED is green when active.
8 <Automatic> button.
LED is green when active.
9 <ESC> button one page back (setup mode only).
10 <Enter (confirmation)> button
11 <F4 multiple operation> button
12 <F3 Change> button
13 <F2 Motorized sensor positioning> button
14 <F1 Changeover of sensors/drives> button

For a detailed functioning description, see the separate operating manual from the company Erhardt + Leimer.

5.1.5 Usage of the touchscreen

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

5.1.6 Touchscreen structure

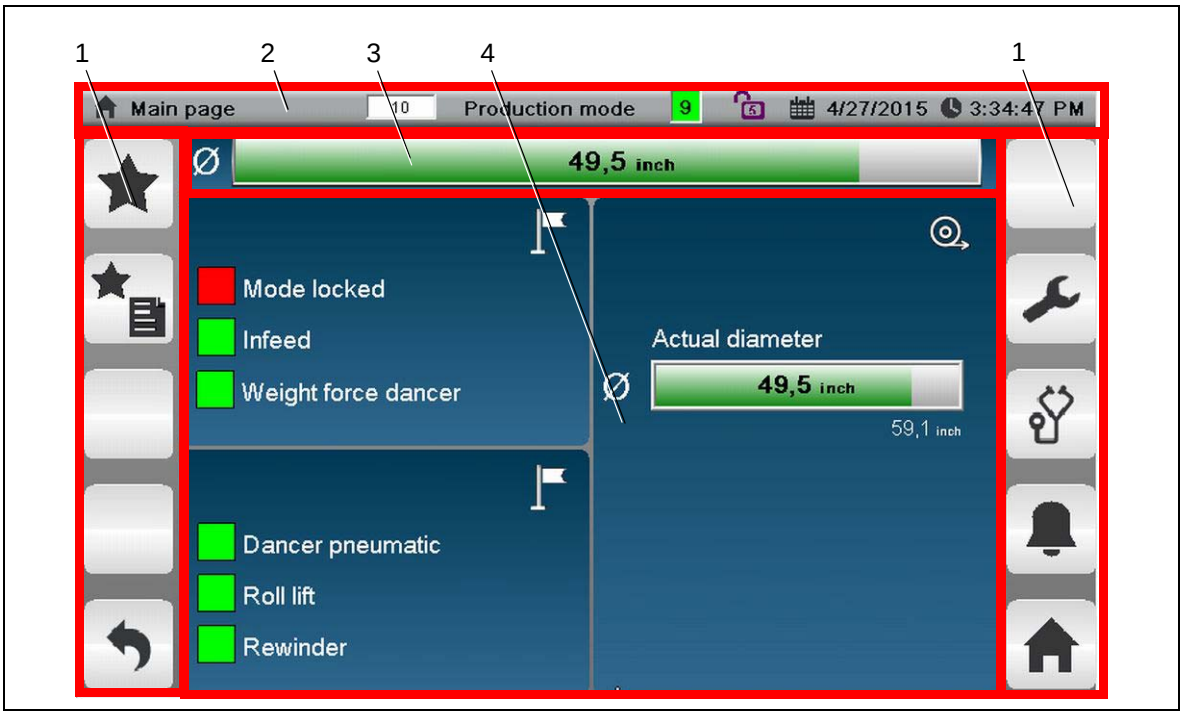


Illustration 28: Touchscreen structure

The touchscreen is divided into the following functional groups:

1 Function keys
See chapter "5.1.6.2 Function keys"

2 Info box <Page name, operating mode, machine status. Password level, date and time>.
See chapter "5.1.6.1 Info box".

3 <Current web diameter, alarms, notices> display field.
See chapter "5.1.9.1 <Start page / main page> page".

4 <Current page content> display
See chapter "5.1.9.1 <Start page / main page> page".

5.1.6.1 Info box

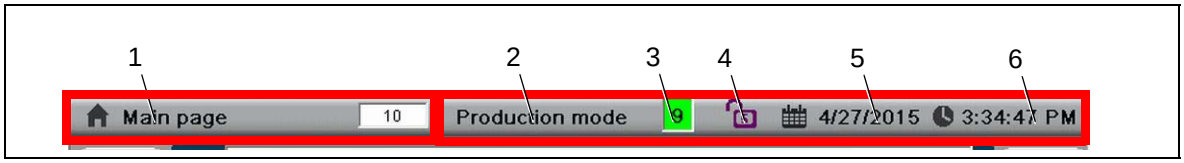


Illustration 29: Info box

1 **<Title of the current page> display**.
Pressing this displays the current page number.
Pressing this again hides the current page number.
2 **<Current operating mode> display**.
3 **<Machine status> display**.
Displays the current status of the machine.
See chapter "5.1.7 Displaying machine status"
4 **<Password> button**.
Displays the current password level.
See Chapter "5.1.8 Entering the password".
5 **<Current date> display**.
6 **<Current time> display**.

5.1.6.2 Function keys

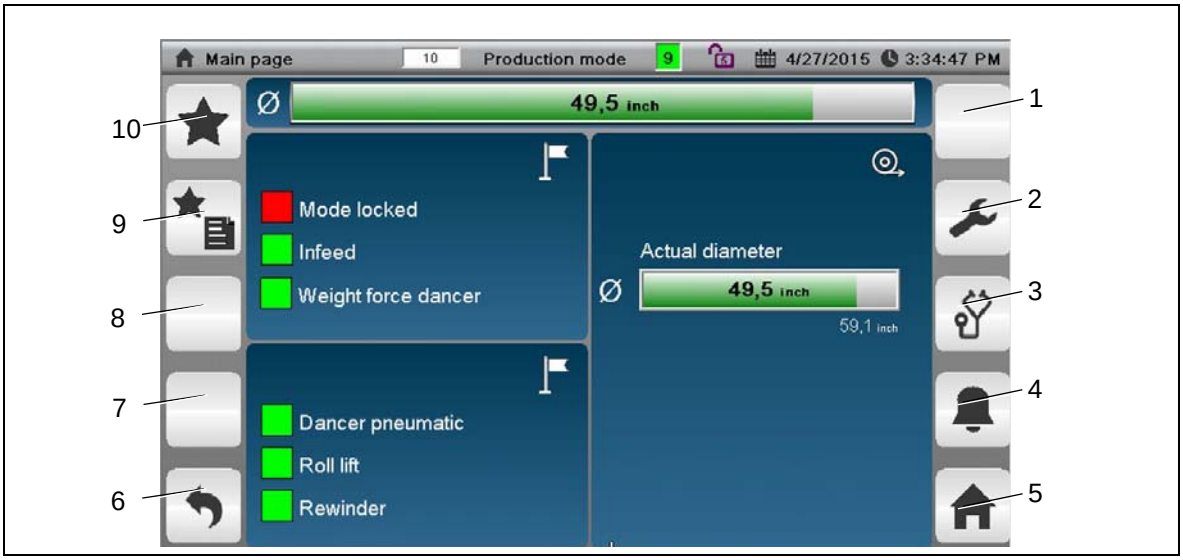


Illustration 30: Function keys

1 **Not assigned**.
2 **<Service> button (password-protected**.
Pressing the button displays the <Service> page.
Password-protected.
3 **<Diagnosis> button.**
Pressing the button displays the <Diagnostics> page.
4 **<Alarms> button**.
Pressing the button displays the <Alarms> page.
See chapter "5.1.10 Selecting favorite pages".
5 **<Main page> button**.
Pressing the button displays the <Main page>.
See chapter "5.1.9.1 <Start page / main page> page".
6 **<Page back> button**.
Pages back to the previous pages.
7 **Not assigned**.
8 **Not assigned**.
9 **<Display favorite pages> button**.
Pressing the button displays the <Favorite> page.
See chapter "5.1.10 Selecting favorite pages".
10 **<Select favorite pages**> button.
Pressing this button saves this page as a <Favorite>.
See chapter "5.1.10 Selecting favorite pages"

5.1.7 Displaying machine status

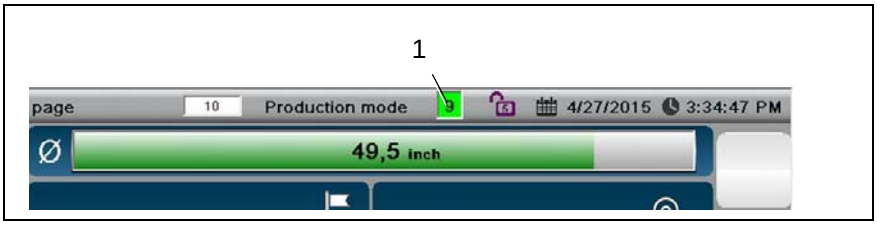


Illustration 31: Displaying machine status

The <Machine status> display is used to diagnose functional faults. The relevant operating condition of the machine is displayed as a number and in the corresponding color.

5.1.8 Entering the password

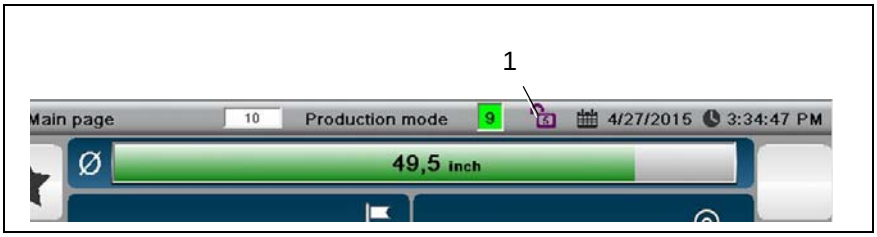


Illustration 32: Entering the password

1 <Password> button.
The <Password> button is used to select various password levels.
If the <Padlock> symbol is closed, no password level is selected.
If the <Padlock> symbol is open, the current password level is displayed as a number in the symbol.

5.1.8.1 Password levels

Password level	Password	Area and authorization	Symbol
0	-	**Area:** • Diagnosis (look at all/change something). **Authorization for:** Operator	
1	XXXX	**Area:** • Diagnosis (look at all/change something). • Service (look at all/change something). **Authorization for:** Machine setter with supervision.	

Table 21: Password level

5.1.8.2 Change password level

Special diagnostic and configuration pages can be unlocked by entering particular passwords.

Proceed as follows to change the password level.

Prerequisites

These prerequisites must be fulfilled:

- You are authorized to change the password level.

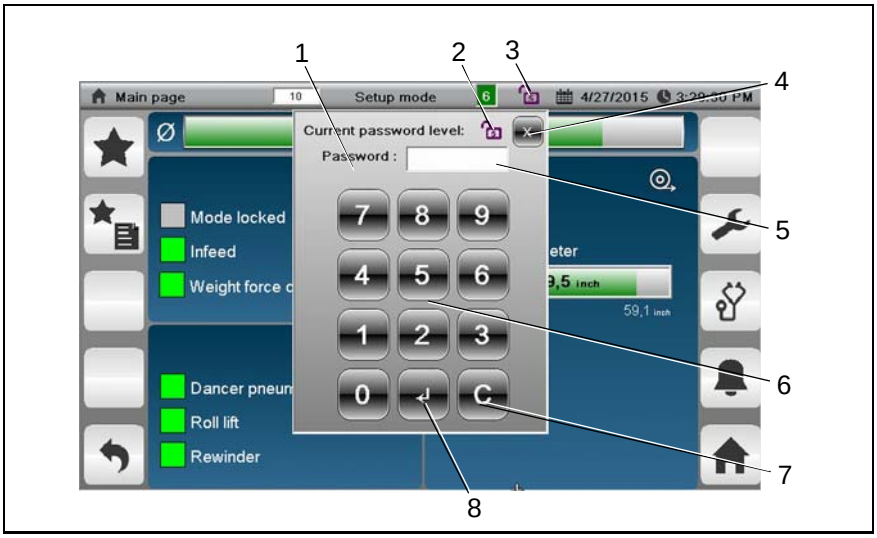


Illustration 33: Password

Entering the password

Here's how to enter a password.

▷ Press the <Password> button (3).
The password input window (1) is opened.

▷ The <Current password level> display (2) shows the current password level as a number.

▷ Enter the password for the required password level via the numeric input field (6)

▷ Press the <Enter> button (8).
The <Password> button (3) displays an open lock with the corresponding password level.

