

**Rotary Die-Cutter**  
**BSR 550 Servo**



**Operating Instructions**

**Translation from the original operating instructions**

**Please keep for future use**

**In case of doubt, the German text shall be applicable.**

## Preface

In this BOGRAMA product, you have purchased a high quality industrial product with which you are able to attain the highest levels of reliability and performance provided you carefully follow the operating instructions. The operating instructions are aimed at users of the machine. They are intended to familiarise the operator with the function and operation, as well as the safety instructions and maintenance of this machine.

## Copyright

These operating instructions may not be reprinted, in whole or in part, without the written consent of **BOGRAMA AG**.

Furthermore, no parts may be reproduced, and duplicated and disseminated using electronic systems.

The operating instructions and the spare parts list form part of the scope of supply stipulated contractually.

## Warranty

The warranty claim stipulated contractually applies for our products. We exclude the following from the warranty claim:

- The customer's own add-on parts and modifications to the incomplete machine
- Damage attributable to deficient maintenance and repair work carried out on the customer's own authority
- Non-intended use
- Removal of protective and safety equipment, and any resulting damage

## Customer service information

BOGRAMA machines and replacement parts are available worldwide from your local representatives.

Please contact your agent should you have any questions, customer service requests or require a repair service.

Always have your machine number and machine model to hand when ordering and making enquiries. Please refer to the nameplate on the machine for this information.

## Version information

These operating instructions were released in April 2011 and can be ordered under **BSR 550 Servo**, specifying the machine number.

Differences between the software and the operating instructions are possible at all times. We reserve the right to make changes to the software and operating instructions without prior notice.

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# Copy of original declaration of conformity

(separate document)



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## 1 Introduction

### 1.1 About the operating instructions

These operating instructions form part of your product. They must be kept with the machine over the entire service life of the product. Pass on these operating instructions to every subsequent owner and user of the product.

Important information pertaining to safety is marked in addition with symbols.

Keep these operating instructions up to date. Add every subsequent addendum to this document.

Our machine is state-of-art-technology at the time of delivery. We reserve the right to make changes given our continual work on enhancements.

Our operating instructions are updated on a regular basis. We would be glad to receive suggests for improvement to make these instructions more user freindly.

### 1.2 Identification of the product

Please refer to the nameplate (Fig. 1) on the machine for identification of the machine as well as the most important machine details, such as model, machine number and year of manufacture. You will need these details for ordering spare parts and to make use of our customer service department.

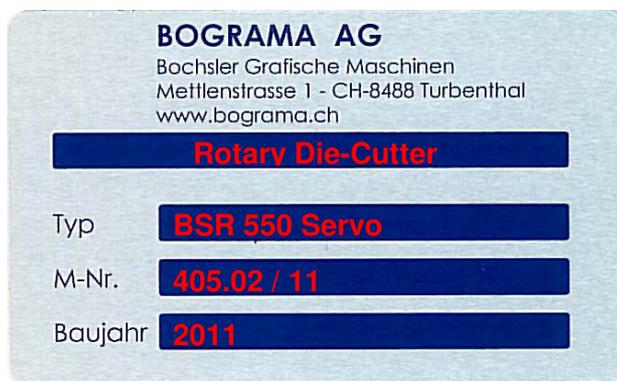


Figure 1: BSR 550 Servo nameplate

## **2 Safety**

### **2.1 General**

This section introduces the safety requirements - adherence to them is an absolute requirement when using the BOGRAMA BSR 550 Servo.

Reading and understanding of the operating instructions is mandatory for all those carrying out work on and with the BSR 550 Servo.

Conformance to all generally applicable regional safety and accident prevention laws, and supplementary operator regulations, is a requirement.

Keep all safety and hazard warning signs on the BSR 550 Servo in a legible condition.

### **2.2 Safety concept**

#### **2.2.1 Scope**

The safety concept of the BSR 550 Servo is autonomous and does not influence machines interfaced upstream and downstream.

If the BSR 550 Servo is operated inline with other machines, the Emergency Stop command detector must come into effect across the whole machine line and switch it off. Connectors exist for this on the BSR 550 Servo and must be used for this purpose. If older machines are linked into this machine line, they may have to be upgraded.

#### **2.2.2 3-stage method**

The safety concept is based upon a safe and nonhazardous design of the BSR 550 Servo. The 3-stage method in the EN ISO 12100-1:2003 standard is applied for the design.

##### **Stage 1: Inherently safe design**

The BSR 550 Servo was designed in accordance with recognised safety-related rules of design. The hazard area around the BSR 550 Servo is 1m. Nobody may enter this area apart from those authorised.

##### **Stage 2: Technical protection measures**

All safety covers are screwed to the BSR 550 Servo. The safety covers can only be removed with the use of tools, and are thereafter not part of the BSR 550 Servo.

The safety covers and safety hoods may only be removed by BOGRAMA technicians, personnel trained by BOGRAMA, and other authorised personnel.

##### **Stage 3: User information as regards residual risks**

Hazard symbols in the operating instructions and on the machine provide warnings against residual risks. Reference is made to residual risks in "2.4.2 Safety instructions".

#### **2.2.3 Add-ons and modifications**

No technical changes (in terms of add-ons and modifications) may be carried out on the BSR 550 Servo without written consent from BOGRAMA AG.

## 2.3 Warning signs

### 2.3.1 Danger symbols

Sign	Meaning
	<b>Prohibition</b> <b>red border</b> <b>white background</b> <b>black symbol</b>
Warning about hazards that can directly result in serious injury or material damage.	
	<b>Warning</b> <b>yellow background</b> <b>black symbol</b>
Warning about hazards that can result in minor and not so serious injury, and material damage.	
	<b>Instruction</b> <b>blue background</b> <b>white symbol</b>
Instructions on technical or efficiency requirements. Failure to comply can result in malfunction, inefficiency and possibly production losses.	

Table 1: Colours for the safety signs

### 2.3.2 Danger signs

Sign	Meaning
	Warning about hazard from hot surfaces.
	Warning about the risk of squeezing in rotating rollers.
	Warning about rotating belt drive.
	Warning about hand injury.
	Warning about sharp tool.
	Warning about hazard from electrical current.
	Warning about tripping hazards.
	Warning about hazard areas.

Table 2: Danger signs

### 2.3.3 Danger levels

Danger levels provide an indication of the severity of hazards. They are built upon a classification system using different signal words to provide distinction.

Sign	Meaning
 <b>Danger</b>	An imminent hazard that may result in serious bodily injury or death.
 <b>Warning</b>	A dangerous situation that may result in serious bodily injury or death.
 <b>Caution</b>	A dangerous situation that may result in minor bodily injury or material damage.
 <b>Note</b>	A dangerous situation that may damage the product or anything in the vicinity.
 <b>Important</b>	Information and instructions for use

Table 3: Danger levels

### 2.3.4 General warning signs

	<b>Danger</b> Danger from electrical voltage. Failure to comply will result in serious injury and possible death. Immediately report any exposed or bare cables or electrical connectors to those responsible within your organisation.
	<b>Danger</b> Danger from electrical voltage at the main terminals of the switch cabinet (open and switched off at the main switch). Voltage continues to be applied whilst the BSR 550 Servo is connected to the mains. Failure to comply will result in serious injury and possible death. Electrical work may only be carried out by authorised personnel and specialists.
	<b>Danger</b> Danger from electrical voltage. Failure to comply will result in serious injury and possible death. Always keep the main control cabinet and the subdistributor cabinet locked to prevent unauthorised opening. When carrying out maintenance work, turn the switch cabinet off from the main switch and remove the mains plug. When carrying out maintenance work, lock the switch cabinet with a security lock to prevent the system from being switched on by others.
	<b>Danger</b> Danger from the open protective hood dropping down. Failure to comply may result in injury as a result of body parts becoming wedged.

Table 4: General warning signs 1

	<p><b>Danger</b> Danger from running machine parts. Failure to comply will result in serious injury and possible death. Always keep your hair in a bundle and use protection. Take your jewellery off to operate and carry out maintenance work on the machine. Wear tight-fitting clothes when operating and carrying out maintenance work on the machine.</p>
	<p><b>Warning</b> Danger from running machine parts. Failure to comply may result in serious injury and material damage. If the machine suddenly comes to a stop, check the following before switching it on again:</p> <ul style="list-style-type: none"> <li>• There are no other people on the machine</li> <li>• The machine is in perfect condition</li> </ul>
	<p><b>Danger</b> Danger from moving machine parts. Failure to comply may result in serious injury as a result of body parts being pulled in. If the machine suddenly comes to a stop, check the following before switching it on again:</p> <ul style="list-style-type: none"> <li>• The safety switches on the protective hoods may not be tampered with or modified</li> <li>• Adjustment processes on an open protective hood are only permitted in manual mode</li> </ul>
	<p><b>Warning</b> Danger from running machine parts during maintenance work. Failure to comply may result in serious injury and material damage. Only have maintenance and repair work carried out by one person. Turn the machine off from the main switch prior to carrying out maintenance and repair work. Lock the switch cabinet to prevent the system from being switched on again unintentionally.</p>
	<p><b>Danger</b> Danger as a result of modifications to, or removal of, the protective equipment on the machine. Failure to comply will result in serious injury and possible death. Report any audible/visible and safety-relevant changes to the machine to those responsible within your organisation.</p>
	<p><b>Warning</b> Danger from items lying around. Failure to comply may result in serious injury and material damage. Only use tools when they are in perfect working condition. After maintenance and adjustment work is carried out, ensure no tools are left on the machine.</p>
	<p><b>Warning</b> Risk of tripping over cables left lying around. Failure to comply can pose a risk of injury. Ensure machine interfaces (cables, hoses, pipes) are laid such that they cannot be tripped over.</p>
	<p><b>Warning</b> Warning about sharp tools. Failure to comply can pose a risk of injury.</p>

Table 5: General warning signs 2

## 2.4 Residual risks

### 2.4.1 General

The use of technical products is associated with hazards. Hazards which cannot be eliminated by engineering measures or technical protective equipment are referred to as residual risks. The safety symbols in these operating instructions have been determined through risk assessment and make reference to known residual risks.

Should additional hazards and risks come to light during operation, the operator of the BSR 550 Servo commits to immediately informing BOGRAMA AG.

### 2.4.2 Safety instructions

Life phase	Hazard	Precautionary measure
In all life phases	General	Reading and understanding of the operating instructions is mandatory for all those carrying out work on and with the BSR 550 Servo.
		The BSR 550 Servo is designed for one-man operation.
		The BSR 550 Servo may only be operated by personnel who have undergone training held by BOGRAMA AG or one of its agents.
		Remove any oil and dirt residue in the hazard area of the BSR 550 Servo.
		All safety equipment must be fully functional and freely accessible at all times.
		Never turn the main switch off when the BSR 550 Servo is running.
	Ejection	Never stand in the travel area of the outfeed whilst pressing the Enable button.
		Ensure the area is clear of people whilst the table is being opened and closed.
		Never extend your hand into the running BSR 550 Servo.
	Squeezing	Never stand in the travel area of the outfeed whilst pressing the Enable button.
		Ensure the area is clear of people whilst the table is being opened and closed.
		Never extend your hand into the running BSR 550 Servo.
	Cutting	The punching sheet may only be installed and removed by trained personnel.
	Clothing and long hair	Always keep your hair in a bundle and protected.
		Clothes must be tight-fitting and done up.
		Never extend your hand into the running BSR 550 Servo.
		Never stand in the travel area of the outfeed whilst pressing the Enable button.
	Friction and abrasion	Ensure the area is clear of people whilst the table is being opened and closed.
		Never extend your hand into the running BSR 550 Servo.

<b>Life phase</b>	<b>Hazard</b>	<b>Precautionary measure</b>
In all life phases	Impacts	Never stand in the travel area of the outfeed whilst pressing the Enable button.
		Ensure the area is clear of people whilst the table is being opened and closed.
		Never extend your hand into the running BSR 550 Servo.
	Shearing	Never stand in the travel area of the outfeed whilst pressing the Enable button.
		Note that the area must be clear of people whilst the table is being open and closed.
		Never extend your hand into the running BSR 550 Servo.
	Power cable	Protect the power cable from damage.
	Electric shock	Protect the power cable from damage.
	Earth wire	The earth wire must always be connected properly.
		Protect the earth wire from damage.
	Access to / contact with moving parts	Never stand in the travel area of the outfeed whilst pressing the Enable button.
		Note that the area must be clear of people whilst the table is being open and closed.
		Never extend your hand into the running BSR 550 Servo.
	Rotating open ends	Never extend your hand into the running BSR 550 Servo.
	Stability	Align the punching machine in the longwise and lateral directions using the four feet. After aligning, the counternuts of the feet must be tightened.
	Uncontrolled movements	Never stand in the travel area of the outfeed whilst pressing the Enable button.
		Note that the area must be clear of people whilst the table is being open and closed.
		Never extend your hand into the running BSR 550 Servo.
	Chemicals	There may be no corrosive or plastic-corrosive gases, vapours or liquids near the BSR 550 Servo.
	Skin inflammation	Skin inflammation and allergy symptoms may result when greasing or oiling machine parts.
It is necessary to consult a doctor in the event of skin colour changes, breathing difficulties, etc.		
Dirt	Too much dirt on the panes on the infeed/outfeed hoods may result in not being able to see the work area.	
	Clean the panes regularly.	

<b>Life phase</b>	<b>Hazard</b>	<b>Precautionary measure</b>
In all life phases	Jewellery	Take your jewellery off when working on the BSR 550 Servo.
	Rotating shafts	Never extend your hand into the running BSR 550 Servo.
	Positioning rollers	
	Magnetic cylinders	
	Vacuum carpet	
	Sharp-edged machine parts	Wear appropriate protective clothing when working on the BSR 550 Servo.
	Restoration of power after an outagel	If the air pressure of the pneumatic air supply falls to an undesired level, and then increases again, dangerous pinch and shearing points can be created on individual machine parts. If work is carried in manual mode when the protective hoods are open, the air pressure must be checked regularly because otherwise dangerous gashes and squeezing may result (on elements operated pneumatically).
	Movable protective equipment	Closing movable protective equipment can cause pinching. When closing, never hold any body parts in the opening.
Installation	Getting caught up or snared	Never stand in the travel area of the outfeed whilst pressing the Enable button.
		Note that the area must be clear of people whilst the table is being open and closed.
		Never extend your hand into the running BSR 550 Servo.
Faultfinding	Getting caught up or snared	Press the Emergency Stop button before rectifying faults and paper jams on the BSR 550 Servo.
		Never stand in the travel area of the outfeed whilst pressing the Enable button.
		Note that the area must be clear of people whilst the table is being open and closed.
		Never extend your hand into the running BSR 550 Servo.
Start-up	Getting caught up or snared	Never stand in the travel area of the outfeed whilst pressing the Enable button.
		Note that the area must be clear of people whilst the table is being open and closed.
		Never extend your hand into the running BSR 550 Servo.

<b>Life phase</b>	<b>Hazard</b>	<b>Precautionary measure</b>
Normal operation	Getting caught up or snared	Never stand in the travel area of the outfeed whilst pressing the Enable button.
		Note that the area must be clear of people whilst the table is being open and closed.
		Never extend your hand into the running BSR 550 Servo.
	Motors	You may not remove and render ineffective any protective covers.
		In emergencies, follow the internal operating instructions and their specifications. Base your actions on the instructions specified.
		The surface of the motor gets very hot and poses a risk of burns. Never extend your hand into the motors.
	Noise	Use ear protectors.
Emergency Stop	Press the Emergency Stop button before rectifying faults and paper jams on the BSR 550 Servo.	
rejector chute	Never extend your hand into the opening of the rejector chute.	
Training	Getting caught up or snared	Never stand in the travel area of the outfeed whilst pressing the Enable button.
		Note that the area must be clear of people whilst the table is being open and closed.
		Never extend your hand into the running BSR 550 Servo.
Transportation	Stability of the BSR 550 Servo	The BSR 550 Servo may only be moved with a forklift or manual lift truck.
		Never hoist the BSR 550 Servo on one side.
		Make sure that no machine parts are damaged.
		Place down the BSR 550 Servo gently.
		Ensure the area is clear of people when moving the BSR 550 Servo.
		Align the BSR 550 in the longwise and traverse directions using the four feet. After aligning, the counter-nuts of the feet must be tightened.
When adjusting the feet, ensure that the work is only carried out by one person and that this person does not keep any fingers between the feet.		

<b>Life phase</b>	<b>Hazard</b>	<b>Precautionary measure</b>
Retooling, procedure change	Replacement of punching sheet	Prior to installation, clean the cylinder in accordance with the cleaning instructions
		Ensure not to damage the punching sheet during installation/removal.
		Wear cut-resistant protective gloves.
		Beware of bodily injury when handling punching sheets.
	Replacement of counter punching sheet	Only perform installation and removal with feed and discharge unit in Manual mode.
		Prior to installation, clean the cylinder in accordance with the cleaning instructions
Getting caught up or snared	Never stand in the travel area of the outfeed whilst pressing the Enable button.	
	Ensure the area is clear of people whilst the table is being opened and closed.	
	Never extend your hand into the running BSR 550 Servo.	
Maintenance / cleaning	BSR 550	Only carry out maintenance work when the machine is idle.
	Getting caught up or snared	Never stand in the travel area of the outfeed whilst pressing the Enable button.
		Ensure the area is clear of people whilst the table is being opened and closed.
		Never extend your hand into the running BSR 550 Servo.
	Punching sheets	Wear cut-resistant protective gloves.
Viewing panes	Clean the viewing panes regularly.	
Accident / fire	BSR 550	In emergencies, follow the internal operating instructions and their specifications. Base your actions on the instructions specified.

Table 6: General warning signs 2

### 2.4.3 Exposed hazard points



#### **Danger**

Danger from rotating machine parts. Failure to comply may result in serious injury as a result of body parts being pulled in.

**Never extend your hand into the running BSR 550 Servo.  
Never extend your hand into the openings of the rejector chute.**



Figure 2: Hazard point, infeed

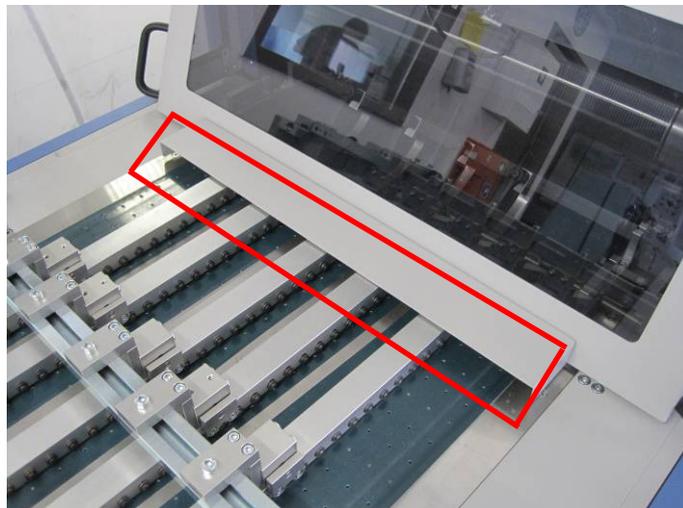


Figure 3: Hazard point, outfeed



Figure 4: Hazard point, rejector chute

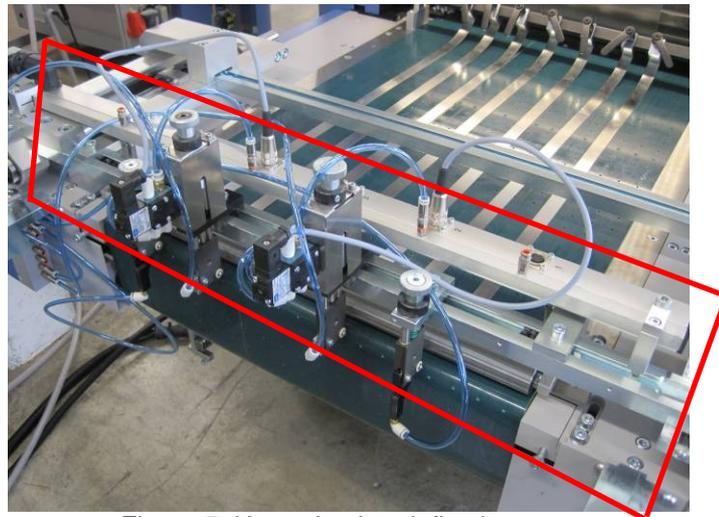


Figure 5: Hazard point, deflection area



**Danger**

**Danger**

Danger of Risk of squeezing when turning the outfeed.  
Failure to comply may result in serious injury as a result of body parts being pulled in.

**Never extend your hand into the running BSR 550 Servo.  
Never extend your hand into the travel area when closing the outfeed.**

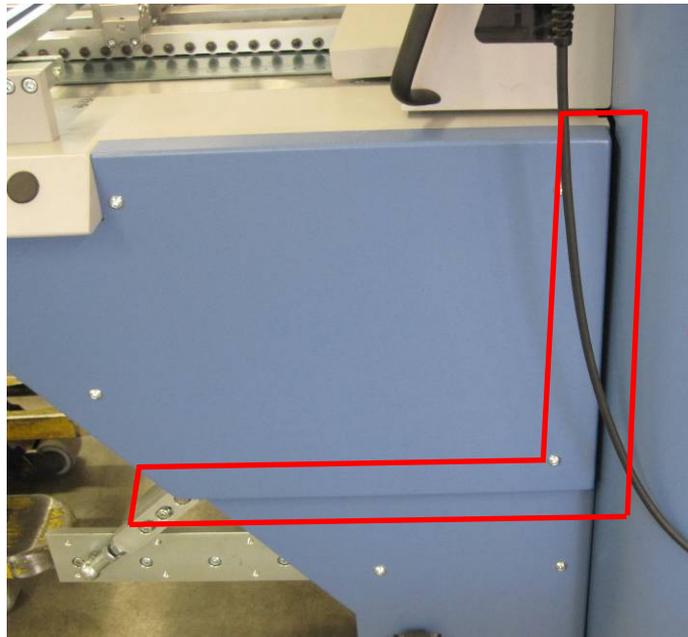


Figure 6: Hazard point, outfeed

## 2.5 Safety equipment

### 2.5.1 Safety equipment checklist



Figure 7: Safety equipment on the BSR 550 Servo

Use the checklist to perform regular checks of the function and safety of the safety equipment listed.

Pos.	Description	Function check	Visual inspection	Result	Comments
1	Infeed hood + outfeed hood				
2	Punch frame cover, front and rear				
3	Toothed belt cover, front and rear				
4	Vacuum table side cover, front and rear				
5	Outfeed frame cover, front and rear				
6	Infeed frame cover, front and rear				
7	Frame cover at bottom				
8	Vacuum table cover at bottom				
9	Positioning roller cover				
10	Switch cabinet				

Table 7: Safety equipment checklist

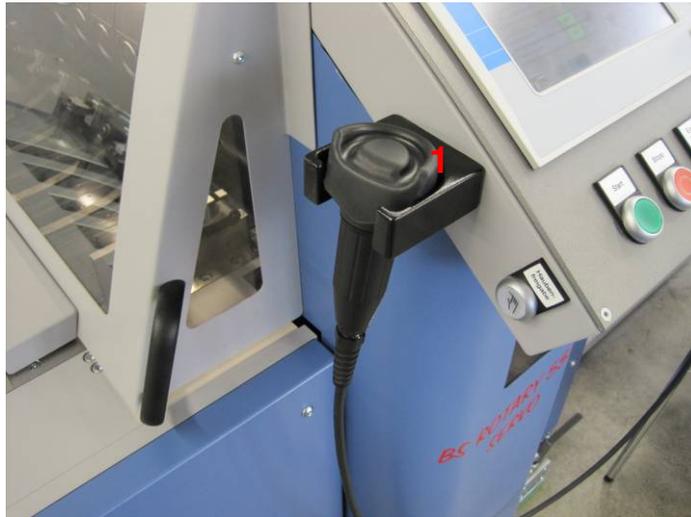


Figure 8: Enable button in Manual mode

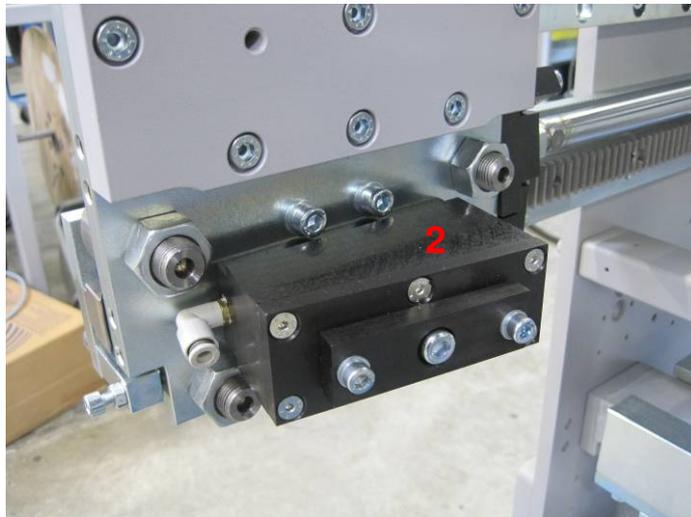


Figure 9: Table brake, vacuum outfeed front and rear

No.	Safety functions	Function check	Visual inspection	Result	Comments
1	Enable button in Manual mode				
2	Table brake, vacuum outfeed front and rear				

Table 8: Safety equipment checklist

## 2.6 Instructions for emergency situations



**Hinweis!**

In emergencies, follow the internal operating instructions and their specifications. Base your actions on the instructions specified.

### 2.6.1 Fire

#### Firefighting

- Report the fire and alert the fire service
- Move to safety, taking others in danger with you
- Try to extinguish the fire using fire extinguishers

#### Accidents involving fire

- Cover burning clothes with fire blankets
- Inform first-aiders and supervisors
- Take care of the injured

### 2.6.2 Accidents involving people

#### **Immediate actions**

- Take first-aid measures for the injured person
- Restore functions critical to survival or keep them going
- Prevent any additional deterioration If the first-aiders contactable? Get the telephone number from the accident prevention regulations

#### **Emergency call:**

- Get the emergency numbers from the notice near the telephone or from the accident prevention regulations.

#### **Questions**

**Answer the accident statements according to these questions:**

where	Where did the accident happen?
what	What happened?
how many	How many injured need help?
which	Which injuries/ symptoms are involved? (respiratory arrest, heavy bleeding, etc)
who	Who reporting the incident? (giving your own name)
how	How are the emergency services getting to the injured? (specify the vehicle access)
wait	Wait for responses. Do not end the emergency call yourself but wait until the conversation is ended by the rescue coordination centre.

Table 9: Questions for reporting an accident

### **First aid**

Continue to attend to the injured by:

- ensuring they are in comfortable and appropriate positions
- providing comforting encouragement
- immobilisation in the event of bone fractures
- applying bandages to open wounds

### **Emergency rescue service**

- The rescue service assumes responsibility for the injured at the site of the accident and takes them to the nearest appropriate hospital
- When the emergency call is made, the rescue coordination centre decides which form of transport to use The rescue actions ends when the injured arrive at hospital

## **2.7 Product safety**

### **2.7.1 Intended use**

- The BSR 550 Servo is only intended for processing (cutting, grooving, perforating, etc.) paper and film.
- The BSR 550 Servo is only designed for one-man operation
- The BSR 550 Servo may only be operated when it is in perfect technical condition. Faults endangering safety must be rectified immediately by trained personnel or specialists from the manufacturer or supplier
- The BSR 550 Servo may only be operated by specially trained and authorised specialists

### **2.7.2 Improper use**

- Any use of the BSR 550 Servo other than cutting, grooving, perforating, etc., paper and film.
- Processing materials other than paper and film.
- Tampering with any making modifications to the BSR 550 Servo
- Removing the safety covers or safety screws on the BSR 550 Servo
- Operating the BSR 550 Servo without having undergone instruction or training from operating personnel
- Maintenance or cleaning work carried out by non-authorised personnel
- Failure to comply with maintenance or cleaning intervals which require standstill of the BSR 550 Servo

### **2.7.3 Liability**

Prior to delivery, the BSR 550 Servo underwent final testing and was in perfect condition. Our "General Conditions of Sale and Supply" apply for warranty and liability. In the event of injury to persons and material damage, warranty and liability claims are excluded if they are attributable to one or more of the following:

- Non-intended use of the BSR 550 Servo
- Improper use of the BSR 550 Servo
- Improper installation, start-up, operation or maintenance of the BSR 550 Servo
- Operation of the BSR 550 Servo when safety equipment is defective, not affixed properly or not functional
- Failure to comply with the operating instructions in regard to transportation, storage, installation, start-up, operation, maintenance and set-up of the BSR 550 Servo
- Failure to comply with safety-relevant information in the operating instructions
- Failure to heed the warning signs on the BSR 550 Servo
- Structural modifications to the BSR 550 Servo made on the customer's own authority
- Deficient monitoring of machine parts subject to wear
- Use of non-original spare parts
- Improper repair work, catastrophic events caused by external factors or force majeure.

## 2.8 Organisation and personnel

### 2.8.1 Requirements made of personnel carrying out work

Work on or with the BSR 550 Servo may only be carried out by authorised personnel. Persons are authorised when they satisfy the following requirements as regards level of training and knowledge, and when they are assigned a precisely defined functional role. This table represents the areas of responsibility and the various activities of groups of people who work on the BSR 550 Servo.

	Instructed personnel	Engineering company	Customer service	Specialist electrician	Superior with relevant expertise
Transportation and packaging	X	X	X		X
Start-up	X		X	X	
Operation	X		X		X
Faultfinding (mechanical)	X	X	X		X
Fault rectification (electrical)			X	X	
Configuration, set-up	X	X	X		X
Maintenance	X	X	X		X
Repair		X	X	X	
Decommissioning, storage			X	X	

Table 10: Requirements made of personnel

### 2.8.2 Training

- Only allow personnel who have undergone instruction and training to work on the BSR 550 Servo
- Define clear responsibilities for personnel operating, setting up and carrying out maintenance work on the machine
- Only allow apprentices to work on the BSR 550 Servo under the supervision of an experienced person
- Instruction and training must be signed off in writing

### **2.8.2.1 Scope of expertise**

#### **Operator**

As a legal entity in a position of authority, the operator is responsible for the BSR 550 Servo being operated as intended, and for the training and deployment of authorised personnel. The operator stipulates, for the particular organisation, binding levels of expertise and managerial authority for authorised personnel.

#### **Service technician (BOGRAMA AG or by those authorised by BOGRAMA AG)**

- Responsible for the mechanical and electrical installation of the BSR 550 Servo at the operator, and starts it up.
- Holds on-site training for machine operators and maintenance personnel.
- Repairs individual elements.
- Is authorised to be anywhere around the entire system.

#### **Machine operator (customer)**

- Sets up and adjusts the BSR 550 Servo to the product to be processed.
- Manages and monitors production.
- Localises faults and organises fault rectification.
- Monitors the correct function of protective equipment.
- Is familiar with and understands the entire contents of the operating instructions.
- Is authorised to be anywhere around the entire system.
- Cleans the entire system.

#### **Maintenance personnel (customer)**

- Services the entire BSR 550 Servo, including lubrication system.
- Repairs faults and defects assigned.
- Is familiar with and understands the entire contents of the operating instructions.
- Is authorised to be anywhere around the entire system.

#### **Assistant (customer)**

- Puts the products into place.
- Generally works under the instruction of the machine operator.
- May only work under the instruction of the machine operator when carrying out adjustment work on the BSR 550 Servo.
- Is authorised to be anywhere around the entire system.

### **2.8.2.2 Training and qualifications (minimum)**

#### **Operator**

- Person with a managerial function and trained in business management
- Has relevant experience in risk assessment and personnel management.

#### **Service technician**

- Industry-related vocational apprenticeship (mechanical/electrical/electronic).
- Specific internal and/or external advanced training

#### **Machine operator**

- Relevant vocational training
- Training course held by BOGRAMA AG or those authorised

#### **Maintenance personnel (mechanical/electrical)**

- Relevant vocational training
- Training course held by BOGRAMA AG or those authorised

#### **Assistant**

- Introduction into the activities by the machine operator.

### **3 Description**

#### **3.1 BSR 550 Servo**

The BSR 550 Servo is a machine for contour punching, grooving and perforation processes.

The BSR 550 Servo is used only for the processing of single sheets in print finishing.

The sheets are aligned on the sides with an angular belt table or angular roller table and fed to the longitudinal alignment area. Here the sheets are aligned lengthwise to the magnetic cylinder and fed on to the punching area. In the punching area, sheets are processed with punching sheet and counter punching sheet between the magnetic cylinders. Afterwards the processed sheet is forwarded to the vacuum outfeed. The BSR 550 Servo can be used in solo mode or inline mode.

The BSR 550 Servo is fitted with a separate, portable Enable button with which the drives can be activated. The connector cable is limited to a net length of 1.5 metres and may not be extended.

#### **3.2 Additional modules**

The following additional modules are optionally available for the BSR 550 Servo:

- Flat pile feeder
- Pallet feeder
- Register table
- Alignment table
- UEB 550 B

#### **3.3 Punching sheets**

The following tools can be used on the BSR 550 Servo and be ordered from the following companies.

- Punching sheet, height 1.0mm
- Counter punching sheet, 0.2mm (Kocher + Beck)
- Punching sheet with grooving lines and counter sheet with grooves (Kocher + Beck)
- Punching film for the bonding of cutting, perforation and grooving lines (Cito)
- 0.15mm counter punching sheet for punching film with bonded lines

Kocher + Beck GmbH + Co. Rotationsstanztechnik KG Dieselstrasse 6 D-72124 Pliezhausen
--

Cito System GmbH Haimendorfer Strasse 37+46 D-90571 Schwaig
---

Drohmann GmbH easycut Barbarossastrasse 8 D-73547 Lorch
---

### 3.4 Technical details

Electrical details	Operating voltage	400 VAC / N / PE	
	Control voltage	24 VDC	
	Fuse in supply lines	32 A	
Noise emission	Emission sound pressure level	90.8 dB(A)	
	Sound power level	103.5 dB(A)	
Air pressure		min. 6 bar	max. 8 bar
Ambient temperature		min. 5°	max. 45°
		<b>BSR 550 Servo</b>	
Format 1)	Maximum format	550 x 750 mm	
	Minimum format	210 x 210 mm	
Punch thicknesses	Max. product thickness	0.5 mm	
	Min. product thickness	0.1 mm	
Electrical details	Rating	15 kW	
	Total current	31 A	
Working speed 2)	Belt speed	20-168 m / min	
	Max. products/hour	12,000	
Weight and dimensions	Width	1350 mm	
	Height	1650 mm	
	Length	varies	
	Weight	varies	
1) Other punch thicknesses on request.			
2) The average working speed is dependent on the punching sheet used, and the condition and quality of the product material.			