✓ The password level is changed.

Canceling password input

Here's how to cancel password input:

▷ Press the <Close window> button (4).
The password input window is closed.

✓ The password input is canceled.

Resetting the password level

Here's how to reset the password level:

▷ Press the <Password> button (1).
The password input window is opened.

▷ Press the <C> button (7).

▷ Press the <Enter> button (8).
The <Password> button (3) displays a closed lock.

✓ The password level is reset.

5.1.9 Description of the screens

5.1.9.1 <Start page / main page> page

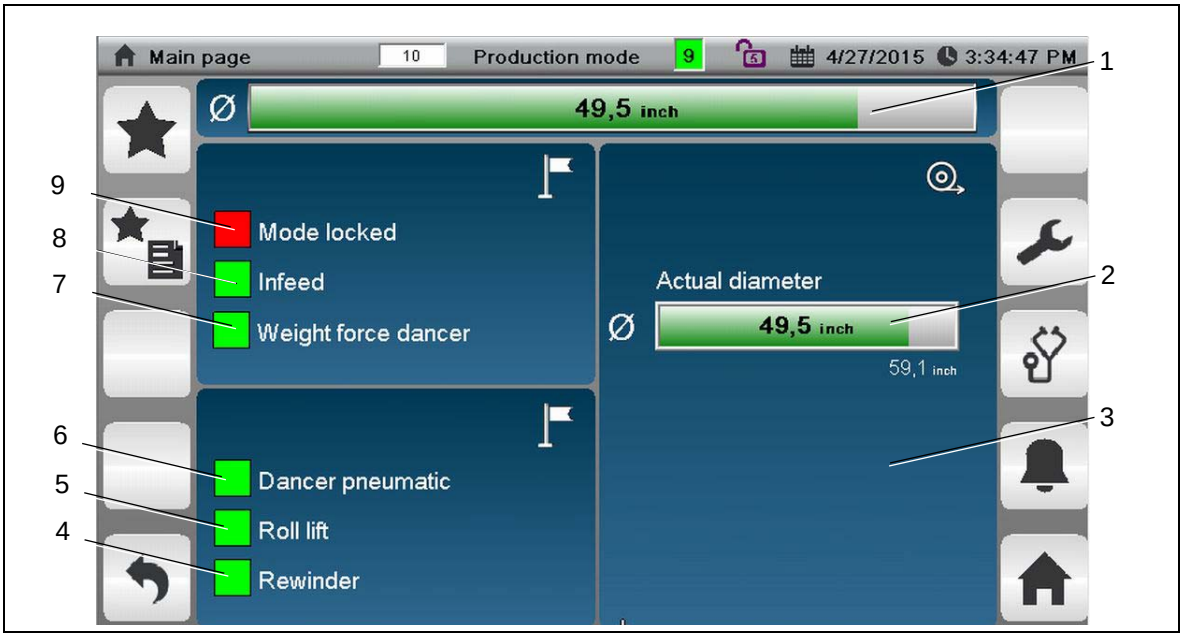


Illustration 34: Start page / main page

1 <Current roll diameter, alarms, notices> display field.
The following information is displayed according to the operating condition of the machine:
- Current web diameter
- Current alarm
- Current notice

2 **<Current roll diameter> display**.
Displays the current roll diameter.

3 **<Settings> input field**.
See chapter "5.1.9.2 <Main page / settings> page"

4 **<Rewinder ready> display**.
The current operating condition of the rewinder is displayed.
Green = rewinder ready.

5 **<Roll lift ready> display**.
The current operating condition of the roll lift is displayed.
Green = roll lift ready.

6 **<Pneumatic dancer ready> display**.
The current operating condition of the pneumatic dancer is displayed.
Green = dancer ready

7 **<Weight force dancer ready> display**.
The current operating condition of the weight force dancer is displayed.
Green = dancer ready

8 **<Infeed ready> display**.
The current operating condition of the printer is displayed.
Green = printer ready.

9 **<Production operating mode blocked> display**.
The operating condition of production is displayed.
Gray = production operating mode is not blocked.
Red = production operating mode is blocked. In other words, it is not possible to switch over to the <Setup> operating mode in this status.

5.1.9.2 <Main page / settings> page

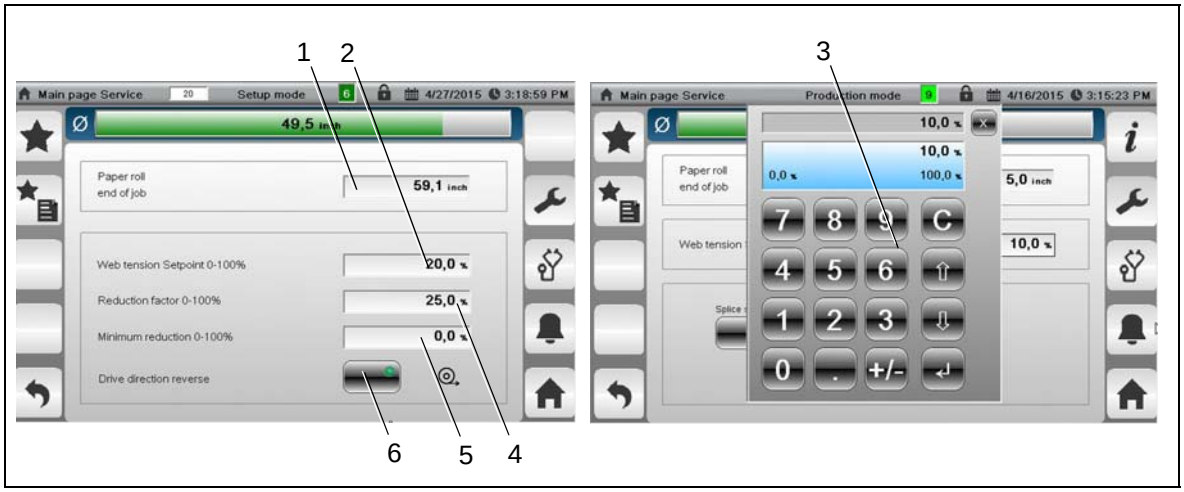


Illustration 35: Main page, settings

1 **<Maximum roll diameter> input field**.
Pressing the input field (1) displays a numeric keypad (3). Enter the maximum roll diameter.
2 **<Web tension set point value> input field**.
Pressing the input field (2) displays a numeric keypad (3). Enter the required web tension.
3 **Numeric input field**.
4 **<Reduction factor> input field**.
Pressing the input field (4) displays a numeric keypad (3). Enter the required reduction factor.
5 **<Minimum reduction factor> input field**.
No function with Rewinder RW500.
6 **<Set rewind direction> button**.
With this button is used to set the winding direction of the winding drive.

5.1.10 Selecting favorite pages

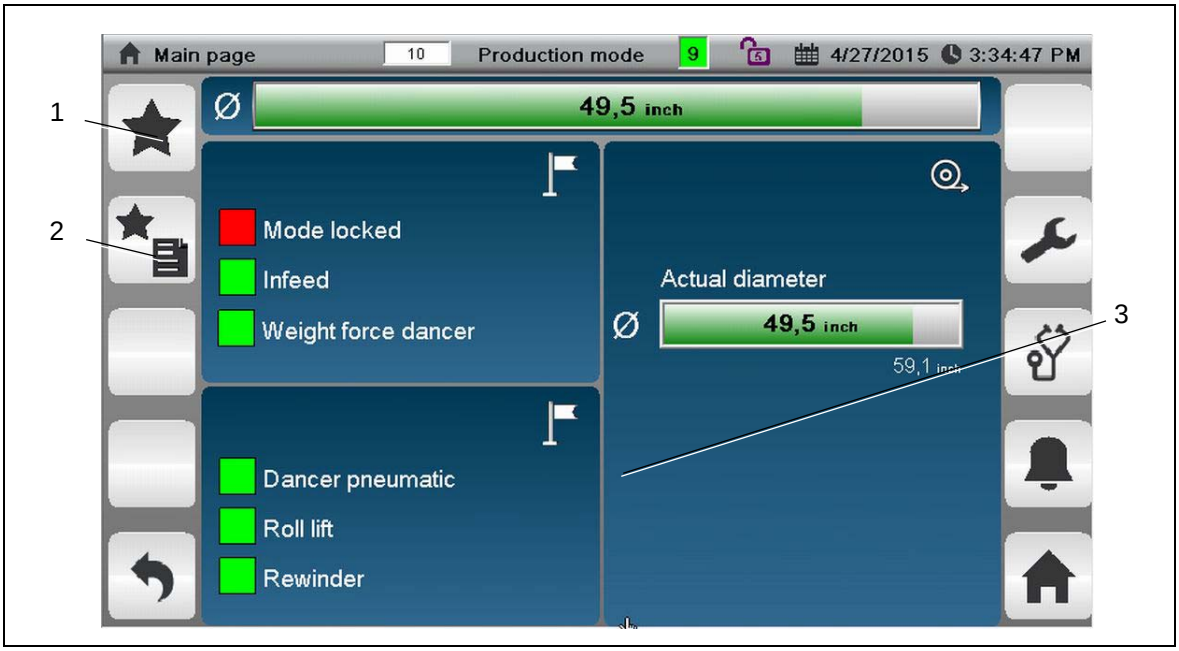


Illustration 36: Selecting favorite pages

The favorite changeover is used for the rapid changeover between up to five different favorite pages.

Procedure:

- ▷ Navigate to the first page that you want to set as a favorite page.
- ▷ When the content of the required page (3) is displayed, press the <Select favorite pages> button (1).
- ▷ Navigate to the second page that you want to set as a favorite page.
- ▷ When the content of the required page (3) is displayed, press the <Select favorite pages> button (1).
- ▷ Pressing the <Favorite page changeover> button (2) displays a selection list with a maximum of five favorite pages.
- ▷ Press the required favorite page in the selection list.
- ✓ The required favorite page is displayed.

5.1.11 <Diagnosis> page

The <Diagnosis> page has the following functions:

- Selection of the display language, units of measurement and date formats
- Branching to the various diagnostic pages.

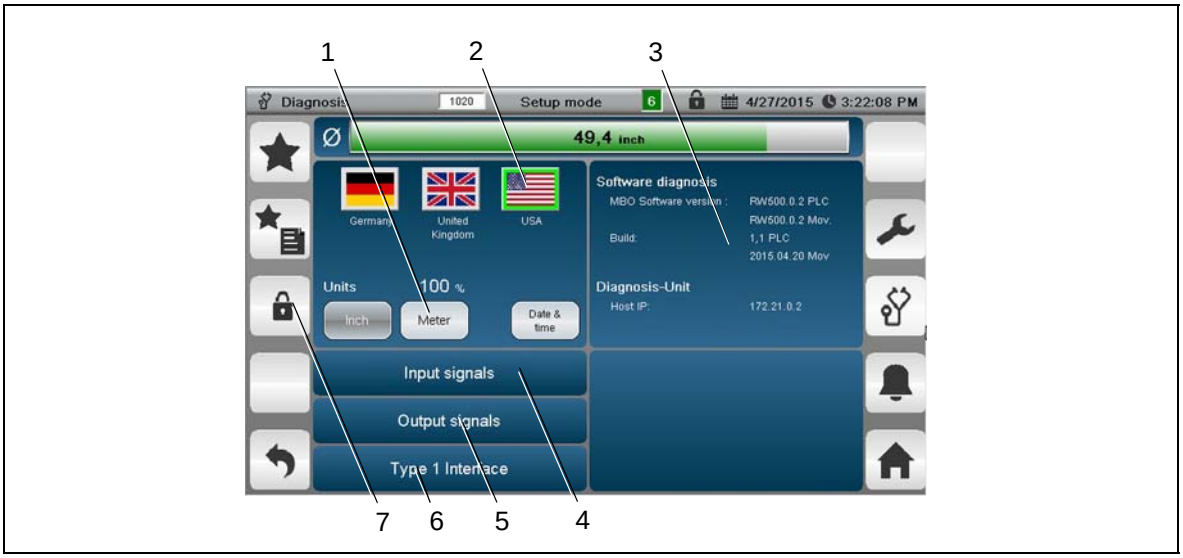


Illustration 37: <Diagnosis> page

1 **<Units of measurement> buttons**.
Press the buttons Inch, Metre, Date & Time to display the corresponding national units of measurement (metric/Imperial) or date and time formats.

2 **<Select language> buttons**.
Pressing the flags displays the display texts in the relevant language.

3 **<Software diagnosis> keypad**.
Pressing the keypad opens the page for the software diagnostics.
See chapter "5.1.11.1 <Software diagnosis> page".

4 **<Input signals> keypad**.
Pressing the keypad opens the <Input signals> page.
See chapter "5.1.11.2 <Diagnosis/input signals> page".

5 **<Output signals> keypad**.
Pressing the keypad opens the <Output signals> page.
See chapter "5.1.11.3 <Diagnosis/output signal> page".

6 **<Type 1 interface> keypad**.
Pressing the keypad opens the <Type 1 interface> page.
See chapter "5.1.11.4 <Diagnosis/type 1 interface> page".

7 **<Password management> keypad**.
Pressing the keypad opens the <Password management> page.

5.1.11.1 <Software diagnosis> page

Illustration 38: <Software diagnosis> page

5.1.11.2 <Diagnosis/input signals> page

This page displays the signals of the inputs.
Active inputs are displayed in green.
Inactive inputs are displayed in gray.

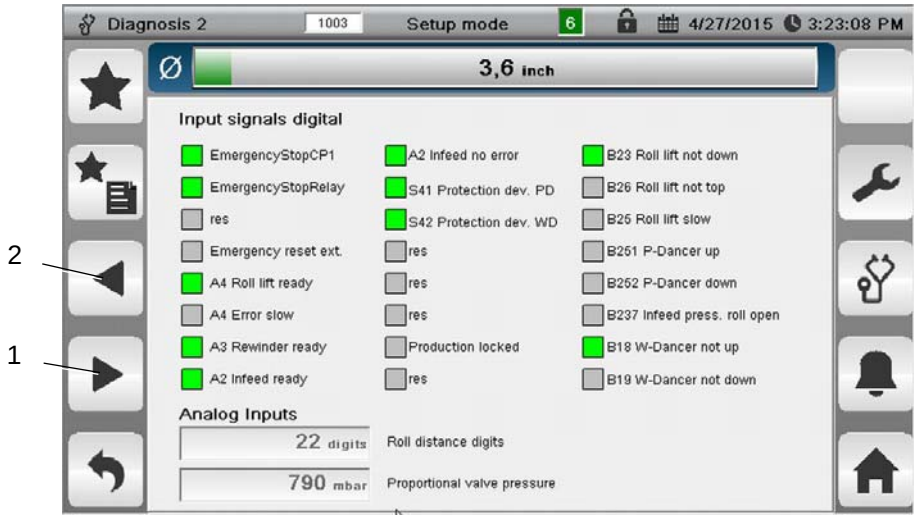


Illustration 39: <Diagnosis/input signals> page

1 <Scroll diagnostic pages forwards> function key
2 <Scroll diagnostic pages backwards> function key

5.1.11.3 <Diagnosis/output signal> page

This page displays the signals of the outputs.
Active outputs are displayed in red.
Inactive outputs are displayed in gray.

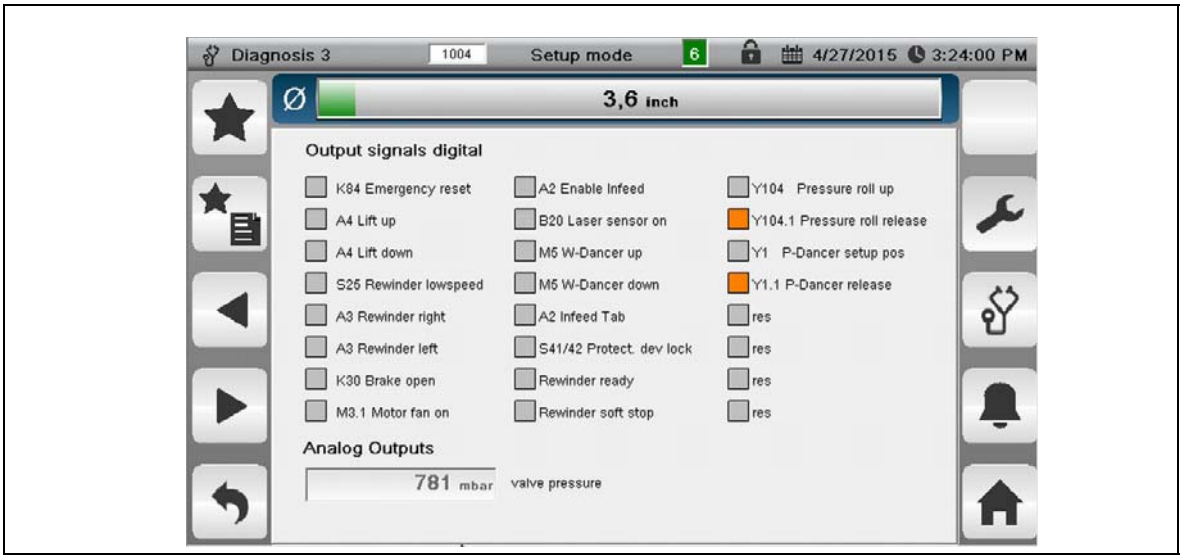


Illustration 40: <Diagnosis/output signals> page

5.1.11.4 <Diagnosis/type 1 interface> page

This page displays the signals of the type 1 interface.
Active in/outputs are displayed in red.
Inactive in/outputs are displayed in gray.

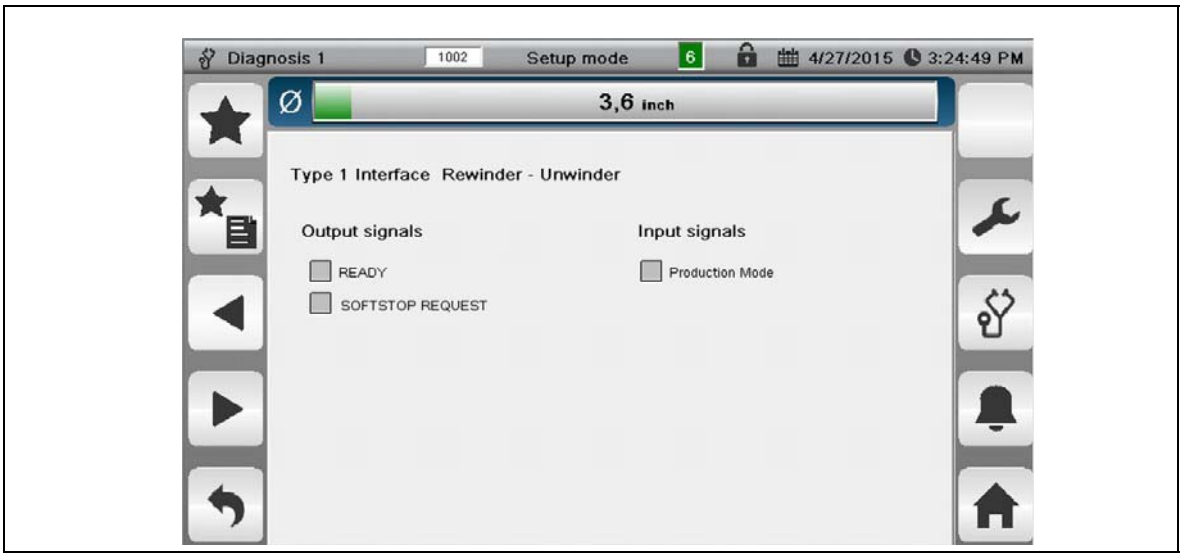
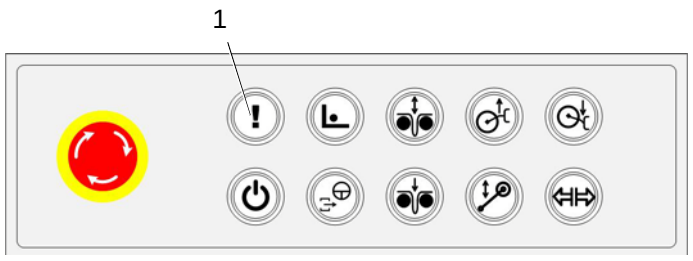


Illustration 41: <Diagnosis/type 1 interface> page

5.2 Error displays

5.2.1 Control panel



1 <Confirm error> illuminated button.

Illustration 42: Error display

If an error occurs in the rewinder, the <Reset emergency stop/confirm error> illuminated button is lit.

Color of the light ring	Error description
Off	No error present.
Blue	<EMERGENCY STOP> palm button (in the machinery) was or is activated.
Yellow	Error according to the error list.

Table 22: Error display

5.2.2 Touchscreen

5.2.2.1 <Alarms> page

The <Alarm> page displays the current error messages.

The following pages can be selected via the function keys:

- <Alarms> page
- <History> page

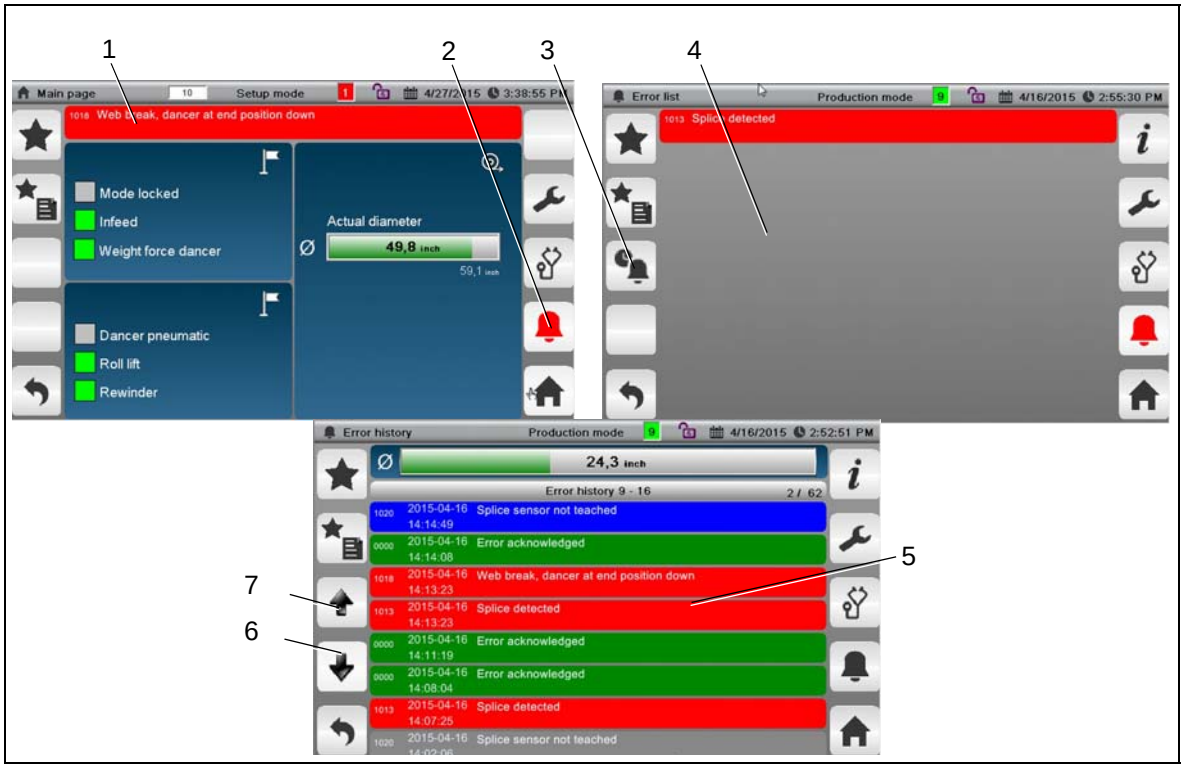


Illustration 43: <Alarms> and <History> pages

1 <Current web diameter, alarms, notices> display field
2 <Alarms> function key
3 <History> function key
4 <Alarm list> page
5 <History> page
6 <Scroll down> button
7 <Scroll down> button

Display <Alarm list> page

Here's how to display the <Alarm list> page:

▷ Press the display field (1) or the <Alarms> function key (2).