Table 11: Technical details

### 3.4.1 Other documents supplied

Documents of third-party manufacturers			
Siemens	Operating instructions for main and Emergency OFF switches	3LD2	Item no.: 3ZX1012-0LD20-1BN1
Siemens	Operating instructions for LOGO!Power	C98130-A7559-A1-11-6419	Item no.: 6EP1334-2AA01-0AA0
SICK	Operating instructions for safety switches	i12 S	Item no.: Multi Language
SICK	Operating instructions for safety switches	i10 Lock	Item no.: Multi Language
SICK	Safety instructions		Item no.: Multi Language
SICK	Operating instructions for Enable button	E100	Item no.: Multi Language
SICK	Operating instructions for cylinder sensor	MZ2Q	Item no.: Multi Language
Festo	Pressure monitor		
Phoenix Contact	Operating instructions for semi-conductor reversing conductor	ELR W3-	Item no.: 83076948-02
Mitsubishi	Operating instructions for frequency converter	FR-D700	209070
Mitsubishi	Installation instructions for frequency converter	FR-D700	231244, Version A
Mitsubishi	Interference filter for frequency convertor	FR-D700	218129, Version A
Werma	Description of indicator lights		693
SP Getriebe	Operating instructions for gear mechanism	SP+	2022-D036008
LP Getriebe	Operating instructions for gear mechanism	LP+/LPB+	2022-D018479
Pfannenber	Installation and operating instructions for filters and fans		085408082
Omron	Operating instructions for optic fibre sensor		E3X-NA
Omron	Operating instructions for laser sensor		E3Z-L
Omron	Operating instructions for inductive sensor		E2E-M5

Table 12: Other applicable documents

A CD-ROM containing all the Sigmatek control data is also supplied.

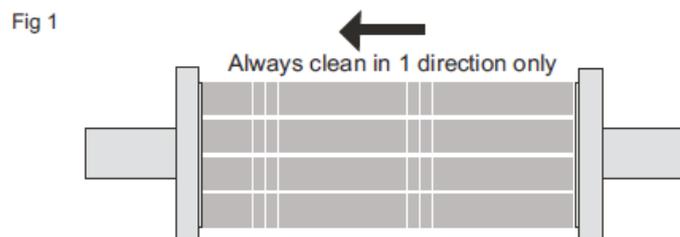
### 3.4.2 Magnet cylinder information

## **IMPORTANT NOTICE**

Dear Customer

Congratulations on purchasing this Kocher + Beck Magnetic Cylinder, like all Kocher + Beck products it is manufactured to exacting standards to give you long and trouble free service, however, it is vital that you maintain this product and ensure it is used in an appropriate manner to maximise the life and function of this product. Below are some tips for the proper use and maintenance of your new Magnetic cylinder.

1. Magnetic cylinders should be cleaned before and after use to ensure all dust and debris particles are removed.
2. Only appropriate cleaning fluids such as Isopropanol [**Betaclean 3900**] should be used, as some cleaners contain chemicals that will react with the bonding resin and can cause movement of the magnets.
3. Always clean cylinders in one direction as a backward & forward motion will not remove unwanted material due to the magnetic nature of the cylinder (see fig1)



4. Pressure should be applied with the press running and applied evenly across the cylinder.
5. Pressure should be monitored during the run using a pressure gauge such as the K+B KMS range of pressure gauges, and adjusted to maintain the minimum of pressure required to keep the cutting station stable and to ensure even load across the cylinder.
6. **WARNING** Excessive pressure may result in damaged bearers and a reduction in the critical airgap - this will result in shorter die life and poor performance.
7. Bearers should be lubricated with a light engineering oil throughout the press run, preferable applied via a felt pad either directly onto the bearers or indirectly via the anvil.

For further tips or to arrange for an in-house training session, please contact your local Kocher + Beck representative.



Helping to maintain "THE PERFECT CUT"

Figure 10: Magnet cylinder information



3.5.2 Horizontal view of BSR 550 Servo register table with MBO feeder

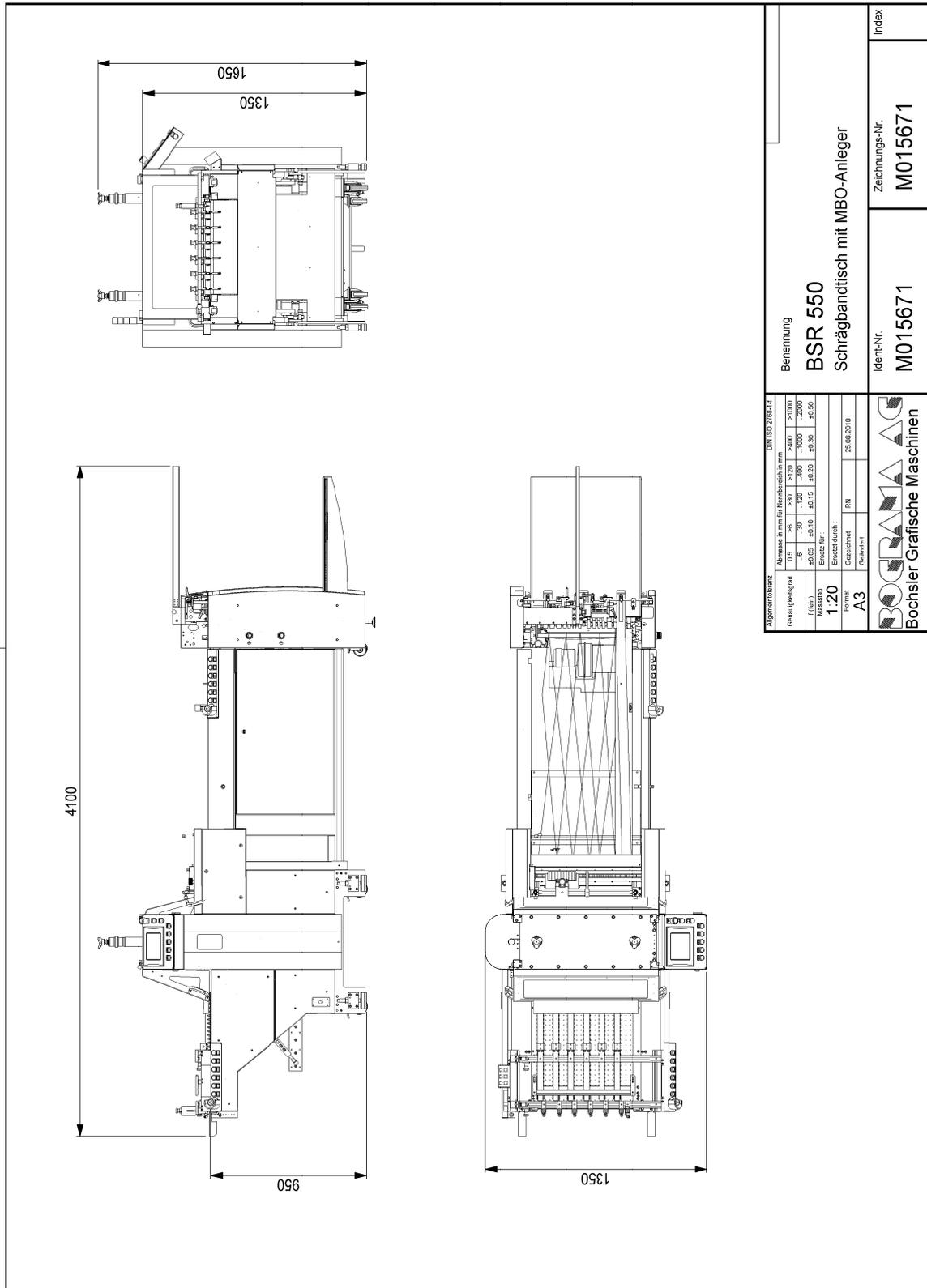
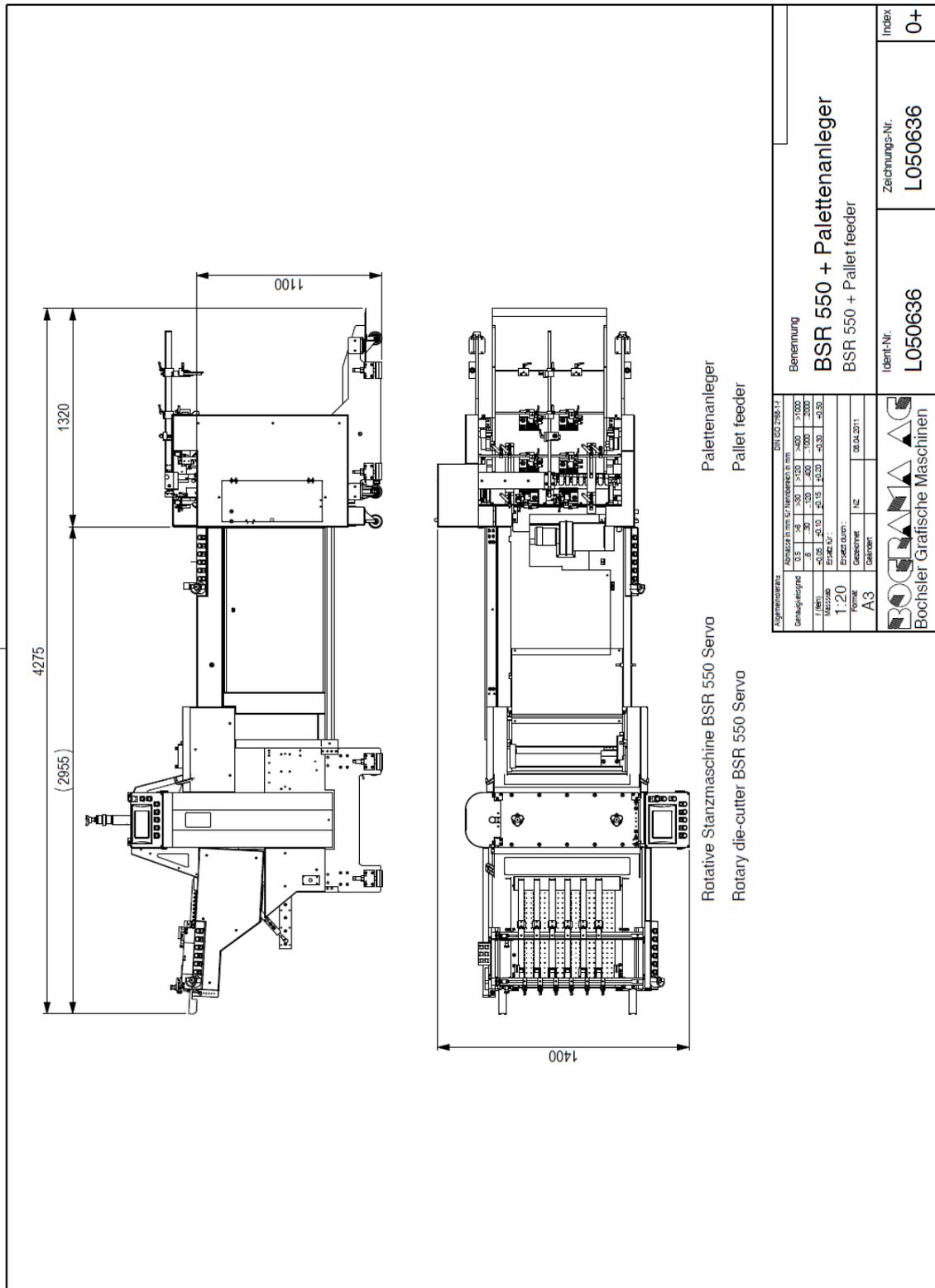


Figure 12: Horizontal view of BSR 550 Servo with angular belt table and MBO feeder

3.5.3 Horizontal view of BSR 550 Servo register table with pallet feeder



Allgemeine Maße Abstände in mm zu Nennmaßen in mm Genauigkeitsgrad 0,5 -> 0,5 -> 0,5 -> 0,5 1 -> 1 -> 1 -> 1 Maßstab 1:20 Format A3 Datum 08.10.2011		Benennung <b>BSR 550 + Palettenanleger</b> BSR 550 + Pallet feeder		Zeichnungs-Nr. <b>L050636</b>	Index <b>0+</b>
Rotative Stanzmaschine BSR 550 Servo Rotary die-cutter BSR 550 Servo		Palettenanleger Pallet feeder		Ident-Nr. <b>L050636</b>	Ident-Nr. <b>L050636</b>

Figure 13: Horizontal view of BSR 550 Servo with angular belt table and pallet feeder

### 3.6 Transportation



**Caution!**

**Risk of injury.**

Unpack the BSR 550 Servo carefully.

Carefully look through the packaging material of the additional packages.



**Note!**

Following the instructions for transportation in "2.4.2 Safety instructions".

The machine is delivered as a fully assembled unit. Loose parts (tools, operating tools and other accessories) are packed separately. Final assembly is in accordance with customer requirements.

The BSR 550 Servo is packed in film and possibly also in a wooden crate. First unscrew the cover off the wooden crate, then the sides. Then carefully remove the film and then the rust protection oil on the BSR 550 Servo. The BSR 550 Servo is screwed to the wooden base with four T-squares. Remove all four T-squares and raise the BSR 550 Servo from the wooden base with lifting equipment.

### 3.7 Start-up



**Danger!**

**Ensure not to mix up the plug connectors.**

Other plug connectors can result in a different voltage, thereby damaging beyond repair the electronics in the switch cabinet.

**Only use the cables supplied.**

To move the BSR 550 Servo to its intended position, use an appropriate forklift to move under it and lift it. On uneven floor, align the BSR 550 Servo using the side adjustment feet in the longwise and traverse directions.

The electrical connection has a rating of 400 Volts. The connector cable (ca. 5 metres in length) with Cekon plug is fitted to the control cabinet. Machines interfaced upstream and downstream may only be connected with the cables supplied.

### 3.8 Maintenance

The operator of the BSR 550 Servo commits to carrying out maintenance and to keeping to the servicing intervals. Maintenance is limited to few places on the BSR 550 Servo.

Check the water separator on the maintenance unit and drain the condensation if necessary.

#### 3.8.1 Consumables

- Oil for lubricating the ball races **ISO VG68, CGLP68**
- Grease for greasing the bearings **Blasolube item no. 00472-01**
- Grease for greasing the sprockets **Molykote spray 1122**
- Oil for lubricating the magnet cylinder bearings **Oil 15 W40**

#### 3.8.2 Maintenance points and servicing intervals



**Note!**

Keeping to the servicing intervals lowers the level of wear and increases the stability of the BSR 550 Servo.  
The maintenance points listed are on both sides of the BSR 550 Servo

No.	Maintenance point	Number per side	Servicing interval	Action
1	Sprockets	2	Twice a week	Molykotespray 1122
2	Ball races	2	Every 30 operational hours	Sliding guide oil ISO VG 68
3	Rollers	1	Monthly	Grease with Blasolube no. 00472-01
4	Pressure rollers	2	Monthly	Grease with Blasolube no. 00472-01
5	Replace scraper felt	1	Depending on level of dirt	Felt
6	Magnet cylinder bearing	2	Oil inspection once a week. Change oil every year.	Oil 15 W40
7	Runner rails	1	Clean once a week	
8	Becker side channel blower		As per manufacturer's specifications	As per manufacturer's specifications
9	Control cabinet filter	1	Monthly	Clean

Table 13: Maintenance points and servicing intervals

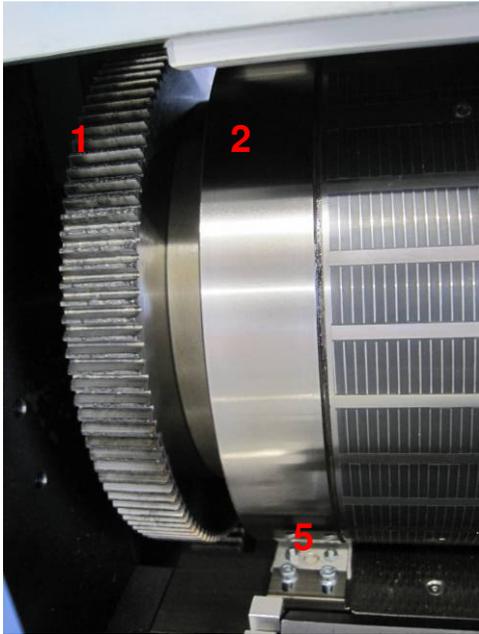


Figure 14: Maintenance point, magnetic cylinder

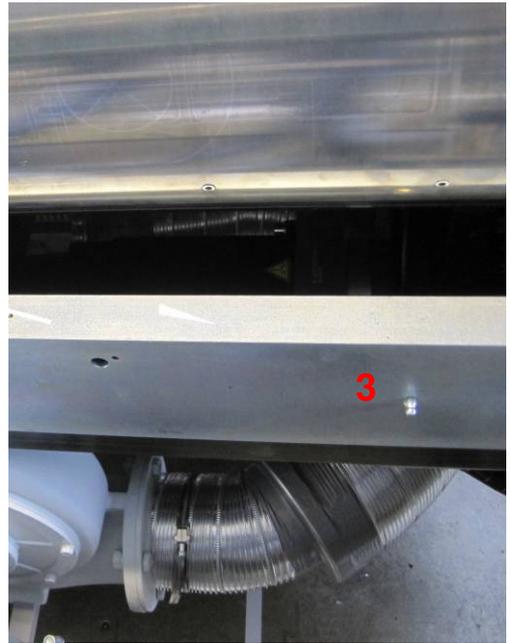


Figure 15: Maintenance point, rollers



Figure 16: Maintenance point, pressure rollers



Figure 17: Maintenance point, magnetic cylinder bearing



Figure 18: Maintenance point, runner rails

### 3.8.3 Magnetic cylinders

Every time punching sheets are replaced, the magnetic cylinders must be cleaned, and inspected for damage, in accordance with the manufacturer's instructions.

When the system is not being used, the punch pressure at the pressure sensors (Pos. 1+2) must be reduced to 0 bar because otherwise there is a risk of damage to the ball races.

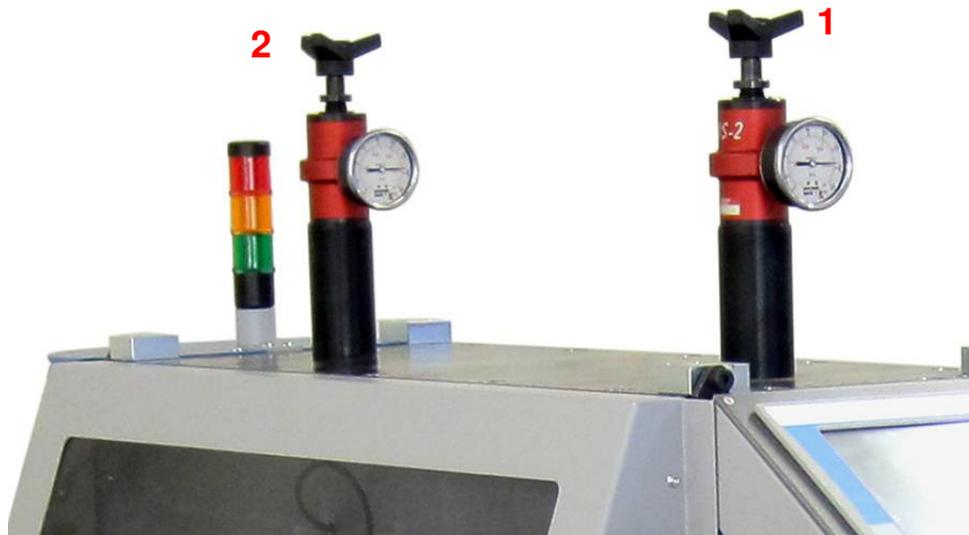


Figure 19: Pressure sensors, model KMS 2

### 3.9 Product thicknesses and material

Because different product thicknesses and materials are handled in the BSR 550 Servo, the punch pressure with which the two magnetic cylinders are pressed together is adjustable. The punch pressure is adjusted at the pressure sensors on the punching frame (Fig. 19, Pos. 1+2). The correct punch pressure is given when the product is being fully cut through and the ball races are running stably on one another.

## 4 Start-up and operation



**Danger!**

**Warning about hazards that can result in immediate death, serious injury or material damage.**

The BSR 550 Servo may only be operated by personnel who have undergone training by BOGRAMA AG.

If a leakage current sensor is used in the mains supply of the servo drive system, a leakage current sensor RCD type B must be used. If a RCD type A or AC is used, there is a risk, that the DC ground current of the servo drive will inhibit the leakage current sensor.

### 4.1 The control cabinet



Figure 20: The control cabinet

No.	Function
1	Main switch ON/OFF
2	Fan
3	Filter

Table 14: Control cabinet details

## 4.2 The control panel



**Warning!**

The control panel may only be opened by specialist personnel.

### 4.2.1 Front view



Figure 21: Front view of control panel

Nine controls and indicators make up the control panel.

No.	Function	Description
1	<b>Emergency OFF palm button</b>	Stops all functions and isolates the drives from the power supply.
2	<b>Reset</b>	Fault and Emergency OFF reset.
3	<b>Touchscreen</b>	Adjustment and operation of the BSR 550 Servo.
4	<b>Start</b>	Start of the BSR 550 Servo and, if available, machines interfaced upstream and downstream.
5	<b>Stop</b>	Stop of the BSR 550 Servo and, if available, machines interfaced upstream and downstream.
6	<b>Single sheet</b>	Retrieval of a single sheet from the feeder.
7	<b>Multiple sheets</b>	Retrieval of sheets in sequential mode.
8	<b>Operating mode</b>	Key switch for changing from Manual mode to Automatic mode.
9	<b>Setting</b>	Key switch for enabling Setting mode.

Table 15: Front view of control panel

#### 4.2.2 Side view



Figure 22: Side view of control panel

No.	Function	Description
10	<b>Protective hoods</b>	To release and open the protective hoods.
11	<b>Lighting</b>	For switching on the machine lighting (if available).
12	<b>Enable button</b>	For dangerous movements in Setting mode.

Table 16: Side view of control panel

### 4.3 Operation

#### 4.3.1 Symbols and operating the touchscreen



**Note!**

The touchscreen may not be operated with pointed or sharp-edged objects - **only with fingers.**

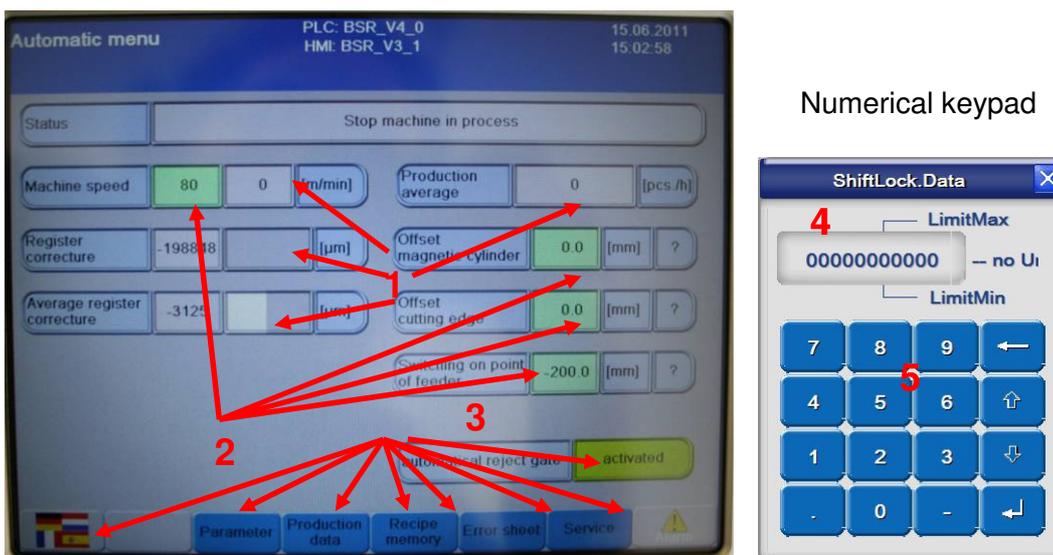


Figure 23: Display and numerical keypad

No.	Function	Description
1	Display panels	These panels are used to display the machine parameters.
2	Entry panels	These panels are used to enter and change parameters.
3	Function keys	Function keys are for using individual functions on the system and for the individual menus. Press the function keys with fingers to run the functions.
4	Numerical panel	Numerical panels are used to show numerical values. Press the entry panel with your fingers to change numerical values. A numeric keypad (5) opens enabling you to enter the values.
5	Numeric keypad	For entering numerical values.

Table 17: Display details

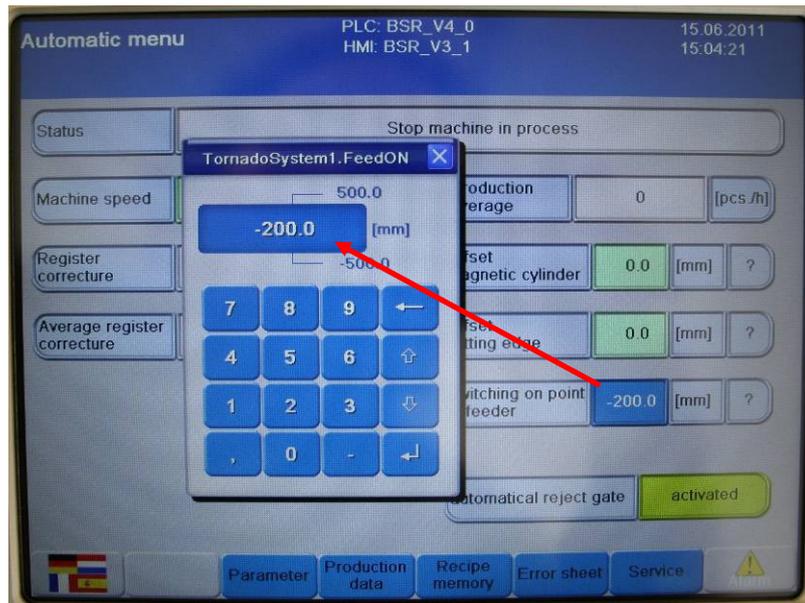


Figure 24: Display and numerical keypad

Press a value to change its value. A numerical keypad opens. Change the value and press Enter.

### 4.3.2 Using the Enable button

The Enable button is used to carry out dangerous movements in Setting mode. This is for the safety of the operator.

The Enable button has 3 positions.

The movement is stopped in position 0.



Figure 25: Position 0

The Enable button must be pressed gently to move to position 1. The operator feels resistance when pressing – this is now position 1. Movements are carried out in this position.



Figure 26: Position 1

Pressing the Enable button too hard changes to position 2. This is equivalent to the Emergency Stop function and the drives are therefore isolated from the power supply.



Figure 27: Position 2

### 4.3.3 Switching on the system

The first step is switching on the control cabinet from the main switch. After the display is initialised, the appropriate screen is displayed (depending on key switch position).

For Automatic mode:

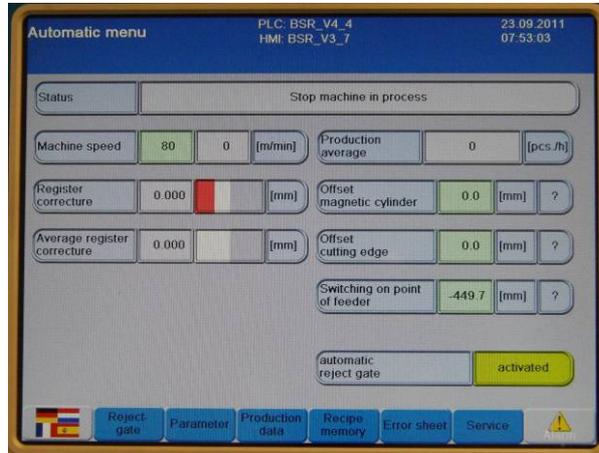


Figure 28: "Automatic mode" display

For Manual mode:

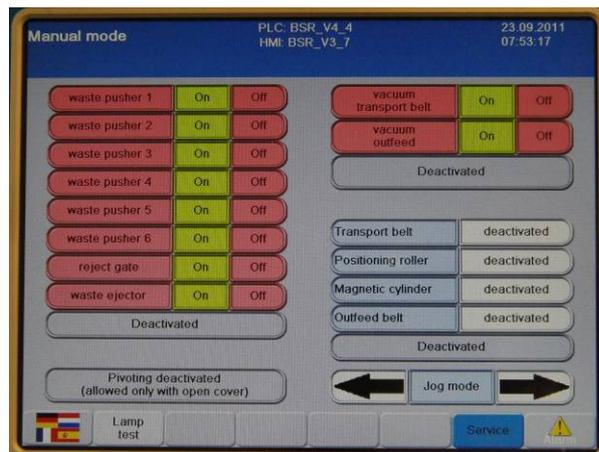


Figure 29: "Manual mode" display

When the key switch is in position 0:

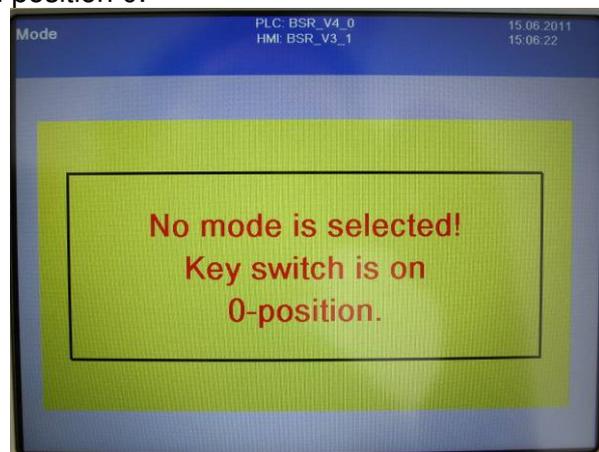


Figure 30: "No operating mode" display

#### 4.3.4 Emergency OFF

If the Emergency Stop button on the control panel or on an external unit (if connected to the BSR), or the Enable button is pressed, the drives (if being actuated) are shut down and then isolated from the power supply within a few seconds. A main valve bleeds the system of air.



Figure 31: "Hot Alarm" display

After rectification of the fault, or releasing of the Emergency Stop switch, the blue Reset button must be pressed to restore the machine to the ready state. To make it clearer to the operator, the blue Reset button flashes when intervention is required.



Figure 32: Emergency Stop with Reset button

### 4.3.5 Protective hoods

The machine has two protective hoods which are locked with an electromechanical safety switch. Operation is only possible when the protective hoods are closed. The only exception is Setting mode, in which movement is only possible with the Enable button (2).

If the protective hoods are opened, all movements are stopped. All shafts are affected here, even those not in the immediate hazard area.



Figure 33: Enable button with hood request

To open the protective hoods, it must be requested on the display with the button (1).

The button can be operated in all situations. The flashing luminous indicator (integrated) indicates an open request.

If Automatic mode is active, the machine is stopped and, when idle, the doors are released.

The continual light on the button (1) and flashing of the blue Reset button (3) denote release of the hoods.



Figure 34: Emergency OFF with Reset button

To lock open protective hoods, the hoods must be closed and the blue Reset button (3) pressed.

### 4.3.6 Description of the buttons



Figure 35: Infeed buttons

No.	Function	Description
1	<b>Start</b>	Starts the system (section 4.3.7.1).
2	<b>Stop</b>	Stops the system (section 4.3.7.2).
3	<b>Single sheet</b>	Retrieval of a single sheet from the feeder or other machine.
4	<b>Multiple sheets</b>	Start sheet retrieval from feeder or other machine.
5	<b>rejector</b>	Manual activation of the rejector (section 4.3.9).
6	<b>Table enable</b>	Is used for table activation of the integrated feeder (if fitted).
7	<b>Table activation selector switch</b>	Is used for table activation of the integrated feeder (if fitted).

Table 18: Infeed button details



Figure 36: Outfeed buttons

No.	Function	Description
1	<b>Start</b>	Starts the system (section 4.3.7.1).
2	<b>Stop</b>	Stops the system (section 4.3.7.2).
3	<b>Single sheet</b>	Retrieval of a single sheet from the feeder or other machine.
4	<b>Multiple sheets</b>	Start sheet retrieval from feeder or other machine.
5	←	If this button is pressed, the outfeed belt can be moved forwards in idle mode, irrespective of operating mode. Setting mode is an exception.
6	→	If this button is pressed, the outfeed belt can be moved backwards in idle mode, irrespective of operating mode. Setting mode is an exception.

Table 19: Outfeed buttons

4.3.7 Automatic mode with external feeder

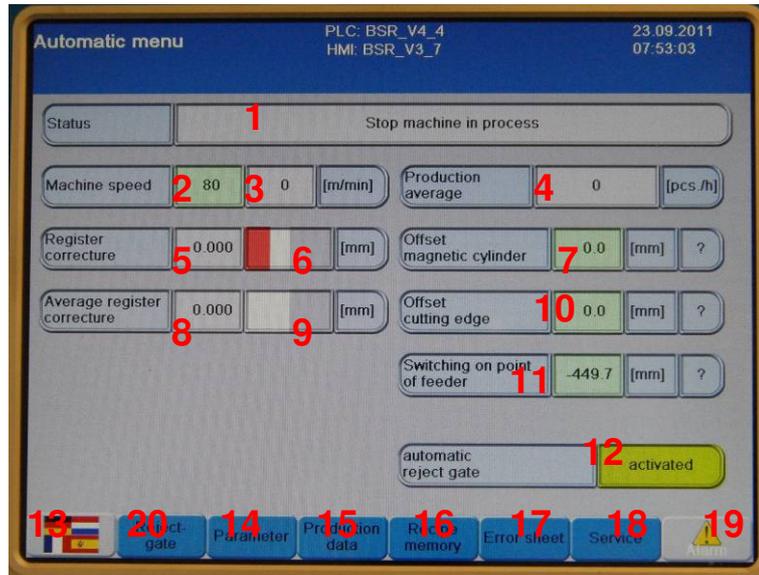


Figure 37: "Main menu" display

No.	Function	Description
1	Status	Display of the current machine status. See also Section 4.3.25.
2	TARGET speed	Entry panel for target speed.
3	ACTUAL speed	Display panel for actual speed.
4	Production average	Display panel for actual production average.
5	Actual register correction	Display of the current register correction in $\mu\text{m}$ .
6	Visual display of the register correction	Visual display to give the operator a better understanding of the adjustment.
7	Magnetic cylinder offset	To compensate greater discrepancies in the cut pattern. Adjustment only possible when idle.
8	Register correction average	Display of the register correction for the last 10 products.
9	Visual display of the average	Visual display to give the operator a better understanding of the adjustment.
10	Cutting edge offset	To make fine adjustments to the cutting edge.
11	Infeed switching point	Set here is the retrieval of products from the upstream machine. If the value is changed here, it has an effect on the register correction.
12	Ejection	Ejection can be enabled and disabled.
13	Language	Switches to the language selection. See also Section 4.3.21.
14	Parameters	Switches to the Parameter menu. See also Section 4.3.10.
15	Production data	Switches to Production data. See also Section 4.3.16.
16	Recipe storage	Switches to the Recipes. See also Section 4.3.13.
17	Waste sheets	Setting for the number of imperfections in a row before the machine switches off. See also Section 4.3.17.
18	Service	Switches to the Service menu. See also Section 4.3.22.
19	Alarm	When an alarm has been triggered, the button turns red and the operator is switched to the Alarm menu.
20	Rejector	Switch to the rejector menu. See 4.3.9.

Table 20: "Main menu" details

### 4.3.7.1 Starting the machine



Figure 38: Key switch

To start the machine in Automatic mode, the key switches must be set as shown in the picture. Automatic mode must be switched on and Setting mode switched off.