✓ The <Alarm list> page is displayed.

Display <History> page

Here's how to display the <History> page:

▷ Press the <History> function key (3).

The <History> page is displayed.

5.3 Operating modes

There are the following operating modes:

- Setting up
- Production

5.3.1 Setting up

The Setting Up (Setup) operating mode permits:

- The rewinder to be set up for a new job.
- A roll to be changed during a job.
- Web breaks to be corrected.

5.3.2 Production

In the Production operating mode the rewinder is ready for production; i.e. when the previous machine (printer, etc.) delivers paper, the rewinder winds this with the relevant:

- Web speed
- Web tension.

6 Transport and interim storage

6.1 Introduction

For transport and interim storage of the machine, also observe:

- Qualification of personnel.
  See chapter "6.1.1 Qualification of personnel".
- The safety messages.
  See chapter "6.1.2 Safety messages".

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

6.1.2 Safety messages

WARNING!

Crushing hazard during transport of the machine and machine parts.

Non-observance could result in serious injury or death.

- Only use approved lifting and transport equipment for transport (crane, fork lift, pallet truck, lifts, etc.)
- Keep the transport paths and the loading and unloading areas free of personnel.
- Transport may only be carried out by trained specialized personnel.

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 fork lift carrier and length of forks.
- For details about the minimum requirements, please see the "Technical data" chapter.

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 storage.

Non-observance could result in property damage.

Observe the specified storage conditions.

6.2 Packaging of the machine

6.2.1 Machine

The machine is delivered as follows:

- On a shipping 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.

Proceed as follows to transport the machine.

Prerequisites

These prerequisites must be fulfilled:

- Machine must be screwed to the shipping pallet.
- Use a suitable fork lift.
  For requirements, see Chapter "3.2.5 Shipping and transport data".

1 Machine

Illustration 44: Transporting the machine

Transporting the machine

Here's how to transport the machine:

▷ Observe the safety messages.
▷ 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

Proceed as follows to store the machine temporarily outdoors.

Prerequisites

These prerequisites must be fulfilled:

- Machine must be screwed to the shipping pallet.
- The packaging must be intact.
- Storage time outdoors = maximum two weeks.

Interim storage of the machine

Here's how to store the machine outdoors:

▷ Observe the specified storage conditions.
▷ Protect machine with a roof or suitable cover tarps against humidity.
▷ As soon as condensate forms, store the machine in a storage room (danger of corrosion).
▷ Loosen cover film 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"

7 Installation, commissioning

7.1 Introduction

To install/commission the machine, also observe:

- Qualification of personnel.
  See chapter "7.1.1 Qualification of personnel".
- The safety messages.
  See chapter "7.3.1 Safety messages".
- The safety instructions in the separate installation and commissioning instructions.
  See separate installation and commissioning instructions.
- The protective devices.
  See chapter "4.4.8 Checklist for protective devices".

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

7.1.2 Safety messages

WARNING!

Hazardous voltage.

Non-observance could result in serious injury or death.

- Only a electrically qualified person may perform work on the machine's electrical system.
- Follow the local occupational safety regulations and electrotechnical regulations.
- 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).

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 fork lift 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.

WARNING!

Trip hazards due to cables and hoses lying around.

Non-observance could result in serious injury or death.

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

7.2 Installing 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.
- in the USA, this must generally be carried out by a licensed electrician.

  This licensed electrician must be familiar with the corresponding standards, especially NFPA 70, as well as the technical connection requirements of the local power supply company.

7.3.1 Safety messages

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.
- In the USA, this must generally only be carried out by a licensed electrician.

  This licensed electrician must be familiar with the corresponding standards, especially NFPA 70, 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, an additional 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 may be used exclusively for the connection of MBO folding units, units, or deliveries.
- The 230 VAC sockets of the MBO machines may be used exclusively for connecting auxiliary devices intended for this purpose, such as gluing 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.	Design according to VDE 0100 Part 430 (IEC 60364-4-47)	Design according to VDE 0100 Part 540 (IEC 60364-5-54)
	Protective equipotential bonding[1)] (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 25: Design of the stationary mains connection

1) Prerequisite, see chapter "7.3.5 Connecting the protective equipotential bonding conductor".

7.3.4 Making the stationary mains connection on the main control cabinet

1 Terminals strip for stationary mains connection 2 Cable grommet

Illustration 45: Stationary mains connection

Procedure:

1) Insert the power cable into the main control cabinet through the cable grommet (2).
2) Connect the power cable to the terminal strip for stationary mains connection (1) according to the wiring diagram.
3) Ensure finger safety by fastening the yellow protective plate via the open connection terminals.
   Use the red plastic screws included to do this.

✓ The stationary mains connection is complete.

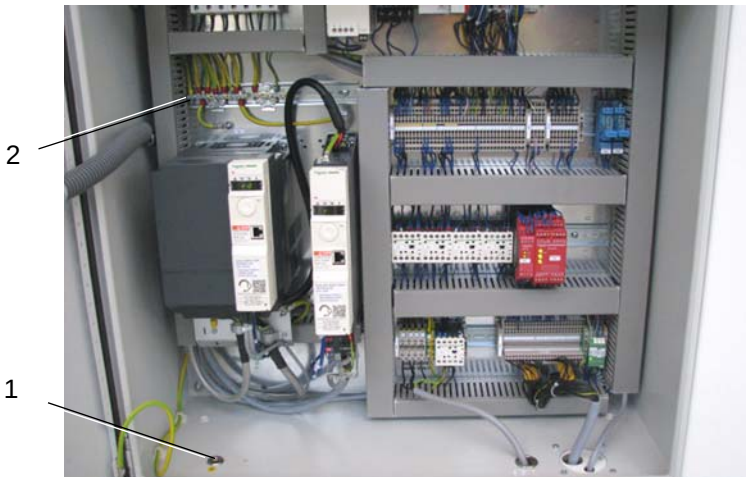
7.3.5 Connecting the protective equipotential bonding conductor

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 Cable grommet
2 PE connection terminal strip

Illustration 46: 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 a 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 process

- 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 Conducting a 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 "4.4.8 Checklist for protective devices".

7.6 Conducting an inspection after commissioning

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

Proceed as follows to conduct the inspection after commissioning.

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.

8 Adjustment and operation

8.1 Introduction

To adjust and operate the machine, observe the following:

- Qualification of personnel.
  See chapter "8.1.1 Qualification of personnel".
- The safety messages.
  See chapter "8.1.2 Safety messages".
- The intended use.
  See chapter "2.1 Intended use".

8.1.1 Qualification of personnel

This table lists the necessary qualification of the personnel related to "Operation and setting work" of the machine.

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

Table 26: Qualification of personnel, operation and setting work
Legend: X permitted, - not permitted

8.1.2 Safety messages

WARNING!

Dismantling, bridging or bypassing protective devices.

Non-observance could 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 alteration to the machine to the person responsible for the plant in your operation.

WARNING!

Crushing and drawn-in hazard due to 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.
- Never reach into the machine while the machine is running.

WARNING!

Crushing hazard when loading and unloading the roll lift.

Non-observance could result in serious injury or death.

- The loading and unloading should only be carried out by one person.
- Stand to the side of the roll lift when loading and unloading.
- Do not reach into the moving supporting arms on the roll lift when loading and unloading.

WARNING!

Crushing and drawn-in hazard.

With the relevant rewind direction, there is a hazardous entanglement zone between the paper roll and floor.

Non-observance could result in serious injury or death.

- Do not stand in the area of the paper roll when the machine is running.
- Never crawl underneath the paper roll.
- Never reach into the rotating paper roll while the machine is running.
- Ensure that there are no objects located in this danger zone.

WARNING!

Drawn-in hazard due to rotating rollers.

Non-observance could result in serious injury or death.

- Never reach into the machine when it is running.
- 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!

Crushing and drawn-in hazard on the pressure shaft of the pressure arm.

Non-observance could result in serious injury or death.

Never reach towards the pressure shaft while the machine is running.

CAUTION!

Risk of burning due to hot braking resistors.

Non-observance could result in injury.

Never touch the hot braking resistor.

CAUTION!

Cutting hazard.

Edges of running webs can cause cutting injuries.

- Never touch the edges of running webs.

8.2 Operation

8.2.1 Switching the main switch on/off

Proceed as follows to switch on/off the main switch.

Prerequisites

These prerequisites must be fulfilled:

- The machine is connected to the mains supply.

Illustration 47: Switch the main switch on/off

Switching on

Here's how to switch the main switch on:

▷ Turn the main switch (1) to switch position 1.
The control system boots up.

✓ The machine is switched on.

Switching off

Here's how to switch the main switch off:

▷ Turn the main switch (1) to switch position 0.
The display turns off.

✓ The machine is turned off now.

To save energy, a machine that is not being used should be switched off.

8.2.2 Press the EMERGENCY STOP palm button

Proceed as follows to activate the EMERGENCY STOP palm button.

Prerequisites

These prerequisites must be fulfilled:

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

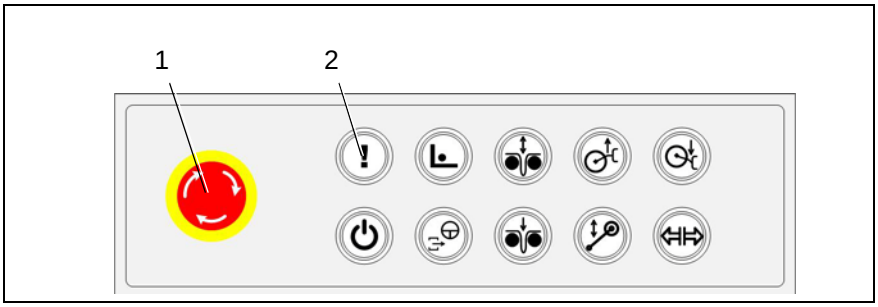


Illustration 48: EMERGENCY STOP palm button

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.(1).
   The <Reset EMERGENCY STOP> illuminated button (2) lights up blue.
2) Eliminate the problem.
3) Unlock the EMERGENCY STOP palm button (1) with a turn to the right.
4) Press the <Reset EMERGENCY STOP> illuminated button (2).
   The <Reset EMERGENCY STOP> illuminated button (2) does not light up.

✓ The machine is ready for operation.

If there is another fault, the <Reset emergency stop> illuminated button is lit in red.
Before the machine can be started, the fault must be rectified.
See chapter "5.2 Error displays"

8.2.3 Switching on <Setup / production> operating modes

Proceed as follows to switch on the operating modes.

Prerequisites

These prerequisites must be fulfilled:

- The main switch is switched on.
- The machine is stationary.
- The movable guards are closed.

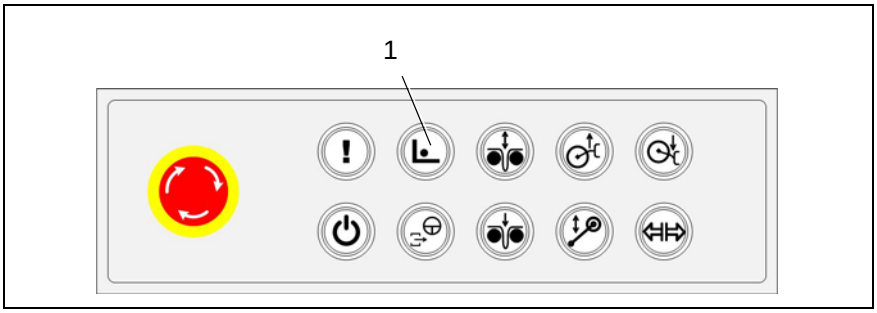


Illustration 49: Change over the operating modes

Switch on <Setup> operating mode

Here's how to switch on the <Setup> operating mode:

▷ Press the <Setup / production operating mode> (1) for approx. 3 seconds.
The illuminated button (1) is lit yellow.

✓ The <Setup> operating mode is switched on.

The following functions are active in the <Setup> operating mode:

- Lower roll lift
- Raise roll lift
- Open/close brake
- Set the position of the pneumatic dancer
- Set the position of the weight force dancer
- Inch the in-feed shaft
- Raise/lower pressure arm
- Change the rewind direction of the paper roll

Switch on <Production> operating mode

Here's how to switch on the <Production> operating mode:

▷ Press the <Setup / production operating mode> illuminated push button (1) for approx. 3 seconds.
The illuminated button (1) is lit green.