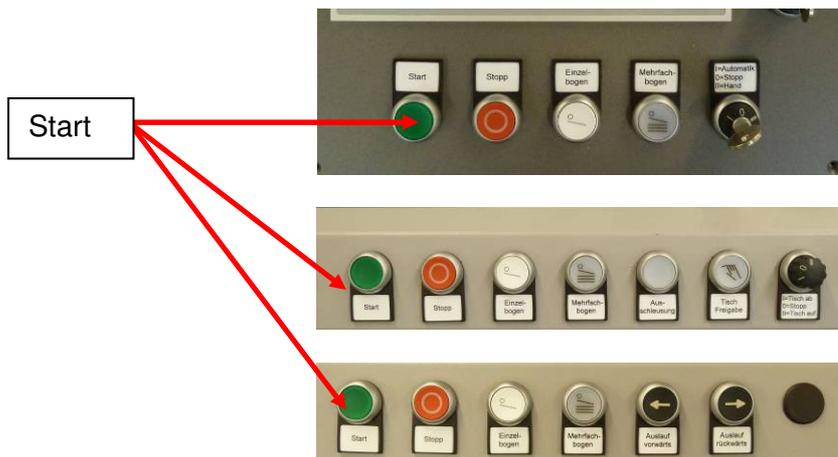


Figure 39: Buttons

Pressing the green Start button starts the machine with the target speed set.

If a machine is connected downstream to the BSR 550 Servo, and this supports the interface used by us, this machine is started first and then issues an Enable signal to the BSR 550 Servo. The BSR 550 Servo does not start until receiving this Enable signal.

### 4.3.7.2 Stopping the machine

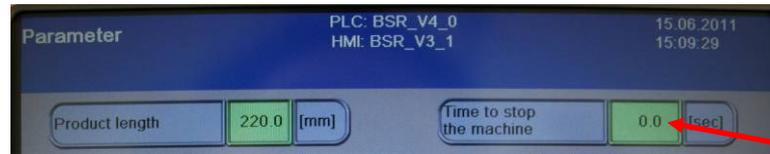


Figure 40: Stopping the machine

Defined in the Parameter menu is the number of seconds after which the machine initiates the stop process after the stop is requested.

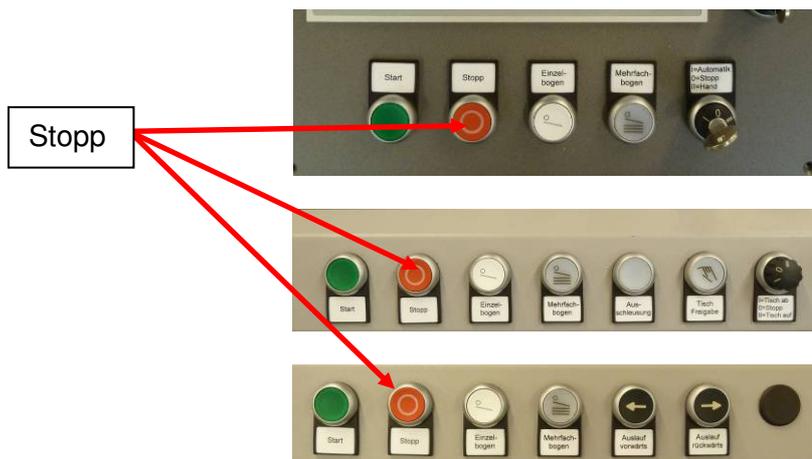


Figure 41: Stop buttons

There are several ways to stop the system:

- Pressing the red Stop button stops sheet retrieval (if enabled) and the machine is stopped with the stop time set
- Requesting an opening of the protective hoods initiates the same procedure as described above
- Turning the key switch to an operating mode other than Automatic mode
- By turning the key switch to Setting mode
- By stopping one of the machines interfaced upstream or downstream

### 4.3.8 Register settings

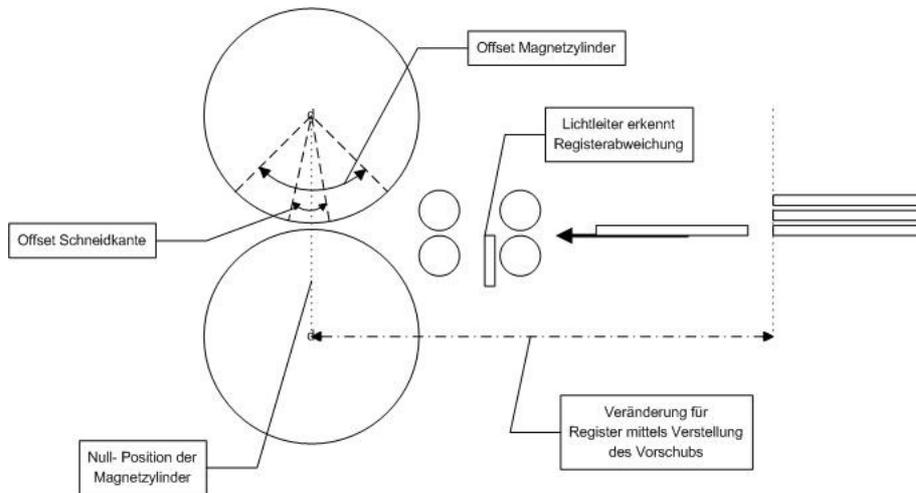


Figure 42: Register settings

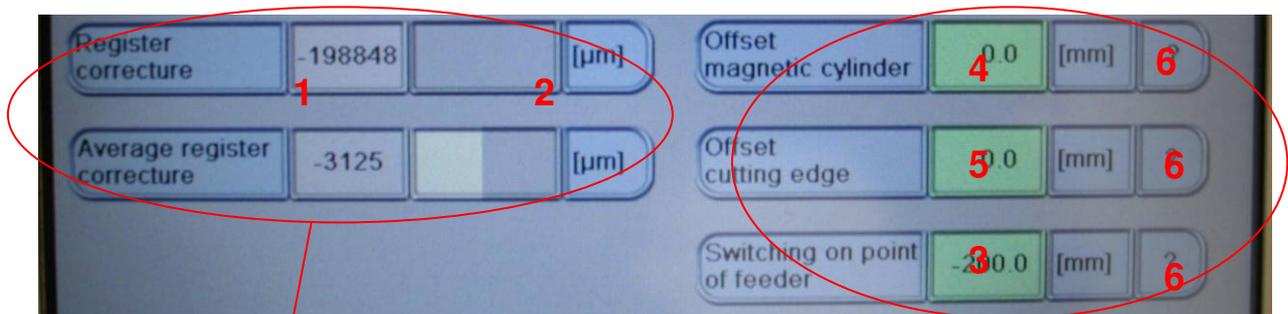


Figure 43: "Register settings" display

The register correction shows the ratio between zero position or cutting edge of the magnetic cylinders and sheet retrieval on the upstream machine (infeed switching point).

The correction is displayed in two ways, with an accurate display in  $\mu\text{m}$  (1) and also as a bar chart (2). If the white bar in the picture is exactly in the centre, no correction is necessary. If it moves to the right, the product is coming too early and the existing number in the infeed (3) must be reduced. If the larger area in the bar is grey, the existing number in the infeed (3) must be increased. The goal is to keep the bar as shown in the picture.

The cutting edge is adjusted with the offset for the magnetic cylinder (4). This value can only be changed in the idle state. A product is first allowed to pass through, and the difference between the ACTUAL and TARGET cutting edges is measured. This difference is entered in the offset and allows another sheet through. The fine adjustment can be set with the cutting edge offset (5) during on-going operation. The value is then automatically added to or subtracted from the magnetic cylinder offset.

By pressing the “?” button (6) opens a window on the screen accurately describing how to use the buttons on the machine.

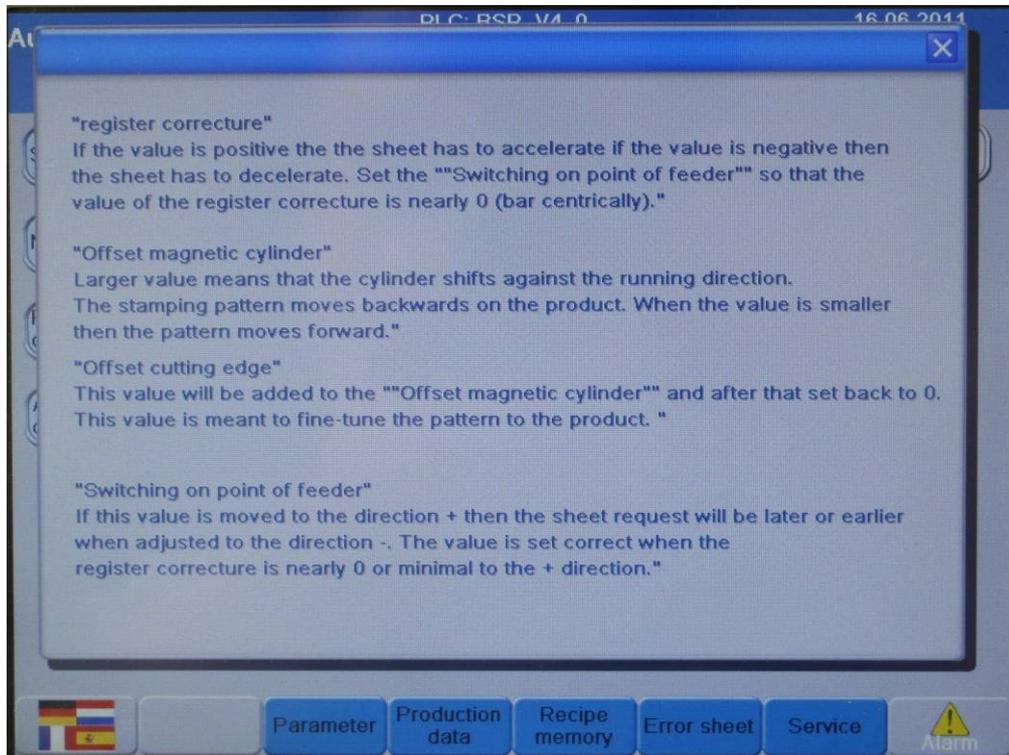


Figure 44: "Register settings" help

### 4.3.9 Rejector

The BSR has an rejector mechanism for ejecting products. This prevents erroneous punching when products are fed in with too great a difference to the punching edge.

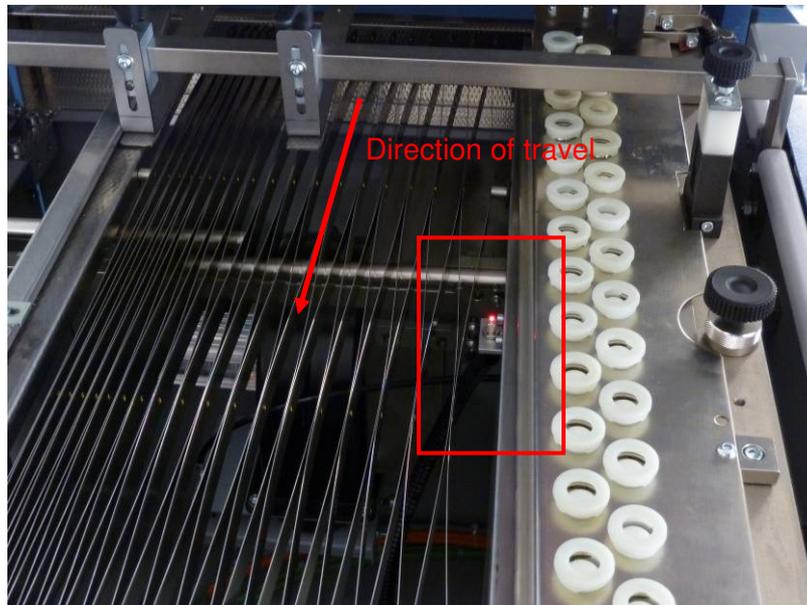


Figure 45: Light barrier in the infeed

Products are registered by a light barrier in the infeed. The belt speed is used to determine whether the products are in the adjustment range for positioning. If this is not the case, no positioning is performed and the products are ejected from the punching area. These products can then be reused for subsequent processing.



Figure 46: Eject buttons

To also manually enable ejection during on-going operation, the “Eject“ button has been added to the buttons on the infeed. Pressing this enables ejection and a light in the button shows the status.

Pressing the button again disables ejection. If a product is in the rejector, disabling waits until the product has been fully ejected.

Manually pressing does not necessarily require activation of the machine and can be activated in idle mode.

It can be beneficial in many situations if products are not ejected automatically.

The Automatic menu includes the touch buttons for enabling and disabling automatic ejection (as shown in the diagrams) .



Figure 47: "Eject" display

This function is required, for example, when setting up a new product because this way the erroneous punching can be seen, enabling adjustments to be determined.

Also, it may be the case that not all products are ejected because they may be too thick to be ejected.

### 4.3.10 Register correction

The switching point of the pile feeder can be automatically calculated, so that the real register correction only minimal drops out.

Proceed as follows:

1. Switch off the automatic reject gate
2. Call a sheet or wait for a sheet. (if feeding is still running)
3. A new “Register correction” – value is displayed now.
4. Press the “Calibrate feeder” button. (Only one time!)
5. The machine is calculating a new switch on point of feeder by using the register correction of the last sheet.

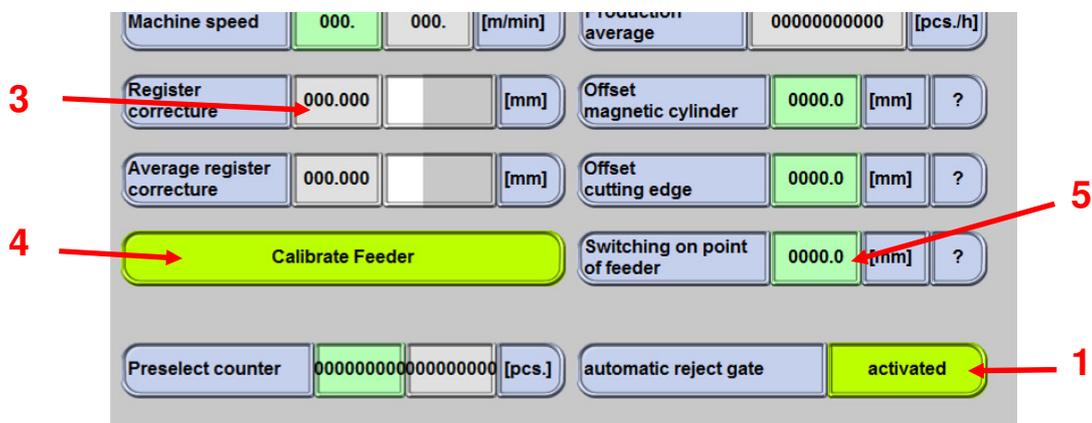


Figure 48: Register correction

Wait until the correction takes affection before you use it again.

### 4.3.11 Reject gate

The light barrier LS1 is used for acting the reject gate and LS2 is used for acting the register correction. For steady function of the rejector it is necessary that LS1 und LS2 are measured the same value. Depending on the grip of paper it is possible that the measured values are completely different. A matching provide to adjust the measured data of LS1.

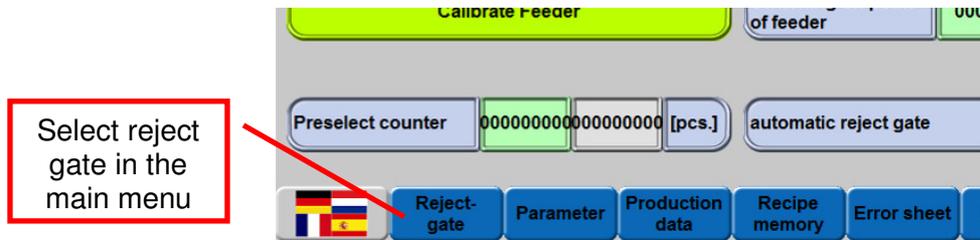


Figure 49: Reject gate

To adjust the reject gate, proceed as follows:

1. Switch off reject gate and call a single sheet
2. The new register correction value und difference to the LS1 target is displayed.
3. If these two values are extreme different you should adjust them.
4. To adjust: stop the machine, press "Compensate difference". (Only one time). The machine calculates a new adaption value from the difference between register correction and difference reject gate.
5. Check the new setting by calling two single sheets. The two measured data should be about the same.

In case it is not possible to make a matching, adjust the adjustment value manually. Check the performance as written and adjust the setting again if needed.

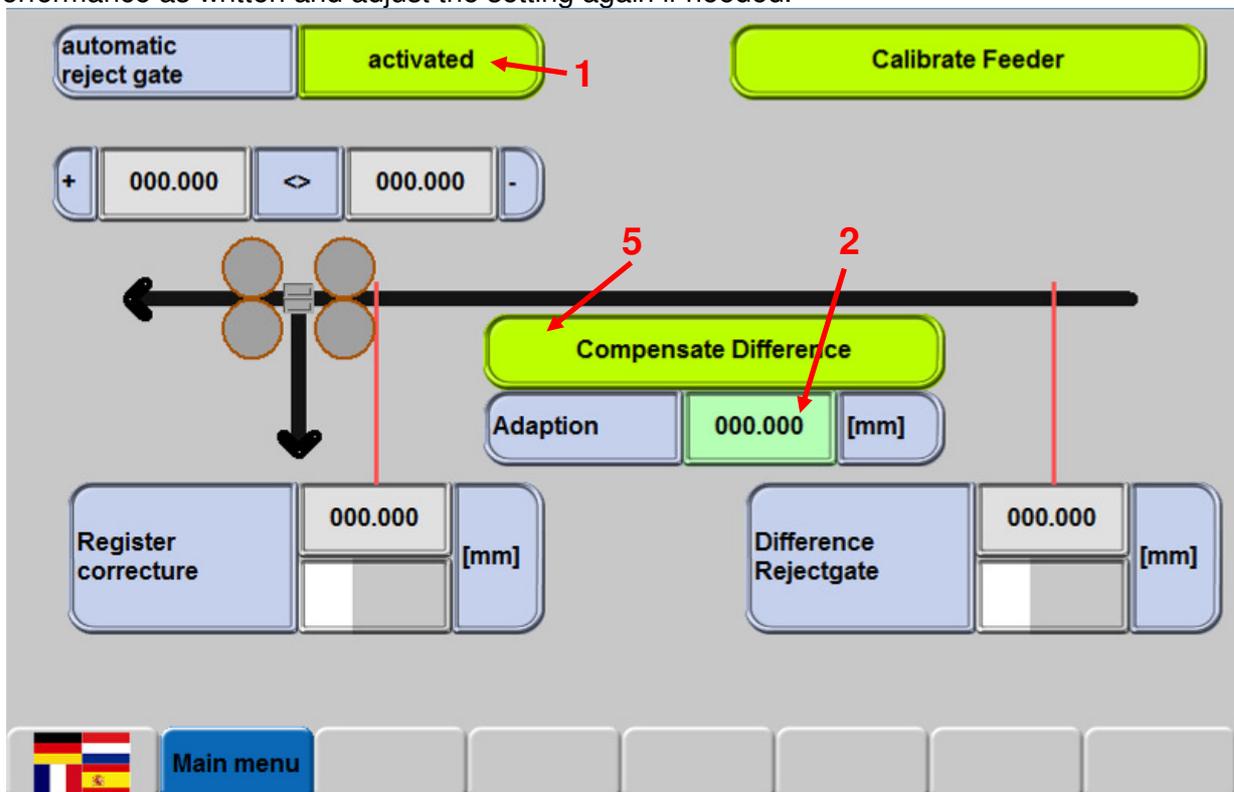


Figure 50: Reject gate

### 4.3.12 Reject range

Depending on the machine speed the range of register correction is between +/- 50 and +/- 100 mm. The display shows the range as well as the value in the reject gate menu. Additionally will be the area with a red bar marked in the graphic display.

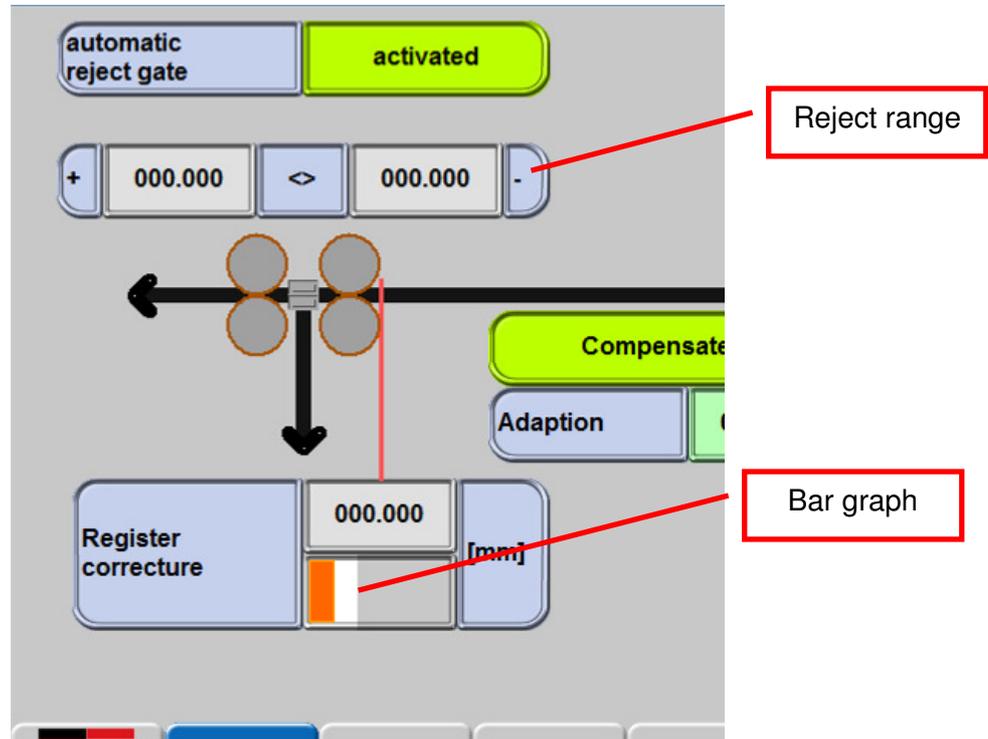


Figure 51: Reject range

4.3.13 Parameters

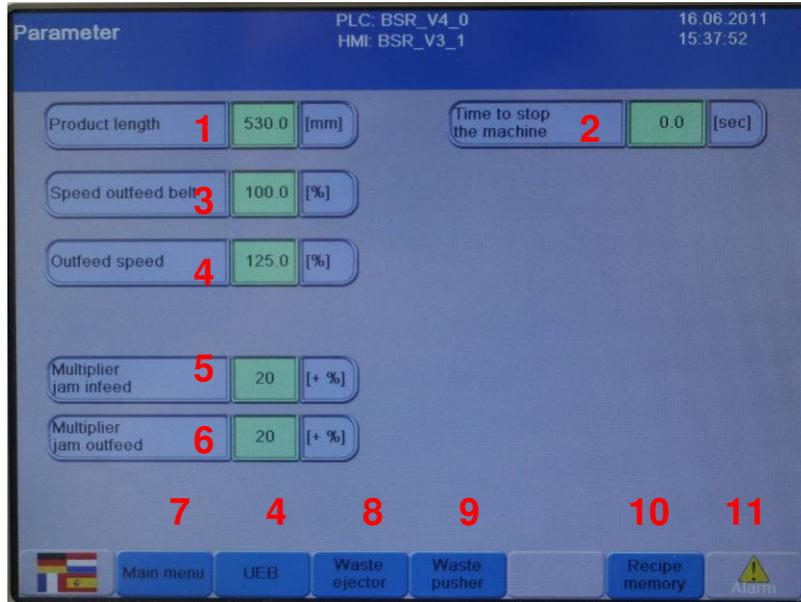


Figure 52: "Parameters" display

No.	Function	Description
1	<b>Product length</b>	The product length must be entered here. This value is used in the program as the computation basis for many functions.
2	<b>Time to system stop</b>	Waiting time until the machine stops after the Stop signal. See also Section 4.3.7.2.
3	<b>Outfeed belt speed</b>	Here the speed of the outfeed belt in relation to the system speed can be changed ( in % values). 100.0% means the speed is the same as the system speed. The outfeed speed can change in relation to the vacuum of the outfeed set.
4	<b>Speed of transfer unit and UEB button</b>	These functions are only displayed when the transfer unit has been enabled. Please refer to the installation instructions for the transfer unit for a more detailed description.
5	<b>Blockage multiplier, infeed</b>	The multiplier is used to determine the percentage more than the product length greater than which a fault is generated. 50% → 1.5 x product length
6	<b>Blockage multiplier, outfeed</b>	See the line above for the description.
7	<b>Main menu</b>	Returns to the main menu. See also Section 4.3.7.
8	<b>Waste deflector</b>	Picture reference for the waste deflector in the outfeed. See also Section 4.3.11.
9	<b>Separator</b>	Picture reference for the separator in the outfeed. See also Section 4.3.12.
10	<b>Recipe memory</b>	Picture reference for the recipe memory. See also Section 4.3.13.
11	<b>Alarm</b>	When an alarm has been triggered, the button turns red and the operator is switched to the Alarm menu.

Table 21: "Parameter" specifications

#### 4.3.14 Waste deflector

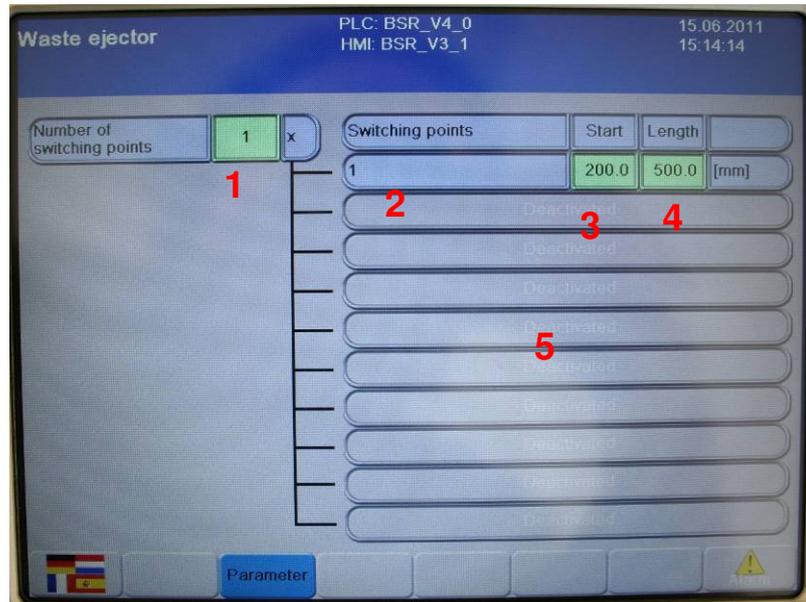


Figure 53: "Waste deflector" display

To move waste in the outfeed out of the production area, waste deflectors are attached that deflect the waste downwards after the outfeed belt.

The waste deflectors have valves that support the function of the rollers.

The number of switch points can be entered in the menu (1). 10 different switch points can be selected.

The switch points, depending on which value is entered in (1), are shown on the right-hand side. The value can vary from 0 to 10.

If "1" is entered (as in the picture), only the data for one switch point (2) is shown. The rest are disabled (5).



Figure 54: "Waste deflector" display

The start value (3) is entered starting from the 0 point. The start value is defined in the Supervisor menu (Section 4.3.24)

The duration (4) must be specified according to requirements. All values must be entered in mm.

### 4.3.15 Seperator

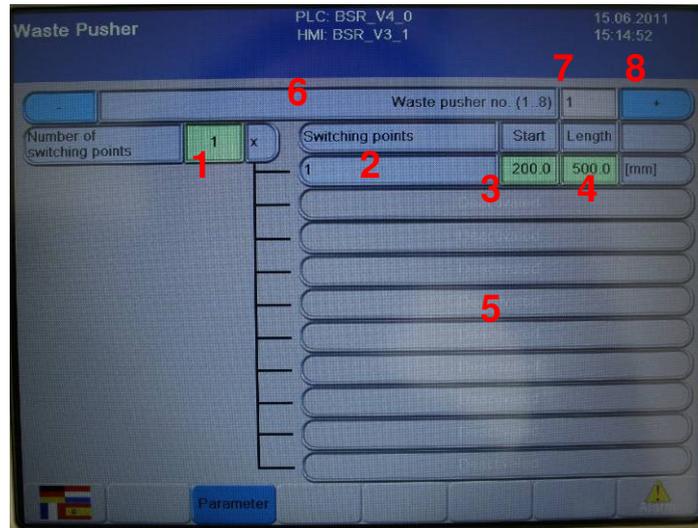


Figure 55: "Seperator" display

To get the cut-out out of the product, separators are attached which punch the cut-out lightly to make it easier to deflect it downwards behind the outfeed belt.

The separators are fitted with valves which move a push rod downwards.

The number of switch points can be entered in the menu (1). 10 different switch points can be selected.

The switch points, depending on which value is entered in (1), are shown on the right-hand side. The value can vary from 0 to 10.

If "1" is entered (as in the picture), only the data for one switch point (2) is shown. The rest are disabled (5).



Figure 56: Connector for seperators

The start value (3) is entered starting from the 0 point. The start value is defined in the Supervisor menu (Section 4.3.24)

The duration (4) must be specified according to requirements. All values must be entered in mm.

Up to 8 valves can be actuated. This is shown by points 6 to 8. However, this functionality has yet to be implemented and is still listed as an option.

### 4.3.16 Recipe memory

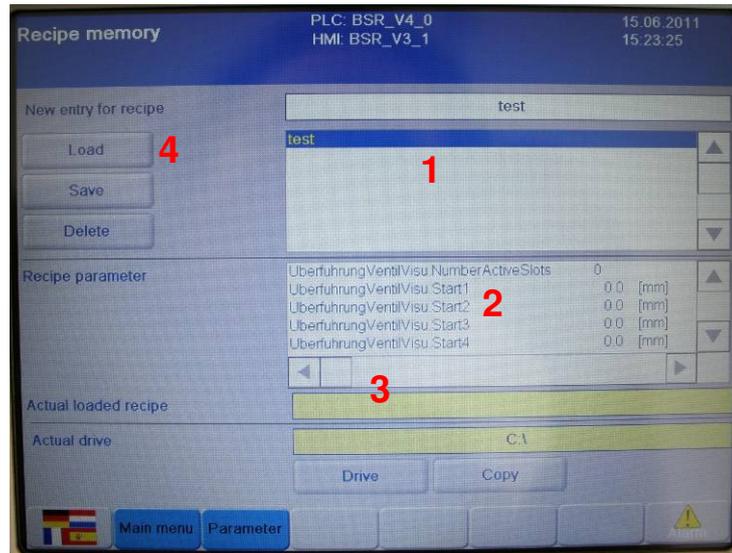


Figure 57: "Recipe memory" display

The machine has been designed to store the corresponding data for different products. This enables format changes without major data adjustments. The data can be stored in a format understandable to the operator.

#### Loading a recipe

The recipes already loaded are shown in the field (1). The required recipe can then be selected. The recipe selected is then displayed with a coloured background and can be loaded into the work process with the "Load" (4) button.

Once the recipe has been loaded, the name stored is shown in field 3. This enables a check of whether the required recipe has indeed been loaded.

Displayed in field 2 is the individual data stored. Individual data can be adjusted here once again.

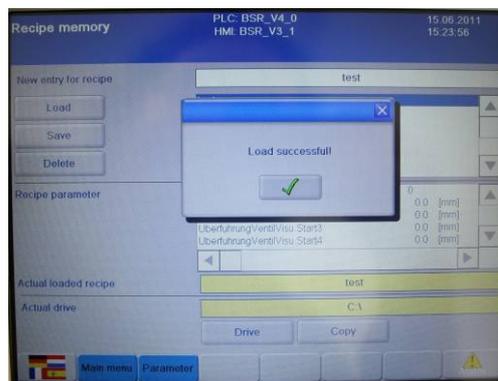


Figure 58: "Load successful" display

A popup shows the loading of a recipe. Confirm the popup to close it.

### 4.3.16.1 Storing a recipe

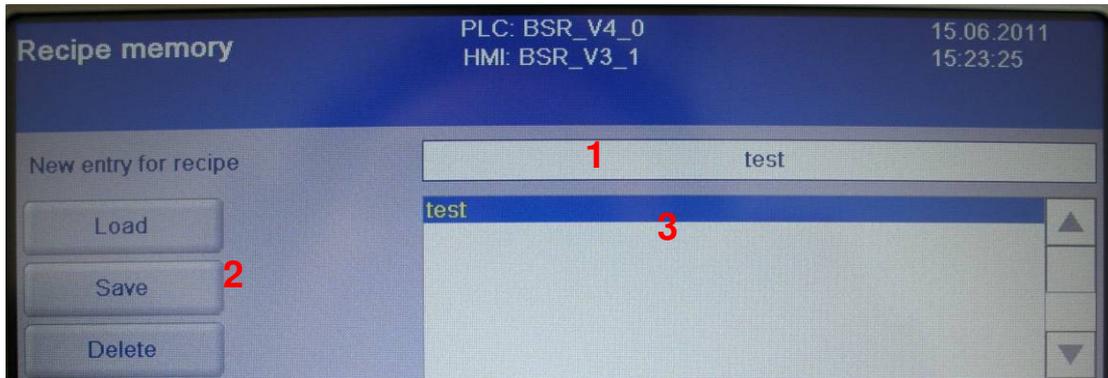


Figure 59: "Store" display

To create a new program, or to store the data into an existing recipe, the recipe name must first be entered in field 1. A popup keypad helps you here.

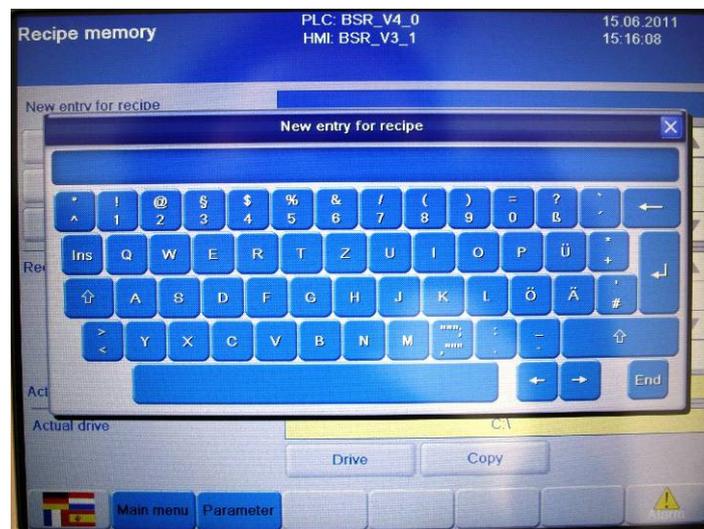


Figure 60: "Keypad" display

Once the required name has been entered, the data is stored with the selected name by pressing the "Store" (2) button.

If the name entered is already assigned, a popup is displayed which must be acknowledged to continue with the store process.

To store data into an existing recipe, the same name must be re-entered in field 1.

### 4.3.17 Deleting a recipe

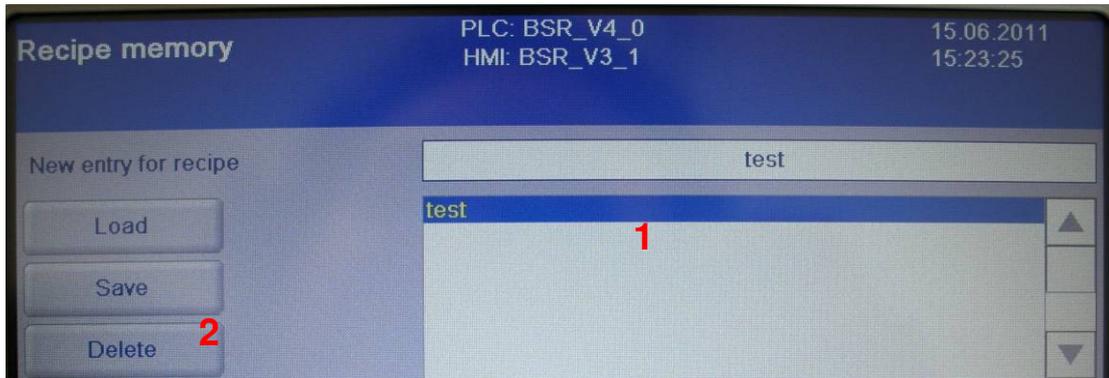


Figure 61: "Delete" display

Select a recipe in field 1 to delete it. The recipe selected is then shown with a blue background (as in the picture). Now pressing the "Delete" button (2) displays a popup asking you whether you really want to delete this recipe.

Confirming this prompt deletes the recipe from the memory.

### 4.3.18 Saving a recipe onto a USB stick

It is possible to backup recipes onto a USB stick, enabling the data stored for a product to be copied to another machine at any time, and recipes deleted by accident to be restored.

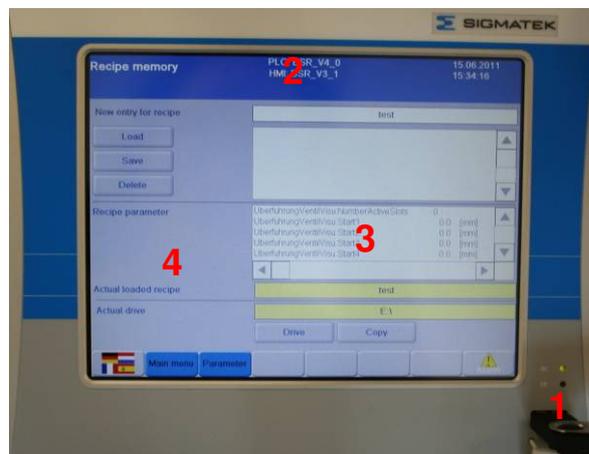


Figure 62: Empty USB stick

The USB stick must be inserted into the slot as shown in the picture (1). This is shown as drive "E:\:" in the drive display (3). Data already stored is shown in field 2. As can be seen in the picture, no data has yet been stored on this USB stick.

Press the "Drive" (4) button to switch between the USB stick and drive "C:\".



Figure 63: Data on USB stick

If you want to copy data from the hard drive to the USB stick, or vice versa, first make a note of which drive is selected (3). As can be seen in the picture, copying is from drive “C:” to the USB stick.

Pressing the “Copy” button (1) loads the data onto the stick. A popup (2) indicates successful loading – this must be acknowledged.



Figure 64: Data on USB stick

Now the data is also stored on drive “E:\” (4), the USB stick (5).

### 4.3.19 Production data

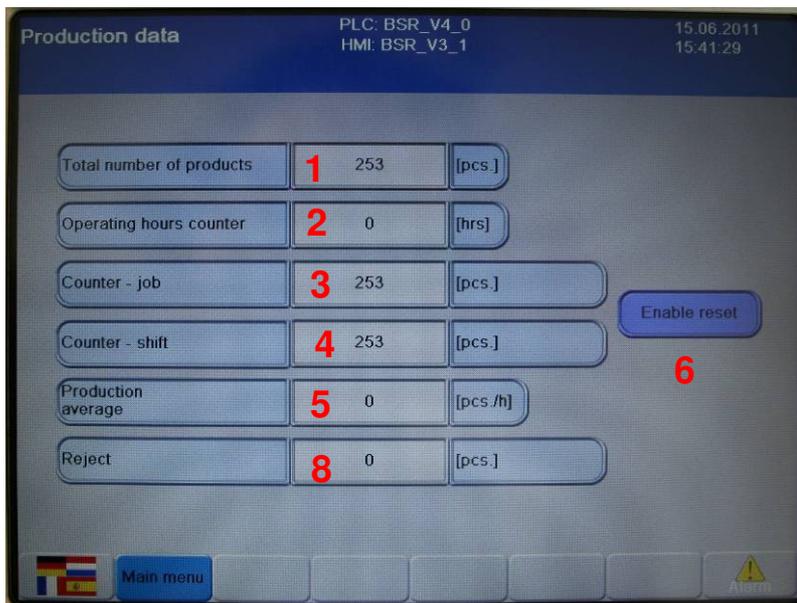


Figure 65: "Production data" display

The machine has an operational hours counter and a unit counter, and a display for the production rate in one hour (5).

The operational hours counter counts all the hours in production mode and shows this a whole number (2).

The unit counter is divided into 3 different counters:

1. Overall unit counter (1). This counter counts all products and cannot be reset.
2. Unit counter – job (3)
3. Unit counter – shift (4)
4. Counter – rejected products (8)

The unit counters for job and shift can be reset individually and are used as checks for the different applications



Figure 66: Reset of unit counters

Button "Reset enable" (6) must be pressed to reset the unit counters. Displayed then after the unit counters are the respective buttons (7) to reset the counters to 0. Note here that the button (7) must be pressed twice to start the process (to prevent unintentional resetting).

### 4.3.20 Waste sheets

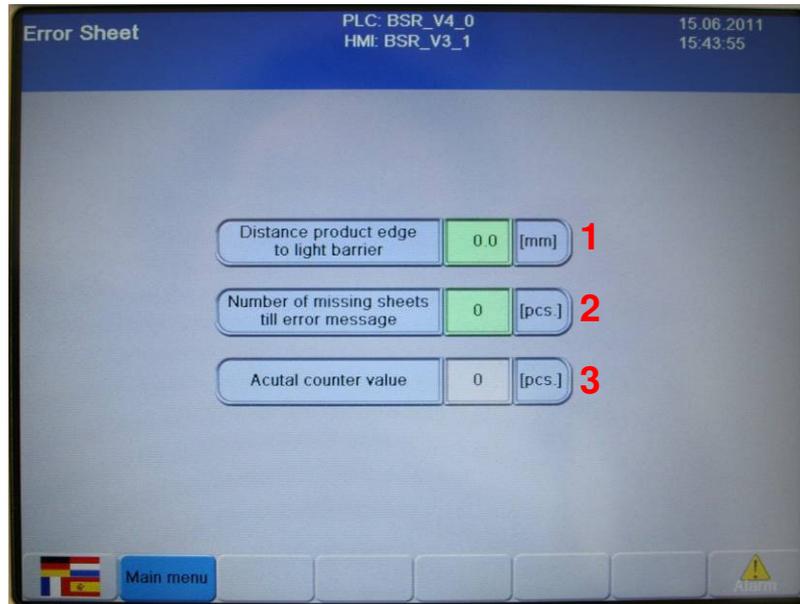


Figure 67: "Waste sheets" display

Waste sheet detection is incorporated to prevent the whole machine from stopping when no sheet is taken.

The distance from the first light barrier in the infeed to the product edge (1) must be entered. Also, the number of waste sheets in a row before a fault is generated can be selected (2).

Every time a waste sheet comes, the current counter value is incremented by 1 (3) until the number of items set in 2 is reached. When the number is reached, a fault is generated and the machine is stopped.

The counter value is reset to 0 for every sheet dispensed.

### 4.3.21 Preselection counter

The machine has a preselection counter. This enables a job-related number to be dispensed, or a certain number with a defined distance in-between.

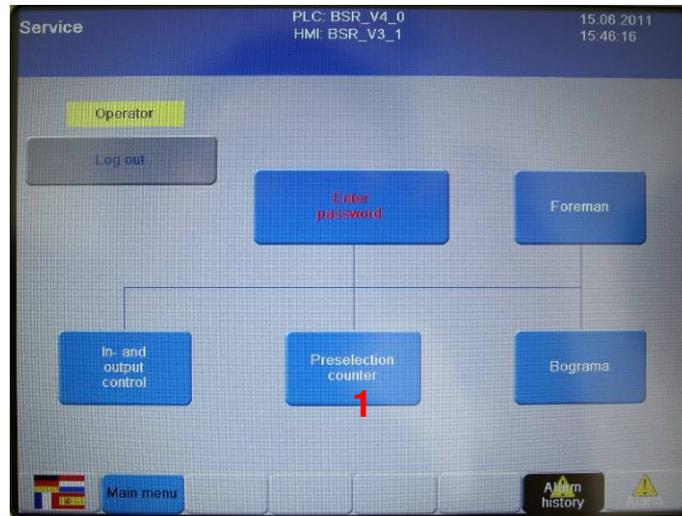


Figure 68: "Service" display

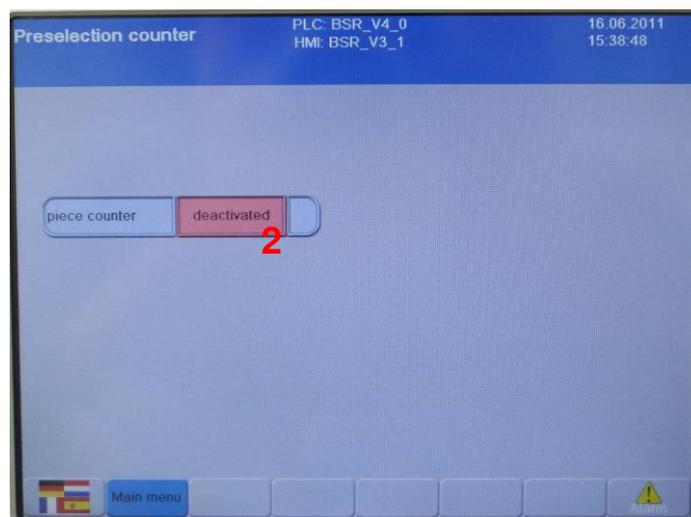


Figure 69: "Preselection counter" display

To enable the preselection counter, the "Preselection counter" (1) button must be pressed in the Service menu.

This can now be enabled by pressing the button (2) on the screen for the preselection counter.

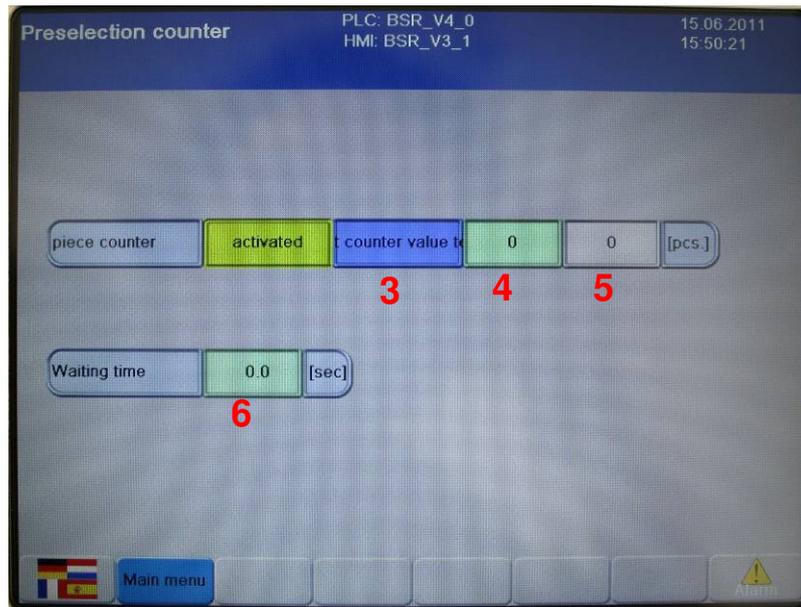


Figure 70: "Preselection counter" display

The required number of items can be entered in entry field 4. The up-to-date product count is shown in field 5. This counter can be reset to 0 with button 3.

The wait time is set in field 6. This time starts when the number of items set in 4 is reached. After the time expires, the dispense process starts anew until the number of items set is reached.

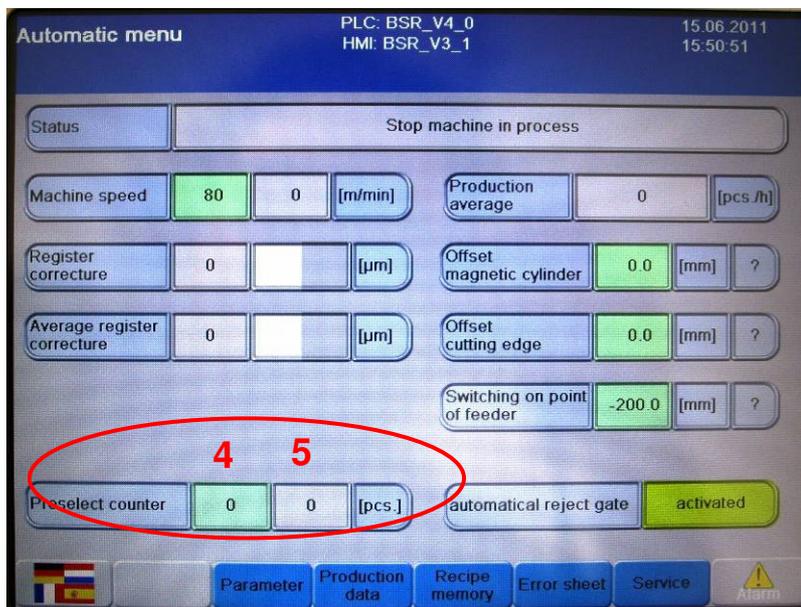


Figure 71: Preselection counter in the main menu

If the preselection counter is enabled, the function for the counter is displayed in the main menu. Operation is as described above. The required number of items is entered in field 4, and field 5 shows the current number of items.

### 4.3.22 Manual mode



**Warning**

**Risk of injury to hands from tool equipment.**

Manual functions can be carried out with protective hoods open.



**Warning**

**Danger from rotating belt drive** Failure to comply may result in serious material damage and injury.

Only make adjustments to bands when the BSR 550 Servo is idle.



**Warning**

**Danger from rotating rollers** Failure to comply may result in serious material damage and injury.

Only make adjustments to rollers when the BSR 550 Servo is idle.

Manual mode distinguishes between 2 different modes – Manual mode itself and Setting mode.

The operating modes are set with key switches.



Figure 72: Manual mode



Figure 73: Setting mode

In Manual mode, all valves and motors can be operated with protective hood closed, in Setting mode only the motors with protective hood open.

In Setting mode, however, there is the limitation that all movements may only be performed with the Enable button.

### 4.3.22.1 Overview of Manual mode

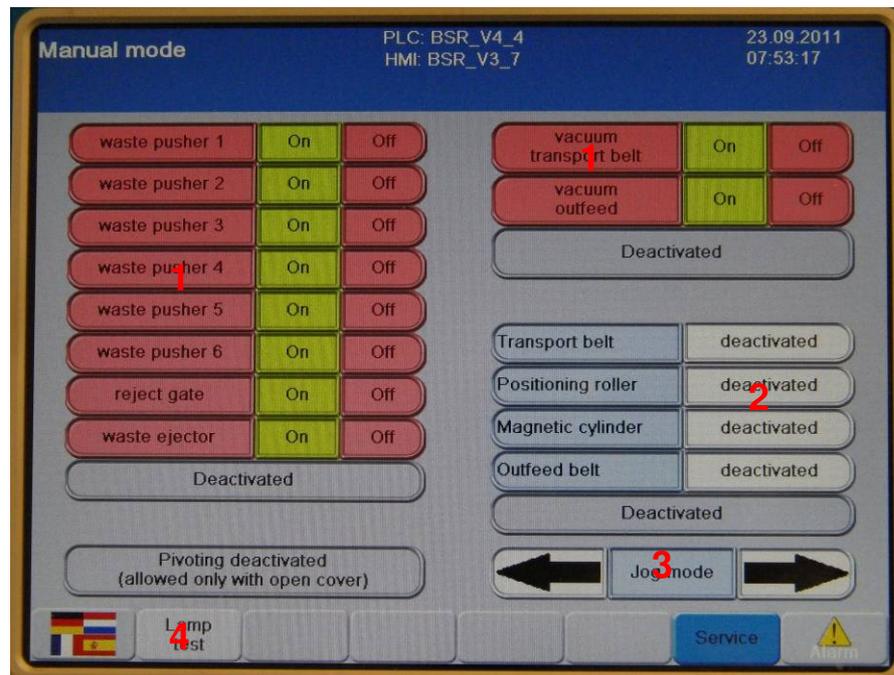


Figure 74: “Manual mode“ display

All valves, vacuum pumps and motors can be activated and deactivated. For valves and vacuum pumps, the activated functions are shown green and deactivated red (1). The colour change and clear text denote which motors are activated and which not.

One of the arrow buttons of the “Inch” button (3) must be pressed to trigger a motor movement. All activated motors continue to move as long as the button is being pressed.

If the lamp test (4) is pressed, all of the lights on the machine light up, enabling their function to be tested.

When the operating mode is changed, all activated units are automatically reset to their idle state. This also applies for changes into Setting mode.

### 4.3.22.2 Setting mode



**Risk of injury to hands from tool equipment.**  
Setting functions can be carried out with protective hoods open.

Setting mode is used to carry out movements when the protective hood is open. The movement may only be started with the Enable button (see Section 4.3.2) for safety reasons.

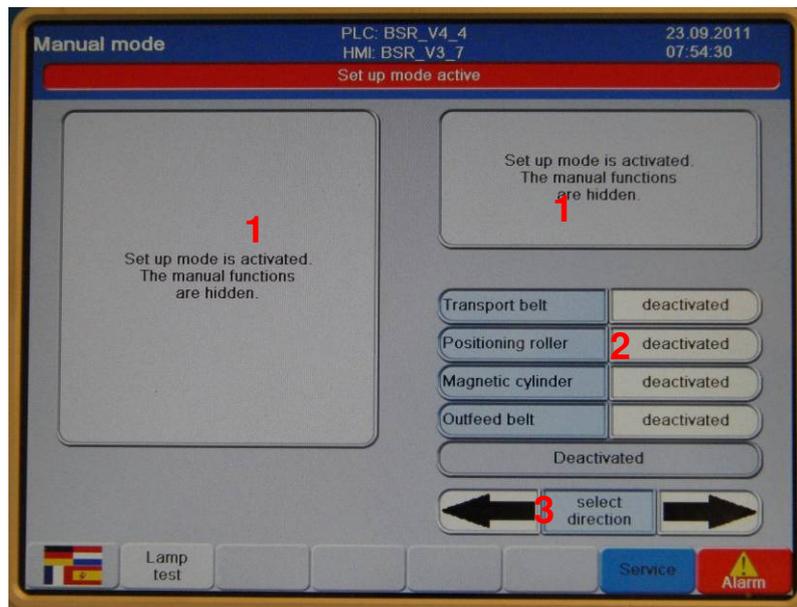


Figure 75: "Setting mode" display

The functions for the valves and vacuum pump are disabled in Setting mode (1). This is for reasons of safety because otherwise injury may result if the protective hoods are open.

The servo motors required can be activated and deactivated individually. Selected functions are coloured green and displayed clearly.

In Setting mode, the direction is preselected with the arrow keys (3) and the movement is performed with the Enable button in position 1.



Figure 76: Position 1

### 4.3.23 Swivelling the outfeed



#### Risk of injury from swivelling

The hazard area must be clear of people during the swivel operation.

The outfeed must be swivelled upwards to change the punching sheet. This is possible in Manual mode but the protective hood in the outfeed must be opened.

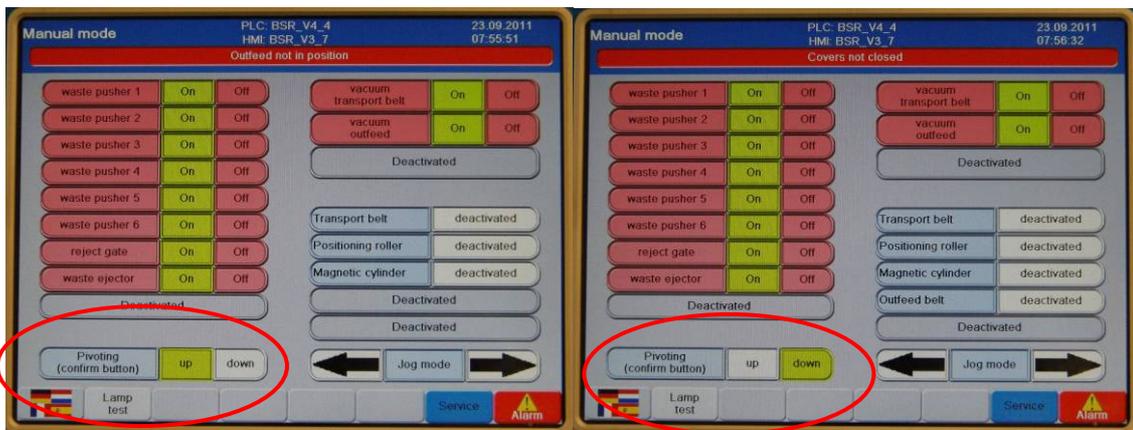


Figure 77: Swivelling

If the protective hood in the outfeed is open, the swivel controls are displayed (as in the picture). Whether swivelling is downwards or upwards can now be selected.

For safety reasons, the swivel movement must be carried out with the Enable button in position 1.



Figure 78: Position 1



**Risk of injury from swivelling**

The hazard area must be clear of people during the swivel operation.

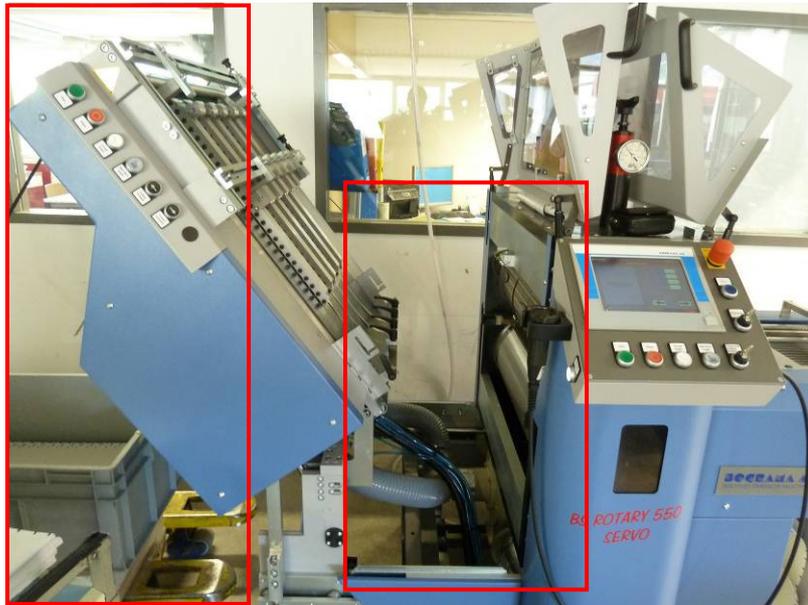


Figure 79: Outfeed swivelled up

The hazard area must be clear of people whilst the outfeed is being opened and closed. The hazard area is designated red here.

The swivel speed has been reduced for safety reasons, but the hazard area must still be clear.

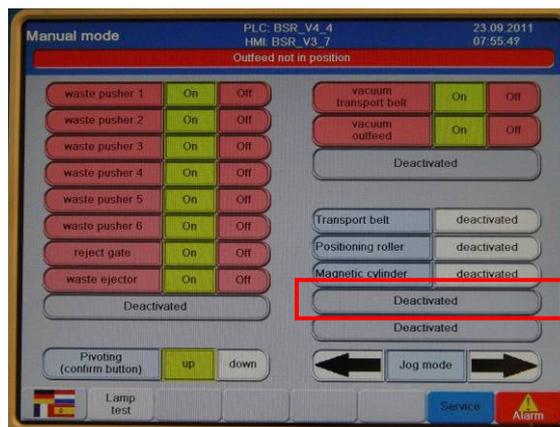


Figure 80: "Manual mode" display

Operation of the outfeed belt is no longer possible if the outfeed is swivelled up. The selection is no longer displayed.

#### 4.3.24 Selecting the display language

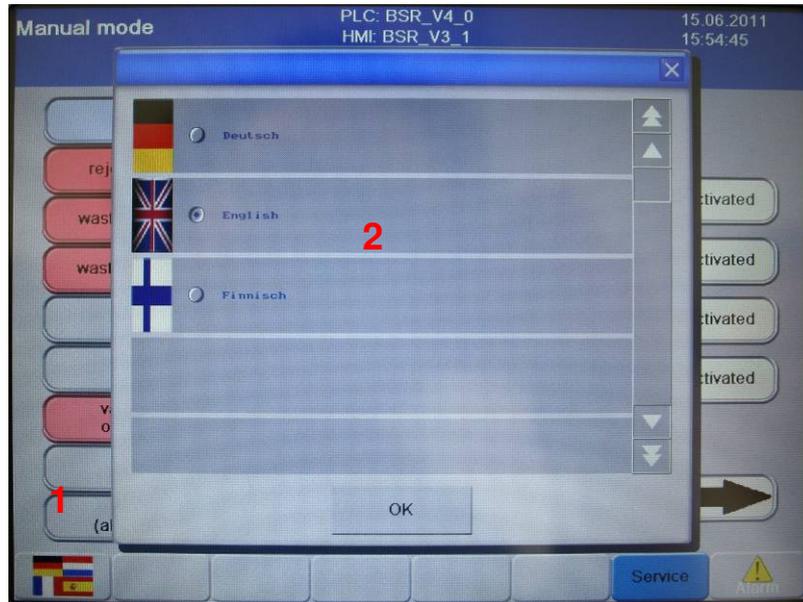


Figure 81: "Language selection" display

Button 1 on the display is used to change to the display language selection. It is possible to use different languages for the displays.

It is currently possible to switch between German, English and Finnish, but other languages can be added at any time (2).

To select a language, click the line for the language required. The dot after the country flag denotes the language selected.

4.3.25 Service menu

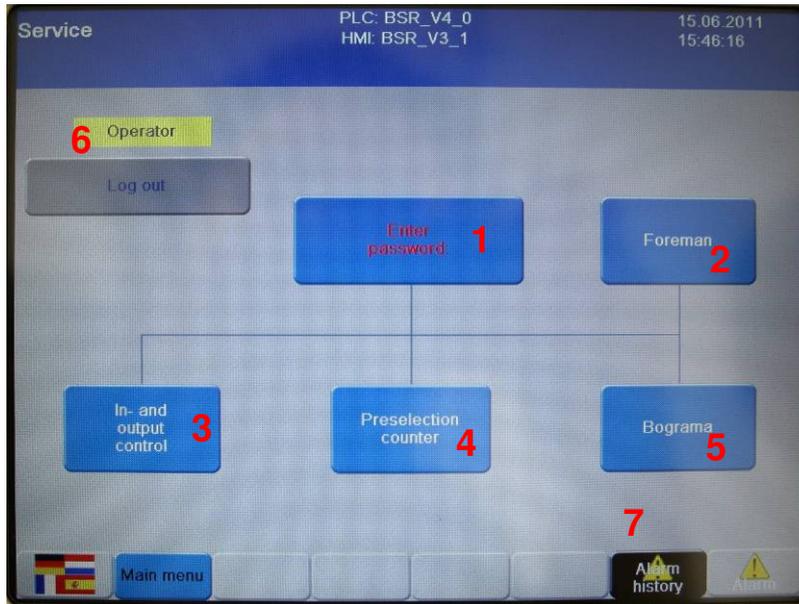


Figure 82: "Service menu" display

Different submenus are accessed from the Service menu.

No.	Function	Description
1	<b>Password entry</b>	A numerical entry field is displayed after pressing. The code must be entered here. If the correct code is entered, the user is able to switch to the relevant menu.
2	<b>Supervisor</b>	Password-protected menu. For the configuration of certain parameters. The user is switched to the menu after pressing. See also Section 4.3.24.
3	<b>Input and output test</b>	Not a password-protected menu. For testing the hardware inputs. The user is switched to the menu after pressing. See also Section 4.3.23.
4	<b>Preselection counter</b>	Not a password-protected menu. For dispensing counted products. The user is switched to the menu after pressing. See also Section 4.3.18.
5	<b>Bograma</b>	Password-protected menu. Is only used by Bograma service technicians.
6	<b>Logoff</b>	The user currently logged on is displayed here. Pressing the "Logoff" button sets the "Operator" user. The variants supported are Operator, Supervisor and Bograma.
7	<b>History</b>	This is where the entire list of alarms can be viewed.

Table 22: "Service menu" details

### 4.3.26 Input and output test

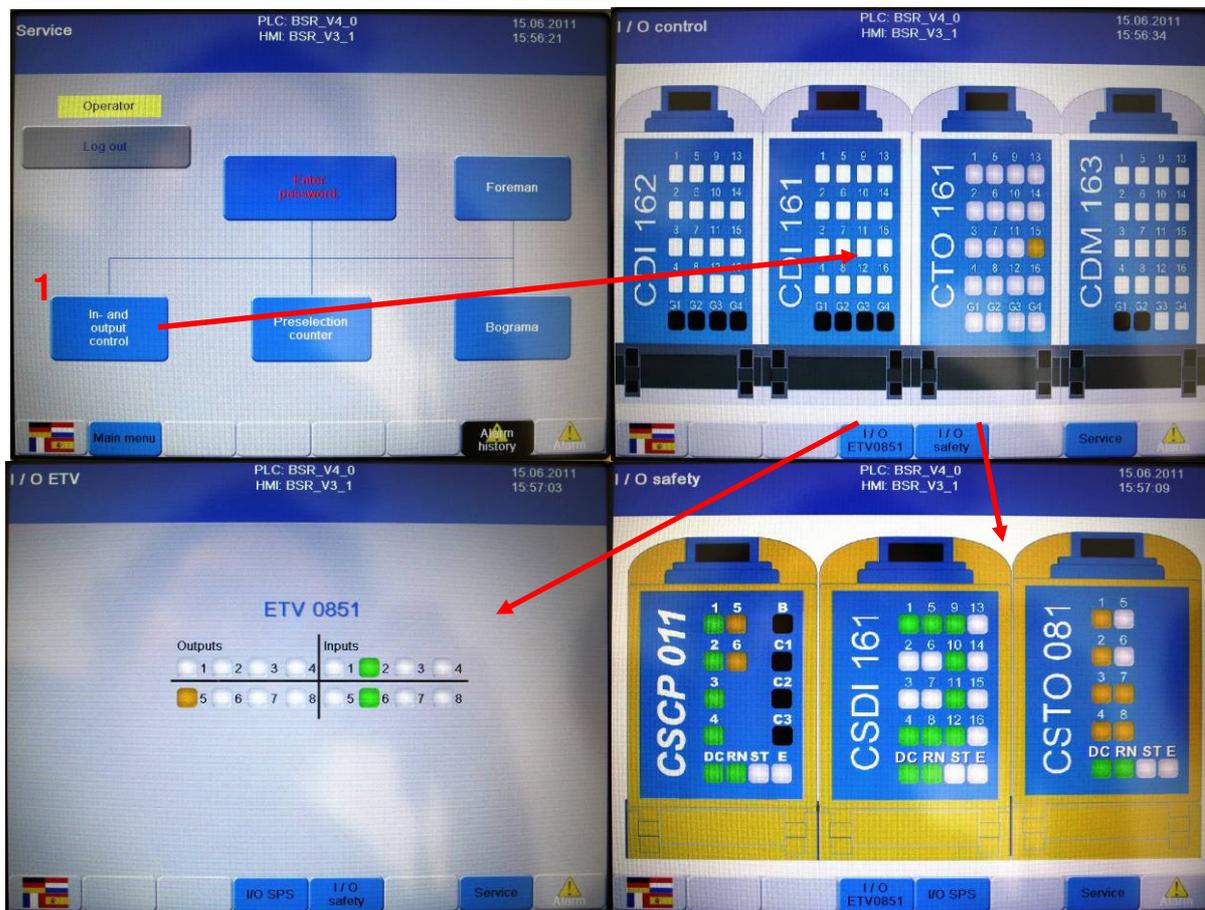


Figure 83: Input and output test

To simplify faultfinding, all hardware inputs and outputs are shown graphically. Button 1 in the Service menu is used to switch to the Test screen. Orange and green colours are used to show the statuses of different inputs and outputs (I/O). The user is able to switch between normal I/O, display I/O and safety I/O.

### 4.3.27 Supervisor menu

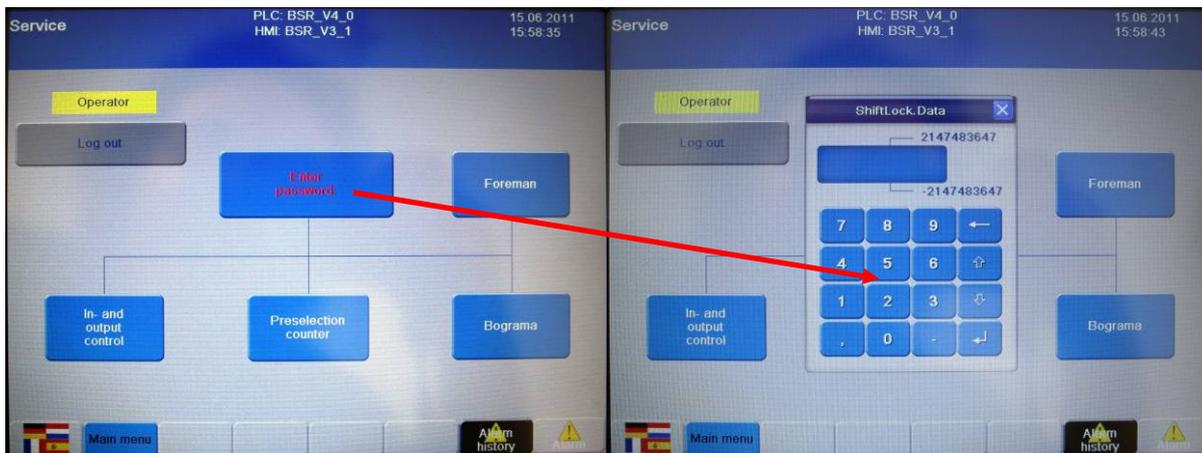


Figure 84: Supervisor menu

A code (disclosed on start-up) must be entered to access the Supervisor menu.

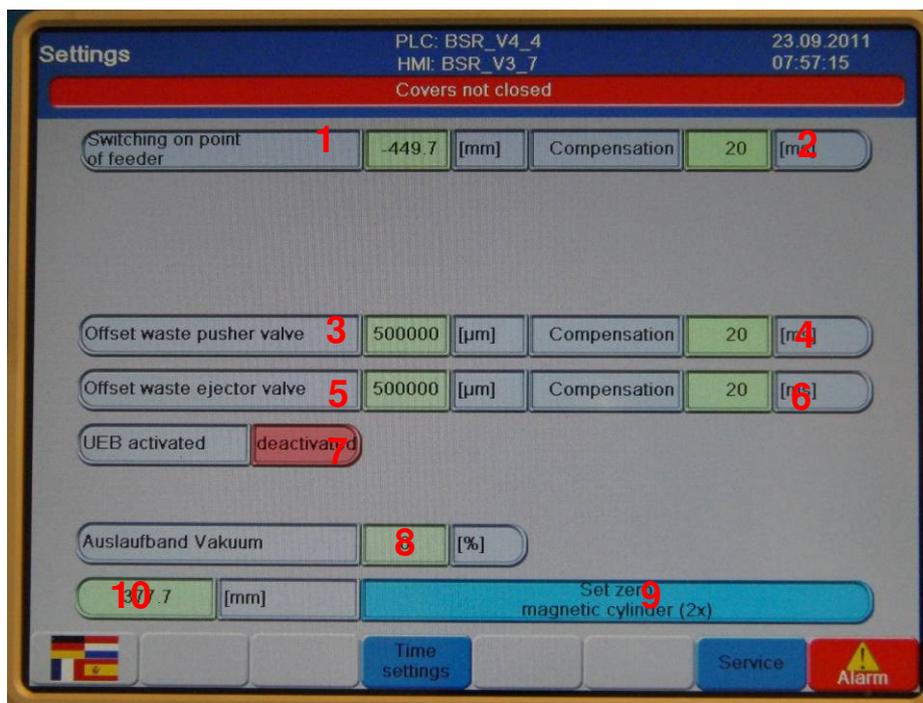


Figure 85: Supervisor menu

The infeed switching point (1) has a bearing on the retrieval from the feeder or external feeder. This value is dependent on the retrieval point of the BSR. If a negative value is entered, retrieval is earlier (and later for a bigger value). Positive and negative values can be entered.