✓ The <Production> operating mode is switched on.

The following functions are automatically moved to the <Production> position after switching to the <Production> operating mode (3):

- Weight force dancer
- Pneumatic dancer
- Pressure arm.

8.2.4 Raising/lowering the roll lift

Proceed as follows to lower/raise the roll lift.

Prerequisites

These prerequisites must be fulfilled:

- The <Setup> operating mode is switched on.

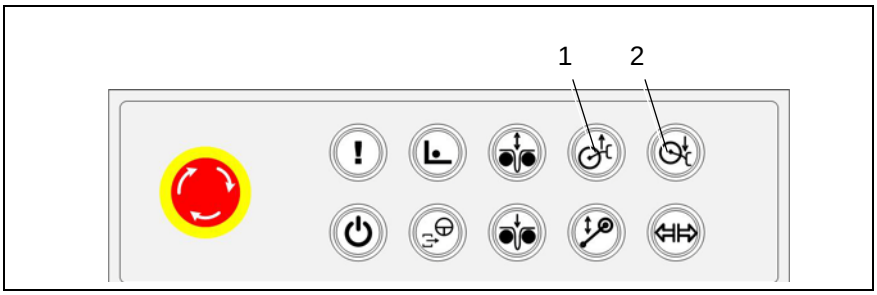


Illustration 50: Raising/lowering the roll lift

Lowering the roll lift

Here's how to lower the roll lift:

▷ Press the <Lower roll lift> (2) illuminated button.
The roll lift lowers.
The illuminated button (2) is lit yellow.

▷ Press the illuminated button (2) until the roll lift has been completely lowered.

✓ The roll lift has been lowered.

Raising the roll lift

Here's how to raise the roll lift:

▷ Press the <Raise roll lift> illuminated button (1).
The roll lift is raised.

▷ Press the <Raise roll lift> illuminated button (1) until the roll lift stops automatically at the top position.

✓ The roll lift has been raised.

- To simplify the engaging of the gear wheels, the web drive automatically rotates at a slow speed.
- Ensure that the gear wheels are intermeshing correctly and not running tooth on tooth.

8.2.5 Switching off/on the paper roll brake

Proceed as follows to switch the brake on/off.

Prerequisites

These prerequisites must be fulfilled:

- The <Setup> operating mode is switched on.

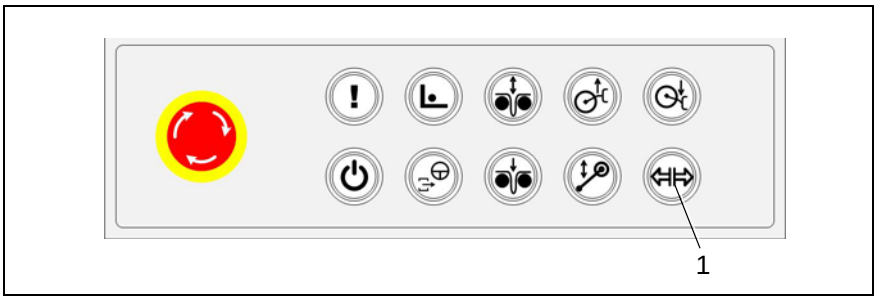


Illustration 51: Switch the brake off/on

Switching off the brake

Here's how to switch the brake off:

▷ Press the <Brake on/off> (1) illuminated button.
The illuminated button (1) is lit yellow.

✓ The brake is switched off.

Switching on the brake

Here's how to switch the brake on:

▷ Press the <Brake on/off> (1) illuminated button.
The illuminated button (1) is lit green.

✓ The brake is switched on.

The brake is switched on automatically after switching to the <Production> operating mode.

8.2.6 Adjusting the rewind direction of the paper roll

WARNING!

Drawn-in and crushing hazard.

With the relevant rewind direction, there is a hazardous entanglement zone between the paper roll and floor.

Non-observance could result in serious injury or death.

- Do not stand in the area of the paper roll when the machine is running.
- Never crawl underneath the paper roll.
- Never reach into the rotating paper roll while the machine is running.
- Ensure that there are no objects located in this danger zone.
- Mark the danger zone on the floor with black/yellow markings.

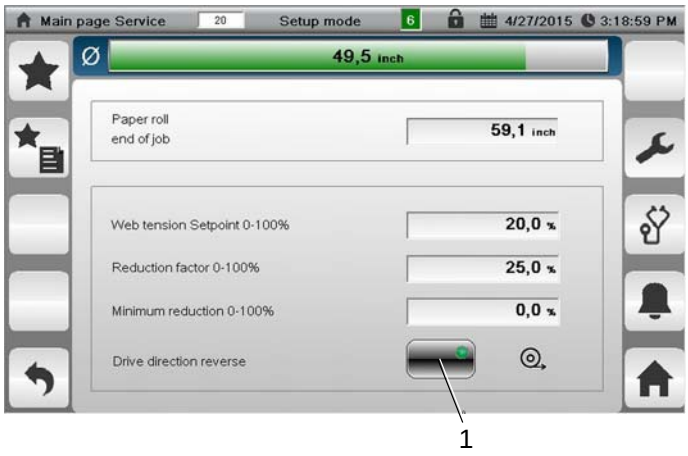
The rewind direction must be set in accordance with the print image of the paper roll.

Proceed as follows to adjust the rewind direction of the paper roll.

Prerequisites

These prerequisites must be fulfilled:

- The <Setup> operating mode is switched on.
- The rewind direction must be changed.



1 <Set rewind direction> button

Illustration 52: Set the rewind direction of the paper roll

The standard rewind direction is <counter clockwise>.

The LED in the button (1) is gray.

Here's how to set the rewind direction clockwise:

▷ Press the <Set rewind direction> button (1).
The LED in the button (1) is green.
The paper roll rotates clockwise.

✓ The rewind direction is set.

Here's how to set the rewind direction counter-clockwise:

▷ Press the <Set rewind direction> button (1).
The LED in the button (1) is gray.
The paper roll rotates counter-clockwise.

✓ The rewind direction is set.

Ensure that the web trajectory corresponds to the pressure shaft of the rewind direction when changing the rewind direction.
Standard rewind direction counter-clockwise.
The web must be moved underneath the pressure shaft.
Rewind direction clockwise.
The web must be moved over the pressure shaft.
See chapter "8.3.3 Feeding in the web".

8.2.7 Pneumatic dancer, set position

Proceed as follows to set the position of the pneumatic dancer.

Prerequisites

These prerequisites must be fulfilled:

- The <Setup> operating mode is switched on.
- The paper roll brake is switched off.
- The movable guards are closed.

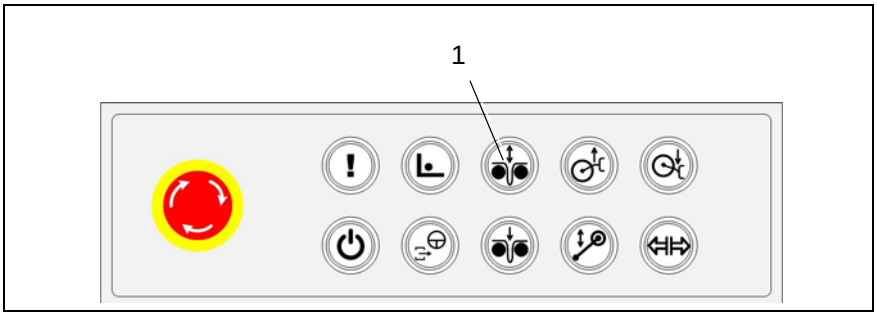


Illustration 53: Pneumatic dancer, set position

Set the dancer to the <Setup> position

Here's how to set the dancer to the <Setup> position:

▷ Press the <Production / setup dancer position> illuminated button (1).
The illuminated button (1) is lit yellow.
The dancer moves upwards.

✓ The dancer is in the <Setup> position.

Set dancer to the <Production> position

Here's how to set the dancer to the <Production> position:

▷ Press the <Production / setup dancer position> illuminated button (1).
The illuminated button (1) is lit green.
The dancer moves downwards.

✓ The dancer is in the <Production> position.

The dancer is automatically moved to the <Production> position after switching to the <Production> operating mode.

8.2.8 Weight force dancer, set position

Proceed as follows to set the position of the weight force dancer.

Prerequisites

These prerequisites must be fulfilled:

- The <Setup> operating mode is switched on.
- The paper roll brake is switched off.
- The movable guards are closed.

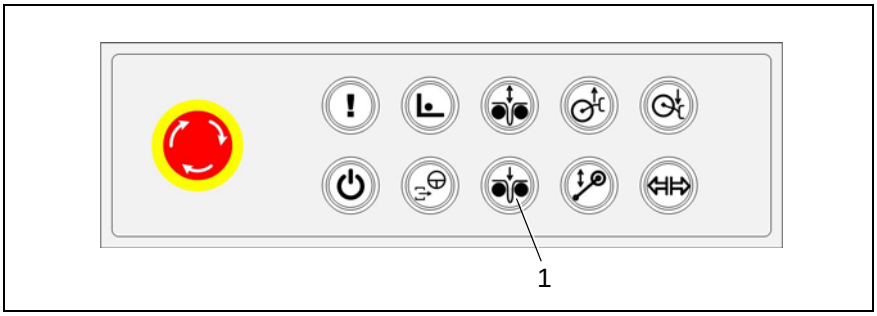


Illustration 54: Weight force dancer, set position

Set the dancer to the <Setup> position

Here's how to set the dancer to the <Setup> position:

▷ Press the <Production / setup dancer position> illuminated button (1).
The illuminated button (1) is lit yellow.
The dancer moves upwards.

✓ The dancer is in the <Setup> position.

Set dancer to the <Production> position

Here's how to set the dancer to the <Production> position:

▷ Press the <Production / setup dancer position> illuminated button (1).
The illuminated button (1) is lit green.
The dancer moves downwards.

✓ The dancer is in the <Production> position.

The dancer is automatically moved to the <Production> position after switching to the <Production> operating mode.

8.2.9 Raising/lowering the pressure arm

The pressure arm with the pressure shaft is used to press out the air during winding.

Proceed as follows to lower/raise the pressure arm.

Prerequisites

These prerequisites must be fulfilled:

- The <Setup> operating mode is switched on.
- The web has been fed in.
- The paper roll brake is switched on.

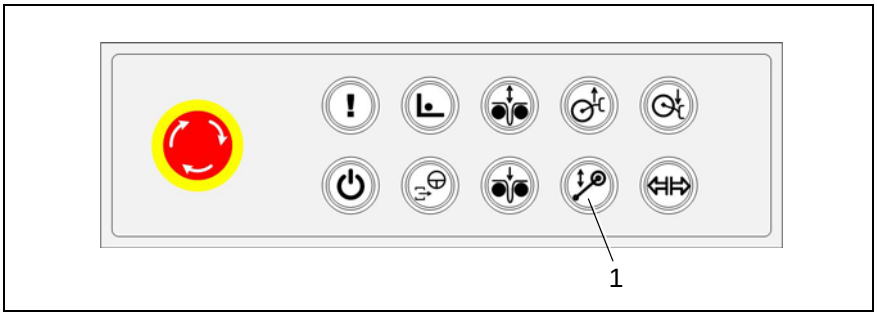


Illustration 55: Raising/lowering the pressure arm

Lowering the pressure arm

Here's how to lower the pressure arm:

The illuminated button (1) is lit yellow.

▷ Press the <Raise/lower pressure arm> (1) illuminated button.
The illuminated button (1) is lit green.
The pressure arm moves downwards.

✓ The pressure arm is lowered.

Raising the pressure arm

Here's how to raise the pressure arm:

The illuminated button (1) is lit green.

▷ Press the <Raise/lower pressure arm> (1) illuminated button.
The illuminated button (1) is lit green.
The pressure arm moves upwards.

✓ The pressure arm is raised.

The pressure arm is automatically lowered after switching to the <Production> operating mode.

8.2.10 Move the in-feed shaft in inching mode

Proceed as follows to move the in-feed shaft in inching mode.