The offset values for the separators and waste deflectors (3+5) set the start point for the valves (Sections 4.3.11 + 4.3.12).

The value is measured from the cutting edge in the magnetic cylinders. Because the distance measurement of the cylinder running backwards, means a bigger values shifting right direction (to piler) and a smaller to the left direction (to outlet).

Compensation (2+4+6) is used to counteract the switch-on delay of the valves.

The transfer unit (UEB) can be activated (7) in case it is connected to the machine. Please consider the separated manuell of the UEB.

The vacuum strength of the outlet belt can be adjusted on the display (8). On some machines, this option is not available. On this machine the vacuum adjustment should be selected from the potentiometer on the right side inside the switch cabinet.

If it is necessary to adjust the set point of the cylinder again, you can adjust it in the supervisor menu (9) which set the cylinder position on 0. First the cylinder has to be driven in a manual mode to the set point. A double-click on the button triggers the function. The actual position of the cylinder displays next to the button (10)

### 4.3.28 System status

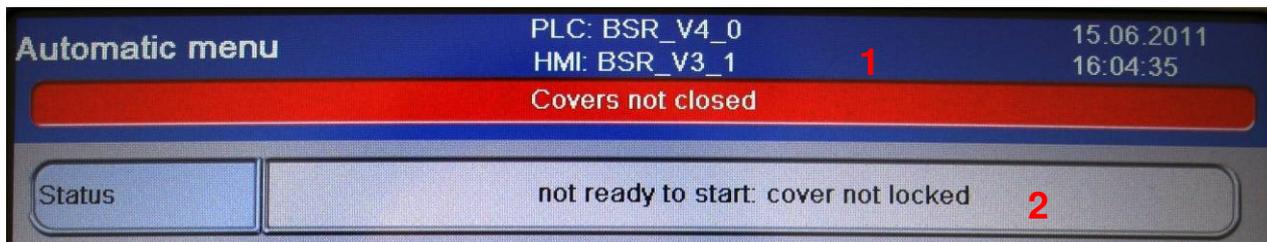


Figure 86: System status and hot alarm

The current system status is shown by 2 displays. Firstly, the “Hot Alarm“ (1), shown on every screen as soon as an alarm or instruction occurs (see also Section 4.5).

The second display is the “System status“ (2), only shown in the Automatic menu.

The system status provides the following information:

System status	Description
<b>System ready for products</b>	The system has reached its specified speed and can now be used for product processing.
<b>System being booted</b>	The system has been started and running up to the target speed configured. No product processing is possible during boot-up.
<b>System stop being prepared</b>	The system has been sent a Stop signal by a Stop button, a fault, a “door open“ request, a Stop command from a machine interfaced upstream or downstream, or a fault of a machine interfaced upstream or downstream.
<b>System has been shut down</b>	The system is in idle mode.
<b>Not ready to start: Hoods not locked.</b>	The protective hoods must be locked for start-up. Pressing the “R“ button locks them and start-up is possible.
<b>Not ready to start: Fault.</b>	Start-up is not possible if there is a fault. The fault must be rectified and the status acknowledged with the “R“ button.

Table 23: System status details

### 4.3.29 Indicator lamps

The machine is fitted with different indicator lamps, the meanings of which are explained here.

#### 4.3.29.1 Light stack



Figure 87: Light stack

State	Description
<b>Flashing red</b>	There is a fault which has yet to be acknowledged.
<b>Continual red</b>	A fault has been acknowledged but is still present.
<b>Flashing yellow</b>	The machine is in Setting mode.
<b>Continual yellow</b>	The machine is in Manual mode.
<b>Flashing yellow + flashing green</b>	The machine is in Automatic mode.
<b>Flashing yellow + continual green</b>	Stop in Automatic mode has been initiated.
<b>Flashing green</b>	The machine is being brought up to the target speed in Automatic mode.
<b>Continual green</b>	The target speed in Automatic mode has been reached and the machine is ready for product processing.

Table 24: Details of indicator lamps (light stack)

4.3.29.2 Buttons



Figure 88: Transport buttons



Figure 89: Outfeed buttons



Figure 90: Display buttons

No.	State	Description
1	<b>Start (flashing green)</b>	The machine is being brought up to the target speed in Automatic mode.
1	<b>Start (continual green)</b>	The target speed in Automatic mode has been reached and the machine is ready for product processing.
2	<b>Multiple sheets (continual white)</b>	Sheet retrieval has been enabled.
3	<b>Rejector (continual white)</b>	This shows that the rejector has been activated
4	<b>Table enable (continual white)</b>	Shows that table travel enable has been activated.
4	<b>Table enable (flashing white)</b>	Shows that table travel enable has not been activated in Automatic mode.
5	<b>Reset (flashing blue)</b>	There is a fault which has yet to be acknowledged.

Table 25: Details of indicator lamps (buttons)

## 4.4 Setting up products

### 4.4.1 Basic mechanical settings

To set up a product on the machine, the product is fed to the machine by an upstream unit or, if an integrated feeder has been fitted, the product is positioned centrally, depending on the variant.

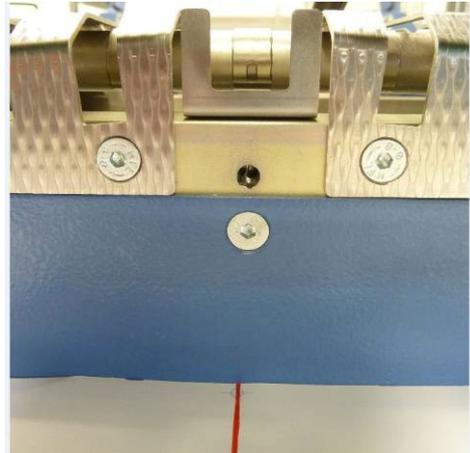


Figure 91: Aligning grooved product

The topmost product is grooved in the centre as an alignment aid, marked here in red, and aligned roughly to the centre screw (symbolising the middle of the machine).

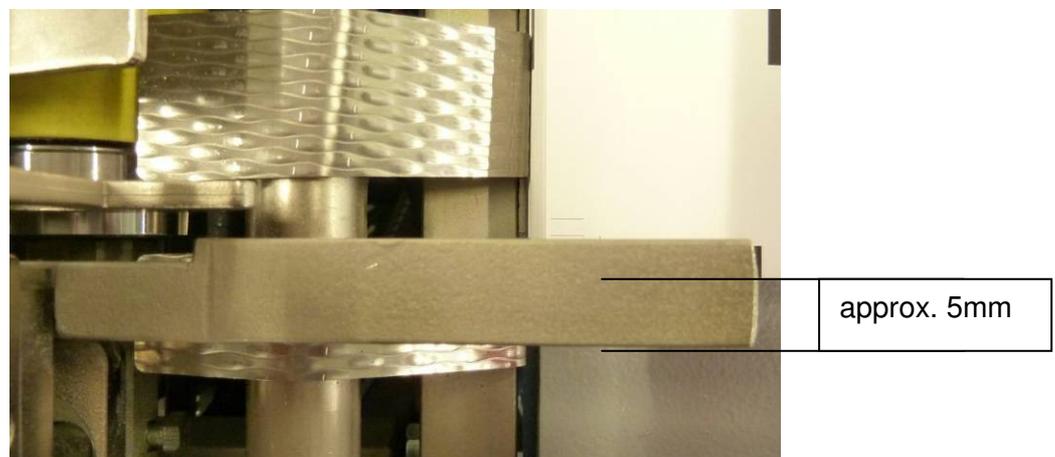


Figure 92: Adjusting the front side alignment

The front side alignment must be adjusted such that the product edge is about 5mm from the outer edge.

If this a repetitive job, the side alignment can be adjusted to the measurement known. A tape measure is affixed to the guide rail for this.

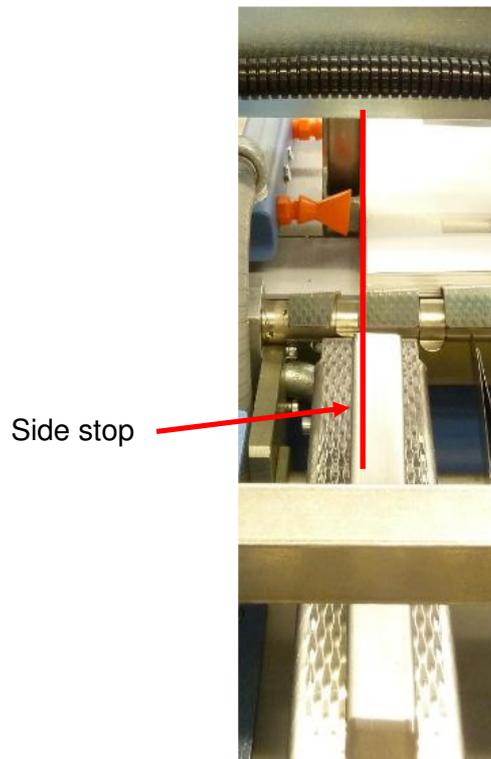


Figure 93: Adjusting rear side alignment

The rear side alignment must be adjusted such that the sheet border is about at the centre of the guide.

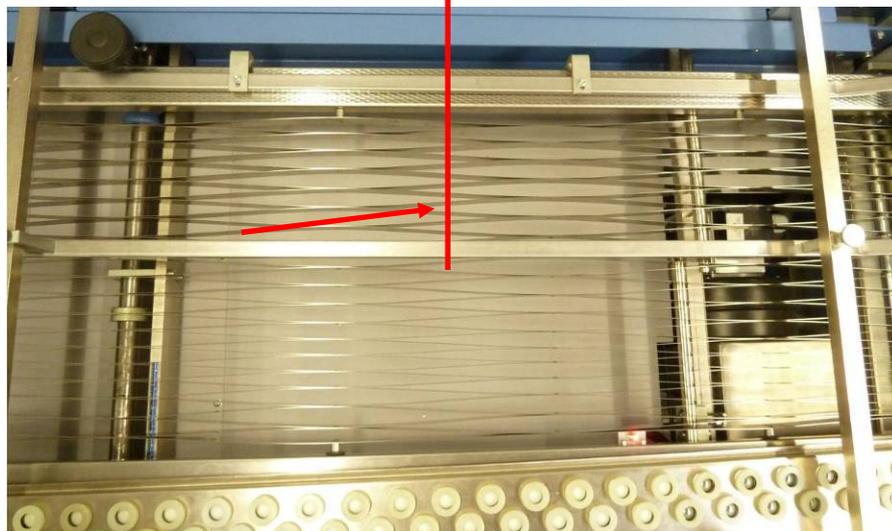


Figure 94: Adjustment of centre guides

The centre guides must be spread out in line with the product width. 2 guides should be used for wide products.

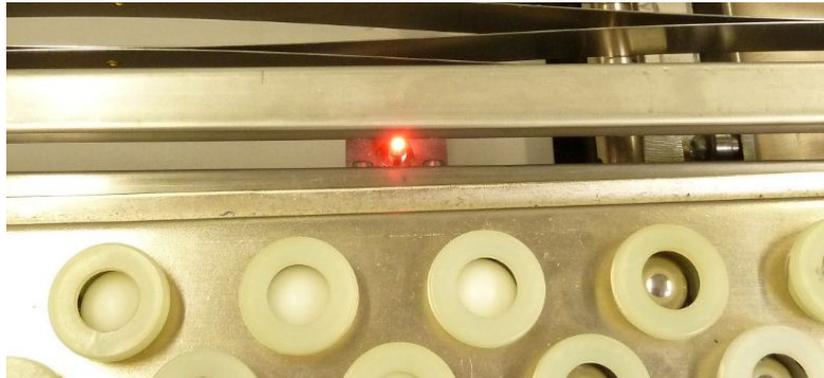


Figure 95: Adjustment of centre guides



Figure 96: Incorrect adjustment

Ensure that the light barrier is not covered when adjusting the centre guides. The optical fibre amplifier shows this (see picture).



Figure 97: Double sheet test

The double sheet test must be adjusted to the product thickness by underlying a product.

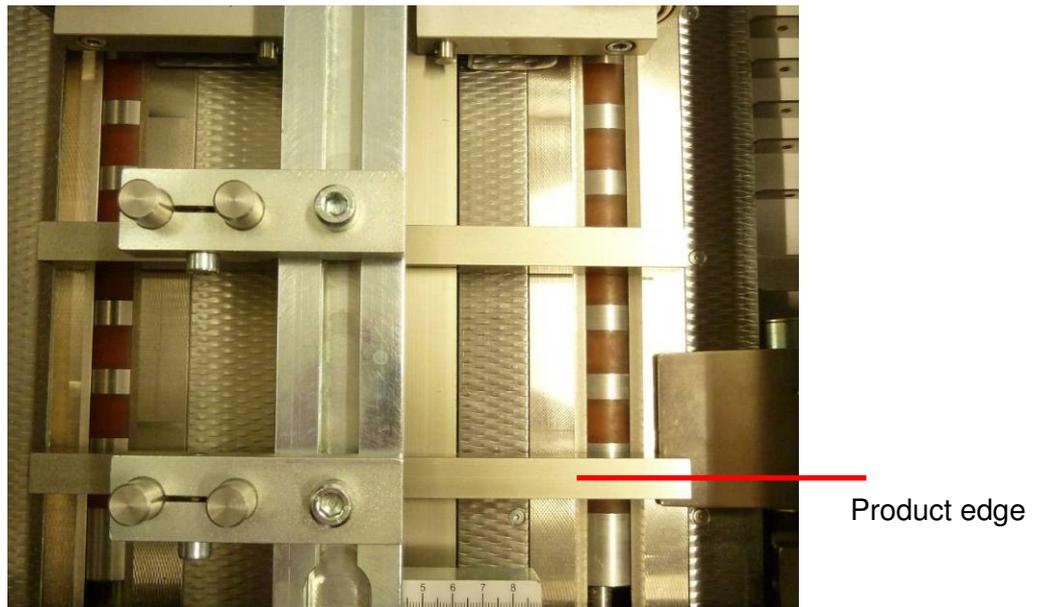


Figure 98: Front alignment

The holding-down clamps in the positioning area must be adjusted to the product such that the edges in particular are kept down. Because the product edge is known by the side aligner, the holding-down clamps can be brought into its position without a product.

The outer holding-down clamp should be adjusted such that it points to the edge of the product (the inner one can be set in the centre).



Figure 99: Rear alignment

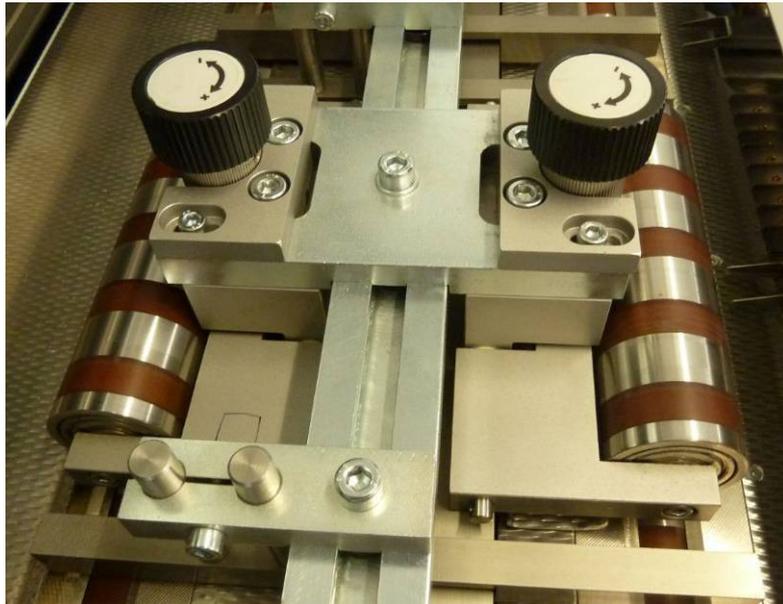


Figure 100: Pressure rollers

The pressure rollers of the positioning rollers need only be adjusted to the product thickness for products below 80g/m<sup>2</sup> and above 300g/m<sup>2</sup>. No further adjustment is required for any other product.

The stamping sheet must then be fitted (see also Section 5).

For set-up of the machine, the machine interfaced upstream must be ready and be set up correctly.

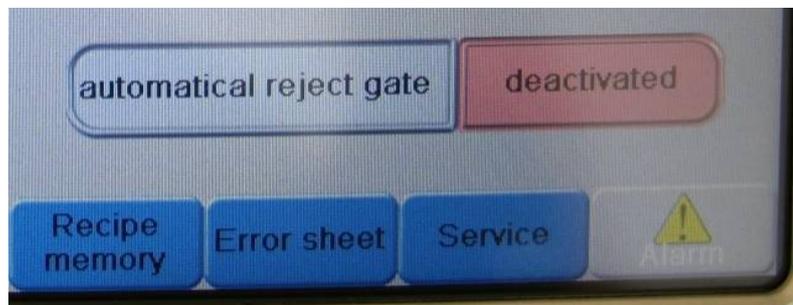


Figure 101: Rejector deactivated

To simplify set-up, the rejector must be deactivated in Automatic mode and the speed adapted to the upstream machine. An optimal set-up speed is between 60 and 80 m/min.

#### 4.4.2 Set-up with products

Once finished with the basic mechanical settings, the process continues with the products.

First, two to three products are retrieved and register correction tested.

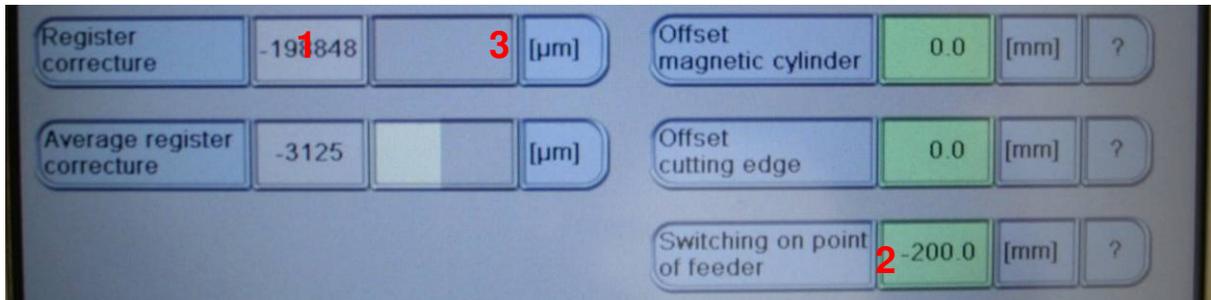


Figure 102: Register and offset

Once the Correction register (1) has a relatively uniform display, correction of the retrieval can be performed.

If, for example, the display is -300000, the infeed switching point (2) must be set to 300.

If products are now dispensed uniformly and the bar of the register correction (3) is shown in about the middle, the correction setting has been selected correctly.

When the products are in the register, the product angle may need to be changed. This must be measured on punched product.

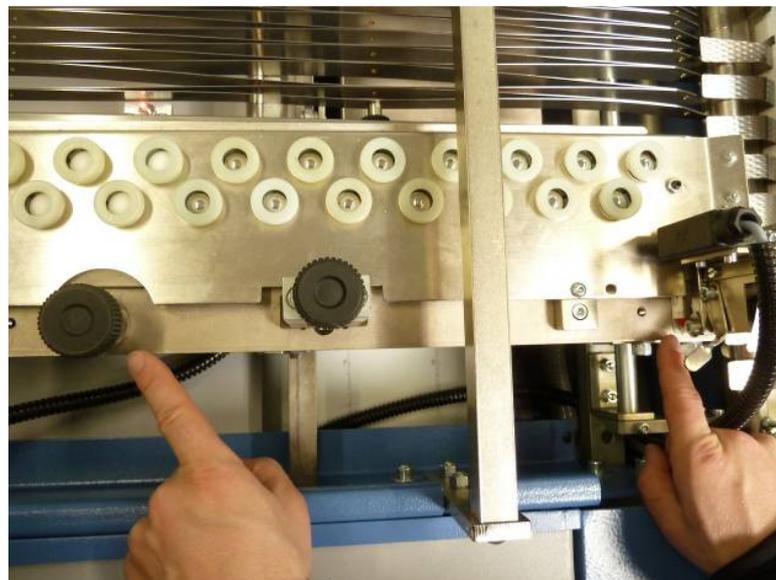


Figure 103: Angular adjustment

Once the angle is set correctly, the side alignment is corrected (if necessary).



Figure 104: Side adjustment

A differentiation is made between approximate (1) and fine adjustment (2) in the side alignment.

Once these steps have been carried out correctly, the product is fed neatly and straight to the punching cylinder. This is a basic requirement for a successful end product.

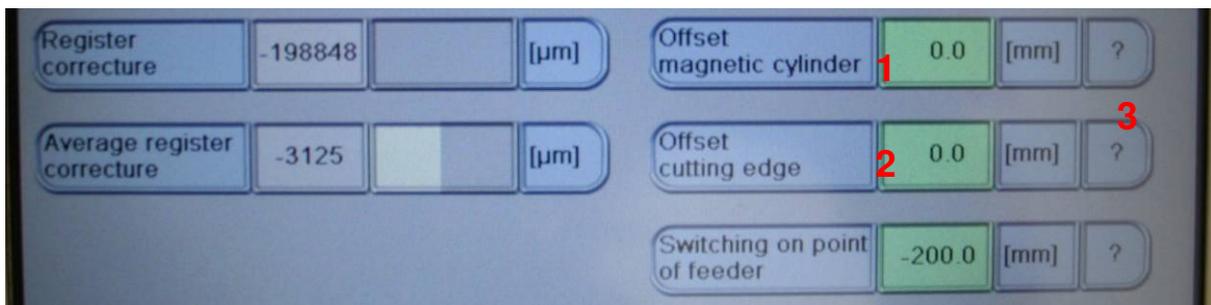


Figure 105: Register and offset

Now the cutting edge is adapted to the product.

A correction during operation can be made using the offset value of the cutting edge. Note here however that the maximum correction is limited to +/-100mm.

If the correction to be made is greater than the threshold, the offset value for the magnetic cylinder must be changed in the idle state. The correction is then applied on next machine start.

If the value of the cutting edge is altered, this value is used as the offset value for the magnetic cylinder, and the cutting edge value is reset to 0.

If, during operation, you are no longer sure which value must be changed in which direction, a Help screen can be displayed with the ? button (3).

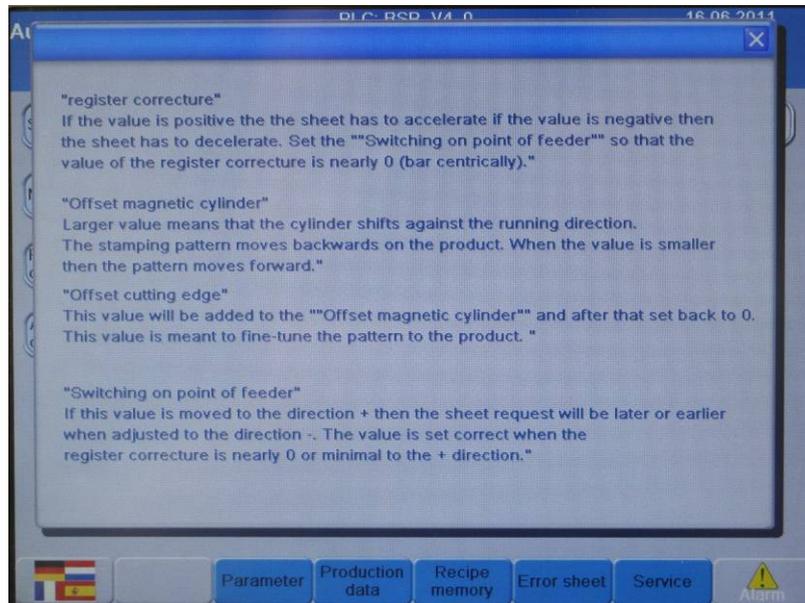


Figure 106: Help screen

Next, the position of the draggers (1) is adjusted in the outfeed.

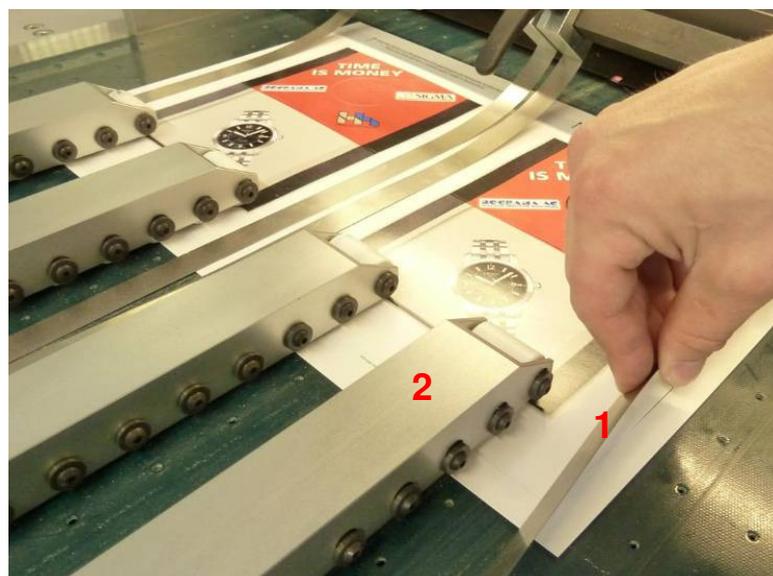


Figure 107: Dragger

The draggers must be laid onto the cutting edge to prevent displacement between product and waste.

The roller bars (2) are placed centrally or, as shown in the picture, spread on the product to guarantee reliable transport.

If grooved products are used, the roller bars must be placed onto the groove because otherwise smooth transport can no longer be guaranteed.

Now the arrow keys on the outfeed, or Manual mode, is used to move the product to the edge of the outfeed to adjust the waste defectors.

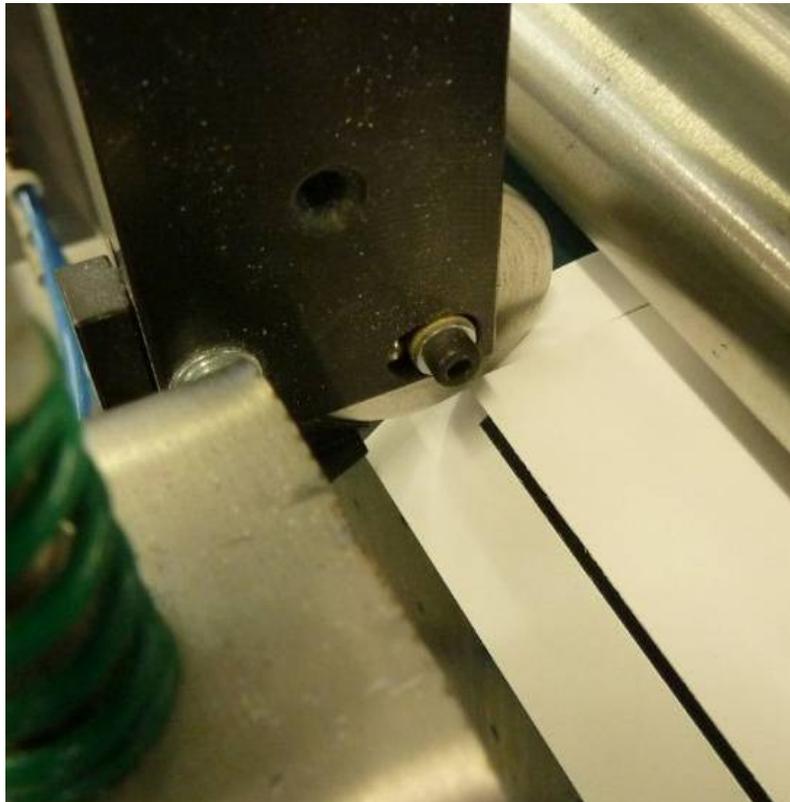


Figure 108: Waste defectors

The rollers of the waste defectors must be adjusted such that they meet the waste in the centre to guarantee correct deflection.

The air connectors must be fitted to the connectors provided.

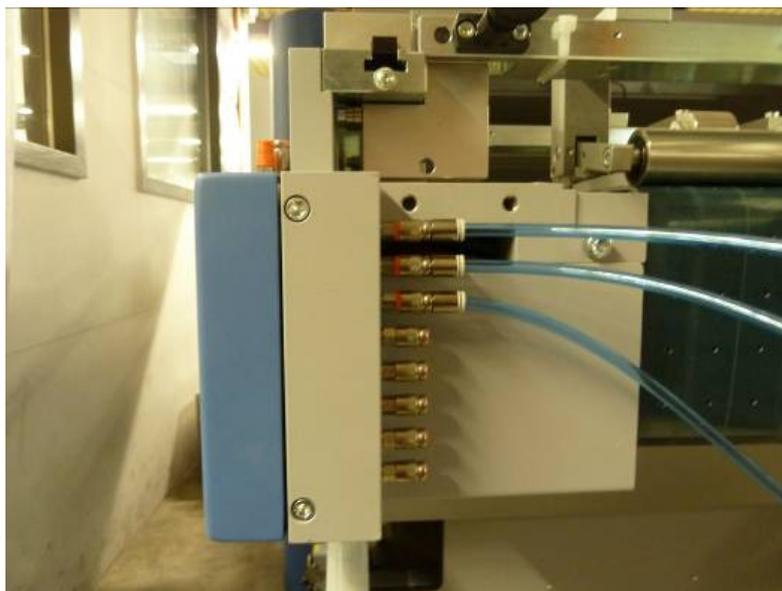


Figure 109: Air connection for waste defectors

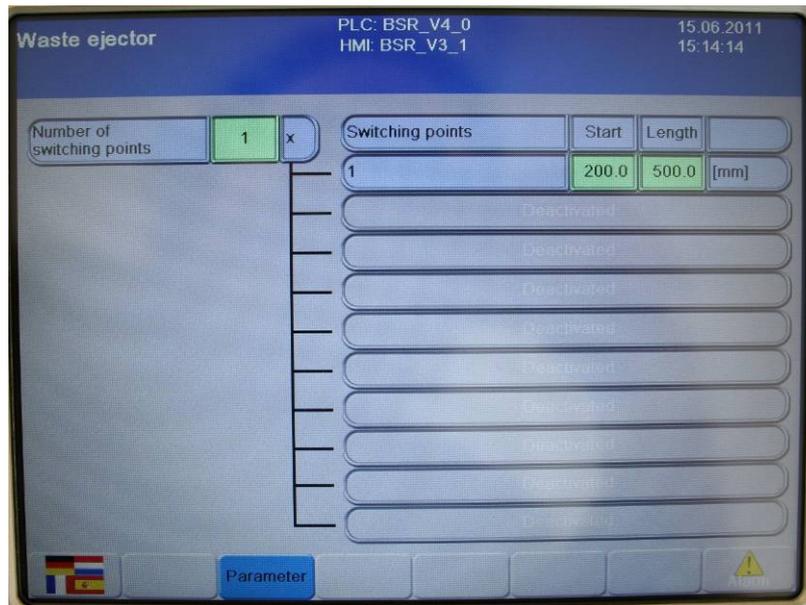


Figure 110: Waste deflector switching points

The switching point for the waste deflectors is defined in the Parameter menu.

The start value relates to the outfeed edge. The duration should be product length + 50mm to guarantee that all of the waste is transported downwards neatly.