Prerequisites

These prerequisites must be fulfilled:

- The <Setup> operating mode is switched on.
- The web has been fed in.
- The movable guards are closed.

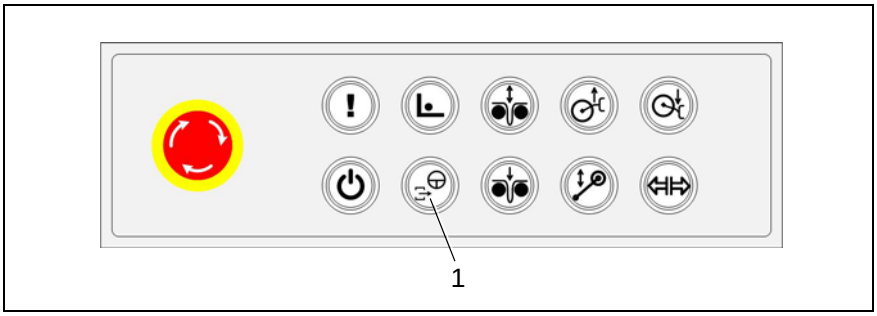


Illustration 56: Move in inching mode

Here's how to move the in-feed shaft in inching mode:

The <Inching> illuminated button (1) lights up in white.

▷ Press and hold the <Inching> illuminated push button (1).
The illuminated button (1) is lit green.
The in-feed shaft rotates.

✓ The in-feed shaft is moved in inching mode.

8.2.11 Creating production readiness

Proceed as follows to create production readiness.

Prerequisites These prerequisites must be fulfilled:

- The <Setup> operating mode is switched on.

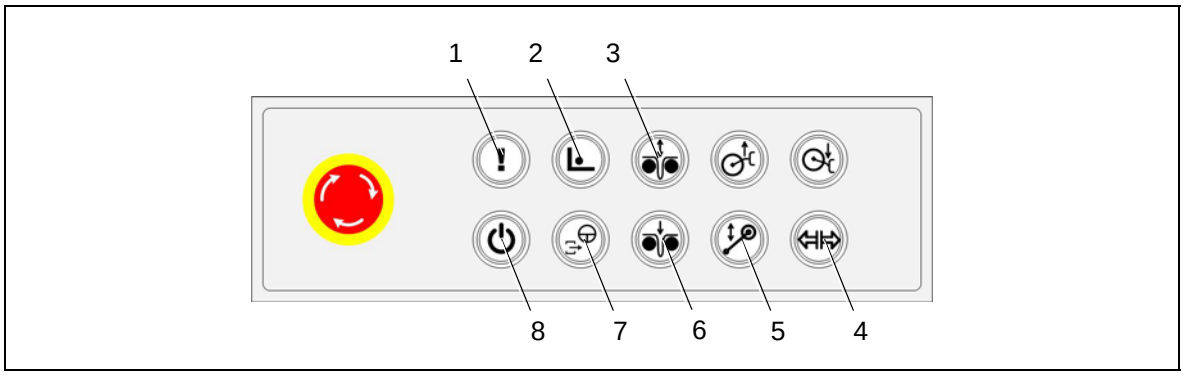


Illustration 57: Creating production readiness

Here's how to get ready for production:

1) Fit the rewinder with a core shaft and an empty sleeve.
2) Set the correct rewinding direction.
3) Guide the web through the rewinder to the core shaft.
4) Affix the web to the empty sleeve.
5) Switch the paper roll brake (4) on.
6) Lower the pressure arm (5).
7) Set the weight force dancer to the <Production> position (6).
8) Set the pneumatic dancer to the <Production> position (3).
9) Close the nip roller of the in-feed shaft.
10) Switch the web guide on (option).
11) Switch the <Production> operating mode (2) on.
    The illuminated button (2) is lit green.
    The <Reset emergency stop> illuminated button (1) does not light up.
    The <Stop request> illuminated button (8) lights up in red.

✓ The system is ready for production.

8.3 Adjustment

8.3.1 Brief instructions for adjusting the machine

The machine is adjusted in these work steps.

1) Operate the machine.
   See chapter "8.2 Operation".
2) Switching on setup mode.
   See chapter "8.2.3 Switching on <Setup / production> operating modes".
3) Set the pneumatic dancer to the <Setup> position.
   See chapter "8.2.7 Pneumatic dancer, set position".
4) Set the weight force dancer to the <Setup> position.
   See chapter "8.2.8 Weight force dancer, set position".
5) Switching off the paper roll brake.
   See chapter "8.2.5 Switching off/on the paper roll brake".
6) Insert the core shaft with empty sleeve.
   See chapter "8.3.2 Insert the core shaft with empty sleeve".
7) Set the rewinding direction.
   See chapter "8.2.6 Adjusting the rewind direction of the paper roll"
8) Feed in the web.
   See chapter "8.3.3 Feeding in the web".
9) Close the nip roller.
   See chapter "8.3.3 Feeding in the web"
10) Connecting the web after a roll change.
    See chapter " ".
11) Switching on the paper roll brake.
    See chapter "8.2.5 Switching off/on the paper roll brake".
12) Set the pneumatic dancer to the <Production> position.
    See chapter "8.2.7 Pneumatic dancer, set position".
13) Set the weight force dancer to the <Production> position.
    See chapter "8.2.7 Pneumatic dancer, set position".
14) Switching on production mode.
    See chapter "8.2.3 Switching on <Setup / production> operating modes".
15) Setting the internal web tension.
    See chapter "8.3.5 Setting the internal web tension".
16) <Set the full paper roll> position.
    See chapter "8.4 Set <Full paper roll>".
17) Troubleshooting.
    See chapter "8.6 Identification and handling of malfunctions".

✓ The machine has been adjusted.

8.3.2 Insert the core shaft with empty sleeve

Proceed as follows to insert a core shaft with empty sleeve.

Prerequisites

These prerequisites must be fulfilled:

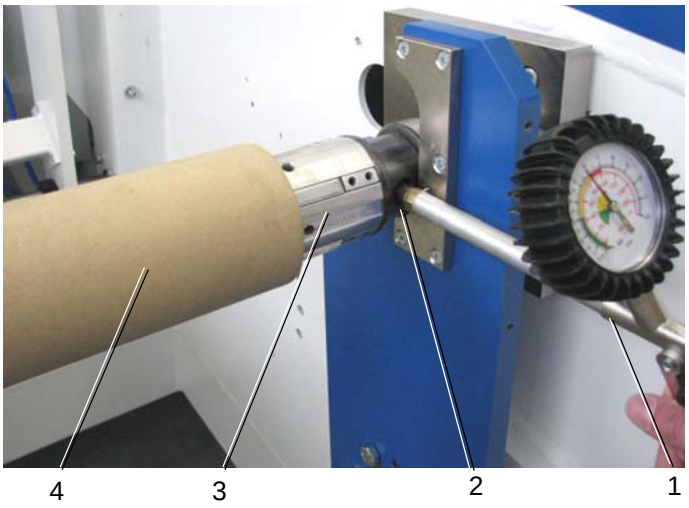
- A full paper roll has been removed.

WARNING!

Clamping the core shaft in loaded status.

Non-observance could result in serious injury or death.

- It is only permitted to clamp or vent the core shaft in unloaded status, i.e. the paper roll must be on the ground.
- The press bars in the core shaft are otherwise positioned unevenly on the roll core and there is a dangerous imbalance.



1 Compressed air pistol with pressure gage	3 Core shaft
2 Compressed air valve	4 Empty sleeve

Illustration 58: Inserting the core shaft

Inserting the core shaft

Here's how to insert the core shaft:

▷ Vent the core shaft on the compressed air valve (2).
▷ Slide an empty sleeve (4) over the core shaft (3).
▷ Fit the core shaft (3) into the roll lift.
▷ Position the empty sleeve (4) on the center of the core shaft (3).
▷ Fit the compressed air pistol (1) onto the compressed air valve (3).
▷ Actuate the compressed air pistol (1) until the maximum pressure has been built up (6 bar).
▷ Only remove the compressed air pistol (1) from the compressed air valve (2) when activated. Otherwise the core shaft would be vented again.
✓ The core shaft has been inserted.

8.3.3 Feeding in the web

Proceed as follows to feed in the web.

Prerequisites These prerequisites must be fulfilled:

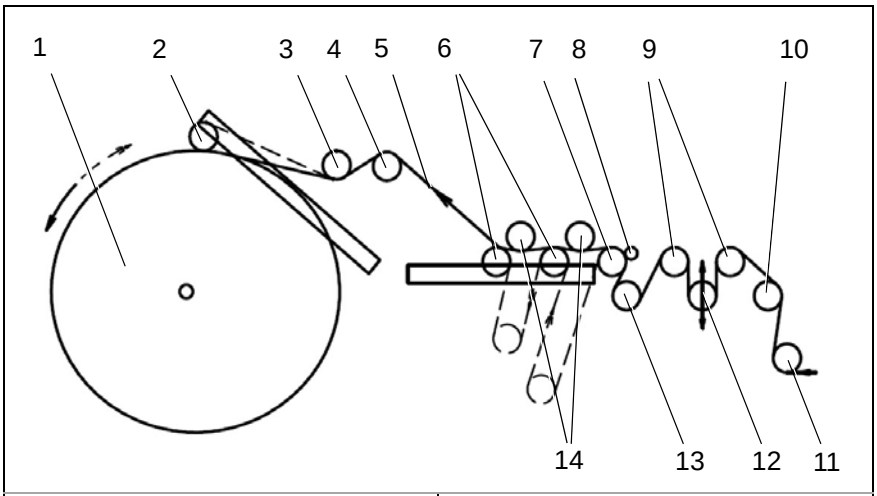
- The <Setup> operating mode is switched on.
- A core shaft with empty sleeve is located in the roll lift.
- The paper roll brake is switched off.
- The nip roller on the in-feed shaft is open.
- The weight force dancer is in the <Setup> (top) position.
- The pneumatic dancer is in the <Setup> (top) position.

WARNING!

Crushing and drawn-in hazard.

Non-observance could result in serious injury or death.

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



1 Paper roll	8 Nip roller
2 Pressure shaft	9 Guide shafts
3 Guide shaft	10 Guide shaft
4 Guide shaft	11 Infeed shaft
5 Web	12 Movable dancer shaft
6 Guide shafts	13 Guide shaft
7 in-feed shaft	14 Movable dancer shafts

Illustration 59: Feeding in the web

Feed in the web

Here's how to feed in the web:

1) Insert the web (5) underneath the infeed shaft (11).
2) Guide web (5) over the guide shaft (10).
3) Insert the web (5) between the moveable dancer shaft (12) and the fixed guide shafts (9).
4) Insert the web (5) underneath the guide shafts (12).
5) Guide the web (5) through the in-feed shaft (7) and the nip roller (8).
6) Insert the web (5) between the moveable dancer shaft (14) and the fixed guide shafts (6).
7) Guide web (5) over the guide shaft (4).
8) Guide the web (5) underneath the guide shaft (3).

With standard rewind direction counter-clockwise

9) Guide the web (5) underneath the pressure shaft (2) to the core shaft.

With rewind direction clockwise

10) Guide the web (5) over the pressure shaft (2) to the core shaft.
11) Fasten the end of the web with adhesive strips onto the empty sleeve.
12) Turn the core shaft by hand until there are approx. 2 - 3 windings over the splice.
13) Switch the paper roll brake on.

✓ The web has been fed in.

8.3.4 Open/close the nip roller on the in-feed shaft

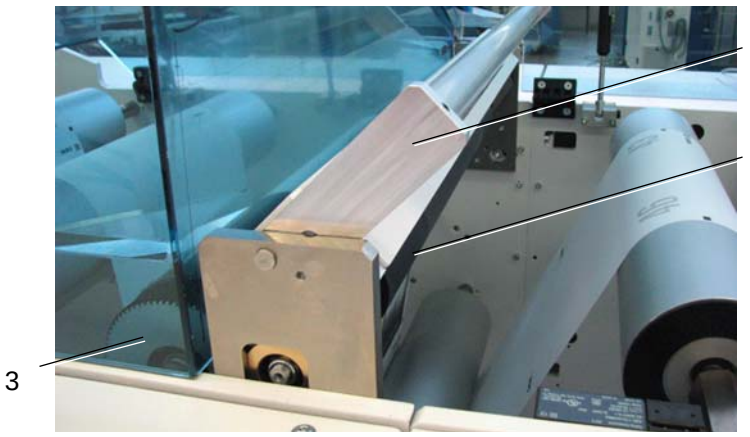
The in-feed shaft with closed nip roller disconnects the external web tension to the printer from the internal web tension of the rewinder.