#### 4.5 Fault diagnostics

<b>Fault code</b>	<b>1</b>
<b>Fault message</b>	<b>Emergency Stop on panel pressed or Enable button pressed all the way down</b>
<b>Description</b>	The Emergency Stop on the panel has been pressed or the Enable button pressed all the way down (position 2).
<b>Test points</b>	<ul style="list-style-type: none"> <li>• Emergency Stop on the panel</li> </ul>
<b>Countermeasures</b>	<ul style="list-style-type: none"> <li>• Release Emergency Stop</li> <li>• Press the "R" button</li> </ul>

<b>Fault code</b>	<b>2</b>
<b>Fault message</b>	<b>Servo fault</b>
<b>Description</b>	A fault has been ascertained by the Servo driver.
<b>Test points</b>	<ul style="list-style-type: none"> <li>• Read the fault code on the display</li> </ul>
<b>Countermeasures</b>	<ul style="list-style-type: none"> <li>• Test the appropriate Servo spindle in Manual mode.</li> <li>• If the fault persists, contact Bograma</li> </ul>

<b>Fault code</b>	<b>4</b>
<b>Fault message</b>	<b>Emergency Stop not acknowledged. Acknowledge with the "R" button</b>
<b>Description</b>	Emergency Stop has yet to be acknowledged with the "R" button.
<b>Test points</b>	<ul style="list-style-type: none"> <li>• Is the Emergency Stop on the panel released</li> </ul>
<b>Countermeasures</b>	<ul style="list-style-type: none"> <li>• Press the "R" button</li> </ul>

<b>Fault code</b>	<b>5 / 6</b>
<b>Fault message</b>	<b>Emergency Stop on upstream/downstream machine</b>
<b>Description</b>	An Emergency Stop has been pressed on an upstream/downstream machine, or its voltage has yet to be switched on.
<b>Test points</b>	<ul style="list-style-type: none"> <li>• Check Emergency Stop on upstream/downstream machine</li> <li>• Check main switch on upstream/downstream machine</li> <li>• Check plug-in contact to upstream/downstream machine</li> </ul>
<b>Countermeasures</b>	<ul style="list-style-type: none"> <li>• Release Emergency Stop on upstream/downstream machine, and acknowledge if required</li> <li>• Switch on the voltage of upstream/downstream machine</li> <li>• Insert correctly the connection to the upstream/downstream machine, or insert dummy plug if stand-alone operation</li> </ul>

<b>Fault code</b>	<b>8</b>
<b>Fault message</b>	<b>Maloperation: In Automatic mode: Please turn off Setting key switch</b>
<b>Description</b>	This message is displayed when the key switch is set to Automatic mode and Setting mode is not yet enabled.
<b>Test points</b>	<ul style="list-style-type: none"> <li>• Check the key switches for operating modes and Setting mode</li> </ul>
<b>Countermeasures</b>	<ul style="list-style-type: none"> <li>• Move the key switch from Setting mode to position "0".</li> </ul>

<b>Fault code</b>	<b>9</b>
<b>Fault message</b>	<b>Hoods not closed</b>
<b>Description</b>	Indicates that not all of the hoods on the BSR are closed.
<b>Test points</b>	<ul style="list-style-type: none"> <li>• Check whether the two hoods were closed properly</li> <li>• Test inputs CSDI 161.9, CSDI 161.11 and CSDI 161.13</li> </ul>
<b>Countermeasures</b>	<ul style="list-style-type: none"> <li>• Close the hoods properly</li> <li>• Check the function of the safety switches</li> </ul>

<b>Fault code</b>	<b>10</b>
<b>Fault message</b>	<b>Hoods not locked and acknowledged (press "R" button)</b>
<b>Description</b>	When the hood was closed but not locked.
<b>Test points</b>	<ul style="list-style-type: none"> <li>• Test inputs CSDI 161.10 and CSDI 161.12.</li> </ul>
<b>Countermeasures</b>	<ul style="list-style-type: none"> <li>• Press the "R" button</li> <li>• Check the function of the safety switches</li> </ul>

<b>Fault code</b>	<b>11</b>
<b>Fault message</b>	<b>Rejector timeout down</b>
<b>Description</b>	When the rejector is activated, but receives no acknowledgement from the sensor that it is down.
<b>Test points</b>	<ul style="list-style-type: none"> <li>• Check the free mechanical movement of the rejector. Check for collision with roller block.</li> <li>• Check the switching points on the sensor</li> <li>• Check the compressed air</li> </ul>
<b>Countermeasures</b>	<ul style="list-style-type: none"> <li>• Adjust the mechanics correctly, swap bearing if required, rectify collision</li> <li>• Re-teach the sensor Pay attention to the definition of the sensor</li> <li>• Adjust the compressed air correctly</li> </ul>

<b>Fault code</b>	<b>12</b>
<b>Fault message</b>	<b>Rejector timeout up</b>
<b>Description</b>	When the rejector is activated, but receives no acknowledgement from the sensor that it is up.
<b>Test points</b>	<ul style="list-style-type: none"> <li>• Check the free mechanical movement of the rejector. Check for collision with roller block.</li> <li>• Check the switching points on the sensor</li> <li>• Check the air pressure</li> </ul>
<b>Countermeasures</b>	<ul style="list-style-type: none"> <li>• Adjust the mechanics correctly, swap bearing if required, rectify collision</li> <li>• Re-teach the sensor Pay attention to the definition of the sensor</li> <li>• Correctly adjust the compressed air pressure</li> </ul>

<b>Fault code</b>	<b>13</b>
<b>Fault message</b>	<b>Hood on external machine open</b>
<b>Description</b>	A protective hood on an upstream/downstream machine has been opened.
<b>Test points</b>	<ul style="list-style-type: none"> <li>• Check the protective hoods on the upstream/downstream machine</li> <li>• Check the plug-in contact to the upstream/downstream machine</li> </ul>
<b>Countermeasures</b>	<ul style="list-style-type: none"> <li>• Close the protection hoods and acknowledge if required</li> </ul>

<b>Fault code</b>	<b>101</b>
<b>Fault message</b>	<b>Double sheet in infeed</b>
<b>Description</b>	A double sheet has been detected in the infeed.
<b>Test points</b>	<ul style="list-style-type: none"> <li>• Check the infeed for double sheets</li> <li>• Check the switch for free mechanical movement</li> <li>• Check cables for defects</li> <li>• Check switches for defects</li> </ul>
<b>Countermeasures</b>	<ul style="list-style-type: none"> <li>• Remove the double sheet</li> <li>• Replace switch</li> <li>• Replace defective cable</li> </ul>

<b>Fault code</b>	<b>102</b>
<b>Fault message</b>	<b>Blockage on the transport belt</b>
<b>Description</b>	The sensor on the transport belt has detected a blockage.
<b>Test points</b>	<ul style="list-style-type: none"> <li>• Check transport belt for blockage</li> <li>• Check optical fibre sensor =TRAN-B6.8</li> <li>• Check optical fibre for defects</li> <li>• Check whether the product length is configured correctly</li> </ul>
<b>Countermeasures</b>	<ul style="list-style-type: none"> <li>• Remove products on transport belt</li> <li>• Correctly adjust the optical fibre sensor</li> <li>• Replace the optical fibre sensor Configure the product length correctly</li> </ul>

<b>Fault code</b>	<b>103</b>
<b>Fault message</b>	<b>Blockage at magnetic cylinder</b>
<b>Description</b>	Sensor =ZYL-B25.1 is fitted to the outfeed of the magnetic cylinders. This enables blockages and throughput to be monitored.
<b>Test points</b>	<ul style="list-style-type: none"> <li>• Check magnetic cylinders for blockage</li> <li>• Check magnetic cylinders for missing product (product is deflected downwards into the machine area)</li> <li>• Check the reflector film in the outfeed sheet Check the position of the sensor and function</li> </ul>
<b>Countermeasures</b>	<ul style="list-style-type: none"> <li>• Remove the product blockage</li> <li>• Clean reflector or affix correctly</li> <li>• Correct the sensor position</li> <li>• Replace sensor</li> </ul>

<b>Fault code</b>	<b>104</b>
<b>Fault message</b>	<b>No product available</b>
<b>Description</b>	When a signal has been sent to the feeder to dispense a product, but no product arrives at the infeed light barrier within a certain time.
<b>Test points</b>	<ul style="list-style-type: none"> <li>• Check feeder to see whether it has dispensed</li> <li>• Check transport path</li> <li>• Check function of sensor</li> </ul>
<b>Countermeasures</b>	<ul style="list-style-type: none"> <li>• Press the “R” button</li> <li>• Correctly adjust the feeder (e.g. sheet ventilation)</li> <li>• Correctly adjust the sensor</li> <li>• Replace sensor</li> </ul>

<b>Fault code</b>	<b>105</b>
<b>Fault message</b>	<b>No sheet (possibly feeder blockage, timeout.....)</b>
<b>Description</b>	When a signal has been sent to the feeder to dispense a product, but no product arrives at the infeed light barrier within a certain time.
<b>Test points</b>	<ul style="list-style-type: none"> <li>• Check feeder to see whether it has dispensed</li> <li>• Check transport path</li> <li>• Check function of sensor</li> </ul>
<b>Countermeasures</b>	<ul style="list-style-type: none"> <li>• Press the “R” button</li> <li>• Correctly adjust the feeder (e.g. sheet ventilation)</li> <li>• Correctly adjust the sensor</li> <li>• Replace sensor</li> </ul>

<b>Fault code</b>	<b>201</b>
<b>Fault message</b>	<b>Fault with downstream machine</b>
<b>Description</b>	A fault with a downstream machine has been detected.
<b>Test points</b>	<ul style="list-style-type: none"> <li>• Check downstream machine for faults</li> <li>• Check plug-in contact to downstream machine</li> </ul>
<b>Countermeasures</b>	<ul style="list-style-type: none"> <li>• Rectify fault with downstream machine</li> </ul>

<b>Fault code</b>	<b>202 (only on models with feeder)</b>
<b>Fault message</b>	<b>Feeder not in position</b>
<b>Description</b>	The attachment arm for product infeed on the feeder can be swivelled up. This is interrogated by sensor =ANL-B5.3.
<b>Test points</b>	<ul style="list-style-type: none"> <li>• Check the position of the attachment arm</li> <li>• Check sensor =ANL-B5.3</li> </ul>
<b>Countermeasures</b>	<ul style="list-style-type: none"> <li>• Move the attachment arm into the correct position</li> <li>• Correctly adjust the sensor</li> <li>• Replace sensor</li> </ul>

<b>Fault code</b>	<b>203</b>
<b>Fault message</b>	<b>Outfeed not in position</b>
<b>Description</b>	The position of the outfeed is interrogated on swivelling. If the outfeed is not in the correct position to start the system, this is displayed.
<b>Test points</b>	<ul style="list-style-type: none"> <li>• Check the position of the outfeed</li> <li>• Test safety switch =ZYL-B20.5</li> <li>• Test input CDI 162.14</li> </ul>
<b>Countermeasures</b>	<ul style="list-style-type: none"> <li>• Move the outfeed into the correct position</li> <li>• Test the actuator for safety switches</li> <li>• Replace safety switches</li> </ul>

<b>Fault code</b>	<b>204 (only on models with feeder)</b>
<b>Fault message</b>	<b>Fault with feeder vacuum pump</b>
<b>Description</b>	Fault message from the vacuum pump on the feeder.
<b>Test points</b>	<ul style="list-style-type: none"> <li>• Check motor protection switch =MAIN-F2.32</li> <li>• Check motor =ANL-M1.3</li> <li>• Check pump filter</li> <li>• Check airways</li> </ul>
<b>Countermeasures</b>	<ul style="list-style-type: none"> <li>• Clean filter</li> <li>• Clean airways</li> <li>• Test motor coils</li> <li>• Replace motor</li> </ul>

<b>Fault code</b>	<b>205</b>
<b>Fault message</b>	<b>Fault with outfeed vacuum pump</b>
<b>Description</b>	Fault message from the vacuum pump on the outfeed.
<b>Test points</b>	<ul style="list-style-type: none"> <li>• Test frequency converter in separate control cabinet</li> <li>• Test motor =ZYL-M3.1</li> <li>• Test contactor =ZYL-EXT3.0-Q3.9 in separate control cabinet</li> <li>• Check airways</li> <li>• Test potentiometer =MAIN-R3.7</li> </ul>
<b>Countermeasures</b>	<ul style="list-style-type: none"> <li>• Test the motor coils</li> <li>• Replace contactor</li> <li>• Replace frequency converter</li> <li>• Replace motor</li> </ul>

<b>Fault code</b>	<b>206</b>
<b>Fault message</b>	<b>No compressed air</b>
<b>Description</b>	The compressed air is monitored to ensure supply. A minimum pressure of 5.5bar is required.
<b>Test points</b>	<ul style="list-style-type: none"> <li>• Test the display of the pressure gauge</li> <li>• Test the compressed air supply</li> <li>• Test input CDI 162.11</li> <li>• Test the switching hysteresis of the pressure monitor</li> </ul>
<b>Countermeasures</b>	<ul style="list-style-type: none"> <li>• Correct the compressed air supply</li> <li>• Adjust switching hysteresis</li> <li>• Replace pressure monitor</li> </ul>

<b>Fault code</b>	<b>207</b>
<b>Fault message</b>	<b>Fault with vacuum pump (vacuum bar)</b>
<b>Description</b>	Fault message from the vacuum pump of the vacuum bar.
<b>Test points</b>	<ul style="list-style-type: none"> <li>• Test motor protection switch =MAIN-F4.3</li> <li>• Test motor –M4.3</li> <li>• Check airways</li> </ul>
<b>Countermeasures</b>	<ul style="list-style-type: none"> <li>• Test the motor coils</li> <li>• Replace motor</li> </ul>

<b>Fault code</b>	<b>209</b>
<b>Fault message</b>	<b>Maintenance place not in position</b>
<b>Description</b>	A removable maintenance plate is in the infeed of the magnetic cylinders. Its position is monitored by a sensor.
<b>Test points</b>	<ul style="list-style-type: none"> <li>• Check the maintenance plate is positioned correctly</li> <li>• Test sensor =ZYL-B25.2</li> <li>• Test input CDI 162.14</li> </ul>
<b>Countermeasures</b>	<ul style="list-style-type: none"> <li>• Insert maintenance plate correctly</li> <li>• Replace sensor</li> </ul>

<b>Fault code</b>	<b>302</b>
<b>Fault message</b>	<b>Fault with Servo transport belt</b>
<b>Description</b>	A fault with the Servo amplifier for the transport belt has been detected
<b>Test points</b>	<ul style="list-style-type: none"> <li>• Check the plug-in connectors on motor =TRAN-M7.1</li> <li>• Check for free movement of the transport belt</li> </ul>
<b>Countermeasures</b>	<ul style="list-style-type: none"> <li>• Press the “R” button</li> <li>• Restart the machine</li> <li>• Insert the connector correctly</li> <li>• Replace motor</li> <li>• Replace encoder cable</li> </ul>

<b>Fault code</b>	<b>303</b>
<b>Fault message</b>	<b>Fault with Servo positioning rollers</b>
<b>Description</b>	A fault with the Servo amplifier for the positioning rollers has been detected.
<b>Test points</b>	<ul style="list-style-type: none"> <li>• Check the plug-in connectors on motor =TRAN-M11.1</li> <li>• Check for free movement of the positioning rollers</li> </ul>
<b>Countermeasures</b>	<ul style="list-style-type: none"> <li>• Press the “R” button</li> <li>• Restart the machine</li> <li>• Insert the connector correctly</li> <li>• Replace motor</li> <li>• Replace encoder cable</li> </ul>

<b>Fault code</b>	<b>304</b>
<b>Fault message</b>	<b>Fault with Servo magnetic cylinder</b>
<b>Description</b>	A fault with the Servo amplifier for the magnetic cylinders has been detected.
<b>Test points</b>	<ul style="list-style-type: none"> <li>• Check the plug-in connectors on motor =ZYL-M8.1</li> </ul>
<b>Countermeasures</b>	<ul style="list-style-type: none"> <li>• Press the “R” button</li> <li>• Restart the machine</li> <li>• Insert the connector correctly</li> <li>• Replace motor</li> <li>• Replace encoder cable</li> </ul>

<b>Fault code</b>	<b>305</b>
<b>Fault message</b>	<b>Fault with Servo outfeed belt</b>
<b>Description</b>	A fault with the Servo amplifier for the outfeed belt has been detected
<b>Test points</b>	<ul style="list-style-type: none"> <li>• Check the plug-in connectors on motor =AUSL-M10.1</li> <li>• Check for free movement of the outfeed belt</li> </ul>
<b>Countermeasures</b>	<ul style="list-style-type: none"> <li>• Press the “R” button</li> <li>• Restart the machine</li> <li>• Insert the connector correctly</li> <li>• Replace motor</li> <li>• Replace encoder cable</li> </ul>

<b>Fault code</b>	<b>306</b>
<b>Fault message</b>	<b>Fault with table travel (only on models with feeder)</b>
<b>Description</b>	A fault with the Servo amplifier for the table travel has been detected.
<b>Test points</b>	<ul style="list-style-type: none"> <li>• Test motor =ANL-M1.5</li> <li>• Check table mechanically</li> <li>• Check the dummy plug on the encoder input</li> </ul>
<b>Countermeasures</b>	<ul style="list-style-type: none"> <li>• Press the “R” button</li> <li>• Restart the machine</li> <li>• Insert the connector correctly</li> <li>• Replace motor</li> </ul>

<b>Fault code</b>	<b>600</b>
<b>Fault message</b>	<b>UEB transfer unit is activated but not connected, or Varan bus is down</b>
<b>Description</b>	Test the bus connection to the UEB.
<b>Test points</b>	<ul style="list-style-type: none"> <li>• Is a UEB present?</li> <li>• The connector for the Varan bus must be inserted into socket =TRAN-XB110</li> <li>• Test the bus module on the UWB</li> <li>• Test bus distributor =TRAN-T12.3</li> <li>• Check cables for damage</li> </ul>
<b>Countermeasures</b>	<ul style="list-style-type: none"> <li>• If no UEB is present, it must be deactivated on the display</li> <li>• Insert connector correctly</li> <li>• Restart the machine</li> <li>• Replace bus module</li> <li>• Replace bus distributor</li> </ul>

<b>Fault code</b>	<b>601 (only on models with feeder)</b>
<b>Fault message</b>	<b>Feeder is activated but not connected, or Varan bus is down</b>
<b>Description</b>	The bus connection to the feeder is tested.
<b>Test points</b>	<ul style="list-style-type: none"> <li>• Is a feeder present?</li> <li>• The connector for the Varan bus must be inserted into socket =TRAN-XB100 or directly from the bus distributor in slot 1</li> <li>• Test the bus module on the feeder</li> <li>• Test bus distributor =TRAN-T12.3</li> <li>• Check cables for damage</li> </ul>
<b>Countermeasures</b>	<ul style="list-style-type: none"> <li>• If no feeder is present, it must be deactivated on the display</li> <li>• Insert connector correctly</li> <li>• Restart the machine</li> <li>• Replace bus module</li> <li>• Replace bus distributor</li> </ul>

<b>Fault code</b>	<b>602</b>
<b>Fault message</b>	<b>The Varan bus to I/O module CIV512 is down (restart required)</b>
<b>Description</b>	The bus connection from the display to the I/O module is tested.
<b>Test points</b>	<ul style="list-style-type: none"> <li>• Check connector on CIV 512</li> <li>• Check connector on display</li> <li>• Check cables for damage</li> </ul>
<b>Countermeasures</b>	<ul style="list-style-type: none"> <li>• Insert connector correctly</li> <li>• Restart the machine</li> <li>• Replace bus cable</li> </ul>

<b>Fault code</b>	<b>603</b>
<b>Fault message</b>	<b>The Varan bus to Servo rack 1 is down (restart required)</b>
<b>Description</b>	The bus connection from the I/O module to rack 1 is tested.
<b>Test points</b>	<ul style="list-style-type: none"> <li>• Check connector on CIV 512</li> <li>• Check connector on rack 1 (-K6.1)</li> <li>• Check cables for damage</li> </ul>
<b>Countermeasures</b>	<ul style="list-style-type: none"> <li>• Insert connector correctly</li> <li>• Restart the machine</li> <li>• Replace bus cable</li> </ul>

<b>Fault code</b>	<b>604</b>
<b>Fault message</b>	<b>The Varan bus to Servo rack 2 is down (restart required)</b>
<b>Description</b>	The bus connection from the I/O module to rack 2 is tested.
<b>Test points</b>	<ul style="list-style-type: none"> <li>• Check connector on rack 1 (-K6.1)</li> <li>• Check connector on rack 2 (-K9.2)</li> <li>• Check cables for damage</li> </ul>
<b>Countermeasures</b>	<ul style="list-style-type: none"> <li>• Insert connector correctly</li> <li>• Replace bus cable</li> </ul>

<b>Fault code</b>	<b>605</b>
<b>Fault message</b>	<b>The Varan bus to distributor VSV041 is down (restart required)</b>
<b>Description</b>	The bus connection from rack 2 to the bus distributor is tested.
<b>Test points</b>	<ul style="list-style-type: none"> <li>• Test the power supply of bus module =TRAN-T12.3</li> <li>• Check connector on rack 2 (-K9.2)</li> <li>• Check connector on bus distributor =TRAN-T12.3</li> <li>• Check cables for damage</li> </ul>
<b>Countermeasures</b>	<ul style="list-style-type: none"> <li>• Restore the power supply</li> <li>• Insert connector correctly</li> <li>• Replace bus cable</li> </ul>

Table 26: Details of indicator lamps (buttons)

## 5 Setting up

### 5.1 Positioning rollers



**Note!**

The pressure rollers of the positioning rollers are pre-set at the factory and should not be readjusted. The pressure rollers are set to the position of the positioning rollers and the sensor. The position of the mechanical stops for the assembly rail and the position of the pressure roller holder on the assembly rail should not be adjusted. The holders of the individual pressure rollers should not be loosen or moved. Failure to comply means Bograma AG is unable to guarantee smooth running of the BSR 550 Servo.

Only the contact pressure on the respective product should be set on the positioning rollers. The adjusting screws are used for this (Fig. 107, Pos. 1+2). For thin products, the pressure should be reduced a little when the product starts to distort.

If the BSR 550 Servo has an angular belt table, the vacuum of the suction belt in the part directly in front of the alignment rollers should be adjusted down.

For paper jams underneath the pressure rollers, only the screws securing the assembly rail need be undone to remove the paper (Fig. 107, Pos. 3+4).

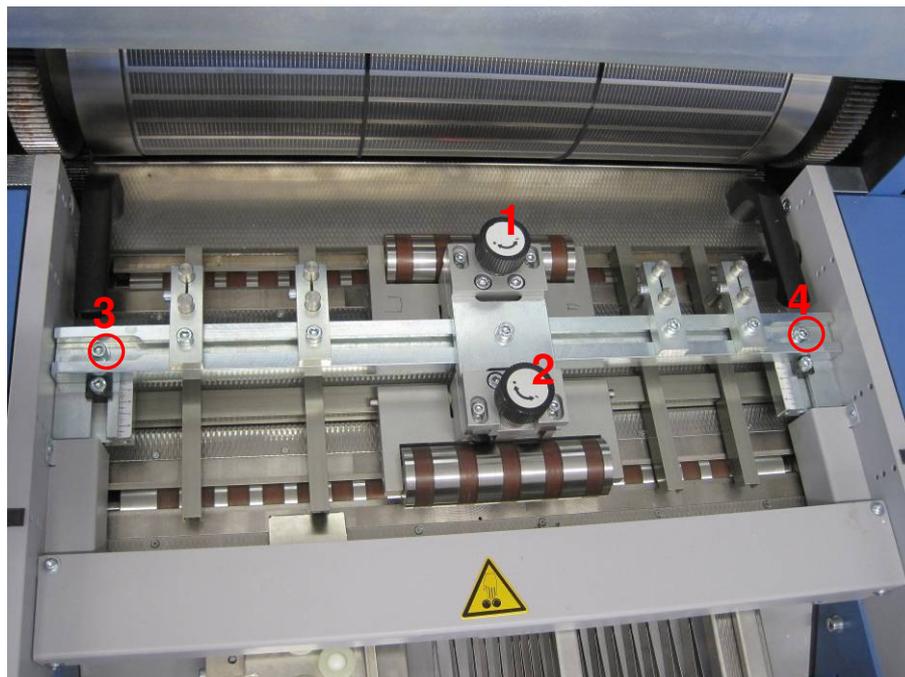


Figure 111: Positioning rollers with pressure rollers

## 5.2 Punching sheet



**Note!**

When mounting punching sheets, ensure that the locators are fitted cleanly in the holes in the punching sheet, and the punching sheet is therefore clamped straight on the magnetic cylinder.

### 5.2.1 Installation

Keep to the following order when fitting the punching sheet.

#### 1. Magnetic cylinder



**Warning!**

**Warning about damage to magnetic cylinder.**

The punching sheet must be neatly resting against the magnetic cylinder, and there may be no dirt between punching sheet and magnetic cylinder.

The punching sheet may not be resting on the locators and instead the locators must be in the holes.

1. Clean the magnetic cylinder as per the manufacturer's instructions
2. Clean the back of the sheet
3. Place the sheet cleanly on the locators
4. Allow the magnetic cylinder to run forwards to fully mount the punching sheet

#### 2. Punching sheet



**Caution!**

**Never lie the punching sheet unprotected onto the cutting side.**

**Protect the cutters against damage.**

**Never fold or overbend the punching sheet.**



**Danger**

**Risk from sharp cutting tool.**

**The cutters of punching sheets can cause injury.**

**There is increased risk of injury here from the low thickness of punching sheets on the outer sides. Wear suitable protective clothing.**

### 5.3 Counter punching sheet



**Note!**

When mounting counter punching sheets, ensure that the locators fit neatly in the holes in the counter punching sheet, and that it is therefore clamped straight on the magnetic cylinder.

Polished side to the magnet cylinder, smooth side to the punching sheet.

#### 5.3.1 General

Supplier: Company Kocher + Beck  
Type: 11158427-4  
Tolerances: 0,2 – 0,003

#### 5.3.2 Installation

Keep to the following sequence when installing the counter punching sheet.

##### 1. Magnetic cylinder



**Warning!**

##### **Warning about damage to magnetic cylinder.**

The counter punching sheet must be neatly resting against the magnetic cylinder, and there may be no dirt between counter punching sheet and magnetic cylinder. The counter punching sheet may not be resting against the locators and instead the locators must be in the holes.

5. Clean the magnetic cylinder as per the manufacturer's instructions
6. Clean the back of the sheet
7. Place sheet cleanly on the locators
8. Allow the magnetic cylinder to run forwards to fully mount the punching sheet

##### 2. Counter punching sheet



**Caution!**

**Protect the surface against damage.  
Never fold or overbend the counter punching sheet.**



**Danger!**

**There is increased risk of injury here from the low thickness of the counter punching sheet on the outer sides. Wear suitable protective clothing.**

### 3. Fitting the counter punching sheet

To fit the counter punching sheet, swing the vacuum outfeed upwards and connect the assembly aid for the counter punching sheet to the punching frame (Fig. 108)



Figure 112: Punching sheet assembly aid

Place the counter punching sheet onto the assembly aid and turn the lower magnetic cylinder until the locators are aligned horizontally to the cylinder spindle or are about 10mm underneath the assembly aid (Fig. 109).

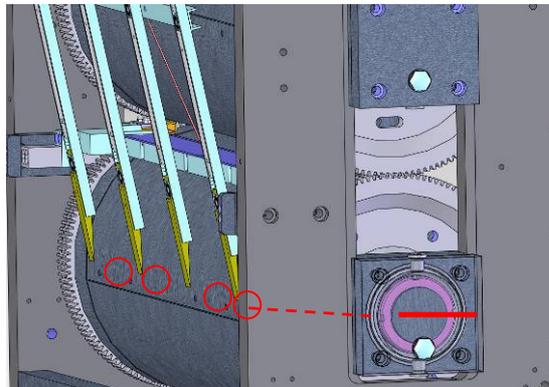


Figure 113: Punching sheet assembly aid and lower magnetic cylinder

Align the counter punching sheet onto the locators on the magnetic cylinder and connect it in. Turn the magnetic cylinder forwards, thereby clamping the counter punching sheet onto the cylinder. Secure the counter punching sheet on the ends with retaining band (Cito, order no. BRH00008).

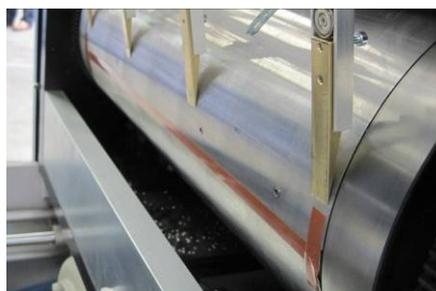


Figure 114: Lower magnetic cylinder

#### 4. Removal of counter punching sheet

1. Position the magnetic cylinder such that the prongs of the assembly aid are about 10mm above the end of the counter punching sheet.



Figure 115: Magnet cylinder with feeder

2. Retract the prongs and lift the sheet.



Figure 116: Magnet cylinder with feeder

3. Push the prongs behind the sheet.

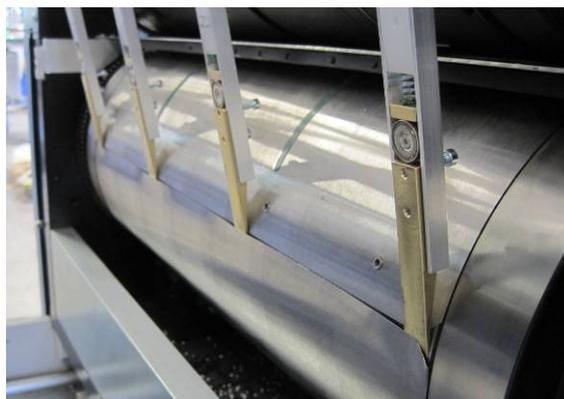


Figure 117: Magnet cylinder with feeder

4. Turn the cylinder backwards until the sheet has been pushed fully onto the assembly aid.

## 5.4 Adjusting the punch pressure



**Warning**

### **Warning about damage to ball races and bearings.**

When the system is not being used, the punch pressure on the pressure sensors (Pos. 1+2) are reset to 0 bar, otherwise there is a risk of damage to ball races and bearings.

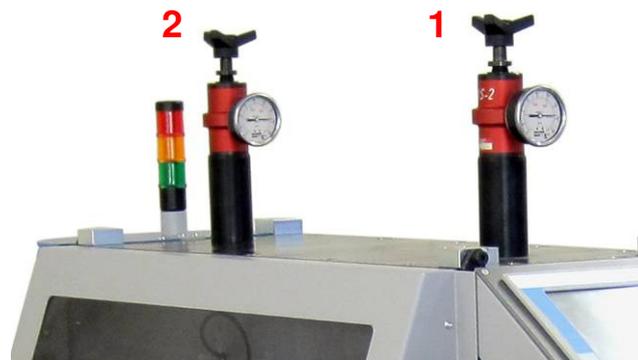


Figure 118: Adjusting the punch pressure

Because different product thicknesses and materials are processed in the BSR 550 Servo, the punch pressure with which the two magnetic cylinders are pressed together is adjustable. The punch pressure is adjusted at the pressure sensors on the punching frame (Fig. 114, Pos. 1+2). The correct punch pressure is given when the product is being fully cut through and the ball races are running stably on one another. Pressure infeed may be required (until the end of the pressure sensor measurement scale), depending on material and product thickness.

## 5.5 Vacuum outfeed

### 1. Adjust the trails

Undo the trails on the associated tension lever and, if possible, place onto the cutting edges (lying in the direction of production). Then reattach the trail with the tension lever.

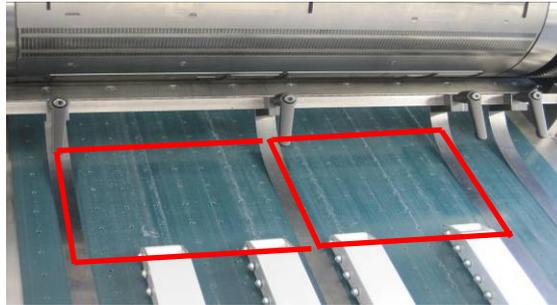


Figure 119: Adjusting the trails

If there are grooves in the direction of production, position a trail next to the groove on left and right (if possible) for flat guiding of the product on the table.

Position the retaining ledge of the trails slightly at an angle (1) to press the trails in the front part of the table gently onto the table.

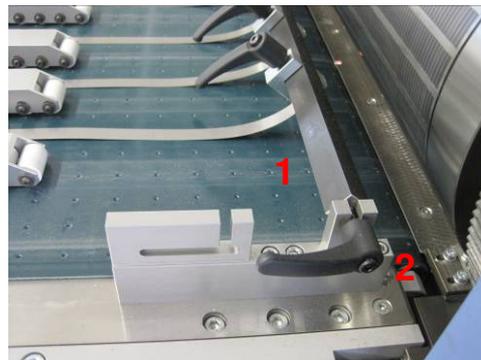


Figure 120: Retaining ledge

For cleaning purposes, the retaining ledge is removable (by undoing the tension lever (2) together with trails).

## 2. Adjusting the roller bars

The roller bars (1) are easily movable by undoing the retaining screw (2) on the assembly bar. If possible, position the roller bars next to the trails on the punched product to guide it cleanly on the table.

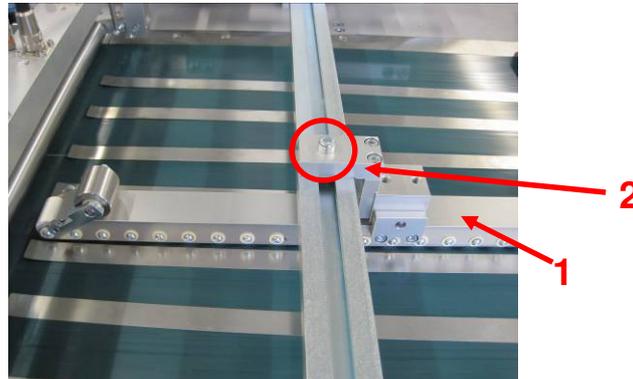


Figure 121: Roller bar

To clean the belt carpet, the assembly bar can be swung upwards by undoing the clamping screw (3) on the operator side. The protective hood on the punching frame must be open for this. Move the assembly bar upwards until the index bolt (4) locks into place in front of the hinge.



Figure 122: Belt carpet assembly bar



**Danger**

To fold down with one hand, secure the assembly bar so it does not fold down and then pull the index bolt (4).

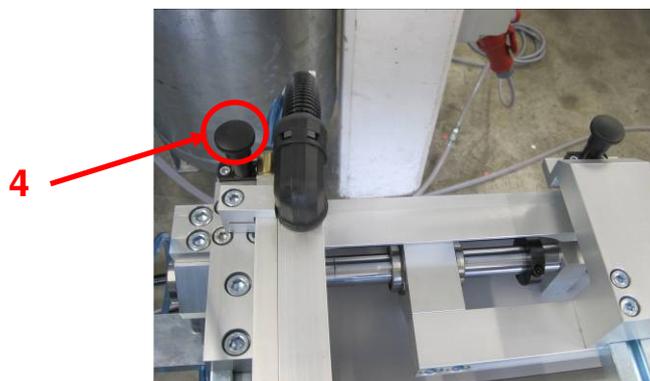


Figure 123: Belt carpet index bolt

### 3. Adjusting the separation rollers

In front of the separation rollers is a pressure roller so that the lattice cut-off can be diverted without the products moving. Depending on the product, however, individual pressure rollers (Fig. 120, Pos.1) can be folded down. The pressure cylinder must be removed for this (Fig. 120, Pos. 2).

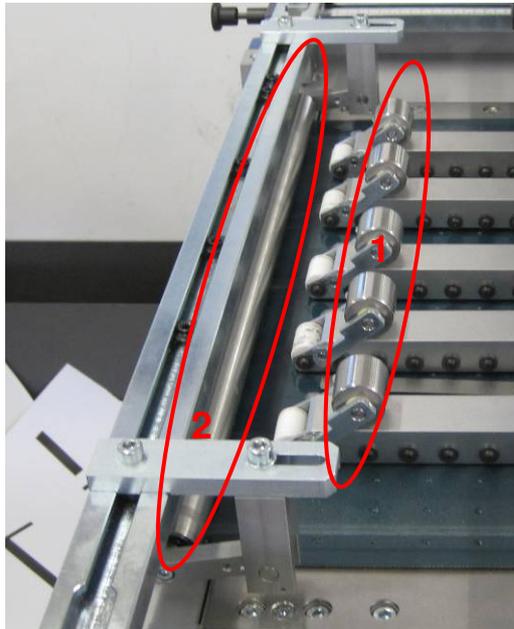


Figure 124: Adjusting the separator rollers

The separation rollers must be aligned centrally onto the bars of the lattice cut-out, in the direction of production. The assembly bar should be positioned 15mm in front of the end of the side attachments.

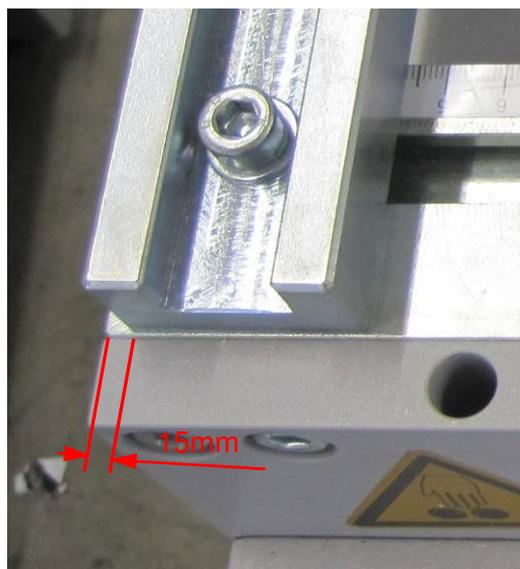


Figure 125: Assembly bar

The height of the rollers should be such that the bearing blocks of the rollers are about 2mm above the carpet and the rollers run with slight pressure on the vacuum carpet.



Running the rollers with too much pressure on the vacuum carpet will damage it.

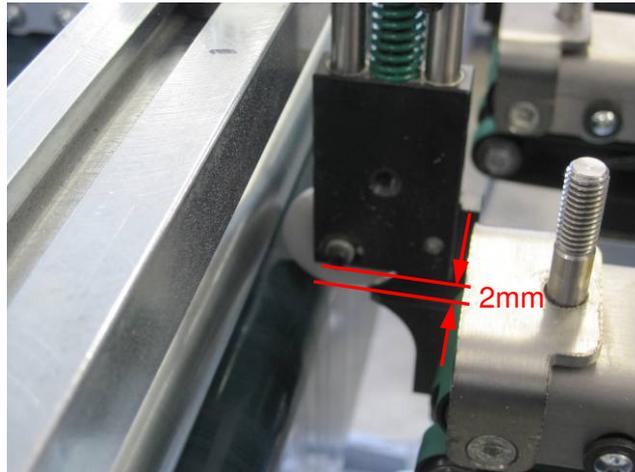


Figure 126: Adjusting the rollers

To clean the belt carpet, the assembly bar can be swung upwards by undoing the clamping screw (3) on the operator side. The protective hood on the punching frame must be open for this. Move the assembly bar upwards until the index bolt locks into place in front of the hinge.

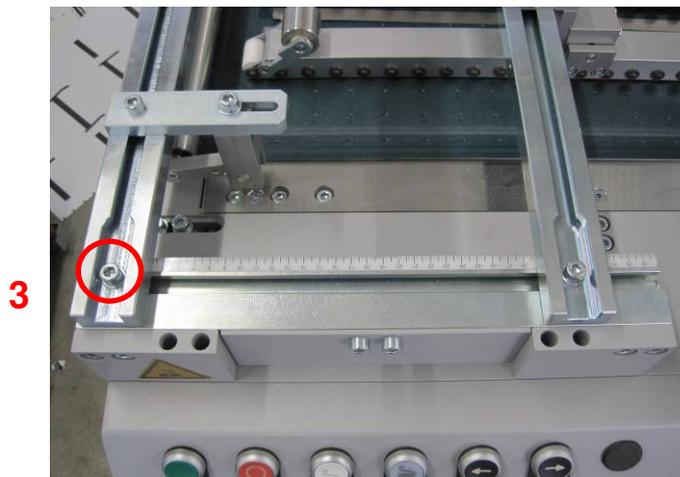


Figure 127: Assembly bar



**Danger**

To fold down with one hand, secure the assembly bar so it does not fold down and then pull the index bolt (4).



Figure 128: Index bolt

## 5.6 Punching sheets



**Danger**

### **Danger from sharp edges and cutters.**

Suitable protective clothing must be used at all time when handling punching sheets.

### 5.6.1 Cutter height

Punching sheets for counter-punching sheet thickness 0.2mm must always be produced to cylinder clearance 1.0mm.

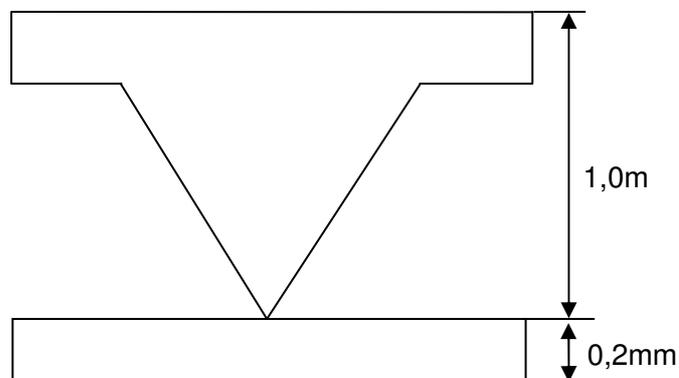


Figure 129: 1,0mm punching sheet

For punching sheets with associated counter punching sheet, the height of the cutters is 0.6mm and the height of the bars for the cutters is also 0.6mm. They must be produced with a cylinder clearance of 1.2mm.

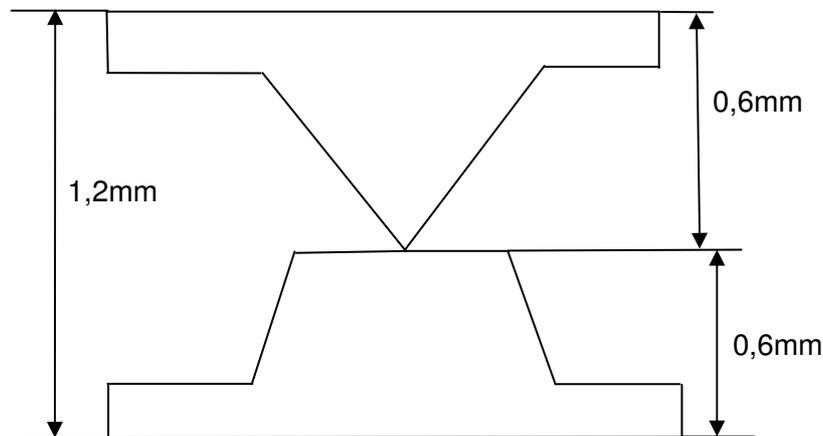


Figure 130: 0.6mm punching sheet



**Warning**

The punching sheet may only be produced with the cutter heights mentioned above because otherwise counter-punching sheet and magnetic cylinder are damaged.

Punching sheets may not be underlaid or bonded on the rear. The changed cutter height can result in damage to the counter-punching sheet and magnetic cylinder.

When using cutter and perforation lines from Cito, the correct punching film and a suitable counter punching sheet from Cito must be used.



**Warning**

Using unsuitable cutting lines, punching film and counter punching sheets can damage the magnetic cylinders.

### 5.6.2 Cutting lines and product clearance

Cutting lines running parallel to one another should have a minimum clearance of 3mm to guarantee ejection of punched material. A minimum diameter of 3mm is required for circular punching.



**Note**

A lower cutting line clearance and lower punching diameters can cause material to become jammed between cutters, resulting in irreparable damage to the punching sheet.

Products should be positioned on the sheet such that their clearance to each other does not fall below 4mm. This distance is required to discharge the punch scrap. The distance of products to the sheet edge should be at least 10mm on all sides.

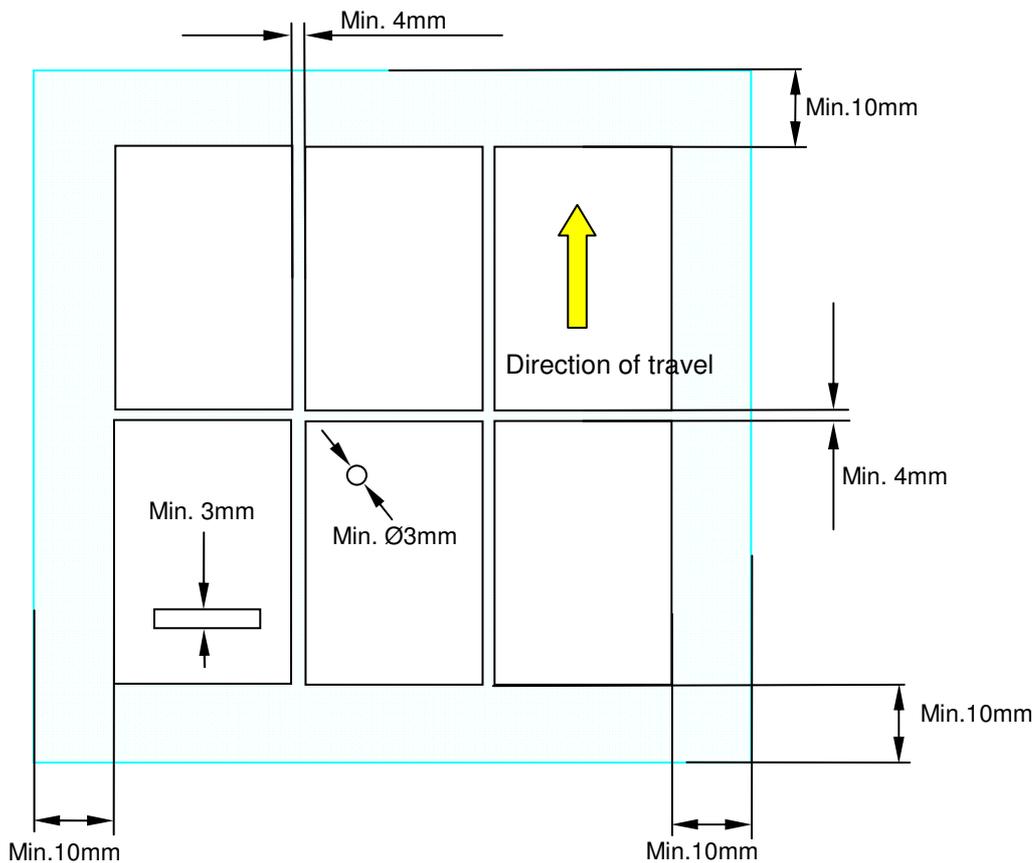


Figure 131: Cutting lines and product clearance

### 5.6.3 Rejector material

Normally RSP supporting cross pieces from Cito are used for the rejector material (order no. ARH00004). This presses the products and the punch scrap from the punching sheet. Different bonding is required depending on material and material thickness. The sheet on the outfeed lip can also be controlled with the rejector material. With bonding across the direction of production of the punching sheet on the front sheet edge, the sheet has more of a downward tendency. This can be beneficial when the sheet tends to be pulled upwards with the punching sheet.

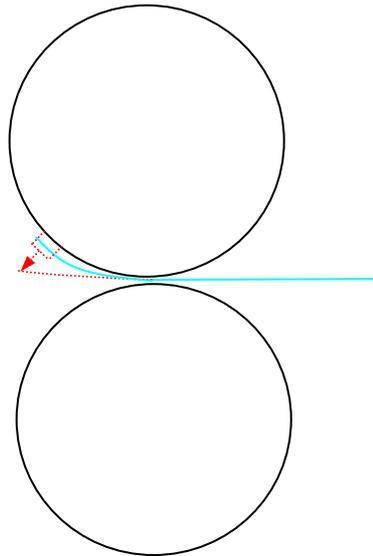


Figure 132: Punching sheet pulled upwards

When the sheet has more of a tendency to attach to the lower cylinder, and to run into the gap between outfeed lip and counter-punching cylinder, the rejector material on the front edge of the sheet is bonded to the counter-punching sheet.

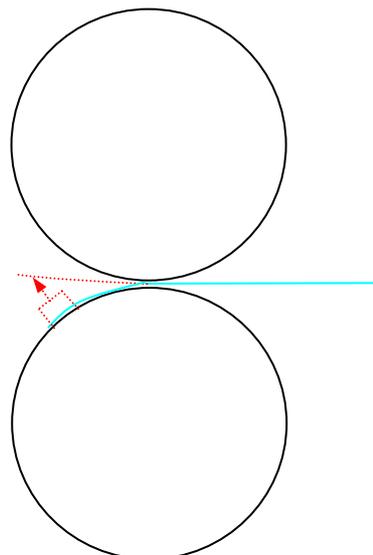


Figure 133: Punching sheet pulled downwards



For small-sized punching, or cutting lines not lying closely next to each other, rejector material should always be bonded in if there are no hold points also pulling out the section from the punching sheet. Without this rejector material, blockage in this cut-out area can occur, thereby resulting in damage to the punching sheet.

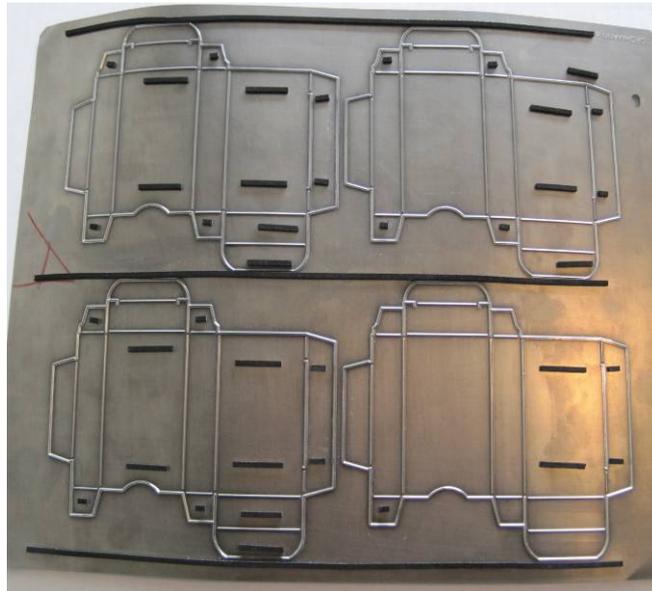


Figure 134: Punching sheet with eject material



### 5.6.5 Recommendations for selecting Cito RSP creasing finishes

Material thickness	Creasing finish	Creasing rule height	Creasing rule width
0,10 mm	0,3 x 0,7 mm	0,80 mm	0,50 mm
0,15 mm	0,3 x 0,8 mm	0,75 mm	0,50 mm
0,20 mm	0,3 x 1,0 mm	0,70 mm	0,50 mm
0,25 mm	0,3 x 1,0 mm	0,65 mm	0,50 mm
0,30 mm	0,3 x 1,2 mm	0,60 mm	0,50 mm
0,35 mm	0,2 x 1,2 mm	0,55 mm	0,50 mm
0,40 mm	0,2 x 1,2 mm	0,50 mm	0,50 mm

Tabelle 27: Creasing finish from Cito

Note:

The above values are estimated rough guideline values and therefore not binding

The following have a significant influence on the correct creasing finish:

- Print impression
- Print surface hardness
- Print surface dampness
- Grid sheet finish

## Creasing line shape new

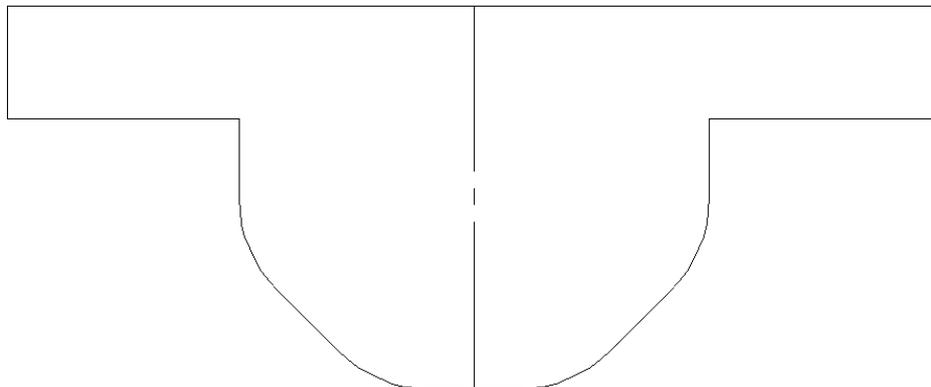


Abbildung 136: Creasing line shape

## 6 Format sizes

Minimum format:	210x297mm
Maximum format:	550x750mm
Minimum grammage:	120g/m <sup>2</sup>
Maximum paper thickness:	0.5mm

Table 28: Format sizes

## 7 Punching sheet layout

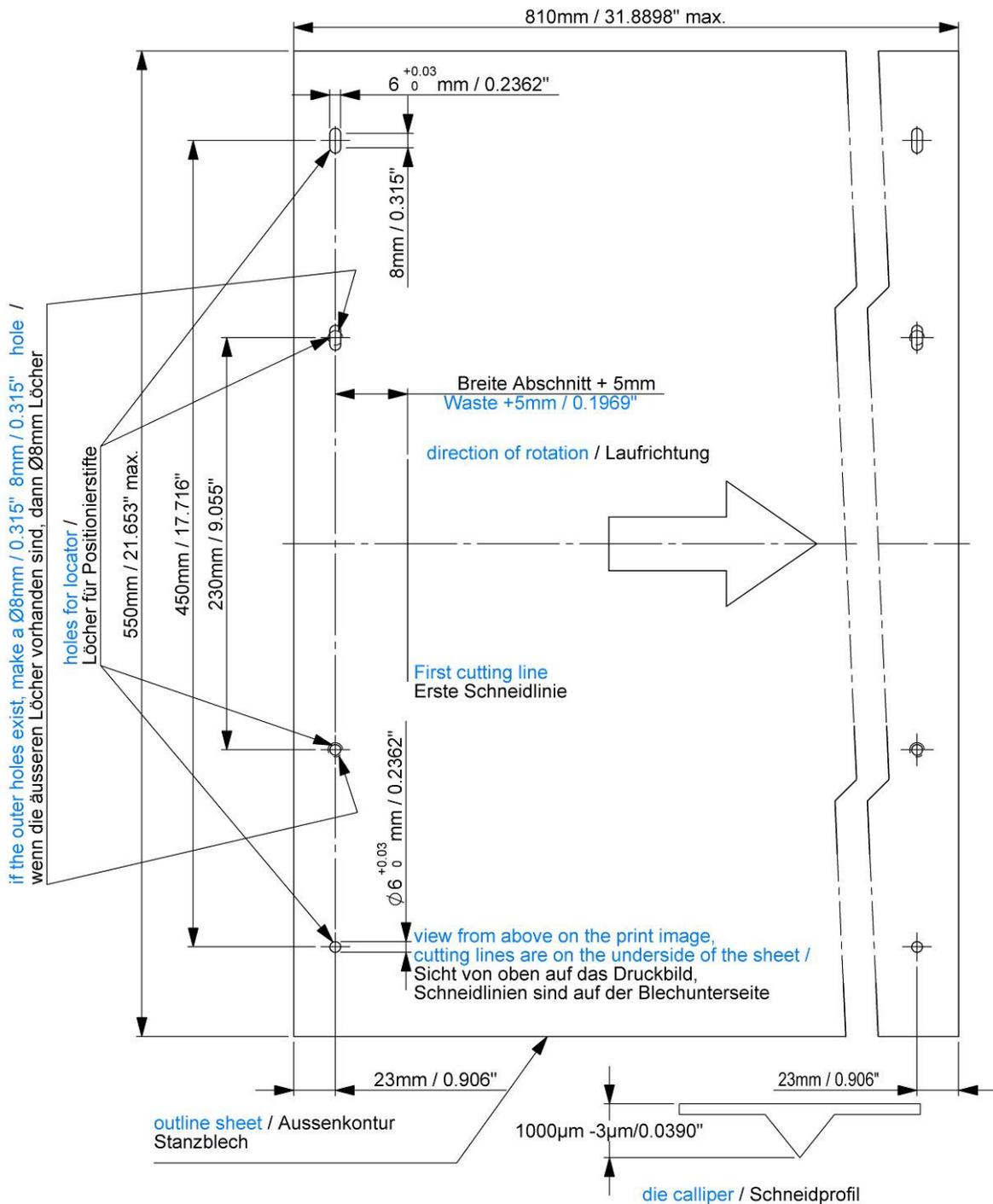


Figure 137: Punching sheet layout

## 8 Order form

### 8.1 DROHMANN easycut



Anfrage	Bestellung	(Bitte ankreuzen!)
<b>Besteller:</b> Firmenstempel	<b>Eugen Drohmann GmbH easycut</b> Barbarossastraße 8 D – 73547 Lorch Tel. +49 7172 9106 0 Fax +49 7172 9106 80 Mail info@drohmann.com Web www.drohmann.com	
<b>Kontakt</b> _____		
<b>Telefonnummer</b> _____		

**Maschine: Stanzmaschine BS ROTARY 550 Servo / Bograma**

Bestellnummer: _____	Lieferdatum: _____
Auflagenhöhe: _____	Druckbogengröße: _____
Abstand Druckbogenvdk. bis Aufnahmelöcher: 8 mm	Sonstiges _____ mm

Stanzform per	Muster	Film	Datei (.pdf oder .ai)	Dateiname: _____
Bedruckstoffdicke	_____ mm	Perforation (Schnitt/Steg)	_____ / _____ mm	
Rille (Höhe/Breite)	_____ / _____ mm		Werkzeughöhe (längs/quer)	_____ / _____ mm
Anstanzung	Durchstanzung	Haltepunkte	Stärke _____ mm	

**Zeichnung gleich Druckansicht! Achtung Werkzeug wird gespiegelt!**

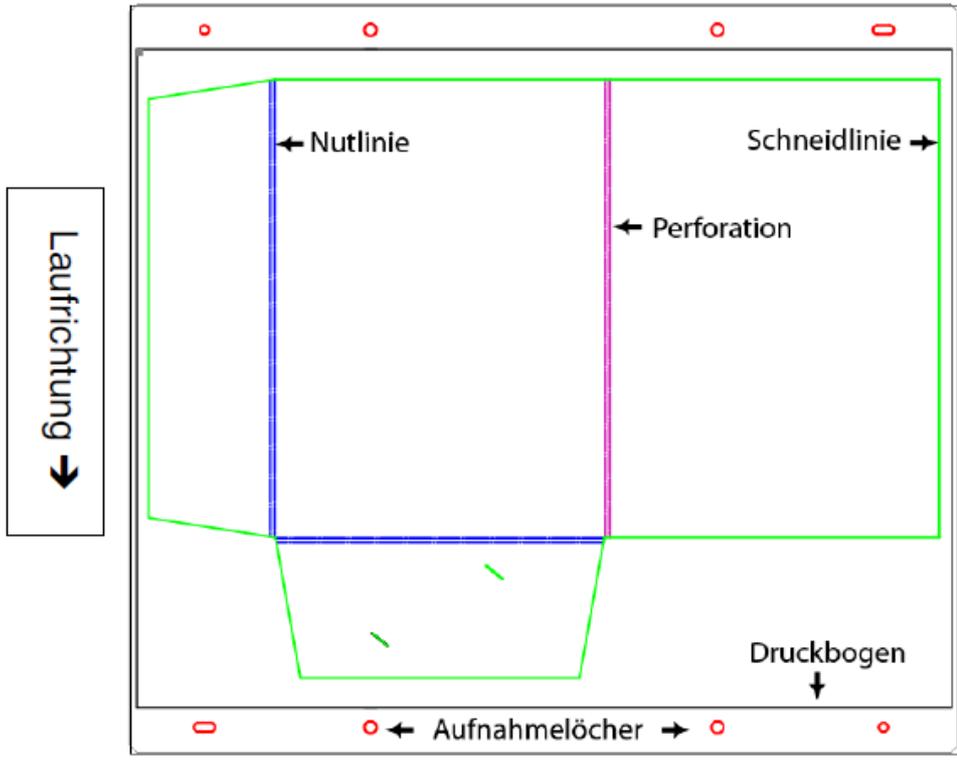


Figure 138: Order form for DROHMANN easycut

**8.2 KOCHER + BECK**

Firma \_\_\_\_\_  
 Straße \_\_\_\_\_  
 PLZ / Ort \_\_\_\_\_  
 Ansprechpartner \_\_\_\_\_  
 Telefon \_\_\_\_\_



Kocher + Beck GmbH +Co  
 Rotationsstanztechnik KG  
 Dieselstr. 6 D- 72124 Pliezhausen  
 Phone: +49 7127 97 85 -765  
 Fax: +49 7127 9785 - 989  
 ioc@kocher-beck.de  
[www.kocher-beck.de](http://www.kocher-beck.de)

BESTELLUNG     ANFRAGE

Liefertermin: \_\_\_\_\_ Ab Werk  
Abweichende Lieferadresse bitte angeben

Versandart:  DHL/Postexpress  
 Abholung  
 Kurier

Maschinentyp: **Bograma BS ROTARY 550**

Bestellnummer .....

Werkzeugnummer .....  
Diese Nummer wird in Ihr Werkzeug eingraviert

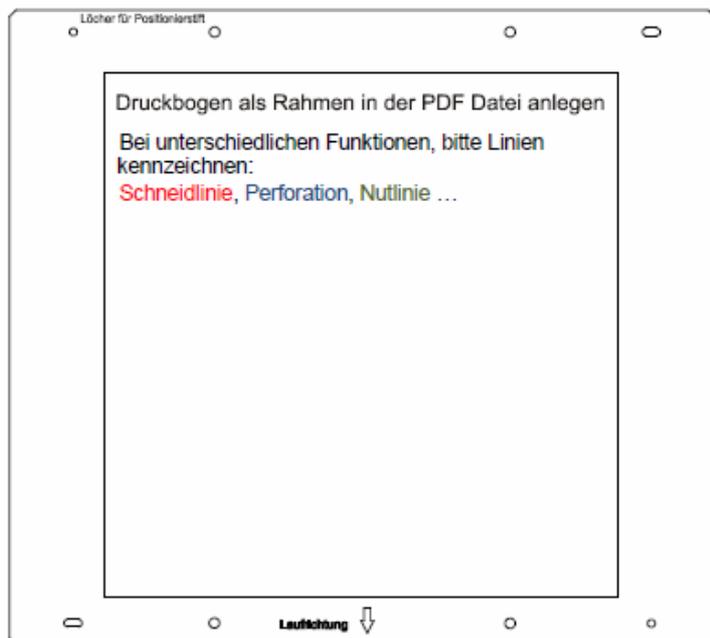
Bedruckstoff:

- Papier ..... µm     Haftpapier - Träger ..... µm     Folie - Träger ..... µm
- anstanzen                       durchstanzen
- Haltepunkte ..... mm     Perforation    Schnitt : Steg: ..... mm  
(bitte Position kennzeichnen)
- Rillen gegen Kanal             Rillen mit Gegenrillblech (pos./neg)

Darstellung zeigt Aufsicht  
 auf Produkt

Kommentar:

.....  
 .....  
 .....  
 .....  
 .....



\_\_\_\_\_  
Datum/Unterschrift  
 Für diesen Auftrag gelten unsere, Ihnen vorliegenden allgemeinen Geschäftsbedingungen

Figure 139: KOCHER + BECK order form

## **9 Taking out of service**

### **9.1 Specification for storage**

- Check the storage area in regard to temperature and humidity. The ideal room temperature is 15 - 20°C. The higher the humidity, the greater the risk of corrosion.
- Take into consideration the weight specifications of the BSR 550 Servo when selecting a storage area.
- Take into consideration the size specifications of the BSR 550 Servo when selecting a storage area. Prepare the gear mechanisms and motors for storage.
- The requirements here are different on a case by case basis. For this reason, ask the supplier of the gears and motors and following the third-party instructions.
- Thoroughly clean the BSR 550 Servo to remove dust and dirt, but do not use water as this poses a risk of corrosion.
- Have the BSR 550 Servo electrically decoupled by an electrician.
- Use a forklift for transportation.
- Cover the BSR 550 Servo with plastic sheeting

### **9.2 Disposal**

Dispose of user machined, spare parts and all waste from the BSR 550 Servo in an environmentally-friendly manner in line with the waste laws applicable in your country.

Follow the relevant regulations, ask about municipal disposal options or use private waste disposal contractors.

On request, we will be glad to send you documents and further information on the disposal of your machine.

A distinction is made between:

- Destruction (file destruction)
- Recycling (plastic packaging)
- Disposal (disposal of harmful substances)

## 10 Pneumatics diagram

### 10.1 BSR 550 Servo pneumatics diagram

The maximum air consumption of the BSR 550 is, at 12,000 products/hour with discharge of the punch scrap, about 500 litres/minute, at an operating pressure of 6 bar.

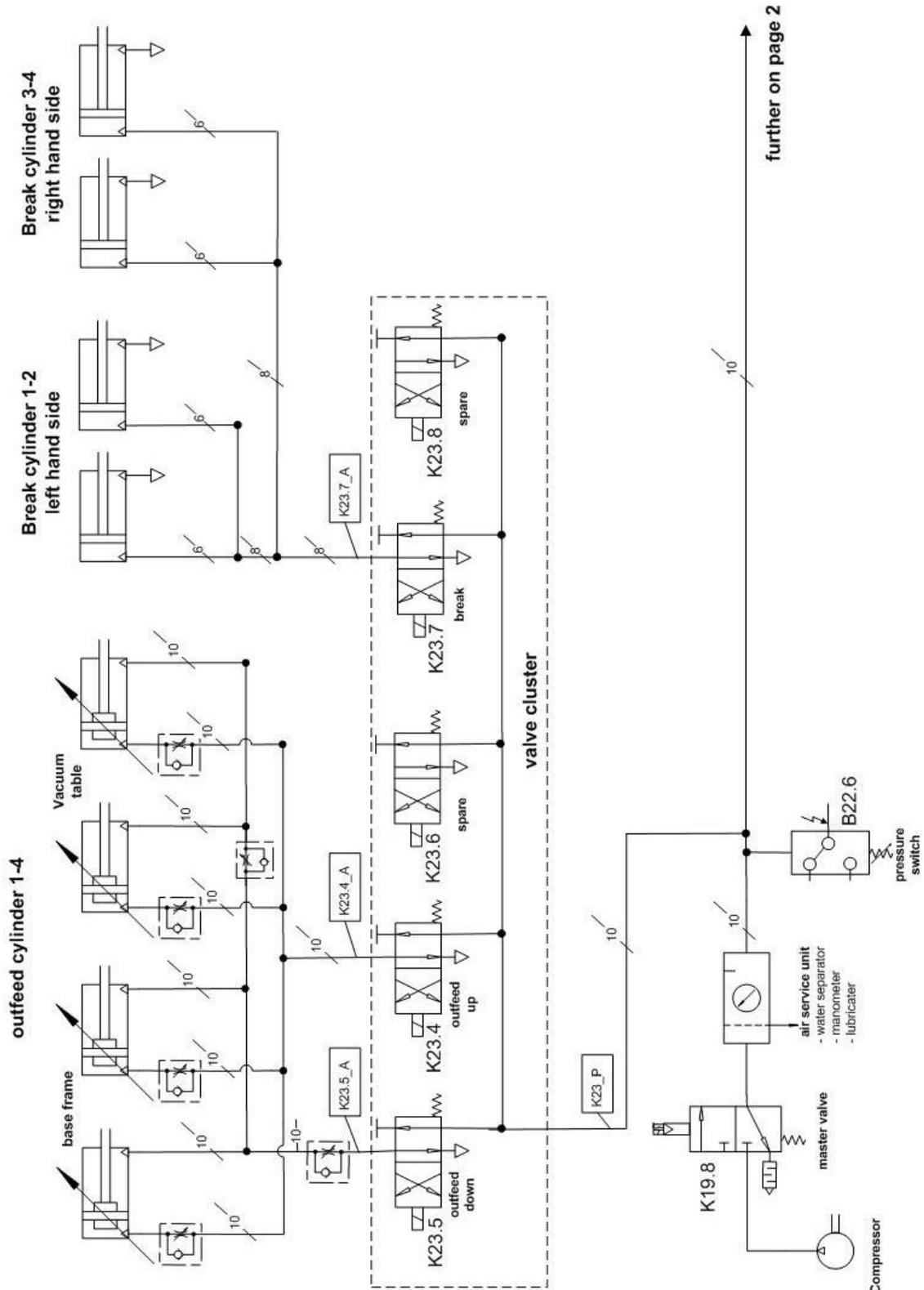


Figure 140: Pneumatics diagram of BSR 550 Servo, page 1

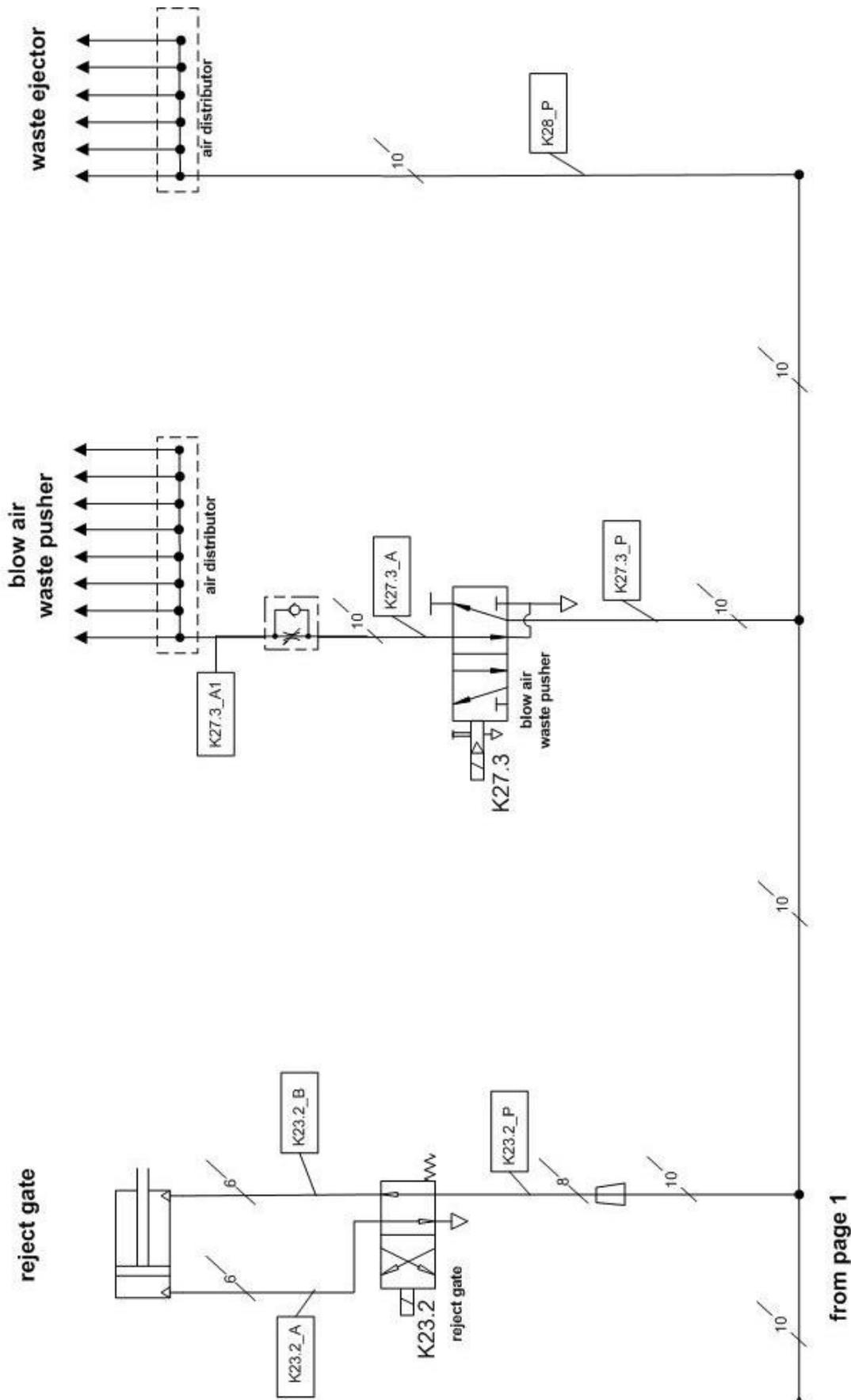


Figure 141: Pneumatics diagram of BSR 550 Servo, page 2

## 11 Spare parts



**Hinweis!**

Only original spare parts may be used.

### 11.1 Drives

#### 11.1.1 Magnetic cylinders

Sigmathek servo motor  
Alpha gears

SIGMA.AKM53K-ANC2GB-B0  
ALP.SP100S-MC1-10-1G1

#### 11.1.2 Transport belt, outfeed belt

Sigmathek servo motor  
Alpha gears

SIGMA.AKM33E-ANCNGB-B0  
ALP.LP070-M01-4-111

#### 11.1.3 Positioning rollers

Sigmathek servo motor  
Alpha gears

SIGMA.AKM43G-ANCNGB-B0  
ALP.LP090-M01-3-111

### 11.2 Control

#### 11.2.1 Sigmatek drive control

Module mounting  
Mains module  
2-way drive module  
1-way drive module

SIGMA.MDM 021  
SIGMA.MDP 101  
SIGMA.MDD 121  
SIGMA.MDD 111

#### 11.2.2 Sigmatek display

Control panel

SIGMA.ETV 0851

#### 11.2.3 Sigmatek input and output modules

Varan interface  
C-DIAS safety CPU  
C-DIAS safety inputs  
C-DIAS safety outputs  
C-DIAS fast inputs  
C-DIAS inputs  
C-DIAS mixing module  
C-DIAS outputs

SIGMA.CIV 512  
SIGMA.CSCP 011  
SIGMA.CSDI 161  
SIGMA.CSTO 081  
SIGMA.CDI 162  
SIGMA.CDI 161  
SIGMA.CDM 163  
SIGMA.CTO 161

### 11.3 General

Siemens voltage supply	SIE.6EP1334-2AA01
Omron optical fibre amplifier	OMR.E3X-NA41F
Omron optical fibre sensor head	OMR.E32.CC200
Omron proximity switch for maintenance plate check	OMR.E2E-X1B2-M5
Omron reflection light barrier for outfeed control	OMR.E3Z-LR86

The other spare part numbers can be taken from the electrical diagram.