Proceed as follows to open/close the nip roller.

Prerequisites

These prerequisites must be fulfilled:

- The <Setup> operating mode is switched on.
- The web is moved to the core shaft.
- The interlocking moveable guard with guard locking over the weight force dancer is open.



1 Grip 2 Nip roller	3 in-feed shaft

Illustration 60: Open/close the nip roller

Close the nip roller

Here's how to close the nip rollers:

▷ Press the handle (1) on the nip roller (2) downwards.

✓ The nip roller is closed.

Open the nip roller

Here's how to open the nip roller:

▷ Pull the handle (1) on the nip roller (2) upwards.

✓ The nip roller is open.

When opening the nip roller, ensure that there is no web break in the rewinder.
Otherwise the web is retracted by the external web tension.

8.3.5 Setting the internal web tension

The internal web tension affects the winding quality of the paper roll.
This is generated by the pressure of the pneumatic dancer shafts on the web.
The internal web tension is set via the touchscreen.
As with increasing roll diameter the web tension increases automatically, the input of a reduction factor can be used to keep the web tension constant across the entire web diameter.

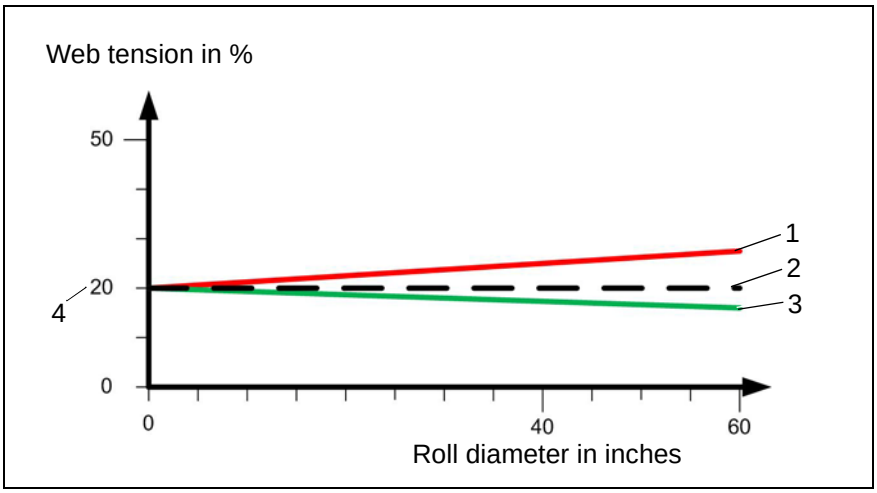


Illustration 61: Setting the web tension

1 Web tension run with reduction factor = 0%
2 Web tension run with reduction factor = 25%
3 Web tension run with reduction factor = 30%
4 Web tension setting = 20%

Proceed as follows to set the internal web tension.

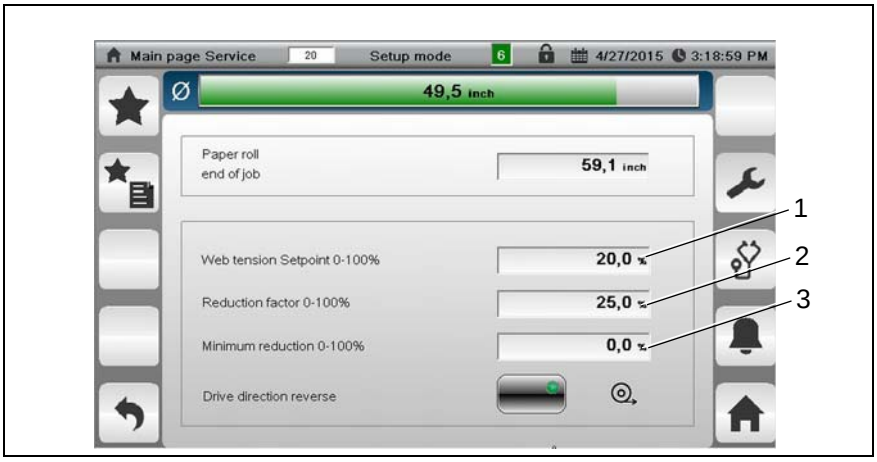


Illustration 62: Setting the web tension

Setting value (experiential values)

Web tension = approx. 15-20%
Reduction factor = approx. 20-25%

Setting the web tension (1)

Here's how to set the internal web tension:

▷ Press the input field (1).
A numeric input field appears.
▷ Enter the value for the required web tension.
✓ The internal web tension is set.

Setting the reduction factor (2)

Here's how to set the reduction factor:

▷ Press the input field (2).
A numeric input field appears.
▷ Enter the value for the required reduction factor.
✓ The reduction factor is set.

Minimum reduction factor (3)

No function with Rewinder RW500

The web tension is set based on the paper weight.

- Light papers = low web tension.
- Heavy papers = greater web tension.

8.4 Set <Full paper roll>

Proceed as follows to set the <Paper roll full> position.

Prerequisites These prerequisites must be fulfilled:

- The <Production> operating mode is switched on.

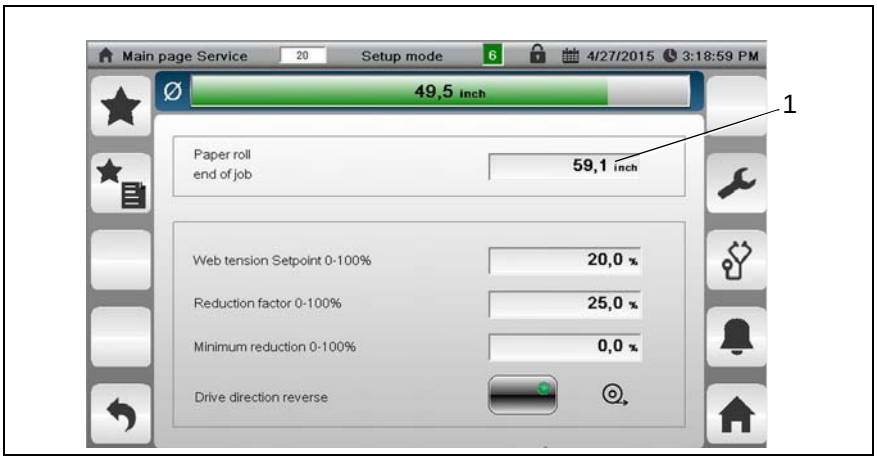


Illustration 63: Set <Full paper roll> position

Here's how to set the <Full paper roll> position:

▷ Press the input field (1).
A numeric input field appears.

▷ Enter the value for the required shutdown position.

✓ The <Full paper roll> position is set.

8.5 Setting the contact pressure of the pressure arm

The pressure arm with pressure shaft prevents air pillows forming between the webs.

The contact pressure is set depending on the paper properties, the set internal web tension and the roll diameter.

- Lightweight papers, low web tension and small web diameter = lower contact pressure.
- Heavyweight papers, high web tension and large roll diameter = greater contact pressure.

Proceed as follows to set the contact pressure of the pressure arm.

Prerequisites These prerequisites must be fulfilled:

- The compressed air supply is connected.
- There is a network pressure of at least 6 bar.
- The <Production> operating mode is switched on.
- The web moves at production speed.

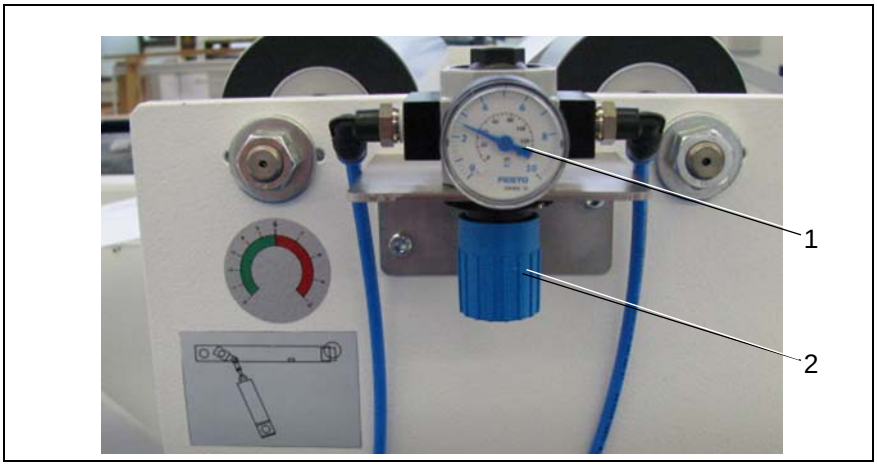


Illustration 64: Setting the contact pressure of the pressure arm

Adjusting the contact pressure

Here's how to adjust the contact pressure of the pressure arm:

1) Read the set pressure on the manometer (1).
2) Pull out the adjustment element (2).
3) Turn the adjustment element (2).

   Direction of rotation clockwise
   The pressure is reduced.
   The contact pressure is reduced.

   Direction of rotation counter-clockwise
   The pressure is increased.
   The contact pressure is increased.
4) Set the desired contact pressure using the manometer (1).
5) Push in the adjustment element (1).
   The adjustment element is locked.

✓ The contact pressure is set.

Set the contact pressure so that:

- the pressure shaft is parallel on the paper roll.
- no air pillows are created in the coil.

8.6 Identification and handling of malfunctions

8.6.1 Error/Cause/Remedy

Error/ error message	Cause	Remedy
EMERGENCY STOP cannot be reset.	• An EMERGENCY STOP palm button is pressed.	• Check all EMERGENCY STOP palm buttons.
Roll lift will not raise/lower.	• <Production> operating mode is switched on.	• Switch on the <Setup> operating mode.
Winding motor not working.	• EMERGENCY STOP pressed. • Unwinder not ready. • The <Setup> operating mode is switched on.	• Reset EMERGENCY STOP. • Check the <Confirm error> illuminated button if there is an error. • Switch the <Production> operating mode on.
Pneumatic dancer is not responding.	• No compressed air.	• Check the compressed air supply.
Web running unevenly.	• Rewinder not correctly aligned. • Paper roll is not aligned. • Web guide in wrong operating mode.	• Align the rewinder correctly. • Move the paper roll flush with the existing system • Switch the web guide to automatic mode.
1001 EMERGENCY STOP button activated on control panel 1	• An EMERGENCY STOP palm button is pressed.	• Reset EMERGENCY STOP.
1002 EMERGENCY STOP relay open	•	•
1015 Lift control not ready	•	• Notify service
1018 Web break, dancer below	• Web break	• Correct the web break.
1024 Lift not in top end position	• The roll lift is not located in the top end position.	• Move the roll lift to the top end position.
1025 Protective hood/door open	•	• Close the protective hood/ door.
1027 End of job	• Web diameter has reached the set value.	• Remove the full paper roll.
1030 Contact roller on in-feed open, in <Setup> operating mode	• The pressure roller on the in-feed shaft is open.	• Close the pressure roller
1033 Time error when starting the weight dancer	•	• Notify service

Table 27: Error/Cause/Remedy

Error/ error message	Cause	Remedy
1034 Error on the frequency inverter	•	• Notify service
1035 Overload on frequency inverter	• The drive unit has been overloaded.	• Notify service
1036 Lift not in top end position	•	• Notify service
1037 Compressed air pressure roller, setup	• No compressed air.	• Check the compressed air supply.
1038 Compressed air pressure roller, production	• No compressed air.	• Check the compressed air supply.

Table 27: Error/Cause/Remedy

9 Maintenance

9.1 Introduction

For the maintenance of the machine, observe the following:

- Qualification of personnel.
  See chapter "9.1.1 Qualification of personnel".
- The safety messages.
  See chapter "9.1.2 Safety messages".
- The protective devices.
  See chapter "4.4.7 Checking protective devices".

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	-	X	-
Maintenance	X	-	X
Repair	-	-	X

Table 28: Qualification of personnel
Legend: X permitted, - not permitted

9.1.2 Safety messages

WARNING!

Crushing hazard during maintenance.

Non-observance could result in serious injury or death.

Maintenance work must be carried out by one trained and authorized person only.

- Turn the main switch to the position <0>.
- Use a padlock to secure the main switch from unintentionally switching on again.
- Follow the local occupational safety regulations and electrotechnical regulations.
- Make absolutely sure that before the machine is switched back on, all persons are in the secured area.

WARNING!

Hazardous voltage.

Non-observance could result in serious injury or death.

- Only a electrically qualified person may perform work on the machine's electrical system.
- Follow the local occupational safety regulations and electrotechnical regulations.
- 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).

WARNING!

Improper maintenance.

Non-observance could result in serious injury or death.

- Maintenance work must be carried out by specially trained and authorized technicians only.
- Follow the local occupational safety regulations and electrotechnical regulations.
- Observe the corresponding supplier documentation.
- Heed the maintenance plan.

WARNING!

Operation without protective devices.

Non-observance could result in serious injury or death.

The protective devices protect against danger spots.

- Never operate the machine without protective devices.
- Check that all protective devices are refitted after maintenance or repair work.

CAUTION!

Unsuitable tool.

Non-observance could result in injury or property damage.

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

9.2 Service

WARNING!

Non-approved safety components.

Non-observance could result in serious injury or death.

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

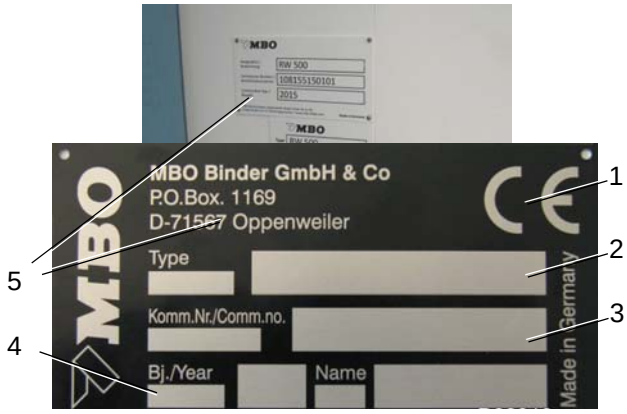
9.2.1 Ordering spare and wear parts

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		

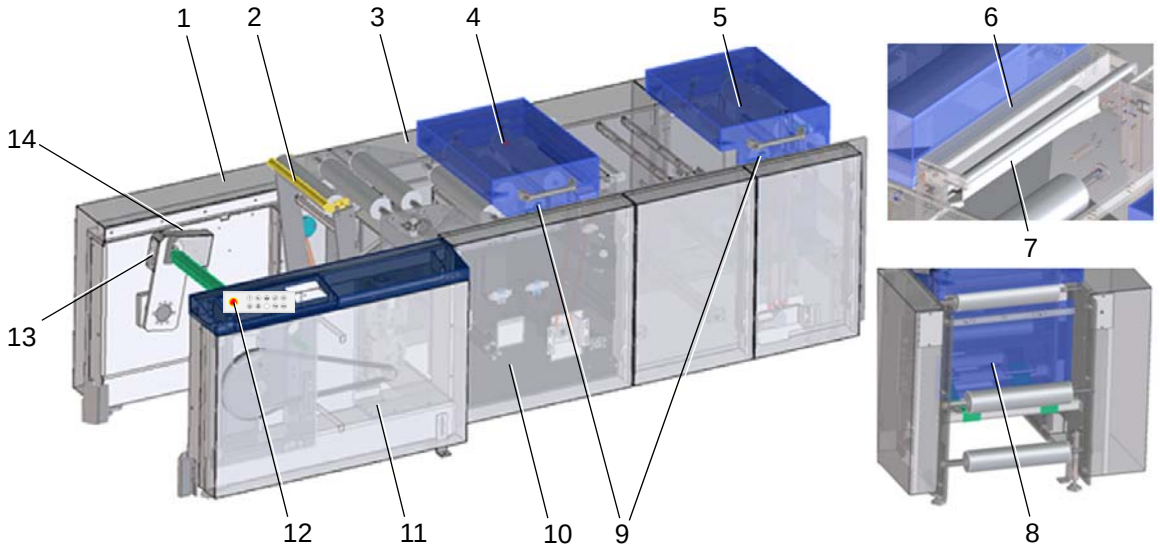
Illustration 65: Name plate

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 Spare part list for the protective devices



Pos.	Designation	Number	Parts number
1	Guard	1	719.7864.0014
2	Guard, pressure arm	1	719.6461.0001
3	Guard	1	719.7864.0016
4	Interlocking movable guards with guard locking	1	719.5666.0002
5	Interlocking movable guards with guard locking	1	719.5666.0003
6	Guard	1	719.6362.0008
7	Guard	1	719.6360.0002
8	Guard, disc	1	719.6466.0001
9	Safety switch with guard locking	2 2	0801472 0801498
10	Guard	1	719.7864.0017
11	Guard	1	719.7864.0015
12	EMERGENCY STOP palm button	1	See wiring diagram
13	Guard	1	719.8160.0001
14	Guard	1	719.6260.0001

Table 29: Spare part list for the protective devices

9.4 Performing operational maintenance

WARNING!

Rotating machine parts during operational maintenance.

Non-observance could result in serious injury or death.

Maintenance work must be carried out by one trained and authorized person only.

- Turn the main switch to the position <0>.
- Use a padlock to secure the main switch from unintentionally switching on again.
- Heed the local occupational safety regulations.
- Make absolutely sure that before the machine is switched back on, all persons are in the secured area.

9.4.1 Checking protective devices

WARNING!

Incorrectly set safety switch.

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 protective devices for shutting down the machine in an emergency 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.

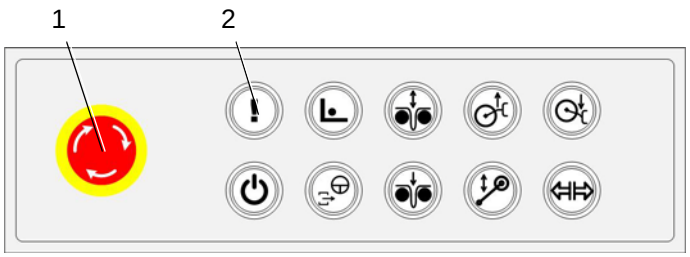
9.4.1.1 Checking the EMERGENCY STOP palm button

Proceed as follows to check the EMERGENCY STOP palm button:

Prerequisites

These prerequisites must be fulfilled:

- The machine is in production.



1 EMERGENCY STOP palm button

Illustration 66: Checking the 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 (1) so that it remains engaged and in an actuated state.
   The <Reset EMERGENCY STOP> illuminated button (2) lights up blue.
   Pressing the EMERGENCY STOP palm button (1) must cause all machine functions to shut down.
2) Unlock the EMERGENCY STOP palm button (1) with a turn to the right.
3) Press the <Reset EMERGENCY STOP> illuminated button (2).
   The <Reset EMERGENCY STOP> illuminated button (2) does not light up.

✓ The 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.

9.4.1.2 Check interlocking movable guard with guard locking

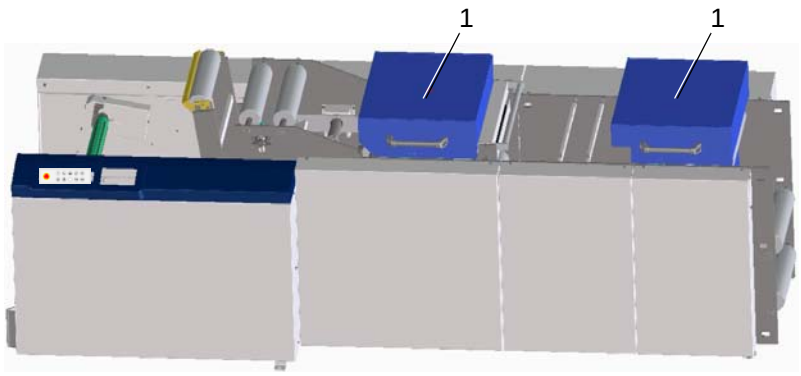
For safety reasons, the function of the interlocking movable guard must be checked every day.

Proceed as follows to test the interlocking movable guard with guard locking.

Prerequisites

These prerequisites must be fulfilled:

- The <Production> operating mode is switched on.
  The <Setup/production operating mode> illuminated push button is lit in green.



1 Interlocking movable guards with guard locking

Illustration 67: Interlocking movable guard with guard locking

Checking the interlocking movable guard

Here's how to check the interlocking movable guard:

1) Try opening the movable guard.
   The movable guard is not permitted to be opened due to the guard locking.
2) Press the <Setup/production> illuminated button for approx. 3 seconds to switch to the <Setup> operating mode.
   The illuminated button is lit yellow.
3) Try opening the movable guard.
   The interlocking movable guard should now open.
4) Close the interlocking movable guard.
5) Press the <Setup/production> illuminated button for approx. 3 seconds to switch to <Production> operating mode.
   The illuminated button is flashing green.

✓ The interlocking movable guard is checked.

The interlocking moveable guards are not permitted to be openable in the <Production> operating mode.

9.4.2 Check that all protective devices are present

WARNING!

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 that the protective devices are present.

Prerequisites

These prerequisites must be fulfilled:

- The machine is turned off now.

Checking protective devices

Here's how to check the protective devices:

▷ Check that all protective devices are present and functional.
See chapter "4.4.8 Checklist for protective devices".

✓ The protective devices are checked.

9.4.3 Cleaning the machine

9.4.3.1 Safety messages

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 aggressive chemical detergents or cleaning 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 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.

9.4.3.2 Recommended cleaning agents

Flat surfaces and cavities	Suction clean or sweep out (No compressed air as there is a risk 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.

9.4.3.3 Cleaning the machine

Proceed as follows to clean the machine.

Prerequisites

These prerequisites must be fulfilled:

- Main switch is switched off and secured.
- EMERGENCY STOP palm button is pressed.
- Clean the machine at least once 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 aggressive chemical detergents or cleaning 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.

9.4.4 Cleaning the optical sensors

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

The following optical sensors are integrated in the rewinder

- <Dancer position> weight force dancer sensor
- <Webguide> sensors

Proceed as follows 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 or reflectors with a dry, lint-free cloth.

✓ The optical sensors are cleaned.

9.5 Performing maintenance

WARNING!

Improper maintenance.

Non-observance could result in serious injury or death.

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

Only have repair work performed by MBO Service or by an authorized customer service agent.
Separate instructions are required for this.

9.6 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	"Conducting an inspection after commissioning"	After 20 operating hours		
	9.4.1.1	"Checking the EMERGENCY STOP palm button"	Daily		
	9.4.1.2	"Check interlocking movable guard with guard locking"	Daily		
	9.4.3	"Cleaning the machine"	Weekly		
	9.4.4	"Cleaning the optical sensors"	Weekly		
Maintenance					

Table 30: Maintenance schedule

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

9.7 Performing repair

WARNING!

Improper maintenance.

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.
- Separate instructions are required for the repair .

10 Decommissioning, storage

10.1 Introduction

10.1.1 Qualification of personnel

This table lists the necessary qualification level 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
Legend: X permitted, - not permitted

10.1.2 Safety messages

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

10.2 Decommissioning

10.2.1 Temporary shutdown

Proceed as follows 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 "10 Instandhaltung".

✓ The machine is temporarily shut down.

After a temporary shutdown, the machine must be commissioned again.
See chapter "7 Installation, commissioning".

10.2.2 Final decommissioning

Proceed as follows 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 disconnected.

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 and interim storage".

✓ The machine is permanently shut down.

10.3 Storage

Proceed as follows 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 "3.2.5 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 messages

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.

Proceed as follows to dispose of/recycle the machine.

Prerequisites

These prerequisites must be fulfilled:

- Decommission the machine prior to disposal.
  See chapter "10.2 Decommissioning".
- Observe the transport instructions.
  See chapter "6 Transport and 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, consumables, and supplies 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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