### 11.4 Mechanical spare parts

Drive belts	Alignment rollers – drive – toothed belt	HTD 535 – 5M – 25
	Alignment rollers – drive – toothed belt	HTD 375 – 5M – 25
	Ejection transport – toothed belt	DHTD 755 – D5M - 25
	Vacuum carpet drive – toothed belt	HTD 375 – 5M - 25
Pneumatics	Maintenance unit	C 33 UNIVER
	Magnetic valve	46A-SC1-JDA0-1KD MAC
	Magnetic valve	EWV – 141 – G60 – 1/4B
	Rejector cylinder	CD85N16 – 5C - B
	Vacuum table cylinder	CP95SDB63 – 410
	Vacuum table cylinder	CP95SDB63 – 230

## **Register table**



## **Installation Instructions**

Keep for future use.

After the installation into a machine, the installation instructions become part of the operating instructions.

## Preface

In this BOGRAMA product, you have purchased a high quality industrial product with which you are able to attain the highest levels of reliability and performance provided you carefully follow the installation instructions and operating instructions. These installation instructions show you how to correctly install and operate the Register table, and to follow the safety regulations.

## Copyright

These installation instructions may not be reprinted, in whole or in part, without the written consent of **BOGRAMA AG**.

Furthermore, no parts may be reproduced, and duplicated and disseminated using electronic systems.

The installation instructions form part of the scope of supply agreed contractually.

## Warranty

The warranty claim stipulated contractually applies for our products. We exclude the following from the warranty claim:

- The customer's own add-on parts and modifications to the incomplete machine
- Damage attributable to deficient maintenance and repair work carried out on the customer's own authority
- Non-intended use
- Removal of protective and safety equipment, and any resulting damage

## Customer service information

BOGRAMA machines and replacement parts are available worldwide from your local representatives.

Please contact your agent should you have any questions, customer service requests or require a repair service.

Always have your machine number and machine model to hand when ordering and making enquiries. Please refer to the nameplate on the fully configured machine for this information.

## Version information

These installation instructions were released in May 2011 and can be ordered from BOGRAMA AG under **Register table**, specifying the version number (e.g. V1).

We reserve the right to make changes to the installation instructions without prior notice.

### Manufacturer details

BOGRAMA AG  
Bochsler Graphische Maschinen  
Mettlenstrasse 1  
8488 Turbenthal  
Switzerland

### Sales partners

MBO America  
  
400 Highland Drive  
US-08060 Westampton  
USA

# Copy of Original Installation Instructions

(separate document)



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## 1 General

### 1.1 About the installation instructions

The installation instructions are aimed at users of the machine. They are intended to familiarise the operator with installation and operation, as well as the safety instructions.

These installation instructions form part of your Register table. After fitting the Register table to the machine, these installation instructions form part of the operating instructions for the machine. The installation instructions must be kept safely over the service life of the Register table. Pass on these installation instructions to every subsequent owner and user of the Register table.

Our Register table is state-of-the-art technology at the time of delivery. We reserve the right to make changes given our continual work on enhancements.

### 1.2 Identification of the product

Please refer to the nameplate (Fig. 1) on the machine for identification of the machine as well as the most important machine details, such as model, machine number and year of manufacture. You will need these details for ordering spare parts and to make use of our customer service department. You also need these details for the Register table.

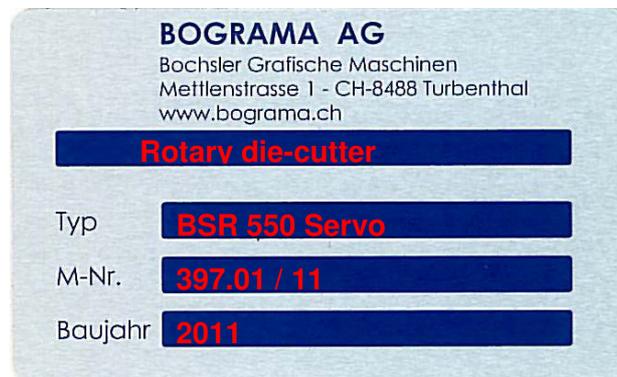


Figure 1: BOGRAMA AG nameplate

## **2 Safety**

### **2.1 General**

This section introduces the safety requirements - adherence to them is an absolute requirement when using the Register table.

Reading and understanding these installation instructions is mandatory for all those carrying out work with the Register table, and in particular with the machine.

### **2.2 Safety concept**

The safety concept is based primarily upon a safe and nonhazardous design. The protective covers may only be removed by BOGRAMA technicians and trained personnel.

The operator of the Register table, especially the machine, commits to operating it only when it is in perfect condition and undamaged. Malfunctions which can impact safety must be rectified immediately.

### **2.3 Hazards**

#### **2.3.1 General residual risks**

The use of technical products is associated with hazards. Hazards which cannot be eliminated by engineering measures or technical protective equipment are referred to as residual risks. The safety symbols in these installation instructions have been determined through risk assessment and make reference to known residual risks.

Should additional hazards and risks come to light during operation, the operator of the Register table commits to immediately informing BOGRAMA AG.

**2.3.2 Safety instructions**

Life phase	Hazard	Precautionary measure
In all life phases	General injuries	Reading and understanding of the installation instructions is mandatory for all those carrying out work on and with the Register table.
	Crushing	Never extend your hand into the running Register table.
	Getting caught up or snared	Never extend your hand into the running Register table.
	Cutting and amputation	Never extend your hand into the running Register table.
	Clothing and long hair	Always keep your hair in a bundle and use protection. Clothes must be tight-fitting and done up. Never extend your hand into the running Register table.
	Friction and abrasion	Never extend your hand into the running Register table.
	Access to/contact with moving parts	Never extend your hand into the running Register table.
	Surface of the motor	Never extend your hand into the motor.
	Protective covers	You may not remove and render ineffective any protective covers.
	Burns	In emergencies, follow the internal operating instructions and their specifications. Base your actions on the instructions specified.
	Electrical	Protect the supply line of the drive motor and vacuum pump from damage. The earth wire must always be connected properly. Protect the earth wire from damage.
	Sensor	Do not look directly into the light beam of the optical sensor at the conveyor belt and the positioning rollers.
Electric current conductor	The connection to the upstream or downstream machine must follow a neat and clearly organized routing designed to prevent the creation of obstacles and tripping hazards.	

Normal operation	Surface of the motor	Never extend your hand into the motor.
	Motor overload	You may not remove and render ineffective any protective covers. In emergencies, follow the internal operating instructions and their specifications. Base your actions on the instructions specified.
	Uncontrolled movements	Press the Emergency Stop button on the BSR before rectifying faults and paper jams in the Register table.
	General injuries	Never extend your hand into the running Register table.
Transportation	Stability	The Register table may only be moved with a forklift or manual lift truck. Never hoist the Register table on one side. Make sure that no machine parts are damaged. Set the Register table down gently. Ensure the area is clear of people when moving the Register table.
Maintenance	Register table	Only carry out maintenance work when the machine is idle.
Cleaning	Register table	Disconnect the power supply prior to cleaning work. Emergency Stop!
In the event of a malfunction	General	Press the Emergency Stop button on the BSR before rectifying faults and paper jams.

Table 1: Safety instructions

### 2.3.3 Exposed hazard points



**Danger**

Danger from moving machine parts. Warning of hand injuries. Failure to comply may lead to material damage or serious injuries to body parts due to crushing, cutting etc.

**Never extend your hand into the running Flat pile feeder.**

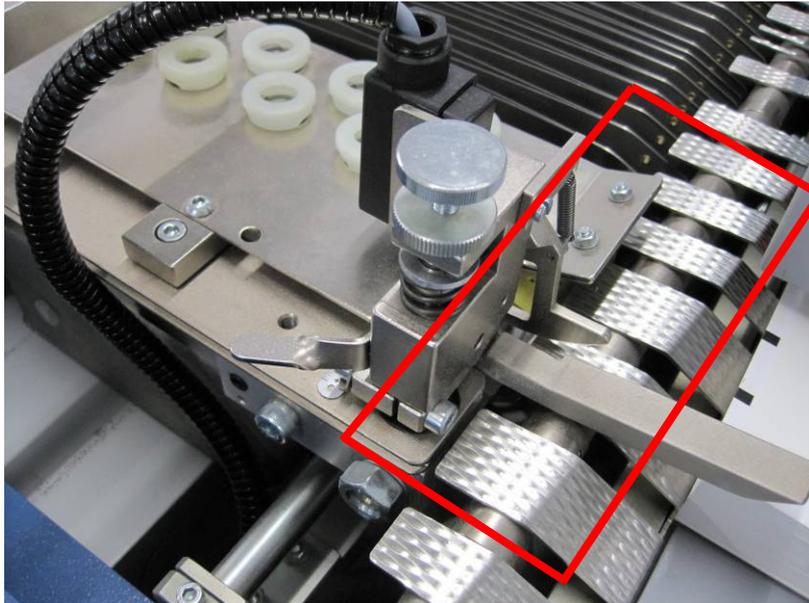


Figure 2: Hazard point 1, Sheet infeed

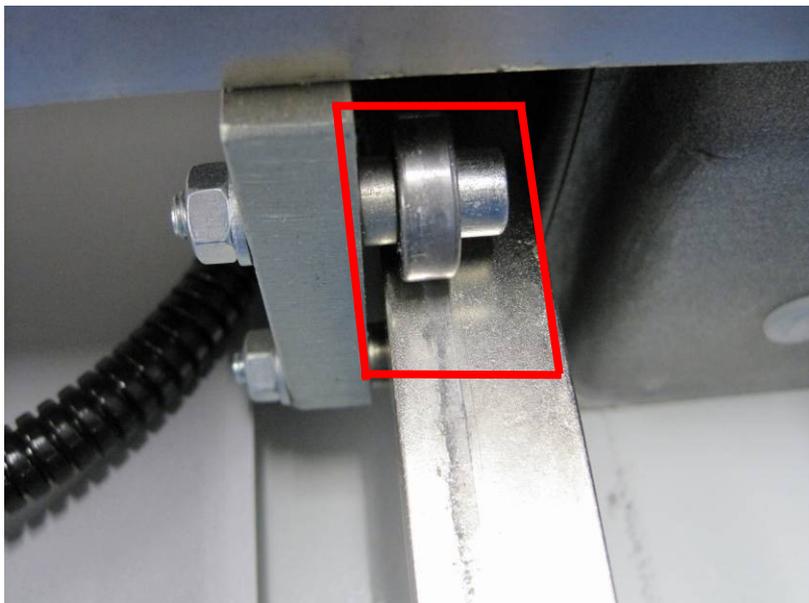


Figure 3: Hazard point 2, Slide rail



**Danger**

Hazard due to light beam. Warning of intense and highly concentrated beam. The high-intensity light beam can in particular cause injury to the eyes.

**Do not look directly into the light beam of the optical sensor at the conveyor belt and the positioning rollers.**

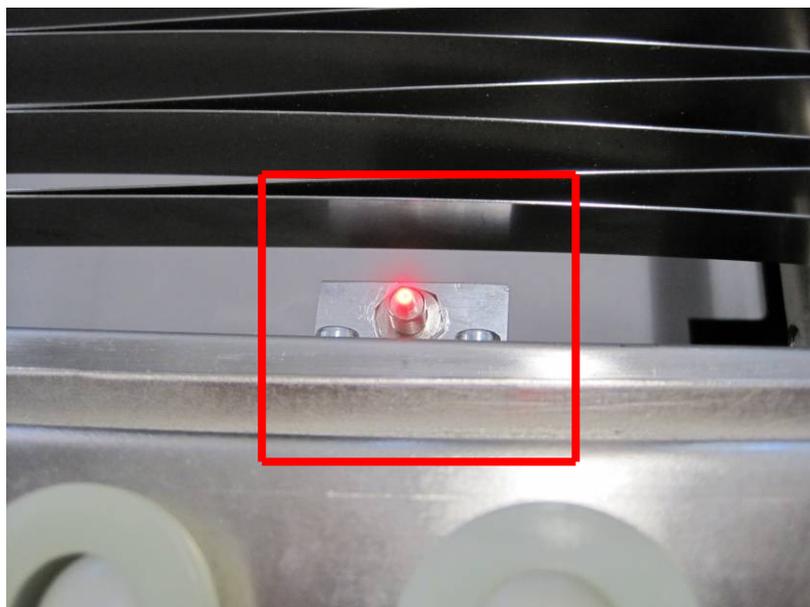


Figure 4: Hazard point 3, Optical sensor

## **3 Description**

### **3.1 Intended use**

- The Register table may only be installed on the machines listed in 3.3.
- The Register table is intended for the transfer of paper and film.
- The Register table may only be operated when in perfect technical condition. Faults endangering safety must be rectified immediately by trained personnel or specialists from the manufacturer or supplier.
- The Register table may only be installed and operated by specially trained and authorised personnel.

### **3.2 Improper use**

- Any use other than the transfer of paper and film.
- Tampering with and modifications to the Register table on the customer's own authority.
- Removal of protective and safety equipment on the Register table.
- Operating the transfer unit without having undergone instruction or training from operating personnel.

The manufacturer/supplier shall assume no liability for any damage caused by improper use.

### **3.3 Fitting to machines**

The Register table may only be fitted to the following BOGRAMA AG machine:

- BSR 550 Servo

## **4 Installation**

### **4.1 Installation conditions**

The following installation conditions must be satisfied for the transfer unit to be properly assembled into a machine with other parts without impacting safety and endangering the health of people.

- The Register table may only be installed on the machines listed in 3.3.
- The machine to which the Register table is fitted must be in perfect condition and be fully functional.
- All protective and safety equipment must be fully functional.
- The removal of protective and safety equipment is not permitted.
- Installation must only be carried out by a Bograma employee or a person trained by Bograma.

## 4.2 Settings

### 4.2.1 Setting the sheet size

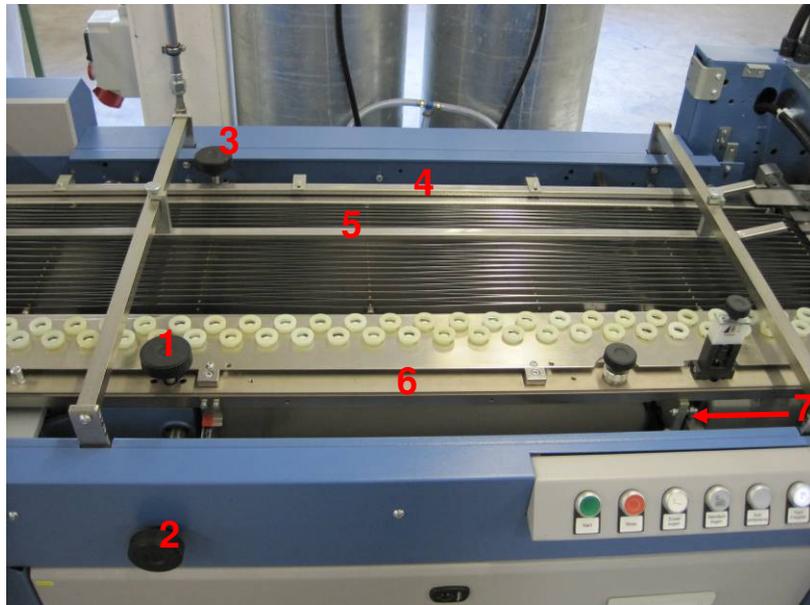


Figure 5: Setting the sheet size

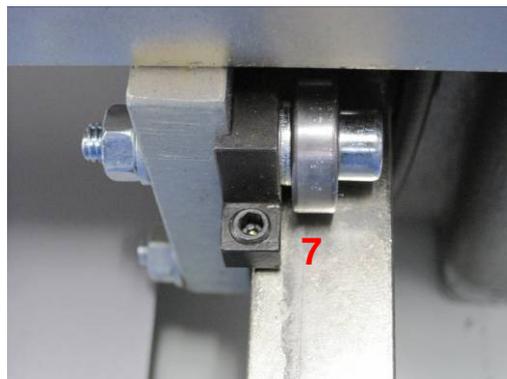


Figure 6: Setting the sheet size

No.	Designation
1	Knurled handle
2	Knurled handle
3	Knurled handle
4	Guide panel
5	Hold-down bar
6	Aligning edge
7	Clamping piece

Table 2: Checklist - Setting the sheet size

The aligning straight edge (6) is adjusted by knurled handle (1) (1/2 paper width). It can be finely adjusted with knurled handle (2). A guide panel (4) with mounted rail is located on the opposite side to the aligning edge. Adjust this guide panel (4) with knurled handle (3) so that the incoming sheet runs with its edge in the rail. Depending on the paper width, additional hold-down bars (5) should be mounted.

Procedure:

- Release the knurled handle (1).
- Release the clamping piece (7).
- Set the aligning edge (6) to half the paper width.
- Firmly tighten the knurled handle (1).
- Firmly tighten the clamping piece (7).
- Release the knurled handle (3).
- Adjust the guide panel (4).
- Firmly tighten the knurled handle (3).
- Position the hold-down bars (5).

### 4.2.2 Angle adjustment

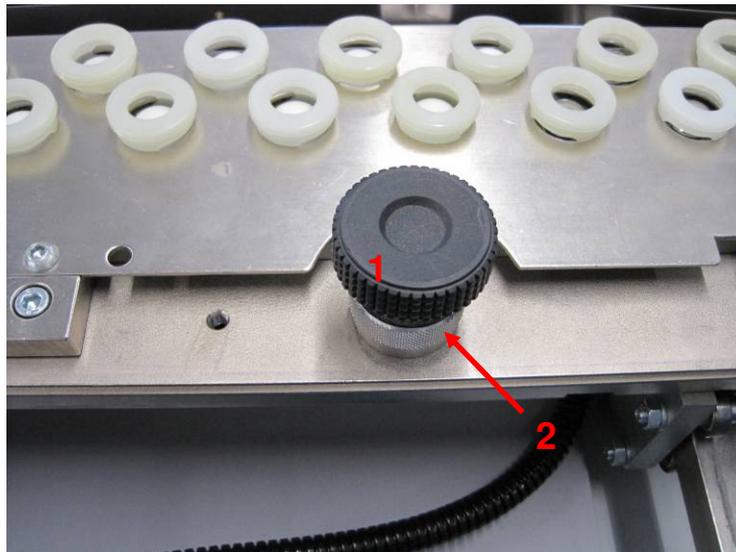


Figure 7: Angle adjustment



Figure 8: Angle adjustment

No.	Designation
1	Knurled screw
2	Eccentric
3	Millimetre scale

Table 3: Checklist - Angle adjustment

The angle setting of the aligning edge can be adjusted by loosening the knurled screw (1) and turning the eccentric (2). The setting can be read off the fitted millimetre scale (3).

**Procedure:**

- Loosen the knurled screw (1).
- Adjust the angle with the eccentric (2).
- Read off the setting on the millimetre scale (3).
- Firmly tighten the knurled screw (1).

### 4.2.3 Setting up the ball feed guide

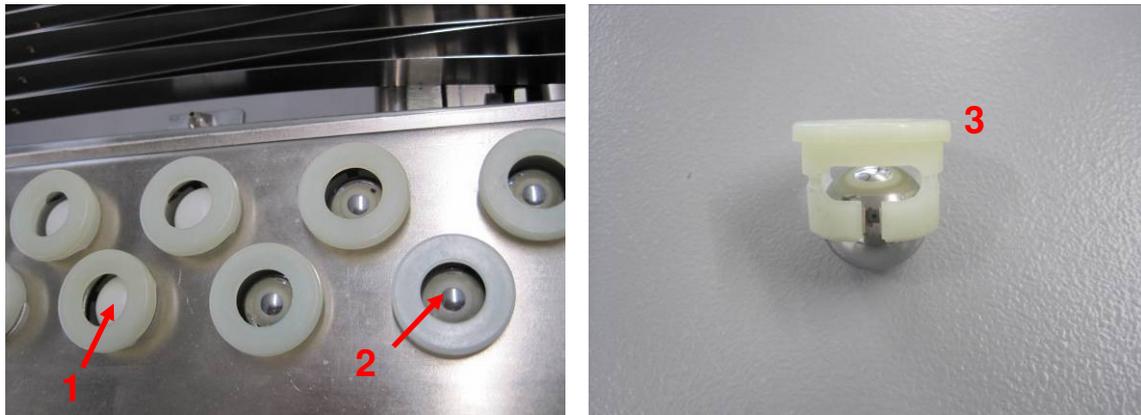


Figure 9: Ball feed guide

No.	Designation
1	Plastic ball
2	Steel ball
3	Ball retainer

Table 4: Checklist - Ball feed guide

The types of balls inserted in the holes provided on the aligning edge depends on the paper quality (lightweight paper = plastic balls (1), heavy paper = steel balls (2) or combination of plastic and steel balls).

For portrait formats, fewer balls are generally required. More balls may have to be fitted for landscape formats and possibly for very heavy paper types.

However, in both cases, steel balls should be inserted in the first three holes (seen in the direction of sheet flow) in order to ensure reliable transfer of the sheets from the flat pile feeder.

Procedure:

- Pull out the ball retainer (3).
- If necessary, change the ball.
- Replace the ball retainer.

#### 4.2.4 Setting the suction pressure

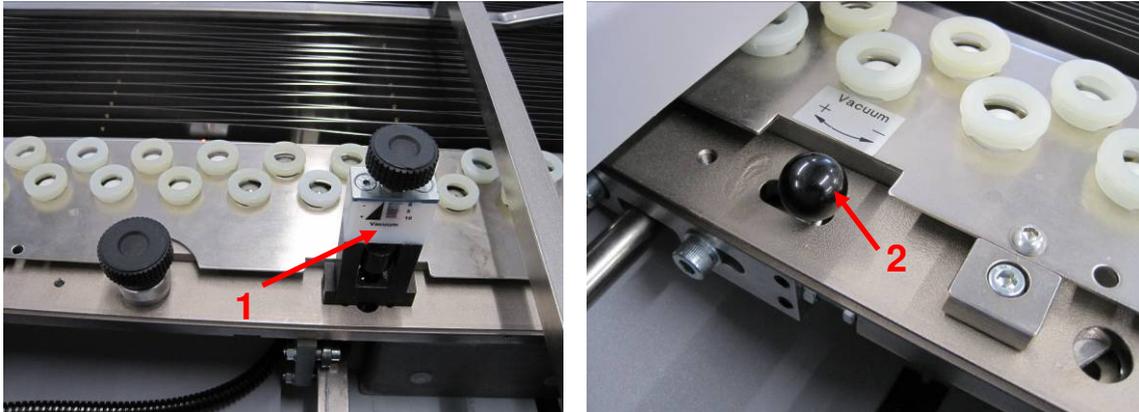


Figure 10: Setting the suction pressure

No.	Designation
1	Suction rotary control
2	Suction slider control knob

Table 5: Checklist - Setting the suction pressure

Heavy or thick paper types require more suction than lightweight or thin paper. The suction setting on the register table is adjusted by the rotary control (1) at the table inlet and the slider knob at the end of the table.

##### Procedure:

- Turn the rotary suction control (1)
- Turn clockwise (+) = Increase suction force
- Turn counter-clockwise (-) = Reduce suction force
- Push the sliding suction control knob (2)
- Push right (+) = Increase suction force
- Push left (-) = Reduce suction force

### 4.2.5 Changing the aligning belt



Figure 11: Changing the aligning belt

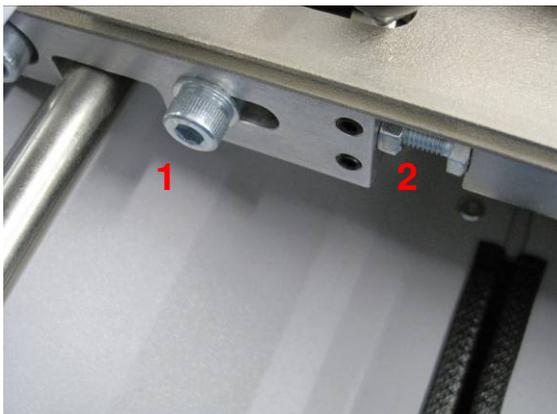


Figure 12: Loosening the belt



Figure 13: Loosening the screw

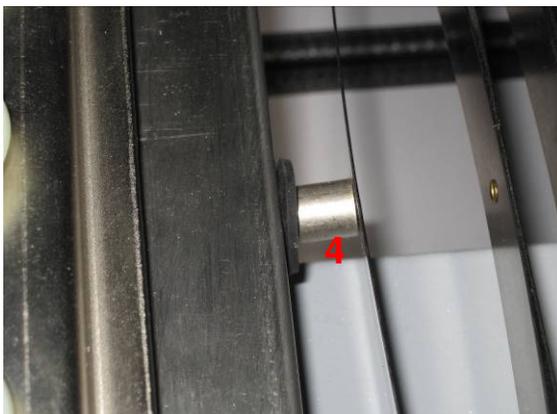


Figure 14: Removing the scissor arms

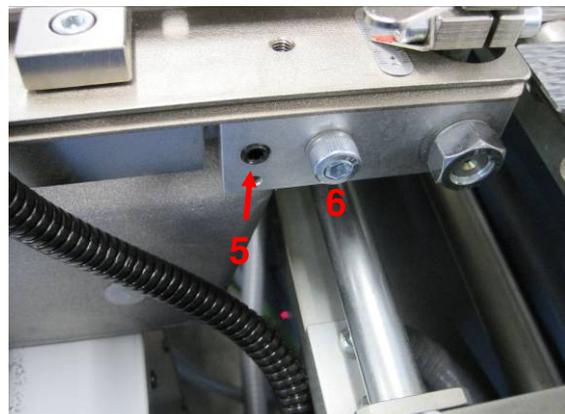


Figure 15: Centring the belt

No.	Designation
1	Screw
2	Screw
3	Screw
4	Scissor arm fixing point
5	Screw
6	Screw
7	Rod

Table 6: Checklist - Changing the aligning belt

Procedure:

- Loosen screw (1).
- Loosen screw (2) to loosen the tension of the mat.
- Loosen screw (3).
- Remove the rod (7).
- Remove the scissor arm assembly (4).
- Carefully extricate the aligning belt.
- Install the new aligning belt in reverse sequence.
- Loosen screw (6).
- Centre the belt with screw (5).
- Firmly tighten screw (6).
- Check the belt tension and adjust if necessary.

#### 4.2.6 Setting double-sheet detection

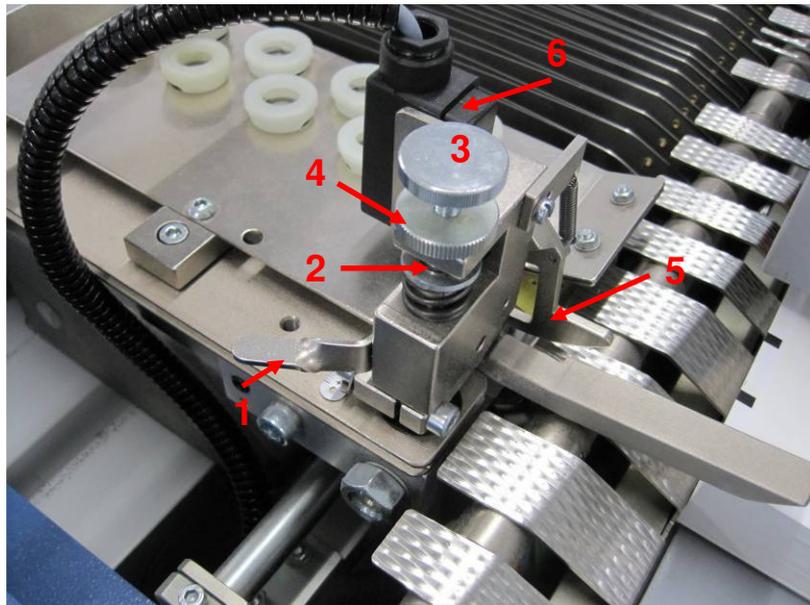


Figure 16: Double sheet detection

No.	Designation
1	Opening handle
2	Opening
3	Knurled screw
4	Clamping nut
5	Tripping device lever
6	Switch

Table 7: Checklist - double sheet detection

The double sheet detection system must be reset with each new product having a different paper thickness. A piece of paper must be inserted in the opening (2). Using the knurled screw, the tripping device (5) must be set so that the product runs under the tripping device without activating it. After completing this setting, the clamping nut (4) must be firmly tightened.

The double sheet detection system must be set to ensure that as soon as two sheets are fed in together, the tripping device (5) detects the problem and automatically stops the machine.

**Procedure:**

- Press the opening handle (1).
- Insert a piece of paper in the opening (2).
- Adjust the tripping lever (5) to the product with the knurled screw (3).
- Tighten the clamping nut (4).

## 5 Operation / Control

### 5.1 Control panel

The register table is operated from the control panel of the BSR machine. Instructions for operation of the control panel and switching on the machine can be obtained from the Operating Instructions of the machine.

### 5.2 Manual mode



**Danger of rotating belt drive.** Failure to comply may lead to serious personal injury and to material damage.  
**Only adjust the belts when the machine is at standstill.**



**Danger of rotating rollers.** Failure to comply may lead to serious personal injury and to material damage.  
**Only adjust the rollers when the machine is at standstill.**

#### 5.2.1.1 Overview Manual mode



Figure 17: "Manual mode" display

The vacuum pump and motor can be activated and deactivated. In the case of the vacuum pump, the activated function is indicated in green, and deactivated in red (1).

In the case of the motor, in addition to the colour change, activation is also displayed in plain text.

To actuate a movement with the motor, one of the arrow keys of the "Inching" button (3) must be pressed. All activated motors will then continue moving as long as this key is held down.

All activated units are automatically reset to their rest state when the mode is changed. This also applies when switching to Setup mode.

### 5.2.1.2 Setup mode



#### **Danger of hand injuries during tool rigging.**

Setup functions may be performed with the protective hoods open.

Setup mode is used to execute movements with the protective hood open. For safety reasons, the movement may only be started with the dead man's button (see BSR Operating Instructions, Section 4.3.2).

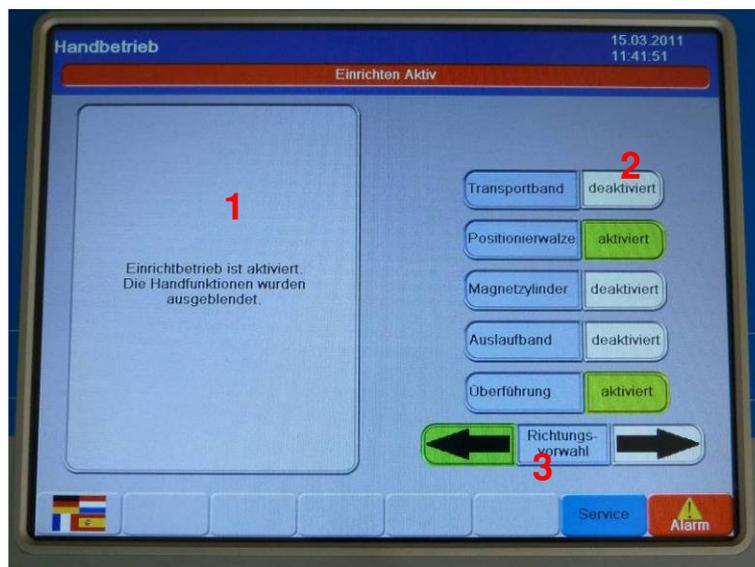


Figure 18: "Setup mode" display

In Setup mode, the functions for the valves and vacuum pump are switched off (1). This precaution is also for reasons of safety, because otherwise injuries may be caused with the protective hoods open.

The desired motors can be activated or deactivated individually. The selected functions are indicated by colour code (green) and in plain text.

In particular in Setup mode, the direction is preselected with the arrow keys (3), and the actual movement is then executed with the dead man's button in position 1.



Figure 19: Position 1

### 5.3 Automatic mode



**Danger of rotating belt drive.** Failure to comply may lead to serious personal injury and to material damage.  
**Only adjust the belts when the machine is at standstill.**



**Danger of rotating rollers.** Failure to comply may lead to serious personal injury and to material damage.  
**Only adjust the rollers when the machine is at standstill.**

In Automatic mode, care must be taken to ensure that the optical sensor is not permanently busy, because otherwise a paper jam signal will be transmitted, and the machine will be stopped.

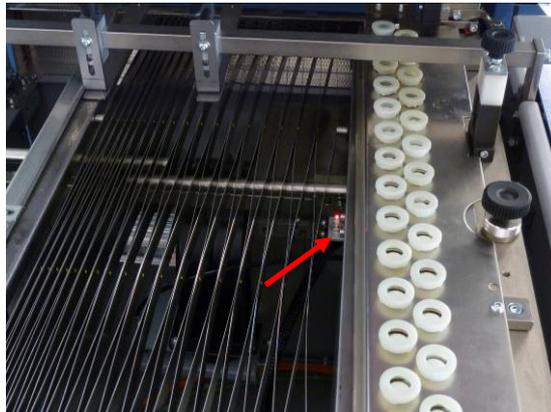


Figure 20: Optical sensor



Figure 21: Amplifier

The "busy" state of the optical sensor is indicated by the amplifier level display. When the sensor is not active, the LEDs must be as shown in the photo on the left. A busy optical sensor is indicated by the level-indicating LEDs. Continuous sensor activation is therefore visible from this display.

## 5.4 Changing optical sensor

The optical sensor may only be replaced when the machine is switched off.



Figure 22: Optical sensor

To replace the optical sensor in the event of a fault, the sensor locknut must be unscrewed and the mounted cable to the amplifier removed.

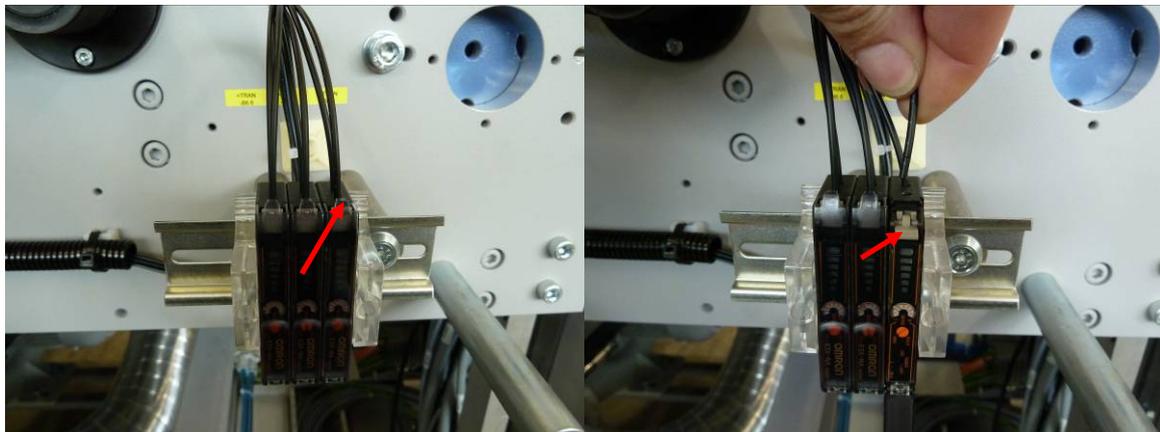


Figure 23: Optical amplifier

To remove the fibre-optic cable from the optical amplifier, the cover over the amplifiers must be removed. The amplifier cover can now be folded down to access the optical cable fastener.

Flip down the cable clamping mechanism in order to remove the cable. Insert the new cable and clamp it back into place.

Fasten the new optical sensor with the locknut, and refit all covers.